AGENDA

CITY COUNCIL OF THE CITY OF MORENO VALLEY
MORENO VALLEY COMMUNITY SERVICES DISTRICT
CITY AS SUCCESSOR AGENCY FOR THE COMMUNITY REDEVELOPMENT AGENCY OF THE CITY OF MORENO VALLEY
MORENO VALLEY HOUSING AUTHORITY
BOARD OF LIBRARY TRUSTEES

December 11, 2018

SPECIAL MEETING – 6:00 PM

City Council Study Sessions
Second Tuesday of each month – 6:00 p.m.

City Council Meetings
Special Presentations – 5:30 P.M.
First & Third Tuesday of each month – 6:00 p.m.

City Council Closed Session
Will be scheduled as needed at 4:30 p.m.

City Hall Council Chamber – 14177 Frederick Street

Upon request, this agenda will be made available in appropriate alternative formats to persons with disabilities, in compliance with the Americans with Disabilities Act of 1990. Any person with a disability who requires a modification or accommodation in order to participate in a meeting should direct such request to Guy Pegan, ADA Coordinator, at 951.413.3120 at least 72 hours before the meeting. The 72-hour notification will enable the City to make reasonable arrangements to ensure accessibility to this meeting.

Dr. Yxstian A. Gutierrez, Mayor

Victoria Baca, Mayor Pro Tem
Ulises Cabrera, Council Member
David Marquez, Council Member
Carla Thornton, Council Member

AGENDA
JOINT MEETING OF THE
CITY COUNCIL OF THE CITY OF MORENO VALLEY
MORENO VALLEY COMMUNITY SERVICES DISTRICT
CITY AS SUCCESSOR AGENCY FOR THE
COMMUNITY REDEVELOPMENT AGENCY OF THE
CITY OF MORENO VALLEY
MORENO VALLEY HOUSING AUTHORITY
AND THE BOARD OF LIBRARY TRUSTEES

THE CITY COUNCIL RECEIVES A SEPARATE STIPEND FOR CSD MEETINGS

SPECIAL MEETING – 6:00 PM
DECEMBER 11, 2018

CALL TO ORDER

Joint Meeting of the City Council, Community Services District, City as Successor Agency for the Community Redevelopment Agency, Housing Authority and the Board of Library Trustees - actions taken at the Joint Meeting are those of the Agency indicated on each Agenda item.

INVOCATION

Senior Pastor Donald Wilson, Lighthouse Baptist Church

PRESENTATION OF COLORS

Blue Eagles Total Force Honor Guard

NATIONAL ANTHEM

Canyon Springs High School Choir

PLEDGE OF ALLEGIANCE

Frank Wright

POSTING OF COLORS

Blue Eagles Total Force Honor Guard

AMERICA THE BEAUTIFUL

Emily Adkins, Soloist, Canyon Springs High School

ROLL CALL

INTRODUCTIONS

PUBLIC COMMENTS ON MATTERS ON THE AGENDA ONLY

SPECIAL ORDER OF BUSINESS

1. RESOLUTION RECITING THE FACT OF THE GENERAL MUNICIPAL ELECTION HELD ON NOVEMBER 6, 2018, DECLARING THE OFFICIAL RESULTS AND SUCH OTHER MATTERS AS PROVIDED BY LAW (Report of: City Clerk)

   Recommendation: That the City Council:

   1. Adopt A Resolution of the City Council of the City of Moreno Valley, California, reciting the fact of the General Municipal Election held on November 6, 2018, declaring the results and such other matters as provided by law.

RECOGNITION OF OUTGOING CITY OFFICIALS

City Council Comments/Presentations

Jeffrey Giba

PRESENTATION OF THE CERTIFICATES OF ELECTION AND ADMINISTRATION OF THE OATHS OF OFFICE TO NEWLY ELECTED OFFICIALS

Council Member District 2 - Oath and Remarks

Council Member District 4 - Oath and Remarks

Mayor - Oath and Remarks

RECOGNITION TO NEWLY ELECTED CITY OFFICIALS BY THE CITY COUNCIL AND/OR OTHER PUBLIC OFFICERS

RECESS TO RECEPTION IN THE MAIN LOBBY

RECONVENE CITY COUNCIL MEETING

ROLL CALL

JOINT CONSENT CALENDARS (SECTIONS A-D)

All items listed under the Consent Calendars, Sections A, B, C, and D are considered to be routine and non-controversial, and may be enacted by one motion unless a member of the City Council, Community Services District, City as Successor Agency for the Community Redevelopment Agency, Housing Authority or the Board of Library Trustees requests that an item be removed for separate action. The motion to adopt the Consent Calendars is deemed to be a separate motion by each Agency and shall be so recorded by the City Clerk. Items withdrawn for report or discussion will be heard after public hearing items.

A. CONSENT CALENDAR-CITY COUNCIL

A.1. MINUTES - SPECIAL MEETING (CLOSED SESSION) - NOV 13, 2018 4:30 PM

Recommendation: Approve as submitted.

A.2. MINUTES - SPECIAL MEETING - NOV 13, 2018 6:00 PM

Recommendation: Approve as submitted.

A.3. MINUTES - SPECIAL MEETING - NOV 19, 2018 5:00 PM

Recommendation: Approve as submitted.

A.4. RECEIVE THE ANNUAL AB1600 COMPLIANCE REPORT FOR FISCAL YEAR 2017-18 AND THE FIVE-YEAR REPORT (Report of: Financial & Management Services)

Recommendations:

1. Receive and file the Annual AB 1600 Compliance Report for FY 2017-18 and the Five-Year Report in compliance with California Government Code sections 66006 and 66001.

2. Approve the finding that staff has demonstrated a continuing need to hold unexpended Development Impact Fees.

A.5. APPROVE A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY TO AMEND THE ELECTRIC RATES FOR MORENO VALLEY UTILITY (Report of: Financial & Management Services)

Recommendation:

1. Approve Resolution No. 2018-XX. A Resolution of the City Council of the City of Moreno Valley, California, to Amend the Electric Rates for Moreno Valley Utility (MVU).

A.6. AUTHORIZE AN INCREASE TO THE CONTRACT AMOUNT WITH HIGH COUNTRY LINE CONSTRUCTION, INC. FOR THE CONSTRUCTION OF THE KITCHING STREET ELECTRICAL SUBSTATION AND SWITCHYARD PROJECT (Report of: Financial & Management Services)

Recommendations:

1. Approve a Change Order and an increase in existing Purchase Order for High Country Line Construction, Inc. in the amount of $465,000 to cover unanticipated work including additional work required by Southern California Edison.

2. Authorize the City Manager to execute a Change Order to High Country Line Construction, Inc.

A.7. AUTHORIZE THE AWARD OF THE CONSTRUCTION CONTRACT TO HOT LINE CONSTRUCTION, INC. FOR THE HEACOCK CROSSTOWN TIE IMPROVEMENTS, PROJECT NO. 805 0043 (Report of: Financial & Management Services)

Recommendations:

1. Award the construction contract to Hot Line Construction, Inc., 9020 Brentwood Boulevard, Suite H, Brentwood, CA 94513, the lowest responsible bidder, for the Heacock Crosstown Tie Project.

2. Authorize the City Manager to execute a contract with Hot Line Construction, Inc.

3. Authorize the issuance of a Purchase Order to Hot Line Construction, Inc. for the amount of $1,816,798 ($1,579,824 bid amount plus 15% contingency) when the contract has been signed by all parties.

4. Authorize the Chief Financial Officer/City Treasurer to execute any subsequent related minor change orders to the contract with Hot Line Construction, Inc. up to, but not exceeding, the 15% contingency amount of $236,974, subject to the approval of the City Attorney.

5. Amend the FY 2017/2018 & 2018/2019 Adopted Capital Improvement Plan and Appropriate $357,300 from the Moreno Valley Utility Fund (Account No. 6011 30 80 80005 720199) to cover the construction and administrative costs.

A.8. LIST OF PERSONNEL CHANGES (Report of: Human Resources)

Recommendation:

1. Ratify the list of personnel changes as described.

A.9. CONSIDERATION OF PROPOSED VOLUNTARY EARLY RETIREMENT INCENTIVE PROGRAM (Report of: Human Resources)

Recommendation:

1. Staff recommends that the City Council approve the Proposed Voluntary Early Retirement Incentive (VERI) program.

A.10. APPROVAL TO FUND A COMMUNITY SERVICES COORDINATOR POSITION (Report of: Human Resources)

Recommendation:

1. Authorize the Parks and Community Services Department to de-fund one Administrative Assistant position and fund one Community Services Coordinator position.

2. Authorize the City Position Summary, as amended, to reflect the de-funding of one Administrative Assistant position and the funding of one Community Services Coordinator position.

A.11. TELECOMMUNICATIONS LICENSE AGREEMENT WITH LOS ANGELES SMSA LIMITED PARTNERSHIP, d/b/a VERIZON WIRELESS, FOR A CELL TOWER AT EL POTRERO PARK (Report of: Parks & Community Services)

Recommendations:

1. Authorize the Mayor to execute a Telecommunications License Agreement with Los Angeles SMSA Limited Partnership, d/b/a Verizon Wireless, on the property known as El Potrero Park.

2. Authorize the City Manager to execute any subsequent related Extensions or Amendments to the Agreement, subject to the approval of the City Attorney.

3. Approve the amended budget as set forth in the Fiscal Impact Section of this report.

A.12. COUNCIL DISCRETIONARY EXPENDITURE REPORTS FOR FISCAL YEAR 2018/2019 AS OF JULY 1, 2018 THROUGH OCTOBER 31, 2018 (Report of: City Clerk)

Recommendation:

1. Receive and file the Fiscal Year 2018/2019 Council Discretionary Expenditure Report for July 1, 2018 through October 31, 2018.

A.13. MAYORAL APPOINTMENTS TO THE EMERGING LEADERS COUNCIL, SENIOR CITIZEN'S BOARD AND THE ENVIRONMENTAL AND HISTORICAL PRESERVATION BOARD (Report of: City Clerk)

Recommendation:

1. Receive and confirm the Mayoral appointments as follows:

Emerging Leaders Council

Name	Position	Term
Patrick Samones	Member	Ending 05/31/2020

Senior Citizen's Board

Name	Position	Term
Cleveland Johnson	Member	Ending 06/30/2021

Environmental and Historical Preservation Board

Name	Position	Term
Gerald Michael Budlong	Member	Ending 06/30/2021

A.14. ADOPTION OF ORDINANCE LOCAL MORENO VALLEY COMMERCIAL CANNABIS ACTIVITY TAX. (Report of: City Clerk)

Recommendations: That the City Council:

1. By motion, adopt an Ordinance of the People of the City of Moreno Valley, California, Amending Moreno Valley Municipal Code to add Chapter 3.28 "Commercial Cannabis Activity Tax" Setting the Maximum Amount of Tax Rate at Eight Percent (8%) And $15.00 Per Square Foot for Cultivation Businesses for the Purpose of Funding Local General Municipal Services

B. CONSENT CALENDAR-COMMUNITY SERVICES DISTRICT

B.1. MINUTES - SPECIAL CLOSED SESSION OF NOV. 13, 2018 (See A.1)

Recommendation: Approve as submitted.

B.2. MINUTES - SPECIAL MEETING OF NOV. 13, 2018 (See A.2)

Recommendation: Approve as submitted.

B.3. MINUTES - SPECIAL MEETING OF NOV. 19, 2018 (See A.3)

Recommendation: Approve as submitted.

C. CONSENT CALENDAR - HOUSING AUTHORITY

C.1. MINUTES - SPECIAL CLOSED SESSION OF NOV. 13, 2018 (See A.1)

Recommendation: Approve as submitted.

C.2. MINUTES - SPECIAL MEETING OF NOV. 13, 2018 (See A.2)

Recommendation: Approve as submitted.

C.3. MINUTES - SPECIAL MEETING OF NOV. 19, 2018 (See A.3)

Recommendation: Approve as submitted.

D. CONSENT CALENDAR - BOARD OF LIBRARY TRUSTEES

D.1. MINUTES - SPECIAL CLOSED SESSION OF NOV. 13, 2018 (See A.1)

Recommendation: Approve as submitted.

D.2. MINUTES - SPECIAL MEETING OF NOV. 13, 2018 (See A.2)

Recommendation: Approve as submitted.

D.3. MINUTES - SPECIAL MEETING OF NOV. 19, 2018 (See A.3)

Recommendation: Approve as submitted.

E. PUBLIC HEARINGS

Questions or comments from the public on a Public Hearing matter are limited to five minutes per individual and must pertain to the subject under consideration.

Those wishing to speak should complete and submit a GOLDENROD speaker slip to the Sergeant-at-Arms.

E.1. PROPOSED GENERAL PLAN AMENDMENT FOR PROJECTS 1 AND 2; PROJECT 1, CENTERPOINTE COMMERCE CENTER, INCLUDING A CHANGE OF ZONE AND PLOT PLAN FOR THE DEVELOPMENT OF A 204,022 SQUARE FOOT WAREHOUSE PROJECT ON 8.8 ACRES; AND PROJECT 2, BRODIAEA RESIDENTIAL PROJECT, INCLUDING A CHANGE OF ZONE, AND TENTATIVE TRACT MAP FOR 45 SINGLE-FAMILY RESIDENTIAL LOTS ON APPROXIMATELY 8.85 ACRES (Report of: Community Development)

Recommendations: That the City Council:

1. **CONDUCT** a public hearing for review of Project 1 and defer taking action on Project 1 until after the public hearing for Project 2: and

2. **CONDUCT** a public hearing for review of Project 2, then take action on Project 1 and Project 2; and

3. **ADOPT** Resolution No. 2018-XX; A Resolution of the City Council of the City Moreno Valley for Project 1 **CERTIFYING** the Final Mitigated Negative Declaration (MND, PEN18-0026) prepared for the Centerpointe Commerce Center Project, inclusive of all related applications on file with the Community Development Department, incorporated herein by this reference, whereby the Final MND has been completed in compliance with the California Environmental Quality Act and reflects the City's independent judgement and analysis; and **ADOPTING** the Mitigation Monitoring and Reporting Program prepared for the Centerpointe Commerce Center project; and

4. **ADOPT** Resolution No. 2018-XX; A Resolution of the City Council of the City Moreno Valley for Project 2 **CERTIFYING** the Final Mitigated Negative Declaration (MND, PEN18-0055) prepared for the Brodiaea Residential Project inclusive of all related applications on file with the Community Development Department, incorporated herein by this reference, whereby the Final MND has been completed in compliance with the California Environmental Quality Act and reflects the City's independent judgement and analysis; and **ADOPTING** the Mitigation Monitoring and Reporting Program prepared for the Brodiaea Residential Project; and

5. **APPROVE** Resolution No. 2018-17, A Resolution of the City of Moreno Valley approving a General Plan Amendment thereby establishing General Plan designations for Project 1 and Project 2, as described in the Resolution and included on the revised General Plan Land Use Maps; and,

6. **INTRODUCE** and conduct the first reading by title only of Ordinance No. 2018-XX approving a Zone Change (PEN18-0025) for Project 1 from Office (O) to Light Industrial (LI), based on the findings in the Ordinance, and the revised Zoning Atlas; and

7. **APPROVE** Resolution No. 2018-XX: A Resolution of the City Council of the City of Moreno Valley approving Plot Plan PEN18-0023 for Project 1 based on the findings contained in this resolution, and subject to the conditions of approval included as Exhibit A; and

8. **SCHEDULE** the introduced Ordinance for the second reading and final action for the next regular City Council meeting.

9. I**NTRODUCE** and conduct the first reading by title only of Ordinance No. 2018-XX approving a Change of Zone (PEN18-0054) for Project 2 from R3 (maximum 3 units/acre) to RS10 (single-family residential, maximum 10 units/acre) based on the findings in the Ordinance, and the revised Zoning Atlas; and

10. **APPROVE** Resolution No. 2018-XX: A Resolution of the City Council of the City of Moreno Valley approving a Tentative Tract Map (PEN18-0092) for Project 2 based on the findings contained in this resolution, and subject to the conditions of approval included as Exhibit A; and

11. **SCHEDULE** the introduced Ordinance for the second reading and final action for the next regular City Council meeting.

E.2. A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT OF A DONUT STORE / CONVENIENCE STORE WITH GASOLINE SALES AND CAR WASH LOCATED AT THE NORTHEAST CORNER OF PERRIS BOULEVARD AND COTTONWOOD AVENUE (Report of: Community Development)

Recommendations: That the City Council:

1. ADOPT Resolution No. 2018-XX: A Resolution of the City Council of the City of Moreno Valley CERTIFYING the Mitigated Negative Declaration prepared for the Yum Yum Donuts Moreno Valley project, inclusive of all related applications on file with the Community Development Department, incorporated herein by this reference, whereby the Mitigated Negative Declaration has been completed in compliance with the California Environmental Quality Act, and the information and findings contained in the Mitigated Negative Declaration reflects the City's independent judgment and analysis; and ADOPTING the Mitigation Monitoring and Reporting Program prepared for the Yum Yum Donuts Moreno Valley project; and

2. ADOPT Resolution No. 2018-XX approving the request by Yum Yum Donuts for a General Plan Amendment (PEN16-0086), from Residential/Office (R/O) to Commercial (C) for a 1.77-acre site located at the northeast corner of Perris Boulevard and Cottonwood Avenue, based on the findings in the Resolution, the Revised General Plan Land Use Map; and

3. INTRODUCE and conduct the first reading by title only of Ordinance No. 2018-XX approving the request of Yum Yum Donuts for a Zone Change (PEN16-0087) from Office Commercial (OC) to Community Commercial (CC) for a 1.77-acre site located at the northeast corner of

Perris Boulevard and Cottonwood Avenue, as described in the Ordinance, based on the findings in the Ordinance, and the revised Zoning Atlas; and

4. ADOPT Resolution No. 2018-XX: A Resolution of the City Council of the City of Moreno Valley approving the request of Yum Yum Donuts for a Conditional Use Permit PEN16-0088 for a convenience store with gasoline sales, carwash, and alcohol beer and wine sales for a 1.77-acre site located at the northeast corner of Perris Boulevard and Cottonwood Avenue, based on the findings contained in this Resolution, and subject to the conditions of approval included as Exhibit A; and

5. SCHEDULE the introduced Ordinance for second reading and final action for the next regular City Council meeting.

F. ITEMS REMOVED FROM CONSENT CALENDARS FOR DISCUSSION OR SEPARATE ACTION

G. GENERAL BUSINESS

G.1. CONSIDERATION OF CHANGING THE NUMBER OF COMMERCIAL CANNABIS BUSINESS PERMITS ALLOWED IN THE CITY (Report of: Financial & Management Services)

Recommendations: That the City Council:

1. Consider a change in the maximum number of Commercial Cannabis Business Permits that would be issued in the City.

H. REPORTS

H.1. CITY COUNCIL REPORTS

(Informational Oral Presentation - not for Council action)

March Joint Powers Commission (JPC)

Riverside County Habitat Conservation Agency (RCHCA)

Riverside County Transportation Commission (RCTC)

Riverside Transit Agency (RTA)

Western Riverside Council of Governments (WRCOG)

Western Riverside County Regional Conservation Authority (RCA)

School District/City Joint Task Force

H.2. CITY MANAGER'S REPORT

(Informational Oral Presentation - not for Council action)

H.3. CITY ATTORNEY'S REPORT

(Informational Oral Presentation - not for Council action)

CLOSING COMMENTS AND/OR REPORTS OF THE CITY COUNCIL, COMMUNITY SERVICES DISTRICT, CITY AS SUCCESSOR AGENCY FOR THE COMMUNITY REDEVELOPMENT AGENCY, HOUSING AUTHORITY AND THE BOARD OF LIBRARY TRUSTEES.

ADJOURNMENT

PUBLIC INSPECTION

The contents of the agenda packet are available for public inspection on the City's website at www.moval.org and in the City Clerk's office at 14177 Frederick Street during normal business hours.

Any written information related to an open session agenda item that is known by the City to have been distributed to all or a majority of the City Council less than 72 hours prior to this meeting will be made available for public inspection on the City's website at www.moval.org and in the City Clerk's office at 14177 Frederick Street during normal business hours.

CERTIFICATION

I, Pat Jacquez-Nares, City Clerk of the City of Moreno Valley, California, certify that 72 hours prior to this Regular Meeting, the City Council Agenda was posted on the City's website at: www.moval.org and in the following three public places pursuant to City of Moreno Valley Resolution No. 2007-40:

City Hall, City of Moreno Valley
14177 Frederick Street

Moreno Valley Library
25480 Alessandro Boulevard

Moreno Valley Senior/Community Center
25075 Fir Avenue

Pat Jacquez-Nares, CMC & CERA
City Clerk

Date Posted: December 7, 2018

MINUTES
JOINT MEETING OF THE
CITY COUNCIL OF THE CITY OF MORENO VALLEY
MORENO VALLEY COMMUNITY SERVICES DISTRICT
CITY AS SUCCESSOR AGENCY FOR THE
COMMUNITY REDEVELOPMENT AGENCY OF THE
CITY OF MORENO VALLEY
MORENO VALLEY HOUSING AUTHORITY
BOARD OF LIBRARY TRUSTEES

SPECIAL MEETING (CLOSED SESSION) – 4:30 PM
November 13, 2018

Minutes Acceptance: Minutes of Nov 13, 2018 4:30 PM (CONSENT CALENDAR-CITY COUNCIL)

CALL TO ORDER

The Closed Session of the City Council of the City of Moreno Valley, Moreno Valley Community Services District, City as Successor Agency for the Community Redevelopment Agency of the City of Moreno Valley, and Housing Authority was called to order at 4:31 p.m. by Mayor Gutierrez in the Council Chamber located at 14177 Frederick Street, Moreno Valley, California.

Mayor Gutierrez announced that the City Council receives a separate stipend for CSD meetings.

ROLL CALL

Council:	Dr. Yxstian A. Gutierrez	Mayor
	Victoria Baca	Mayor Pro Tem
	David Marquez	Council Member
	Ulises Cabrera	Council Member
	Jeffrey J. Giba	Council Member

PUBLIC COMMENTS ON MATTERS ON THE AGENDA ONLY

Mayor Gutierrez opened the public comments portion of the meeting for items listed on the agenda only. Rafael Brugueras opposes Item No. 1.A. There being no further members of the public to come forward to speak, he closed the public comments.

CLOSED SESSION

City Attorney Koczanowicz announced that the City Council would recess to Closed Session to discuss the items as listed on the agenda and that staff did not anticipate any reportable action.

The Closed Session will be held pursuant to Government Code:

1 TWO LIABILITY CLAIMS GOVERNMENT CODE SECTION 54956.95

A. Giba vs. City of Moreno Valley

B. Black Creek Properties et al vs. City of Moreno Valley

2 SECTION 54957.6 - LABOR NEGOTIATIONS

A. Agency Representative:	Thomas M. DeSantis, City Manager
Employee Organization:	Moreno Valley City Employees Association (MVCEA)
B. Agency Representative:	Thomas M. DeSantis, City Manager
Employee Organization:	Moreno Valley Management Association (MVMA)

Council Member Giba stated he would recuse himself from Item No. 1.A.

Mayor Gutierrez recessed the Council to the City Manager's Conference Room, second floor, City Hall, for their Closed Session at 4:34 p.m.

Mayor Gutierrez reconvened the City Council in the Council Chamber from their Closed Session at 5:36 p.m.

REPORT OF ACTION FROM CLOSED SESSION, IF ANY, BY CITY ATTORNEY

City Attorney Koczanowicz announced there was no reportable action taken in Closed Session.

ADJOURNMENT

There being no further business to come before the City Council, Mayor Gutierrez adjourned the Closed Session at 5:36 p.m.

Submitted by:

_____

Pat Jacquez-Nares, CMC & CERA, City Clerk,
Secretary, Moreno Valley Community Services District
Secretary, City as Successor Agency for the Community
Redevelopment Agency of the City of Moreno Valley
Secretary, Moreno Valley Housing Authority
Secretary, Board of Library Trustees

Approved by:

_____

Dr. Yxstian A. Gutierrez
Mayor
City of Moreno Valley
President, Moreno Valley Community Services District
Chairperson, City as Successor Agency for the Community
Redevelopment Agency of the City of Moreno Valley
Chairperson, Moreno Valley Housing Authority
Chairperson, Board of Library Trustees

Minutes Acceptance: Minutes of Nov 13, 2018 4:30 PM (CONSENT CALENDAR-CITY COUNCIL)

MINUTES
CITY COUNCIL SPECIAL MEETING OF THE CITY OF MORENO VALLEY
November 13, 2018

CALL TO ORDER - 5:30 PM

SPECIAL PRESENTATIONS

1. Recognition of David Ruiz and Jeffrey Harper for their many years of service to the City of Moreno Valley Fire Department on the occasion of their retirement (Report of: City Clerk)

Minutes Acceptance: Minutes of Nov 13, 2018 6:00 PM (CONSENT CALENDAR-CITY COUNCIL)

MINUTES
JOINT MEETING OF THE
CITY COUNCIL OF THE CITY OF MORENO VALLEY
MORENO VALLEY COMMUNITY SERVICES DISTRICT
CITY AS SUCCESSOR AGENCY FOR THE
COMMUNITY REDEVELOPMENT AGENCY OF THE
CITY OF MORENO VALLEY
MORENO VALLEY HOUSING AUTHORITY
BOARD OF LIBRARY TRUSTEES

SPECIAL MEETING – 6:00 PM
November 13, 2018

Minutes Acceptance: Minutes of Nov 13, 2018 6:00 PM (CONSENT CALENDAR-CITY COUNCIL)

CALL TO ORDER

The Joint Meeting of the City Council, Community Services District, City as Successor Agency for the Community Redevelopment Agency of the City of Moreno Valley, Moreno Valley Housing Authority and the Board of Library Trustees was called to order at 6:04 p.m. by Mayor Gutierrez in the Council Chamber located at 14177 Frederick Street.

PLEDGE OF ALLEGIANCE

The Pledge of Allegiance was led by Rafael Brugueras.

INVOCATION

President Kendall Shumway of the Church of Jesus Christ of Latter-day Saints

ROLL CALL

Council:	Dr. Yxstian A. Gutierrez	Mayor
	Victoria Baca	Mayor Pro Tem
	David Marquez	Council Member
	Ulises Cabrera	Council Member
	Jeffrey J. Giba	Council Member

INTRODUCTIONS

Staff:	Pat Jacquez-Nares	City Clerk
	Marshall Eyerman	Chief Financial Officer/City Treasurer
	Martin Koczanowicz	City Attorney
	Tom DeSantis	City Manager
	Allen Brock	Assistant City Manager
	Mike Lee	Economic Development Director

Rick Sandzimier	Community Development Director
David Kurylowicz	Chief of Police
Abdul Ahmad	Fire Chief
Kathleen Sanchez	Human Resources Director
Patti Solano	Parks and Community Services Director
Michael Wolfe	Public Works Director/City Engineer

PUBLIC COMMENTS ON MATTERS ON THE AGENDA ONLY

Tom Jerele
1. Regarding Item No. A.2., questioned what amount each Council Member is allotted for their discretionary funds.
2. Loaned a photo to the City.

Rafael Brugueras
1. Supports Item Nos. A.7., A.8., and A.9.

JOINT CONSENT CALENDARS (SECTIONS A-D)

Council Member Giba requested clarification on Item No. A.4. and that Item No. A.9. be pulled for a separate vote.

RESULT:	**ACCEPTED [UNANIMOUS]**
MOVER:	Ulises Cabrera, Council Member
SECONDER:	Victoria Baca, Mayor Pro Tem
AYES:	Dr. Yxstian A. Gutierrez, Victoria Baca, David Marquez, Ulises Cabrera, Jeffrey J. Giba

A. CONSENT CALENDAR-CITY COUNCIL

A.1. City Council - Regular Meeting - Oct 16, 2018 6:00 PM

Recommendation: Approve as submitted.

A.2. COUNCIL DISCRETIONARY EXPENDITURE REPORTS FOR FISCAL YEAR 2018/2019 AS OF JULY 1, 2018 THROUGH SEPTEMBER 30, 2018 (Report of: City Clerk)

Recommendation:

1. Receive and file the Fiscal Year 2018/2019 Council Discretionary Expenditure Report for July 1, 2018 through September 30, 2018.

A.3. LIST OF PERSONNEL CHANGES (Report of: Human Resources)

Recommendation:

1. Ratify the list of personnel changes as described.

Minutes Acceptance: Minutes of Nov 13, 2018 6:00 PM (CONSENT CALENDAR-CITY COUNCIL)

A.4. PAYMENT REGISTER - SEPTEMBER 2018 (Report of: Financial & Management Services)

Council Member Giba asked if the amount reflected for State Route 60 and Theodore improvements is the full payment or merely a portion of the payment.

Public Works Director/City Engineer Wolfe replied that the amount is partial payment and the full cost amounts to approximately 8 hundred thousand.

Council Member Giba requested information regarding a reimbursement to Highland Fairview listed on page 70.

City Manager DeSantis replied that the refund is a result of unused funds from a traffic study.

Council Member Giba queried if the study was recently performed.

City Manager DeSantis answered that the study was completed as a component of the most recent Environmental Impact Report.

Council Member Giba requested the amount of the original deposit furnished by Highland Fairview.

Because the information was not currently known City Manager DeSantis would email Council Member Giba the amount later.

Council Member Giba questioned which project is funded by the entry for HR Green on page 70.

City Manager DeSantis stated that the firm provides contract planning services for the City.

Council Member Giba asked for the name of the specific project associated with the cost.

City Manager DeSantis promised to supply the information after the meeting.

Council Member Giba suggested that future payment registers contain more detail.

Council Member Giba inquired as to the tuition reimbursements for City Clerk Jacquez-Nares in July and November.

Human Resources Director Sanchez remarked that all career employees are entitled to $2,000 and the payments span two separate fiscal years.

Council Member Giba noted that the City's website lists tuition reimbursement as a benefit for non-exempt employees only.

Minutes Acceptance: Minutes of Nov 13, 2018 6:00 PM (CONSENT CALENDAR-CITY COUNCIL)

Human Resources Director Sanchez responded that although City Clerk Jacquez-Nares is an exempt employee, her contract affords her all of the benefits provided to non-exempt employees.

Recommendation:

1. Receive and file the Payment Register.

A.5. RECEIPT OF QUARTERLY INVESTMENT REPORT FOR THE QUARTER ENDED SEPTEMBER 30, 2018 (Report of: Financial & Management Services)

Recommendation:

1. Receive and file the Quarterly Investment Report for quarter ended September 30, 2018, in compliance with the City's Investment Policy.

A.6. RESERVATION OF FUTURE EASEMENT FOR ELECTRIC UTILITY PURPOSES ACROSS PARCEL 1 OF PM 12368 (Report of: Financial & Management Services)

Recommendations:

1. Approve the Reservation of Future Easement for electric utility purposes across Parcel 1 of PM 12368.

2. Authorize the Mayor to execute the Reservation of Future Easement.

3. Direct the City Clerk to record the Reservation of Future Easement with the County Recorder of Riverside County when fully executed.

A.7. APPROVE THE USE OF EMERGENCY SERVICES AGENCY FINE FUNDS TO PURCHASE SIX ZOLL AUTOPULSE RESUSCITATION AUTOMATED CPR SYSTEMS (Report of: Fire Department)

Recommendations: That the City Council:

1. Authorize the Moreno Valley Fire Department to purchase six (6) Zoll AutoPulse Resuscitation Systems, at a cost of $90,924 ($84,384 for Equipment and $6,539.76 for sales tax).

2. Authorize an appropriation of $90,924 ($84,384 for Equipment and $6,539.76 for sales tax) from the Emergency Services Agency Fines Fund (2014) balance to expenditure account 2014-40-45-30150-660310 to purchase this equipment.

Minutes Acceptance: Minutes of Nov 13, 2018 6:00 PM (CONSENT CALENDAR-CITY COUNCIL)

A.8. APPROVAL TO USE ASSET FORFEITURE FUNDS TO PURCHASE LICENSE PLATE RECOGNITION SYSTEM AND PORTABLE SURVEILLANCE SECURITY CAMERAS (Report of: Police Department)

Recommendations:

1. Authorize the police department to purchase eight new Vigilant Solutions License Plate Recognition (LPR) and software at a cost of $156,538.17 ($145,279.04 for the LPR system, plus $11,259.13 sales tax).

2. Authorize the Police Department to purchase two portable surveillance cameras from Hitachi Vantara for $33,630.07 ($31,211.20 for the cameras and support, plus $2,418.87 sales tax).

3. Authorize the Police Department to purchase two solar powered portable surveillance cameras from Arrow Electronics Inc. for $26,468.79 ($24,565 for the cameras, plus $1,903.79 sales tax).

4. Authorize a budget adjustment of $216,637.03 to the General Fund (1010) Police Asset Forfeiture revenue and expenditure accounts and Technology Services Asset Fund (7220) expenditure account.

A.9. ITEM NO. A.9. WAS REMOVED FOR SEPARATE VOTE AND MOVED TO ITEM NO. F.1. BY COUNCIL MEMBER GIBA

B. CONSENT CALENDAR-COMMUNITY SERVICES DISTRICT

B.1. MINUTES - REGULAR MEETING OF OCT 16, 2018 (See A.2)

Recommendation: Approve as submitted.

C. CONSENT CALENDAR - HOUSING AUTHORITY

C.1. MINUTES - REGULAR MEETING OF OCT 16, 2018 (See A.2)

Recommendation: Approve as submitted.

D. CONSENT CALENDAR - BOARD OF LIBRARY TRUSTEES

D.1. MINUTES - REGULAR MEETING OF OCT 16, 2018 (See A.2)

Recommendation: Approve as submitted.

E. PUBLIC HEARINGS - NONE

F. ITEMS REMOVED FROM CONSENT CALENDARS FOR DISCUSSION OR SEPARATE ACTION

Minutes Acceptance: Minutes of Nov 13, 2018 6:00 PM (CONSENT CALENDAR-CITY COUNCIL)

F.1. APPROVE THE AGREEMENT FOR PROFESSIONAL CONSULTANT SERVICES WITH ARCHITERRA DESIGN GROUP FOR DESIGN AND CONSTRUCTION SUPPORT FOR THE CIVIC CENTER AMPHITHEATER AND PARK PROJECT, PROJECT NO. 803 0037 (AGMT. NO. 2018-496) (Report of: Parks & Community Services)

Parks & Community Services Director Solano provided the report.

Council Member Giba indicated that his position on the item has not changed.

Recommendations:

1. Approve the Agreement for Professional Consultant Services with ARCHITERRA DESIGN GROUP, for the Civic Center Amphitheater and Park Project.

2. Authorize the City Manager to execute the Agreement for Professional Consultant Services with ARCHITERRA DESIGN GROUP.

3. Authorize the issuance of a purchase order to ARCHITERRA DESIGN GROUP in the amount of $493,873.00 when the contract has been signed by all parties.

RESULT:	**APPROVED [3 TO 1]**
MOVER:	Victoria Baca, Mayor Pro Tem
SECONDER:	Ulises Cabrera, Council Member
AYES:	Dr. Yxstian A. Gutierrez, Victoria Baca, Ulises Cabrera
NAYS:	Jeffrey J. Giba
ABSTAIN:	David Marquez

G. GENERAL BUSINESS

G.1. FISCAL YEAR 2018/19 FIRST QUARTER BUDGET REVIEW AND APPROVAL OF THE FISCAL YEAR 2018/19 FIRST QUARTER BUDGET AMENDMENTS (RESO. NOS 2018-82 AND CSD 2018-24) (Report of: Financial & Management Services)

Chief Financial Officer/City Treasurer Eyerman provided the report.

Council Member Giba questioned why the costs for the motorcycles continue to increase.

Chief Financial Officer/City Treasurer Eyerman explained that a portion of the expenditure includes maintenance fees.

Rafael Brugueras
1. Expressed his support of the project.

Minutes Acceptance: Minutes of Nov 13, 2018 6:00 PM (CONSENT CALENDAR-CITY COUNCIL)

Recommendations: That the City Council:

1. Receive and file the Fiscal Year 2018/19 First Quarter Budget Review. (Attachment 1)

2. Adopt Resolution No. 2018-82. A resolution of the City Council of the City of Moreno Valley, California, adopting the revised operating and capital budgets for Fiscal Year (FY) 2018/19.

3. Approve the City Position Summary. Specific positions are discussed within this staff report and listed on Attachment 5 to this staff report.

4. Approve the reclassification of the Senior Management Analyst to Economic Development Division Manager.

5. Approve the reclassification of one Construction Inspector to a Construction Inspector Supervisor.

6. Approve the reclassification of two Construction Inspectors to Senior Construction Inspectors.

7. Approve the Job Class Specifications for the Economic Development Department Program Manager and the Construction Inspector Supervisor.

Recommendation: That the CSD:

1. Adopt Resolution No. CSD 2018-24. A resolution of the Moreno Valley Community Services District of the City of Moreno Valley, California, adopting the revised operating and capital budget for FY 2018/19.

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	David Marquez, Council Member
SECONDER:	Ulises Cabrera, Council Member
AYES:	Gutierrez, Baca, Marquez, Cabrera, Giba

H. REPORTS

H.1. CITY COUNCIL REPORTS

(Informational Oral Presentation - not for Council action)

March Joint Powers Commission (JPC)

Mayor Pro Tem Baca reported the following:

Minutes Acceptance: Minutes of Nov 13, 2018 6:00 PM (CONSENT CALENDAR-CITY COUNCIL)

Tonight, I'm providing an update from the March Joint Powers Commission meeting on October 24th.

At that meeting, the Commission adopted a Threshold of Significance related to future nighttime flights by private aircraft and we updated the JPA's Local CEQA Guidelines to provide guidance for environmental studies of nighttime flight noise impacts.

Riverside County Habitat Conservation Authority (RCHCA) - None

Riverside County Transportation Commission (RCTC)

Mayor Pro Tem Baca reported the following:

RCTC has expanded Freeway Service Patrol (FSP) on Interstate 15 and 215 in Southwestern Riverside County. The roving tow truck operators, with more than 40,000 annual assists, offer help to stranded motorists by performing routine mechanical repairs. They also tow vehicles from the freeway to preapproved locations - all at no cost to the motorist. The new coverage area expands FSP service to more than 140 miles of local freeways.

Riverside Transit Agency (RTA)

Council Member Marquez reported the following:

On November 15, RTA invites you to donate non-perishable food and other items to Operation SafeHouse, which assists local teens in crisis. Donations will be accepted aboard RTA buses at several Riverside locations throughout the day. Please call (951) 351-4418 for further details.

Western Riverside Council of Governments (WRCOG)

Mayor Gutierrez reported the following:

Items covered at the WRCOG Executive Committee meeting on November 5, 2018 include:

- The contract to purchase and acquire SCE streetlights was executed with Moreno Valley on September 19, 2017 and fully approved on June 19, 2018. Next steps include financing, retrofit, on-going maintenance and LED fixture selection.

- Planning for the 2019 WRCOG Round 4 Fellow Program is already underway, with expansion to additional universities a top priority. California Baptist University student Samantha Welch has been assigned to the Planning Division through the WRCOG Round 3 Fellow Program since July to assist staff with regional planning and grant related projects.

Minutes Acceptance: Minutes of Nov 13, 2018 6:00 PM (CONSENT CALENDAR-CITY COUNCIL)

Western Riverside County Regional Conservation Authority (RCA)

Council Member Giba reported the following:

Items covered at the RCA Board of Directors meeting on November 1, 2018 include:

- Moreno Valley had the highest MSHCP fee collection of all 18 Western Riverside County cities, as a result of the continued development within the City. An additional property was approved for purchase, while negotiations on another property continue.

School District/City Joint Task Force - None

H.2. CITY MANAGER'S REPORT

(Informational Oral Presentation - not for Council action)

City Manager DeSantis addressed a resident question regarding reimbursement funds that are accessible to the City Council. He thanked the City Council for approving two public safety items on the agenda. He wished the City Council and the residents a wonderful Thanksgiving.

H.3. CITY ATTORNEY'S REPORT

(Informational Oral Presentation - not for Council action)

City Attorney Koczanowicz wished everyone a happy Thanksgiving.

CLOSING COMMENTS AND/OR REPORTS OF THE CITY COUNCIL, COMMUNITY SERVICES DISTRICT, CITY AS SUCCESSOR AGENCY FOR THE COMMUNITY REDEVELOPMENT AGENCY, HOUSING AUTHORITY AND THE BOARD OF LIBRARY TRUSTEES

Council Member Giba

1. Announced that the Rotary Club will provide free Thanksgiving meals on November 20, 2018.
2. Attended the Veterans Day event on November 11, 2018. As a twenty-four-year Navy Veteran he appreciates the honor.
3. Wished everyone a peaceful Thanksgiving.

Council Member Marquez

1. Apologized to the community for not attending the Veterans Day event.
2. Encouraged everyone to practice moderation on Thanksgiving and advised them not to drink and drive.
3. Wished everyone an enjoyable Thanksgiving weekend.
4. Extolled the current winning season of the Los Angeles Rams.

Council Member Cabrera

1. Pleased that the Public Safety items were approved.
2. Requested and received support for the reintroduction of the item limiting the number of cannabis permits issued for placement on the agenda for the first meeting in December.
3. Requested and received support to schedule a Study Session item to identify improvements to the Cart Retrieval program.
4. Reminded everyone of the Cyclocross taking place at March Field Park on November 17 and 18.
5. Expressed his excitement for building a downtown in Moreno Valley.
6. Thanked Public Works Director/City Engineer Wolfe and his staff for all of the roadway improvements.
7. Invited residents to contact him regarding code violations so that they may be addressed.
8. Wished everyone a Happy Thanksgiving.

Mayor Pro Tem Baca

1. Attended the Operation Recognition Ceremony. Requested that the City's website contain a link to the organization.
2. Congratulated Mayor Gutierrez on his reelection.
3. Announced that Highland Fairview is hosting a Thanksgiving Dinner at the Senior Center on November 20, 2018.
4. Participated in the Veterans Day ceremony.
5. Urged everyone to be safe on Thanksgiving.

Mayor Gutierrez

1. Delighted that the City Council approved the public safety items and the amphitheater.
2. Announced that the skate park construction will commence in February.
3. Thanked the voters for their support in his reelection.
4. Wished everyone a safe Thanksgiving.

ADJOURNMENT

There being no further business to come before the City Council, Mayor Gutierrez adjourned the meeting at 6:54 p.m.

Submitted by:

_____

Pat Jacquez-Nares, CMC & CERA
City Clerk
Secretary, Moreno Valley Community Services District
Secretary, City as Successor Agency for the Community Redevelopment Agency of the City of Moreno Valley
Secretary, Moreno Valley Housing Authority
Secretary, Board of Library Trustees

Approved by:

_____

Dr. Yxstian A. Gutierrez
Mayor
City of Moreno Valley
President, Moreno Valley Community Services District
Chairperson, City as Successor Agency for the Community Redevelopment Agency of the City of Moreno Valley
Chairperson, Moreno Valley Housing Authority
Chairperson, Board of Library Trustees

Minutes Acceptance: Minutes of Nov 13, 2018 6:00 PM (CONSENT CALENDAR-CITY COUNCIL)

MINUTES
JOINT MEETING OF THE
CITY COUNCIL OF THE CITY OF MORENO VALLEY
MORENO VALLEY COMMUNITY SERVICES DISTRICT
CITY AS SUCCESSOR AGENCY FOR THE
COMMUNITY REDEVELOPMENT AGENCY OF THE
CITY OF MORENO VALLEY
MORENO VALLEY HOUSING AUTHORITY
BOARD OF LIBRARY TRUSTEES

SPECIAL MEETING – 5:00 PM
November 19, 2018

CALL TO ORDER

The Joint Meeting of the City Council, Community Services District, City as Successor Agency for the Community Redevelopment Agency of the City of Moreno Valley, Moreno Valley Housing Authority and the Board of Library Trustees was called to order at 5:00 p.m. by Mayor Gutierrez in the Council Chamber located at 14177 Frederick Street.

PLEDGE OF ALLEGIANCE

The Pledge of Allegiance was led by Mayor Gutierrez.

ROLL CALL

Council:	Dr. Yxstian A. Gutierrez	Mayor
	Victoria Baca	Mayor Pro Tem
	Ulises Cabrera	Council Member
	Jeffrey J. Giba	Council Member
Absent:	David Marquez	Council Member

INTRODUCTIONS

Staff:	Regina Flores	Deputy City Clerk
	Angel Migao	Executive Assistant to the Mayor and City Council
	Martin Koczanowicz	City Attorney
	Tom DeSantis	City Manager
	Allen Brock	Assistant City Manager

Minutes Acceptance: Minutes of Nov 19, 2018 5:00 PM (CONSENT CALENDAR-CITY COUNCIL)

PUBLIC COMMENTS ON MATTERS ON THE AGENDA ONLY - NONE

GENERAL BUSINESS

1. CONSIDERATION OF SCHEDULING A SPECIAL COUNCIL MEETING AND CANCELLING DECEMBER 4TH REGULAR MEETING DUE TO DELAY IN CERTIFICATION OF ELECTION RESULTS BY THE COUNTY REGISTRAR OF VOTERS (Report of: City Attorney)

   City Attorney Koczanowicz provided the report.

   Mayor Pro Tem Baca supports the recommendation as it would avoid the delay that occurred at the swearing-in ceremony in 2016.

   Recommendation that the City Council:

   1. Cancel the Regular Council Meeting of December 4th, 2018.

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Victoria Baca, Mayor Pro Tem
SECONDER:	Ulises Cabrera, Council Member
AYES:	Dr. Yxstian A. Gutierrez, Victoria Baca, Ulises Cabrera, Jeffrey J. Giba
ABSENT:	David Marquez

   2. Schedule a Special Council Meeting for December 11th, 2018 at 6:00 pm.

RESULT:	**APPROVED [UNANIMOUS]**
MOVER:	Victoria Baca, Mayor Pro Tem
SECONDER:	Ulises Cabrera, Council Member
AYES:	Dr. Yxstian A. Gutierrez, Victoria Baca, Ulises Cabrera, Jeffrey J. Giba
ABSENT:	David Marquez

2. CITY COUNCIL REQUESTS AND COMMUNICATIONS

   Council Member Cabrera requested and received support to schedule a Study Session item to discuss the possibility of a new satellite library in either district three or four.

ADJOURNMENT

There being no further business to come before the City Council, Mayor Gutierrez adjourned the meeting at 5:09 p.m.

Minutes Acceptance: Minutes of Nov 19, 2018 5:00 PM (CONSENT CALENDAR-CITY COUNCIL)

Submitted by:

_____
Pat Jacquez-Nares, CMC & CERA
City Clerk
Secretary, Moreno Valley Community Services District
Secretary, City as Successor Agency for the Community Redevelopment Agency of the City of Moreno Valley
Secretary, Moreno Valley Housing Authority
Secretary, Board of Library Trustees

Approved by:

_____
Dr. Yxstian A. Gutierrez
Mayor
City of Moreno Valley
President, Moreno Valley Community Services District
Chairperson, City as Successor Agency for the Community Redevelopment Agency of the City of Moreno Valley
Chairperson, Moreno Valley Housing Authority
Chairperson, Board of Library Trustees

Minutes Acceptance: Minutes of Nov 19, 2018 5:00 PM (CONSENT CALENDAR-CITY COUNCIL)

Report to City Council

TO:	Mayor and City Council
FROM:	Marshall Eyerman, Chief Financial Officer
AGENDA DATE:	December 11, 2018
TITLE:	RECEIVE THE ANNUAL AB1600 COMPLIANCE REPORT FOR FISCAL YEAR 2017-18 AND THE FIVE-YEAR REPORT

RECOMMENDED ACTION

Recommendations:

1. Receive and file the Annual AB 1600 Compliance Report for FY 2017-18 and the Five-Year Report in compliance with California Government Code sections 66006 and 66001.

2. Approve the finding that staff has demonstrated a continuing need to hold unexpended Development Impact Fees.

SUMMARY

Government Code Section 66006 requires cities that impose impact fees to render an annual accounting of the fees and to provide findings that support the retention of any fees that have been held in excess of five years and remain unexpended or have not been committed to projects. The City has no Development Impact Fees (DIF) that are unexpended and uncommitted for a period of five years or more.

Government Code Section 66001 requires cities that impose impact fees must make certain findings described in section 66001(d)(1) every five years as a component of the annual report.

The information included in this staff report is provided to comply with State law.

DISCUSSION

Government Code Section 66006 requires cities imposing impact fees to undertake an annual accounting of such fees within 180 days of the fiscal year end that the accounting be made available for public review. The accounting must provide the beginning and ending balances for the fiscal year, receipts, disbursements, interest earned and any other income that was received. The report must also include a description of how the fees were expended during the past year. If fees are unexpended, whether committed or uncommitted for a period of five or more years, the report must include a finding regarding the continuing need for the fees. If a continuing need cannot be shown, State law requires that the City refund the unused, uncommitted fees. The City's report contains no such instances of Development Impact Fees that remain unexpended and uncommitted.

The attached Annual AB 1600 Compliance Report is for the fiscal year ended June 30, 2018 and has been prepared in compliance with the California Government Code Section 66006 regarding the annual accounting for impact fees. The accounting was completed and the required information was made available to the public within the required time frame of 180 days subsequent to fiscal year end. The report has been on file in the City Clerk's office since November 1, 2018, and available for public review which is also in compliance with state law requiring that the report be made available at least 15 days prior to being considered by the City Council.

On April 17, 2018, the City Council approved Resolution 2018-21 which amended short-term loans from the General Fund to address negative cash balances in the Police ($4,756,000) and the Animal Shelter ($53,000) DIF funds. The loan agreement calls for repayment by June 30, 2019 or, if the funds are not repaid, the issue is to be reconsidered by the City Council.

This report does not include any findings that require the return of unexpended or uncommitted DIF fees. This report does make a finding for continuing to hold previously collected development impact fees since all funds collected and held by the City as of June 30, 2018, within each of the 13 respective Development Impact Fee funds, have been designated for specific capital projects, consistent with the Development Impact Fee Study Final Report approved by the City Council on December 11, 2012, and the Capital Improvement Plan approved by the City Council on June 20, 2017.

Interest earnings attributable to the DIF funds totaled $248,492 for the year.

Government Code Section 66001(d)(1) requires that at least every five years certain findings be made with respect to each impact fee being assessed. The following information is provided to satisfy the four requirements of this code section:

(A) Identify the purpose to which the fee is to be put – The purpose of the development impact fee program is to ensure that new development is paying its share of the transportation infrastructure and facility costs associated with the growth resulting from that development. The program includes projects related to Arterial Street Improvements, Traffic Signal improvements, Fire Facilities, Police Facilities, Park Improvements, Recreation Centers, Libraries, City Hall, Corporate

Yard, Interchange Improvements, Maintenance Equipment, Animal Shelter Facilities and Impact Fee Administration.

(B) Demonstrate a reasonable relationship between the fee and the purpose for which it is charged – The fees are based on the relationship between the needed transportation infrastructure and facility costs associated with the growth resulting from new development.

(C) Identify all sources and amounts of funding anticipated for incomplete improvements – Facilities to be funded from development impact fees are also funded by other sources including gas tax, Measure A, General Fund, and grant funding. The specific funding sources utilized for each project depend on funds availability at the time a project is moved forward.

(D) Designate the approximate dates on which the funding is expected to be deposited into the appropriate account or fund – The receipt of funding and the construction of improvements is dependent upon when undeveloped land remaining in the City is developed. Facilities constructed utilizing development impact fee funding are constructed when all required funding is available and the City Engineer has determined that it is appropriate for the project to move forward.

The recommended action supports the Infrastructure priorities included in the Momentum Moval Strategic Plan.

ALTERNATIVES

The following alternatives are available to the City Council:

1. Approve and accept the Annual AB 1600 Compliance Report for FY 2017-18 in compliance with California Government Code Section 66006 and approve the finding that staff has demonstrated a continuing need to hold unexpended Development Impact Fees. *Staff recommends this alternative to comply with the reporting requirements of the California Government Code.*

2. Approve and accept the Annual AB 1600 Compliance Report for FY 2017-18 in compliance with California Government Code Section 66006 but reject the finding that staff has demonstrated a continuing need to hold unexpended Development Impact Fees. *Staff does not recommend this alternative in that this action could result in the need to refund unexpended fees such that projects and debt service intended to be funded through these fees would be left without a funding source.*

FISCAL IMPACT

There is no fiscal impact resulting from the recommended action; the information included in the staff report is provided to comply with State law.

NOTIFICATION

Publication of the agenda. The Annual AB 1600 Compliance Report for FY 2017-18 at June 30, 2018, was made available for public review in the City Clerk's Office on November 1, 2018.

PREPARATION OF STAFF REPORT

Prepared By:
Brooke McKinney
Treasury Operations Division Manager

Department Head Approval:
Marshall Eyerman
Chief Financial Officer

CITY COUNCIL GOALS

Revenue Diversification and Preservation. Develop a variety of City revenue sources and policies to create a stable revenue base and fiscal policies to support essential City services, regardless of economic climate.

CITY COUNCIL STRATEGIC PRIORITIES

1. **Economic Development**
2. **Public Safety**
3. **Library**
4. **Infrastructure**
5. **Beautification, Community Engagement, and Quality of Life**
6. **Youth Programs**

ATTACHMENTS

1. AB 1600 Report FY 2018

APPROVALS

Budget Officer Approval	✓ Approved	11/15/18 9:29 AM
City Attorney Approval	✓ Approved	11/28/18 9:23 AM
City Manager Approval	✓ Approved	12/05/18 2:51 PM

City of Moreno Valley

Annual AB 1600 Compliance Report

For the Fiscal Year Ended
June 30, 2018

MORENO VALLEY
WHERE DREAMS SOAR

Attachment: AB 1600 Report FY 2018 [Revision 1] (3234 : RECEIVE THE ANNUAL AB 1600 COMPLIANCE REPORT AND THE FIVE-YEAR

City of Moreno Valley
Annual AB1600 Compliance Report
For the Fiscal Year Ended June 30, 2018

Pursuant to Government Code Section 66006, the following report on the receipt, use and retention of development impact fees for fiscal year ended June 30, 2018 is hereby presented to the City Council for review and approval.

Fund Number / Fund Name	Beginning Fund Balance July 1, 2017	Receipts	Disbursements	Transfers In	Interest Earnings	Ending Fund Balance June 30, 2018
2901 Arterial Streets Development Impact Fee	$ 873,607	$ 731,055	$ (1,298,000)	$ 1,058,000	$ 15,666	$ 1,380,328
2902 Traffic Signal Development Impact Fee	$ 204,359	$ 383,936	$ -	$ -	$ 3,285	$ 591,580
2903 Fire Facility Development Impact Fee	$ 1,471,434	$ 899,799	$ (243,000)	$ -	$ 25,058	$ 2,153,291
2904 Police Facility Development Impact Fee	$ (4,265,947)	$ 444,437	$ (641,000)	$ -	$ -	$ (4,462,510)
2905 Parkland Facilities Development Impact Fee	$ 3,706,429	$ 265,079	$ -	$ -	$ 60,884	$ 4,032,392
2907 Recreation Center Development Impact Fee	$ 157,625	$ 345,701	$ -	$ -	$ -	$ 503,326
2908 Libraries Development Impact Fee	$ 4,670,162	$ 163,356	$ (750,000)	$ -	$ 67,587	$ 4,151,105
2909 City Hall Development Impact Fee	$ 2,760,692	$ 165,210	$ (5,000)	$ -	$ 43,776	$ 2,964,678
2910 Corporate Yard Development Impact Fee	$ 428,027	$ 499,422	$ -	$ -	$ 9,806	$ 937,255
2911 Interchange Improvements Development Impact Fee	$ 1,109,622	$ 550,596	$ (1,258,146)	$ -	$ 14,197	$ 416,269
2912 Maintenance Equipment Development Impact Fee	$ 489,571	$ 139,797	$ -	$ -	$ 8,233	$ 637,601
2913 Animal Shelter Development Impact Fee	$ (86,794)	$ 98,094	$ -	$ -	$ -	$ 11,300
2914 Administration Development Impact Fee	$ 178,432	$ 117,154	$ (10,000)	$ -	$ -	$ 285,586

The reservation of Fund Balance and disbursement information for each of the above funds is as follows:

Attachment: AB 1600 Report FY 2018 [Revision 1] (3234 : RECEIVE THE ANNUAL AB 1600 COMPLIANCE REPORT AND THE FIVE-YEAR

Attachment: AB 1600 Report FY 2018 [Revision 1] (3234 : RECEIVE THE ANNUAL AB 1600 COMPLIANCE REPORT AND THE FIVE-YEAR

Fund 2901 - Arterial Streets Development Impact Fee

Disbursements:		% Funded by Impact Fees
Debt Service – 2013 Refunding Lease Revenue Bonds Current Year	630,000	100%
Debt Service – 2014 Refunding Lease Revenue Bonds Current Year	428,000	100%
Heacock St/Reche Vista Dr to Myers and Atwood Ave to Cactus Ave	65,000	100%
Indian St/Cardinal Ave Bridge (Over Lateral A)	175,000	100%
	$ 1,298,000	

Fund Balance Designations:	
Existing Debt Service and Future Arterial Streets Development	$ 1,380,328
Unreserved Fund Balance	None
Funds unexpended or uncommitted for five years or more	None

Fund 2902 - Traffic Signal Development Impact Fee

Disbursements:		% Funded by Impact Fees
No Disbursements	0	0%
	$ -	

Fund Balance Designations:	
Future Traffic Signal Development	$ 591,580
Unreserved Fund Balance	None
Funds unexpended or uncommitted for five years or more	None

Fund 2903 - Fire Facility Development Impact Fees

Disbursements:		% Funded by Impact Fees
Debt Service – 2013 Refunding Lease Revenue Bonds	144,000	100%
Debt Service – 2014 Refunding Lease Revenue Bonds	99,000	100%
	$ 243,000	

Fund Balance Designations:	
Future Fire Facility	$ 2,153,291
Unreserved Fund Balance	None
Funds unexpended or uncommitted for five years or more	None

Fund 2904 - Police Facility Development Impact Fee

Disbursements:		% Funded by Impact Fees
Debt Service – 2013 Refunding Lease Revenue Bonds	382,000	100%
Debt Service – 2014 Refunding Lease Revenue Bonds	259,000	100%
	$ 641,000	

Fund Balance Designations:	
Future Police Facility	$ (4,462,510)
Unreserved Fund Balance	None
Funds unexpended or uncommitted for five years or more	None

Fund 2905 - Parkland Facilities Development Impact Fee

Disbursements:		% Funded by Impact Fees
No Disbursements	-	
	$ -	
Fund Balance Designations:		
Future Parkland Facility	$ 4,032,392	
Unreserved Fund Balance	None	
Funds unexpended or uncommitted for five years or more	None	

Fund 2907- Recreation Center Development Impact Fee

Disbursements:		% Funded by Impact Fees
No Disbursements	-	
	$ -	
Fund Balance Designations:		
Future Recreation Center	$ 503,326	
Unreserved Fund Balance	None	
Funds unexpended or uncommitted for five years or more	None	

Fund 2908 - Libraries Development Impact Fee

Disbursements:		% Funded by Impact Fees
Moreno Valley Mall Branch	750,000	
	$ 750,000	
Fund Balance Designations:		
Future Libraries	$ 4,151,105	
Unreserved Fund Balance	None	
Funds unexpended or uncommitted for five years or more	None	

Fund 2909 - City Hall Development Impact Fee

Disbursements:		% Funded by Impact Fees
Civic Center Improvements	5,000	
	$ 5,000	
Fund Balance Designations:		
Future City Hall	$ 2,964,678	
Unreserved Fund Balance	None	
Funds unexpended or uncommitted for five years or more	None	

Attachment: AB 1600 Report FY 2018 [Revision 1] (3234 : RECEIVE THE ANNUAL AB 1600 COMPLIANCE REPORT AND THE FIVE-YEAR

Fund 2910 - Corporate Yard Development Impact Fee

Disbursements:		% Funded by Impact Fees
No Disbursements	-	
	$ -	

Fund Balance Designations:	
Future Corporate Yard	$ 937,255
Unreserved Fund Balance	None
Funds unexpended or uncommitted for five years or more	None

Fund 2911 - Interchange Improvements

Disbursements:		% Funded by Impact Fees
SR-60 / Theodore St Interchange	1,179,274	1%
SR-60 / Moreno Beach Dr Interchange	48,872	1%
SR-60 / Nson St Overcrossing Bridge	30,000	4%
	$ 1,258,146	

Fund Balance Designations:	
Future Interchange Improvements	$ 416,269
Unreserved Fund Balance	None
Funds unexpended or uncommitted for five years or more	None

Fund 2912 - Maintenance Equipment Development Impact Fee

Disbursements:		% Funded by Impact Fees
No Disbursements	-	
	$ -	

Fund Balance Designations:	
Future Maintenance Equipment	$ 637,601
Unreserved Fund Balance	None
Funds unexpended or uncommitted for five years or more	None

Fund 2913 - Animal Shelter Development Impact Fee

Disbursements:		% Funded by Impact Fees
No Disbursements	-	
	$ -	

Fund Balance Designations:	
Future Animal Shelter	$ 11,300
Unreserved Fund Balance	None
Funds unexpended or uncommitted for five years or more	None

Attachment: AB 1600 Report FY 2018 [Revision 1] (3234 : RECEIVE THE ANNUAL AB 1600 COMPLIANCE REPORT AND THE FIVE-YEAR

Fund 2914 Administration Development Impact Fee

		% Funded by Impact Fees
Disbursements:		
Audit of DIF Charges	10,000	100%
	$ 10,000	
Fund Balance Designations:		
Future Development Impact Fee Study	$ 285,586	
Unreserved Fund Balance	None	
Funds unexpended or uncommitted for five years or more	None	

Attachment: AB 1600 Report FY 2018 [Revision 1] (3234 : RECEIVE THE ANNUAL AB 1600 COMPLIANCE REPORT AND THE FIVE-YEAR

Five-Year Reporting Requirements

Government Code Section 66001(d)(1) requires that at least every five years certain findings be made with respect to each impact fee being assessed. The following information is provided to satisfy this requirement:

(A) Identify the purpose to which the fee is to be put – The purpose of the development impact fee program is to ensure that new development is paying its share of the transportation infrastructure and facility costs associated with the growth resulting from that development. The program includes projects related to Arterial Street Improvements, Traffic Signal improvements, Fire Facilities, Police Facilities, Park Improvements, Recreation Centers, Libraries, City Hall, Corporate Yard, Interchange Improvements, Maintenance Equipment, Animal Shelter Facilities and Impact Fee Administration.

(B) Demonstrate a reasonable relationship between the fee and the purpose for which it is charged – The fees are based on the relationship between the needed transportation infrastructure and facility costs associated with the growth resulting from new development.

(C) Identify all sources and amounts of funding anticipated for incomplete improvements – Facilities to be funded from development impact fees are also funded by other sources including gas tax, Measure A, General Fund, and grant funding. The specific funding sources utilized for each project depend on funds availability at the time a project is moved forward.

(D) Designate the approximate dates on which the funding is expected to be deposited into the appropriate account or fund – The receipt of funding and the construction of improvements is dependent upon when undeveloped land remaining in the City is developed. Facilities constructed utilizing development impact fee funding are constructed when all required funding is available and the City Engineer has determined that it is appropriate for the project to move forward.

Attachment: AB 1600 Report FY 2018 [Revision 1] (3234 : RECEIVE THE ANNUAL AB 1600 COMPLIANCE REPORT AND THE FIVE-YEAR

Development Impact Fee Rate Table

RESIDENTIAL IMPACT FEES

City-Wide (Except as otherwise noted)

Impact Fee Description	Single Family (DU)	Multi-family (DU)	Mobile/Senior (DU)
Police Facilities	$ 493.63	$ 191.73	$ 125.86
Fire Facilities	$ 980.93	$ 261.58	$ 392.37
Libraries	$ 327.90	$ 280.31	$ 128.37
Park Improvements	$ 2,728.51	$ 2,332.44	$ 1,068.16
Community & Recreation Cntrs	$ 694.29	$ 593.50	$ 271.80
Arterial Streets	$ 1,125.17	$ 787.62	$ 506.33
Traffic Signals	$ 764.56	$ 535.19	$ 344.05
Interchange Improvements	$ 700.84	$ 490.59	$ 315.38
City Hall	$ 180.49	$ 48.13	$ 72.20
Animal Shelter	$ 196.74	$ 168.18	$ 77.02
Corporate Yard	$ 543.24	$ 144.86	$ 217.30
Maintenance Equipment	$ 152.41	$ 40.64	$ 60.97
Impact Fee Administration Fee	$ 177.77	$ 113.66	$ 69.08
Total	**$ 9,066.48**	**$ 5,796.70**	**$ 3,523.03**

NON-RESIDENTIAL IMPACT FEES

City-Wide (Except as otherwise noted)

Impact Fee Description	Commercial General (KSF)	Commercial Regional (KSF)	Industrial (KSF)	Industrial High-Cube (KSF)	Office (KSF)
Police Facilities	$ 646.34	$ 553.26	$ 115.77	$ 115.77	$ 246.73
Fire Facilities	$ 360.31	$ 360.31	$ 257.36	$ 257.36	$ 300.25
Libraries	No Fee	No Fee	No Fee	No Fee	No Fee
Park Improvements	No Fee	No Fee	No Fee	No Fee	No Fee
Community & Recreation Cntrs	No Fee	No Fee	No Fee	No Fee	No Fee
Arterial Streets	$ 1,479.77	$ 1,297.79	$ 729.66	$ 170.48	$ 1,022.89
Traffic Signals	$ 1,005.51	$ 881.85	$ 495.80	$ 115.84	$ 695.05
Interchange Improvements	$ 921.71	$ 808.36	$ 454.48	$ 106.19	$ 637.13
City Hall	$ 66.30	$ 66.30	$ 47.35	$ 47.35	$ 55.25
Animal Shelter	No Fee	No Fee	No Fee	No Fee	No Fee
Corporate Yard	$ 199.54	$ 199.54	$ 142.53	$ 142.53	$ 166.28
Maintenance Equipment	$ 55.98	$ 55.98	$ 39.99	$ 39.99	$ 46.65
Impact Fee Administration Fee	$ 94.71	$ 84.47	$ 45.66	$ 19.91	$ 63.40
Total	**$ 4,830.17**	**$ 4,307.86**	**$ 2,328.60**	**$ 1,015.42**	**$ 3,233.63**

City-Wide **except MV Ranch and TownGate SP**

See Planning staff for projects within TownGate Specific Plan (SP200)

DU=Dwelling Unit

KSF=1,000 gross square feet of building space

Attachment: AB 1600 Report FY 2018 [Revision 1] (3234 : RECEIVE THE ANNUAL AB 1600 COMPLIANCE

Report to City Council

TO:	Mayor and City Council
FROM:	Marshall Eyerman, Chief Financial Officer
AGENDA DATE:	December 11, 2018
TITLE:	APPROVE A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY TO AMEND THE ELECTRIC RATES FOR MORENO VALLEY UTILITY

RECOMMENDED ACTION

Recommendation:

1. Approve Resolution No. 2018-XX. A Resolution of the City Council of the City of Moreno Valley, California, to Amend the Electric Rates for Moreno Valley Utility (MVU).

SUMMARY

This report recommends approval of a resolution that would amend Moreno Valley Utility rates to maintain approximate parity with Southern California Edison.

The proposed adjustments were presented to the Utilities Commission on October 24, 2018.

DISCUSSION

Staff recommends approval of the resolution that will amend the electric rates for the Moreno Valley Utility (MVU) to keep them generally the same as the rates charged by Southern California Edison (SCE). Since the inception of MVU, City Council policy has been to maintain parity with SCE electric rates. Resolution 2006-112 approved implementing a schedule to adjust MVU's rates to reflect the same rate schedule as SCE. This policy is also incorporated within the Professional Services Agreement with ENCO Utility Services Moreno Valley, LLC, which requires that MVU adjusts its electric rates to maintain approximate parity with those charged by SCE. In addition, Resolution 2015-32, adopted by the City Council on May 12, 2015, approved the adjustment of MVU rates two times per year to provide rate stability to its customers.

Resolution No. 2018-XX adjusts the following items:

1. Amends the electric rates for MVU to correspond with SCE rates that became effective on October 1, 2018.
2. Adds rate Schedule WTR, a Wireless Technology Rate, for wireless technology industries that require electric service to operate devices mounted on MVU facilities.

Rate Adjustments: The recommended adjustments ensure compliance with the policies and resolutions noted above.

As with all electric utilities, Moreno Valley Utility's service year is divided into two categories: Winter (October to June) and Summer (June to October). Adjusting rates to maintain approximate parity with SCE rates as presented in this report will generally decrease MVU's rate schedules on an annual basis.

Rates are structured to reflect usage; the table below shows the monthly impact to customers during the summer season and winter season.

Average Residential Usage	SUMMER		WINTER	
792 kWh	-$1.89	-1.10%		
542 kWh			-$1.29	-1.11%

Average Small Commercial Usage	SUMMER		WINTER	
800 kWh	-$0.76	-0.42%	-$0.30	-0.20%

Average Large Commercial Usage	SUMMER		WINTER	
26,500 kWh, 90 kW Demand	$6.59	0.10%	$41.96	1.06%

Average Large Commercial, TOU Usage	SUMMER		WINTER	
386,896 kWh, 865 kW Demand	-$497.81	-0.70%		
392,333 kWh, 666 kW Demand			-$15.50	-0.04%

Average Traffic Controller Usage	SUMMER	WINTER

364 kWh	-$0.10	-0.14%	-$0.10	-0.14%

Street Lights	SUMMER		WINTER	
Schedule SL-1 9,500 Lumen (1,167 lights)	$1.35	0.01%	$1.35	0.01%
Schedule SL-1 22,000 Lumen (689 lights)	$1.69	0.02%	$1.69	0.02%
Schedule SL-1 LED 14,700 Lumen (123 lights)	$2.76	0.16%	$2.76	0.16%
Schedule SL-1 LED 11,500 Lumen (12 lights)	No change	No change	No change	No change
Schedule SL-3 (total of all accounts based on average usage)	$0.13	0.02%	$0.13	0.02%

Rate Schedule WTR – Wireless Technology Rate is applicable to wireless technology industries that require electric service to devices (such as small cell attachments) that are mounted on MVU facilities. To stay on this rate, the monthly kilowatt-hour (kWh) usage of each device cannot exceed 2,700 kWh, and the maximum wattage rating cannot exceed 4,028 watts.

ALTERNATIVES

1. Approve Resolution No. 2018-XX amending the Electric Rates and Rules for Moreno Valley Utility. *Staff recommends this alternative as the proposed amended electric rates will allow the City's utility to comply with established Council-adopted policies and practices.*

2. Do not approve Resolution No. 2018-XX amending the Electric Rates and Rule for Moreno Valley Utility. *Staff does not recommend this alternative because the resolution is needed to keep the Utility in compliance with established Council-adopted policies and practices.*

FISCAL IMPACT

The proposed rate adjustment is estimated to decrease revenue by an average of approximately $84,000 per month. It is anticipated that net income will remain positive for fiscal year 2018/2019.

NOTIFICATION

Publication of the Agenda.

PREPARATION OF STAFF REPORT

Prepared By:
Jeannette Olko

Department Head Approval:
Marshall Eyerman

Electric Utility Division Manager Chief Financial Officer/City Treasurer

CITY COUNCIL GOALS

Revenue Diversification and Preservation. Develop a variety of City revenue sources and policies to create a stable revenue base and fiscal policies to support essential City services, regardless of economic climate.

CITY COUNCIL STRATEGIC PRIORITIES

1. **Economic Development**
2. **Public Safety**
3. **Library**
4. **Infrastructure**
5. **Beautification, Community Engagement, and Quality of Life**
6. **Youth Programs**

Objective 4.1: Develop a Moreno Valley Utility Strategic Plan to prepare for the 2020 expiration of the ENCO Utility Systems agreement.

ATTACHMENTS

1. Resolution Rate Adjust 12042018
2. MVU Proposed Rates 12042018

APPROVALS

Budget Officer Approval	✓ Approved	11/15/18 9:44 AM
City Attorney Approval	✓ Approved	11/28/18 8:19 AM
City Manager Approval	✓ Approved	11/28/18 9:46 AM

RESOLUTION NO. 2018-XX

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, TO AMEND THE ELECTRIC RATES FOR MORENO VALLEY UTILITY

WHEREAS, the City of Moreno Valley (the "City"), a municipal corporation, is authorized pursuant to Article XI, Section 9(a) of the California Constitution to establish, purchase, and operate public works to furnish its inhabitants with light, water, power, heat, transportation, or means of communication; and

WHEREAS, on June 26, 2001, the City Council of the City of Moreno Valley approved Resolution No. 2001-33 and, as amended by Resolution 2002-46, authorized the formation of a municipally owned utility for the purpose of providing electrical power, storm water, telephone telecommunications, cable TV, water, natural gas, and sanitary sewer; and

WHEREAS, on July 8, 2003, the City Council approved Resolution No. 2003-58 adopting the Electric Service Rules, Fees and Charges document for Moreno Valley Utility which states, in part, that the rates to be charged by and paid to the City for electric service will be the rates legally in effect and on file with the City Council; and

WHEREAS, on January 13, 2004, the City Council approved Resolution No. 2004-05 establishing the electric rates for Moreno Valley Utility; and

WHEREAS, on September 26, 2006, the City Council approved Resolution No. 2006-112 implementing a schedule to adjust Moreno Valley Utility electric rates to reflect the same schedule as Southern California Edison; and

WHEREAS, there are sections of the Electric Service Rules, Fees and Charges document that contain rules which define the terms and conditions under which electric service will be provided to the customer; and

WHEREAS, there are rules, fees, charges, and rates associated with providing the services identified in these documents. These rules, fees, charges, and rates are deemed necessary and equitable for services rendered and are required to fund in whole or in part, all of the services required to facilitate the delivery of electric distribution pursuant to the rules; and

WHEREAS, Urgency Ordinance No. 651 was adopted by the City Council on December 9, 2003, allowing for the adoption of rates by resolution.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

Attachment: Resolution Rate Adjust 12042018 (3290 : APPROVE A RESOLUTION TO AMEND THE ELECTRIC RATES FOR MVU)

1. The City Council hereby adopts the amended Moreno Valley Utility Rates, attached hereto as Exhibit A and incorporated herein, and on file in the Financial and Management Services Department.

APPROVED AND ADOPTED this 4th day of December 2018.

_____
Mayor of the City of Moreno Valley

ATTEST:

_____
City Clerk

APPROVED AS TO FORM:

_____
City Attorney

Attachment: Resolution Rate Adjust 12042018 (3290 : APPROVE A RESOLUTION TO AMEND THE ELECTRIC RATES FOR MVU)

RESOLUTION JURAT

STATE OF CALIFORNIA)

COUNTY OF RIVERSIDE) ss.

CITY OF MORENO VALLEY)

I, Pat Jacquez-Nares, City Clerk of the City of Moreno Valley, California, do hereby certify that Resolution No. 2018-XX was duly and regularly adopted by the City Council of the City of Moreno Valley at a regular meeting thereof held on the 4th day of December 2018 by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

(Council Members, Mayor Pro Tem and Mayor)

_____

CITY CLERK

(SEAL)

Attachment: Resolution Rate Adjust 12042018 (3290 : APPROVE A RESOLUTION TO AMEND THE ELECTRIC RATES FOR MVU)

Exhibit A

Moreno Valley Utility

Electric Rates

Attachment: MVU Proposed Rates 12042018 (3290 : APPROVE A RESOLUTION TO AMEND THE ELECTRIC RATES FOR MVU)

Electric Rates - Table of Contents

SCHEDULE A – RESIDENTIAL SERVICE 3

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Attachment: MVU Proposed Rates 12042018 (3290 : APPROVE A RESOLUTION TO AMEND THE ELECTRIC RATES FOR MVU)

SCHEDULE A – RESIDENTIAL SERVICE

Attachment: MVU Proposed Rates 12042018 (3290 : APPROVE A RESOLUTION TO AMEND THE ELECTRIC RATES FOR MVU)

Applicability

Applicable to electric service for residential uses.

Territory

Within the designated areas served by the Moreno Valley Utility.

Rates

Basic Charge - $/Day:

Single-Family Residence	$ 0.031
Multi-Family Residence	$ 0.024

Energy Usage Charge - $/kWh:

Summer:

Tier 1 -Baseline Quantities, all kWh, per kWh	$ 0.16123
Tier 2 – 101% to 400% of Baseline	$ 0.23283
Tier 3 – All excess kWh, per kwh	$ 0.33273

Winter:

Tier 1 -Baseline Quantities, all kWh, per kWh	$ 0.16123
Tier 2 – 101% to 400% of Baseline	$ 0.23283
Tier 4 – All excess kWh, per kWh	$ 0.33273

Public Purpose Programs:

All kWh per kWh	$ 0.01289

Monthly Minimum Charge:

Monthly Minimum Charge	$ 10.00

Energy Cost Adjustment

1. The energy charge may be adjusted each month based upon the percentage of the energy being provided by the Department of Water Resources to the investor owned utility on the billing date monthly. These adjustments could result in slight decreases or increases in the energy charge.

Special Conditions

1. Baseline Rates: Baseline rates are applicable only to separately metered residential use.

2. Baseline Quantities: The residential allocation shall be 15.5 kWhs per day in the Summer season and 11.0 kWhs per day in the Winter season.

3. Summer and Winter Seasons are defined as follows: The Summer season begins at 12:00 a.m. on June 1 and will continue until 12:00 a.m. on October 1 each year. The Winter season begins at 12:00 a.m. on October 1 and continues until 12:00 a.m. on June 1 of the following year.

4. Voltage: Service will be supplied at one standard voltage.

5. For the purposes of applying the Basic Charge, the following definitions shall be used:

   Single-Family Residence - A building of single occupancy which does not share common walls, floors, or ceilings with other residential dwelling units.

   Multi-Family Residence - Apartments, mobile homes, condominiums, townhouses, or a building of multiple occupancy which shares common walls and /or floors and ceilings with other residential dwelling units.

6. Medical Baseline Allocation: Upon application and acceptance of a certification from a medical doctor or osteopath licensed to practice medicine in California, eligible residential customers are provided a standard year-round medical baseline allocation of 15.5 kWh per day in addition to the applicable baseline allocation for the season.

	Regular Baseline Daily kWh Allocation	Additional Medical Baseline Daily kWh Allocation	Total Baseline Daily kWh Allocation
Summer	15.5	15.5	31.0
Winter	11.0	15.5	26.5

Medical Baseline Allocation Eligibility:

a) Regular use in the customer's home of one or more medical life-support devices essential to maintain the life of a full-time resident of the household; and/or

Attachment: MVU Proposed Rates 12042018 (3290 : APPROVE A RESOLUTION TO AMEND THE ELECTRIC RATES FOR MVU)

b) A full-time resident of the household is: a paraplegic, hemiplegic, quadriplegic, multiple sclerosis or scleroderma patient, being treated for life-threatening illness, and/or has a compromised immune system.

Life support devices are those devices or equipment that utilize mechanical or artificial means to sustain, restore or supplant a vital function, or mechanical equipment relied upon for mobility both within and outside of buildings.

Life-support devices include:

Aerosol Tent	Ultrasonic Nebulizer
Pressure Pad	Electrostatic Nebulizer
Apnea Monitor	Inhalation Pulmonary Pressure
Pressure Pump	Breather Machine (IPPB)
Compressor	Iron Lung
Concentrator	Dialysis Machine
Respirator (all types)	Hemodialysis Machine
Electronic Nerve Stimulator	Motorized Wheelchair
Suction Machine	Oxygen Generator

Applying for the Medical Baseline Allocation:

1. Request application from Moreno Valley Utility by telephone, mail or in person
2. Complete application.
3. The patient's physician will need to fill out the required information on the application and sign it certifying the medical need.
4. The customer can mail or bring the application to Moreno Valley Utility's offices
5. Once the application is reviewed and approved, the Medical Baseline Allocation will be effective on the next regular electric billing.
6. Applications must be renewed every two years.
7. Low Income Program - A low-income assistance discount program is offered under this standard residential rate. To be considered for this discount, an application must be filed with Moreno Valley Utility. To be eligible for this discount, the income of the customer, including all members of the household, must meet the income levels of the program and can be no more than 200% of Federal Poverty Guidelines. Under this program a discount for qualified low-income residents of 20% is provided on monthly energy charges. Discount

Attachment: MVU Proposed Rates 12042018 (3290 : APPROVE A RESOLUTION TO AMEND THE ELECTRIC RATES FOR MVU)

applies to energy charges only. The customer charge, public purpose charge, service fees and all taxes are calculated at the standard rates.

8. Family Electric Rate Assistance (FERA) Program: The FERA discount program is offered under the standard residential rate. To be considered for this discount, an application must be filed with Moreno Valley Utility. To be eligible for this discount the household must consist of three or more persons where the total gross income from all sources is no more than 250% of Federal Poverty Guidelines. Under this program a discount for qualified FERA households of 12% is provided on monthly energy charges. Discount applies to energy charges only. The customer charge, public purpose charge, service fees and all taxes are calculated at the standard rates.

Attachment: MVU Proposed Rates 12042018 (3290 : APPROVE A RESOLUTION TO AMEND THE ELECTRIC RATES FOR MVU)

SCHEDULE B – GENERAL SERVICE

Applicability

Applicable to nonresidential electric service for all types of uses including lighting and power. Customers whose monthly maximum demand is expected to exceed 20 kW, or has exceeded 20 kW in any three months during the preceding 12 months, are ineligible for service under this schedule.

Territory

Within the designated areas served by the Moreno Valley Utility.

Rates

Customer Charge - $/Day:	
Single-Phase Service	$ 0.806
Polyphase Service	$ 0.060
Energy Usage Charge - $/kWh:	
Summer, all kWh, per kWh	$ 0.17162
Winter, all kWh, per kWh	$ 0.13470
Public Purpose Programs:	
All kWh per kWh	$ 0.01118
Monthly Minimum Charge:	
Monthly Minimum Charge	$ 10.00

Energy Cost Adjustment

1. The energy charge may be adjusted each month based upon the percentage of the energy being provided by the Department of Water Resources to the investor owned utility on the billing date monthly. These adjustments could result in slight decreases or increases in the energy charge.

Special Conditions

1. Summer and Winter Seasons are defined as follows: The Summer season begins at 12:00 a.m. on June 1 and will continue until 12:00 a.m. on October 1 each year. The Winter season begins at 12:00 a.m. on October 1 and continues until 12:00 a.m. on June 1 of the following year.

2. Voltage: Service will be supplied at one standard voltage.

Attachment: MVU Proposed Rates 12042018 (3290 : APPROVE A RESOLUTION TO AMEND THE ELECTRIC RATES FOR MVU)

3. Direct Current Fast Charger (DCFC) Charging Stations: DCFC Station installations shall be billed on this rate regardless of the kW demand until other rates are adopted for this use.

Attachment: MVU Proposed Rates 12042018 (3290 : APPROVE A RESOLUTION TO AMEND THE ELECTRIC RATES FOR MVU)

SCHEDULE C – LARGE GENERAL SERVICE

Applicability

Applicable to nonresidential electric service for all types of uses including lighting and power where the customer's monthly maximum demand is expected to exceed 20 kW or has exceeded 20 kW in any of the 3 months during the preceding 12 months.

Territory

Within the designated areas served by the Moreno Valley Utility.

Rates

Customer Charge - $/Meter/Month:		
Single Phase	$ 231.17	
Polyphase	$ 216.29	
Energy Usage Charge - $/kWh:		
Summer, all kWh, per kWh	$ 0.07140	
Winter, all kWh, per kWh	$ 0.06237	
Demand Charge - $/kW:	Summer	Winter
Facilities Related Demand Charge, per kW	$ 15.78	$ 15.78
Time Related Demand Charge, per kW	$ 20.03	$ 0.00
Public Purpose Programs:		
All kWh per kWh	$ 0.01072	
Monthly Minimum Charge:		
Monthly Minimum Charge	$ 10.00	

Energy Cost Adjustment

1. The energy charge may be adjusted each month based upon the percentage of the energy being provided by the Department of Water Resources to the investor owned utility on the billing date monthly. These adjustments could result in slight decreases or increases in the energy charge.

Attachment: MVU Proposed Rates 12042018 (3290 : APPROVE A RESOLUTION TO AMEND THE ELECTRIC RATES FOR MVU)

Special Conditions

1. Summer and Winter Seasons are defined as follows:

   The Summer season begins at 12:00 a.m. on June 1 and will continue until 12:00 a.m. on October 1 each year. The Winter season begins at 12:00 a.m. on October 1 and continues until 12:00 a.m. on June 1 of the following year.

2. Voltage: Service will be supplied at one standard voltage.

3. Billing Demand: The Billing Demand shall be the kilowatts of Maximum Demand, determined to the nearest kW. The Billing Demand shall be the greater of the kilowatts of Maximum Demand recorded (or established for) the monthly billing period or 50% of the highest Maximum Demand established in the preceding eleven months (Ratcheted Demand).

4. Maximum Demand: The maximum demand in any month shall be the measured maximum average kilowatt input, indicated or recorded by instruments to be supplied by the City, during any 15-minute metered interval in the month.

5. Voltage Discount: The monthly Facilities Related Demand Charge will be reduced by $0.21 per kW for service delivered and metered at voltages of 4 kV through 12 kV. The energy charge will be reduced by $.00101 per kWh for service delivered and metered at voltages of 2 kV through 12 kV.

6. Excess Transformer Capacity: Excess Transformer Capacity is the amount of transformer capacity requested by a customer in excess of that which the City would normally install to serve the customer's Maximum Demand. Excess Transformer Capacity shall be billed at the amount shown in the rates section above.

7. Power Factor Adjustment: When Maximum Demand has exceeded 200 kW for three consecutive months, kilovar metering will be installed as soon as practical, and thereafter, until the Maximum Demand has been less than 150 kW for twelve consecutive months, the billing will be adjusted each month for power factor.

   a. Adjustment Rate:

      i. For service delivered and metered at voltages 12 kV or less, the billing will be increased by $0.55 per kilovar of maximum reactive demand.

   b. Determining the Reactive Demand:

      i. Service delivered and metered at voltages of 4 kV or greater:

Attachment: MVU Proposed Rates 12042018 (3290 : APPROVE A RESOLUTION TO AMEND THE ELECTRIC RATES FOR MVU)

1. The maximum reactive demand shall be the highest measured maximum average kilovar demand indicated or recorded by metering during any 15-minute metered interval in the month. The kilovars shall be determined to the nearest unit. A device will be installed on each kilovar meter to prevent reverse operation of the meter.

ii. Services delivered and metered at voltages less than 4 kV:

1. For customers with metering used for billing that measures reactive demand, the maximum reactive demand shall be the highest measured maximum average kilovar demand indicated or recorded by metering during any 15-minute metered interval in the month. The kilovars shall be determined to the nearest unit. A device will be installed on each kilovar meter to prevent reverse operation of the meter.

2. For customers with metering used for billing that measures kilovar-hours instead of reactive demand, the kilovars of reactive demand shall be calculated by multiplying the kilowatts of measured maximum demand by the ratio of the kilovar-hours to the kilowatt-hours. Demands in kilowatts and kilovars shall be determined to the nearest unit. A ratchet device will be installed on the kilovar-hour meter to prevent its reverse operation on leading power factors.

Attachment: MVU Proposed Rates 12042018 (3290 : APPROVE A RESOLUTION TO AMEND THE ELECTRIC RATES FOR MVU)

SCHEDULE SL – STREET LIGHTING SERVICE
MVU OWNED SYSTEM

Attachment: MVU Proposed Rates 12042018 (3290 : APPROVE A RESOLUTION TO AMEND THE ELECTRIC RATES FOR MVU)

Applicability

Applicable to un-metered service for the lighting of streets and highways where MVU owns and maintains the street lighting equipment and associated facilities included under this schedule.

Territory

Within the designated areas served by the Moreno Valley Utility.

Rates

Energy Usage Charge - High Pressure Sodium Vapor Lamps

Basic Charge:

Initial Lumens	Wattage	All Night Service kWhs/Month	$/Lamp/Month	$/Lamp/Month Public Purpose Programs
9,500	100	40	$11.46	$0.27
16,000	150	67	$13.74	$0.45
22,000	200	85	$15.39	$0.58
27,500	250	108	$17.12	$0.73

Energy Usage Charge – Light Emitting Diode (LED) Lamps

Basic Charge:

Initial Lumens	Wattage	All Night Service kWhs/Month	$/Lamp/Month	$/Lamp/Month Public Purpose Programs
14,700	173	75	$14.76	$0.53
11,500	98	47	$12.03	$0.32
3,800	31	15	$ 9.24	$0.10

Energy Cost Adjustment

1. The energy charge may be adjusted each month based upon the percentage of the energy being provided by the Department of Water Resources to the investor owned utility on the billing date monthly. These adjustments could result in slight decreases or increases in the energy charge.

Special Conditions

1. Maintenance shall include periodic inspection, renewal of lamps, cleaning of glassware, replacement of damaged glassware and lamps, and minor repairs to wiring and electrical appurtenances.

2. Hours of Service: Under MVU's standard all night operating schedule, approximately 4,140 hours of service will be furnished.

3. The developer shall install streetlights that will be served from MVU's underground system. These streetlights must be installed in accordance with MVU's specifications and the developer will deed such facilities to MVU.

4. Requirements and Restrictions:

    a. The applicant for street light service shall specify the lamp size and location of streetlights.

    b. Service shall not be furnished under this schedule where location, mounting height, or other considerations are unacceptable to the MVU.

    c. The installation of street lighting equipment and facilities hereunder is contingent upon the MVU obtaining easements, rights of way, and highway permits satisfactory to the MVU for the required poles, equipment, and facilities.

    d. In accordance with Rule No. 4, a written contract for a term of not less than one year is required in order to receive street light service under the provisions of this schedule.

    e. Should the applicant not commence using the street lighting in a bona fide manner within ninety (90) days after date of completion and installation of a street light or street lighting system requested by the applicant, the MVU will bill, and the applicant shall pay, the applicable lamp charge(s).

5. Liability of Utility: MVU shall not, by taking action pursuant to its tariffs, be liable for any loss, damage, or injury, established or alleged, which may result, or be claimed to result, therefrom.

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SCHEDULE SL2 – STREET LIGHTING SERVICE
CUSTOMER OWNED AND MAINTAINED SYSTEM SCHEDULE
(UNMETERED)

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Applicability

Applicable to service for un-metered lighting of streets, highways, and directional highway signs served in conjunction with street and highway lighting, and other publicly operated automobile parking lots which are open to the general public, where the customer owns and maintains the street lighting equipment operated within the period from dusk to dawn.

Territory

Within the designated areas served by the Moreno Valley Utility.

Rates

Energy Usage Charge - High Pressure Sodium Vapor Lamps

Basic Charge:

Initial Lumens	Wattage	All Night Service kWhs/Month	$/Lamp/Month	$/Lamp/Month Public Purpose Programs
9,500	100	40	$ 5.26	$0.27
16,000	150	67	$ 7.16	$0.45
22,000	200	85	$ 8.49	$0.58
27,500	250	108	$ 10.16	$0.73

Energy Cost Adjustment

1. The energy charge may be adjusted each month based upon the percentage of the energy being provided by the Department of Water Resources to the investor owned utility on the billing date monthly. These adjustments could result in slight decreases or increases in the energy charge.

Special Conditions

1. Voltage: Service will be supplied at one standard voltage.

2. Requirements and Restrictions:

    a. The applicant for street light service shall specify the lamp size and location of streetlights.

    b. Service shall not be furnished under this schedule where location, mounting height, or other considerations are unacceptable to the MVU.

    c. The installation of street lighting equipment and facilities hereunder is contingent upon the MVU obtaining easements, rights of way, and highway permits satisfactory to the MVU for the required poles, equipment, and facilities.

3. Liability of Utility: MVU shall not, by taking action pursuant to its tariffs, be liable for any loss, damage, or injury, established or alleged, which may result, or be claimed to result, therefrom.

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SCHEDULE SL3 – STREET LIGHTING SERVICE
CUSTOMER OWNED SYSTEM SCHEDULE
(METERED)

Applicability

Applicable to service for metered lighting service of streets, highways, and directional highway signs served in conjunction with street and highway lighting, and other publicly operated automobile parking lots which are open to the general public, where the customer owns the street lighting equipment operated within the period from dusk to dawn.

Territory

Within the designated areas served by the Moreno Valley Utility.

Rates

Customer Charge – Per Meter Per Month:	$ 12.80
Energy Usage Charge - $/kWh:	
All Year - all kWh, per kWh	$ 0.06115
Public Purpose Programs:	
All kWh, per kWh	$ 0.00680

Energy Cost Adjustment

1. The energy charge may be adjusted each month based upon the percentage of the energy being provided by the Department of Water Resources to the investor owned utility on the billing date monthly. These adjustments could result in slight decreases or increases in the energy charge.

Special Conditions

1. Voltage: Service will be supplied at one standard voltage.
2. The customer will furnish and maintain all equipment beyond the meter.

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SCHEDULE TC-1 – TRAFFIC CONTROL SERVICE

Applicability

Applicable to service for traffic directional sign or signal lighting service owned by governmental agencies and located on streets, highways and other publicly dedicated outdoor ways and places.

Territory

Within the designated areas served by the Moreno Valley Utility.

Rates

Customer Charge – Per Meter Per Day:

Single-Phase Service	$ 0.500
Polyphase Service	$ 0.031

Energy Usage Charge - $/kWh:

All kWh per kWh	$ 0.12779

Public Purpose Programs:

All kWh per kWh	$ 0.01188

Energy Cost Adjustment

1. The energy charge may be adjusted each month based upon the percentage of the energy being provided by the Department of Water Resources to the investor owned utility on the billing date monthly. These adjustments could result in slight decreases or increases in the energy charge.

Special Conditions

1. Voltage: Service will be supplied at one standard voltage.

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SCHEDULE TOU-LGS – TIME OF USE – LARGE GENERAL SERVICE

Applicability

Applicable to nonresidential electric service for all types of uses including lighting and power where the customer's monthly maximum demand is expected to exceed 500 kW or has exceeded 500 kW in any of the 3 months during the preceding 12 months.

Territory

Within the designated areas served by the Moreno Valley Utility.

Rates – Primary Voltage

Customer Charge:		
$/Meter/Month	$ 314.30	
Energy Usage Charge - $/kWh:		
Summer		
On-Peak	$ 0.09042	
Mid-Peak	$ 0.06389	
Off-Peak	$ 0.04617	
Winter		
Mid-Peak	$ 0.06218	
Off-Peak	$ 0.05160	
Demand Charge - $/kW:	Summer	Winter
Facilities Related Demand Charge, per kW	$18.79	18.79
Time Related Demand Charge, per kW		
On-Peak	$21.49	$0.00
Mid-Peak	$4.05	$0.00
Off-Peak	$0.00	$0.00
Public Purpose Programs:		
All kWh per kWh	$0.00933	
Minimum Monthly Charge	See Conditions #4	

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Rates – Secondary Voltage

Customer Charge:		
$/Meter/Month	$ 634.89	
Energy Usage Charge - $/kWh:		
Summer		
On-Peak	$ 0.09229	
Mid-Peak	$ 0.06575	
Off-Peak	$ 0.04761	
Winter		
Mid-Peak	$ 0.06392	
Off-Peak	$ 0.05312	
Demand Charge - $/kW:	Summer	Winter
Facilities Related Demand Charge, per kW	$19.02	$19.02
Time Related Demand Charge, per kW:		
On-Peak	$21.42	$0.00
Mid-Peak	$4.12	$0.00
Off-Peak	$0.00	$0.00
Public Purpose Programs:		
All kWh per kWh	$ 0.00980	
Minimum Monthly Charge:		
Minimum Monthly Charge	See Condition #4	

Energy Cost Adjustment

1. The energy charge may be adjusted each month based upon the percentage of the energy being provided by the Department of Water Resources to the investor owned utility on the billing date monthly. These adjustments could result in slight decreases or increases in the energy charge.

Special Conditions

1. Time periods are defined as follows:

On-Peak:	Noon to 6:00 p.m. Summer weekdays except holidays
Mid-Peak:	8:00 a.m. to Noon and 6:00 p.m. to 11 p.m. Summer weekdays except holidays; 8 a.m. to 9 p.m. Winter weekdays except holidays
Off-Peak:	All other hours

Holidays are defined as New Year's Day (January 1), Martin Luther King's Birthday (third Monday in January), Washington's Birthday (third Monday in February), Memorial Day (last Monday in May),

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Independence Day (July 4), Labor Day (first Monday in September), Veterans Day (November 11), Thanksgiving Day (fourth Thursday in November), and Christmas Day (December 25).

When any holiday listed above falls on Sunday, the following Monday will be recognized as an off-peak period. No change will be made for holidays falling on Saturday.

2. Summer and Winter Seasons are defined as follows: The Summer season begins at 12:00 a.m. on June 1 and will continue until 12:00 a.m. on October 1 each year. The Winter season begins at 12:00 a.m. on October 1 and continues until 12:00 a.m. on June 1 of the following year.

3. Voltage: Service will be supplied at one standard voltage.

4. Billing Demand: The Billing Demand shall be the kilowatts of Maximum Demand, determined to the nearest kW. The Billing Demand shall be the greater of the kilowatts of Maximum Demand recorded (or established for) the monthly billing period or 50% of the highest Maximum Demand established in the preceding eleven months (Ratcheted Demand).

5. Maximum Demand: The maximum demand in any month shall be the measured maximum average kilowatt input, indicated or recorded by instruments to be supplied by the City, during any 15-minute metered interval in the month.

6. Excess Transformer Capacity: Transformer Capacity is the amount of transformer capacity requested by a customer in excess of that which the City would normally install to serve the customer's Maximum Demand. Excess Transformer Capacity shall be billed at the amount shown in the rates section above.

7. Power Factor Adjustment: The billing will be adjusted each month for power factor.

    a. Adjustment Rate: The customer's bill will be increased each month for the power factor $0.55 per kilovar of maximum reactive demand.

    b. The maximum reactive demand shall be the highest measured maximum average kilovar demand indicated or recorded by metering during any 15 minute metered interval in the month. For customers with metering used for billing that measures kilovar-hours instead of reactive demand, the kilovars of reactive demand shall be calculated by multiplying the kilowatts of measured maximum demand by the ratio of the kilovar-hours to the kilowatt-hours. Demands in kilowatts and kilovars shall be determined to

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the nearest unit. A device will be installed on the kilovar-hour meter to prevent its reverse operation on leading power factors.

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SCHEDULE SE - SERVICE ESTABLISHMENT CHARGE

Applicability

Applicable to general service and domestic service customers.

Territory

Within the entire territory served by Moreno Valley Utility.

Rate

For each establishment of electric service, a charge will apply.

Special Conditions

1. The service establishment charge is in addition to the charges calculated on the applicable rate schedule and will be made each time an account is established.
2. Establishment means each time an account is opened, including a turn on of electric service or a change of name that requires a meter reading.
3. If the customer requests electric service be established on the same day as his request or outside regular business hours, an additional charge will apply.

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SCHEDULE NEM – NET ENERGY METERING

Applicability

Applicable to general service and domestic service customers who have eligible renewable energy generation systems connected to MVU's system (interconnected) and meet program requirements. This schedule is closed to new applicants effective April 2018.

Territory

Within the entire territory served by Moreno Valley Utility.

Net Surplus Compensation Rate

The net surplus compensation rate shall be $0.030175 per kWh applied to any net surplus energy remaining at the end of the customer's twelve (12) monthly billing period ("relevant period").

Special Conditions

1. NEM customers will receive a credit for the surplus electricity supplied to MVU's system.
2. This credit will be applied to the customer's energy bill, to offset all or part of the costs associated with the energy that is consumed each month.
3. Residential accounts are billed once a year for "net" energy consumed or generated over the previous 12 months, if any.
4. Small business accounts served under the General Service Rate also qualify for annual billing.
5. Large business NEM accounts under the Large General Service Rate are billed monthly for their energy usage.
6. Net surplus energy is the amount of generated kilowatt-hours (kWh) energy that is exported to MVU's system that exceeds the amount that is received from MVU.
7. Any net surplus energy remaining at the end of the 12-month billing period (also called the "relevant period") will be given a monetary value known as the Net Surplus Compensation Rate (NSCR).
8. The NSCR value is established by MVU to reflect the costs MVU avoids in procuring power during the time period net surplus generators are likely to produce excess power.

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9. Customers may choose to either roll over the monetary value of any net surplus energy to the next billing cycle, or receive payment for any net surplus energy at the end of your 12-month relevant period.

10. Customers will be billed monthly for nominal non-energy-related charges such as taxes.

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SCHEDULE NEM 2.0 – NET ENERGY METERING
SUCCESSOR RATE

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Applicability

Applicable to Eligible Customer-Generators, as defined in Section 2827 of the California Public Utilities Code, operating a renewable electrical generation facility, as therein defined, located on the customer's owned, leased, or rented premises with a capacity of no more than one megawatt that is intended primarily to offset part or all of the customer's own electrical requirements and which is interconnected and operates in parallel with MVU's power system pursuant to an interconnection and metering agreement with MVU.

Territory

Within the entire territory served by Moreno Valley Utility.

Net Surplus Compensation Rate

The net surplus compensation rate shall be $0.030175 per kWh applied to any net surplus energy remaining at the end of the customer's monthly billing period.

Special Conditions

1. As determined in each billing period, when a customer is a net consumer of energy, the resulting net consumed energy will be used in the calculation of all applicable energy charges.
2. As determined in each billing period, when a customer is a net producer of energy, the resulting net produced energy will be used in the calculation of a monetary value that shall only be applied to the customer's monthly bill, including any minimum charges and applicable taxes.
3. A customer is a net producer of energy when the amount of generated kilowatt-hours (kWh) of energy that is exported to MVU's system exceeds the amount that the customer receives from MVU.
4. The monetary value calculated is the product of the net kWh produced multiplied by the Net Surplus Compensation Rate (NSCR).
5. The NSCR value is established by MVU to reflect the costs MVU avoids in procuring power during the time period net surplus generators are likely to produce excess power.

6. MVU shall retain any net surplus energy generated by the NEM customer, including any associated environmental attributes or renewable energy credits ("REC").

7. To be eligible for service under this Schedule, generating facilities must meet all applicable safety and performance standards established by the National Electrical Code, the Institute of Electrical and electronics Engineers, and accredited testing laboratories such as Underwriters Laboratories and, where applicable, rules regarding safety and reliability (i.e., MVU's Electric Rule 21). All generating facilities must have a warranty of at least 10 years for all equipment and the associated installation from the system provider (not from MVU). All major solar system components (including PV panels and other generation equipment, inverters and meters) must be on the verified equipment list maintained by the CEC. Any other equipment, as determined by MVU, must be verified as having safety certification from a Nationally Recognized Testing Laboratory.

8. To be eligible for service under this Schedule, the customer's generating facilities must be sized to offset part or all of the customer's own electrical requirements and cannot be oversized. This means that the estimated output of the generating facility, using the CEC-AC nameplate rating for inverter-based generating facilities must not exceed the customer's previous annual usage in kWh. In the event that there is less than 12 months of previous recorded usage data, the standard of 2 watts per square foot of the premises will apply.

9. Customers seeking to interconnect their generating facilities for the purpose of receiving service under this Schedule are subject to the interconnection requirements and interconnection cost responsibility provisions as established in MVU's Electric Rule 21.

10. A new customer of record who owns, rents, or leases a premise that includes a generating facility that was approved by MVU for parallel operation prior to the new customer moving in and/or taking electric service with MVU will take service under this Schedule as long as the requirements of this Schedule are met. This provision also applies to premises where the developer/contractor establishes the interconnection.

11. Existing generating facilities currently under Schedule NEM that are modified such that the generating capacity or output increases by 10% or more will be placed under Schedule NEM 2.0.

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12. Existing customers under Schedule NEM will remain under Schedule NEM for a period of fifteen (15) years from the original year in which their generating facility was interconnected to MVU's grid as determined from the date the customer received the permission to operate (PTO), and then will be switched to Schedule NEM 2.0 or any otherwise applicable rate schedule. Existing customers under Schedule NEM can request to be placed under Schedule NEM 2.0 at any time; the customer's account will be trued up at the time of the request. This means that any outstanding balance due or credit due will be applied to the next regular billing.

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SCHEDULE ED – ECONOMIC DEVELOPMENT ("ED") RATE

Applicability

Commercial or industrial end-use customers that would otherwise receive service under Electric Rate Schedule TOU-LGS (Time of Use-Large General Service) and meet certain criteria as established and adopted by resolution of the City Council of the City of Moreno Valley may take advantage of the ED rate as a New Customer or Expanded Load Customer. This ED rate is applicable to all or part of the services provided to New Customers and Expanded Load Customers, as such terms are defined herein. Local Hiring Incentive applicable to certain other rate classes as described in Special Condition No. 6.

1. A New Customer shall be a customer seeking to locate a new business or relocate an existing business (not currently located within the territory served by Moreno Valley Utility) within Moreno Valley Utility's service territory.

2. An Expanded Load Customer shall be an existing Moreno Valley Utility TOU-LGS customer that is adding new load to Moreno Valley by a minimum of 200 kW based upon the customer's past electrical demand as determined by Moreno Valley Utility. The expanded load can be at the customer's current site, or at a new site within the Moreno Valley Utility service territory. The ED rate will only be applied to the expanded load as determined in Section 5 below.

3. A New Customer shall meet the following criteria:

    a. Targeted industries
        i. Logistics/Distribution
        ii. Medical/Healthcare
        iii. Auto Dealerships

    b. Job Creation

i.	Tier 1 Discount Rate	150 – 499 jobs
ii.	Tier 2 Discount Rate	500 – 999 jobs
iii.	Tier 3 Discount Rate	greater than 1000 jobs
iv.	Tier 4 Discount Rate	350 jobs minimum
v.	Tier 5 Discount Rate	200 jobs minimum

    c. City Revenue Producer – either sales tax or use tax generation
        i. Tier 1a Discount Rate

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ii. Tier 4 Discount Rate - minimum $40,000 annual sales tax revenue to the City

Territory

Within the entire territory served by Moreno Valley Utility.

Character of Service

The service provided hereunder shall be alternating current with regulated frequency of 60 hertz, three-phase, or a combination single and three-phase served through one meter, at a standard voltage not to exceed 480 volts, or as may be specified by the Electric Division. To be eligible to participate all customers must have a demand meter.

Rates

Except as provided herein, or in the Economic Development Rate Agreement, all charges and provisions of the customer's otherwise applicable rate schedule shall apply. The applicable Energy Charge and Demand Charge under the customer's otherwise applicable rate schedule will be reduced as follows:

	Tier 1/Tier 1a	Tier 2	Tier 3	Tier 4
Year 1	19.00%	21.50%	24.00%	26.50%
Year 2	16.00%	18.50%	21.00%	23.50%
Year 3	13.00%	15.50%	18.00%	20.50%
Year 4	10.00%	12.50%	15.00%	17.50%
Year 5	7.00%	9.50%	12.00%	14.50%

	Tier 5
Years 1 – 4	20.00%
Years 5 – 8	15.00%
Years 9 – 12	10.00%
Years 13 - 16	5.00%

Special Conditions

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1. Term: Economic Development Rate Agreements entered into under this Schedule shall be for a single five-year term, except for Tier 5, which shall be for a single sixteen-year term.

2. Approval: Application of this Rate Schedule shall be subject to the approval of the City Manager or his designee, based on meeting the eligibility criteria outlined herein.

3. Agreement: The customer must sign a standard Moreno Valley Economic Development Rate Agreement in order for the rates under this Schedule to be applicable. In addition to the other terms of this Schedule, the Economic Development Rate Agreement shall require the customer to reimburse Moreno Valley for all rate reductions received under this Schedule, if the customer fails to maintain the required minimum load during the applicable term of the Agreement.

4. Minimum Load: Customers qualifying under this Schedule as a New Customer with a projected minimum monthly electric demand of at least 500 kW or as an Expanded Load Customer under Applicability Sections 1 and 2 above, respectively, must agree to maintain a minimum level of load for five years for Tiers 1 through 4 and sixteen years for Tier 5 from the date service is first rendered under this Schedule as set forth in the Economic Development Rate Agreement.

5. Jobs: Job as prescribed in Section 3c above is defined as Full Time Equivalent that is working at least 1750 hours per year. The Customer retains authority in making individual hiring decisions. This program does not require the Customer to hire any person who does not have the experience and ability to qualify such persons for a job.

6. Local Hiring Incentive: The Local Hiring Incentive is available for Tier 1 through Tier 5. Customers who qualify under Tiers 1 – 4 and voluntarily hire at least 20% of Full Time Equivalent (FTE) employees that are City of Moreno Valley residents will receive an additional discount of 2%; those Customers who hire at least 40% of Full Time Equivalent (FTE) employees that are City of Moreno Valley residents will receive an additional discount of 4%. For Customers eligible for the Tier 5 discount, the Local Hiring Incentive is an additional 1% discount for Customers who voluntarily hire at least 20% of FTE employees that are City of Moreno Valley residents. The additional 1% discount will be applied to the first five years of the sixteen-year term. Any additional discounts will apply to the Energy Charge and Demand Charge. Customers must certify the local hire percentage each year to remain eligible for the additional discount.

7. Base Period Usage: Base Period Usage shall be established and agreed to in the Economic Development Rate Agreement for Expanded Load Customers. Base Period Usage shall be the average monthly energy use and demand for the customer during the last three years of service to the

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customer, from the date ending the last payment period before the date of the Agreement. Expanded Load qualifying for the rate under this Schedule shall be measured as the difference between the new monthly, meter documented energy use and demand, and the Base Period Usage.

8. State Mandated Public Purpose Program Charge: All bills rendered under this Schedule shall be subject to the Public Purpose Program Charge as established by the City Council.

9. Miscellaneous Fees and Charges: Rates charged pursuant to this Schedule shall be subject to any Energy Users Taxes, Utility Users Taxes, and any other governmental taxes, duties, or fees which are applicable to Electric Service provided to Customer by the City of Moreno Valley. Rates are also subject to adjustment, as established by the City of Moreno Valley City Council in response to federal or state climate change laws, renewable portfolio standard or other mandated legislation. These adjustments may include but are not limited to charges to mitigate the impacts of greenhouse gas emissions or "green power" premiums.

10. Expanded Load: Expanded Load customers applying for this rate must demonstrate to the satisfaction of the Utility that the expanded load is new to Moreno Valley.

11. Effective Date: The effective date of the Economic Development Rate Agreement shall commence within 12 months from the date of the City's approval, or the Agreement becomes null and void. The Agreement becomes effective upon execution by the parties, and the Economic Development Rate commences upon written notice by customer, and coincides with the customer's normal billing cycle.

12. Reapplication: Customers who have received service under the Economic Development Rate are eligible to reapply for the rate as an Expanded Load Customer 12 months after their current Economic Development Rate Agreement has expired, if they meet the criteria therefore.

13. Restrictions: Residential customers and federal, state or local government agencies are not eligible to apply for service under this Schedule.

14. City Manager: The City Manager or his/her designee may offer to customers an Economic Development Rate and term based upon the actual cost to serve the customer. The customer must sign a Moreno Valley Economic Development Rate Agreement, and such Agreement shall be approved by the City Council. All other terms and conditions under this rate schedule shall apply.

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SCHEDULE ED-BR - ECONOMIC DEVELOPMENT- BUSINESS RETENTION RATE

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Applicability

This Schedule is applicable to the anchor stores at Stoneridge Towne Centre and Moreno Beach Plaza, whose building size is 25,000 square feet or larger and have 30 or more employees.

1. The Customer must demonstrate to the satisfaction of the City that relocation of its entire operation to a site outside of Moreno Valley Utility's service territory is a viable alternative or that the threat of closure of the Customer's existing facilities is otherwise imminent.

2. The Customer must provide:

   a. An affidavit that "but for" the economic development retention rate incentives, in combination with other city-sponsored incentives, such customer would relocate outside of the City's electric service territory, and
   b. Substantial evidence demonstrating the business has considered viable locations outside of Moreno Valley's service territory including but not limited to incentive offer letters from competing states, local jurisdictions and economic development organizations and/or real estate sale and lease agreements for competing sites, or
   c. Substantial evidence documenting the imminent threat of facility closure, including but not limited to letters from business owners or appropriate corporate officers documenting the circumstances which have led to this imminent threat and why the Business Retention Rate is necessary to retain the business within Moreno Valley Utility's service territory.

3. The Customer must agree to maintain a minimum level of load for five years from the date service is first rendered as set forth in the Economic Development Rate Agreement for Business Retention.

Territory

Within the entire territory served by Moreno Valley Utility.

Rates

Except as provided herein, or in the Economic Development Business Retention Rate Agreement, all charges and provisions of the customer's otherwise applicable rate schedule shall apply. The applicable Energy Charge and Demand Charge under the customer's otherwise applicable rate schedule will be reduced as follows:

- Year 1 20%
- Year 2 20%
- Year 3 20%
- Year 4 0%
- Year 5 0%

Special Conditions

1. Term: Economic Development Rate Agreement for Business Retention entered into under this Schedule shall be for a single five-year term.

2. Approval: Application of this Rate Schedule shall be subject to the approval of the Public Works Director or his designee, based on meeting the eligibility criteria outlined herein.

3. Agreement: The customer must sign a standard Moreno Valley Economic Development Rate Agreement for Business Retention in order for the rates under this Schedule to be applicable. In addition to the terms of this Schedule, the Economic Development Rate Agreement for Business Retention shall require the customer to reimburse Moreno Valley for all rate reductions received under this Schedule, if the customer fails to maintain the required minimum load during the five-year term of the Agreement.

4. Minimum Load: All customers must agree to maintain a minimum level of load for five years from the date service is first rendered under this Schedule as set forth in the Economic Development Rate Agreement for Business Retention.

5. State Mandated Public Purpose Charge: All bills rendered under this Schedule shall be subject to the Public Purpose Charge as established by the City Council.

6. Miscellaneous Fees and Charges: Rates charged pursuant to this Schedule shall be subject to any Energy Users Taxes, Utility Users Taxes, and any other governmental taxes, duties, or fees which are applicable to Electric Service provided to Customer by the City of Moreno Valley. Rates are also subject to adjustment, as established by the City of Moreno Valley City Council in response to federal or state climate change laws, renewable portfolio standard or other mandated legislation. These adjustments may include but are not limited to charges to mitigate the impacts of greenhouse gas emissions or "green power" premiums.

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7. Effective Date: The Agreement becomes effective upon execution by the parties, and the Economic Development Business Retention Rate commences with the customer's normal billing cycle following execution of the Agreement by both parties.

8. Restrictions: Residential customers, small commercial customers, and federal, state or local government agencies are not eligible to apply for service under this Schedule.

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SCHEDULE EV PUBLIC – ELECTRIC VEHICLE PUBLIC CHARGING

Applicability

This Schedule is applicable to electric vehicle charging stations owned and maintained by Moreno Valley Utility.

Charging type	Voltage
Level 2	240V
Level 3	480V

Territory

Within the entire territory served by Moreno Valley Utility.

Rates

Level 2 City Owned Charging Station	$0.21 per kWh
Level 3 City Owned Charging Station	$0.35 per kWh

Per Ordinance 942, there is a four-hour maximum for parking and charging of electric vehicles in a single charging session. Sessions will be given a 30-minute grace period and thereafter will be charged $1.00 per hour up to a maximum of $30.00.

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SCHEDULE WTR – WIRELESS TECHNOLOGY RATE

Applicability

This Schedule is applicable to single-phase service for wireless technology industries and utility customers deploying advanced metering infrastructure (AMI) that require electric service to operate wireless communication devices that are mounted on existing utility facilities, or other facilities approved by the utility and are unmetered. The monthly kilowatt-hour (kWh) usage of each device shall not exceed 2,700 kWh. Effective with the date the customer becomes ineligible for service under this Schedule, the customer's account shall be transferred to Schedule B - General Service or another applicable rate schedule.

Territory

Within the entire territory served by Moreno Valley Utility.

Rates

Customer Charge - $/Meter/Month:	
Single Phase	$ 27.29
Polyphase	$ 27.32
Inspection Charge - $/Device/Inspection	$ 15.23
Initialization of Service Charge – One-Time Fee	$ 7.31

Fixed Energy Charge - $/Device/Month:

Tiers	Energy Use	$/Device/Month
1	0-50 kWhs / Month	$ 6.38
2	51-100 kWhs / Month	$ 12.80
3	101-150 kWhs / Month	$ 16.91
4	151-200 kWhs / Month	$ 22.54
5	201-250 kWhs / Month	$ 28.20
6	251-300 kWhs / Month	$ 31.36
7	301-350 kWhs / Month	$ 39.45
8	351-400 kWhs / Month	$ 45.10
9	401-450 kWhs / Month	$ 50.74
10	451-500 kWhs / Month	$ 56.39
11	501-900 kWhs / Month	$101.46
12	901-1350 kWhs / Month	$152.19

Attachment: MVU Proposed Rates 12042018 (3290 : APPROVE A RESOLUTION TO AMEND THE ELECTRIC RATES FOR MVU)

13	1351-1800 kWhs / Month	$203.14
14	1801-2250 kWhs / Month	$253.68
15	2251-2700 kWhs / Month	$304.40

Public Purpose Programs Charge - $/Device/Month:

Tiers	Energy Use	$/Device/Month
1	0-50 kWhs / Month	$0.59
2	51-100 kWhs / Month	$1.19
3	101-150 kWhs / Month	$1.75
4	151-200 kWhs / Month	$2.33
5	201-250 kWhs / Month	$2.91
6	251-300 kWhs / Month	$3.50
7	301-350 kWhs / Month	$4.08
8	351-400 kWhs / Month	$4.66
9	401-450 kWhs / Month	$5.24
10	451-500 kWhs / Month	$5.93
11	501-900 kWhs / Month	$10.49
12	901-1350 kWhs / Month	$15.73
13	1351-1800 kWhs / Month	$20.97
14	1801-2250 kWhs / Month	$26.21
15	2251-2700 kWhs / Month	$31.46

Special Conditions

1. Voltage: Service will be supplied at 120 volts.
2. Three-Phase Service: Where the utility determines, it is impractical to provide single-phase service under this Schedule three-phase service will be provided.
3. Determination of monthly usage: The customer must provide the utility information from which the utility can determine the level of kWh usage to be consumed and/or level of service to be provided, such as the manufacturers' equipment specifications, data sheets, etc., and the number of devices to be installed. The utility will place the customer in the appropriate usage tier and charge according to the maximum value of that tier. The utility retains the right to perform on- site inspections to verify the energy consumption of the device(s).

Attachment: MVU Proposed Rates 12042018 (3290 : APPROVE A RESOLUTION TO AMEND THE ELECTRIC RATES FOR MVU)

4. Installation: The device(s) shall be installed on utility facilities, or other facilities approved by the utility. Utility customers taking service for AMI-related devices attached to utility-owned facilities may attach only to underground-fed streetlight poles. When the devices are installed on utility facilities, the installation and removal of such device(s) will be performed at the customer's expense. Device installation shall not be performed under this Schedule where location, mounting height, and/or other considerations are not acceptable to the utility. Unless approved by the utility, all wireless communication devices must be visible to the utility.

5. Maintenance: Upon installation of the device(s), where the utility experiences, or expects to experience, maintenance costs exceeding its normal maintenance expense resulting from, but not limited to, vandalism, the utility may require the customer to pay the excess maintenance expense.

6. Liability of the Utility: The utility shall not, by taking action pursuant to its tariffs, be liable for any loss, damage, or injury, established or alleged, which may result, or be claimed to result, there from.

Attachment: MVU Proposed Rates 12042018 (3290 : APPROVE A RESOLUTION TO AMEND THE ELECTRIC RATES FOR MVU)

Report to City Council

TO: Mayor and City Council

FROM: Marshall Eyerman, Chief Financial Officer

AGENDA DATE: December 11, 2018

TITLE: AUTHORIZE AN INCREASE TO THE CONTRACT AMOUNT WITH HIGH COUNTRY LINE CONSTRUCTION, INC. FOR THE CONSTRUCTION OF THE KITCHING STREET ELECTRICAL SUBSTATION AND SWITCHYARD PROJECT

RECOMMENDED ACTION

Recommendations:

1. Approve a Change Order and an increase in existing Purchase Order for High Country Line Construction, Inc. in the amount of $465,000 to cover unanticipated work including additional work required by Southern California Edison.

2. Authorize the City Manager to execute a Change Order to High Country Line Construction, Inc.

SUMMARY

This report recommends the approval of a Change Order and an increase in the existing Purchase Order to High Country Line Construction, Inc. in the amount of $465,000 to cover the cost of unanticipated onsite electrical work including additional work required by Southern California Edison on the switchyard portion of the Kitching Street Electrical Substation project.

DISCUSSION

On December 12, 2016, the City Council awarded a contract to High Country Line Construction, Inc. and authorized the issuance of a Purchase Order in the total amount of $4,835,677 to construct the Kitching Street Electrical Substation to be owned and operated by Moreno Valley Utility and a Switchyard to be owned and operated by Southern California Edison. Per Southern California Edison's requirements to allow the

City to connect to Edison's power grid, the City was required to construct the Switchyard and meet all of Edison's standards as amended.

The cost increase was due to unanticipated onsite electrical work is primarily related to relay rewiring inside the switchgear, bus duct, and MEER building required to be completed at the request of Edison to allow for the final transfer of the Switchyard to Edison.

This new substation with eight circuits will help satisfy existing and projected future electrical demand in the City's South Industrial Area. This industrial area requires additional capacity as identified in the 2016-2020 Moreno Valley Utility Distribution System Planning Study Report which included the planned development of more than 8 million square feet of new industrial space.

ALTERNATIVES

1. Authorize the recommended actions as presented in this staff report. *Staff recommends this alternative as it will allow payment to the contractor.*

2. Do not authorize the recommended actions as presented in this staff report. *Staff does not recommend this alternative as it will result in delaying payment to the contractor.*

FISCAL IMPACT

This project is financed by use of 2015 Lease Revenue Bonds and Moreno Valley Utility's restricted fund. The increase in the contract amount will be paid from the project's remaining budget. There is no impact to the General Fund.

The table below provides a breakdown of construction related contract expenditures to date including the final quantity "true-up" change order amount from the contractor. The original contract amount including contingency of $4,835,677 plus the requested increase in contract amount of $465,000 covers the total construction expenditures in the table below.

CONSTRUCTION DESCRIPTION	KITCHING (MVU SUBSTATION) EXPENDITURES	KARMA (SCE SUBSTATION) EXPENDITURES
LANDSCAPING	$65,681.43	$-
STREET IMPROVEMENTS	$890,067.49	$-
ON-SITE IMPROVEMENTS	$2,639,111.17	$1,704,348.14
TOTALS	$3,594,860.09	$1,704,348.14

NOTIFICATION

Publication of the Agenda.

PREPARATION OF STAFF REPORT

Prepared By:
Clement Jimenez
Senior Engineer, P.E.

Department Head Approval:
Marshall Eyerman
Chief Financial Officer/City Treasurer

Concurred By:
Jeannette Olko
Electric Utility Division Manager

CITY COUNCIL GOALS

Public Facilities and Capital Projects. Ensure that needed public facilities, roadway improvements, and other infrastructure improvements are constructed and maintained.

CITY COUNCIL STRATEGIC PRIORITIES

1. **Economic Development**
2. **Public Safety**
3. **Library**
4. **Infrastructure**
5. **Beautification, Community Engagement, and Quality of Life**
6. **Youth Programs**

Objective 4.1: Develop a Moreno Valley Utility Strategic Plan to prepare for the 2020 expiration of the ENCO Utility Systems agreement.

ATTACHMENTS

None

APPROVALS

Budget Officer Approval	✓ Approved	11/28/18 3:02 PM
City Attorney Approval	✓ Approved	11/28/18 8:31 AM
City Manager Approval	✓ Approved	12/05/18 2:39 PM

Report to City Council

TO:	Mayor and City Council
FROM:	Marshall Eyerman, Chief Financial Officer
AGENDA DATE:	December 11, 2018
TITLE:	AUTHORIZE THE AWARD OF THE CONSTRUCTION CONTRACT TO HOT LINE CONSTRUCTION, INC. FOR THE HEACOCK CROSSTOWN TIE IMPROVEMENTS, PROJECT NO. 805 0043

RECOMMENDED ACTION

Recommendations:

1. Award the construction contract to Hot Line Construction, Inc., 9020 Brentwood Boulevard, Suite H, Brentwood, CA 94513, the lowest responsible bidder, for the Heacock Crosstown Tie Project.

2. Authorize the City Manager to execute a contract with Hot Line Construction, Inc.

3. Authorize the issuance of a Purchase Order to Hot Line Construction, Inc. for the amount of $1,816,798 ($1,579,824 bid amount plus 15% contingency) when the contract has been signed by all parties.

4. Authorize the Chief Financial Officer/City Treasurer to execute any subsequent related minor change orders to the contract with Hot Line Construction, Inc. up to, but not exceeding, the 15% contingency amount of $236,974, subject to the approval of the City Attorney.

5. Amend the FY 2017/2018 & 2018/2019 Adopted Capital Improvement Plan and Appropriate $357,300 from the Moreno Valley Utility Fund (Account No. 6011 30 80 80005 720199) to cover the construction and administrative costs.

SUMMARY

This report recommends approval of a contract with Hot Line Construction, Inc. to construct the Heacock Crosstown Tie project. The Heacock Crosstown Tie project

consists of infrastructure improvements that will improve Moreno Valley Utility's electrical system reliability. This project will allow the transfer of electrical load from interconnect sites located within the Centerpointe Planning Area to the Kitching Substation. Additionally, the project will install conduit that will facilitate future fiber optic improvements as well as further enable future traffic signal coordination along Heacock Street. The project is funded with Moreno Valley Utility's fund balance and has been approved in the FY 2017/2018 & 2018/2019 Adopted Capital Improvement Plan.

DISCUSSION

As Moreno Valley Utility continues to grow and expand its service, several capital improvement projects are necessary to accommodate increasing demands for electricity as well as provide system redundancy and reliability. The Heacock Crosstown Tie project will facilitate the transfer of electrical load from interconnect sites near or at capacity in the Centerpointe Planning Area to the Kitching Substation.

The electrical plans call for the installation of conduit, structures, equipment, and cable along with related electrical facilities within Heacock Street from just south of Gentian Avenue to Cactus Avenue. Construction will require coordination with Riverside County Flood Control & Water Conservation District.

Associated work includes saw cutting of PCC and AC surfaces, trench backfill and repair including grind and overlay, asphalt concrete and aggregate base placement, sidewalk panel removal and replacement, curb and gutter removal and replacement, spandrel removal and replacement, driveway approach removal and replacement, curb return including access ramp removal and replacement, and restoration of traffic signal loop detectors. Boring is required under existing City maintained storm drain lateral crossings.

The Notice Inviting Bids for the project was advertised in the Press Enterprise. Formal bidding procedures were followed in conformance with Public Contract Code. Six bids were received as follows:

Contractors	Verified Bid Amounts
1. Hot Line Construction, Inc.	$1,579,824
2. Asplundh Construction, LLC	$1,587,000
3. International Line Builders	$1,593,781
4. E. E. Electric, Inc.	$1,710,255
5. Pacific Utility Installation, Inc.	$2,124,315
6. Henkels & McCoy	$2,986,768

ALTERNATIVES

1. Approve and authorize the recommended actions as presented in this staff report. *This alternative will provide for the ultimate, timely construction of the Heacock Crosstown Tie Project.*

2. Do not approve and authorize the recommended actions as presented in this staff report. *This alternative will result in delaying the timely construction of this project and will prevent Moreno Valley Utility from providing electrical service to forthcoming development in the Centerpointe Planning Area.*

FISCAL IMPACT

This project is included in the Fiscal Year 2017/2018 & 2018/2019 Adopted Capital Improvement Plan Budget. It will be financed by use of Moreno Valley Utility's fund balance. A Budget Appropriation in the amount of $357,300 is required because of additional infrastructure required for fiber optic and traffic signal coordination improvements as well as project administration costs.

Proposed Appropriation for Fiscal Year 2018/2019:

Description	GL Account No.	Type (Rev/Exp)	FY 17/18-18/19 Budget	Proposed Adjustments	FY 17/18-18/19 Amended Budget
6011-MVU Restricted	GL – 6011-30-80-80005-720199 PN – 805 0043 6011 99	Exp	$1,716,000	$357,300	$2,073,300

FISCAL YEAR 2017/2018 – 2018/2019 PROJECT BUDGET:

MVU Restricted Fund
GL Account No. 6011-30-80-80005-720199
Project No. 805 0043 6011 99…….. $1,716,000
MVU Fund Budget Appropriation
GL Account No. 6011-30-80-80005-720199
Project No. 805 0043 6011 99…….. $ 357,300
Total…….. $2,073,300

ESTIMATED CONSTRUCTION RELATED COSTS:

Construction Costs (includes 15% contingency)…….. $1,816,798
Consultant Work Authorization…… $ 86,500
Project Administration and Inspection…… $ 110,000
Geotechnical Services…… $ 60,000
Total…….. $2,073,298

NOTIFICATION

A Notice Inviting Bid was advertised in the Press Enterprise. The project was placed on PlanetBids for 35 days, from September 13, 2018 through October 18, 2018. A Pre-Bid Conference was held on October 4, 2018.

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PREPARATION OF STAFF REPORT

Prepared By:
Clement Jimenez
Senior Engineer, P.E.

Department Head Approval:
Marshall Eyerman
Chief Financial Officer/City Treasurer

Concurred By:
Jeannette Olko
Electric Utility Division Manager

CITY COUNCIL GOALS

Public Facilities and Capital Projects. Ensure that needed public facilities, roadway improvements, and other infrastructure improvements are constructed and maintained.

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2. **Public Safety**
3. **Library**
4. **Infrastructure**
5. **Beautification, Community Engagement, and Quality of Life**
6. **Youth Programs**

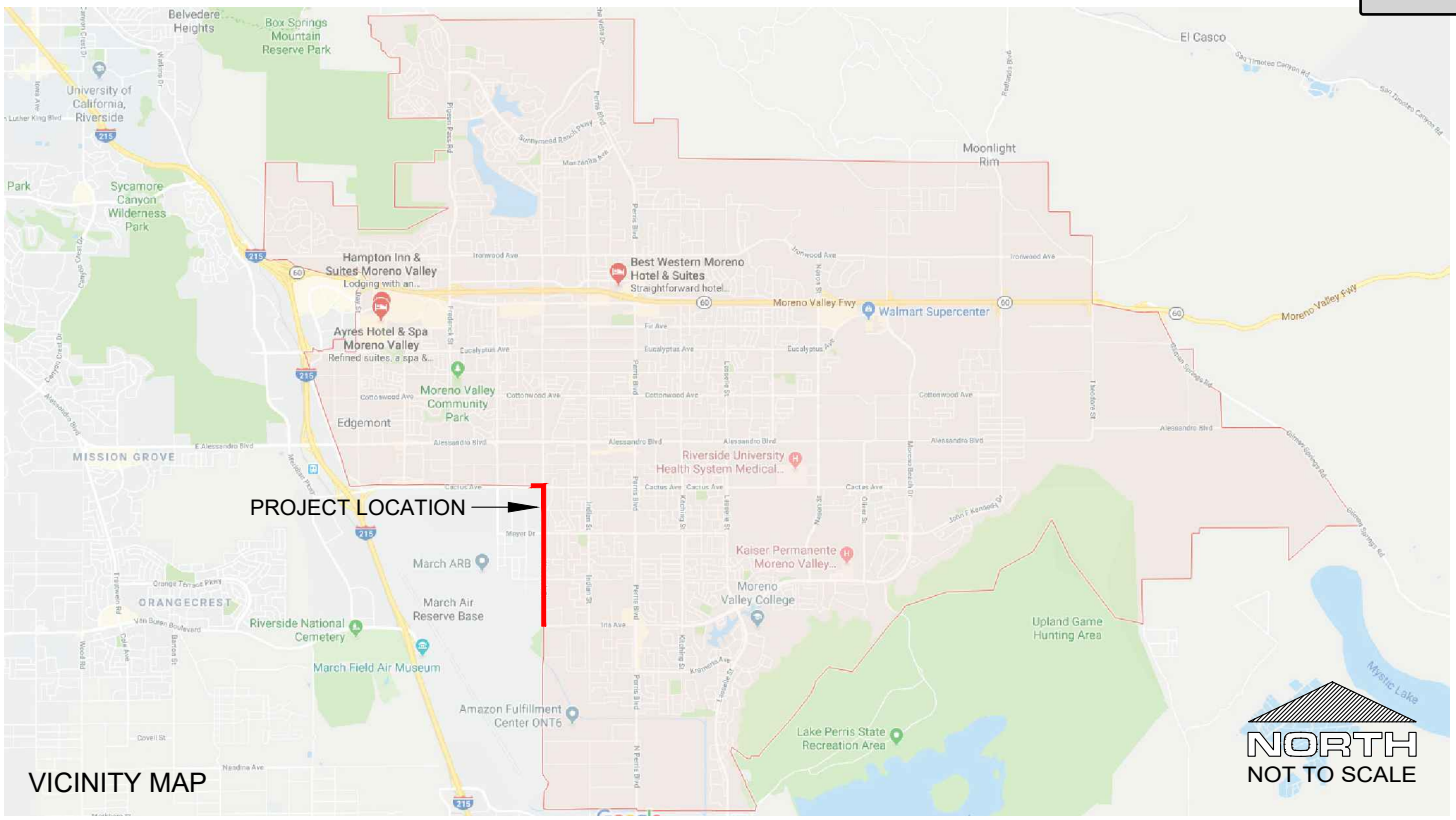
Objective 4.1: Develop a Moreno Valley Utility Strategic Plan to prepare for the 2020 expiration of the ENCO Utility Systems agreement.

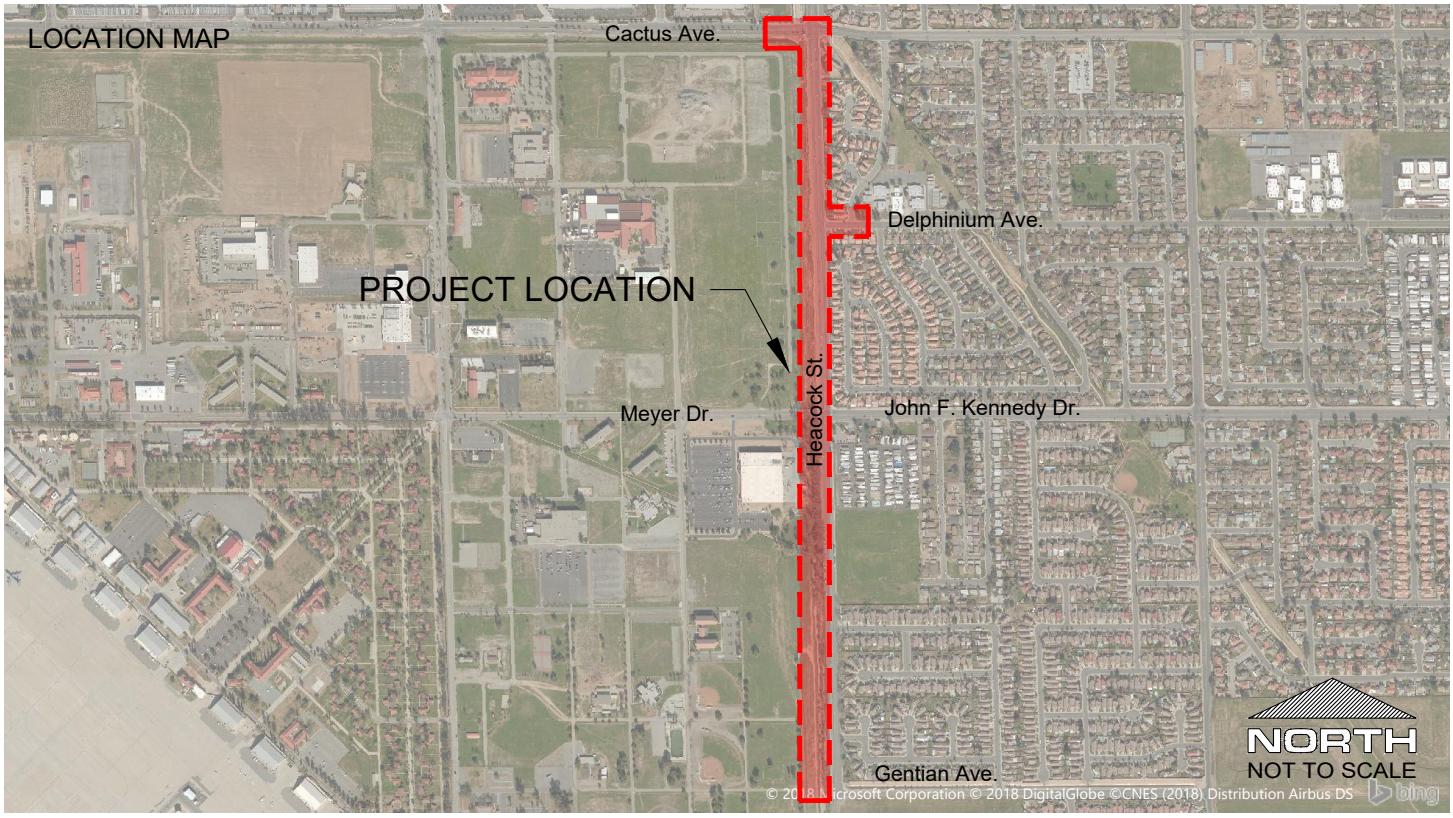
ATTACHMENTS

1. Attachment 1 - Location Map
2. Attachment 2 - Agreement

APPROVALS

Budget Officer Approval	✓ Approved	11/16/18 3:47 PM
City Attorney Approval	✓ Approved	11/28/18 9:32 AM
City Manager Approval	✓ Approved	11/28/18 9:46 AM





LOCATION MAP

Financial & Management Services Department
Electric Utility Division

HEACOCK CROSSTOWN TIE

ATTACHMENT "A"

PROJECT No. 805 0043

Attachment: Attachment 1 - Location Map (3306 : AUTHORIZE THE AWARD OF THE CONSTRUCTION CONTRACT TO HOT LINE

Attachment: Attachment 2 - Agreement (3306 : AUTHORIZE THE AWARD OF THE CONSTRUCTION CONTRACT TO HOT LINE CONSTRUCTION,

AGREEMENT

PROJECT NO. 805 0043 30 80

HEACOCK CROSSTOWN TIE
Conduit, Cable, and Related Electrical Infrastructure
Heacock Street between Gentian Avenue and Cactus Avenue

THIS Agreement, effective as of the date signed by the City of Moreno Valley by and between the City of Moreno Valley, a municipal corporation, County of Riverside, State of California, hereinafter called the "City" and **Hot Line Construction, Inc.**, hereinafter called the "Contractor."

That the City and the Contractor for the consideration hereinafter named, agree as follows:

1. CONTRACT DOCUMENTS. The Contract Documents consist of the following, which are incorporated herein by this reference:

A. Governmental approvals, including, but not limited to, permits required for the Work
B. Any and all Contract Change Orders issued after execution of this Agreement
C. This Agreement
D. City Special Provisions, including the General Provisions and Technical Provisions
E. Standard Specifications for Public Works Construction (“Greenbook”) – latest edition in effect at the Bid Deadline, as modified by the City Special Provisions
F. Project Plans
G. City Standard Plans
H. The bound Bidding Documents
I. Contractor’s Certificates of Insurance and Additional Insured Endorsements
J. Contractor’s Bidder’s Proposal and Subcontractor Listing

In the event of conflict between any of the Contract Documents, the provisions placing a more stringent requirement on the Contractor shall prevail. The Contractor shall provide the better quality or greater quantity of Work and/or materials unless otherwise directed by City in writing. In the event none of the Contract Documents place a more stringent requirement or greater burden on the Contractor, the controlling provision shall be that which is found in the document with higher precedence in accordance with the above order of precedence.

2. REFERENCE DOCUMENTS. The following Reference Documents are not considered Contract Documents and are made available to the Contractor for informational purposes:

A. Environmental Notice of Exemption

3. SCOPE OF WORK. The Contractor shall perform and provide all materials, tools, equipment, labor, and services necessary to complete the Work described in the Contract Documents, except as otherwise provided in the Plans, Standard Specifications, or City Special Provisions to be the responsibility of others.

4. PAYMENT.

4.1. **Contract Price and Basis for Payment**. In consideration for the Contractor's full, complete, timely, and faithful performance of the Work required by the Contract Documents, the City shall pay Contractor for the actual quantity of Work required under the Bid Items awarded by the City performed in accordance with the lump sum prices and unit prices for Bid Items and Alternate Bid Items, if any, set forth the Bidder's Proposal submitted with the Bid. The sum of the unit prices and lump sum prices for the Base Bid Items, awarded by the City is **One Million Five Hundred Seventy Nine Thousand Eight Hundred Twenty Four Dollars ($1,579,824)** ("Contract Price"). It is understood and agreed that the quantities set forth in the Bidder's Proposal for which unit prices are fixed are estimates only and that City will pay and Contractor will accept, as full payment for these items of work, the unit prices set forth in the Bidder's Proposal multiplied by the actual number of units performed, constructed, or completed as directed by the City Engineer.

4.2. **Payment Procedures**. Based upon applications for payment submitted by the Contractor to the City, the City shall make payments to the Contractor in accordance with Article 9 of the Standard Specifications, as modified by Article 9 of the City Special Provisions.

5. CONTRACT TIME.

A. Initial Notice to Proceed. After the Agreement has been fully executed by the Contractor and the City, the City shall issue the "Notice to Proceed to Fulfill Preconstruction Requirements and Notice to Proceed with Order of Materials." The date specified in the Notice to Proceed to Fulfill Preconstruction Requirements and Notice to Proceed with Order of Materials constitutes the date of commencement of the Contract Time of **One Hundred Twenty (120) Working Days**. The Contract Time includes the time necessary to fulfill preconstruction requirements, place the order of materials, and to complete construction of the Project (except as adjusted by subsequent Change Orders).

The Notice to Proceed to Fulfill Preconstruction Requirements and Notice to Proceed with Order of Materials shall further specify that Contractor must complete the preconstruction requirements and order materials within **Forty (40) Working Days** after the date of commencement of the Contract Time; this duration is part of the Contract Time.

Critical preconstruction requirements include, but are not limited to, the following:

- Submitting and obtaining approval of Traffic Control Plans
- Submitting and obtaining approval of the Storm Water Pollution Prevention Plan (SWPPP)
- Submitting and obtaining approval of critical required submittals
- Installation of the approved Project Identification Signs
- Obtaining an approved no fee Encroachment Permit
- Obtaining an approved Temporary Use Permit (TUP) for Construction Yard if needed
- Notifying all agencies, utilities, residents, etc., as outlined in the Bidding Documents

If the City's issuance of a Notice to Proceed to Fulfill Preconstruction Requirements and Notice to Proceed with Order of Materials is delayed due to Contractor's failure to return the fully executed Agreement and insurance and bond documents within ten (10) Working Days after Contract award, then Contractor agrees to the deduction of one (1) Working Day from the number of days to complete the Project for every Working Day of delay in the City's receipt of said documents. This right is in addition to and does not affect the City's right to demand forfeiture of Contractor's Bid Security if Contractor persistently delays in providing the required documentation.

Attachment: Attachment 2 - Agreement (3306 : AUTHORIZE THE AWARD OF THE CONSTRUCTION CONTRACT TO HOT LINE CONSTRUCTION,

B. Notice to Proceed with Construction. After all preconstruction requirements are met and materials have been ordered in accordance with the Notice to Proceed to Fulfill Preconstruction Requirements and Notice to Proceed with Order of Materials, the City shall issue the "Notice to Proceed with Construction," at which time the Contractor shall diligently prosecute the Work, including corrective items of Work, day to day thereafter, within the remaining Contract Time.

6. LIQUIDATED DAMAGES AND CONTROL OF WORK.

6.1. **Liquidated Damages.** The Contractor and City (collectively, the "Parties") have agreed to liquidate damages with respect to Contractor's failure to order all materials in accordance with the Notice to Proceed with Order of Materials and/or, failure to fulfill the preconstruction requirements, and/or failure to complete the Work within the Contract Time. The Parties intend for the liquidated damages set forth herein to apply to this Contract as set forth in Government Code Section 53069.85. Contractor acknowledges and agrees that the liquidated damages are intended to compensate the City solely for Contractor's failure to meet the deadline for completion of the Work and will not excuse Contractor from liability from any other breach, including any failure of the Work to conform to the requirements of the Contract Documents.

In the event that Contractor fails to order all materials in accordance with the Notice to Proceed with Order of Materials and/or fails to fulfill the preconstruction requirements and/or fails to complete the Work within the Contract Time, Contractor agrees to pay the City **$2,500.00 per Calendar day** that completion of the Work is delayed beyond the Contract Time, as adjusted by Contract Change Orders. The Contractor will not be assessed liquidated damages for delays occasioned by the failure of the City or of the owner of a utility to provide for the removal or relocation of utility facilities.

The Contractor and City acknowledge and agree that the foregoing liquidated damages have been set based on an evaluation of damages that the City will incur in the event of late completion of the Work. The Contractor and City acknowledge and agree that the amount of such damages are impossible to ascertain as of the date of execution hereof and have agreed to such liquidated damages to fix the City's damages and to avoid later disputes. It is understood and agreed by Contractor that liquidated damages payable pursuant to this Agreement are not a penalty and that such amounts are not manifestly unreasonable under the circumstances existing as of the date of execution of this Agreement.

It is further mutually agreed that the City will have the right to deduct liquidated damages against progress payments or retainage and that the City will issue a Change Order or Construction Change Directive and reduce the Contract Price accordingly. In the event the remaining unpaid Contract Price is insufficient to cover the full amount of liquidated damages, Contractor shall pay the difference to the City.

6.2. Any work completed by the Contractor after the issuance of a Stop Work Notice by the City shall be rejected and/or removed and replaced as specified in Section 2-11 of the Special Provisions.

6.3. **Owner is Exempt from Liability for Early Completion Delay Damages**. While the Contractor may schedule completion of all of the Work, or portions thereof, earlier than the Contract Time, the Owner is exempt from liability for and the Contractor will not be entitled to an adjustment of the Contract Sum or to any additional costs, damages, including, but not limited to, claims for extended general conditions costs, home office overhead, jobsite overhead, and management or administrative costs, or compensation whatsoever, for use of float time or for Contractor's inability to complete the Work earlier than the Contract Time for any reason whatsoever, including but not

Attachment: Attachment 2 - Agreement (3306 : AUTHORIZE THE AWARD OF THE CONSTRUCTION CONTRACT TO HOT LINE CONSTRUCTION,

limited to, delay cause by Owner or other Excusable Compensable Delay. See Section 6-6 of the Standard Specifications and City Special Provisions regarding compensation for delays.

7. INSURANCE.

7.1. **General**. The Contractor shall procure and maintain at its sole expense and throughout the term of this Agreement, any extension thereof, Commercial General Liability, Automobile Liability, and Workers' Compensation Insurance with such coverage limits as described herein.

7.2. **Additional Insured Endorsements**. The Contractor shall cause the insurance required by the Contract Document to include the City of Moreno Valley, the City Council and each member thereof, the Moreno Valley Housing Authority (MVHA), and the Moreno Valley Community Services District (CSD), and their respective officials, employees, commission members, officers, directors, agents, employees, volunteers and representatives as an additional insureds. For the Commercial General Liability coverage, said parties shall be named as additional insureds utilizing either:

1. Insurance Services Office ("ISO") Additional Insured endorsement CG 20 10 (11/85); or

2. ISO Additional Insured endorsement CG 20 10 (10/01) and Additional Insured Completed Operations endorsement CG 20 37 (10/01); or

3. substitute endorsements providing equivalent coverage, approved by the City.

The endorsements shall be signed by a person authorized by the insurer to bind coverage on its behalf. The coverage shall contain no special limitations on the scope of protection afforded to such additional insureds. Coverage for such additional insureds does not extend to liability to the extent prohibited by Insurance Code Section 11580.4.

7.3. **Waivers of Subrogation**. All policies of insurance required by the Contract Documents shall include or be endorsed to provide a waiver by the insurers of any rights of recovery or subrogation that the insurers may have at any time against the City of Moreno Valley, the City Council and each member thereof, the Moreno Valley Housing Authority (MVHA), and the Moreno Valley Community Services District (CSD), and their respective officials, employees, commission members, officers, directors, agents, employees, volunteers and representatives.

7.4. **Primary Coverage**. All policies and endorsements shall stipulate that the Contractor's (and the Subcontractors') insurance coverage shall be primary insurance as respects the City of Moreno Valley, the City Council and each member thereof, the Moreno Valley Housing Authority (MVHA), and the Moreno Valley Community Services District (CSD), and their respective officials, employees, commission members, officers, directors, agents, employees, volunteers and representatives, and shall be excess of the Contractor's (and its Subcontractors') insurance and shall not contribute with it.

7.5. **Coverage Applies Separately to Each Insured and Additional Insured**. Coverage shall state that the Contractor's (and its Subcontractors') insurance shall apply separately to each insured or additional insured against whom claim is made or suit is brought, except with respect to

Attachment: Attachment 2 - Agreement (3306 : AUTHORIZE THE AWARD OF THE CONSTRUCTION CONTRACT TO HOT LINE CONSTRUCTION,

the limits of the insurer's liability. Coverage shall apply to any claim or suit brought by an additional insured against a named insured or other insured.

7.6. **Self-Insurance**. Any self-insurance (including deductibles or self-insured retention in excess of $50,000) in lieu of liability insurance must be declared by Contractor and approved by the City in writing prior to execution of the Agreement. The City's approval of self-insurance, if any, is within the City's sole discretion and is subject to the following conditions:

1. Contractor must, at all times during the term of the Agreement and for a period of at least **one (1)** year after completion of the Project, and any extension of the one-year correction guarantee period in accordance with Section 6-8.1 of the City Special Provisions, maintain and upon Owner's reasonable request provide evidence of:

   (a) Contractor's "net worth" (defined as "total assets" [defined as all items of value owned by the Contractor including tangible items such as cash, land, personal property and equipment and intangible items such as copyrights and business goodwill]) minus total outside liabilities must be reflected in a financial statement for the prior fiscal year reflecting sufficient income and budget for Contractor to afford at least one loss in an amount equal to the amount of self-insurance;

   (b) financial statements showing that Contractor has funds set aside/budgeted to finance the self-insured fund (i.e., Contractor has a program that fulfills functions that a primary insurer would fill; and

   (c) a claims procedure that identifies how a claim is supposed to be tendered to reach the financing provided by the self-insured fund.

2. If at any time after such self-insurance has been approved Contractor fails to meet the financial thresholds or otherwise fails to comply with the provisions set forth in this Paragraph 7, at the option of the City:

   (a) the Contractor shall immediately obtain and thereafter maintain the third party insurance required under this Paragraph 7 and otherwise on the terms required above; or

   (b) the insurer shall reduce or eliminate such deductibles or self-insured retention as respects the City, its officers, officials, employees and volunteers; or

   (c) the Contractor shall procure a bond guaranteeing payment of losses and related investigation, claim administration, and defense expenses.

7.7. **Insurer Financial Rating**. Insurance companies providing insurance hereunder shall be rated A-:VII or better in Best's Insurance Rating Guide and shall be legally licensed and qualified to conduct insurance business in the State of California.

7.8. **Notices to City of Cancellation or Changes**. Each insurance policy described in this Paragraph 7 shall contain a provision or be endorsed to state that coverage will not be cancelled

Attachment: Attachment 2 - Agreement (3306 : AUTHORIZE THE AWARD OF THE CONSTRUCTION CONTRACT TO HOT LINE CONSTRUCTION,

without **thirty (30) days'** prior written notice by certified or registered mail to the City (this obligation may be satisfied in the alternative by requiring such notice to be provided by Contractor's insurance broker and set forth on its Certificate of Insurance provided to the City), except that cancellation for non-payment of premium shall require (10) days prior written notice by certified or registered mail. If an insurance carrier cancels any policy or elects not to renew any policy required to be maintained by Contractor pursuant to the Contract Documents, Contractor agrees to give written notice to the City at the address indicated on the first page of the Agreement. Contractor agrees to provide the same notice of cancellation and non-renewal to the City that is required by such policy(ies) to be provided to the First Named Insured under such policy(ies). Contractor shall provide confirmation that the required policies have been renewed not less than seven (7) days prior to the expiration of existing coverages and shall deliver renewal or replacement policies, certificates and endorsements to the City Clerk within fourteen (14) days of the expiration of existing coverages. Contractor agrees that upon receipt of any notice of cancellation or alteration of the policies, Contractor shall procure within five (5) days, other policies of insurance similar in all respects to the policy or policies to be cancelled or altered. Contractor shall furnish to the City Clerk copies of any endorsements that are subsequently issued amending coverage or limits within fourteen (14) days of the amendment.

7.9. **Commercial General Liability**. Coverage shall be written on an ISO Commercial General Liability "occurrence" form CG 00 01 (10/01 or later edition) or equivalent form approved by the City for coverage on an occurrence basis. The insurance shall cover liability, including, but not limited to, that arising from premises operations, stop gap liability, independent contractors, products-completed operations, personal injury, advertising injury, and liability assumed under an insured contract. The policy shall be endorsed to provide the Aggregate Per Project Endorsement ISO form CG 25 03 (11/85). Coverage shall contain no contractors' limitation or other endorsement limiting the scope of coverage for liability arising from pollution, explosion, collapse, or underground (x, c, u) property damage. Contractor shall provide Products/Completed Operations coverage to be maintained continuously for a minimum of **one (1) year** after Final Acceptance of the Work, and any extension of the one-year correction guarantee period in accordance with Section 6-8.1 of the City Special Provisions.

Contractor shall maintain Commercial General Liability insurance with the following minimum limits: $1,000,000 per occurrence / $2,000,000 aggregate / $2,000,000 products-completed operations.

7.10. **Business Automobile Liability**. Coverage shall be written on ISO form CA 00 01 (12/93 or later edition) or a substitute form providing equivalent coverage for owned, hired, leased and non-owned vehicles, whether scheduled or not, with $1,000,000 combined single limit per accident for bodily injury and property damage. If necessary, the policy shall be endorsed to provide contractual liability coverage.

7.11. **Workers' Compensation**. Contractor shall comply with the applicable sections of the California Labor Code concerning workers' compensation for injuries on the job. Compliance is accomplished in one of the following manners:

1. Provide copy of permissive self-insurance certificate approved by the State of California; or
2. Secure and maintain in force a policy of workers' compensation insurance with statutory limits and Employer's Liability Insurance with a minimal limit of **$1,000,000** per accident; or
3. Provide a "waiver" form certifying that no employees subject to the Labor Code's Workers' Compensation provision will be used in performance of this Contract.

Attachment: Attachment 2 - Agreement (3306 : AUTHORIZE THE AWARD OF THE CONSTRUCTION CONTRACT TO HOT LINE CONSTRUCTION,

7.12. **Subcontractors' Insurance**. The Contractor shall include all Subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each Subcontractor. All coverages for Subcontractors shall be subject to all of the requirements stated herein.

8. BONDS. The Contractor shall furnish a satisfactory Performance Bond meeting all statutory requirements of the State of California on the form provided by the City. The bond shall be furnished as a guarantee of the faithful performance of the requirements of the Contact Documents as may be amended from time to time, including, but not limited to, liability for delays and damages (both direct and consequential) to the City and the City's Separate Contractors and consultants, warranties, guarantees, and indemnity obligations, in an amount that shall remain equal to one hundred percent (100%) of the Contract Price.

The Contractor shall furnish a satisfactory Labor and Materials Payment Bond meeting all statutory requirements of the State of California on the form provided by the City in an amount that shall remain equal to one hundred percent (100%) of the Contract Price to secure payment of all claims, demands, stop notices, or charges of the State of California, of material suppliers, mechanics, or laborers employed by the Contractor or by any Subcontractor, or any person, form, or entity eligible to file a stop notice with respect to the Work.

All bonds shall be executed by a California-admitted surety insurer. Bonds issued by a California-admitted surety insurer listed on the latest version of the U.S Department of Treasury Circular 570 shall be deemed accepted unless specifically rejected by the City. Bonds issued by sureties not listed in Treasury Circular 570 must be accompanied by all documents enumerated in California Code of Civil Procedure Section 995.660(a). The bonds shall bear the same date as the Contract. The attorney-in-fact who executes the required bonds on behalf of the surety shall affix thereto a certified and current copy of the power of attorney. In the event of changes that increase the Contract Price, the amount of each bond shall be deemed to increase and at all times remain equal to the Contract Price. The signatures shall be acknowledged by a notary public. Every bond must display the surety's bond number and incorporate the Contract for construction of the Work by reference. The terms of the bonds shall provide that the surety agrees that no change, extension of time, alteration, or modification of the Contract Documents or the Work to be performed thereunder shall in any way affect its obligations and shall waive notice of any such change, extension of time, alteration, or modification of the Contract Documents. The surety further agrees that it is obligated under the bonds to any successor, grantee, or assignee of the City.

Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

Should any bond become insufficient, or should any of the sureties, in the opinion of the City, become non-responsible or unacceptable, the Contractor shall, within ten (10) Calendar Days after receiving notice from the City, provide written documentation to the Satisfaction of the City that Contractor has secured new or additional sureties for the bonds; otherwise the Contractor shall be in default of the Contract. No further payments shall be deemed due or will be made under Contract until a new surety(ies) qualifies and is accepted by the City.

Contractor agrees that the Labor and Materials Payment Bond and Faithful Performance Bond attached to this Agreement are for reference purposes only, and shall not be considered a part of this Agreement. Contractor further agrees that said bonds are separate obligations of the

Attachment: Attachment 2 - Agreement (3306 : AUTHORIZE THE AWARD OF THE CONSTRUCTION CONTRACT TO HOT LINE CONSTRUCTION,

Contractor and its surety, and that any attorney's fee provision contained in any payment bond or performance bond shall not apply to this Agreement. In the event there is any litigation between the parties arising from the breach of this Agreement, each party will bear its own attorneys' fees in the litigation.

9. RECORDS. The Contractor and its Subcontractors shall maintain and keep books, payrolls, invoices of materials, and Project records current, and shall record all transactions pertaining to the Contract in accordance with generally acceptable accounting principles. Said books and records shall be made available to the City of Moreno Valley, Riverside County, the State of California, the Federal Government, and to any authorized representative thereof for purposes of audit and inspection at all reasonable times and places. All such books, payrolls, invoices of materials, and records shall be retained for at least three (3) years after Final Acceptance.

10. INDEMNIFICATION.

10.1. **General**. To the fullest extent permitted by law, the Contractor assumes liability for and agrees, at the Contractor's sole cost and expense, to promptly and fully indemnify, protect, hold harmless and defend (even if the allegations are false, fraudulent, or groundless), the City of Moreno Valley, its City Council, the Moreno Valley Housing Authority (MVHA), and the Moreno Valley Community Services District (CSD), and all of their respective officials, officers, directors, employees, commission members, representatives and agents ("Indemnitees"), from and against any and all claims, allegations, actions, suits, arbitrations, administrative proceedings, regulatory proceedings, or other legal proceeds, causes of action, demands, costs, judgments, liens, stop notices, penalties, liabilities, damages, losses, anticipated losses of revenues, and expenses (including, but not limited to, any fees of accountants, attorneys, experts or other professionals, or investigation expenses), or losses of any kind or nature whatsoever, whether actual, threatened or alleged, arising out of, resulting from, or in any way (either directly or indirectly), related to the Work, the Project or any breach of the Contract by Contractor or any of its officers, agents, employees, Subcontractors, Sub-subcontractors, or any person performing any of the Work, pursuant to a direct or indirect contract with the Contractor ("Indemnity Claims"). Such Indemnity Claims include, but are not limited to, claims for:

A. Any activity on or use of the City's premises or facilities;
B. Any liability incurred due to Contractor acting outside the scope of its authority pursuant to the Contract, whether or not caused in part by an Indemnified Party;
C. The failure of Contractor or the Work to comply with any Applicable Law, permit or orders;
D. Any misrepresentation, misstatement or omission with respect to any statement made in the Contract Documents or any document furnished by the Contractor in connection therewith;
E. Any breach of any duty, obligation or requirement under the Contract Documents, including, but not limited to any breach of Contractor's warranties, representations or agreements set forth in the Contract Documents;
F. Any failure to coordinate the Work with City's Separate Contractors;
G. Any failure to provide notice to any party as required under the Contract Documents;
H. Any failure to act in such a manner as to protect the Project from loss, cost, expense or liability;

Attachment: Attachment 2 - Agreement (3306 : AUTHORIZE THE AWARD OF THE CONSTRUCTION CONTRACT TO HOT LINE CONSTRUCTION,

I. Bodily or personal injury, emotional injury, sickness or disease, or death at any time to any persons including without limitation employees of Contractor;

J. Damage or injury to real property or personal property, equipment and materials (including, but without limitation, property under the care and custody of the Contractor or the City) sustained by any person or persons (including, but not limited to, companies, corporations, utility company or property owner, Contractor and its employees or agents, and members of the general public);

K. Any liability imposed by Applicable Law including, but not limited to criminal or civil fines or penalties;

L. Any dangerous, hazardous, unsafe or defective condition of, in or on the Site, of any nature whatsoever, which may exist by reason of any act, omission, neglect, or any use or occupation of the Site by Contractor, its officers, agents, employees, or Subcontractors;

M. Any operation conducted upon or any use or occupation of the Site by Contractor, its officers, agents, employees, or Subcontractors under or pursuant to the provisions of the Contract or otherwise;

N. Any acts, errors, omission or negligence of Contractor, its officers, agents, employees, or Subcontractors;

O. Infringement of any patent rights, licenses, copyrights or intellectual property which may be brought against the Contractor or Owner arising out of Contractor's Work, for which the Contractor is responsible; and

P. Any and all claims against the City seeking compensation for labor performed or materials used or furnished to be used in the Work or alleged to have been furnished on the Project, including all incidental or consequential damages resulting to the City from such claims.

10.2. **Effect of Indemnitees' Active Negligence**. Contractor's obligations to indemnify and hold the Indemnitees harmless **exclude** only such portion of any Indemnity Claim which is attributable to the active negligence or willful misconduct of the Indemnitee, provided such active negligence or willful misconduct is determined by agreement of the parties or by findings of a court of competent jurisdiction. In instances where an Indemnitee's active negligence accounts for only a percentage of the liability for the Indemnity Claim involved, the obligation of Contractor will be for that entire percentage of liability for the Indemnity Claim not attributable to the active negligence or willful misconduct of the Indemnitee(s). Such obligation shall not be construed to negate, abridge or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this Paragraph 10. Subject to the limits set forth herein, the Contractor, at its own expense, shall satisfy any resulting judgment that may be rendered against any Indemnitee resulting from an Indemnity Claim. The Indemnitees shall be consulted with regard to any proposed settlement.

10.3. **Independent Defense Obligation.** The duty of the Contractor to indemnify and hold harmless the Indemnitees includes the separate and independent duty to defend the Indemnitees, which duty arises immediately upon receipt by Contractor of the tender of any Indemnity Claim from an Indemnitee. The Contractor's obligation to defend the Indemnitee(s) shall be at Contractor's sole expense, and not be excused because of the Contractor's inability to evaluate liability or because the Contractor evaluates liability and determines that the Contractor is not liable. This duty to defend shall apply whether or not an Indemnity Claim has merit or is meritless, or which involves claims or allegations that any or all of the Indemnitees were actively, passively, or concurrently negligent, or which otherwise asserts that the Indemnitees are responsible, in whole or in part, for any Indemnity Claim. The Contractor shall respond within thirty (30) Calendar Days to the tender of

Attachment: Attachment 2 - Agreement (3306 : AUTHORIZE THE AWARD OF THE CONSTRUCTION CONTRACT TO HOT LINE CONSTRUCTION,

any Indemnity Claim for defense and/or indemnity by an Indemnitee, unless the Indemnitee agrees in writing to an extension of this time. The defense provided to the Indemnitees by Contractor shall be by well qualified, adequately insured and experienced legal counsel acceptable to the City.

10.4. **Intent of Parties Regarding Scope of Indemnity.** It is the intent of the parties that the Contractor and its Subcontractors of all tiers shall provide the Indemnitees with the broadest defense and indemnity permitted by Applicable Law. In the event that any of the defense, indemnity or hold harmless provisions in the Contract Documents are found to be ambiguous, or in conflict with one another, it is the parties' intent that the broadest and most expansive interpretation in favor of providing defense and/or indemnity to the Indemnitees be given effect.

10.5. **Waiver of Indemnity Rights Against Indemnitees.** With respect to third party claims against the Contractor, to the fullest extent permitted by law, the Contractor waives any and all rights to any type of express or implied indemnity against the Indemnitees.

10.6. **Subcontractor Requirements.** In addition to the requirements set forth hereinabove, Contractor shall ensure, by written subcontract agreement, that each of Contractor's Subcontractors of every tier shall protect, defend, indemnify and hold harmless the Indemnitees with respect to Indemnity Claims arising out of, in connection with, or in any way related to each such Subcontractors' Work on the Project in the same manner in which Contractor is required to protect, defend, indemnify and hold the Indemnitees harmless. In the event Contractor fails to obtain such defense and indemnity obligations from others as required herein, Contractor agrees to be fully responsible to the Indemnitees according to the terms of this Paragraph 10.

10.7. **No Limitation or Waiver of Rights.** Contractor's obligations under this Paragraph 10 are in addition to any other rights or remedies which the Indemnitees may have under the law or under the Contract Documents. Contractor's indemnification and defense obligations set forth in this Paragraph 10 are separate and independent from the insurance provisions set forth in the Contract Documents, and do not limit, in any way, the applicability, scope, or obligations set forth in such insurance provisions. The purchase of insurance by the Contractor with respect to the obligations required herein shall in no event be construed as fulfillment or discharge of such obligations. In any and all claims against the Indemnitees by any employee of the Contractor, any Subcontractor, any supplier of the Contractor or Subcontractors, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the obligations under this Paragraph 10 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor or any supplier of either of them, under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts. Failure of the City to monitor compliance with these requirements imposes no additional obligations on the City and will in no way act as a waiver of any rights hereunder.

10.8. **Withholding to Secure Obligations.** In the event an Indemnity Claim arises prior to final payment to Contractor, the City may, in its sole discretion, reserve, retain or apply any monies due Contractor for the purpose of resolving such Indemnity Claims; provided, however, the City may release such funds if the Contractor provides the City with reasonable assurances of protection of the Indemnitees' interests. The City shall, in its sole discretion, determine whether such assurances are reasonable.

10.9. **Survival of Indemnity Obligations.** Contractor's obligations under this Paragraph 10 are binding on Contractor's and its Subcontractors' successors, heirs and assigns and shall survive the completion of the Work or termination of the Contractor's performance of the Work.

Attachment: Attachment 2 - Agreement (3306 : AUTHORIZE THE AWARD OF THE CONSTRUCTION CONTRACT TO HOT LINE CONSTRUCTION,

11. SUCCESSORS AND ASSIGNS. The Parties bind themselves, their heirs, executors, administrators, successors and assigns the covenants, agreements and obligations contained in the Contract Documents. The Contractor shall not, either voluntarily or by action of law, assign any right or obligation of the Contractor under the Contract Documents without prior written consent of the City.

(SIGNATURE PAGE FOLLOWS)

Attachment: Attachment 2 - Agreement (3306 : AUTHORIZE THE AWARD OF THE CONSTRUCTION CONTRACT TO HOT LINE CONSTRUCTION,

CITY OF MORENO VALLEY
Project No. 805 0044 30 80

CITY OF MORENO VALLEY, Municipal Corporation

BY: _____
Thomas M. DeSantis, City Manager

DATE: _____

Hot Line Construction, Inc.

License No./
Classification: _____

Expiration Date: _____

Federal I.D. No.: _____

PRINT NAME: _____

SIGNATURE: _____

TITLE: _____

DATE: _____

INTERNAL USE ONLY

APPROVED AS TO LEGAL FORM:

_____
City Attorney

_____
Date

RECOMMENDED FOR APPROVAL:

_____
Chief Financial Officer / City Treasurer

_____
Date

PRINT NAME: _____

SIGNATURE: _____

TITLE: _____

DATE: _____

SIGNING INSTRUCTIONS TO THE CONTRACTOR:

Signature(s) must be accompanied by a completed notary certificate of acknowledgement attached hereto. A general partner must sign on behalf of a partnership. **Two (2)** corporate officers must sign on behalf of a corporation unless the corporation has a corporate resolution that allows one person to sign on behalf of the corporation; if applicable, said resolution must be attached hereto. The corporate seal may be affixed hereto.

Attachment: Attachment 2 - Agreement (3306 : AUTHORIZE THE AWARD OF THE CONSTRUCTION CONTRACT TO HOT LINE CONSTRUCTION,

Report to City Council

TO: Mayor and City Council

FROM: Kathleen Sanchez, Human Resources Director

AGENDA DATE: December 11, 2018

TITLE: LIST OF PERSONNEL CHANGES

RECOMMENDED ACTION

Recommendation:

1. Ratify the list of personnel changes as described.

DISCUSSION

The attached list of personnel changes scheduled since the last City Council meeting is presented for City Council ratification.

Staffing of City positions ensures assignment of highly qualified and trained personnel to achieve Momentum MoVal priorities, objectives and initiatives.

FISCAL IMPACT

All position changes are consistent with appropriations previously approved by the City Council.

PREPARATION OF STAFF REPORT

Prepared By:
Denise Hansen
Executive Assistant

Department Head Approval:
Kathleen M. Sanchez
Human Resources Director

CITY COUNCIL GOALS

None

CITY COUNCIL STRATEGIC PRIORITIES

1. **Economic Development**
2. **Public Safety**
3. **Library**
4. **Infrastructure**
5. **Beautification, Community Engagement, and Quality of Life**
6. **Youth Programs**

ATTACHMENTS

1. Personnel Changes 12.11.18

APPROVALS

Budget Officer Approval	✓ Approved	12/03/18 5:36 PM
City Attorney Approval	✓ Approved	12/05/18 12:07 PM
City Manager Approval	✓ Approved	12/05/18 2:56 PM

City of Moreno Valley
Personnel Changes
December 11, 2018

New Hires

Kimberly Ganimian, Management Aide
Financial & Management Services Department/Treasury Operations Division

Jaime Juengel, Animal Control Officer
Community Development Department/Animal Services Division

Promotions

James Gutierrez
From: Maintenance Worker II, Public Works Department/Maintenance & Operations Division
To: Lead Maintenance Worker, Public Works Department/ Maintenance & Operations Division

Transfers

None

Separations

Michael Lungren, Building Inspector II
Community Development Department/Building & Safety Division

Samantha Rodriguez, Management Analyst
Public Works Department/Maintenance & Operations Division

Attachment: Personnel Changes 12.11.18 (3266 : LIST OF PERSONNEL CHANGES)

Report to City Council

TO:	Mayor and City Council
FROM:	Kathleen Sanchez, Human Resources Director
AGENDA DATE:	December 11, 2018
TITLE:	CONSIDERATION OF PROPOSED VOLUNTARY EARLY RETIREMENT INCENTIVE PROGRAM

RECOMMENDED ACTION

Recommendation:

1. Staff recommends that the City Council approve the Proposed Voluntary Early Retirement Incentive (VERI) program.

SUMMARY

As a dynamic organization, the City of Moreno Valley actively pursues new ideas to capture efficiencies and cost savings while delivering first class service to our community. The proposed Voluntary Early Retirement Incentive (VERI) program would provide an opportunity to reduce costs in a proactive manner, without disruption to services. As proposed, the voluntary program could also create promotional opportunities for existing staff members.

It is important to emphasize that this program is presented as a proactive cost reduction option. The City's fiscal situation remains strong; the Council's prudent financial policies have guided us into a 6th consecutive year with a fully balanced General Fund budget. Moreno Valley's track record for proactive, innovative financial management continues to be recognized in awards from the Government Finance Officers Association, as well as our recent designation as one of the most fiscally strong cities in the nation. Under the Council's leadership, staff continues to seek opportunities to reduce costs and maximize efficiencies while preserving the highest possible levels of public service.

DISCUSSION

As proposed, the VERI program would generate cost savings by offering a modest

retirement incentive for eligible employees at higher wage levels. Key components of the program are listed below:

- Offers a proactive program where participation is completely voluntary and is presented to eligible employees for their consideration.

- Creates cost savings as any vacated positions would be filled by employees at lower wage/benefit levels.

- Yields first-year salary savings that will exceed first-year costs.

- Generates ongoing salary savings for multiple years.

- Provides an incentive to eligible employees who opt to leave City service on or before January 31, 2019. (Eligible employees would be required to notify the City of their participation in the VERI program on or before January 7, 2019.)

The VERI program is open to full-time career employees who meet all of the following criteria:

- Minimum age of 50 (consistent with Retirement system requirements)
- At least 5 years of service with the City of Moreno Valley
- At Salary Step G, H, or I
- Employees who have not previously notified the City of their intent to retire

Eligible VERI participants in salary grades equal to or less than C24 will receive a one-time incentive payment of $15,000. Eligible VERI participants in salary grades equal to or greater than C25 will receive a one-time incentive payment of $25,000. The payments will not increase or otherwise impact retirement costs or benefits associated with the City's participation in the California Public Employee Retirement System (CalPERS).

The program is proposed as another progressive option to reduce expenditures while optimizing the efficiency of City programs and services.

ALTERNATIVES

1. Approve Recommended Action as set forth in this staff report. *Staff recommends this alternative.*

2. Do not approve proposed Recommended Action as set forth in this staff report. *Staff does not recommend this alternative.*

FISCAL IMPACT

Actual costs and savings will ultimately depend upon the number of employees, if any, who opt to participate in the VERI program.

The proposed Incentive structure is based upon calculations which ensure that first-year savings will exceed all costs; additional savings will be derived in subsequent years. The illustration below demonstrates the relationship between costs and savings over the first three years of the proposed program.

Estimated Participation Level = 41%

	Year 1	Year 2	Year 3	Total
Costs	$500,000	$0	$0	$500,000
Savings	$562,514	$534,388	$507,669	$1,604,571
			Total Net Savings	**$1,104,571**

Implementation of the VERI program will result in a net cost savings to the City when implementation is combined with a disciplined approach to filing positions left vacant due to early retirement.

NOTIFICATION

On November 21, 2018 eligible employees were sent a letter detailing information regarding the proposed VERI program and its pending inclusion on the December 11, 2018 City Council Agenda. The courtesy notification was sent to eligible employees to offer more time for program consideration should it be approved by the City Council.

PREPARATION OF STAFF REPORT

Department Head Approval:
Kathleen M. Sanchez
Human Resources Director

Approved By:
Thomas M. DeSantis
City Manager

CITY COUNCIL GOALS

Revenue Diversification and Preservation. Develop a variety of City revenue sources and policies to create a stable revenue base and fiscal policies to support essential City services, regardless of economic climate.

CITY COUNCIL STRATEGIC PRIORITIES

1. **Economic Development**
2. **Public Safety**
3. **Library**
4. **Infrastructure**
5. **Beautification, Community Engagement, and Quality of Life**
6. **Youth Programs**

ATTACHMENTS

None

APPROVALS

Budget Officer Approval	✓ Approved	12/04/18 11:07 AM
City Attorney Approval	✓ Approved	12/05/18 9:28 AM
City Manager Approval	✓ Approved	12/06/18 11:06 AM

Report to City Council

TO:	Mayor and City Council
FROM:	Kathleen Sanchez, Human Resources Director
AGENDA DATE:	December 11, 2018
TITLE:	APPROVAL TO FUND A COMMUNITY SERVICES COORDINATOR POSITION

RECOMMENDED ACTION

Recommendation:

1. Authorize the Parks and Community Services Department to de-fund one Administrative Assistant position and fund one Community Services Coordinator position.

2. Authorize the City Position Summary, as amended, to reflect the de-funding of one Administrative Assistant position and the funding of one Community Services Coordinator position.

SUMMARY

This report recommends the City Council authorize Human Resources, on behalf of the Parks and Community Services Department, to de-fund one vacant Administrative Assistant position and fund one Community Services Coordinator position. The Administrative Assistant position in the Parks and Community Services Department is currently vacant due to a recent resignation.

DISCUSSION

The City Position Summary as amended by the City Council serves as an important internal control tool for City Council to establish authorized positions for the City while enabling staff to manage within the authorized and funded positions. The City Position Summary addresses career authorized positions and does not include temporary positions. As a result of operational changes, it is requested that this position be adjusted based on current and projected demands for the position and services.

Staff recommends the following updates to the City Position Summary:

- De-fund one Administrative Assistant position (C16 $46,267.31 - $65,141.85) and fund one Community Services Coordinator position (C18 $51,009.71 - $71,818.86) in the Parks and Community Services Department. The funding of the Community Services Coordinator positon will facilitate the Parks and Community Services Department's ability to align the position with operational changes. Estimated costs of $5,000 will be absorbed within the current budget and no additional funding is being requested.

Department / Position Title		FY 2018/19 Adjustment	Requested Budget Amendment
Parks and Community Services Department			
Administrative Assistant	FT	(1)	$0
Community Services Coordinator	FT	1	
Total Adjustment		0	$0

ALTERNATIVES

1. Approve Recommended Actions as set forth in this staff report, including the approval of the City Position Summary for FY 2017/2018 - 2018/19, as presented in attachment. The approval of these items will allow for ongoing activities to be carried out in the current fiscal year. *Staff recommends this alternative.*

2. Do not approve proposed Recommended Actions as set forth in this staff report, including the approval of the City Position Summary for FY 2017/2018 - 2018/2019, as presented in attachment. *Staff does not recommend this alternative.*

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FISCAL IMPACT

Estimated costs of $5,000 will be absorbed within the current budget and no additional funding is being requested.

NOTIFICATION

Publication of the Agenda

PREPARATION OF STAFF REPORT

Prepared By:
Kathleen M. Sanchez
Human Resources Director

Department Head Approval:
Kathleen M. Sanchez
Human Resources Director

Concurred By:
Name
Title

CITY COUNCIL GOALS

None

CITY COUNCIL STRATEGIC PRIORITIES

1. **Economic Development**
2. **Public Safety**
3. **Library**
4. **Infrastructure**
5. **Beautification, Community Engagement, and Quality of Life**
6. **Youth Programs**

ATTACHMENTS

1. City Position Summary FY 1718 - 1819 v4

APPROVALS

Budget Officer Approval	✓ Approved	12/03/18 5:37 PM
City Attorney Approval	✓ Approved	12/05/18 12:14 PM
City Manager Approval	✓ Approved	12/05/18 2:55 PM

City of Moreno Valley
FY 2017/18 - 2018/19
City Position Summary

Position Title	FY 2012/13 No.	FY 2013/14 No.	FY 2014/15 No.	FY 2015/16 No.	FY 2016/17 No.	FY 2017/18 Adj.	FY 2017/18 No.	FY 2018/19 Adj.	FY 2018/19 No.
Accountant I	2	2	2	1	1	-	1	-	1
Accountant II	-	-	1	1	1	-	1	-	1
Accounting Asst	3	3	3	3	3	-	3	-	3
Accounting Technician	4	3	3	2	2	-	2	-	2
Accounts Payable Supervisor	1	1	1	1	1	-	1	-	1
Administrative Asst	5	8	7	7	8	-	8	(1)	7
Administrative Services Dir	1	1	1	1	1	(1)	-	-	-
After School Prog Coordinator	-	-	-	-	-	-	-	-	-
After School Prog Specialist	-	-	-	-	-	-	-	-	-
After School Prog Supervisor	-	-	-	-	-	-	-	-	-
Animal Care Technician	4	4	4	5	5	-	5	-	5
Animal Care Technician Supervisor	-	-	-	-	-	1	1	-	1
Animal Control Officer	7	7	7	7	7	-	7	-	7
Animal Rescue Coordinator	-	-	-	1	1	-	1	-	1
Animal Services Asst	2	2	2	4	4	-	4	-	4
Animal Svcs Dispatcher	1	2	2	1	1	-	1	-	1
Animal Svcs Division Manager	1	1	1	1	1	-	1	-	1
Animal Svcs Field Supervisor	1	1	1	1	1	-	1	-	1
Animal Svcs License Inspector	1	1	1	1	1	-	1	-	1
Animal Svcs Office Supervisor	1	1	1	1	1	-	1	-	1
Applications & DB Admin	2	2	2	2	1	-	1	-	1
Applications Analyst	2	2	2	2	1	-	1	-	1
Assistant City Attorney	-	-	-	1	1	-	1	-	1
Assistant City Clerk	-	-	-	-	-	-	-	-	-
Assoc Environmental Engineer	1	1	1	1	1	(1)	-	-	-
Associate Engineer	5	5	5	4	4	-	4	-	4
Associate Planner	4	4	4	4	4	-	4	-	4
Asst Buyer	2	2	2	2	2	-	2	-	2
Asst City Manager	1	1	1	1	1	-	1	-	1
Asst Crossing Guard Spvr	1	1	1	1	1	-	1	-	1
Asst Network Administrator	2	2	2	2	1	-	1	-	1
Asst to the City Manager	1	1	1	-	-	-	-	-	-
Asst. Applications Analyst	-	-	-	-	-	-	-	-	-
Banquet Facility Rep	1	1	1	1	1	-	1	-	1
Budget Officer	1	-	-	-	-	-	-	-	-
Building & Neighborhood Services Div Mgr	-	1	1	-	-	-	-	-	-
Building Safety Supervisor	-	-	-	1	1	-	1	-	1
Building Div Mgr / Official	1	-	-	-	-	-	-	-	-
Building Inspector I I	4	4	4	4	4	-	4	-	4
Business License Liaison	-	-	-	1	1	-	1	-	1
Bus. Support & Neigh Prog Admin	1	-	-	-	-	-	-	-	-
Cable TV Producer	2	2	2	4	2	-	2	-	2
Capital Projects Division Manager	-	-	-	-	1	-	1	-	1
Chief Financial Officer/City Treasurer	1	1	1	1	1	-	1	-	1
Child Care Asst	5	4	4	4	4	-	4	-	4
Child Care Instructor I I	5	4	4	4	4	-	4	-	4
Child Care Program Manager	1	1	1	1	1	-	1	-	1
Child Care Site Supervisor	5	4	4	4	4	-	4	-	4
City Attorney	1	1	1	1	1	-	1	-	1
City Clerk	1	1	1	1	1	-	1	-	1
City Manager	1	1	1	1	1	-	1	-	1
Code & Neigh Svcs Division Manager	-	-	-	-	-	1	1	-	1
Code & Neigh Svcs Official	1	-	-	-	-	-	-	-	-
Code Compliance Field Sup.	-	1	1	1	1	(1)	-	-	-
Code Compliance Officer I/I I	5	6	6	6	6	-	6	-	6
Code Supervisor	-	-	-	-	-	-	-	-	-
Comm & Economic Dev Director	1	1	-	-	-	-	-	-	-
Community Dev Director	-	-	1	1	1	-	1	-	1
Community Services Coordinator	-	-	-	-	3	-	3	1	4
Community Svcs Supervisor	1	1	1	1	1	-	1	-	1
Construction Inspector	5	5	5	5	5	-	5	(3)	2
Construction Inspector Supervisor	-	-	-	-	-	-	-	1	1

Attachment: City Position Summary FY 1718 - 1819 v4 (3326 : APPROVAL OF A COMMUNITY SERVICES COORDINATOR POSITION)

City of Moreno Valley
FY 2017/18 - 2018/19
City Position Summary

Position Title	FY 2012/13 No.	FY 2013/14 No.	FY 2014/15 No.	FY 2015/16 No.	FY 2016/17 No.	FY 2017/18 Adj.	FY 2017/18 No.	FY 2018/19 Adj.	FY 2018/19 No.
Crossing Guard	35	35	35	35	35	-	35	-	35
Crossing Guard Supervisor	1	1	1	1	1	-	1	-	1
Customer Service Asst	1	-	-	-	-	-	-	-	-
Dep PW Dir /Asst City Engineer	1	1	1	1	-	-	-	-	-
Deputy City Attorney I	-	-	-	-	1	-	1	-	1
Deputy City Attorney I I I	2	-	1	-	-	-	-	-	-
Deputy City Clerk	1	1	1	1	1	-	1	-	1
Deputy City Manager	-	-	-	-	-	-	-	-	-
Dep. Comm & Economic Dev Director	-	-	-	-	-	-	-	-	-
Development Svcs Coordinator	-	-	-	-	-	-	-	-	-
Economic Dev Director	-	-	1	1	1	-	1	-	1
Economic Dev Division Mgr	-	-	-	1	1	-	1	1	2
Electric Utility Chief Engineer	-	-	-	-	-	-	-	1	1
Electric Utility Division Mgr	1	1	1	1	1	-	1	-	1
Electric Utility Program Coord	1	1	1	1	1	-	1	-	1
Emerg Mgmt & Vol Svc Prog Spec	1	1	1	1	1	-	1	-	1
Emerg Mgmt & Vol Svcs Prog Mgr	1	1	1	1	1	-	1	-	1
Engineering Division Manager/Assistant City Engineer	-	1	1	1	1	-	1	-	1
Engineering Technician I I	1	1	1	1	1	-	1	-	1
Enterprise Systems Admin	2	2	2	2	1	-	1	-	1
Environmental Analyst	1	1	1	1	1	(1)	-	-	-
Equipment Operator	4	4	4	4	4	-	4	-	4
Exec Asst to Mayor / City Council	1	1	1	1	1	-	1	-	1
Exec. Assistant to the City Manager	-	-	-	-	-	-	-	-	-
Executive Asst I	9	9	9	9	9	-	9	-	9
Executive Asst I I	1	1	1	1	1	-	1	-	1
Facilities Maint Mechanic	1	1	1	1	1	-	1	-	1
Facilities Maint Worker	3	3	2	3	3	-	3	-	3
Facilities Maintenance Spvr	-	-	-	-	1	-	1	-	1
Financial Analyst	-	-	-	1	1	(1)	-	-	-
Financial Operations Div Mgr	1	1	1	1	1	-	1	-	1
Financial Resources Div Mgr	-	1	1	1	1	-	1	-	1
Fire Inspector I	-	2	2	-	-	-	-	-	-
Fire Inspector I I	2	2	1	-	-	-	-	-	-
Fire Marshall	1	1	-	-	-	-	-	-	-
Fire Safety Specialist	1	2	1	-	-	-	-	-	-
Fleet Supervisor	-	-	-	1	1	-	1	-	1
GIS Administrator	2	2	-	-	-	-	-	-	-
GIS Specialist	2	2	2	2	1	-	1	-	1
GIS Technician	-	-	2	2	1	-	1	-	1
Housing Program Coordinator	1	1	1	-	-	-	-	-	-
Housing Program Specialist	3	-	-	-	-	-	-	-	-
Human Resources Analyst	1	1	1	1	1	-	1	(1)	-
Human Resources Director	-	-	-	-	-	1	1	-	1
Human Resources Technician	-	-	-	-	-	-	-	-	-
Info Technology Technician	4	4	4	4	2	-	2	-	2
Landscape Development Coord	-	-	-	-	-	-	-	-	-
Landscape Irrigation Tech	1	1	1	1	1	(1)	-	-	-
Landscape Svcs Inspector	3	2	2	2	2	-	2	-	2
Landscape Svcs Supervisor	-	-	1	1	1	-	1	-	1
Lead Animal Care Technician	1	1	1	1	1	(1)	-	-	-
Lead Facilities Maint Worker	-	-	1	1	1	-	1	-	1
Lead Maintenance Worker	3	3	3	4	4	-	4	-	4
Lead Parks Maint Worker	5	5	5	6	6	-	6	-	6
Lead Traffic Sign/Marking Tech	2	2	2	2	2	-	2	-	2
Lead Vehicle / Equip Tech	1	1	1	-	-	-	-	-	-
Legal Secretary	1	1	1	-	-	-	-	-	-
Lib Serv Div Mgr	1	-	-	-	-	-	-	-	-
Librarian	4	-	-	-	-	-	-	-	-
Library Asst	13	-	-	-	-	-	-	-	-
Library Circulation Supervisor	1	-	-	-	-	-	-	-	-
Maint & Operations Div Mgr	1	1	1	1	1	-	1	-	1

Attachment: City Position Summary FY 1718 - 1819 v4 (3326 : APPROVAL OF A COMMUNITY SERVICES COORDINATOR POSITION)

City of Moreno Valley
FY 2017/18 - 2018/19
City Position Summary

Position Title	FY 2012/13 No.	FY 2013/14 No.	FY 2014/15 No.	FY 2015/16 No.	FY 2016/17 No.	FY 2017/18 Adj.	FY 2017/18 No.	FY 2018/19 Adj.	FY 2018/19 No.
Maintenance Worker I	-	7	-	-	-	-	-	-	-
Maintenance Worker II	1	1	-	-	-	-	-	-	-
Maintenance Worker I/II	12	12	18	18	18	-	18	-	18
Management Aide	-	-	1	2	2	(1)	1	-	1
Management Analyst	14	12	11	10	9	4	13	1	14
Management Asst	3	4	5	4	4	1	5	-	5
Media Division Manager	-	-	-	-	-	1	1	-	1
Media & Production Supervisor	1	1	1	2	1	(1)	-	-	-
Network Administrator	2	2	2	2	1	-	1	-	1
Office Asst	1	1	-	-	-	-	-	-	-
Paralegal	-	-	-	1	1	-	1	-	1
Park Ranger	3	3	3	3	3	-	3	-	3
Parking Control Officer	2	2	2	2	2	-	2	-	2
Parks & Community Services Deputy Director	-	-	-	-	-	1	1	-	1
Parks & Community Services Director	1	1	1	1	1	-	1	-	1
Parks & Community Services Division Manager	1	1	1	1	1	(1)	-	-	-
Parks Maintenance Division Manager	-	-	-	-	-	-	-	-	-
Parks Maint Supervisor	2	2	2	2	2	-	2	-	2
Parks Maint Worker	13	13	13	12	12	-	12	-	12
Parks Projects Coordinator	1	1	1	1	1	-	1	-	1
Payroll Supervisor	1	1	1	1	1	-	1	-	1
Permit Technician	6	5	5	5	5	-	5	-	5
Planning Commissioner	7	7	7	7	7	-	7	-	7
Planning Div Mgr / Official	1	1	1	1	1	-	1	-	1
Principal Accountant	1	1	1	1	1	-	1	-	1
Public Information/Intergovernmental Relations Officer	-	-	-	1	1	-	1	-	1
Public Safety Contract Administrator	-	-	-	-	-	1	1	-	1
Purch & Facilities Div Mgr	1	1	1	1	1	-	1	-	1
PW Director / City Engineer	1	1	1	1	1	-	1	-	1
Recreation Program Coord	1	1	1	2	-	-	-	-	-
Recreation Program Leader	7	7	7	7	7	-	7	-	7
Recreation Supervisor	1	1	1	-	-	-	-	-	-
Recycling Specialist	-	1	1	2	1	-	1	-	1
Resource Analyst	-	-	-	-	-	-	-	-	-
Risk Division Manager	-	-	-	-	-	-	-	-	-
Security Guard	2	2	2	2	2	-	2	-	2
Spec Dist Budg & Accting Spvr	-	-	-	-	-	-	-	-	-
Spec Districts Div Mgr	1	1	1	1	1	-	1	-	1
Special Districts Prog Mgr	1	1	1	-	-	-	-	-	-
Sr Accountant	1	1	1	2	2	1	3	-	3
Sr Administrative Asst	16	14	17	17	17	-	17	-	17
Sr Applications Analyst	-	-	2	2	1	-	1	-	1
Sr Citizens Center Coord	1	1	1	1	-	-	-	-	-
Sr Code Compliance Officer	-	-	-	-	-	2	2	-	2
Sr Construction Inspector	-	-	-	-	-	-	-	2	2
Sr Customer Service Asst	3	3	3	3	3	-	3	-	3
Sr Deputy City Clerk	-	-	-	-	-	-	-	1	1
Sr Electrical Engineer	1	1	1	1	1	-	1	-	1
Sr Engineer, P.E.	9	9	9	7	6	(1)	5	-	5
Sr Engineering Technician	1	1	1	1	1	-	1	-	1
Sr Equipment Operator	1	1	1	1	1	-	1	-	1
Sr Financial Analyst	2	2	1	-	-	-	-	-	-
Sr GIS Analyst	2	2	2	2	1	-	1	-	1
Sr Graphics Designer	1	1	1	2	1	-	1	-	1
Sr Human Resources Analyst	1	1	1	1	1	-	1	-	1
Sr IT Technician	-	-	-	-	-	-	-	-	-
Sr Landscape Svcs Inspector	1	1	-	-	-	-	-	-	-
Sr Management Analyst	2	2	3	4	5	(1)	4	(1)	3
Sr Office Asst	5	4	3	3	3	(1)	2	-	2
Sr Park Ranger	-	-	-	-	-	-	-	-	-
Sr Parking Control Officer	1	1	1	1	1	-	1	-	1
Sr Parks Maint Technician	2	2	2	2	2	-	2	-	2

Attachment: City Position Summary FY 1718 - 1819 v4 (3326 : APPROVAL OF A COMMUNITY SERVICES COORDINATOR POSITION)

City of Moreno Valley
FY 2017/18 - 2018/19
City Position Summary

Position Title	FY 2012/13 No.	FY 2013/14 No.	FY 2014/15 No.	FY 2015/16 No.	FY 2016/17 No.	FY 2017/18 Adj.	FY 2017/18 No.	FY 2018/19 Adj.	FY 2018/19 No.
Sr Payroll Technician	1	1	1	1	1	-	1	-	1
Sr Permit Technician	2	2	2	2	2	-	2	-	2
Sr Planner	2	2	2	2	2	-	2	-	2
Sr Recreation Program Leader	2	2	2	2	2	-	2	-	2
Sr Telecomm Technician	2	2	2	2	1	-	1	-	1
Sr Traffic Engineer	1	1	1	-	-	-	-	-	-
Sr Traffic Signal Technician	1	1	1	1	1	-	1	-	1
Storekeeper	1	1	1	1	1	-	1	-	1
Storm Water Prog Mgr	1	1	1	1	1	(1)	-	-	-
Strategic Initiatives Manager	-	-	-	-	-	1	1	-	1
Street Maintenance Supervisor	2	2	2	2	2	-	2	-	2
Sustainability & Intergovernmental Prog Mgr	-	1	1	-	-	-	-	-	-
Technology Services Div Mgr	2	2	2	2	1	(1)	-	-	-
Telecomm Engineer / Admin	2	2	2	2	1	-	1	-	1
Telecomm Technician	2	2	2	2	1	-	1	-	1
Traffic Operations Supervisor	1	1	1	1	1	-	1	-	1
Traffic Sign / Marking Tech I	1	1	1	1	1	-	1	-	1
Traffic Sign/Marking Tech I I	2	2	2	2	2	-	2	-	2
Traffic Signal Technician	2	2	2	2	2	-	2	-	2
Trans Div Mgr / City Traf Engr	1	1	1	1	1	-	1	-	1
Treasury Operations Div Mgr	1	1	1	1	1	-	1	-	1
Tree Trimmer	1	1	1	-	-	-	-	-	-
Vehicle / Equipment Technician	2	3	3	3	3	-	3	-	3
Total	**391**	**374**	**375**	**374**	**356**	**-**	**356**	**2**	**358**

Attachment: City Position Summary FY 1718 - 1819 v4 (3326 : APPROVAL OF A COMMUNITY SERVICES COORDINATOR POSITION)

Report to City Council

TO:	Mayor and City Council
FROM:	Patti Solano, Parks & Community Services Director
AGENDA DATE:	December 11, 2018
TITLE:	TELECOMMUNICATIONS LICENSE AGREEMENT WITH LOS ANGELES SMSA LIMITED PARTNERSHIP, D/B/A VERIZON WIRELESS, FOR A CELL TOWER AT EL POTRERO PARK

RECOMMENDED ACTION

Recommendations:

1. Authorize the Mayor to execute a Telecommunications License Agreement with Los Angeles SMSA Limited Partnership, d/b/a Verizon Wireless, on the property known as El Potrero Park.

2. Authorize the City Manager to execute any subsequent related Extensions or Amendments to the Agreement, subject to the approval of the City Attorney.

3. Approve the amended budget as set forth in the Fiscal Impact Section of this report.

SUMMARY

This report recommends approval of a Telecommunications License Agreement with Los Angeles SMSA Limited Partnership, d/b/a Verizon Wireless, on the property known as El Potrero Park to improve reception for telecommunication users.

DISCUSSION

Verizon Wireless representatives met with Parks and Community Services staff to review and discuss the requirements for the installation of a monopine (faux pine tree) designed wireless communication system at El Potrero Park. Parks and Community Services staff provided the specifications and location for a potential new cell tower. On March 16, 2017, Parks and Community Services authorized Verizon to submit an

application and drawings for a new telecommunications monopine tower at El Potrero Park. Verizon requested this location due to increased demand for telecommunications services, resulting from the proliferation of various personal communication devices making additional cellular tower facilities necessary to meet consumer demand. Parks and Community Services found that adding a cell tower would be an ideal way to have these services offered and provide the Department additional revenue. A License Fee was determined by the square footage of the facility and appurtenances located on the pole. The final location chosen for the tower was away from residences and out of the play zone of the soccer fields.

This project went through the Project Review Staff Committee process and onto Planning Commission. Effective February 2, 2018, CUP PEN17-0070 was approved for an unmanned telecommunications facility in El Potrero Park, located on 16901 Lasselle Street.

The proposed Telecommunications License Agreement with Verizon is for a term of five (5) years, with five (5) additional renewal terms of five (5) years each. The Agreement will provide $39,336 per full year of license fee revenue to the Parks and Community Services Department (CSD). In addition, a $100 per month landscape maintenance and graffiti abatement fee will be paid by the Licensee. Both license fee and the landscape maintenance and graffiti abatement fee include annual increases of three percent (3%). A one-time fee of $25,000 for granting the license will be paid within thirty (30) days of full execution of the License.

Performance and Labor and Material Bonds for construction, as well as a Performance Bond for the removal of all of the Licensee's improvements and repairing the site to its original state prior to the termination of the License, are required and provided with the Telecommunications License Agreement.

ALTERNATIVES

1. Approve and authorize the recommended actions as presented in this staff report. ***Staff recommends this alternative.***

2. Reject and do not authorize the recommended actions as presented in this staff report. ***Staff does not recommend this action, as it would result in a loss of potential revenue to the CSD.***

FISCAL IMPACT

The proposed agreement will provide revenue to the Parks and Community Services Department in initial license fee payments of $19,668 the first year, based on six (6) months remaining in fiscal year 2018/19. The Licensee will pay a $100 per month landscape maintenance and graffiti abatement fee; this revenue will be credited to the Parks and Community Services Department for use in paying for additional landscape maintenance. Both licensee fee and the landscape maintenance and graffiti abatement fee include annual increases of three percent (3%). The one-time fee of $25,000 for granting the license will be credited to Parks and Community Services.

Revenue (Prorated 1st Year)

License Fee (Account No. 5011-50-57-35210-463080) $19,668
Landscape Maintenance and Graffiti Abatement
(Account No. 5011-50-57-35210-501000) $600
One-time fee (Account No. 5011-50-57-35214-540040) $25,000

Total FY 18/19 ..... $45,268

DESCRIPTION	FUND	GL ACCOUNT NO.	TYPE (REV/EXP)	FY 18/19 BUDGET	PROPOSED ADJUSTMENTS	FY 18/19 AMENDED BUDGET
Parks Maintenance	Zone A	5011-50-57-35210-463080	REV	$304,000	$19,668	$323,668
Parks Maintenance	Zone A	5011-50-57-35210-501000	REV	$8,700	$600	$9,300
Parks Projects	Zone A	5011-50-57-35214-540040	REV	$5,000	$25,000	$30,000

PREPARATION OF STAFF REPORT

Prepared By:
Tony Hetherman
Parks Projects Coordinator

Department Head Approval:
Patti Solano
Parks & Community Services Director

CITY COUNCIL GOALS

Revenue Diversification and Preservation. Develop a variety of City revenue sources and policies to create a stable revenue base and fiscal policies to support essential City services, regardless of economic climate.

CITY COUNCIL STRATEGIC PRIORITIES

1. **Economic Development**
2. **Public Safety**
3. **Library**
4. **Infrastructure**
5. **Beautification, Community Engagement, and Quality of Life**
6. **Youth Programs**

Objective 1.8: Evaluate staff resources and dedicate City funding to invest in aggressive Economic Development activities that will result in increased revenues to the City, additional employment opportunities, and enhanced quality of life for our residents.

ATTACHMENTS

1. El Potrero TLA Partial Exe

APPROVALS

Budget Officer Approval	✓ Approved	11/26/18 7:56 AM
City Attorney Approval	✓ Approved	11/28/18 9:04 AM
City Manager Approval	✓ Approved	12/05/18 2:53 PM

CITY OF MORENO VALLEY
TELECOMMUNICATIONS LICENSE AGREEMENT

This Telecommunications License Agreement ("License") is effective as of the date signed by Licensor and is by and between THE CITY OF MORENO VALLEY, hereinafter called "Licensor," and, LOS ANGELES SMSA LIMITED PARTNERSHIP, a California limited partnership, DBA Verizon Wireless, hereinafter called "Licensee."

The parties agree as follows:

1. Premises.

Licensor owns the real property legally described in Exhibit "A" hereinafter called "Property." Subject to the following terms and conditions, Licensor licenses to Licensee that portion of Licensor's Property depicted in Exhibit "B," including all necessary and reasonable access and utility rights for the installation, operation, and maintenance of Licensee's equipment, structures, and utilities (the "Premises"). Exhibit "C," Conditional Use Permit and Conditions of Approval issued to Licensee for the Premises, is attached hereto and incorporated by reference into this License Agreement.

2. Use.

A. The Premises may be used by Licensee for any lawful activity in connection with the provision of mobile/wireless communications services, including without limitation, the transmission and the reception of wireless communication signals on various frequencies and the construction, maintenance and operation of related communications facilities, subject to the terms and conditions of this License.

B. Licensee shall use the Premises in compliance with all applicable laws, statutes, ordinances, rules, regulations and orders in effect.

C. Licensor agrees, at no expense to Licensor, to cooperate with Licensee, in making application for and obtaining all licenses, permits and any and all other necessary approvals that may be required for Licensee's intended use of the Premises.

D. The terms and conditions in this License are offered solely to Licensee as an inducement to execute the License for the Premises. Licensor would not necessarily license the Premises to another licensee on such favorable terms and conditions, it being understood that Licensor is specifically relying on the identity of Licensee in agreeing to the terms and conditions in this License. Licensee acknowledges that the License terms and conditions are for Licensee's benefit only so long as Licensee operates the business allowed by this License. But for the previously stated reasons, Licensor would not enter into this License. Therefore, Licensee shall not voluntarily, involuntarily, or by operation of laws, sublicense all or

Attachment: El Potrero TLA Partial Exe (3317 : TELECOMMUNICATIONS LICENSE AGREEMENT WITH LOS ANGELES SMSA LIMITED

any part of the Premises or allow it to be assigned or sublicensed to any person or entity other than Licensee except as otherwise permitted under Section 13 below.

E. Licensee shall not voluntarily, involuntarily, or by operation of law, sublicense all or any part of the Premises or allow it to be sublicensed, to any person or entity other than Licensee (except as otherwise permitted under Section 13) without the prior written approval of Licensor, which approval will not be unreasonably withheld, delayed or conditioned. In the event Licensee sublicenses or permits the collocation of equipment within the Premises to another communications carrier, the License Fee (defined below) due under this License shall increase by an amount equal to:

1. Fifty percent (50%) of the current License Fee at the time of the sublicensing or collocation for each month the additional carrier's equipment is located within the Premises.

Notwithstanding anything in this License to the contrary, nothing in this License shall prohibit the shared use of Licensee's Facilities (as defined below) with another party pursuant to a strategic alliance, roaming, or other agreement with Licensee; provided, however, such third party does not install any equipment in or upon the Premises.

3. Conditions Precedent.

This License is conditioned upon Licensee obtaining all necessary federal, state, or local governmental permits and approvals enabling Licensee to construct and operate mobile/wireless communications facilities on the Premises.

4. Term.

A. This License is binding and in effect upon full execution and delivery by Licensor and Licensee. The initial term of this License ("Initial Term") shall be five (5) years commencing on the first day of the month following the date the License is fully executed. This date shall be referred to as the "Commencement Date". Licensor and Licensee acknowledge and agree that the initial License Fee payment(s) shall not be due and payable by Licensee until thirty (30) days after the Commencement Date. Construction plans must be approved, prior to execution of the License, which approval shall not be unreasonably withheld, conditioned, or delayed. Licensee shall have the right to extend the Initial Term of this License for five (5) additional terms (each a "Renewal Term") of five (5) years each. The terms and conditions for the Renewal Term shall be the same terms and conditions of this License, except that the License Fee shall be increased as set forth in Section 5. This License shall automatically be extended for each successive five (5) year Renewal Term unless notice is provided in writing of Licensee's intention not to extend this License at least thirty (30) days but not more than 180 days prior to the expiration of the initial first five year Term or any then existing Renewal Term. The Initial Term and any Renewal Terms are collectively referred to as the Term ("Term").

B. At the expiration of the final Renewal Term of the License Agreement, Licensor and Licensee, at their option, may renegotiate this License.

Attachment: El Potrero TLA Partial Exe (3317 : TELECOMMUNICATIONS LICENSE AGREEMENT WITH LOS ANGELES SMSA LIMITED

5. License Fee.

A. In consideration of being granted this License, the Licensee shall pay the Licensor a one-time payment of *twenty-five thousand dollars ($25,000)*, payable within thirty (30) days after the License if fully executed.

B. The payment form (check, money order, etc) shall be reference as "VERIZON IRIS ONE-TIME". This one-time payment shall be made payable to the City of Moreno Valley, and sent to:

City of Moreno Valley
Parks and Community Services
Attn: Parks Projects Coordinator
14075 Frederick St.
Moreno Valley, CA 92553

C. In consideration of the rights granted by this License, upon the Commencement Date and throughout the Term of this License, Licensee shall pay Licensor the sum of *thirty-nine thousand, three hundred, thirty-six dollars ($39,336.00) per year* as a License Fee ("License Fee"). Commencing on the Commencement Date, License Fee shall be payable in twelve (12) equal monthly installments, on or before the first day of each month. At the Licensee's option, the Licensee may elect to make yearly payments on or before the first day of the month of the Commencement Date. License Fee shall increase at a rate of three percent (3%) each year on each anniversary date of the Commencement Date. The initial License Fee payment will be forwarded by Licensee to Licensor within sixty (45) days after the Commencement Date.

D. The payment form (check, money order, etc) shall be reference the site "VERIZON IRIS". License Fee payments shall be made payable to the City of Moreno Valley, and sent to:

City of Moreno Valley
Finance Department
P.O. Box 88005
Moreno Valley, CA 92552-0805

E. License Fee is assessed based on an equipment enclosure not exceeding 300 square feet, together with telecommunications equipment, including a generator and antenna structure within such enclosure for the uses permitted under this License, as referenced in Exhibit 'B' attached hereto and made part hereof.

F. If the License Fee is not received by Licensor on or before the fifteenth (15th) day following the due date, it shall be deemed delinquent. If the License Fee is not paid before delinquency, then the amount due and unpaid shall be subject to a monthly late charge at the rate of five percent (5%) of the overdue amount, without limitation to Licensor's other rights and remedies under this License.

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G. Licensee may request to expand the Premises. Licensee must submit plans showing the proposed use beyond the existing square footage, and if determined to be in Licensor's best interests, Licensor will provide written consent, which consent will not be unreasonably withheld, conditioned, or delayed. If expansion of the Premises is granted, the License shall be amended. License Fee shall be increased in proportion to the extra square footage included in the revised premises, based on the current License Fee.

6. Improvements; Access.

A. Licensee shall have the right (but not the obligation) at any time following the full execution and delivery of this License and prior to the Commencement Date, to enter the Premises for the purpose of making necessary inspections and engineering surveys (and soil tests where applicable) and other reasonably necessary tests (collectively "Tests") to determine the suitability of the Premises for Licensee's Facilities and for the purpose of preparing for the construction of Licensee's Facilities. During any Tests or pre-construction work, Licensee will have in effect the insurance required in Section 12, Insurance below. Licensee will notify Licensor of any proposed Tests or pre-construction work and will coordinate the scheduling of same with Licensor. If Licensee determines that the Premises are unsuitable for Licensee's contemplated use, then Licensee will notify Licensor and this License will terminate at Licensee's option.

B. Subject to all terms and conditions of this License, the Conditional Use Permit, and Approved Plans and Specs, Licensee has the right to construct, maintain and operate on the Premises wireless communications facilities, including but not limited to, radio frequency transmitting and receiving equipment, batteries, utility lines, transmission lines, radio frequency transmitting and receiving antennas and structures, (collectively, "Licensee's Facilities") and lighting as specifically identified on the attached Exhibit B. In connection therewith, Licensee has the right to do all work necessary to prepare, add, maintain and alter the Premises for Licensee's communications operations and to install utility lines and transmission lines connecting antennas to transmitters and receivers, except that any change to the Licensee's Facilities adversely and materially affecting the visual appearance of the Premises, any modification of equipment which places an additional load on the Licensor's electrical system requiring an increase in Licensee's 200 amp service panel size and capacity shall be prohibited until approved in writing by Licensor, and such approval will not be unreasonably withheld, unreasonably conditioned or unreasonably delayed. Notwithstanding the forgoing, Licensee shall be entitled to exchange and replace equipment and antennas within the Premises provided that (i) any new equipment is either not physically or materially greater in size or not visible to the public; or (ii) any antennas are not greater in size than those previously installed.

C. Licensee shall submit an application to the City of Moreno Valley for a Conditional Use Permit and pay all applicable fees. Subject to the approval of a Conditional Use Permit, Licensee shall construct, maintain and operate said Licensees Facilities in accordance with the Conditions of Approval as set forth by the

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City's Planning Division, Building and Safety Division, Parks and Community Services Department, and the Fire Prevention Bureau, et al, during the plan review process.

D. Licensee shall obtain and pay for all building permits and fees as required. Licensor approved temporary fencing shall be placed and maintained around the construction site for the duration of construction.

E. As part of the installation of Licensee's Facilities, Licensee shall have the right to install electrical service, at Licensee's expense, including, but not limited to primary power and installation of an emergency back-up power system for Licensee's Facilities. Subject to Licensor's approval of the location, which approval shall not be unreasonably withheld, Licensee shall have the right to place utilities on (or to bring utilities across) Licensor's Property in order to service the Premises and Licensee's Facilities.

F. Licensee shall use its best efforts to commence and diligently pursue all of the construction and installation work described in this Section 6 so as to fully complete said work within 180 days of the Commencement Date subject to reasonable extension of time due to events of force majeure, delays in obtaining government approvals necessary to properly install and operate Licensee's Facilities, or as otherwise required by Licensee.

G. All of Licensee's construction and installation work shall be performed at Licensee's sole cost and expense, in a good and workmanlike manner as defined by the prevailing industry standard for public works projects.

H. Licensee shall provide and maintain in effect three (3) good and sufficient Surety Bonds as follows:

The first bond shall be a "Faithful Performance Bond," which shall be in an amount of *one hundred thousand dollars ($100,000)* and shall guarantee the faithful performance of all work related to the removal of the Licensee's Facilities as required herein. This Faithful Performance Bond for facility removal shall be required to be kept in place during the entire term of the License.

The second bond shall be a "Faithful Performance Bond," which shall be in an amount of *two hundred thousand dollars ($200,000)* and shall guarantee the faithful performance of all the work related to the construction of the Licensee's Facilities as required herein.

The third bond shall be a "Labor and Materials Payment Bond," which shall be in an amount of *two hundred thousand dollars ($200,000)* and shall secure the payment of the claims of labor, mechanics, or materialmen pursuant to Section 3115 and 3143 of the Civil Code for all work related to the installation of Licensee's Facilities.

The 'construction-related' "Faithful Performance Bond" and the "Labor and Materials Bond" shall be kept in place until such time as Licensor approves in writing

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the final installation of the Licensee's Facilities, which approval shall not be unreasonably withheld, conditioned or delayed. Upon such approval from Licensor, the 'construction related' Faithful Performance Bond and the Labor and Materials Payment Bond may be terminated. All bonds shall be Licensor approved, prior to the issuance of building permits, which approval shall not be unreasonably withheld, conditioned or delayed.

I. Title to Licensee's Facilities installed or placed on the Premises by Licensee shall be held by Licensee. Licensee has the right to remove all of Licensee's Facilities at its sole expense on or before the expiration or termination of this License, except those portions of Licensee's Facilities which are full integrated into Licensor owned property (i.e. underground conduit). Upon termination of this License, Licensee shall remove Licensee's Facilities at Licensee's sole expense, including Licensee's antenna structure and equipment cabinets, within ninety (90) days following expiration of earlier termination of this License. All of Licensee's communication equipment shall at all times be and remain Licensee's personal property, not be considered fixtures, and in no event shall any part of Licensee's communications equipment be deemed or considered "integrated into Licensor owned property", and Licensor agrees that Licensee's communications equipment shall be exempt from execution, foreclosure, sale, levy, attachment or distress for any License Fee due or to become due. Notwithstanding anything to the contrary contained herein, in the event Licensee ceases to pay the License Fee for a period of more than six (6) consecutive months and abandons its communications equipment at the Premises during that six (6) month period, Licensor shall be entitled to remove Licensee's communications equipment from the Premises and dispose of it in any commercially reasonable manner it deems fit.

J. Licensor shall provide continuous access to Licensee, Licensee's employees, agents, contractors and subcontractors a designated access route identified on Exhibit B to the Premises twenty-four (24) hours a day, seven (7) days a week, at no charge to Licensee. In the event said route is obstructed, Licensor shall provide another suitable route of access to Licensee's Premises. Licensor represents and warrants that it has full rights of ingress to and egress from the Premises, and hereby grants such rights to Licensee to the extent required to construct, maintain, install and operate Licensee's Facilities on the Premises. Licensee's exercise of such rights shall not cause undue inconvenience to the Licensor. Except in the event of an emergency (including equipment failure), Licensee shall provide a minimum of twenty-four (24) hours telephonic notice to the Licensor at 951.413.3702, prior to access of the Premises for scheduled routine maintenance and other major work.

K. For additional access and utility rights beyond those provided to Licensee by Licensor in this License, it shall be the responsibility of Licensee to obtain and pay for all additional easements, rights of entry and all incidentals necessary to Licensee's operations upon the Premises.

L. Licensee's current access pathway to the Premises is across turf. There is no defined path, so multiple paths may be taken. Licensor shall maintain walking access over the existing grade from a public roadway to the Premises in a manner

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sufficient to allow access for Licensee's use of the Premises. Licensor shall be responsible for maintaining and repairing such access pathway, at its sole expense, except for any damage to the extent caused by Licensee's use of such access pathway; or replace damaged items. If Licensee causes any such damage, Licensee shall promptly repair all damages within 20 (twenty) business days of Licensee's receipt of written notice from the Licensor. If the Licensee fails to make such repair or replacement within 20 (twenty) working days of Licensee's receipt of written notice, the Licensor may cause the work to be done and the costs reasonably incurred thereby shall become the liability of the Licensee, and the Licensor shall be reimbursed said cost.

M. Licensee shall fully and timely pay for all utilities used by Licensee for the use, operation and maintenance of Licensee's Facilities in the Premises.

N. Licensor shall be entitled to enter the Premises, upon reasonable prior written notice and in the presence of a Licensee representative, at any time to inspect Licensee's facilities for compliance with the terms of this License, and with all applicable Federal, State and local governmental regulations.

7. Repairs, Maintenance, Graffiti Removal and Landscape Maintenance Fee.

A. Licensee shall be responsible for repairing and maintaining Licensee's Facilities and any other improvements installed by Licensee on the Premises in an reasonably acceptable aesthetic appearance, proper operating, and reasonably safe condition. This shall include the repair of all damage to Licensee's Facilities incurred whether natural or man made.

B. Upon the Commencement Date of the License, Licensor shall be responsible for all graffiti removal and abatement at the Premises (with the exception of personal and real property while under construction). Commencing on the Commencement Date, Licensee shall pay Licensor a graffiti removal and landscape maintenance fee in the amount of one hundred dollars ($100) per month for said service (the "Graffiti Removal and Landscape Maintenance Fee"). The Graffiti Removal and Landscape Maintenance Fee shall be noted as a separate line item but included in the License Fee payment. The Graffiti Removal and Landscape Maintenance Fee shall increase at a rate of three percent (3%) each year, on the anniversary date of the Commencement Date of the License, for the remaining Term of the License. Licensor shall be responsible for Licensee installed landscaping and irrigation, and concrete pathway maintenance located outside of the Premises. The landscape, irrigation and concrete pathway maintenance is reflected in the said Graffiti Removal and Landscape Maintenance Fee.

8. Interference with Communications.

A. Licensee agrees to install equipment of types and frequencies which will not cause harmful interference to the currently existing communications equipment (as configured) of Licensor's vendors, or other pre-existing licensees or lessees of the Premises. In the event Licensee's equipment causes such interference, Licensee

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shall cooperate with Licensor in determining the source and will immediately take all steps necessary to correct and eliminate the interference. If said interference cannot be eliminated within forty-eight (48) business hours after receipt of written and telephonic notice from Licensor to Licensee's notice address and Licensee's Network Operations Center (phone: 800.264.6620) of the existence of such interference and Licensee and Licensor have reasonably determined Licensee's equipment to be the source of said interference, Licensee shall discontinue use of the equipment creating said interference. Licensee shall shut down the interfering equipment except for intermittent operation for the purpose of testing after performing any maintenance, repair, modification, replacement or other action for the purpose of correcting such interference. If such interference is not corrected within thirty (30) days after receipt of the aforesaid notice, Licensee shall remove the interfering equipment from the Premises until such interference is corrected. In the event that the cause of such interference cannot be pinpointed to a particular piece of equipment or system, Licensee shall disconnect the electric power and shut down all of its equipment until such time as the interference problem is corrected. If such interference is not corrected within thirty (30) days after receipt of the aforesaid notice, Licensee shall disable or remove its equipment from the Premises within an additional ten (10) day period. Licensor shall not be liable to Licensee for any interruption of service of Licensee unless caused by Licensor or for interference with the operation of Licensee's equipment unless caused by Licensor.

B. Notwithstanding the foregoing, in the event that said interference has been determined through tests that it interferes with Licensor's own equipment (communications and public safety) as configured and installed, and said interference jeopardizes the safe operation of Licensor's operations, Licensee will be responsible for eliminating the interference within twenty-four (24) hours following Licensee's receipt of notice to Licensee's Network Operations Center (phone: 800.264.6620). Licensee shall shut down the interfering equipment except for intermittent operations for the purpose of testing if Licensee is unable to eliminate said interference within twenty-four (24) hours of said notification. If Licensor disconnects power to the facility, Licensor will allow intermittent power to Licensee for equipment testing only.

C. Licensee has satisfied itself and hereby represents to Licensor that, to the best of Licensee's current, actual knowledge as of the date of this License, no such interference shall result to the currently existing systems (as configured) of Licensor or other such pre-existing licensees or lessees at the Property, provided such systems and operations are in compliance with applicable laws, operating on approved frequencies and in accordance with all manufacturers warranties and guidelines. Licensee agrees to indemnify, hold harmless and defend Licensor against any claim or damage, including reasonable attorney's fees, to the extent arising out of Licensee's interference with the systems of Licensor or other pre-existing licensees or lessees existing at the Property as of the date of this License, except to the extent caused by the negligence or willful misconduct of Licensor or other such pre-existing licensees or lessees at the Property.

D. Licensee shall be responsible for performing and providing documentation to the Licensor for all engineering studies to ensure that the placement

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of its equipment at the Premises will not cause interference with any existing equipment (as configured) placed there by Licensor and/or any other such pre-existing licensees or lessees.

E. It is emphasized that the primary use of the Premises is intended to include future and presently unknown Licensor uses, the integrity and security of which shall in no way be compromised by the Licensee. If during the Term of the License, Licensor's present or future operations requires installation of additional telecommunications equipment adjacent to the Premises (installed, operated and owned by Licensor and not a third party), Licensor agrees to take all reasonable steps necessary not to affect or interfere with Licensee's right hereunder. If, however, such interference occurs despite the best efforts of both Licensor and Licensee, the Licensor's operational need shall prevail and Licensee shall be required to modify or remove their interfering equipment.

F. Excepting pre-existing equipment located on the Premises prior to the date of this License, Licensor shall not allow any use of the Property which interferes with Licensee's use of the Premises. If such interference occurs, Licensor shall promptly correct such interference within forty-eight (48) hours of Licensor's receipt of written notice from Licensee.

9. Taxes.

Licensee shall pay all taxes assessed against Licensee's Facilities. Pursuant to California Revenue and Taxation Code section 107.6, Licensee is notified that the property interest acquired by Licensee in the Premises under this License may be subject to property taxation as a possessory interest in real property, and Licensee may be subject to the payments of property taxes levied on that interest.

10. Termination.

This License shall not be revoked or terminated during the Term, except as expressly stated in this License. This License may be terminated on thirty (30) days prior written notice (except where stated otherwise) as follows:

A. by either party upon a default of any covenant, condition, or term hereof by the other party, which default is not cured within sixty (60) days of receipt of written notice of default, provided that if such default is curable, but not curable within such sixty (60) day period, then within such period of time as is reasonably necessary to accomplish such cure (in order to avail itself of this time period in excess of sixty (60) days, the defaulting party must send to the other party, within the sixty (60) day period, a written plan to cure the default, which is reasonably acceptable to the other party, and the defaulting party diligently commences and continues performance of such cure to completion according to the written plan);

B. by Licensee if it does not obtain or maintain licenses, permits or other approvals necessary to the construction or operation of Licensee's Facilities; however,

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Licensee shall act with due diligence to obtain and maintain such agreements, licenses, permits, and other approvals;

C. by Licensee if Licensee is unable to occupy or utilize the Premises due to ruling or directive of the Federal Communications Commission ("FCC") or other governmental or regulatory agency, including, but not limited to, a take back of channels or change in frequencies;

D. by Licensee if Licensee determines that the Premises are not appropriate for its operations for economic, environmental or technological reasons, including without limitation, signal strength or interference;

E. by Licensee for any reason or for no reason provided Licensee delivers written notice of termination to Licensor prior to the Commencement Date.

F. In the event of a termination of this License by Licensee, if Licensee determines that the Premises are not appropriate for its operations for economic, environmental or technological reasons, including without limitation, signal strength or interference which occurs at any time within the initial Term of this License, Licensee shall be required to provide Licensor a minimum of three (3) months prior written notice of termination of the License.

G. In the event of a termination of this License for any cause in any Renewal Term, except default and failure to cure by Licensor, Licensee shall not receive a refund of any License Fee paid in advance to Licensor.

11. Condemnation.

If a condemning authority takes all of Licensor's Property, or a portion which in Licensee's opinion is sufficient to render the Premises unsuitable for Licensee's use, then this License shall terminate as of the date when possession is delivered to the condemning authority. In any condemnation proceeding each party shall be entitled to make a claim against the condemning authority for just compensation (which for Licensee shall include the value of Licensee's Facilities, prepaid License Fee, and any other amounts recoverable under condemnation law). Sale of all or part of the Premises to a purchaser with the power of eminent domain in the face of the exercise of its power of eminent domain shall be treated as a taking by a condemning authority.

12. Insurance

A. Licensee shall maintain in full force and effect, at no expense to Licensor, the following insurance:

1. Commercial general liability insurance in the amount of one million dollars ($1,000,000) per occurrence, four million dollars ($4,000,000) aggregate for death, bodily injury, personal injury, or property damage;

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2. Auto Liability insurance endorsed for "any auto" with limits of liability of one million dollars ($1,000,000) per accident for bodily injury and property damage;

3. Employer's Liability insurance with limits of liability of one million dollars ($1,000,000), each accident; one million dollars ($1,000,000) disease each employee; and one million dollars ($1,000,000) disease policy limit.

B. The insurance coverage required of the Licensee by section 12 shall also meet the following requirements:

1. The insurance shall be primary with respect to any insurance or coverage maintained by Licensor, as relates to Licensee's operations, and shall not call upon Licensor insurance or coverage for any contribution but only to the extent caused by Licensee, its agents or contractors.

2. The insurance policies shall include contractual liability and personal injury. Notwithstanding the forgoing, Licensee may, in its sole discretion, self insure any of the required insurance under the same terms as required by this Agreement. In the event Licensee elects to self-insure its obligation under this Agreement to include Licensor as an additional insured, the following conditions apply:
(i) Licensor shall promptly and no later than thirty (30) days after notice thereof provide Licensee with written notice of any claim, demand, lawsuit, or the like for which it seeks coverage pursuant to this Section and provide Licensee with copies of any demands, notices, summonses, or legal papers received in connection with such claim, demand, lawsuit, or the like; (ii) Licensor shall not settle any such claim, demand, lawsuit, or the like without the prior written consent of Licensee; and (iii) Licensor shall fully cooperate with Licensee in the defense of the claim, demand, lawsuit, or the like.

3. The insurance policies shall include the City of Moreno Valley, the Moreno Valley Housing Authority, and the Moreno Valley Community Services District (CSD), its officers, agents, employees, and volunteers, as additional insureds under the policies; and shall include substantially the following provisions:

"Moreno Valley Community Services District (CSD), the City of Moreno Valley (City), the Moreno Valley Housing Authority, and their officers, officials, employees, agents, and volunteers are additional insureds as respects to General Liability and Auto Liability insurance. This insurance is primary, and our obligations are not affected by any other insurance carried by such additional insured whether primary, excess, contingent, or on any other basis. Waiver of subrogation for Workers' Compensation and Employer's Liability insurance as respects to the Moreno Valley Community Services District (CSD), the City of Moreno Valley (City), the Moreno Valley Housing Authority and each of their officers, officials, employees, agents, and volunteers."

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A. For the Commercial General Liability coverage, said parties shall be named as additional insureds utilizing either:
   1. Insurance Services Office ("ISO") Additional Insured endorsement CG 20 10 (04/13); or
   2. Substitute endorsements providing equivalent coverage, approved by the City.
   3. Licensor's additional insured status shall (i) be limited to bodily injury, property damage or personal and advertising injury caused, in whole or in part, by Licensee, its employees, agents, or independent contractors; (ii) not extend to claims for puntitive or exemplary damages arising out of the acts or omissions of Licensor, its employees, agents or independent contractors or where such coverage is prohibited by law or to claims arising out of the gross negligence of Licensor, its employees, agents or independent contractors; and, (iii) not exceed Licensee's indemnification obligation under this Agreement, if any.

B. The endorsements shall be signed by a person authorized by the insurer to bind coverage on its behalf. The coverage shall contain no special limitations on the scope of protection afforded to such additional insureds. Coverage for such additional insureds does not extend to liability to the extent prohibited by Insurance Code Section 11580.4.

C. All policies of insurance required by the Contract Documents shall include or be endorsed to provide a waiver by the insurers of any rights of recovery or subrogation that the insurers may have at any time against the *"Moreno Valley Community Services District (CSD), the City of Moreno Valley (City), the Moreno Valley Housing Authority, and their officers, officials, employees, agents, and volunteers*."

D. All policies and endorsements shall stipulate that the Licensee's (and its Subcontractors') insurance coverage shall be primary and noncontributory insurance as respects the *"Moreno Valley Community Services District (CSD), the City of Moreno Valley (City), the Moreno Valley Housing Authority, and their officers, officials, employees, agents, and volunteers*," and shall be excess of the Licensee's (and its Subcontractors') insurance and shall not contribute with it.
   For the primary and noncontributory coverage, said parties shall be named as additional insureds utilizing either:
   1. Insurance Services Office ("ISO") Additional Insured endorsement CG 20 10 (01/13); or
   2. Substitute endorsements providing equivalent coverage, approved by the City.
   3. Coverage shall state that the Licensee's (and its Subcontractors') insurance shall apply separately to each insured or additional insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability. Coverage shall apply to any claim or suit brought by an additional insured against a named insured or other insured.
   4. Licensee shall provide to Licensor's Attorney, (a) Certificates of Insurance evidencing the insurance coverage required herein, and (b)

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specific endorsements or blanket additional insured endorsements including Licensor, its officers, employees, agents, and volunteers, as additional insureds under the required liability policies;

5. Licensee shall provide at least thirty (30) days written notice to Licensor's Attorney ten (10) days notice shall apply to non-payment) of any cancellation or non renewel of any required coverage that is not replaced.
6. If the insurance is written on a Claims Made Form, then, following termination of this License, said insurance coverage shall survive for a period of not less than five (5) years;
7. The insurance policies shall provide for a retroactive date of the placement of Licensee's Facilities coinciding with the effective date of this License;
8. The insurance shall be reasonably approved as to form and sufficiency by the Licensor's Attorney.

E. If it employs any person, Licensee shall maintain worker's compensation and employer's liability insurance, as required by the State Labor Code and other applicable laws and regulations.

13. Successors and assigns.

Licensee may assign this License upon written notice to and approval of Licensor, which approval shall not be unreasonably withheld, conditioned or delayed, provided, however, Licensee shall have the right to sublicense or assign its rights under this License without consent of Licensor, (i) to any of its partners, members, subsidiaries, affiliates or successor legal entities, (ii) to any entity acquiring substantially all of the assets of Licensee in the geographic region the Premises are located, or (iii) to any entity in connection with any financing, loan, security interest, pledge, or mortgage of Licensee's property. This License shall inure to the benefit of and be binding upon the heirs, successors and assigns of the parties.

14. Environmental Indemnification; Hazardous substances.

A. Licensee hereby represents, warrants, covenants and agrees to and with Licensor that all of Licensee's operations or activities upon, or any use or occupancy of the Property by Licensee, or any portion thereof, by Licensee, shall be in all respects in compliance with all applicable state, federal and local laws and regulations governing or in any way relating to the generation, handling, manufacturing, treatment, storage, use, transportation, spillage, leakage, dumping, discharge, or disposal (whether legal or illegal, accidental or intentional) of any Hazardous Substance (as defined below).

B. If any investigation or monitoring of site conditions or any clean-up, containment, restoration, removal or other remedial work (collectively, the "Remedial Work") is required under any applicable federal, state or local law or regulation, by any judicial order, or by any governmental entity due to any Hazardous Substances brought on to or generated on the Property by Licensee, Licensee shall perform or

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cause to be performed the Remedial Work in compliance with such law, regulation, or order. All costs and expenses of such Remedial Work shall be paid by Licensee including, without limitation, all charges of Licensee's contractors, consultants and engineers and Licensor's reasonable attorney, architect's and/or consultant's fees and costs incurred in connection with monitoring or review of such Remedial Work. In the event Licensee shall fail to timely commence, or cause to be commenced, or fail to diligently prosecute to completion, such Remedial Work, Licensor may, but shall not be required to, cause such Remedial Work to be performed, and all reasonable costs and expenses thereof, or incurred in connection therewith, shall be reimbursed to Licensor; provided, however, that Licensee shall be given reasonable notice and opportunity to cure. Notwithstanding the foregoing, Licensee shall not be liable for or responsible for addressing any environmental condition, including the release of Hazardous Substances, that existed on the Property before the execution of this Agreement, or that otherwise does not result from the activities of Licensee.

C. "Hazardous Substances" shall include without limitation:

1. Those substances included within the definitions of "hazardous substances," "hazardous materials," toxic substances," or "solid waste" in the Comprehensive Environmental Response Compensation and Liability Act of 1980 (42 U.S.C. § 9601 et seq.) ("CERCLA"), as amended by Superfund Amendments and Reauthorization Act of 1986 (Pub. L. 99-499 100 Stat. 1613) ("SARA"), the Resource Conservation and Recovery Act of 1976 (42 U.S.C. § 6901 et seq.) ("RCRA"), and the Hazardous Materials Transportation Act, 49 U.S.C. § 1801 et seq., and in the regulations promulgated pursuant to said laws, all as may be amended from time to time;

2. Those substances listed in the United States Department of Transportation Table (49 CFR 172.101 and amendments thereto) or by the Environmental Protection Agency (or any successor agency) as hazardous substances (40 CFR Part 30, and as may be amended from time to time);

3. Any material, waste or substance which is petroleum, asbestos, polychlorinated biphenyls, designated as a "hazardous substance" pursuant to Section 311 of the Clean Water Act, 33 U.S.C. 1251 et seq. (33 U.S.C. § 1321) or listed pursuant to Section 307 of the Clean Water Act (33 U.S.C. § 1317); or radioactive materials; and such other substances, materials, and wastes which are or become regulated as hazardous or toxic under applicable local, state, or federal law, or the United States government, or which are classified as hazardous or toxic under federal, state, or local laws or regulations.

15. Indemnity and Mutual Release.

Licensor and Licensee each indemnifies the other against and holds the other harmless from any and all costs (including reasonable attorney's fees) and claims of liability or loss to the extent arising from the ownership, use and/or occupancy of the Licensor's Property or Premises by the indemnifying party. This indemnity does not apply to any claims arising from the negligence or intentional misconduct of the

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indemnified party, breach of this License by the indemnified party, or violation of law by the indemnified party. The indemnity obligations under this Section will survive the termination of this License.

16. Attorneys' fees; Litigation costs.

A. If any action at law or in equity is brought to recover any License Fee or other sums under this License, or for or on account of any breach of or to enforce or interpret any of the covenants, terms, or conditions of this License, or for the recovery of the possession of the Premises, the prevailing party shall be entitled to reasonable attorneys' fees, costs and other expenses, in addition to any other relief to which such party may be entitled to the extent award by a court of law.

B. Whenever provision is made in this License for the payment of attorney's fees, such fees shall be payable whether the legal services are rendered by a salaried employee for the party or by independent counsel and shall include such fees as are incurred in connection with any pretrial proceeding, trial or appeal of the action.

C. Any award of damages following judicial remedy or arbitration as a result of the breach of this License or any of its provisions shall include an award of prejudgment interest from the date of the breach at the lesser of (i) the maximum amount of interest allowed by law or (ii) Ten Percent (10%).

17. Waiver of Incidental and Consequential Damages.

With the exception of the indemnification obligations identified within this License, neither party will assert any claim whatsoever against the other party for loss of anticipatory profits or any other indirect, special, incidental or consequential damages incurred as a result of the construction, installation, operation, maintenance, or replacement of personal property owned by either party, or Licensor's or Licensee's use of the Premises or Licensor's Property, including any and all losses incurred as a result of Licensor's or Licensee's actions or defaults.

18. Miscellaneous.

A. Severability. If any provision of the License is invalid or unenforceable with respect to any party, the remainder of this License or the application of such provision to persons other than those as to whom it is held invalid or unenforceable, shall not be affected and each provision of this License shall be valid and enforceable to the fullest extend permitted by law.

B. Notices. Any notice or demand required to be given herein shall be made by certified or registered mail, return receipt requested, or trackable overnight mail to the address of the respective parties set forth below. Any change in address shall be promptly reported to affected party.

Attachment: El Potrero TLA Partial Exe (3317 : TELECOMMUNICATIONS LICENSE AGREEMENT WITH LOS ANGELES SMSA LIMITED

Licensor:

Parks and Community Services
Attn: Director
City of Moreno Valley
14075 Frederick Street
Moreno Valley, CA 92553

Licensee:

Los Angeles SMSA Limited Partnership
dba Verizon Wireless
180 Washington Valley Road
Bedminster, New Jersey 07921
Attn: Network Real Eastae

A copy to be sent to:

Licensor:

City Manager
City of Moreno Valley
P.O. Box 88005
14177 Frederick Street
Moreno Valley, CA 92552-0805

C. Choice of Law. This License shall be governed under the laws of the State of California and applicable Federal law.

D. Survival of Terms. Terms and conditions of this License which by their sense and context survive the termination, cancellation or expiration of this License will so survive.

E. Entire Agreement. The terms of this License (including the Exhibits, all of which are hereby incorporated by reference) are intended by the parties as the final expression of their agreement with respect to such terms. The parties further intend that this License constitutes the complete and exclusive statement of its terms and no extrinsic evidence whatsoever may be introduced in any proceeding, involving this License. The language in all parts of this License will in all cases be construed as a whole and in accordance with its fair meaning and not construed for or against either party.

F. Amendments and Modifications. No amendments, modification or supplement, including those by custom, usage of trade, or course of dealing, of any provisions of this License shall be binding on any of the parties unless it is in writing and signed by the parties in interest at the time of the modification. No oral order, objection, claim, or notice by either party to the other shall affect or modify any of the terms or obligations contained in the License.

G. Venue. At Licensor's option, any action by any party to this License shall be brought in the appropriate court of competent jurisdiction within the County of Riverside, notwithstanding any other provision of law which may provide that such action may be brought in some other location.

H. Waiver. Failure by a party to insist upon the strict performance of any of the provisions of this License by the other party, or the failure by a party to exercise its rights upon the default of the other party shall not constitute a waiver of such party's

Attachment: El Potrero TLA Partial Exe (3317 : TELECOMMUNICATIONS LICENSE AGREEMENT WITH LOS ANGELES SMSA LIMITED

right to insist and demand strict compliance by the other party with the terms of this License thereafter.

Signatures Appear on the Following Page

Attachment: El Potrero TLA Partial Exe (3317 : TELECOMMUNICATIONS LICENSE AGREEMENT WITH LOS ANGELES SMSA LIMITED

IN WITNESS WHEREOF, Licensor and Licensee have executed this Telecommunications License Agreement as of the date and year signed by Licensor.

Licensor:

City of Moreno Valley

BY:_____
MAYOR

DATE:_____

INTERNAL USE ONLY

ATTEST:

_____
City Clerk

APPROVED AS TO LEGAL FORM:

_____
City Attorney

_____
Date

Licensee:

Los Angeles SMSA Limited Partnership,
dba Verizon Wireless
By: AirTouch Cellular Inc.
Its: General Partner

Federal I.D. No.: 33-0033922

PRINT NAME: Phillip French

SIGNATURE: _____

TITLE: Executive Director-Network

DATE: 10/31/2018

PRINT NAME: Steven Lamb

SIGNATURE: _____

TITLE: Director- Network

DATE: 10/24/18

SIGNING INSTRUCTIONS TO LICENSEE:

Signature(s) must be accompanied by a completed notary certificate of acknowledgement attached hereto. A general partner must sign on behalf of a partnership. **Two (2)** corporate officers must sign on behalf of a corporation unless the corporation has a corporate resolution that allows one person to sign on behalf of the corporation; if applicable, said resolution must be attached hereto. The corporate seal may be affixed hereto.

Enclosures:

Exhibit "A" – Legal Description of the Property
Exhibit "B" – Description of Premises, Licensee's Facilities, Incorporation of Approved Construction Plans by Reference
Exhibit "C" – Conditional Use Permit and Conditions of Approval

Attachment: El Potrero TLA Partial Exe (3317 : TELECOMMUNICATIONS LICENSE AGREEMENT WITH LOS ANGELES SMSA LIMITED

NOTARY ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA)

COUNTY OF Orange)

On October 24 2018, before me, Jin K. Park, Notary Public, personally appeared Steve Lamb, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Notary Public

JIN K. PARK
COMM. # 2161715
NOTARY PUBLIC-CALIFORNIA
ORANGE COUNTY
MY COMM. EXP. AUG 28, 2020

(Seal)

Attachment: El Potrero TLA Partial Exe (3317 : TELECOMMUNICATIONS LICENSE AGREEMENT WITH LOS ANGELES SMSA LIMITED

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of ORANGE)

On OCTOBER 31, 2018 before me, KELLY A MCDONOUGH
(insert name and title of the officer)

personally appeared PHILLIP JOHN FRENCH,
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

KELLY A. McDONOUGH
COMM. #2128414
Notary Public - California
Orange County
My Comm. Expires Sep. 28, 2019

Signature _____ (Seal)

Attachment: El Potrero TLA Partial Exe (3317 : TELECOMMUNICATIONS LICENSE AGREEMENT WITH LOS ANGELES SMSA LIMITED

EXHIBIT A

LEGAL DESCRIPTION OF CITY'S PROPERTY

Licensor's Property of which Premises are a part is legally described as follows:

PARCEL A: (APN: 312-243-010)

ALL THAT CERTAIN REAL PROPERTY SITUATED IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

THAT PORTION OF PARCEL 3 AND A PORTION OF LOT E OF PARCEL MAP 21574, IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 147, PAGES 28 THROUGH 30 INCLUSIVE OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY, DESCRIBED AS FOLLOWS:
BEGINNING AT THE SOUTHWESTERLY CORNER OF SAID LOT E;
THENCE NORTHERLY ALONG THE WEST LINE OF LOT E AND PARCEL 3, ON A CURVE CONCAVE TO THE WEST, HAVING A RADIUS OF 3068 FEET, THROUGH A CENTRAL ANGLE OF 10° 54' 50" AND AN ARC LENGTH OF 584.40 FEET TO THE POINT OF BEGINNING OF SAID BOUNDARY LINE (THE INITIAL RADIAL LINE BEARS NORTH 89° 31' 26" EAST) TO A POINT ON THE SOUTHERLY LINE OF TRACT NO. 22383-1 AS SHOWN BY MAP ON FILE IN BOOK 197 OF MAPS AT PAGE(S) 64 THROUGH 69, INCLUSIVE;
THENCE NORTH 77° 31' 17" EAST A DISTANCE OF 95.55 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE NORTHEASTERLY AND HAVING A RADIUS OF 330.00 FEET, A RADIAL LINE THROUGH SAID BEGINNING OF A NON-TANGENT CURVE BEARS SOUTH 77° 31' 17" WEST;
THENCE SOUTHEASTERLY ALONG SAID NON-TANGENT CURVE THROUGH A CENTRAL ANGLE OF 67° 20' 07", AN ARC LENGTH OF 387.82 FEET;
THENCE SOUTH 78° 37' 46" EAST A DISTANCE OF 145.13 FEET;
THENCE SOUTH 79° 48' 50" EAST A DISTANCE OF 88.34 FEET;
THENCE SOUTH 35° 03' 11" EAST A DISTANCE OF 32.34 FEET TO THE WEST LINE OF LASSELLE STREET, ALSO BEING THE BEGINNING OF A NON-TANGENT CURVE CONCAVE EASTERLY AND HAVING A RADIUS OF 6050.00 FEET, A RADIAL LINE THROUGH SAID BEGINNING OF NON-TANGENT CURVE BEARS NORTH 82° 51' 48" WEST;
THE PREVIOUSLY FIVE COURSES BEING ALONG THE SOUTHERLY LINE OF SAID TRACT;
THENCE SOUTHERLY ALONG SAID NON-TANGENT CURVE THROUGH A CENTRAL ANGLE OF 02° 45' 47", AN ARC LENGTH OF 291.76 FEET;
THENCE NORTH 88° 30' 30" WEST A DISTANCE OF 515.55 FEET ALONG THE SOUTHERLY LINE OF SAID LOT 3 TO THE POINT OF BEGINNING.
EXCEPT THEREFROM ANY AND ALL OIL, GAS, PETROLEUM, HYDROCARBON SUBSTANCES AND OTHER MINERALS LYING BELOW A DEPTH OF 500 FEET, WITHOUT THE RIGHT OF SURFACE ENTRY, AS MORE PARTICULARLY SET FORTH AND PROVIDED IN THAT CERTAIN DOCUMENT RECORDED NOVEMBER 22, 1983 AS INSTRUMENT NO. 242971 OF OFFICIAL RECORDS.
PARCEL B: (APN: 312-130-024)
A PORTION OF THE SOUTHEAST QUARTER OF SECTION 29 AND THE NORTHEAST QUARTER OF SECTION 32, TOWNSHIP 3 SOUTH, RANGE 3 WEST, SAN BERNARDINO BASE AND MERIDIAN, BEING A PORTION OF PARCEL 4010-25 AND PARCEL 4010-22 AS SHOWN ON RECORD OF SURVEY BOOK 65, PAGES 54 THROUGH 62 INCLUSIVE OF RECORDS OF SURVEY, RIVERSIDE COUNTY, CALIFORNIA, DESCRIBED AS FOLLOWS:
BEGINNING AT THE NORTHEAST CORNER OF SAID PARCEL 4010-25;
THENCE NORTH 88° 59' 10" WEST ALONG THE NORTHERLY LINE OF SAID PARCEL, A DISTANCE OF

Attachment: El Potrero TLA Partial Exe (3317 : TELECOMMUNICATIONS LICENSE AGREEMENT WITH LOS ANGELES SMSA LIMITED

444.61 FEET;
THENCE SOUTH 00° 07' 57" WEST, A DISTANCE OF 290.00 FEET, TO A POINT ON THE EASTERLY LINE OF SAID PARCEL 4010-22;
THENCE SOUTH 88° 59' 02" EAST, A DISTANCE OF 444.61 FEET, TO THE MOST EASTERLY LINE OF SAID PARCELS;
THENCE NORTH 00° 07' 57" EAST ALONG SAID EASTERLY LINE A DISTANCE OF 290.00 FEET TO THE POINT OF BEGINNING.
APN: 312-243-010-0 & 312-130-024-4

Attachment: El Potrero TLA Partial Exe (3317 : TELECOMMUNICATIONS LICENSE AGREEMENT WITH LOS ANGELES SMSA LIMITED

EXHIBIT B

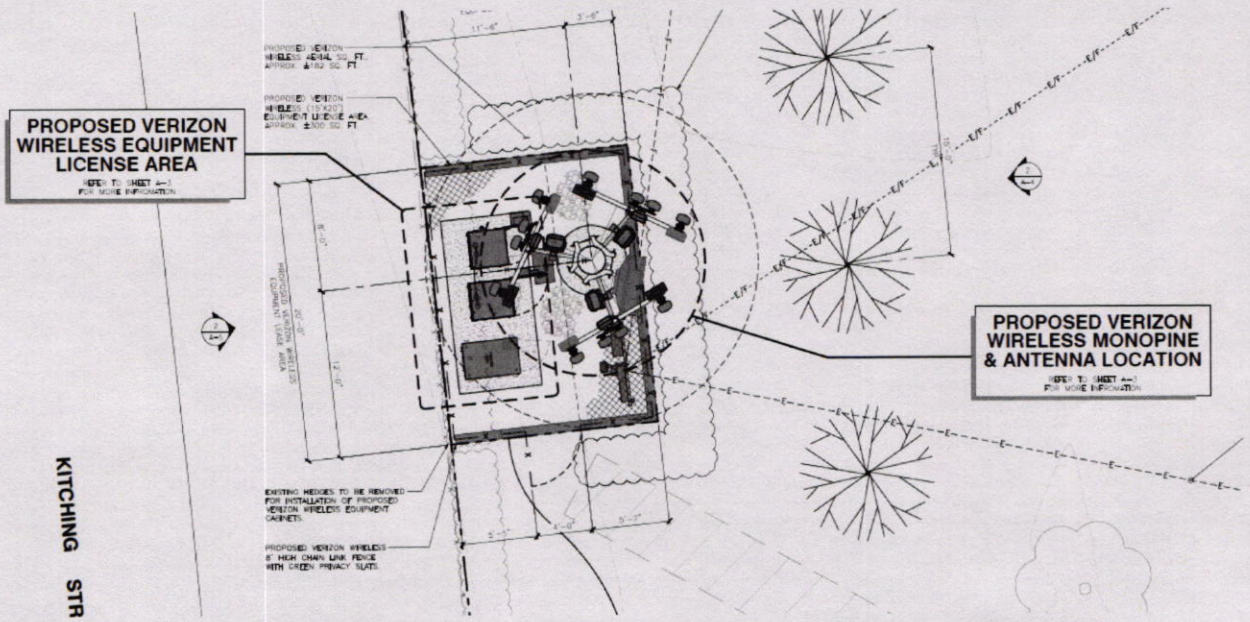
1. Location

2. Licensee's Facilities

The project consists of the installation of 12 panel antennas, 18 RRU's, and one microwave dish, mounted to new 75 foot monopine. A new building measuring approximately 15 feet x 20 feet with interior power and Telco panels.

License area: Approximately 300 sq ft.

Layout sheet



3. Incorporation of Plans by Reference

Construction drawings as approved by Building and Safety Division.

Attachment: El Potrero TLA Partial Exe (3317 : TELECOMMUNICATIONS LICENSE AGREEMENT WITH LOS ANGELES SMSA LIMITED

MORENO VALLEY
WHERE DREAMS SOAR

EXHIBIT "C"

Conditional Use Permit and Conditions of Approval by reference. Conditional Use Permit (CUP) #PEN17-0070 was approved by the Community Development Department on 01/17/2018, and effective on 02/02/18, per Section 9.02.220 of the Municipal Code.

Attachment: El Potrero TLA Partial Exe (3317 : TELECOMMUNICATIONS LICENSE AGREEMENT WITH LOS ANGELES SMSA LIMITED

Report to City Council

TO:	Mayor and City Council
FROM:	Pat Jacquez-Nares, City Clerk
AGENDA DATE:	December 11, 2018
TITLE:	COUNCIL DISCRETIONARY EXPENDITURE REPORTS FOR FISCAL YEAR 2018/2019 AS OF JULY 1, 2018 THROUGH OCTOBER 31, 2018

RECOMMENDED ACTION

Recommendation:

1. Receive and file the Fiscal Year 2018/2019 Council Discretionary Expenditure Report for July 1, 2018 through October 31, 2018.

SUMMARY

This staff report is prepared at the request of the City Council to provide transparency with respect to the expenditure of City funds from City Council Discretionary Expenditure Accounts. These reports are for each Council Member's year to date expenditures for Fiscal Year 2018/2019, for July 1, 2018 through October 31, 2018. Each Council District receives an annual budget allocation of $3,000 and the Mayor receives an annual budget allocation of $6,000.

Unused monies from Fiscal Year 2017/2018 have been carried over to the current Fiscal Year as approved by City Council in Resolution 2018-78. The Discretionary Expenditure Reports now reflect amended budget amounts as approved in the aforementioned Resolution.

The expenditure reports are included routinely in the City Council agenda as an additional means of distributing reports on activities to the Council and public. The reports are to be posted to the City's website following Council approval. The monthly reports provide unaudited information and are reconciled to the City's general ledger. Following the end of the Fiscal Year, the financial information shall be reviewed as part of the City's independent financial audit.

NOTIFICATION

Posting of the agenda as required by the Brown Act.

PREPARATION OF STAFF REPORT

Prepared By:
Renee Bryant
Management Aide

Department Head Approval:
Pat Jacquez-Nares
City Clerk

CITY COUNCIL GOALS

None

CITY COUNCIL STRATEGIC PRIORITIES

1. **Economic Development**
2. **Public Safety**
3. **Library**
4. **Infrastructure**
5. **Beautification, Community Engagement, and Quality of Life**
6. **Youth Programs**

ATTACHMENTS

1. July - October Discretionary Reports

APPROVALS

Budget Officer Approval	✓ Approved	12/04/18 5:32 PM
City Attorney Approval	✓ Approved	12/05/18 12:11 PM
City Manager Approval	✓ Approved	12/05/18 2:55 PM

MAYOR

Fiscal Year 2018/2019 Council Discretionary Expenditures
Accounts: 1010-10-01-10015-620130 Mayor Discretionary
1010-10-01-10015-620131 Mayor Discretionary - Carryover
July 1, 2018 - October 31, 2018

Date		Amount	Description
7/23/2018	$	20.00	LOCC Riverside County Division General Meeting
7/25/2018	$	20.00	MVCC Wake-Up Moreno Valley
			No expenditures to report for August 2018
			No expenditures to report for September 2018
10/29/2018	$	247.02	Per Diem and Mileage - NLC Summit
	$	287.02	TOTAL Council Discretionary Expenditures for FY 18/19
	$	6,000.00	FY 18/19 Adopted Budget Amount
	$	5,589.00	Carryover Budget Amount FY 2017/2018
	$	11,589.00	FY 18/19 Amended Budget Amount
	$	11,301.98	FY 18/19 Budget Amount Remaining

Source: Unaudited financial data from the City's accounting records.
Updated as of: 11/29/2018

Attachment: July - October Discretionary Reports (3338 : COUNCIL DISCRETIONARY EXPENDITURE REPORTS FOR FISCAL YEAR 2018/2019)

COUNCIL DISTRICT 1

Fiscal Year 2018/2019 Council Discretionary Expenditures

Accounts: 1010-10-01-10011-620111 Council District 1 Discretionary

1010-10-01-10011-620116 Council District 1 Discretionary - Carryover

July 1, 2018 - October 31, 2018

Date		Amount	Description
			No Expenditures to report for July 2018
			No Expenditures to report for August 2018
9/14/2018	$	125.00	Rotary Club of Moreno Valley 36th Annual Truck Party
10/2/2018	$	150.00	UNIDO Riverside Art Museum Cheech Marin
	$	275.00	TOTAL Council Discretionary Expenditures for FY 18/19
	$	3,000.00	FY 18/19 Adopted Budget Amount
	$	1,704.00	Carryover Budget Amount FY 2017/2018
	$	4,704.00	FY 18/19 Amended Budget Amount
	$	4,429.00	FY 18/19 Budget Amount Remaining

Source: Unaudited financial data from the City's accounting records.

Updated as of: 11/29/2018

Attachment: July - October Discretionary Reports (3338 : COUNCIL DISCRETIONARY EXPENDITURE REPORTS FOR FISCAL YEAR 2018/2019)

COUNCIL DISTRICT 2

Fiscal Year 2018/2019 Council Discretionary Expenditures

Accounts: 1010-10-01-10012-620112 Council District 2 Discretionary

1010-10-01-10012-620117 Council District 2 Discretionary - Carryover

July 1, 2018 - October 31, 2018

Date		Amount	Description
7/23/2018	$	1,000.00	Community Now's Annual Back 2 School Event
			No expenditures to report for August 2018
9/13/2018	$	147.00	2018 Inland Empire Economic Forecast
10/16/2018	$	853.00	Sponsorship Donation for Palm Middle School Autism Awareness
10/29/2018	$	500.00	Sponsorship Donation for Friends of the Moreno Valley Senior Center
	$	2,500.00	TOTAL Council Discretionary Expenditures for FY 18/19
	$	3,000.00	FY 18/19 Adopted Budget Amount
	$	666.00	Carryover Budget Amount FY 2017/2018
	$	3,666.00	FY 18/19 Amended Budget Amount
	$	1,166.00	FY 18/19 Budget Amount Remaining

Source: Unaudited financial data from the City's accounting records.

Updated as of: 11/29/2018

Attachment: July - October Discretionary Reports (3338 : COUNCIL DISCRETIONARY EXPENDITURE REPORTS FOR FISCAL YEAR 2018/2019)

COUNCIL DISTRICT 3

Fiscal Year 2018/2019 Council Discretionary Expenditures
Accounts: 1010-10-01-10013-620113 Council District 3 Discretionary
1010-10-01-10013-620118 Council District 3 Discretionary - Carryover
July 1, 2018 - October 31, 2018

Date		Amount	Description
7/19/2018	$	85.00	BIA Meet the Builder
7/23/2018	$	20.00	LOCC Riverside County Division General Meeting
7/24/2018	$	500.00	Community Now's Annual Back 2 School Event
8/23/2018	$	50.00	2018 State of Riverside County
9/17/2018	$	55.00	BIA Affordable Housing and Homelessness
9/19/2018	$	45.00	Economic and Workforce Development Summit
10/9/2018	$	350.00	Sponsorship Donation for Moreno Valley Community Band
10/9/2018	$	350.00	Sponsorship Donation for Moreno Valley Master Chorale
	$	1,455.00	TOTAL Council Discretionary Expenditures for FY 18/19
	$	3,000.00	FY 18/19 Adopted Budget Amount
	$	1,024.00	Carryover Budget Amount FY 2017/2018
	$	4,024.00	FY 18/19 Amended Budget Amount
	$	2,569.00	FY 18/19 Budget Amount Remaining

Source: Unaudited financial data from the City's accounting records.
Updated as of: 11/29/2018

Attachment: July - October Discretionary Reports (3338 : COUNCIL DISCRETIONARY EXPENDITURE REPORTS FOR FISCAL YEAR 2018/2019)

COUNCIL DISTRICT 4

Fiscal Year 2018/2019 Council Discretionary Expenditures
Accounts: 1010-10-01-10014-620114 Council District 4 Discretionary
1010-10-01-10014-650119 Council District 4 Discretionary - Carryover
July 1, 2018 - October 31, 2018

Date		Amount	Description
7/19/2018	$	85.00	BIA Meet the Builder
7/26/2018	$	(350.00)	Refund for cancellation - YEO Conference (originally charged in FY 17/18)
			No Expenditures to report for August 2018
9/12/2018	$	150.00	12th Annual San Bernardino County Water Conference
9/12/2018	$	40.00	Let's Do Lunch-Annual Conference Lunch Meeting
			No Expenditures to report for October 2018
	$	(75.00)	TOTAL Council Discretionary Expenditures for FY 18/19
	$	3,000.00	FY 18/19 Adopted Budget Amount
	$	244.00	Carryover Budget Amount FY 2017/2018
	$	3,244.00	FY 18/19 Amended Budget Amount
	$	3,319.00	FY 18/19 Budget Amount Remaining

Source: Unaudited financial data from the City's accounting records.
Updated as of: 11/29/2018

Attachment: July - October Discretionary Reports (3338 : COUNCIL DISCRETIONARY EXPENDITURE REPORTS FOR FISCAL YEAR 2018/2019)

Report to City Council

TO: Mayor and City Council

FROM: Pat Jacquez-Nares, City Clerk

AGENDA DATE: December 11, 2018

TITLE: MAYORAL APPOINTMENTS TO THE EMERGING LEADERS COUNCIL, SENIOR CITIZEN'S BOARD AND THE ENVIRONMENTAL AND HISTORICAL PRESERVATION BOARD

RECOMMENDED ACTION

Recommendation:

1. Receive and confirm the Mayoral appointments as follows:

Emerging Leaders Council

Name	Position	Term
Patrick Samones	Member	Ending 05/31/2020

Senior Citizen's Board

Name	Position	Term
Cleveland Johnson	Member	Ending 06/30/2021

Environmental and Historical Preservation Board

Name	Position	Term
Gerald Michael Budlong	Member	Ending 06/30/2021

CITY COUNCIL GOALS

Advocacy. Develop cooperative intergovernmental relationships and be a forceful advocate of City policies, objectives, and goals to appropriate external governments, agencies and corporations.

CITY COUNCIL STRATEGIC PRIORITIES

1. **Economic Development**
2. **Public Safety**
3. **Library**
4. **Infrastructure**
5. **Beautification, Community Engagement, and Quality of Life**
6. **Youth Programs**

ATTACHMENTS

1. Patrick Samones_redacted
2. ClevelandJohnsonApp_RedactedPDF
3. GeraldMichaelBudlongAppRedacted

APPROVALS

Budget Officer Approval	✓ Approved	12/05/18 2:15 PM
City Attorney Approval	✓ Approved	12/05/18 12:10 PM
City Manager Approval	✓ Approved	12/05/18 2:57 PM

CITY CLERK
MORENO VALLEY
RECEIVED
18 MAY 21 PM 4:17

For City Clerk's Use
Stamp Date and Time Received

City of Moreno Valley

EMERGING LEADERS COUNCIL

Membership Application Form

The purpose of the Emerging Leaders Council (ELC) is to identify college or high school students with a desire and potential to become community leaders, educate and engage young adults in local government, and focus efforts on service to the Moreno Valley community. The Emerging Leaders Council was established as a standing committee with two-year terms by Resolution 2014-30. The attached Resolution No. 2015-31 modifies the existing provisions governing the Emerging Leaders Council.

Meeting Schedule: Fourth Monday of each month at 6:00 p.m., City Hall - Council Chamber, 14177 Frederick Street

Qualifications include: Moreno Valley residency, enrollment in high school or college, must be between the ages of 17 and 25. Please attach at least one letter of recommendation/reference.

Name: PATRICK SAMONES

Home Address: [redacted]
MORENO VALLEY, CA 92553

CONFIDENTIAL INFORMATION

Home Phone No.: [redacted]
Work Phone No.: —
Cell Phone No.: —

E-mail Address: [redacted]
Date of Birth: [redacted]

College or High School: UCR
Major: BIOLOGY

Why do you want to serve on the City's Emerging Leaders Council?
TO SERVE ON THE ELC AND CONTINUE DEVELOPING ACTIVITIES TO ENGAGE YOUTH ON ISSUES

If selected to serve on the Emerging Leaders Council, what do you believe you would be able to contribute to the ELC and your community? In what way(s) are you an "emerging leader"?
I AM PART OF LEADERSHIP OF MANY ON CAMPUS ORGANIZATIONS THAT SERVE MY LOCAL AREA

Attachment: Patrick Samones_redacted (3337 : MAYORAL APPOINTMENTS TO BOARDS, COMMISSIONS AND COMMITTEES)

List any volunteer work that you have performed. Please provide the name(s) of the organization(s) and dates served:

MINI MEDICAL SCHOOL – SEPT 2014 – PRESENT
RIVERSIDE HEALTH CONNECT – OCT 2014 – PRESENT
RIVERSIDE FREE CLINIC – JULY 2017 – PRESENT

How would you define Moreno Valley's strengths? Weaknesses? Why?

STRONG – PEOPLE HERE DO CARE AND CITY SUPPORTS W/ MANY EVENTS
WEAK – LOW ENGAGEMENT + REACH TO EVERYONE

Briefly explain your understanding of the functions of municipal government.

BODY THAT GOVERNS A LOCAL AREA – ALLOWS PEOPLE OF THAT AREA TO HAVE A VOICE AND IMPACT MUNICIPAL AFFAIRS

Do you have any experience chairing and/or participating in meetings that are regulated by the Brown Act?

YES – TEEN COMMISSION ON PARKS AND REC
ELC MEMBER

What do you hope to accomplish by your participation on the Emerging Leaders Council? How will your participation enhance your future goals and objectives?

WANT TO CREATE FURTHER OPPORTUNITIES AND EVENTS FOR YOUTH AND ADDRESS ISSUES

Are you able to commit to participating in one meeting per month? Each meeting can last approximately two hours. Yes ☒ No ☐

Do you have any means of transportation to arrive to meetings on time? Yes ☒ No ☐

Have you ever been removed or asked to resign from a job or volunteer position?

Yes ☐ No ☒

May we contact the person who wrote your letter of recommendation? Yes ☒ No ☐

I hereby authorize that the City of Moreno Valley may obtain and review, on a confidential basis, such information regarding me as may be contained in the California State Summary Criminal History and in records of the California Department of Motor Vehicles. Yes ☒ No ☐

Pursuant to Resolution 2016-43 all board, commission, or council members must be registered voters of the City of Moreno Valley, provided they are at least 18 years old.

I hereby agree to attend all Board meetings, unless excused, and understand that I may be removed for lack of attendance, pursuant to Municipal Code, Subsection 2.06.010(C) which states, "If a member is absent without advance permission of the board or commission or the appointing authority from three consecutive regular meetings or from 25% of the duly scheduled meetings of the board or commission

Attachment: Patrick Samones_redacted (3337 : MAYORAL APPOINTMENTS TO BOARDS, COMMISSIONS AND COMMITTEES)

within any fiscal year, the membership shall thereupon become vacant and shall be filled as any other vacancy."

CERTIFICATE OF APPLICANT: I certify that all statements in this application are true and complete to the best of my knowledge. I understand that any false statements of material fact will subject me to disqualification or dismissal if appointed. I release the City of Moreno Valley from any liability for the use of the aforesaid information.

[redacted]

Signature

5/21/18

Date

Please Note: Applications will be kept on file for potential future vacancies for one year after the application submittal date. Applications are accepted year-round. All applications are public record; personal information may be redacted to protect applicants' privacy.

Attachment: Patrick Samones_redacted (3337 : MAYORAL APPOINTMENTS TO BOARDS, COMMISSIONS AND COMMITTEES)

RESOLUTION NO. 2015-31

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, MODIFYING THE EXISTING PROVISIONS GOVERNING THE EMERGING LEADERS COUNCIL AND REPEALING RESOLUTION NO. 2014-30.

WHEREAS, the actions of the Moreno Valley City Council directly impact the community, including our youth and young adults; and

WHEREAS, Moreno Valley has an abundance of intelligent, civic-minded college students with the potential to become future leaders of this community; and

WHEREAS, Moreno Valley's youth and young adults are capable of participating in a meaningful way in the community's governance; and

WHEREAS, the City Council has a desire to help identify these emerging leaders and provide them with the opportunity to learn about local government, advise the City Council on youth-related issues, and participate in serving their community; and

WHEREAS, a formal Emerging Leaders Council will give Moreno Valley's young adults the opportunity to communicate with the City Council and contribute to the community through participation in City government and service projects; and

NOW, THEREFORE, BE IT RESOLVED THAT THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, DOES HEREBY MODIFY THE EXISTING PROVISIONS OF THE MORENO VALLEY EMERGING LEADERS COUNCIL WHICH SHALL SERVE AND BE GOVERNED AS FOLLOWS:

1. The purpose of the Emerging Leaders Council (ELC) is to identify students with a desire and potential to become community leaders, educate and engage young adults in local government, and focus efforts on service to the Moreno Valley community.

2. The ELC shall consist of nine, (9) members and two (2) alternates appointed by the City Council.

3. The City Council shall appoint one member of the City Council to act as liaison/advisor to the ELC. The Council liaison/advisor shall select one Council Member to assist him/her in reviewing applications and interviewing candidates and will make recommendations to the full City Council for ELC appointments.

4. The City Manager shall appoint a staff liaison to the ELC and provide such reimbursement for their necessary expenses as may be authorized by the City Council in the budget and approved in advance by the City Manager.

5. ELC members shall be high school or college students aged 17 - 25 who reside in Moreno Valley.

Attachment: Patrick Samones_redacted (3337 : MAYORAL APPOINTMENTS TO BOARDS, COMMISSIONS AND COMMITTEES)

registered

CITY CLERK
MORENO VALLEY
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18 JUL -3 PM 4:54

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Stamp Date and Time Received

City of Moreno Valley

Boards and Commissions

Membership Application Form

Name: Cleveland Johnson

Home Address: [redacted]

How long have you resided in Moreno Valley? 40 years

CONFIDENTIAL INFORMATION

Home Phone No.: [redacted]
Work Phone No.:
Cell Phone No.:

Driver's License No. [redacted]
Email Address:
Date of Birth:

Employer Name [redacted] Position:
Address:

Board or Commission applying for*: 1st Choice Senior Citizens
2nd Choice

*If applying for the Accessibility Appeals Board, please indicate which position you are applying for:
☐ Physically Challenged Person ☐ Person Experienced in Construction ☐ Public Member

*If applying for the Utilities Commission, please indicate which position you are applying for:
☐ Public Member ☐ Customer of Moreno Valley Utility ☐ Business Customer of Moreno Valley Utility

Why do you wish to serve on this Board and/or Commission?

List any education, training, or special skills, you have which may be relevant or of particular benefit to this Board and/or Commission:

BA Sociology; Member of Riverside County School Board Assoc.

Explain briefly your understanding of what this Board and/or Commission does, including its powers and limitations.

Main mission is to ensure our seniors that visit the center are treated with respect and loyalty for their

What do you hope to accomplish by your participation?

I hope to continue the work we've started, making our center a friendly and comfortable place for ther

Attachment: ClevelandJohnsonApp_RedactedPDF (3337 : MAYORAL APPOINTMENTS TO BOARDS, COMMISSIONS AND COMMITTEES)

List any employment, volunteer work, or membership in a service/community organization that you have served on, or are now a member of. Please provide the name(s) of the agency (ies), contact person, and dates served:

~~I've served on this commission some 8 years and love it. I currently serve some 35,000 students in m~~

What other areas of interest do you have in our City government?

~~N/A~~

Would you be available for meetings during the day ☒ or evening? ☐

Attendance of at least one (1) meeting is required prior to the appointment.
Date(s) of the meeting(s) attended: Yes, understood 21 May 18

Pursuant to Resolution 2016-42 all board and commission members must be registered voters of the City of Moreno Valley.

I authorize the City of Moreno Valley to obtain and review, on a confidential basis, such information regarding me as may be contained in the California State Summary Criminal History and in records of the California Department of Motor Vehicles. Yes ☒ No ☐ (The application shall not be considered if the NO box is checked.)

I hereby agree to attend all board or commission meetings, unless excused, and understand that I may be removed for lack of attendance, pursuant to Municipal Code, Subsection 2.06.010(C) which states, "If a member is absent without advance permission of the board or commission or of the appointing authority, from three consecutive regular meetings or from 25% of the duly scheduled meetings of the board or commission within any fiscal year, the membership shall thereupon become vacant and shall be filled as any other vacancy."

CERTIFICATE OF APPLICANT: I certify that all statements in this application are true and complete to the best of my knowledge. I understand that any false statements of material fact will subject me to disqualification or dismissal if appointed. I release the City of Moreno Valley from any liability for the use of the aforesaid information.

Signature

1 Jul 18
Date

Please Note: Applications will be kept on file for potential future vacancies for one year after the application submittal date. Applications are accepted year-round. All applications are public record; personal information may be redacted to protect applicants' privacy.

Revised December 6, 2017

Attachment: ClevelandJohnsonApp_RedactedPDF (3337 : MAYORAL APPOINTMENTS TO BOARDS, COMMISSIONS AND COMMITTEES)

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City of Moreno Valley

Boards and Commissions

Membership Application Form

For City Clerk's Use
Stamp Date and Time Received

Name: Cleveland Johnson

Home Address: 15720 Turnberry St.; Moreno Valley

How long have you resided in Moreno Valley? 40 years

CONFIDENTIAL INFORMATION

Home Phone No.: (951) 242-6141
Work Phone No.: (951) 571-7500
Cell Phone No.: (909) 437-8564
Driver's License No.: N9772206
Email Address: cjjohnson20@verizon.net
Date of Birth: 11/21/41

Employer Name: Moreno Valley Unified School
Position: Board of Education
Address: 25634 Alessandro Blvd

Board or Commission applying for*: 1st Choice Senior Citizens
2nd Choice

*If applying for the Accessibility Appeals Board, please indicate which position you are applying for:
☐ Physically Challenged Person ☐ Person Experienced in Construction ☐ Public Member

*If applying for the Utilities Commission, please indicate which position you are applying for:
☐ Public Member ☐ Customer of Moreno Valley Utility ☐ Business Customer of Moreno Valley Utility

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Main mission is to ensure our seniors that visit the center are treated with respect and loyalty for thei

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I hope to continue the work we've started, making our center a friendly and comfortable place for thei

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List any employment, volunteer work, or membership in a service/community organization that you have served on, or are now a member of. Please provide the name(s) of the agency (ies), contact person, and dates served:

I've served on this commission some 8 years and love it. I currently serve some 35,000 students in n

What other areas of interest do you have in our City government?

N/A

Would you be available for meetings during the day ■ or evening? ☐

Attendance of at least one (1) meeting is required prior to the appointment.
Date(s) of the meeting(s) attended: Yes, understood

Pursuant to Resolution 2016-42 all board and commission members must be registered voters of the City of Moreno Valley.

I authorize the City of Moreno Valley to obtain and review, on a confidential basis, such information regarding me as may be contained in the California State Summary Criminal History and in records of the California Department of Motor Vehicles. Yes ◉ No ◯ (The application shall not be considered if the NO box is checked.)

I hereby agree to attend all board or commission meetings, unless excused, and understand that I may be removed for lack of attendance, pursuant to Municipal Code, Subsection 2.06.010(C) which states, "If a member is absent without advance permission of the board or commission or of the appointing authority, from three consecutive regular meetings or from 25% of the duly scheduled meetings of the board or commission within any fiscal year, the membership shall thereupon become vacant and shall be filled as any other vacancy."

CERTIFICATE OF APPLICANT: I certify that all statements in this application are true and complete to the best of my knowledge. I understand that any false statements of material fact will subject me to disqualification or dismissal if appointed. I release the City of Moreno Valley from any liability for the use of the aforesaid information.

Signature

1 Jul 18
Date

Please Note: Applications will be kept on file for potential future vacancies for one year after the application submittal date. Applications are accepted year-round. All applications are public record; personal information may be redacted to protect applicants' privacy.

Attachment: ClevelandJohnsonApp_RedactedPDF (3337 : MAYORAL APPOINTMENTS TO BOARDS, COMMISSIONS AND COMMITTEES)

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17 ~~APR~~ May PM 2:09

For City Clerk's Use
Stamp Date and Time Received

City of Moreno Valley

Boards and Commissions

Membership Application Form

Name: Gerald Michael Budlong

Home Address: [redacted]

How long have you resided in Moreno Valley? 30 Years

CONFIDENTIAL INFORMATION

Home Phone No. [redacted] Driver's License No.: [redacted]
Work Phone No.: [redacted] Cell Phone No.:
E-mail Address: [redacted]

Employer Name: RETIRED FROM Planning Position: Associate Planner
Address: Dept City of San Bernardino
GMBudlong@Yahoo.Com

Board or Commission applying for*: 1st Choice Environmental & Historical Preservation Board
2nd Choice

*If applying for the Accessibility Appeals Board, please indicate which position you are applying for:
☐ Physically Challenged Person ☐ Person Experienced in Construction ☐ Public Member

*If applying for the Utilities Commission, please indicate which position you are applying for:
☐ Public Member ☐ Customer of Moreno Valley Utility ☐ Business Customer of Moreno Valley Utility

Why do you wish to serve on this Board and/or Commission?
I want to continue as an advisor to the city council. I have 40 ya combined experience in Planning and environmental Planning - Private Parnes & Moore, Regt Weston, Tetra Tech Public - Inyo County, City of Victorville and City of San Bernardino. I have experience in the states and projects,

List any education, training, or special skills, you have which may be relevant or of particular benefit to this Board and/or Commission:
I have been member of this board/committe for 24 years +- and 2.5 years of Moreno Valley Planning Commission. I am also a member of EMWD Devil Canyon's citizen advisory committe & March ARB Restoration Bo

Explain briefly your understanding of what this Board and/or Commission does, including its powers and limitations.
An advisor to the city council under their conditions as expressed in writing. Having excellent attendance and treating public & other Board members with respect. Meeting the written requirement of the city council.

What do you hope to accomplish by your participation?
I hope to give the city council with good advice and continue my terms of office with the city. It's my way of giving back to the city. Also provide background material from 27 years + as an appointee of city council.

Attachment: GeraldMichaelBudlongAppRedacted (3337 : MAYORAL APPOINTMENTS TO BOARDS, COMMISSIONS AND COMMITTEES)

List any employment, volunteer work, or membership in a service/community organization that you have served on, or are now a member of. Please provide the name(s) of the agency (ies), contact person, and dates served:

Served on Moreno Valley Ecological Committee/Board since Sept 1989. Served on Moreno Valley Planning Commission filling an open spot at the request of City Council in go County Project Planner for General Plan and staff to the 5 regional citizens Boards. Member of March ARB restoration Board (advisory) member and chairman of David Starr Jordan's Committee ARB Committee

What other areas of interest do you have in our City government?

watch Planning Commission and City Council meetings on Channel 3

Would you be available for meetings during the day ☑ or evening? ☑

Attendance of at least one (1) meeting is required prior to the appointment.

Date(s) of the meeting(s) attended: 24 years of previous attendance only missed one meeting due to medical reason, which was excused.

Pursuant to Resolution 2016-43 all board and commission members must be registered voters of the City of Moreno Valley.

I authorize the City of Moreno Valley to obtain and review, on a confidential basis, such information regarding me as may be contained in the California State Summary Criminal History and in records of the California Department of Motor Vehicles. Yes ☑ No ☐ (The application shall not be considered if the NO box is checked.)

I hereby agree to attend all board or commission meetings, unless excused, and understand that I may be removed for lack of attendance, pursuant to Municipal Code, Subsection 2.06.010(C) which states, "If a member is absent without advance permission of the board or commission or of the appointing authority, from three consecutive regular meetings or from 25% of the duly scheduled meetings of the board or commission within any fiscal year, the membership shall thereupon become vacant and shall be filled as any other vacancy."

CERTIFICATE OF APPLICANT: I certify that all statements in this application are true and complete to the best of my knowledge. I understand that any false statements of material fact will subject me to disqualification or dismissal if appointed. I release the City of Moreno Valley from any liability for the use of the aforesaid information.

Gerald Michael Budlong
Signature

04/27/2017
Date

Please Note: Applications will be kept on file for potential future vacancies for one year after the application submittal date. Applications are accepted year-round.

Revised12/29/16

Attachment: GeraldMichaelBudlongAppRedacted (3337 : MAYORAL APPOINTMENTS TO BOARDS, COMMISSIONS AND COMMITTEES)

Report to City Council

TO:	Mayor and City Council
FROM:	Pat Jacquez-Nares, City Clerk
AGENDA DATE:	December 11, 2018
TITLE:	ADOPTION OF ORDINANCE LOCAL MORENO VALLEY COMMERCIAL CANNABIS ACTIVITY TAX.

RECOMMENDED ACTION

Recommendations: That the City Council:

1. By motion, adopt an Ordinance of the People of the City of Moreno Valley, California, Amending Moreno Valley Municipal Code to add Chapter 3.28 "Commercial Cannabis Activity Tax" Setting the Maximum Amount of Tax Rate at Eight Percent (8%) And $15.00 Per Square Foot for Cultivation Businesses for the Purpose of Funding Local General Municipal Services

DISCUSSION

At the June 19, 2018 Council meeting, City Council adopted Resolution 2018-62 submitting a Local Moreno Valley Commercial Cannabis Activity Tax to the voters (Measure M). Attached to that Resolution was an Ordinance which would become effective if the voters approved the Commercial Cannabis Activity Tax by a majority vote. City Council just certified the election results which showed that Measure M passed by over 74%.

In accordance with California Elections Code 9217, The Ordinance, once acted upon by the Council will become effective 10 days following certification of the election results by the Council.

Since the Ordinance did pass by majority vote of the electorate, Council should by motion adopt said Ordinance, thus formalizing the Moreno Valley Municipal Code amendment to reflect the new Commercial Cannabis Activity Tax for the City.

NOTIFICATION

This ordinance was included with the election materials for the November 6, 2018 Moreno Valley General Municipal Election and the agenda was posted in accordance of the Brown Act.

PREPARATION OF STAFF REPORT

Prepared By:
Pat Jacquez-Nares
City Clerk

Department Head Approval:
Pat Jacquez-Nares
City Clerk

CITY COUNCIL GOALS

Revenue Diversification and Preservation. Develop a variety of City revenue sources and policies to create a stable revenue base and fiscal policies to support essential City services, regardless of economic climate.

CITY COUNCIL STRATEGIC PRIORITIES

1. **Economic Development**
2. **Public Safety**
3. **Library**
4. **Infrastructure**
5. **Beautification, Community Engagement, and Quality of Life**
6. **Youth Programs**

ATTACHMENTS

1. Ordinance

APPROVALS

Budget Officer Approval	✓ Approved	12/05/18 2:28 PM
City Attorney Approval	✓ Approved	12/05/18 12:15 PM
City Manager Approval	✓ Approved	12/05/18 2:54 PM

ORDINANCE NO. _____

AN ORDINANCE OF THE PEOPLE OF THE CITY OF MORENO VALLEY, CALIFORNIA, AMENDING MORENO VALLEY MUNICIPAL CODE TO ADD CHAPTER 3.28 "COMMERCIAL CANNABIS ACTIVITY TAX" SETTING THE MAXIMUM AMOUNT OF TAX RATE AT EIGHT PERCENT (8%) AND $15.00 PER SQUARE FOOT FOR CULTIVATION BUSINESSES FOR THE PURPOSE OF FUNDING LOCAL GENERAL MUNICIPAL SERVICES

THE PEOPLE OF THE CITY OF MORENO VALLEY ORDAIN AS FOLLOWS:

Section 1. ELECTIONS CODE SECTION 13119 STATEMENT

That the establishment of the Commercial Cannabis Activity Tax at the maximum rate from 8% of gross receipts and $15.00 per square foot for cultivation is expected to produce an additional $2,200,000 annually in General Fund revenue and that the tax will remain in place unless subsequently repealed by the voters.

Section 2. LOCAL USE OF PROCEEDS

That the additional revenue produced by the Commercial Cannabis Activity Tax may be used for any local general municipal purpose including, but not limited to, maintaining 9-1-1 emergency response times; maintaining robbery and burglary suppression programs; maintaining safe and clean public areas; repairing potholes, local streets and roads; and enhancing recreation and youth programs and facilities within the City of Moreno Valley.

Section 3. ANNUAL INDEPENDENT AUDITS

That the financial records, accounting practices and internal controls related to the collection, deposit and expenditure of the additional revenue produced by the Local Moreno Valley Commercial Cannabis Activity Tax rate shall be examined by means of an annual audit conducted by an independent auditor whose services shall be retained by the City through a contract for services as an independent contractor and available to the public for review.

Section 4. ESTABLISH COMMERCIAL CANNABIS ACTIVITY TAX

That Section 3.28 "Commercial Cannabis Activity Tax" be added to the Moreno Valley Municipal Code to read as follows:

Attachment: Ordinance (3324 : ADOPTION OF ORDINANCE NO. Local Moreno Valley Commercial Cannabis)

Chapter 3.28 COMMERCIAL CANNABIS ACTIVITY TAX

3.28.010 Short Title
3.28.020 Definitions
3.28.030 Tax Imposed
3.28.050 Operator's duties
3.28.060 Registration and Permitting
3.28.070 Returns and Remittances
3.28.080 Reporting and Remitting
3.28.090 Cessation of the Business
3.28.100 Delinquency
3.28.110 Fraud
3.28.130 Appeal
3.28.140 Records
3.28.150 Refunds
3.28.180 Recording certificates-lien
3.28.190 Priority and lien of tax
3.28.200 Warrant for collection of tax
3.28.210 Seizure and sale
3.28.220 Successor's liability- withholding by purchaser
3.28.230 Liability of purchaser-release
3.28.240 Responsibility for payment
3.28.250 Withhold notice
3.28.260 Violation – misdemeanor
3.28.270 Extension of time
3.28.280 Divulging of information forbidden
3.28.010 Short title.

The short title of this chapter shall be the "Commercial Cannabis Activity Tax."

3.28.020 Definitions.

Except where the context otherwise requires or with exceptions below, the definitions given in this section shall be governed by definitions set forth in Chapter 5.05 of this Code.

(a) "Operator" means an Owner or any other person or entity that is engaged in Operation of a commercial cannabis business per definitions in Section 5.05.050 of this Code"

(b) "Tax administrator" means the City Manager or his designated agent, whether a city employee or county officer or employee.

3.28.030 Tax imposed.

Attachment: Ordinance (3324 : ADOPTION OF ORDINANCE NO. Local Moreno Valley Commercial Cannabis)

For the privilege of operating a Commercial Cannabis Business in the City of Moreno Valley such business shall pay a tax in the maximum amount of eight (8) percent of the gross receipts of the business and or in the case of a cannabis business engaged in cultivation, fifteen dollars ($15.00) for every square foot of canopy cultivated. Insofar as the business owner is concerned, the tax constitutes a debt owed to the city.
3.28.050 Operator's duties.

Each operator shall, on or before the last working day of the month following the close of each calendar month, file a return with the tax administrator on the forms provided by him or her, of the total monthly gross receipts and the amount of tax collected for commercial cannabis activities. Each such return shall contain a declaration under penalty of perjury, executed by the operator or his authorized agent, that to the best of the signatory's knowledge, the statements in the return are true, correct and complete. At the time the return is filed, the tax fixed at the prevailing commercial cannabis tax rate for shall be remitted to the tax administrator. The tax administrator may establish other reporting periods and may require a cash deposit or bond or a separate trust fund bank account for any permit holder if he or she deems it necessary in order to insure collection of the tax and he or she may require further information in the return. All taxes collected by operators pursuant to this chapter shall be held in trust for the account of the city until remittance thereof is made to the tax administrator.

3.28.060 Registration and Permitting.

Every person desiring to engage in or conduct a commercial cannabis business within the city shall file with the tax administrator an application for a Commercial Cannabis Business Permit for each place of business. Every application for such a permit shall be made upon a form prescribed by the city and shall set forth the name under which the applicant transacts or intends to transact business, and be in full compliance of the provisions of Chapter 5.05 of this Code. This Permit does not relieve the operator from having such other permits which are otherwise required for the operation of a commercial cannabis business in the city, including but not limited to a Conditional Use Permit and a State issued license.

3.28.070 Returns and remittances.

The tax imposed under Section 3.28.030 is:

A. Due to the tax administrator on a monthly basis; and

B. Becomes delinquent and subject to penalties if not received by the tax administrator on or before the last working day of the month following the close of each month.

3.28.080 Reporting and remitting.

The reporting, auditing and remitting procedures and protocols shall be established through policies adopted by the Tax Administrator or Chief Financial Officer

Attachment: Ordinance (3324 : ADOPTION OF ORDINANCE NO. Local Moreno Valley Commercial Cannabis)

3.28.090 Cessation of business.

Each operator shall notify the tax administrator, ten days prior to the sale or cessation of business for any reason and returns and remittances are due immediately upon the sale or cessation of business.

3.28.100 Delinquency.

Any operator who fails to remit any tax to the city or any amount of tax required to be collected and remitted to the city including amounts based on determination made by the tax administrator under Section 3.28.080, within the time required, shall pay a penalty of ten percent of the tax or amount of the tax in addition to the tax or amount of tax plus interest at the rate of one-half percent per month, or fraction thereof, from the date on which the tax or the amount of tax required to be collected becomes delinquent until the date of remittance or payment. Any Operator who fails to pay any penalty imposed under this section within ten days after receipt of notice thereof shall pay interest thereon at the rate of one-half of one percent per month, or fraction thereof from the date on which the penalty becomes due and payable to the city until the date of payment.

3.28.110 Fraud.

If the tax administrator determines that the failure to make any remittance or payment due under this chapter is due to fraud, a penalty of one hundred (100) percent of the amount of the tax and penalties shall be added thereto in addition to the penalties stated in Section 3.24.100.

3.28.130 Appeal.

Any operator aggrieved by any decision of the tax administrator with respect to the amount of any tax, interest and penalties, if any, may appeal to the city council by filing a notice of appeal with the city clerk within fifteen (15) days of serving of the assessment or determination of tax and penalties, if any, due. The city council shall fix a time and place for hearing the appeal, and the city clerk shall give notice in writing to the operator at his last known address. The findings of the city council shall be final and conclusive and shall be served upon the appellant in the manner prescribed above for service of notice of hearing. Any amount found to be due shall be immediately due and payable upon the service of notice.

3.28.140 Records.

It shall be the duty of every operator liable for the collection and remittance to the city of any tax imposed by this chapter to keep and preserve, in the city, for a period of three years, records in such form as the tax administrator may require under Section 3.28.080 to determine the amount of such tax. The tax administrator shall have the right to inspect such records at all reasonable times and may subpoena the records of any operator who refuses to make them available for examination.

Attachment: Ordinance (3324 : ADOPTION OF ORDINANCE NO. Local Moreno Valley Commercial Cannabis)

3.28.150 Refunds.

A. Whenever the amount of any tax, interest or penalty has been overpaid or paid more than once or has been erroneously collected or received by the city under this chapter, it may be refunded as provided in subsections B and C of this section, provided a claim in writing therefor, stating under penalty of perjury the specific grounds upon which the claim is founded, is filed with the tax administrator within three years of the date of payment. The claims shall be on forms furnished by the tax administrator.

B. An operator may claim a refund or take as credit against taxes and remitted the amount overpaid, paid more than once or erroneously collected or received when it is established in a manner prescribed by the tax administrator that such tax was collected in error.

C. No refund shall be paid under the provisions of this section unless the claimant establishes his right thereto by written records.

3.28.160 Revocation of permit.

Whenever any operator fails to comply with any provision of this chapter relating to commercial cannabis activity tax or any rule or regulation of the tax administrator relating to such tax, as established by Section 3.28.080 of this Chapter, the tax administrator upon hearing, after giving the operator ten days' notice in writing specifying the time and place of hearing and requiring him or her to show cause why his permit or permits should not be revoked, may suspend or revoke any one or more of the permits held by the operator. The tax administrator shall give to the operator written notice of the suspension or revocation of any of his permits. The notices herein required may be served personally or by mail in the manner prescribed for service of notice of a deficiency determination. The tax administrator shall not issue a new permit after the revocation of a permit unless he or she is satisfied that the former holder of the permit will comply with the provisions of this chapter relating to the commercial cannabis activity tax and regulations of the tax administrator.

3.28.180 Recording certificate—lien.

If any amount required to be remitted or paid to the city under this chapter is not remitted or paid when due, the tax administrator may, within three years after the amount is due, file for record in the office of the county of Riverside recorder a certificate specifying the amount of tax, penalties and interest due, the name and address as it appears on the records of the tax administrator of the operator liable for the same and the fact that the tax administrator has complied with all provisions of this chapter in the determination of the amount required to be remitted and paid. From the time of the filing for record, the amount required to be remitted together with penalties and interest constitutes a lien upon all real property in the county owned by the operator or afterwards and before the lien expires acquired by him or her. The lien has

Attachment: Ordinance (3324 : ADOPTION OF ORDINANCE NO. Local Moreno Valley Commercial Cannabis)

the force, effect and priority of a judgment lien and shall continue for ten years from the time of filing of the certificate unless sooner released or otherwise discharged.

3.28.190 Priority and lien of tax.

A. The amounts required to be remitted and/or paid by any operator under this chapter with penalties and interest shall be satisfied first in any of the following cases:

1. Whenever the person is insolvent;

2. Whenever the person makes a voluntary assignment of his assets;

3. Whenever the estate of the person in the hands of executors, administrators or heirs is insufficient to pay all the debts due from the deceased;

4. Whenever the estate and effects of an absconding, concealed or absent person required to pay any amount under this chapter are levied upon by process law. This chapter does not give the city a preference over any recorded lien which attached prior to the date when the amounts required to be paid became a lien.

B. The preference given to the city by this section shall be subordinate to the preferences given to claims for personal services by Sections 1204 and 1206 of the Code of Civil Procedure.

3.28.200 Warrant for collection of tax.

At any time within three years after any operator is delinquent in the remittance or payment of any amount herein required to be remitted or paid or within three years after the last recording of a certificate under Section 3.28.160, the tax administrator may issue a warrant for the enforcement of any liens and for the collection of any amount required to be paid to the city under this chapter. The warrant shall be directed to any sheriff, marshal, or constable and shall have the same effect as a writ of execution. The warrant shall be levied and sale made pursuant to it in the same manner with the same effect as a levy of and a sale pursuant to a writ of execution. The tax administrator may pay or advance to the sheriff, marshal or constable the same fees, commissions and expenses for his services as are provided by law for similar services pursuant to a writ of execution. The tax administrator, and not the court, shall approve the fees for publication in a newspaper.

3.28.210 Seizure and sale.

At any time within three years after any operator is delinquent in the remittance or payment of any amount, the tax administrator may forthwith collect the amount in the following manner. The tax administrator shall seize any property, real or personal, of the operator and sell the property, or a sufficient part of it, at public auction to pay the amount due together with any penalties and interest imposed for the delinquency and

Attachment: Ordinance (3324 : ADOPTION OF ORDINANCE NO. Local Moreno Valley Commercial Cannabis)

any costs incurred on account of the seizure and sale. Any seizure made to commercial cannabis activity taxes due shall be only of property of the operator not exempt from execution under the provisions of the Code of Civil Procedure.

3.28.220 Successor's liability—Withholding by purchaser.

If any operator liable for any amount under this chapter sells out his business or quits the business, his successor or assigns shall withhold sufficient of the purchase price to cover such amount until the former owner produces a receipt from the tax administrator showing that it has been paid or a certificate stating that no amount is due.

3.28.230 Liability of purchaser—Release.

If the purchaser of the business fails to withhold purchase price as required, he or she shall become personally liable for the payment of the amount required to be withheld by him or her to the extent of the purchase price, valued in money. Within sixty (60) days after receiving a written request from the purchaser for a certificate, or within sixty (60) days from the date the former owner's records are made available for audit, whichever period expires the later, but in any event not later than ninety (90) days after receiving the request, the tax administrator shall either issue the certificate or mail notice to the purchaser at his address as it appears on the records of the tax administrator of the amount that must be paid as a condition of issuing the certificate. Failure of the tax administrator to mail the notice will release the purchaser from any further obligation to withhold purchase price as above provided. The time within which the obligation of the successor may be enforced shall start to run at the time the operator sells his business or at the time that the determination against the operator becomes final, whichever event occurs the later.

3.28.240 Responsibility for payment.

Any tax required to be paid under the provisions of this chapter shall be deemed a debt owed by the operator to the city. Any such tax owed by an operator which has not been remitted to the city is a fiduciary obligation of the operator to the city and collectible in the same manner as a debt. Any person owing money to the city under the provisions of this chapter shall be liable to an action brought in the name of the city of Moreno Valley for the recovery of such amount.

3.28.250 Withhold notice.

If any person or operator is delinquent in the remittance or payment of the amount required to be remitted or paid by him or her or in the event a determination has been made against him or her for the remittance of tax and payment of the penalty, the city may, within three years after the tax obligation became due, give notice thereof personally or by registered mail to all persons, including the state or any political subdivision thereof, having in their possession or under their control any credits or other personal property belonging to the taxpayer. After receiving the withholding

Attachment: Ordinance (3324 : ADOPTION OF ORDINANCE NO. Local Moreno Valley Commercial Cannabis)

notice, the person so notified shall make no disposition of the taxpayer's credits, other personal property or debts until the city consents to a transfer or disposition or until sixty (60) days elapse after the receipt of the notice, whichever expires earlier. All persons, upon receipt of the notice, shall advise the city immediately of all such credits, other personal property or debts in their possession, under their control or owing by them. If such notice seeks to prevent the transfer or other disposition of a deposit in a bank or other credits or personal property in the possession or under the control of the bank, to be effective the notice shall be delivered or mailed to the branch or office of such bank at which such deposit is carried or at which such credits or personal property is held. If any person so notified makes transfer or disposition of the property or debts required to be held hereunder during the effective period of the notice to withhold, he or she shall be liable to the city to the extent of the value of the release up to the amount of the indebtedness owed by the taxpayer to the city.

3.28.260 Violations—Misdemeanor.

A. Except for failure of an operator to pay to the tax administrator taxes owed under this chapter which is punishable as a felony pursuant to Section 424 of the Penal Code, every violation of this chapter is a misdemeanor and punishable by a fine not exceeding five hundred dollars ($500.00) or imprisonment in the county jail for not more than six months or by both such fine and imprisonment.

B. If such offense is not otherwise punishable as mentioned in subsection A of this section, any person willfully failing to comply with, or knowingly violating, any of the provisions of this chapter shall be guilty of a misdemeanor.

C. Any operator or other person who willfully fails or refuses to register as required herein, or to furnish any return required to be made, or who fails or refuses to furnish a supplemental return or other data required by the tax administrator, or who renders a false or fraudulent return or claim is guilty of a misdemeanor. Any person required to make, render, sign or verify any report or claim who willfully makes any false or fraudulent report or claim with intent to defeat or evade the determination of any amount due required by this chapter to be made, is guilty of a misdemeanor.

3.28.270 Extension of time.

The tax administrator, for good cause, may extend for not to exceed one month the time for making any return or paying any amount required to be paid under this chapter. The extension may be granted at any time, provided a request therefor is filed with the tax administrator within or prior to the period for which the extension may be granted. Any person to whom an extension is granted shall pay, in addition to the tax, interest at the rate of one percent per month or fraction thereof, from the date on which the tax would have been due without the extension until the date of payment.

Attachment: Ordinance (3324 : ADOPTION OF ORDINANCE NO. Local Moreno Valley Commercial Cannabis)

3.28.280 Divulging of information forbidden.

It is unlawful for any person having an administrative duty under this chapter to make known in any manner whatever the business affairs, operations or information obtained by an investigation of the records of any operator or any other person visited or examined in the discharge of official duty, or the amount or source of income, profits, losses, expenditures or any particular thereof, set forth or disclosed in any return, or to knowingly permit any return or copy thereof or any abstract or particulars thereof to be seen or examined by any person. Successors, receivers, trustees, executors, administrators, assignees and guarantors, if directly interested, may be given information as to the items included in the amounts of any unpaid tax or amounts of tax, penalties and interest required to be collected.

Section 5. SEVERABILITY

That should any provision, section, paragraph, sentence or word of this ordinance be rendered or declared invalid by any final court action in a court of competent jurisdiction or by reason of any preemptive legislation, the remaining provisions, sections, paragraphs, sentences or words of this ordinance as hereby adopted shall remain in full force and effect.

Section 6. REPEAL OF CONFLICTING PROVISIONS

That all the provisions of the Municipal Code as heretofore adopted by the City of Moreno Valley that are in conflict with the provisions of this ordinance are hereby repealed.

Section 7. CERTIFICATION

That the City Clerk shall certify to the passage of this ordinance and shall cause the same to be published according to law.

Section 8. EFFECTIVE DATE

That this ordinance shall take effect ten (10) days following the City Council's certification of the results of the November 6, 2018 election.

PASSED AND ADOPTED by the People of the City of Moreno Valley at a general municipal election held on November 6, 2018.

ATTESTED BY:

_____
Dr. Yxstian A. Gutierrez
Mayor
City of Moreno Valley

_____
Pat Jacquez-Nares
City Clerk

Attachment: Ordinance (3324 : ADOPTION OF ORDINANCE NO. Local Moreno Valley Commercial Cannabis)

Report to City Council

TO:

FROM: Richard J. Sandzimier, Community Development Director

AGENDA DATE: December 11, 2018

TITLE: PROPOSED GENERAL PLAN AMENDMENT FOR PROJECTS 1 AND 2; PROJECT 1, CENTERPOINTE COMMERCE CENTER, INCLUDING A CHANGE OF ZONE AND PLOT PLAN FOR THE DEVELOPMENT OF A 204,022 SQUARE FOOT WAREHOUSE PROJECT ON 8.8 ACRES; AND PROJECT 2, BRODIAEA RESIDENTIAL PROJECT, INCLUDING A CHANGE OF ZONE, AND TENTATIVE TRACT MAP FOR 45 SINGLE-FAMILY RESIDENTIAL LOTS ON APPROXIMATELY 8.85 ACRES

RECOMMENDED ACTION

Recommendations: That the City Council:

1. **CONDUCT** a public hearing for review of Project 1 and defer taking action on Project 1 until after the public hearing for Project 2: and

2. **CONDUCT** a public hearing for review of Project 2, then take action on Project 1 and Project 2; and

3. **ADOPT** Resolution No. 2018-XX; A Resolution of the City Council of the City Moreno Valley for Project 1 **CERTIFYING** the Final Mitigated Negative Declaration (MND, PEN18-0026) prepared for the Centerpointe Commerce Center Project, inclusive of all related applications on file with the Community Development Department, incorporated herein by this reference, whereby the Final MND has been completed in compliance with the California Environmental Quality Act and reflects the City's independent judgement and analysis; and **ADOPTING** the Mitigation Monitoring and Reporting Program prepared for the Centerpointe Commerce Center project; and

4. **ADOPT** Resolution No. 2018-XX; A Resolution of the City Council of the City Moreno Valley for Project 2 **CERTIFYING** the Final Mitigated Negative

Declaration (MND, PEN18-0055) prepared for the Brodiaea Residential Project inclusive of all related applications on file with the Community Development Department, incorporated herein by this reference, whereby the Final MND has been completed in compliance with the California Environmental Quality Act and reflects the City's independent judgement and analysis; and **ADOPTING** the Mitigation Monitoring and Reporting Program prepared for the Brodiaea Residential Project; and

5. **APPROVE** Resolution No. 2018-17, A Resolution of the City of Moreno Valley approving a General Plan Amendment thereby establishing General Plan designations for Project 1 and Project 2, as described in the Resolution and included on the revised General Plan Land Use Maps; and,

6. **INTRODUCE** and conduct the first reading by title only of Ordinance No. 2018-XX approving a Zone Change (PEN18-0025) for Project 1 from Office (O) to Light Industrial (LI), based on the findings in the Ordinance, and the revised Zoning Atlas; and

7. **APPROVE** Resolution No. 2018-XX: A Resolution of the City Council of the City of Moreno Valley approving Plot Plan PEN18-0023 for Project 1 based on the findings contained in this resolution, and subject to the conditions of approval included as Exhibit A; and

8. **SCHEDULE** the introduced Ordinance for the second reading and final action for the next regular City Council meeting.

9. I**NTRODUCE** and conduct the first reading by title only of Ordinance No. 2018-XX approving a Change of Zone (PEN18-0054) for Project 2 from R3 (maximum 3 units/acre) to RS10 (single-family residential, maximum 10 units/acre) based on the findings in the Ordinance, and the revised Zoning Atlas; and

10. **APPROVE** Resolution No. 2018-XX: A Resolution of the City Council of the City of Moreno Valley approving a Tentative Tract Map (PEN18-0092) for Project 2 based on the findings contained in this resolution, and subject to the conditions of approval included as Exhibit A; and

11. **SCHEDULE** the introduced Ordinance for the second reading and final action for the next regular City Council meeting.

SUMMARY

This report recommends the City Council convene and conduct Public Hearings to consider recommendations regarding Project 1, Centerpointe Commerce Center, a 204,022 square foot warehouse project located at the northeast corner of Brodiaea Avenue and Frederick Street; and Project 2, the Brodiaea Residential project, a 45 lot residential tract map project located at the northwest corner of Brodiaea Avenue and Quincy Street. The recommended actions for Project 1 include approval of a General

Plan Amendment, Change of Zone, and a Plot Plan; the recommended actions for Project 2 include approval of a General Plan Amendment, Change of Zone, and Tentative Tract map.

As provided for in the State Government Code, a mandatory element of the General Plan may be amended no more than four times during one calendar year. However, each amendment may include more than one change to a General Plan element. The recommended action is for City Council to ultimately approve one General Plan Amendment to the Land Use Element covering the land use designation changes for both Project 1 and Project 2. This unified change will be the third amendment to the Land Use Element of the General Plan for the present calendar year.

On October 11, 2018, the Planning Commission held a public hearing to consider the Centerpointe Commerce Center, Project 1, and recommended that the City Council approve the project in its entirety.

On October 25, 2018, the Planning Commission held a public hearing to consider the Brodiaea Residential project, Project 2, and recommended that the City Council approve the project in its entirety.

DISCUSSION

PROJECT 1, CENTERPOINTE COMMERCE CENTER

Project 1 Summary

The project, Centerpointe Commerce Center, includes a General Plan Amendment (PEN18-0024), a Change of Zone (PEN18-0025) and a Plot Plan (PEN18-0023) to develop an 8.8-acre property located at the northeast corner of Brodiaea Avenue and Frederick Street intersection with a light industrial/warehouse building containing 194,022 square feet of warehouse/light industrial building and 10,000 square feet of associated office and mezzanine space (204,022 square feet total). A General Plan Amendment is required for the proposed project because the land use designation of the property is currently “Office” which does not allow warehouse/light industrial uses. Similarly, a Change of Zone is required because the property is currently zoned “Office” which is not intended for the proposed uses. The applicant, Newcastle Partners Inc. is requesting the General Plan Amendment and Change of Zone as their interest is to develop a single warehouse/light industrial commerce center in light of current market demand for these types of facilities.

Advisory Board/ Commission Recommendation

The Planning Commission, at its October 11, 2018 meeting, held a public hearing on the project applications for a General Plan Amendment, Zone Change, and Plot Plan, and recommended that the City Council certify the Final Mitigated Negative Declaration, adopt a Mitigation Monitoring and Reporting Program, approve the General Plan

Amendment, approve the Change of Zone and approve the Plot Plan. During the public testimony on the project, one speaker expressed support for the project; there were no other public comments on the project. The Planning Commission members generally expressed that the proposed project including General Plan Amendment and Change of Zone was appropriate at this location.

PEN18-0024 General Plan Amendment

The proposed General Plan Amendment will change the General Plan land use designation for the entire 8.8-acre property from Office to Business Park. The proposed General Plan land use designation of Business Park will provide development opportunity for manufacturing, research and development, warehousing and distribution, as well as office and support commercial activities. This land use designation would be consistent with General Plan Objective 2.5, which aims to promote a mix of industrial uses that provides a sound and diversified economic base and employment opportunities for the citizens of Moreno Valley in locations that have good access to the regional transportation system, accommodate the personal needs of workers and business visitors, and which meets the service needs of local businesses.

The project site is surrounded by other development areas designated as either "Business Park" or "Commercial" in the General Plan. Existing warehouse buildings are located to the east and southeast of the project site. The Riverside County Waste Management offices, located to the immediate south, are designated as Business Park. The vacant parcel to the immediate north of the project site is designated as Commercial in the General Plan. The City Hall complex and adjacent City owned vacant land (approximately 30 acres) on the west side of Frederick Street, and the proposed project site are currently designated as Office.

PEN18-0025 Change of Zone

The proposed Change of Zone will change the zoning designation of the 8.8-acre site from Office (O) to Light Industrial (LI). The existing zoning, Office (O) allows for the establishment of park-like, office-based working environments for general business, corporate, professional and administrative offices.

The proposed Change of Zone to the Light Industrial (LI) zoning district provides for light manufacturing, light industrial, research and development, warehousing and distribution and multi-tenant industrial uses, as well as certain supporting administrative and professional offices, and commercial uses on a limited basis. This district is intended as an area for light industrial uses (including buildings over 50,000 square feet) that can meet high performance standards. The proposed LI zoning will allow for the development of the proposed warehouse/light industrial commerce center desired by the applicant.

The project site is surrounded by developed Light Industrial zoned properties to the east and south, vacant properties zoned commercial to the immediate north, and City Hall offices on property zoned for Office to the west, as well as properties southwest of the

project site developed and zoned with Business Park uses. Although the requested Change of Zone would replace the 8.8 acres of "Office" zoned property with "Light Industrial" zoning, opportunity for office land uses would remain available on the surrounding properties zoned for Business Park, Light Industrial, and Community Commercial.

PEN18-0023 Plot Plan

The proposed Plot Plan is for a 204,022 square foot warehouse building including 10,000 square feet of office and mezzanine space. Shipping and receiving areas will be located on the east side of the building with 23 loading docks and 27 truck trailer parking spaces. The office space, including the mezzanine, will be located on the northwest corner at the main entrance facing Frederick Street. Employee and visitor parking will be provided along the Frederick Street frontage on the western side of the building.

Site

The project site is located on the northeast corner of Brodiaea Avenue and Frederick Street on a relatively flat, rectangular-shaped site. The proposed grading will not create any manufactured slopes. The site is vacant, undeveloped and has no notable topographic features.

Access/Parking

Vehicular access to the project site is provided by three driveways – two driveways on Frederick Street and one driveway on Brodiaea Avenue. The northernmost driveway on Frederick Street would be used for truck and passenger vehicle traffic access and would be restricted to right turn movements when entering/exiting the site. The southernmost driveway onto Frederick Street would be the de facto eastern leg of the Frederick Street Street/Calle San Juan intersection and would be used by passenger vehicles accessing the site. This driveway would be controlled by an existing traffic signal and would have no restrictions for vehicle turning movements. The proposed driveway onto Brodiaea Avenue would be used for truck and passenger vehicle traffic access and would have no restrictions for vehicle turning movements. All project driveways that would be utilized by trucks would feature a sign directing exiting truck drivers to City of Moreno Valley truck routes. The City of Moreno Valley designates Frederick Street as a truck route.

The auto parking areas will be designed consistent with City parking standards including landscape planters and lighting. The project provides 109 automobile parking spaces and 27 truck trailer parking spaces. Designated spaces for low emitting fuel efficient vehicles and van pool spaces will be provided per the California Building Standards. Bicycle parking will also be provided per the City's Municipal Code requirements.

Design/Landscaping

The architectural design of the building consists of painted concrete tilt-up panels constructed to a maximum of approximately 45 feet with low-reflective, blue glaze glass façade treatment. Due to the proximity of the project site to the March Air Reserve Base, the project was reviewed by the Riverside County Airport Land Use Commission (ALUC). The ALUC conditionally approved the project and limited the building height to 41 feet. Prior to the Planning Commission meeting, the applicant revised the proposed plans increasing the maximum building height to 45 feet. The Planning Commission recommended approval of the Project with the increased height subject to the approval of the Airport Land Use Commission. At the request of the applicant, the ALUC reconsidered the project with an increase in height to 45 feet. On November 9, 2018, the ALUC approved a maximum 45-foot building height, subject to conditions which have been incorporated into the project conditions of approval.

The project has also been reviewed with regard to its articulated and decorative building elements, including shades of white, tan, gray and blue. The proposed building elements and colors have been found to be of high quality and compatible with and complementary to the surrounding architecture.

Screen walls and fences include 6 to 14-foot high decorative concrete tilt-up panels matching the building along the northern and eastern property line, a 6-foot tall black steel fence to enclose the portions of the truck court/loading area that are not visible from a public street, and a 3.5-foot tall open-rail fence with black metal posts installed along the perimeter of the bio-retention basin along Brodiaea Avenue.

Environmental

An Initial Study was prepared for the project after all discretionary applications were deemed complete. The Initial Study indicated a Mitigated Negative Declaration (MND) would be the appropriate environmental document for the project. The MND incorporates mitigation measures for Biological Resources, Cultural Resources and Tribal Cultural Resources which result in a less than significant impact on these subject areas. A Notice of Availability for the IS/MND was prepared with the public comment period beginning on September 18, 2018 and ending on October 8, 2018.

T&B Planning prepared the draft environmental documents, and submitted the documents to the City for review to ensure that the documents reflect the independent judgement and analysis of the City as the California Environmental Quality Act (CEQA) Lead Agency.

NOTIFICATION

Public notice was sent to all property owners of record within 300’ of the project on November 29th. The public hearing notice for this project was posted on the project site and published in the local newspaper on November 30th.

PROJECT 2, BRODIAEA RESIDENTIAL PROJECT

Project 2 Summary

The applicant, FH II, LLC is requesting approval of a General Plan Amendment (PEN18-0053) to change the Land Use Designation from Residential 3 (maximum 3 units/acre) to Residential 10 (maximum 10 units/acre), a Change of Zone (PEN18-0054) to change the Zoning Designation from R3 (maximum 3 units/acre) to RS10 (single-family maximum 10 units/acre), and a Tentative Tract Map (PEN18-0092) to subdivide the subject property, located at the northwest corner of Brodiaea Avenue and Quincy Street, into 45 single-family residential lots on approximately 8.85 acres.

A General Plan Amendment and a Change of Zone are required for the proposed project because the current General Plan Land Use Designation and the Zoning Designation of the property establish the maximum density of three single-family units per acre while the applicant desires to develop the site with 7.75 units per acre. The applicant is requesting, and both the staff recommendation and Planning Commission recommendation are in support of the General Plan Amendment and Change of Zone to increase the allowable density on the site in order to build a residential product type which will be more in-line with current market demand and will serve more diverse socioeconomic groups. Associated improvements to the property include improvements to the Quincy Channel, streets and utility infrastructure.

Advisory Board/Commission Recommendation

The Planning Commission, at its October 25, 2018 meeting, held a public hearing on the project applications. During their deliberations, the Planning Commissioners discussed the type and extent of the proposed amenities, which include improvements to the trail along the channel, including benches, exercise stations and landscaping treatments, and whether these amenities substantially accomplish the intent of the RS10 zoning district and thereby justify or warrant consideration of a General Plan Amendment and Change of Zone. Within the RS-10 zone, the project would also be required to provide at least two of the following amenities throughout the project: front yard porches, automatic garage door openers, or electronic security systems.

There was public testimony on the project, all of which expressed support for the project; there were no public comments in opposition to the project. The Planning Commission on a split vote, 4 in favor and 2 opposed, and one Commissioner absent, recommended that the City Council certify the Final Mitigated Negative Declaration, adopt a Mitigation Monitoring and Reporting Program, approve the General Plan Amendment, approve the Change of Zone and approve the Plot Plan.

PEN18-0053 General Plan Amendment

The proposed General Plan Amendment will change the General Plan land use designation for the 8.85-acre property, located at the northwest corner of Brodiaea Avenue and Quincy Street, from Residential 3 (maximum 3 units/acre) to Residential 10 (maximum 10 units/acre). The proposed Tentative Tract Map would result in a density of 5.09 units per gross acre and 7.75 units per net acre. The General Plan Amendment

would allow the subject property to be subdivided with the proposed density.

The primary purpose of areas designated in the General Plan Residential 3 designation (current designation) is to provide a transition between rural and urban density development areas and to provide for a suburban lifestyle on residential lots larger than those commonly found in suburban subdivisions. The primary purpose of areas designated in the General Plan as Residential 10 (proposed designation) is to provide for a variety of residential products and to encourage innovation in housing types.

Residential areas east of Moreno Beach Drive and north of Brodiaea Avenue are generally designated for, or developed with lower densities suitable for rural and suburban lifestyles consistent with the R3 designation. Existing and planned residential areas south of the project site including areas immediately south of Brodiaea Avenue are designated for, or developed with, higher densities which incorporate amenities and common open space and recreational areas and higher density single-family residential developments in RS10 and R5 zoning districts.

The proposed 7.75 units per acre density will address Goal 2.4 of the General Plan which calls for a supply of housing in sufficient numbers suitable to meet the diverse needs of future residents and to support healthy economic development without creating an oversupply of any particular type of housing. Furthermore, the proposed project will provide a gradual transition from the higher density areas to the south to lower density areas to the north.

PEN18-0054 Change of Zone

The proposed Change of Zone will change the zoning designation of the 8.85-acre site from R3 to RS10. The primary purpose of the existing R3 district is to provide a transition between rural and urban density development areas, and to provide for a suburban lifestyle on residential lots larger than those commonly found in suburban subdivisions. The district is intended as an area for development of large lot, single-family residences at a maximum allowable density of three dwelling units per net acre. The primary purpose of the proposed RS10 district is to provide for residential developments on small single-family lots with amenities not generally found in suburban subdivisions. The district is intended for subdivisions at a maximum allowable density of ten (10) dwelling units per net acre.

The RS10 zoning designation will allow for the development of the proposed residential subdivision as desired by the applicant, consistent with the primary purpose of the RS10 district. The proposed subdivision provides range of lot sizes, and includes trail amenities along the Quincy Channel. The project will improve the Quincy Channel, and as an added amenity will provide recreational improvements to the trail along the channel, including benches, exercise stations and landscaping treatments (Lot B). These amenities will be maintained by a Homeowners Association (HOA) which will be formed for the proposed project. In addition, the Municipal Code specifically requires that small lot development within the RS10 development provide at least two of the following amenities throughout the project: front yard porches, automatic garage door

openers, or electronic security systems.

PEN18-0092 Tentative Tract Map 37544

Tentative Tract Map 37544 proposes to subdivide the 8.85-acre site into 45 residential lots and four (4) lettered lots for water quality/detention and open space/recreational purposes. The residential lot sizes range from 4,843 square feet to 11,939 square feet. While the average lot size is 5,624 square feet, the four (4) Residential lots (lots 42-45) facing Brodiaea Avenue, are larger in size (8,024 square feet to 8,436 square feet) to be more compatible with the existing homes south of Brodiaea. The Tentative Tract Map also includes improvements to the Quincy Channel on the eastern boundary of the Project. The ultimate design of these improvements will be determined in consultation with other regulatory and resource agencies. A linear park and walking trail will run the entire length of the project along Quincy Channel along with recreational amenities.

Site

The Project site is located on the northwest corner of Brodiaea Avenue and Quincy Street, easterly of Moreno Beach Drive on a gently sloping, rectangular-shaped site. The proposed grading will be largely balanced on site with minimal amount of soil import, and will not create any manufactured slopes. The site is vacant, undeveloped and has no notable topographic features.

Surrounding Area

The surrounding area is developed with one and two story single-family homes to the south across Brodiaea (zoned RS10), vacant land to the north (zoned R3), vacant land and a single residence with an associated industrial yard farther to the west (zoned R3), the Quincy Channel to the east, and vacant land and rural residences farther to the east (zoned R3). The land east and west of the existing RS10 residences is zoned R5. A new residential subdivision is under construction southeast of the site (zoned R5).

Access/Parking

Access to the project site would be from Quincy Street which will be improved to approximately 650 feet north of Brodiaea Avenue as part of project construction. The project will have a second point of access (Street A) off Brodiaea, west of Quincy Street. Both of these access streets will connect to internal streets (Street B and Street C) which will provide access to the residential lots.

Design/Landscaping

The applicant has not submitted a plot plan for the development of the architectural design of the building at this time. The design of the residential units, including massing, scale and architectural features, as well as the landscape design will be

subject to the approval of a Plot Plan by the City.

ENVIRONMENTAL

An Initial Study was prepared for Project 2 after all discretionary applications were deemed complete. The Initial Study indicated a Mitigated Negative Declaration (MND) would be the appropriate environmental document for the project. The MND incorporates mitigation measures for Biological Resources, Cultural Resources and Tribal Cultural Resources which result in a less than significant impact on these subject areas. Staff prepared a Notice of Availability for the IS/MND which indicated a public comment period beginning on September 25, 2018 and ending on October 24, 2018. Kent Norton, Environmental Consultant prepared the draft environmental documents, and submitted the documents to the City for review to ensure that the documents reflect the independent judgement and analysis of the City as the California Environmental Quality Act (CEQA) Lead Agency.

NOTIFICATION

Public notice was sent to all property owners of record within 300' of the project on November 29th. The public hearing notice for this project was posted on the project site and published in the local newspaper on November 30th.

ALTERNATIVES

1. Conduct public hearings on Project 1 and Project 2, and take actions to certify the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program for Projects 1 and 2, and approve the General Plan Amendment for Projects 1 and 2; and for Project 1, (Centerpointe Commerce Center), approve the Change of Zone, and Plot Plan; and for Project 2, (Brodiaea Residential project), approve the Change of Zone and Tentative Tract map, consistent with the recommendations of the Planning Commission. Staff recommends this alternative.

2. Conduct public hearings on Project 1 and Project 2, and do not approve the applications for Project 2, but approve all Project 1 applications including the General Plan Amendment for Project 1 only. This would result in the approval of the Centerpointe Commerce Center project only. Staff does not recommend this alternative.

3. Conduct public hearings on Project 1 and Project 2, and do not approve the applications for Project 1, but approve all Project 2 applications including the General Plan Amendment for Project 2 only. This would result in approving the Brodiaea Residential project only. Staff does not recommend this alternative.

4. Conduct public hearings on Project 1 and Project 2, and do not approve the applications for Project 1 or Project 2. For Project 1, this action would retain the

existing Office General Plan designation, and would not certify the Mitigated Negative Declaration, or approve any of the implementing applications for Project 1. For Project 2, this action would retain the existing R3 General Plan designation, and would not certify the Mitigated Negative Declaration, or approve any of the implementing applications for Project 2. Staff does not recommend this alternative.

PREPARATION OF STAFF REPORT

Prepared By:
Seda Yaghoubian
Project Planner

Department Head Approval:
Richard J. Sandzimier
Community Development Director

Concurred By:
Patty Nevins
Planning Official

CITY COUNCIL GOALS

Positive Environment. Create a positive environment for the development of Moreno Valley's future.

Community Image, Neighborhood Pride and Cleanliness. Promote a sense of community pride and foster an excellent image about our City by developing and executing programs which will result in quality development, enhanced neighborhood preservation efforts, including home rehabilitation and neighborhood restoration.

CITY COUNCIL STRATEGIC PRIORITIES

1. **Economic Development**
2. **Public Safety**
3. **Library**
4. **Infrastructure**
5. **Beautification, Community Engagement, and Quality of Life**
6. **Youth Programs**

ATTACHMENTS

1. General Plan Amendment Reso 2018-XX Projects 1 and 2
2. Project 1_Exhibit A to Resolution No 2018-XX GPA Map
3. Project 2_Exhibit B to Resolution No 2018-XX GPA Map
4. Project 1_Resolution No 2018-XX MND
5. Project 1_Exhibit A to Resolution No 2018-XXIS-MND
6. Project 1_Exhibit B MMRP to Resolution No 2018-XX MND

7. Project 1_Ordinance No 2018-XX CZ
8. Project 1_Exhibit A to Ordinance No 2018-XX CZ
9. Project 1_Resolution No 2018-XX Plot Plan
10. Project 1_Exhibit A Plot Plan Conditions of Approval
11. Project 1_Air Quality Impact Analysis
12. Project 1_Mobile Source Health Risk Assessment 2
13. Project 1_General Biological Assessment
14. Project 1_Focused Burrowing Owl Survey Report
15. Project 1_Cultural Resources Report
16. Project 1_Paleontological Resources Assessment
17. Project 1_Geotechnical Investigation
18. Project 1_Greenhouse Gas Emissions Report
19. Project 1_Phase I Environmental Site Assessment
20. Project 1_Phase II Environmental Site Assessment
21. Project 1_Hydrology Report
22. Project 1_Water Quality Management Plan
23. Project 1_Noise Impact Analysis
24. Project 1_Traffic Impact Analysis
25. Project 1_TIA Appendices
26. Project 1_Site Plan
27. Project 1_Color Elevations
28. Project 1_Preliminary Grading Plan
29. Project 1_Preliminary Landscape Plan
30. Project 1_Public Hearing Notice
31. Project 1_Radius Map for Noticing
32. Project 2_Resolution No 2018-XX Initial Study & Mitigated Negative Declaration
33. Project 2_Exhibit A Initial Study Frontier 9-18-18
34. Project 2_Exhibit B MMRP Frontier 9-18-18 final
35. Project 2_Ordinance No 2018-XX Change of Zone
36. Project 2_Exhibit A to Ordinance No 2018-XX CZ
37. Project 2_Resolution No 2018-XX Tentative Tract Map 37544
38. Project 2_Exhibit A Conditions of Approval TTM 37544
39. Project 2_Air Quality GHG Memo (9-12-18)
40. Project 2_Bio Report March 2018
41. Project 2_Burrowing Owl RCAA March 2018
42. Project 2_Cultural Report Final 9-6-18
43. Project 2_Geotech + Soils Report Geotek 2-12-18
44. Project 2_Phase 1 ESA Geotek 3-3-14
45. Project 2_Prelim Hydro Report (9-12-18)

46. Project 2_Hydro Maps+ Calcs MBI ND H-2
47. Project 2_Noise Tables UC April 2018
48. Project 2_Trip Gen Memo Letter
49. Project 2_Prelim WQMP (9-25-18)
50. Project 2_Tentative Tract Map 37544
51. Project 2_Public Hearing Notice
52. Project 2_Radius Map for Noticing

APPROVALS

Budget Officer Approval	✓ Approved	11/29/18 3:05 PM
City Attorney Approval	✓ Approved	12/06/18 7:50 AM
City Manager Approval	✓ Approved	12/06/18 11:15 AM

RESOLUTION NO. YYYY-____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, APPROVING A GENERAL PLAN AMENDMENT PEN18-0024 TO CHANGE THE LAND USE DESIGNATION FROM OFFICE (O) TO BUSINESS PARK (BP) ON APPROXIMATELY 8.8 ACRES FOR ASSESSOR'S PARCEL NUMBER 297-170-029; AND APPROVING GENERAL PLAN AMENDMENT PEN18-0053 TO CHANGE THE LAND USE DESIGNATION FROM RESIDENTIAL 3 TO RESIDENTIAL 10 FOR ASSESSOR'S PARCEL NUMBER 478-080-014, THEREBY ESTABLISHING GENERAL PLAN LAND USE MAP DESIGNATIONS FOR CERTAIN PROPERTIES AS DESCRIBED IN THE RESOLUTION, AND THE REVISED GENERAL PLAN MAPS AS ATTACHED TO THE RESOLUTIONS AS EXHIBITS A AND B

WHEREAS, the applicant, Newcastle Partners, Inc., has filed an application for PEN18-0024 requesting an amendment to the City's General Plan for certain property to change the land use designation from Office to Business Park for Assessor's Parcel Number 297-170-029, as shown in attached Exhibit A. This General Plan Amendment is being processed concurrently with Zone Change (PEN18-0025), and Plot Plan (PEN18-0023). The site is located at the northeast corner of Frederick Street and Brodiaea Avenue; and

WHEREAS, the applicant, FH II, LLC, has filed an application PEN18-0053 requesting an amendment to the City's General Plan Land Use designation for certain property to change the land use designation from Residential 3 to Residential 10 for Assessor's Parcel Number 478-080-014 as shown in attached Exhibit B. This General Plan Amendment is being processed concurrently with a Zone Change, PEN18-0054, and a Tentative Tract Map 37544, PEN18-0092. The project site is located at the northwest corner of Brodiaea Avenue and Quincy Street, easterly of Moreno Beach Drive; and

WHEREAS, the applications have been evaluated in accordance with established City of Moreno Valley procedures, and with consideration of General Plan and other applicable regulations; and

WHEREAS, an environmental assessment, including an Initial Study, has been prepared to address the environmental impacts associated with the application PEN18-0024 as described above and a Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program has been adopted pursuant to the California Environmental Quality Act (CEQA) as there is no evidence that the proposed General

Attachment: General Plan Amendment Reso 2018-XX Projects 1 and 2 [Revision 3] (3321 : Centerpointe Commerce Center, and Brodiaea

Plan Amendment will have a significant impact on the environment with the incorporation of mitigation measures, and

WHEREAS, an environmental assessment, including an Initial Study, has been prepared to address the environmental impacts associated with the application PEN18-0053 as described above and a Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program has been adopted pursuant to the California Environmental Quality Act (CEQA) as there is no evidence that the proposed General Plan Amendment will have a significant impact on the environment with the incorporation of mitigation measures, and

WHEREAS on October 11, 2018, the Planning Commission of the City of Moreno Valley held a public hearing to consider General Plan Amendment PEN18-0024. At said meeting, the Planning Commission recommended approval of General Plan Amendment to the City Council; and

WHEREAS, on October 25, 2018, the Planning Commission of the City of Moreno Valley held a public hearing to consider General Plan Amendment PEN18-0053. At said meeting, the Planning Commission recommended approval of General Plan Amendment to the City Council; and

WHEREAS, all legal prerequisites to the adoption of this Resolution have occurred; and

WHEREAS, pursuant to Government Code Section 66020(d)(1), NOTICE IS HEREBY GIVEN that this project is subject to certain fees, dedications, reservations and other exactions as provided herein.

WHEREAS, all of the facts set forth in the Resolution are true and correct.

Section 1

NOW, THEREFORE, BE IT RESOLVED, by the City Council of the City of Moreno Valley as follows with respect to PEN18-0024:

A. This City Council hereby finds that all of the facts set forth above in this Resolution are true and correct.

B. Based upon substantial evidence presented to this City Council during the meeting on December 11, 2018 including written and oral staff reports: and the record from the public hearing, this City Council hereby specifically finds as follows:

1. Conformance with General Plan Policies – The proposed General Plan Amendment is consistent with the goals, objectives, policies and

Attachment: General Plan Amendment Reso 2018-XX Projects 1 and 2 [Revision 3] (3321 : Centerpointe Commerce Center, and Brodiaea

programs of the General Plan.

FACTS: The Centerpointe Commerce Center project includes a General Plan Amendment, Change of Zone, and Plot Plan. The General Plan Amendment is proposed to allow for the development of a 204,022 square-foot warehouse including 10,000 square feet of associated office and mezzanine space on an 8.8-acre site. The General Plan encourages a mix of industrial uses to provide a diverse economic base and ample employment opportunities. The existing General Plan Land Use Designation for the project site is Office which provides for administrative, professional, legal, medical and financial offices. The proposed Project includes a request for a General Plan Amendment to change the General Plan Land Use Designation of the subject site to Business Park which provides for manufacturing, research and development, warehousing and distribution, as well as office and support commercial activities.

The intent of the General Plan, as expressed in Objective 2.5 of Community Development Element, is to promote a mix of industrial uses which provide a sound and diversified economic base and ample employment opportunities for the citizens of Moreno Valley with the establishment of industrial activities that have good access to the regional transportation system, accommodate the personal needs of workers and business visitors; and which meets the service needs of local businesses.

The proposed Business Park land use designation is consistent with the goals, objectives, policies and programs of the Community Development Element of the General Plan.

2. Health, Safety and Welfare – The proposed General Plan Amendment will not be detrimental to the public health, safety and welfare.

FACTS: The proposed General Plan Amendment is a legislative action and will not result in any direct physical impacts; therefore, the action itself could not be detrimental to the public health, safety, or welfare.

The proposed General Plan Amendment will change the project site's existing land use designation from Office to Business Park which will allow the construction and operation of a proposed 204,000 square-foot warehouse facility including 10,000 square feet of associated office and mezzanine space. This proposed designation and use would be compatible with the surrounding area which primarily consists of similar light industrial uses, as well as professional office and commercial developments. Therefore, the project will not have adverse effects on residential neighborhoods or other types of sensitive land uses.

Attachment: General Plan Amendment Reso 2018-XX Projects 1 and 2 [Revision 3] (3321 : Centerpointe Commerce Center, and Brodiaea

The implementation of the proposed General Plan Amendment for the 8.8-acre site, as designed and conditioned will not adversely affect the public health, safety and welfare, and is consistent with General Plan Objectives 6.1 and 6.2 to minimize the potential for loss of life and protect residents, workers and visitors from physical injury and property damage due to seismic ground shaking and flooding.

An Initial Study was prepared which assessed the potential of the proposed General Plan Amendment, to impact the environment. The Initial Study provided the documentation of the factual basis for the finding in the Mitigated Negative Declaration that the proposed General Plan Amendment will not have a significant effect on the environment. The City as the lead Agency has prepared a Mitigated Negative Declaration (MND) pursuant to sections 15070 et seq. of the State CEQA Guidelines. The preparation and review of the Initial Study / Mitigated Negative Declaration reflects the independent judgement of the City.

Section 2

NOW, THEREFORE, BE IT RESOLVED, by the City Council of the City of Moreno Valley as follows with respect to PEN18-0053:

A. This City Council hereby finds that all of the facts set forth above in this Resolution are true and correct.

B. Based upon substantial evidence presented to this City Council during the meeting on December 11, 2018 including written and oral staff reports: and the record from the public hearing, this City Council hereby specifically finds as follows:

1. Conformance with General Plan Policies – The proposed General Plan Amendment is consistent with the goals, objectives, policies and programs of the General Plan.

FACTS: The Brodiaea Residential project includes a General Plan Amendment, a Zone Change and a Tentative Tract Map. The General Plan Amendment is proposed to allow for the subdivision of an 8.85-acre property into 45 residential lots and 4 lettered lots for water quality and open space purposes. The General Plan encourages an organized, well-designed, high quality, and functional balance of urban and rural land uses that will meet the needs of a diverse population, and promotes the optimum degree of health, safety, well-being, and beauty for all areas of the community, while maintaining a sound economic base (Goal 2.2). The General Plan further calls for a supply of housing in sufficient numbers

Attachment: General Plan Amendment Reso 2018-XX Projects 1 and 2 [Revision 3] (3321 : Centerpointe Commerce Center, and Brodiaea

suitable to meet the diverse needs of future residents and to support healthy economic development without creating an oversupply of any particular type of housing. To achieve these goals, the General Plan establishes Objective 2.2 which aims to provide a wide range of residential opportunities and dwelling types to meet the demands of present and future residents of all socioeconomic groups. This General Plan Amendment is consistent with these goals and objectives by providing a wider range of housing types and opportunities for diverse socioeconomic groups.

The Project is providing infrastructure improvements including streets, and a linear park and meandering trail with recreational amenities along Quincy Channel. The proposed Residential 10 (maximum 10 units per acre) designation is consistent with the goals, objectives, policies and programs of the Community Development Element of the General Plan.

2. Health, Safety and Welfare – The proposed General Plan Amendment will not be detrimental to the public health, safety and welfare.

FACTS: The proposed General Plan Amendment will change the project site's existing land use designation from Residential 3 to Residential 10. While the surrounding area to the north, west, and east is developed with or designated for lower density residential, the area to the south is designated and developed with higher density residential developments ranging from Residential 5 to Residential 15. This proposed designation would be compatible with the surrounding area which primarily consists of single-family suburban residential communities, open space areas, or undeveloped land. Therefore, the project will not have adverse effects on residential neighborhoods or other types of sensitive land uses.

The implementation of the proposed General Plan Amendment for the 8.85-acre site, as designed and conditioned will not adversely affect the public health, safety and welfare, and is consistent with the Goals and Objectives of the General Plan Safety Element including Objectives 6.1 and 6.2, which aim to minimize the potential for loss of life and protect residents, workers and visitors from physical injury and property damage due to seismic ground shaking and flooding.

The analysis presented in the Initial Study/Mitigated Negative Declaration prepared for the Project (including the General Plan Amendment), pursuant to California Environmental Quality Act (CEQA), Public Resources Code 21000, indicates that the Project will not have a significant environmental impact as designed and mitigated.

Attachment: General Plan Amendment Reso 2018-XX Projects 1 and 2 [Revision 3] (3321 : Centerpointe Commerce Center, and Brodiaea

C. FEES, DEDICATIONS, RESERVATIONS, AND OTHER EXACTIONS

1. FEES

Impact, mitigation and other fees are due and payable under currently applicable ordinances and resolutions. These fees may include but are not limited to: Development Impact Fee, Transportation Uniform Mitigation Fee (TUMF), Multi-species Habitat Conservation Plan (MSHCP) Mitigation Fee, Stephens Kangaroo Rat Habitat Conservation fee, Underground Utilities in lieu Fee, Area Drainage Plan Fee, Bridge and Thoroughfare Mitigation Fee (Future) and Traffic Signal Mitigation Fee. The final amount of fees payable is dependent upon information provided by the applicant and will be determined at the time the fees become due and payable.

Unless otherwise provided for by this resolution, all impact fees shall be calculated and collected at the time and in the manner provided in Chapter 3.32 of the City of Moreno Valley Municipal Code or as so provided in the applicable ordinances and resolutions. The City expressly reserves the right to amend the fees and the fee calculations consistent with applicable law.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

1. APPROVE PEN18-0024 and PEN18-0053, thereby establishing General Plan Land Use Map designations for Project 1 and Project 2, for certain properties as described in the Resolution, and included on the revised General Plan maps as attached to the Resolution as Exhibits A and B; and

APPROVED AND ADOPTED this 11th day of December 2018.

_____
Mayor of the City of Moreno Valley

ATTEST:

Attachment: General Plan Amendment Reso 2018-XX Projects 1 and 2 [Revision 3] (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: General Plan Amendment Reso 2018-XX Projects 1 and 2 [Revision 3] (3321 : Centerpointe Commerce Center, and Brodiaea

_____
City Clerk

APPROVED AS TO FORM:

_____
City Attorney

RESOLUTION JURAT

STATE OF CALIFORNIA)

COUNTY OF RIVERSIDE) ss.

CITY OF MORENO VALLEY)

I, Patricia Jacquez-Nares, City Clerk of the City of Moreno Valley, California, do hereby certify that Resolution No. YYYY-___ was duly and regularly adopted by the City Council of the City of Moreno Valley at a special meeting thereof held on the 11th day of December, 2018 by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

(Council Members, Mayor Pro Tem and Mayor)

_____

CITY CLERK

(SEAL)

Attachment: General Plan Amendment Reso 2018-XX Projects 1 and 2 [Revision 3] (3321 : Centerpointe Commerce Center, and Brodiaea

GENERAL PLAN AMENDMENT
Application No. PEN18-0024
APN: 297-170-029
Resolution No.

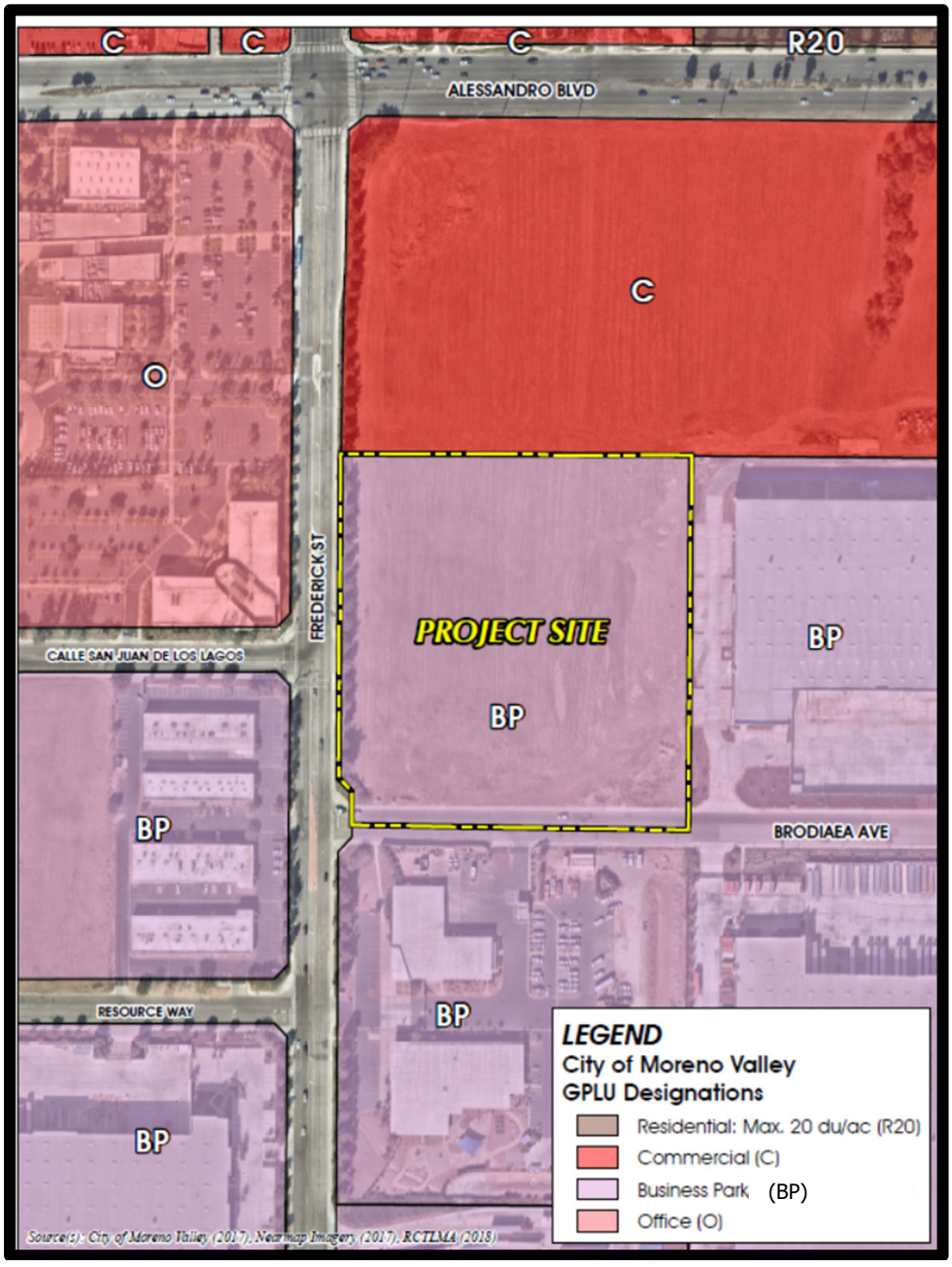
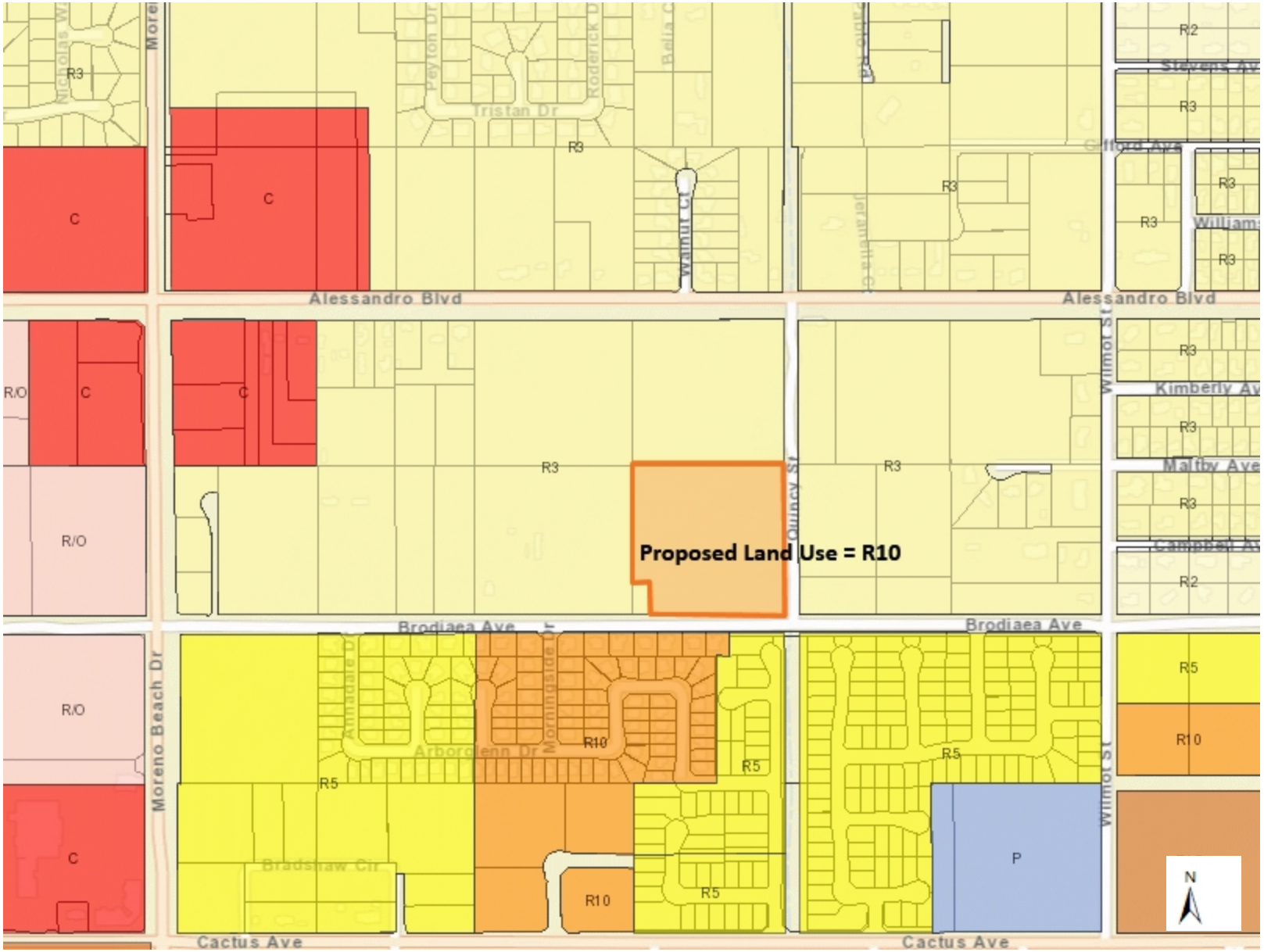
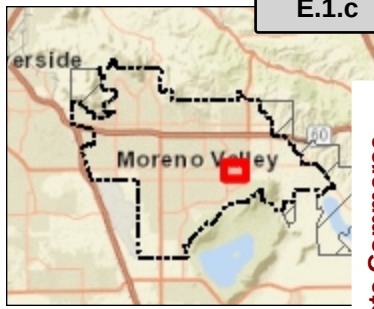


EXHIBIT A

Attachment: Project 1_Exhibit A to Resolution No 2018-XX GPA Map (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

General Plan Amendment
PEN18-0053





Legend

Land Use

- Residential: Max. 1 du/ac
- Mixed Use
- Residential: Max. 2 du/ac
- Rural Residential: Max 2.5 du/ac
- Residential: Max. 3 du/ac
- Residential: Max. 5 du/ac
- Residential: Max. 5 or 15 du/ac
- Residential: Max. 10 du/ac
- Residential: Max.15 du/ac
- Residential: Max. 20 du/ac
- Residential: Max. 30 du/ac
- Hillside Residential
- Planned Residential
- Residential/Office
- Office
- Commercial
- Business Park/Light Industrial
- Open Space
- Public Facilities
- Floodplain

Parcels

Notes

Current Land Use = R3
Proposed Land Use = R10
APN: 478-080-014

1,261.9 0 630.96 1,261.9 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere

Print Date: 10/10/2018

DISCLAIMER: The information shown on this map was compiled from the City of Moreno Valley GIS and Riverside County GIS. The land base and facility information on this map is for display purposes only and should not be relied upon without independent verification as to its accuracy. Riverside County and City of Moreno Valley will not be held responsible for any claims, losses or damages resulting from the use of this map.

Attachment: Project 2_Exhibit B to Resolution No 2018-XX GPA Map (3321 : Centerpointe Commerce

Attachment: Project 1_Resolution No 2018-XX MND [Revision 2] (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

RESOLUTION NO. 2018-XX

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, CERTIFYING THE MITIGATED NEGATIVE DECLARATION (PEN18-0026) AND MITIGATION MONITORING AND REPORTING PROGRAM FOR THE CENTERPOINTE COMMERCE CENTER PROJECT (PEN18-0023, PEN18-0024, PEN18-0025) LOCATED AT THE NORTHEAST CORNER OF FREDERICK STREET AND BRODIAEA AVENUE

WHEREAS, the applicant, Newcastle Partners, Inc. submitted applications for the Centerpointe Commerce Center Project ("Project"), which includes General Plan Amendment PEN18-0024, Change of Zone PEN18-0025, and Plot Plan PEN18-0023. The above applications shall not be approved unless the Initial Study/Mitigated Negative Declaration (IS/MND) is certified and approved; and

WHEREAS, with respect to concurrently filed applications, Section 9.02.030D of the City Municipal Code establishes that applications which are dependent on approval of other enabling application(s), of which the General Plan Amendment and Change of Zone serve; the final approval authority for such dependent application(s) shall be vested with the body authorized to approve the enabling application(s), which in this case is the City Council; and

WHEREAS, the applications for the Project have been evaluated in accordance with established City of Moreno Valley (City) procedures, and with consideration of the General Plan and other applicable regulations; and

WHEREAS, an Initial Study, supporting technical studies, and Mitigated Negative Declaration for the Project were prepared, consistent with the California Environmental Quality Act (CEQA); The California Environmental Quality Act (CEQA) is a statewide environmental law contained in Public Resources Code §§21000-21177. CEQA applies to most public agency decisions to carry out, authorize, or approve actions that have the potential to affect the environment. CEQA requires that public agencies analyze and acknowledge the environmental consequences of their discretionary actions and consider alternatives and mitigation measures that could avoid or reduce significant adverse impacts to the environment when avoidance or reduction is feasible. The CEQA compliance process provides public agencies and the general public an opportunity to comment on a proposed project's environmental effects; and

WHEREAS, a 20-day public review period of the Initial Study and Mitigated Negative Declaration commenced on September 18, 2018 and concluded on October 8, 2018. The public notice of Intent to adopt the Mitigated Negative Declaration was mailed to interested parties, public agencies, as well as published in the local newspaper on September 18, 2018 and filed with the Riverside County Clerk; and

Attachment: Project 1_Resolution No 2018-XX MND [Revision 2] (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

WHEREAS, the City, in conducting its own independent analysis of the Final Mitigated Negative Declaration, determined that a Mitigated Negative Declaration is an appropriate environmental determination for the Project as there is substantial evidence that demonstrates the Project with mitigation would not result in any significant environmental impacts; and

WHEREAS, a Mitigation Monitoring and Reporting Program (MMRP) has been prepared in accordance with CEQA Guidelines, and is designed to ensure compliance with the identified mitigation measures outlined in the Final Mitigated Negative Declaration through Project implementation; and

WHEREAS, the City of Moreno Valley, Community Development Department, located at 14177 Frederick Street, Moreno Valley, California 92552 is the custodian of documents and other materials that constitute the record of proceedings upon which the decision to adopt the Mitigated Negative Declaration is based; and

WHEREAS, the Planning Commission reviewed all environmental documentation for the project and recommended that the City Council adopt a Mitigated Negative Declaration and approve the Mitigation Monitoring Program for the project; and

WHEREAS, all legal prerequisites to the adoption of this Resolution have occurred; and

WHEREAS, the City Council considered the Initial Study prepared for the Project for the purpose of compliance with the California Environmental Quality Act (CEQA), and based on the Initial Study including all supporting technical evidence, it was determined that the project impacts are expected to be less than significant with mitigation, and approval of a Mitigated Negative Declaration is an appropriate environmental determination for the Project.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

A. This City Council specifically finds that all of the facts set forth above in the Resolution are true and correct.

B. Based upon substantial evidence presented to this City Council during the above-referenced meeting on December 4, 2018, including written and oral staff reports, and the record from the public hearing, this Planning Commission finds as follows:

1. Independent Judgment and Analysis – City staff coordinated the preparation of the Initial Study/Mitigated Negative Declaration and related technical studies with T&B Planning for the Centerpointe Commerce Center. The documents were properly circulated for public review in accordance with the California Environmental Quality Act Guidelines. The Initial Study/Mitigated Negative Declaration

has been completed along with the Mitigation Monitoring and Reporting Program (MMRP) to ensure compliance with all mitigation through project implementation. All environmental documents that comprise the Mitigated Negative Declaration, including all technical studies, were independently reviewed by the City. On the basis of the whole record, there is no substantial evidence that the Project as designed, conditioned and mitigated, will have a significant effect on the environment. The Mitigated Negative Declaration prepared and completed, in accordance with the CEQA Guidelines, reflects the independent judgment and analysis of the City.

BE IT FURTHER RESOLVED that the City Council HEREBY ADOPTS Resolution No. 2018-XX, and:

1. CERTIFIES that the Mitigated Negative Declaration prepared for General Plan Amendment PEN18-0024, Change of Zone PEN18-0025 and Plot Plan PEN18-0023 on file with the Community Development Department, incorporated herein by this reference, has been completed in compliance with the California Environmental Quality Act, that the Planning Commission reviewed and considered the information contained in the Mitigated Negative Declaration and that the Document reflects the City's independent judgment and analysis. Attached hereto as Exhibit A; and

2. APPROVES the Mitigation Monitoring and Reporting Program for Plot Plan PEN18-0023, attached hereto as Exhibit B.

APPROVED AND ADOPTED this 11th day of December, 2018.

_____
Mayor of the City of Moreno Valley

ATTEST:

_____
City Clerk

APPROVED AS TO FORM:

_____
City Attorney

Attachment: Project 1_Resolution No 2018-XX MND [Revision 2] (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Attachment: Project 1_Resolution No 2018-XX MND [Revision 2] (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

RESOLUTION JURAT

STATE OF CALIFORNIA)

COUNTY OF RIVERSIDE) ss.

CITY OF MORENO VALLEY)

I, Pat Jacquez-Nares, City Clerk of the City of Moreno Valley, California, do hereby certify that Resolution No. 2018-XX was duly and regularly adopted by the City Council of the City of Moreno Valley at a special meeting thereof held on the 11th day of December, 2018 by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

(Council Members, Mayor Pro Tem and Mayor)

_____

CITY CLERK

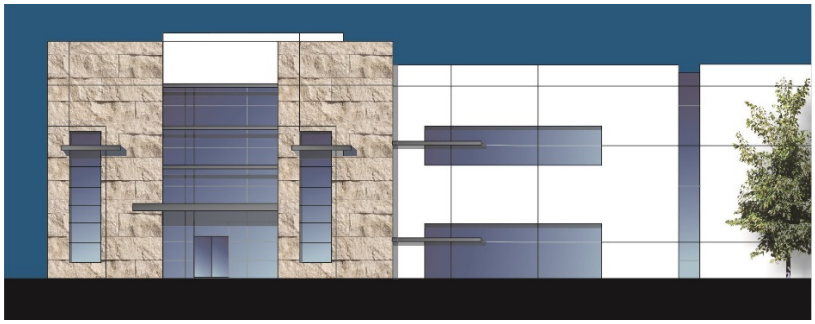
(SEAL)

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Mitigated Negative Declaration

Centerpointe Commerce Center

Moreno Valley, California



Lead Agency
City of Moreno Valley
14177 Frederick Street
Moreno Valley, CA 92552

September 18, 2018

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Mitigated Negative Declaration

Centerpointe Commerce Center
Moreno Valley, California

Lead Agency
City of Moreno Valley
14177 Frederick Street
Moreno Valley, CA 92552

Applicant
Newcastle Partners
4740 Green River Road, Suite 118
Corona, CA 92880

CEQA Consultant
T&B Planning, Inc.
17542 East 17th Street, Suite 100
Tustin, CA 92780

Lead Agency Discretionary Permits
Plot Plan (PEN18-0023)
General Plan Amendment (PEN18-0024)
Change of Zone (PEN18-0025)

September 18, 2018

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5.0 Mitigation Monitoring and Reporting Program

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

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LIST OF TECHNICAL APPENDICES

Appendix	Document Title
A	Air Quality Impact Analysis
B	Mobile Source Health Risk Assessment
C1	General Biological Assessment
C2	Focused Burrowing Owl Survey Report
D1	Cultural Resources Report
D2	Paleontological Resources Report
E	Geotechnical Investigation
F	Greenhouse Gas Emissions Report
G1	Phase I Environmental Site Assessment
G2	Phase II Environmental Site Assessment
H	Hydrology Report
I	Water Quality Management Program
J	Noise Impact Analysis
K	Traffic Impact Analysis

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

ACRONYMS, ABBREVIATIONS, AND UNITS OF MEASURE

§	Section
AM	Ante Meridiem (between the hours of midnight and noon)
AB	Assembly Bill
AB 32	Assembly Bill 32
AB 341	Mandatory Commercial Recycling Program
AB 939	Assembly Bill 939
AB 2185	Assembly Bill 2185
ACMs	Asbestos Containing Materials
ADT	Average Daily Traffic
ALUC	Airport Land Use Commission
ALUCP	Airport Land Use Compatibility Plan
amsl	Above Mean Sea Level
APN	Assessor Parcel Number
AQMP	Air Quality Management Plan
BFSA	Brian F. Smith and Associates
BMPs	Best Management Practices
BP	Business Park / Light Industrial (City of Moreno Valley General Plan designation)
C	Commercial (City of Moreno Valley General Plan designation)
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CalTrans	California Department of Transportation
CARB	California Air Resources Board
CAPCOA	California Air Pollution Controls Officers Association
CASSA	Criteria Area Species Survey Area
CBSC	California Building Standards Code
CCR	California Code of Regulations
CDTSC	California Department of Toxic Substances Control
CEQA	California Environmental Quality Act
CFS	Cubic Feet per Second
CIWMP	Countywide Integrated Waste Management Plan
CMP	Congestion Management Program
CNEL	Community Noise Equivalent Level
CO	Carbon Monoxide
CWA	Clean Water Act
c.y.	Cubic Yards
dBA	A-weighted Decibels
dBA Leq	equivalent decibels
DBESP	Determination of Biologically Superior Preservation
DIF	Development Impact Fee

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

DOC	Department of Conservation
DPM	Diesel Particulate Matter
DTSC	Department of Toxic Substances Control
E+A+P+C	Existing plus Ambient Growth plus Project plus Cumulative Development
E+P	Existing plus Project Conditions
e.g.	exempli gratia, meaning "for example"
EIR	Environmental Impact Report
EMWD	Eastern Municipal Water District
EnA	Exeter sandy loam (soil type)
EpA	Exeter sandy loam, deep (soil type)
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
ESFR	Early Suppression Fast Response
et seq.	et sequentes, meaning "and the following"
FAR	Floor Area Ratio
FEMA	Federal Emergency Management Agency
FEIR	Final Environmental Impact Report
FICON	Federal Interagency Committee Noise
FIRM	Flood Insurance Rate Map
GCC	Global Climate Change
GHG	Greenhouse Gas
GPD	Gallons per Day
Greene	California Senate Bill 50
HCP	Habitat Conservation Plan
HMBEP	Hazardous Materials Business Emergency Plan
I-#	Interstate #
i.e.	that is
ISA	Industrial Support Area (City of Moreno Valley Zoning overlay)
ITE	Institute of Transportation Engineers
JPA	Joint Powers Authority
kWh	kilowatt-hour
kBTU	thousand British thermal units
Leq	Equivalent Continuous Sound Level
LOS	Level of Service
MARB	March Air Reserve Base

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

MARB/IPA	March Air Reserve Base / Inland Port Airport
MATES IV	Multiple Air Toxics Exposure Study
MBTA	Migratory Bird Treaty Act
MDP	Master Drainage Plan
MEIR	Maximally Exposed Individual Receptor
MEISC	Maximally Exposed Individual School Child
MEIW	Maximally Exposed Individual Worker
MGPD	Million Gallons per Day
MM	Mitigation Measure
MMRP	Mitigation Monitoring and Reporting Program
MND	Mitigated Negative Declaration
MPO	Metropolitan Planning Organization
MSHCP	Multiple Species Habitat Conservation Plan
MS4	Municipal Separate Storm Sewer System
$MTCO_2e$	Metric Tons of Carbon Dioxide Equivalent
MVFD	Moreno Valley Fire Department
MVIAP	Moreno Valley Industrial Area Plan
MWD	Metropolitan Water District
n.d.	No Date
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEPSSA	Narrow Endemic Plant Species Survey Area
No.	Number
NOD	Notice of Determination
NOI	Notice of Intent
NOP	Notice of Preparation
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
O_3	Ozone
OWOW	One Water One Watershed
PaA	Pachappa fine sandy loam
PCBs	polychlorinated biphenyls
PCE	Passenger Car Equivalent
PEN#-#	City of Moreno Valley Project Case Number
PM	Post Meridiem (afternoon)
$PM_{2.5}$	Fine Particulate Matter (2.5 microns or smaller)
PM_{10}	Fine Particulate Matter (10 microns or smaller)
PPM	Parts per Million
RCALUC	Riverside County Airport Land Use Commission
RCB	Reinforced Concrete Box (drainage term)
RCIT	Riverside County Information Technologies

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RECs	Recognized Environmental Conditions
RTA	Riverside Transit Authority
RTP/SCS	Regional Transportation Plan / Sustainable Communities Strategy
RWQCB	Regional Water Quality Control Board
SCAB	South Coast Air Basin
SCAG	Southern California Association of Government
SCAQMD	South Coast Air Quality Management District
SF/s.f.	Square Foot or Square Feet
SLF	Sacred Lands File
SO_x	Sulfur Oxides
SR-#	State Route #
SWPPP	Storm Water Pollution Prevention Plan
US EPA	United States Environmental Protection Agency
VdB	Vibration Decibels
VOCs	Volatile Organic Compounds
WQMP	Water Quality Management Plan

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Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

1.0 INTRODUCTION

1.0 INTRODUCTION

1.1 DOCUMENT PURPOSE

This document is a Mitigated Negative Declaration (MND) prepared in accordance with the California Environmental Quality Act (CEQA), including all criteria, standards, and procedures of CEQA (California Public Resource Code §§ 21000 *et seq.*) and the CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, §§ 15000 *et seq.*). This MND is an informational document intended for use by the City of Moreno Valley, Trustee, and Responsible agencies, and members of the general public in evaluating the physical environmental effects of the proposed Centerpointe Commerce Center project (hereafter referred to as "Project" and as described in further detail in Section 3.0 of this MND).

This MND was compiled by the City of Moreno Valley, serving as the Lead Agency for the proposed Project pursuant to CEQA Section 21067 and CEQA Guidelines Article 4 and Section 15367. "Lead Agency" refers to the public agency that has the principal responsibility for carrying out or approving a project.

This *Introduction* provides general information regarding: 1) a summary of the location and history of the Project site; 2) a summary of Initial Study findings supporting the City of Moreno Valley's decision to prepare an MND for the proposed Project; 3) the standards of adequacy for a MND under CEQA; 4) a description of the format and content of this MND; and 5) the governmental processing requirements to consider the proposed Project for approval.

1.2 PROJECT SUMMARY

The Project consists of applications for a General Plan Amendment (PEN18-0024), Change of Zone (PEN18-0025), and Plot Plan (PEN18-0023) to develop an approximately 8.8-acre property located at the northeast corner of the Brodiaea Avenue and Frederick Street intersection with a light industrial/warehouse building containing up to 204,022 square feet (s.f.) of floor area and associated improvements including, but not limited to, surface parking lots, drive aisles, utility infrastructure, landscaping, exterior lighting, and walls/fencing. Refer to Section 3.0, *Project Description*, for a comprehensive description of the proposed Project.

1.3 CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

1.3.1 CEQA Objectives

CEQA requires that before a public agency makes a decision to approve a project that could have one or more adverse effects on the physical environment, the agency must inform itself about the project's potential environmental impacts, give the public an opportunity to comment on the environmental issues, and take feasible measures to avoid or reduce potential harm to the physical environment. The principal objectives of CEQA are to: 1) inform governmental decision makers and the public about the potential, significant environmental effects of proposed activities; 2) identify the ways that environmental damage can be avoided or significantly reduced; 3) prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible; and 4) disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

1.3.2 CEQA Requirements for Environmental Setting and Baseline Conditions

CEQA Guidelines Section 15125 establishes requirements for defining the environmental setting to which the environmental effects of a proposed project must be compared. The environmental setting is defined as "…the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time the environmental analysis is commenced..." (CEQA Guidelines § 15125(a)). In the case of the proposed Project, the Initial Study determined that an MND is the appropriate form of CEQA compliance document, which does not require publication of a Notice of Preparation (NOP) (refer to Subsection 1.3.4, *Initial Study Findings*). Thus, the environmental setting for the proposed Project is the approximate date that the Project's environmental analysis commenced.

The Project's applications were filed with the City of Moreno Valley in February 2018, at which time the City determined the applications were complete and the environmental analysis commenced. Therefore, the environmental setting for the proposed Project is defined as the physical environmental conditions on the Project site and in the vicinity of the Project site as they existed in February 2018.

1.3.3 CEQA Requirements for a Mitigated Negative Declaration (MND)

An MND is a written statement by the Lead Agency that briefly describes the reasons why a project that is not exempt from the requirements of CEQA will not have a significant effect on the environment and, therefore, does not require preparation of an Environmental Impact Report (EIR, CEQA Guidelines § 15371). The CEQA Guidelines require the preparation of an MND if the Initial Study prepared for a project identifies potentially significant effects, but: 1) revisions in the project plans or proposals made by, or agreed to by the applicant before a proposed MND and Initial Study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur; and 2) there is no substantial evidence, in light of the whole record before the Lead Agency, that the project may have a significant effect on the environment. If the potentially significant effects associated with a project cannot be mitigated to a level below significance, then an EIR must be prepared. (CEQA Guidelines § 15070(b))

1.3.4 Initial Study Findings

Section 4.0 of this document contains the Initial Study that was prepared for the proposed Project pursuant to CEQA and City of Moreno Valley requirements. The Initial Study determined that implementation of the proposed Project would not result in significant environmental effects under the impact areas of: Aesthetics, Agriculture and Forestry, Air Quality, Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Mineral Resources, Noise, Population and Housing, Public Services, Recreation, Transportation/Circulation, and Utilities and Service Systems. The Initial Study determined that the proposed Project would result in potentially significant effects to the issue areas of Biological Resources, Cultural Resources, and Tribal Cultural Resources, but the Project Applicant has agreed to incorporate mitigation measures that would avoid or reduce the effects to a point where clearly no significant effects would occur. The Initial Study determined that, with the incorporation of mitigation measures, there is no substantial evidence in light of the whole record before the Lead Agency (City of Moreno Valley) that the Project may have a significant effect on the environment. Based on the Initial Study's findings, the City of Moreno Valley determined that a MND is appropriate for the proposed Project pursuant to CEQA Guidelines § 15070(b).

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

1.3.5 Format and Content of Mitigated Negative Declaration

The following components comprise the MND in its entirety:

1) This document, including all sections. Section 4.0 comprises the completed Initial Study Checklist ("Initial Study") and its associated analyses which document the reasons to support the findings and conclusions of the Initial Study. Section 5.0 comprises the Mitigation Monitoring and Reporting Program (MMRP), which includes all mitigation measures imposed on the proposed Project to ensure that effects to the environment are reduced to less-than-significant levels. The MMRP also indicates the required timing for the implementation of each mitigation measure and identifies the parties responsible for implementing and monitoring each mitigation measure.

2) Thirteen technical reports that evaluate the environmental effects of the proposed Project are attached as Technical Appendices A-K. Each of the appendices listed below are available for review at the City of Moreno Valley Community Development Department, Planning Division, located at 14177 Frederick Street, Moreno Valley, CA, 92552, and are hereby incorporated by reference pursuant to CEQA Guidelines § 15150.

Appendix A	"Centerpointe Air Quality Impact Analysis, City of Moreno Valley" prepared by Urban Crossroads and dated June 4, 2018.
Appendix B	"Centerpointe Mobile Source Diesel Health Risk Assessment, City of Moreno Valley" prepared by Urban Crossroads and dated June 4, 2018.
Appendix C1	"General Habitat Assessment, 8.78-acre Centerpointe Industrial Center Site" prepared by Ecological Sciences, Inc., and dated May 17, 2018.
Appendix C2	"Focused Burrowing Owl Surveys, 8.78-acre Centerpointe Industrial Center Site" prepared by Ecological Sciences, Inc., and dated May 21, 2018.
Appendix D1	"Phase I Cultural Resources Survey for the Centerpointe Project" prepared by Brian F. Smith and Associates and dated February 12, 2018.
Appendix D2	"Paleontological Resource and Monitoring Assessment, Centerpointe Warehouse Project" prepared by Brian F. Smith and Associates and dated January 30, 2018.
Appendix E	"Updated Geotechnical Engineering Investigation, Proposed Industrial Warehouse, NWC of Frederick Street and Brodiaea Avenue, Moreno Valley, California" prepared by NorCal Engineering and dated December 19, 2017.
Appendix F	"Centerpointe Greenhouse Gas Analysis, City of Moreno Valley" prepared by Urban Crossroads and dated June 4, 2018.
Appendix G1	"Phase I Environmental Site Assessment Report, Centerpointe" prepared by Arcadis and dated January 15, 2018.
Appendix G2	"Limited Phase II Investigation Report for Undeveloped Land located at the NEC of the Intersection of Brodiaea Avenue and Frederick Street, Moreno Valley, California" prepared by Arcadis and dated February 12, 2018.

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Appendix H "Drainage Study for Centerpointe industrial, NWC of Frederick Street and Brodiaea Avenue" prepared by REC Consultants, Inc., and dated April 5, 2018.

Appendix I "Project Specific Preliminary Water Quality Management Plan" prepared by REC Consultants, Inc., and dated January 31, 2018.

Appendix J "Centerpointe Noise Impact Analysis, City of Moreno Valley" prepared by Urban Crossroads and dated May 25, 2018.

Appendix K "Centerpointe Traffic Impact Analysis, City of Moreno Valley" prepared by Urban Crossroads and dated September 12, 2018.

3) All plans, policies, regulatory requirements, and other documentation that is incorporated by reference in this document pursuant to CEQA Guidelines § 15150.

1.3.6 Mitigated Negative Declaration Processing

The City of Moreno Valley Community Development Department, Planning Division directed and supervised the preparation of this MND. Although prepared with the assistance of the consulting firm T&B Planning, Inc., the content contained within and the conclusions drawn by this MND reflect the sole independent judgment of the City of Moreno Valley.

A Notice of Intent (NOI) to adopt the MND will be distributed to the following entities for a 20-day public review period: 1) organizations and individuals who have previously requested such notice in writing to the City of Moreno Valley; 2) owners of contiguous property shown on the latest equalized assessment roll; 3) responsible and trustee agencies (public agencies that have a level of discretionary approval over some component of the proposed Project); and 4) the Riverside County Clerk. The NOI identifies the location(s) where the MND, Initial Study, MMRP, and associated Technical Appendices are available for public review.

Following the public review period, the City of Moreno Valley will review any comment letters received and determine whether any substantive comments were provided that may warrant revisions to the MND document. If substantial revisions are not necessary (as defined by CEQA Guidelines § 15073.5(b)), then the MND will be finalized and forwarded to City of Moreno Valley decision-makers for review as part of their deliberations concerning the proposed Project. If the Project is approved, the City of Moreno Valley will adopt findings relative to the Project's environmental effects, as disclosed in this MND, and a Notice of Determination (NOD) will be filed with the Riverside County Clerk.

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

2.0 ENVIRONMENTAL SETTING

2.0 ENVIRONMENTAL SETTING

2.1 PROJECT SETTING

2.1.1 Project Location

Figure 2-1, *Regional Map*, and Figure 2-2, *Vicinity Map*, depict the location of the Project site. The Project site is located in Western Riverside County, within the City of Moreno Valley, immediately north of Brodiaea Avenue and east of Frederick Street. The Project site encompasses Riverside County Assessor Parcel Number (APN) 297-170-029.

2.1.2 Surrounding Land Uses and Development

The land uses surrounding the Project site are described below and illustrated on Figure 2-3, *Surrounding Land Uses and Development*.

North:
The Project site is bounded on the north by a vacant/undeveloped property that contains minimal vegetation and appears to be routinely disced for weed abatement and fire fuel management. Further north of the vacant property is Alessandro Boulevard, a major east-west oriented thoroughfare.

South:
The Project site is bounded on the south by Brodiaea Avenue. Directly south of the site is an office park with two buildings and a small recycling/waste collection facility operated by the Riverside County Department of Waste Resources. The facility includes exterior lighting, ornamental landscaping, and fencing along its frontage to Brodiaea Avenue and parkway landscaping and passenger vehicle parking along its frontage to Frederick Street. Southeast of the Project site is a large warehouse facility (Harbor Freight Distribution Center) that includes automobile parking, truck parking, a screen wall, exterior lighting, and ornamental landscaping along its frontage with Brodiaea Avenue.

West:
The Project site is bounded on the west by Frederick Street. Southwest of the Project site is a business park containing four buildings. The business park includes automobile parking, exterior lighting, and ornamental landscaping along its frontage with Frederick Street. Northwest of the Project site is the Moreno Valley Civic Center complex, which includes City Hall, the Moreno Valley Police Department, and the Moreno Valley Conference Center.

East:
The Project site is bounded on the east by a large, recently constructed warehouse facility. The facility includes automobile parking, truck parking, exterior lighting, and ornamental landscaping. Farther to the east (east of Graham Street) is a concentration of large distribution warehouses.

2.2 EXISTING SITE CHARACTERISTICS

Pursuant to CEQA Guidelines § 15125, the physical environmental condition for purposes of establishing the setting of an MND is the environment as it existed at the time the Lead Agency commenced the environmental analysis for the project. The Project's applications were filed with the City of Moreno Valley

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

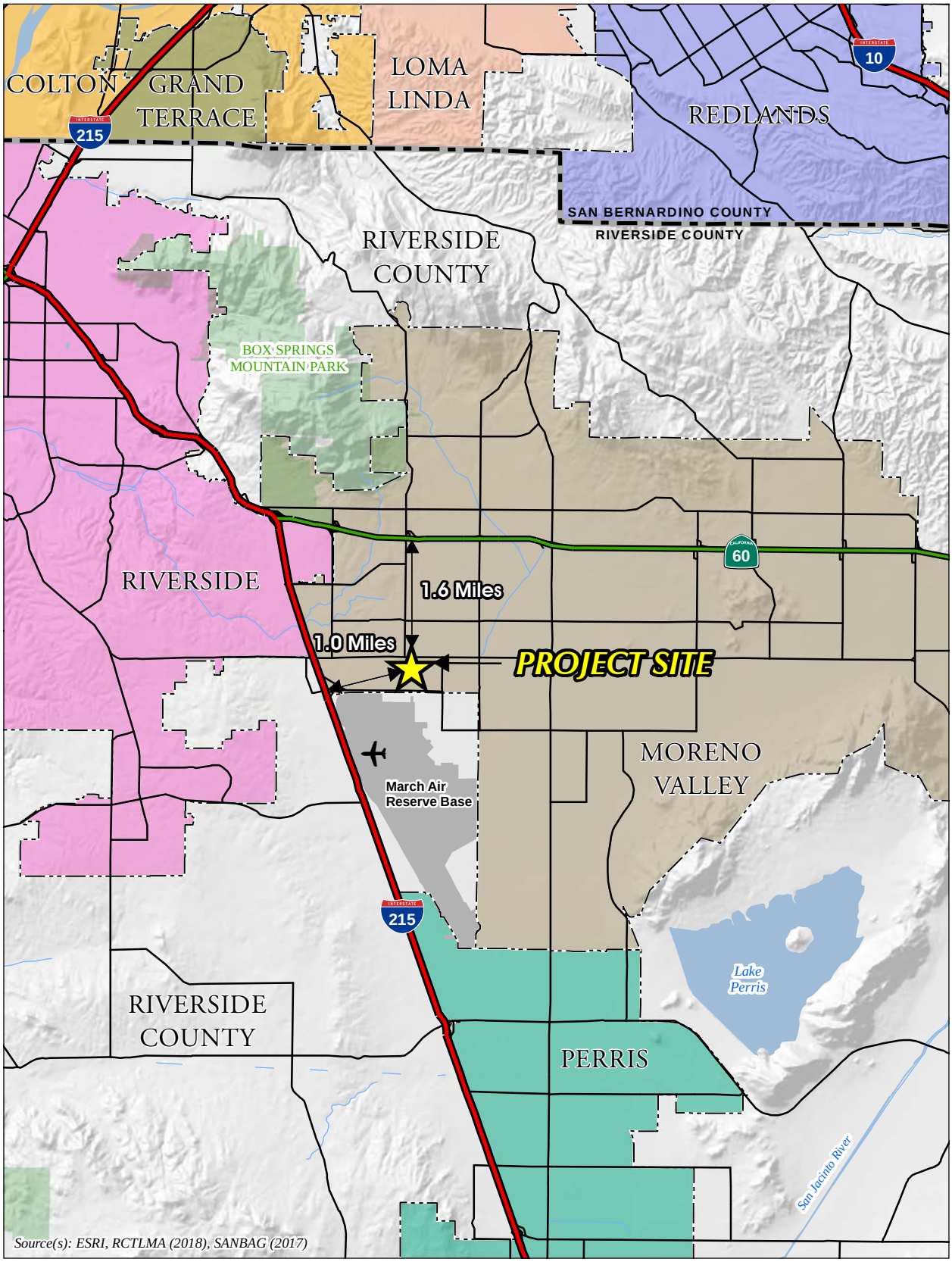


Figure 2-1

REGIONAL MAP

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

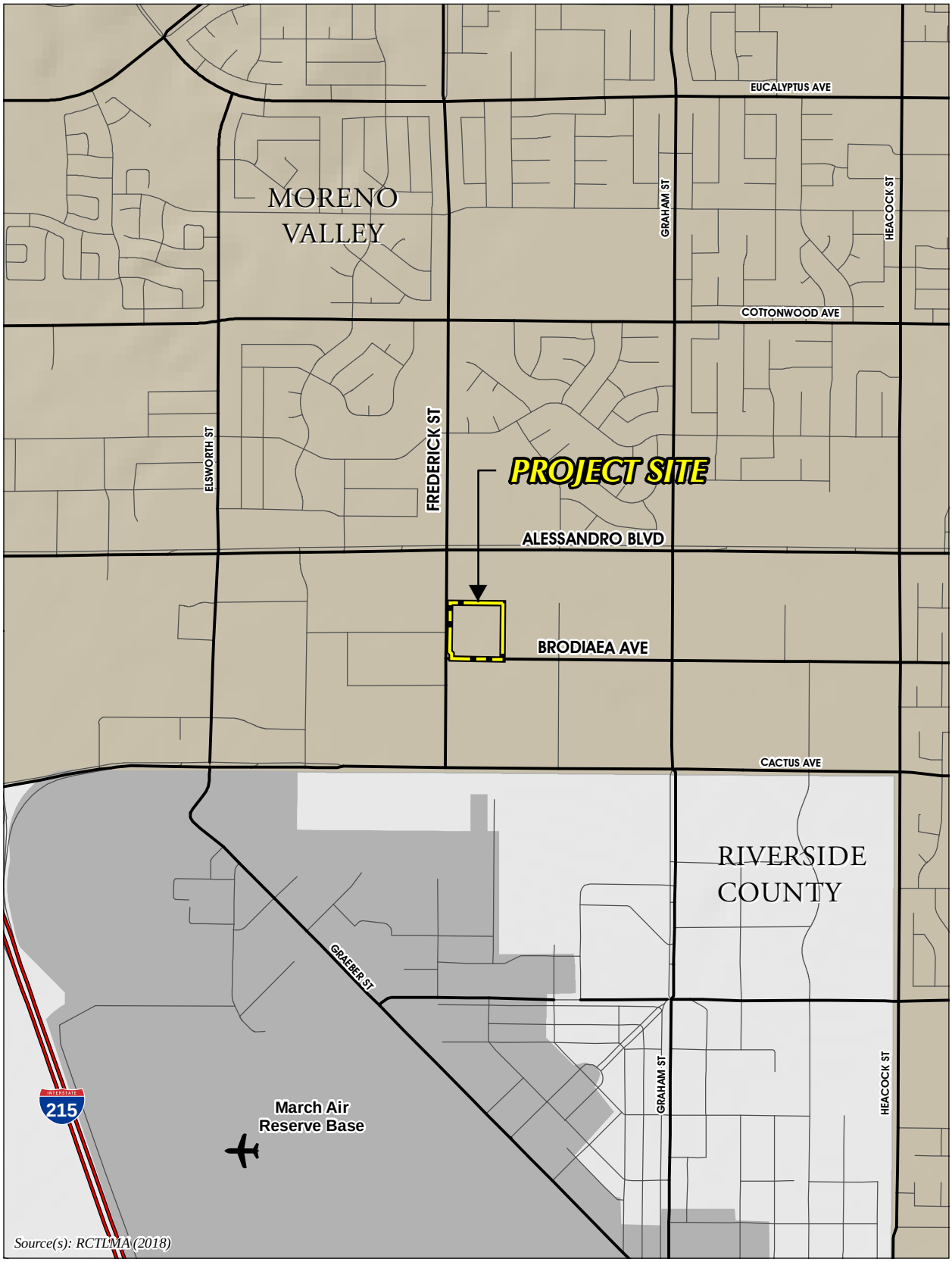


Figure 2-2

VICINITY MAP

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Figure 2-3

SURROUNDING LAND USES AND DEVELOPMENT

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

in February 2018 and the environmental review commenced at that time. As such, the environmental baseline for the Project is established as of February 2018 and the following subsections provide a description of the Project site's physical environmental condition as of that approximate date. Topics are presented on the following pages in no particular order of importance.

2.2.2 Land Use

Based on historical aerial photography, the Project site has remained vacant/undeveloped (and routinely disced) up to the present day. An informal, unpaved trail existed along the Project's western boundary between 1989 and 1994. Between 1994 and 2005, landscaping was installed along the Project site's landscaped frontage with Frederick Street. The Project site's conditions have remained unchanged since 2005. (Arcadis, 2018, Appendix B) Figure 2-4, *Aerial Photograph*, depicts the existing conditions at the Project site.

2.2.3 Aesthetic and Topographic Features

The Project site is virtually flat, with a topographic high point of approximately 1,562 feet above mean sea level (amsl) in the northern portion of the site and a topographic low point of approximately 1,553 feet amsl in the southwest corner of the site. The overall topographic relief of the Project site is approximately 9 feet. Figure 2-5, *USGS Topographic Map*, illustrates the topographic character of the Project site.

The aesthetic character of the Project site is defined by disturbed/undeveloped land. All portions of the Project site are routinely maintained (i.e., disced) for weed abatement and fire fuel management. The Project site's western boundary abuts a landscaped parkway, signalized intersection, and sidewalk along Frederick Street and the Project site's southern boundary abuts a sidewalk and two street lights along Brodiaea Avenue. The existing aesthetic conditions of the Project site are illustrated on Figure 2-6, *Site Photograph Key Map*, Figure 2-7, *Site Photographs* 1-3, and Figure 2-8, *Site Photographs 4-6*.

2.2.4 Site Access and Circulation

The Project site abuts Brodiaea Avenue (an east-west oriented roadway) to the south and Frederick Street (a north-south oriented roadway) to the west. Under existing conditions, there are no driveways or other points of access that connect the Project site to either Brodiaea Avenue or Frederick Street.

The Project site is located approximately 1.2 miles northeast of Interstate 215 (I-215), a north-south oriented freeway facility, and approximately 1.8 miles south of California State Route 60 (SR-60), an east-west oriented freeway facility. Both I-215 and SR-60 are part of the state highway system operated by the California Department of Transportation (CalTrans).

One Riverside Transit Agency (RTA) bus stop, for RTA Routes 11 and 20, is located along the Project site's western frontage with Frederick Street, north of Brodiaea Avenue and south of Calle San Juan.

2.2.5 Air Quality and Climate

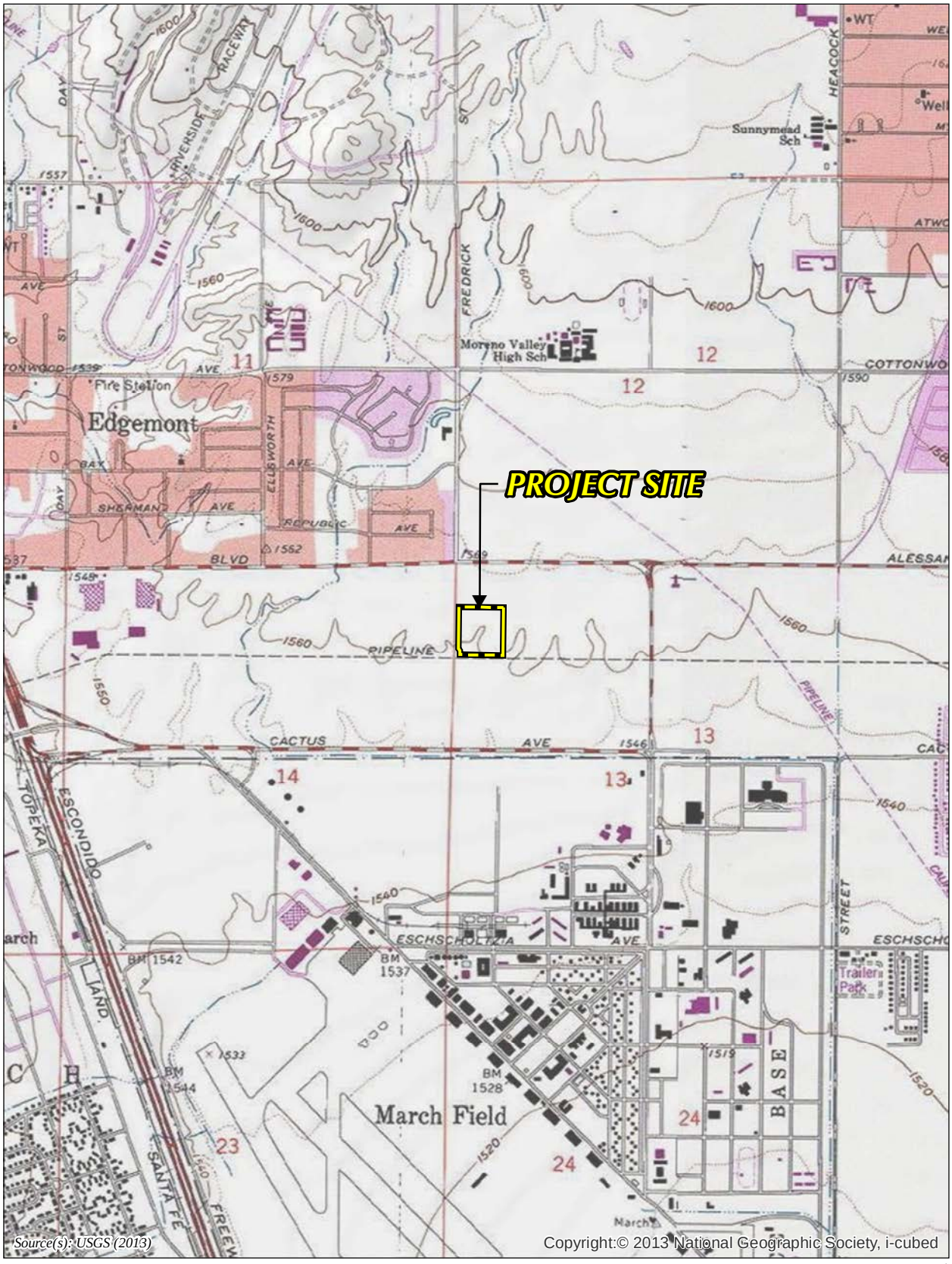
The Project site is located in the 6,745-square-mile South Coast Air Basin (SCAB), which includes portions of Los Angeles, Riverside, and San Bernardino Counties, and all of Orange County. The SCAB is bound by the Pacific Ocean to the west, the San Gabriel, San Bernardino, and San Jacinto Mountains to the north

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Figure 2-4

AERIAL PHOTOGRAPH

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,



0 500 1,000 2,000 Feet

Figure 2-5

USGS TOPOGRAPHIC MAP

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

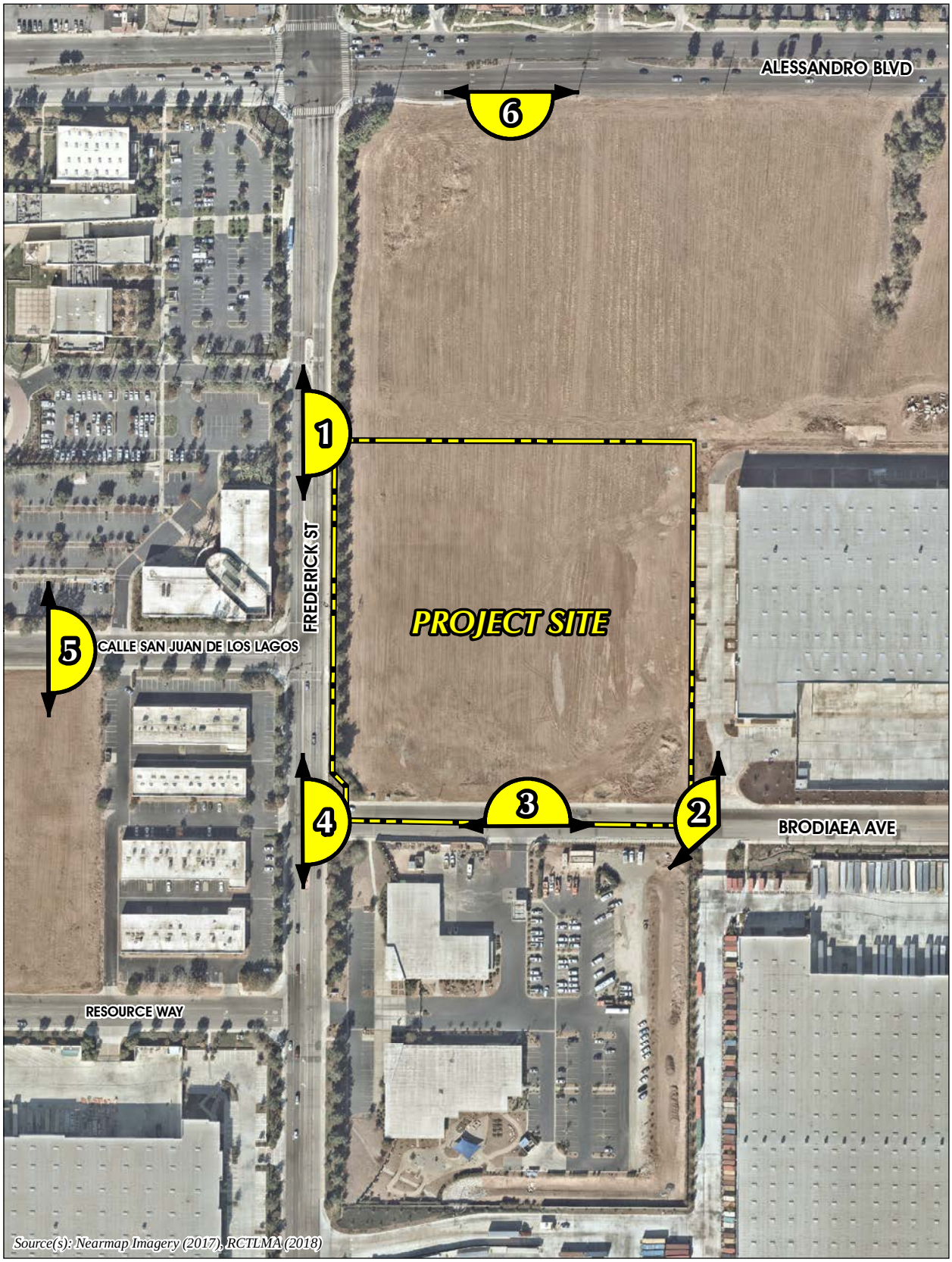


Figure 2-6

SITE PHOTOGRAPH KEY MAP

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Site Photograph 1: From northwest corner of Project Site along Frederick Street looking north to south.

Site Photograph 2: From southeast corner of Project Site along Brodiaea Avenue looking southwest to north.

Site Photograph 3: From southern edge of Project Site along Brodiaea Avenue looking west to northeast.

NOT TO SCALE

Figure 2-7

SITE PHOTOGRAPHS 1-3

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce

Site Photograph 4: From southwest corner of Project Site at the intersection of Frederick Street and Brodiaea Avenue looking north to south.

Site Photograph 5: From west of Project Site along Calle San Juan De Los Lagos looking north to south.

Site Photograph 6: From north of Project Site along Alessandro Boulevard looking east to west.

NOT TO SCALE

Figure 2-8

SITE PHOTOGRAPHS 4-6

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce

and east, and the San Diego County Line to the south. The SCAB is within the jurisdiction of South Coast Air Quality Management District (SCAQMD), the agency charged with bringing air quality in the SCAB into conformity with federal and state air quality standards. The climate of the SCAB is characterized as semi-arid and more than 90% of the SCAB's rainfall occurs from November through April. During the dry season, which also coincides with the months of maximum photochemical smog concentrations, the wind flow is bimodal, characterized by a daytime onshore sea breeze and a nighttime offshore drainage wind.

In the Project region, the SCAB does not attain State and/or federal standards established for one-hour and eight-hour Ozone (O_3) concentrations and particulate matter (PM_{10} and $PM_{2.5}$) concentrations. Local air quality in the vicinity of the Project site has exceeded air quality standards for one-hour and eight-hour ozone concentrations and particulate matter concentrations within the last three years, as recorded at the nearest air monitoring station to the Project site (Perris Valley monitoring station SRA 24). (Urban Crossroads, 2018a, p. 13) Refer to Table 2-3 in the Project's air quality report (refer to *Technical Appendix A*) for a summary of air quality conditions in the vicinity of the Project site within the last three years.

Air pollution contribute to human health concerns. The SCAQMD conducted an in-depth analysis of the toxic air contaminants and their resulting health risks for all of Southern California. This study, titled "Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES IV)," shows that the Project area has an ambient carcinogenic risk of 587.29 in one million persons (SCAQMD, n.d.). Information about specific air pollutants and their specific effects on human health are contained in the Air Quality Impact Analysis and Mobile Source Health Risk Assessment provided as *Technical Appendix A* and *Technical Appendix B*, respectively, to this MND.

2.2.6 Geology

There are no known active or potentially active earthquake faults on the Project site or in the immediate area, and the Project site is not located within an "Alquist-Priolo" Special Studies Zone (NorCal, 2017, p. 6). The closest active fault to the Project site, the San Jacinto fault, is located approximately 7.1 miles northeast of the Project site (Moreno Valley, 2006b). Similar to other properties throughout Southern California, the Project site is located within a seismically active region and is subject to ground shaking during seismic events.

During subsurface investigations conducted on the Project site in 2017, groundwater was encountered at 30 feet below existing ground surface in one of the boring samples (NorCal, 2017, Appendix A). Accordingly, the static groundwater table at the Project site is considered to exist at a depth of approximately 30 feet below existing ground surface.

2.2.7 Soils

The Project site features artificial fill soils to a depth of 1 to 2½ feet. These soils were classified as loose, damp, clayey sand and possess a disturbed appearance, resulting in their classification as artificial fill (NorCal, 2017, p. 2). In addition, the Project site contains native alluvial soils, beneath the artificial fill soils, extending to a depth of at least 30 feet below existing ground surface. The alluvial soils closer to the surface generally consist of dense to very dense clayey sands and the deeper alluvial soils consist of very dense silty sands and sandy silts. (NorCal, 2017, p. 3)

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2.2.8 Hydrology

The Project site is located in the Santa Ana River watershed, which drains an approximately 2,650 square-mile area and is the principal surface flow water body within the region. The Santa Ana River starts in the San Bernardino Mountains, approximately 16.5 miles northeast of the Project site, and flows southwesterly for approximately 96 miles across San Bernardino, Riverside, Los Angeles, and Orange counties before spilling into the Pacific Ocean.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) No. 06065C0745G, the Project site is located within "Flood Zone X (unshaded)" which corresponds with areas of minimal flood hazard (i.e., less than 0.2-percent annual chance of flood). (FEMA, 2008)

Under existing conditions, stormwater on the Project site sheet flows in a southerly direction across the Project site into two (2) existing storm drain inlets located along the Project site's frontage with Brodiaea Avenue. The existing inlets convey flows into an existing 36-inch-diamter storm drain line (Line P) located beneath Brodiaea Avenue.

2.2.9 Noise

The primary source of noise in the Project site vicinity includes vehicle noise along Frederick Street and Brodiaea Avenue and noise associated with flight operations at the March Air Reserve Base, whose nearest runway is located approximately 1.2 miles southwest of the Project site. Based on 24-hour noise measurements collected by the consulting firm Urban Crossroads on January 3, 2018, hourly noise levels in the Project area range between 62.2 equivalent decibels (dBA Leq) and 70.2 dBA Leq (Urban Crossroads, 2018b, p. 31).

2.2.10 Utilities and Service Systems

The Project site is located in the service area of the Eastern Municipal Water District (EMWD) for domestic water and sewer service. EMWD manages the domestic water supply and delivery service within its 555-square mile service area, including the City of Moreno Valley, all or portions of six other cities, and a portion of unincorporated Riverside County. EMWD's water supply is obtained from four sources: 1) imported water from the Metropolitan Water District (MWD); 2) recycled water; 3) local groundwater production; and 4) desalted groundwater. (EMWD, 2016b, pp. 3-1, 3-3) EMWD has an adopted Water Shortage Contingency Plan (EMWD Ordinance 117.2) that applies regulations and restrictions on the delivery of and consumption of water during water shortages.

Wastewater flows generated within the Project area are conveyed to the Moreno Valley Regional Water Reclamation Facility (RWRF). The Moreno Valley RWRF generally receives wastewater flows produced within the northwestern portion of the EMWD service area. (EMWD, 2016b, p. 6-18)

Solid waste collection and disposal in the Project area is conducted by Waste Management of the Inland Empire, a division of Waste Management, Inc. The El Sobrante Landfill, Badlands Sanitary Landfill, and/or Lamb Canyon Sanitary Landfill would receive solid waste produced within the City of Moreno Valley. (Moreno Valley, 2006b, p. 5.13-35)

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2.2.11 Vegetation

Under existing conditions, the entirety of the site has been disturbed by past and on-going routine maintenance activities (i.e., discing for weed abatement and fire fuel management). Based on a field survey conducted by Ecological Sciences on January 10, 2018, the following plant species were found on-site: Short-podded mustard (*Hirschfeldia incana*), Russian thistle (*Salsola tragus*), Pigweed (*Amaranthus sp.*), Mediterranean grass (*Schismus barbatus*), and Slender oat (*Avena barbata*) (Ecological Sciences, 2018a, p. 6). No native plant species were observed on the Project site during field surveys (Ibid., p. 10). Due to historic and on-going human disturbances, the Project site no longer supports native vegetation or native plant communities. For more information pertaining to on-site vegetation refer to *Technical Appendix C1*.

2.2.12 Wildlife

Ecological Sciences did not observe any sensitive wildlife species on-site and no State or Federally listed species are expected to occur on-site due to the absence of suitable habitat (Ecological Sciences, 2018a, p. 10). For more information pertaining to observed on-site wildlife refer to *Technical Appendix C1*.

2.3 PLANNING CONTEXT

2.3.1 General Plan Land Use & Zoning Designations

The prevailing planning documents for the Project site and its surrounding area is the City of Moreno Valley General Plan. The City of Moreno Valley General Plan designates the Project site for "Office (O)" land uses as shown in Figure 2-9, *Existing General Plan Designations*. The Office land use designation provides for general office uses, including, administrative, professional, legal, medical and financial offices, with a building intensity up to a floor area ratio (FAR) of 2.0.

As shown on Figure 2-10, *Existing Zoning Designations*, the City of Moreno Valley Zoning Map applies the "Office (O)" zoning designation to the Project site. According to the City of Moreno Valley Municipal Code, the primary purpose of the Office district is to provide areas for the establishment of park-like, office-based working environments for general business, corporate, professional, and administrative offices (Moreno Valley, 2017, § 9.04.020).

2.3.2 Western Riverside County Multiple Species Habitat Conservation Plan

The Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) is a comprehensive, multi-jurisdictional Habitat Conservation Plan (HCP) focusing on conservation of species and their habitats in Western Riverside County. The Project site is not located within a Cell Group or Criteria Cell and is not targeted for conservation. Pursuant to the MSHCP, the Project site located in the Burrowing Owl Survey Area and the Narrow Endemic Plant Species Survey Area (NEPSSA). (Ecological Sciences, 2018a, p. 1)

2.3.3 Riverside County Airport Land Use Compatibility Plan

The March Air Reserve Base (MARB) Airport Land Use Compatibility Plan (ALUCP) identifies land use standards and design criteria for new development located in the proximity of the MARB to ensure compatibility between the airport and surrounding land uses and to maximize public safety. The Project site is located within "Compatibility Zone D" of the MARB influence area of MARB and is subject to the MARB ALUCP. Within Compatibility Zone D, there are no land use or design restrictions, with the exception of hazards to flight (e.g., very tall objects, visual and electronic forms of interference). (RCALUC, 2014, Table MA-1)

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

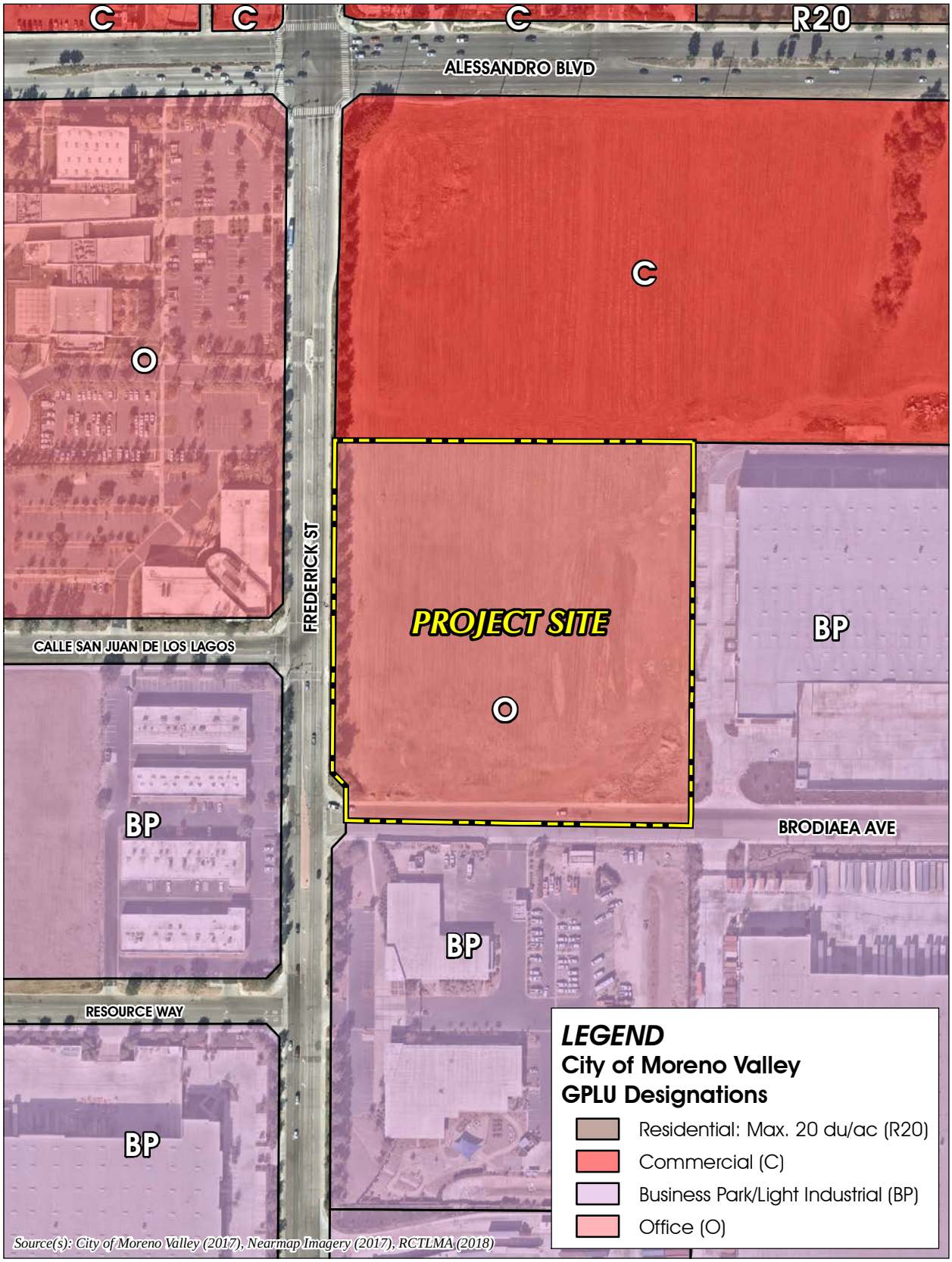


Figure 2-9

EXISTING GENERAL PLAN DESIGNATIONS

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

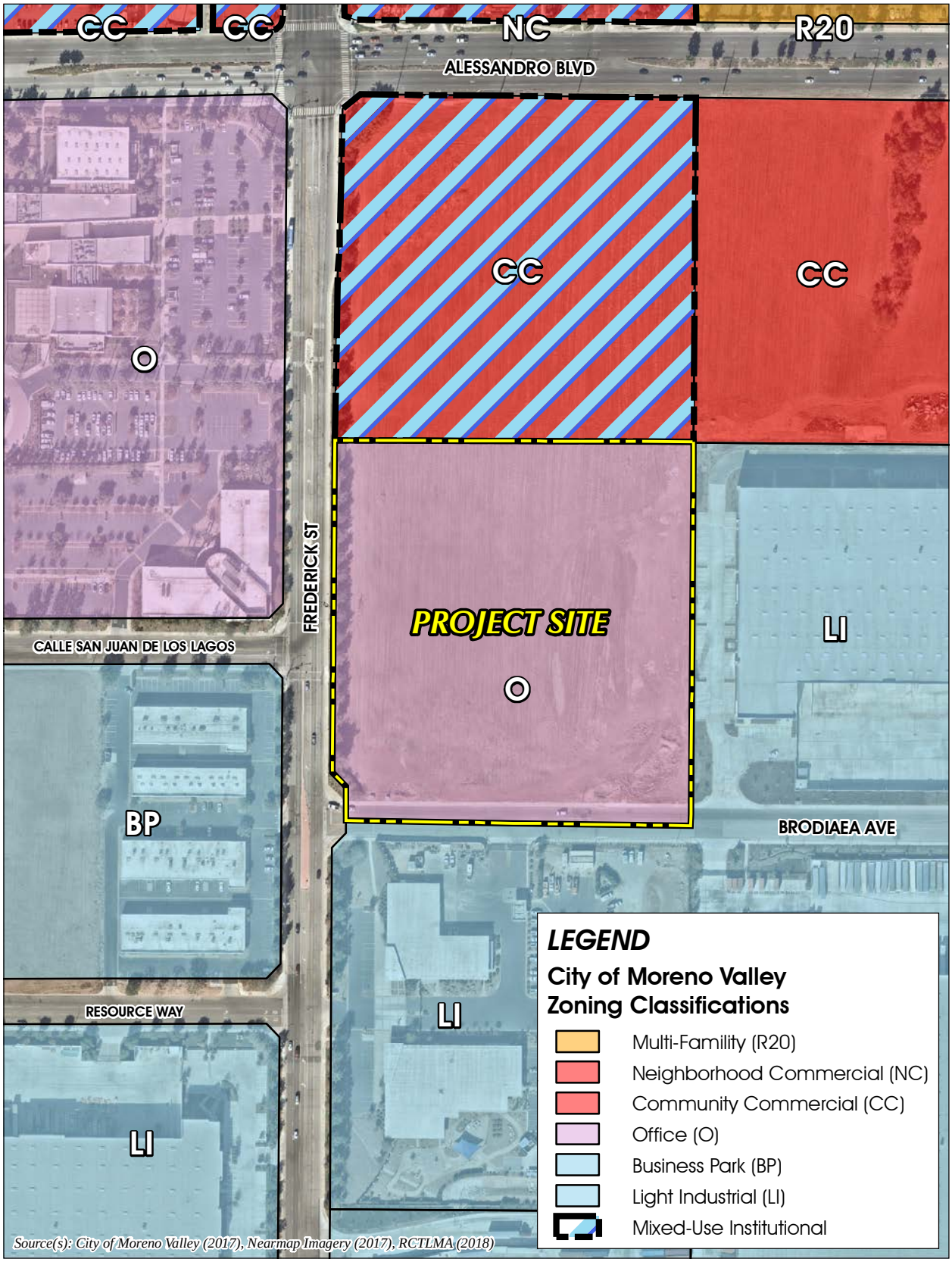


Figure 2-10

EXISTING ZONING DESIGNATIONS

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

2.3.4 Southern California Association of Governments Regional Transportation Plan

The Southern California Association of Governments (SCAG) is a Joint Powers Authority (JPA) under California state law, established as an association of local governments and agencies that voluntarily convene as a forum to address regional issues. Under federal law, SCAG is designated as a Metropolitan Planning Organization (MPO) and under state law as a Regional Transportation Planning Agency and a Council of Governments. The SCAG region encompasses six counties (Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura) and 191 cities in an area covering more than 38,000 square miles. SCAG develops long-range regional transportation plans including sustainable communities strategy and growth forecast components, regional transportation improvement programs, regional housing needs allocations and other plans for the region (SCAG, n.d.).

As an MPO and public agency, SCAG develops transportation and housing plans that transcend jurisdictional boundaries that affect the quality of life for Southern California as a whole. SCAG's *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy* (*RTP/SCS*) includes a chapter titled "Goods Movement" that is applicable to the Project because the Project proposes an industrial building in the SCAG region that would provide for a variety of light industrial, distribution warehousing, and logistics tenants. The Goods Movement chapter states that the SCAG region hosts one of the largest clusters of logistics activity in North America. Logistics activities, and the jobs that go with them, depend on a network of warehousing and distribution facilities, highway and rail connections, and intermodal rail yards. To that end, the *Goods Movement Appendix* of the *RTP/SCS* sets forth regional strategies to achieve an efficient movement of goods which states the following:

> *"The goods movement system in the SCAG region is comprised interconnected infrastructure components designed to serve commercial activities spurred by regional, national, and global demand. The goods movement system provides the backbone for the flow of goods between businesses and consumers. Numerous demand factors (e.g., types of products, destinations, urgency, costs, etc.) create unique markets that must be accommodated by varying types of goods movement activities. Markets in the SCAG region range from origins like local manufacturing companies and the San Pedro Bay Ports to business and customers across the U.S. These markets depend on an extensive regional transportation network that provides the mobility and speed necessary to support economic growth. These mobility needs, coupled with air quality, environmental and community challenges posed by regional goods movement activities, serve as the rationale for developing a comprehensive plan to enhance the regional freight system."* (SCAG, 2016, p. 1)

According to SCAG's *Comprehensive Regional Goods Movement Plan and Implementation Strategy*, the SCAG region has a large demand for warehouse space and the demand will continue into the foreseeable future, resulting in a large unmet demand by the year 2035 (SCAG, 2013, pp. 4-39 and 4-40). SCAG reports that a substantial amount of available industrial land for this type of development is located in the vicinity of the SR-60 corridor, particularly in Moreno Valley, Perris, and near March Air Reserve Base (i.e., the vicinity of the Project site).

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

3.0 PROJECT DESCRIPTION

3.0 PROJECT DESCRIPTION

The Project evaluated by this MND is located within the City of Moreno Valley, Riverside County, California. The proposed Project consists of applications for a Plot Plan (PEN18-0023), General Plan Amendment (PEN18-0024), and Change of Zone (PEN18-0025). Copies of the entitlement applications for the proposed Project are herein incorporated by reference pursuant to CEQA Guidelines § 15150 and are available for review at the City of Moreno Valley Community Development Department, Planning Division, located at 14177 Frederick Street, Moreno Valley, CA 92552. A detailed description of the proposed Project is provided in the following subsections. Additional discretionary and administrative actions that would be necessary to implement the proposed Project are listed in Table 3-1, *Matrix of Project Approvals/Permits*, at the end of this section.

3.1 PROPOSED DISCRETIONARY APPROVALS

3.1.1 General Plan Amendment (PEN18-0024)

General Plan Amendment (PEN18-0024) would amend the City of Moreno Valley General Plan Land Use Map to change the land use designation for the entire Project site from "Office" to "Business Park / Light Industrial" (refer to Figure 3-1, *General Plan Amendment (PEN18-0024)*). According to the City of Moreno Valley General Plan, the "Business Park / Light Industrial" land use designation is intended for "manufacturing, research and development, warehousing and distribution, as well as office and support commercial activities" (Moreno Valley, 2006a, p. 9-7).

3.1.2 Change of Zone (PEN18-0025)

Change of Zone (PEN18-0025) would amend the City of Moreno Valley Zoning Map to change the zoning designation for the entire Project site from "Office" to "Light Industrial" (refer to Figure 3-2, *Change of Zone (PEN18-0025)*. According to the City of Moreno Valley Municipal Code, the "Light Industrial" zoning designation is intended "to provide for light manufacturing, light industrial, research and development, warehousing and distribution and multi-tenant industrial uses, as well as certain supporting administrative and professional offices and commercial uses on a limited basis" (Moreno Valley, 2017, § 9.05.020).

3.1.3 Plot Plan (PEN18-0023)

As shown on Figure 3-3, *Plot Plan (PEN18-0023)*, the Project Applicant proposes to construct a 204,022-square foot (s.f.) warehouse facility on the subject property. The proposed facility would consist of 194,022 s.f. of warehouse floor area, 5,000 s.f. of office space on the first floor, and 5,000 s.f. of mezzanine office space.

Vehicular access to the Project site would be provided by three driveways – two driveways onto Frederick Street and one driveway onto Brodiaea Avenue. The northernmost driveway onto Frederick Street would be used for truck and passenger vehicle traffic access and would be restricted to right turn movements when entering/exiting the site. The southernmost driveway onto Frederick Street would be the de facto eastern leg of the Frederick Street / Calle San Juan intersection and would only be used by passenger vehicles accessing the site; this driveway would be controlled by an existing traffic signal and would have no restrictions for vehicle turning movements. The proposed driveway onto Brodiaea Avenue would be used

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

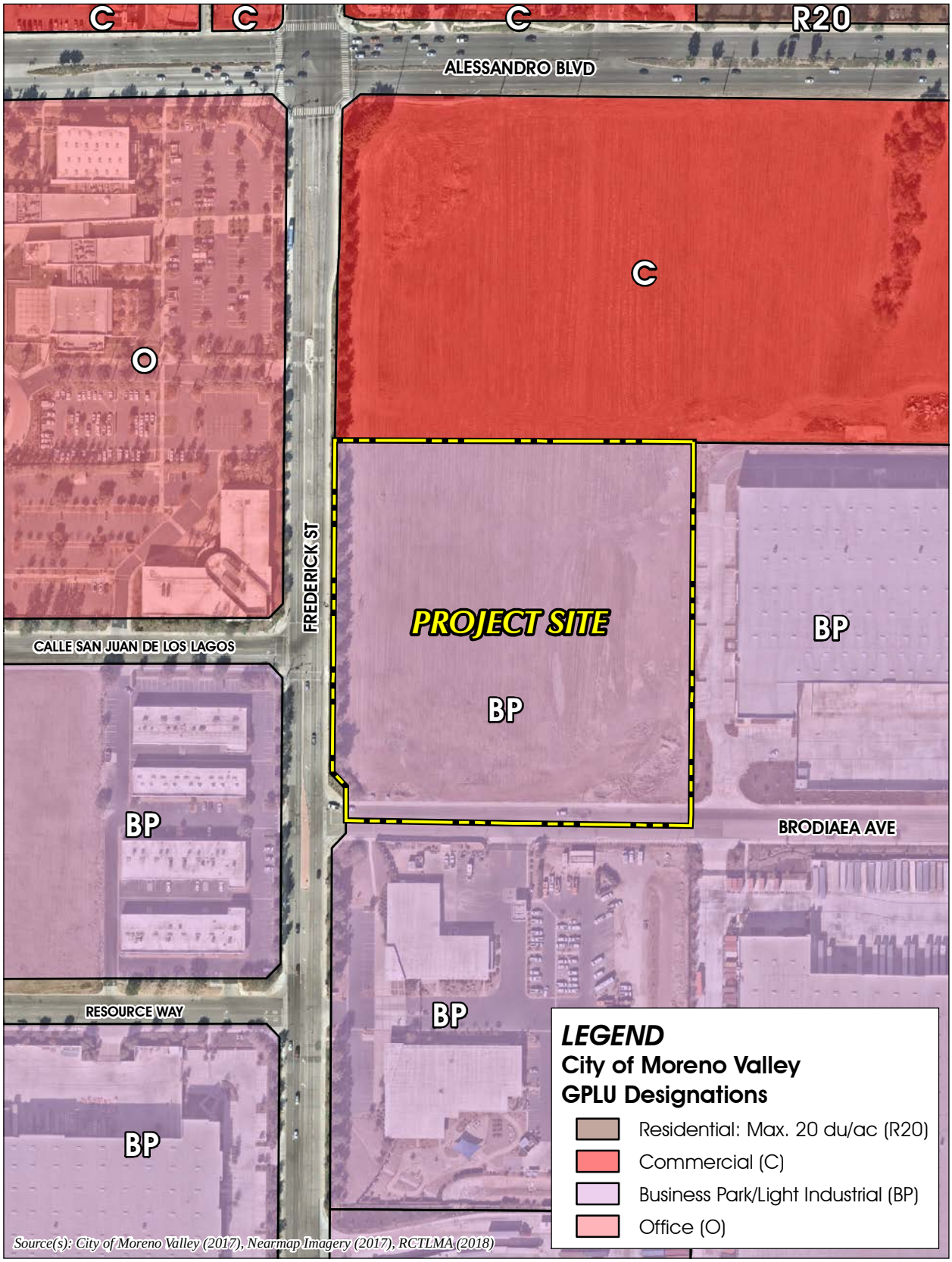


Figure 3-1

GENERAL PLAN AMENDMENT (PEN18-0024)

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

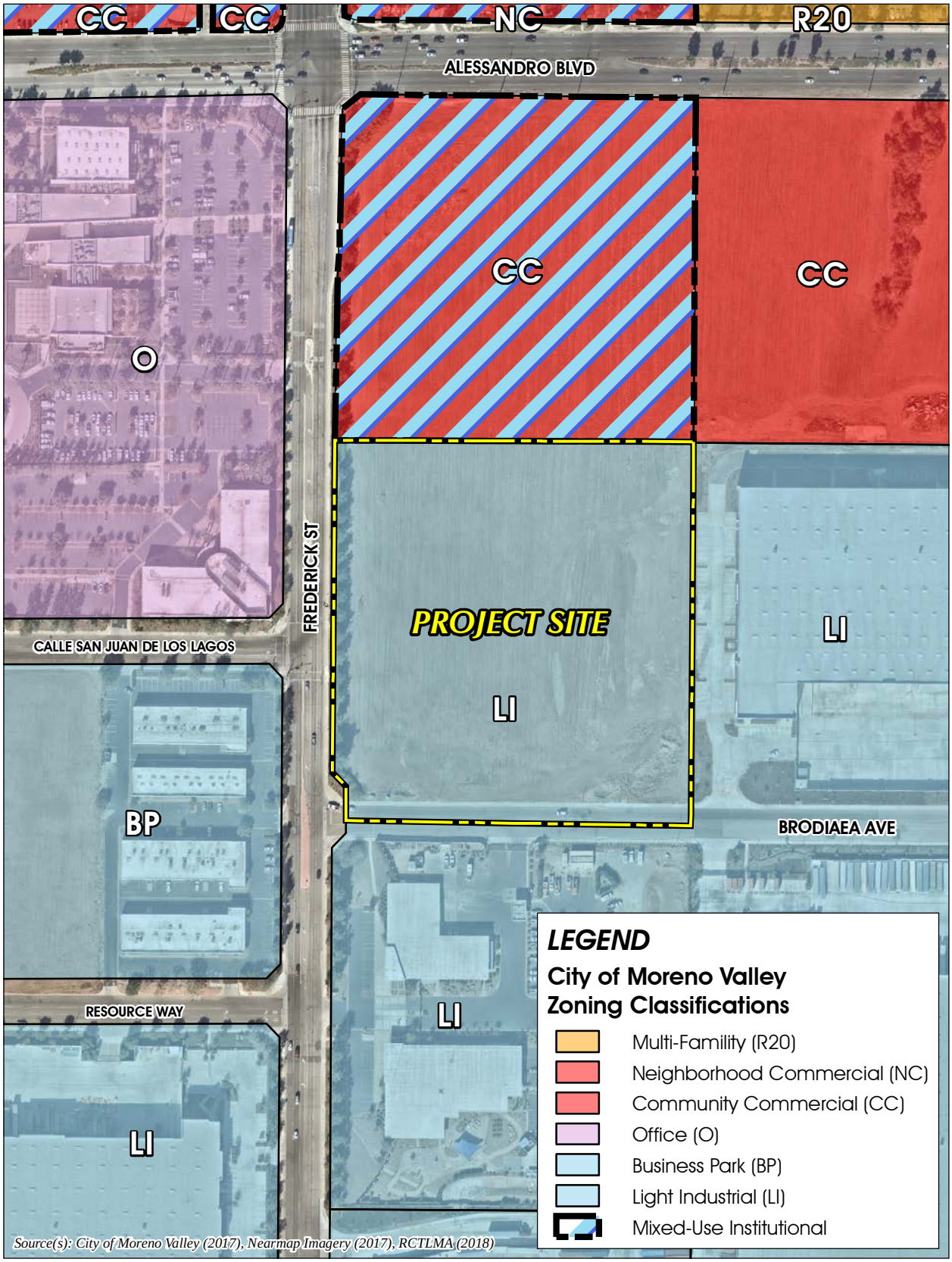
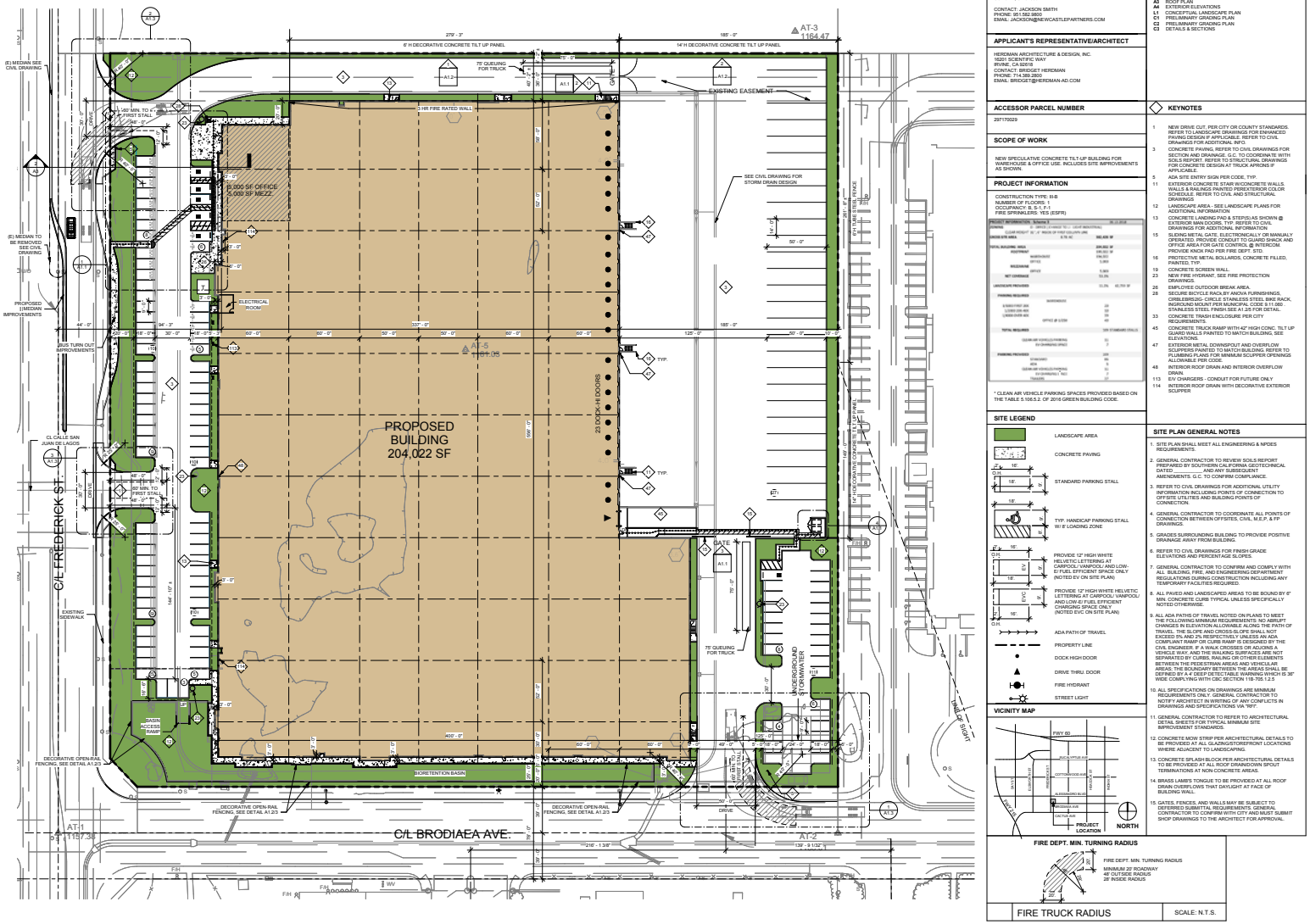


Figure 3-2

CHANGE OF ZONE (PEN18-0025)

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,



DEVELOPER/OWNER

NEWCASTLE PARTNERS, INC.
4740 GREEN RIVER ROAD, #118
CORONA, CA 92880

CONTACT: JACKSON SMITH
PHONE: (951.582.3800
EMAIL: JACKSON@NEWCASTLEPARTNERS.COM

APPLICANT'S REPRESENTATIVE/ARCHITECT

HERDMAN ARCHITECTURE & DESIGN, INC.
1020 E. CENTRE WAY
YORBA LINDA, CA

CONTACT: BRIDGET HERDMAN
PHONE: 714.389.2800
EMAIL: BRIDGET@HERDMAN-AD.COM

ACCESSOR PARCEL NUMBER

297170029

SCOPE OF WORK

NEW SPECULATIVE CONCRETE TILT-UP BUILDING FOR WAREHOUSE & OFFICE USE. INCLUDES SITE IMPROVEMENTS AS SHOWN.

PROJECT INFORMATION

CONSTRUCTION TYPE: II-B
NUMBER OF FLOORS: 1
OCCUPANCY: B, S-1, F-1
FIRE SPRINKLERS: YES (ESFR)

* CLEAN AIR VEHICLE PARKING SPACES PROVIDED BASED ON THE TABLE 5.106.5.2 OF 2016 GREEN BUILDING CODE.

SHEET INDEX

A1 SITE PLAN
A1.1 SITE DETAILS
A2 FLOOR PLAN
A3 ROOF PLAN
A4 EXTERIOR ELEVATIONS
L1 CONCEPTUAL LANDSCAPE PLAN
C1 PRELIMINARY GRADING PLAN
C2 PRELIMINARY GRADING PLAN
C3 DETAILS & SECTIONS

KEYNOTES

1 NEW DRIVE CUT, PER CITY OR COUNTY STANDARDS. REFER TO LANDSCAPE DRAWINGS FOR ENHANCED PAVING DESIGN IF APPLICABLE. REFER TO CIVIL DRAWINGS FOR ADDITIONAL INFO.
3 CONCRETE PAVING, REFER TO CIVIL DRAWINGS FOR SECTION AND DRAINAGE. G.C. TO COORDINATE WITH SOILS REPORT. REFER TO STRUCTURAL DRAWINGS FOR CONCRETE DESIGN AT TRUCK APRONS IF APPLICABLE.
5 ADA SITE ENTRY SIGN PER CODE, TYP.
11 EXTERIOR CONCRETE STAIR W/CONCRETE WALLS. REFER TO A4 FOR FINISH AND EXTERIOR COLOR SCHEDULE. REFER TO CIVIL AND STRUCTURAL DRAWINGS
12 LANDSCAPE AREA - SEE LANDSCAPE PLANS FOR ADDITIONAL INFORMATION
13 CONCRETE LANDING PAD & STEP(S) AS SHOWN @ EXTERIOR MAN DOORS, TYP. REFER TO CIVIL DRAWINGS FOR ADDITIONAL INFORMATION.
15 SLIDING METAL GATE, ELECTRONICALLY OR MANUALLY OPERATED. PROVIDE CONDUIT TO GUARD SHACK AND OFFICE AREA FOR GATE CONTROL @ INTERCOM. PROVIDE KNOX PAD PER FIRE DEPT. STD.
16 PROTECTIVE METAL BOLLARDS, CONCRETE FILLED, PAINTED, TYP.
19 CONCRETE SCREEN WALL.
23 NEW FIRE HYDRANT, SEE FIRE PROTECTION DRAWINGS.
26 EMPLOYEE OUTDOOR BREAK AREA.
28 SECURE BICYCLE RACK,BY ANOVA FURNISHINGS ORBLEBRSIG- CIRCLE STAINLESS STEEL BIKE RACK, INGROUND MOUNT,PER MUNICIPAL CODE 9.11.060. STAINLESS STEEL FINISH SEE A1.2/5 FOR DETAIL.
33 CONCRETE TRASH ENCLOSURE PER CITY REQUIREMENTS.
45 CONCRETE TRUCK RAMP WITH 42" HIGH CONC. TILT UP GUARD WALLS PAINTED TO MATCH BUILDING, SEE ELEVATIONS.
47 EXTERIOR METAL DOWNSPOUT AND OVERFLOW SCUPPERS PAINTED TO MATCH BUILDING. REFER TO STRUCTURAL DRAWINGS FOR MINIMUM SCUPPER OPENINGS ALLOWABLE PER CODE.
48 INTERIOR ROOF DRAIN AND INTERIOR OVERFLOW DRAIN.
113 EV CHARGERS - CONDUIT FOR FUTURE ONLY
114 INTERIOR ROOF DRAIN WITH DECORATIVE EXTERIOR SCUPPER

SITE LEGEND

LANDSCAPE AREA
CONCRETE PAVING
STANDARD PARKING STALL
TYP. HANDICAP PARKING STALL W/ 8' LOADING ZONE
PROVIDE 12" HIGH WHITE HELVETIC LETTERING AT CARPOOL/ VANPOOL AND LOW-E/ FUEL EFFICIENT SPACE ONLY (NOTED EV ON SITE PLAN)
PROVIDE 12" HIGH WHITE HELVETIC LETTERING AT CARPOOL/ VANPOOL AND LOW-E/ FUEL EFFICIENT CHARGING SPACE ONLY (NOTED EVC ON SITE PLAN)
ADA PATH OF TRAVEL
PROPERTY LINE
DOCK HIGH DOOR
DRIVE THRU DOOR
FIRE HYDRANT
STREET LIGHT

SITE PLAN GENERAL NOTES

1. SITE PLAN SHALL MEET ALL ENGINEERING & NPDES REQUIREMENTS.
2. GENERAL CONTRACTOR TO REVIEW SOILS REPORT PREPARED BY SOUTHERN CALIFORNIA GEOTECHNICAL DATED _____ AND ANY SUBSEQUENT AMENDMENTS. G.C. TO CONFIRM COMPLIANCE.
3. REFER TO CIVIL DRAWINGS FOR ADDITIONAL UTILITY INFORMATION INCLUDING POINTS OF CONNECTION TO PUBLIC UTILITIES AND BUILDING POINTS OF CONNECTION.
4. GENERAL CONTRACTOR TO COORDINATE ALL POINTS OF CONNECTION BETWEEN OFFSITES, CIVIL, M.E.P. & FP DRAWINGS.
5. GRADES SURROUNDING BUILDING TO PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDING.
6. REFER TO CIVIL DRAWINGS FOR FINISH GRADE ELEVATIONS AND PERCENTAGE SLOPES.
7. GENERAL CONTRACTOR TO CONFIRM AND COMPLY WITH ALL BUILDING, FIRE, AND ENGINEERING DEPARTMENT REGULATIONS DURING CONSTRUCTION INCLUDING ANY TEMPORARY FACILITIES REQUIRED.
8. ALL PAVED AND LANDSCAPED AREAS TO BE BOUND BY 6" MIN. CONCRETE CURB TYPICAL UNLESS SPECIFICALLY NOTED OTHERWISE.
9. ALL ADA PATHS OF TRAVEL NOTED ON PLANS TO MEET THE FOLLOWING MINIMUM REQUIREMENTS: NO ABRUPT CHANGES IN ELEVATION ALLOWABLE ALONG THE PATH OF TRAVEL. THE SLOPE AND CROSS-SLOPE SHALL NOT EXCEED 5% AND 2% RESPECTIVELY UNLESS AN ADA COMPLIANT RAMP OR CURB RAMP IS DESIGNED BY THE CIVIL ENGINEER. IF A WALK CROSSES OR ADJOINS A VEHICULAR WAY, AND THE WALKING SURFACES ARE NOT SEPARATED BY CURBS, RAILINGS, OR OTHER BARRIERS BETWEEN THE PEDESTRIAN AREAS AND VEHICULAR AREAS, THE BOUNDARY BETWEEN THE AREAS SHALL BE DEFINED BY A 4' DEEP DETECTABLE WARNING WHICH IS 36" WIDE COMPLYING WITH CBC SECTION 11B-705.1.2.5
10. ALL SPECIFICATIONS ON DRAWINGS ARE MINIMUM REQUIREMENTS ONLY. GENERAL CONTRACTOR TO NOTIFY ARCHITECT IN WRITING OF ANY CONFLICTS IN DRAWINGS AND SPECIFICATIONS VIA "RFI".
11. GENERAL CONTRACTOR TO REFER TO ARCHITECTURAL DETAIL SHEETS FOR TYPICAL MINIMUM SITE IMPROVEMENT STANDARDS.
12. CONCRETE MOW STRIP PER ARCHITECTURAL DETAILS TO BE PROVIDED AT ALL GLAZING/STOREFRONT LOCATIONS WHERE ADJACENT TO LANDSCAPING.
13. CONCRETE SPLASH BLOCK PER ARCHITECTURAL DETAILS TO BE PROVIDED AT ALL ROOF DRAIN/DOWN SPOUT TERMINATIONS AT NON-CONCRETE AREAS.
14. BRASS LAMB'S TONGUE TO BE PROVIDED AT ALL ROOF DRAIN OVERFLOWS THAT DAYLIGHT AT FACE OF BUILDING WALL.
15. GATES, FENCES, AND WALLS MAY BE SUBJECT TO DEFERRED SUBMITTAL REQUIREMENTS. GENERAL CONTRACTOR TO CONFIRM WITH CITY AND MUST SUBMIT SHOP DRAWINGS TO THE ARCHITECT FOR APPROVAL.

VICINITY MAP

FIRE DEPT. MIN. TURNING RADIUS

FIRE TRUCK RADIUS | SCALE: N.T.S.

Source(s): Herdman (08-06-2018)

NOT TO SCALE

Figure 3-3

PLOT PLAN (PEN18-0023)

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce

for truck and passenger vehicle traffic access and would have no restrictions for vehicle turning movements. All Project driveways that would be utilized by trucks would feature a sign directing exiting truck drivers to City of Moreno Valley truck routes. The City of Moreno Valley designates Frederick Street as a truck route.

B. Parking and Loading

Figure 3-3 depicts the number and location of parking spaces and loading bays for the Project. The Project would include 109 total automobile parking spaces, including 86 standard spaces, five (5) handicap-accessible stalls, 11 clean air vehicle stalls, and 7 (seven) electrical vehicle charging stalls. The total number of parking spaces proposed by the Project meets the number of parking spaces – 109 – required by the City of Moreno Valley. In addition, the Project includes 23 loading docks on the east side of the building and 27 truck trailer parking spaces. All on-site parking spaces, drive aisles, and loading areas would be paved with concrete.

The Project provides six (6) bicycle parking spaces (two (2) bicycle racks, each with three (3) bicycle spaces) in compliance with the Moreno Valley Municipal Code Section 9.11.060(B)(1), which requires bicycle parking to be provided at a minimum rate equal to 5 percent of the required automobile parking spaces (6 bicycle spaces ÷ 109 total required parking spaces = 5.45%).

C. Architecture, Walls, and Fences

Figure 3-4, *Conceptual Architectural Elevations*, depicts the Project's conceptual architectural design. The proposed warehouse building would be constructed to a maximum height of approximately 45 feet (measured from finished grade to the top of the parapets). The building would be constructed with painted concrete tilt-up panels and low-reflective, blue-glazed glass. Articulated building elements, including parapets, wall recesses, mullions, aluminum canopies, and stone veneer, are proposed as decorative elements. The exterior color palette for the proposed building is comprised of various neutral colors, including shades of white, tan, gray, and blue.

A 14-foot tall, painted concrete screen wall would be installed along portions of the site's eastern and northern boundaries to screen views of the truck court/loading area from public streets. A six (6)-foot tall, black, tube steel fence would enclose the portions of the truck court/loading area that are not visible from public streets. In addition, a six (6)-foot tall painted concrete screen wall would be installed along a portion of the site's northern boundary to provide a transition between on-site uses and future commercial uses on the undeveloped property to the north of the Project site. Lastly, a 3.5-foot tall open-rail fence with black metal posts would be installed along the outside perimeter of the bioretention basin which is located along the southern and southeastern boundaries of the Project site.

D. Conceptual Landscape Plan

The Project's conceptual landscape plan is depicted on Figure 3-5, *Conceptual Landscape Plan*. Proposed landscaping would be ornamental in nature, with the exception of the plantings in the proposed bioretention basin – where species would be selected for their water quality benefits. Landscaping would feature drought-tolerant trees, shrubs, accent succulents and ornamental grasses, and groundcovers. Plant materials would be concentrated along the Project site's frontages with Brodiaea Avenue and Frederick Street, at building entries, along the eastern boundary of the Project site, and within the passenger vehicle parking

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

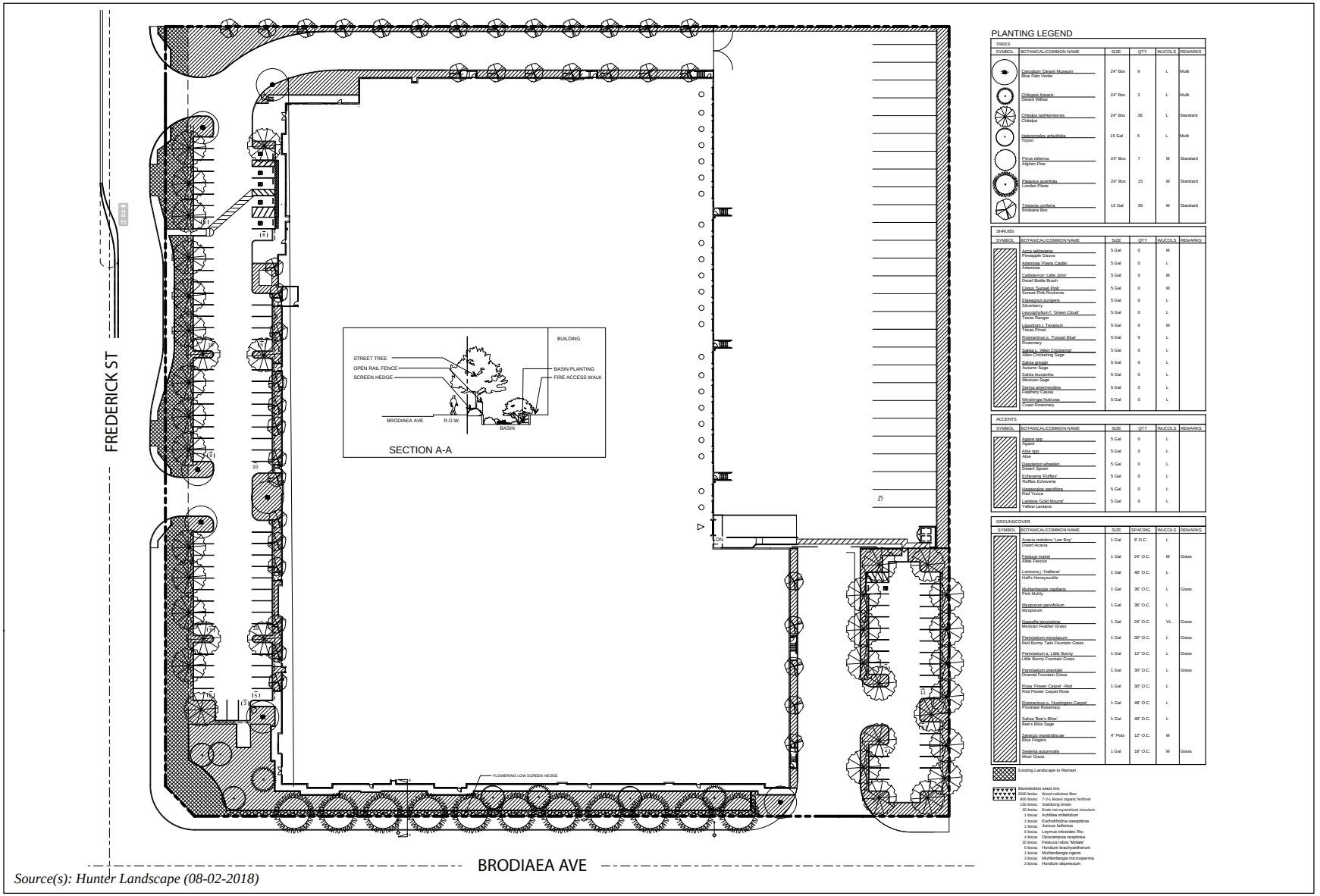
Source(s): Herdman (04-08-2018)

NOT TO SCALE

Figure 3-4

CONCEPTUAL ARCHITECTURAL ELEVATIONS

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce



Source(s): Hunter Landscape (08-02-2018)

NOT TO SCALE

Figure 3-5

CONCEPTUAL LANDSCAPE PLAN

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce

lots. The Project would retain existing landscaping abutting Frederick Street, with the exception of landscaping that would need to be removed to accommodate proposed driveways. The Project's planting and irrigation plans are required to comply with Chapter 9.17 of the Moreno Valley Municipal Code, which establishes requirements for landscape design, automatic irrigation system design, and water-use efficiency.

3.2 PROJECT TECHNICAL CHARACTERISTICS

3.2.1 Project Improvements

A. Public Roadway Improvements

The existing public street network servicing and abutting the Project site consists of Frederick Street to the west and Brodiaea Avenue to the south.

Under existing conditions, Frederick Street is developed to its full width with two vehicular travel lanes in each direction, a raised median, and sidewalk with parkway along both sides of the street. The Project would not alter the primary vehicular travel way of Frederick Street, but would construct a bus turn out for the existing RTA bus stop located approximately 120 feet north of the intersection of Frederick Street and Brodiaea Avenue.

Under existing conditions, Brodiaea Avenue is developed to its full width with one vehicular travel lane in each direction, a painted median, and sidewalks on both sides of the street. The Project would install a landscaped parkway along the site's frontage and would retain the existing curb-adjacent sidewalk.

B. Water and Wastewater Infrastructure

Water and wastewater service would be provided to the Project site by the EMWD. As shown on Figure 3-6, *Existing Water and Sewer Network*, under pre-development conditions, potable water service is provided to the Project area via a 12-inch-diameter water main beneath Brodiaea Avenue and two 16-inch-diameter water mains beneath Frederick Street. Additionally, wastewater service is provided to the Project area via one 21-inch-diameter sewer line in Frederick Street and one eight (8)-inch-diameter sewer line in Brodiaea Avenue. The Project would construct new connections to the existing water and wastewater mains beneath Brodiaea Avenue and Frederick Street. All proposed water and wastewater facilities would be designed and constructed in accordance with EMWD standards.

C. Drainage Plan

The Project's stormwater drainage system is depicted on Figure 3-7, *Conceptual Drainage Plan*. The Project's on-site stormwater drainage system would consist of catch basins, underground storm drain pipes, a bioretention basin, and an underground stormwater storage vault/modular wetland. The system is designed to collect, treat, and/or temporarily detain stormwater runoff before discharging treated flows off-site.

The Project's proposed drainage plan generally bisects the Project site into two (2) distinct drainage areas: the Western Area and the Eastern Area. The Western Area comprises the passenger parking lot west of the proposed warehouse, the western portion of the proposed warehouse, and the landscaped area in the southwestern corner and southern boundary of the Project site. The Eastern Area compromises the truck lot and passenger parking lot east of the proposed warehouse, the eastern portion of the proposed warehouse, and the drive aisles along the northern and eastern portions of the proposed warehouse.

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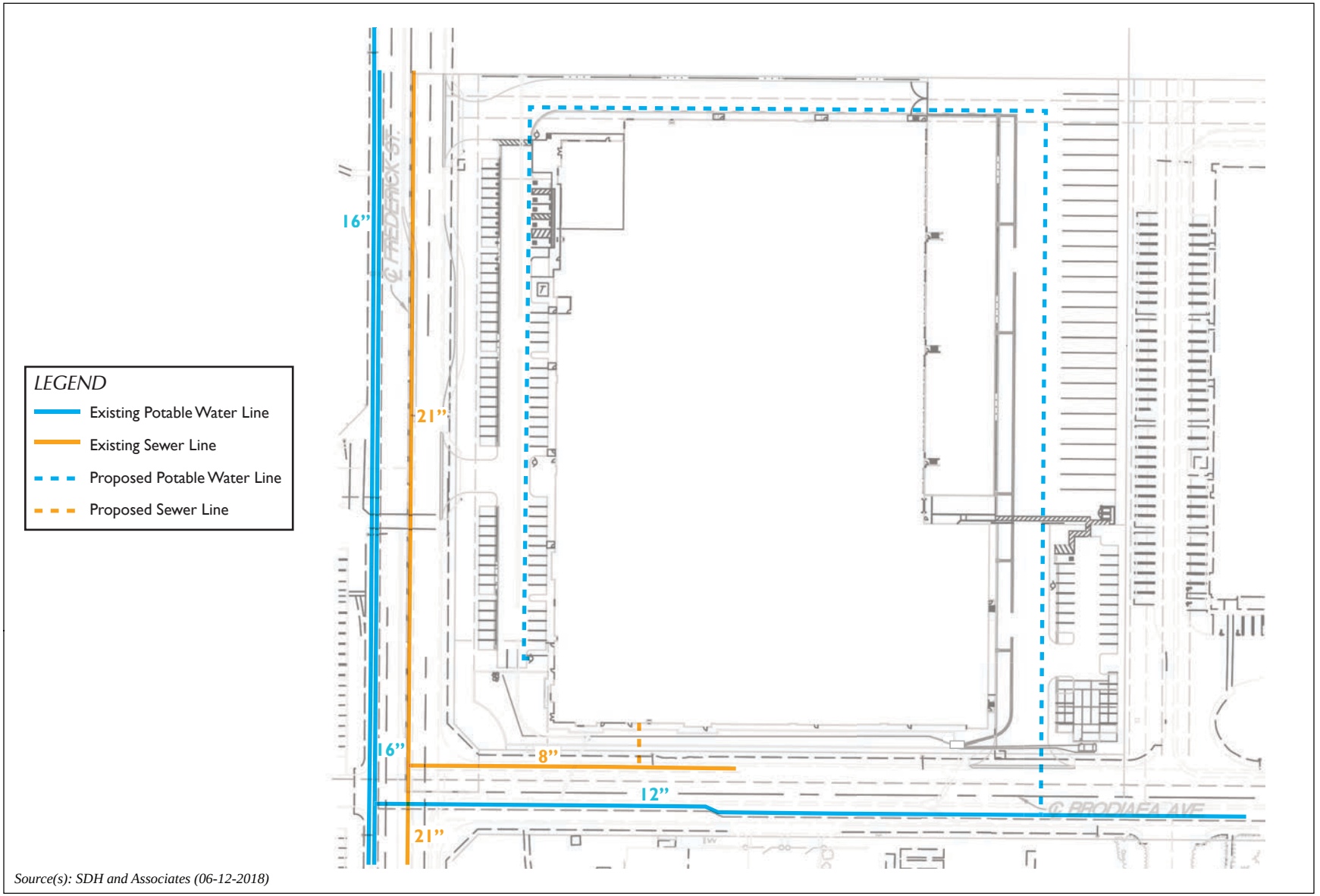
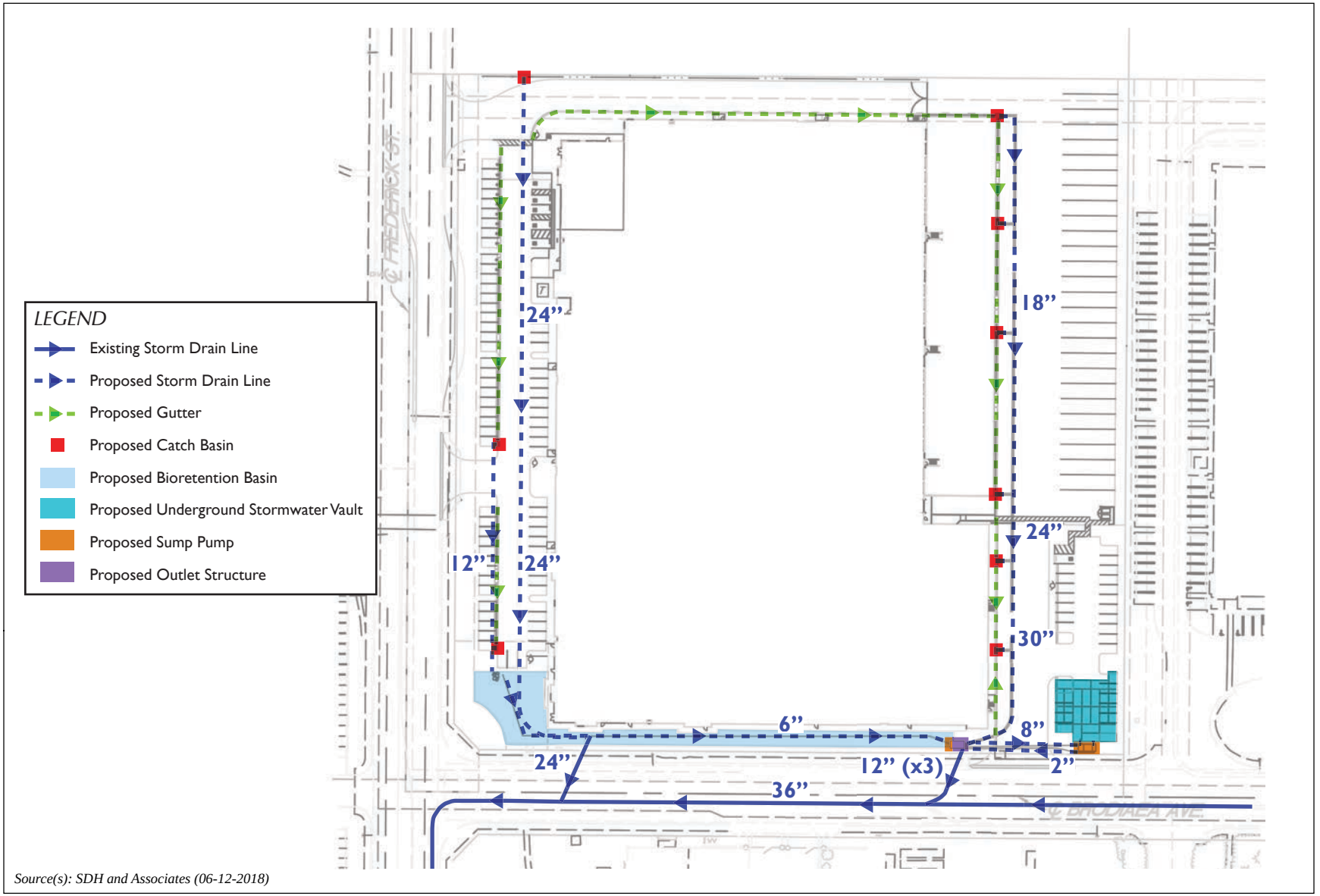


Source(s): SDH and Associates (06-12-2018)

Figure 3-6

EXISTING WATER AND SEWER NETWORK

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce



Source(s): SDH and Associates (06-12-2018)

NOT TO SCALE

Figure 3-7

CONCEPTUAL DRAINAGE PLAN

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce

Stormwater flows within the Western Area would be conveyed to a landscaped bioretention basin located at southwestern corner of the Project site and along the southern boundary of the Project site. The bioretention basin would capture and treat low flows (i.e., generally the first 3/4-inch of rainfall) by facilitating percolation into the landscaped coverage and into a perforated pipe located beneath the bioretention basin. From there, low flows would be conveyed easterly through the perforated pipe toward a drainage inlet (herein, "Inlet A") located adjacent to the southeast corner of the proposed warehouse building. Stormwater from the Western Area would then convey from Inlet A into the existing storm drain line located beneath Brodiaea Avenue. When the bioretention basin reaches capacity, high flows (i.e., the higher volumes flows which follow low flows) from the Western Area would pond within the bioretention area and surface flow directly into Inlet A and proceed toward the existing storm drain line beneath Brodiaea Avenue.

Stormwater flows within the Eastern Area would be conveyed into an underground storm drain line (located east of the proposed warehouse building) and would travel southerly into Inlet A. From there, low flows would be directed easterly toward an underground stormwater vault (located beneath the passenger vehicle parking lot) and would be treated by a closed modular wetland system or approved equal LID BMP as determined in the final water quality management plan. Once treated, low flows would be pumped out of the stormwater vault and would convey westerly, back to Inlet A. Low flows from the Eastern Area would then convey from Inlet A into the existing storm drain line beneath Brodiaea Avenue. When the underground vault reaches capacity, high flows from the Eastern Area would bypass the underground vault altogether and would instead convey directly into Inlet A and proceed toward the existing storm drain line beneath Brodiaea Avenue.

Off-site runoff, which sheet flows southerly toward the Project site from properties to the north, would be conveyed into a catch basin located along the Project's northern boundary (northwest of the proposed warehouse building). Off-site stormwater would then convey southerly via an underground storm drain line (located beneath the western passenger vehicle parking lot) and would terminate at an existing drainage inlet (herein, "Inlet B") located beneath the bioretention basin in the southwestern portion of the Project site. The off-site stormwater flows would then convey into the existing storm drain line beneath Brodiaea Avenue.

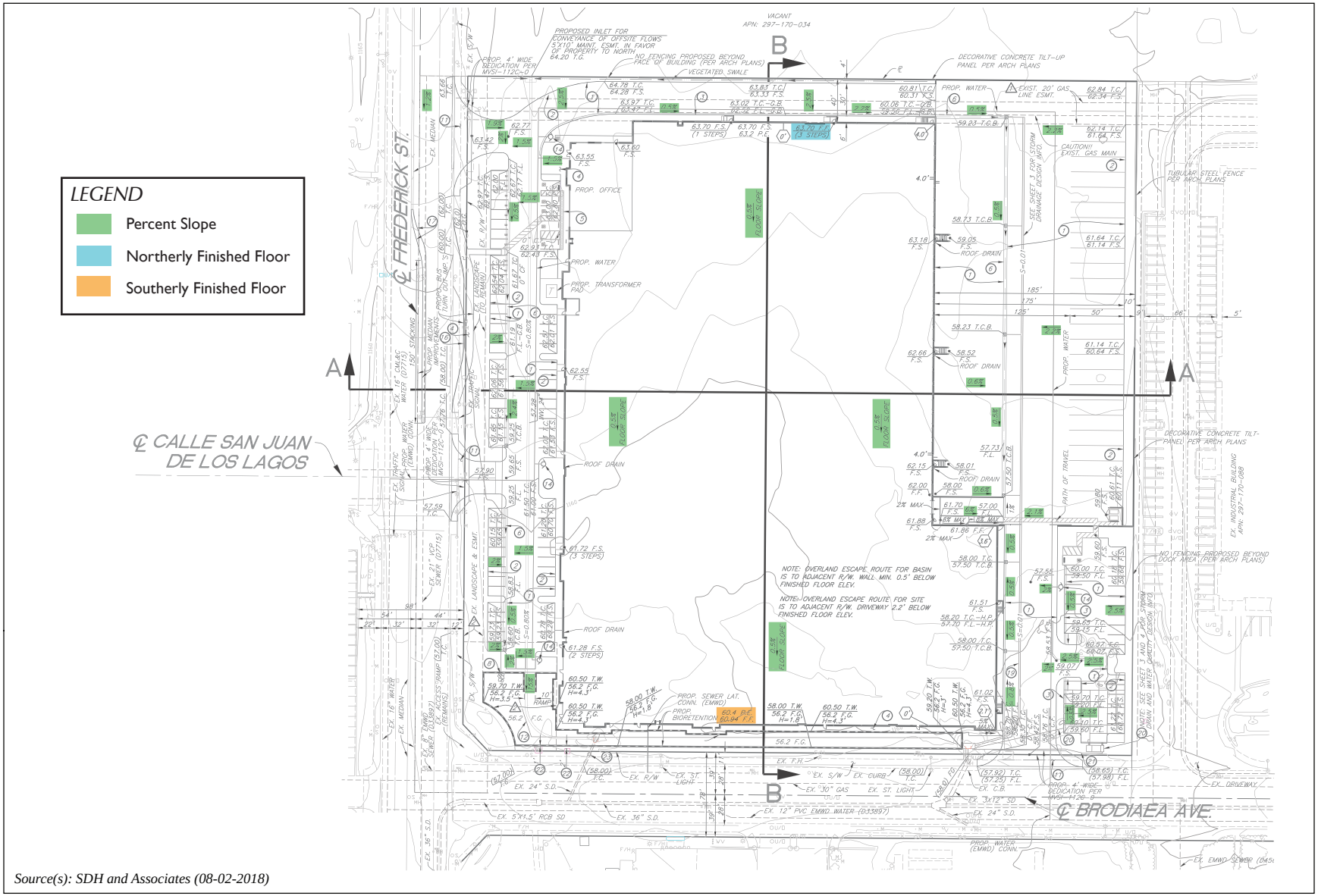
D. Earthwork and Grading

As shown on Figure 3-8, *Conceptual Grading Plan*, earthwork and grading would occur over the entire Project site. No area of the site would be left undisturbed. Proposed earthwork and grading activities would occur in one phase and would result in approximately 15,000 cubic yards (c.y.) of cut and 15,000 c.y. of fill. No import or export of soil materials would be required. Proposed grading would not create manufactured slopes.

3.2.2 Construction Characteristics

The proposed Project is expected to be constructed over the course of approximately 9 months, commencing in December 2018 and completing in September 2019. Construction activities would commence with site preparation, during which the property would be graded and underground infrastructure would be installed. Next, surface materials would be poured and the building would be erected, connected to the underground utility system, and painted. Lastly, landscaping, fencing/walls, and other site improvements would be installed, and fine grading would occur.

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,



Source(s): SDH and Associates (08-02-2018)

NOT TO SCALE

Figure 3-8

CONCEPTUAL GRADING PLAN

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce

Construction equipment is expected to operate on the Project site eight hours per day, five days per week during the construction phase. The types and numbers of heavy equipment expected to be used during construction activities are summarized in Table 3-3 of *Technical Appendix A.*

3.2.3 Operational Characteristics

At the time this MND was prepared, the future Project occupant(s) were unknown. The Project Applicant expects that the building primarily would be occupied by warehouse distribution operators. The proposed building is not designed to include any cold storage or refrigerated uses. For purposes of evaluation in this MND, it is anticipated that the Project would be operational in the year 2020. The Project could be operational 24 hours per day, seven days per week, with exterior loading and parking areas illuminated at night. Lighting would be subject to compliance with Moreno Valley Municipal Code Section 9.08.100, which states that exterior lighting shall be energy-efficient, shielded, or recessed, and directed downward, and away from adjoining properties. The building is designed such that business operations would be conducted within the enclosed building, with the exception of traffic movement, parking, and the loading, and unloading of tractor trailers at designated loading bays. The outdoor cargo handling equipment used during loading, and unloading of trailers (e.g., yard trucks, hostlers, yard goats, pallet jacks, forklifts) are expected to be powered by non-combustion engines (e.g. electric or non-diesel). During long-term operating conditions, the Project is calculated to generate approximately 486 actual vehicle trips[1] on a daily basis, including 386 daily passenger vehicle trips and 100 daily truck trips (Urban Crossroads, 2018c, Table 4-2).

Based on standard EMWD demand rates for industrial warehouse/distribution land uses, the Project is estimated to result in a demand for approximately 4,840 gallons of water per day and 14,960 gallons of wastewater treatment capacity per day (EMWD's standard demand rates for industrial warehouse/distribution land uses are 550 gallons of water per acre per day and 1,700 gallons of wastewater per acre per day, respectively). Based on calculations from the Project's Greenhouse Gas Analysis (*Technical Appendix F*), the Project's operational energy use is estimated at approximately 822,315 kilowatt hours (kWh) per year, and natural gas usage is estimated at approximately 1,657,053 kilo-British thermal units per year (kBTU/yr) (Urban Crossroads, 2018c, Appendix 3.2).

3.3 STANDARD REQUIREMENTS AND CONDITIONS OF APPROVAL

The proposed Project and its technical aspects have been reviewed in detail by the City of Moreno Valley. Various City departments and divisions are responsible for reviewing land use applications for compliance with City codes and regulations. These departments and divisions also were responsible for reviewing this MND for technical accuracy and compliance with CEQA. The City of Moreno Valley departments and divisions responsible for technical review include:

- Community Development Department, Building and Safety Division
- Community Development Department, Planning Division
- Public Works Department, Land Development Division
- Public Works Department, Transportation Engineering Division

[1]Although the Project proposes warehouse land uses, the number of traffic trips identified here and evaluated in this MND is based off a mix of warehouse and general light industrial land uses as such a mix would generate more traffic than solely warehouse land uses. This was done as a conservative measure to overstate the Project's potential environmental effects. Refer to Subsection 15, *Transportation/Traffic*, of the Initial Study / Environmental Checklist Form for additional details regarding the methodology for the Project's traffic generation calculations.

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- Public Works Department, Special Districts Division
- Fire Prevention Bureau
- Moreno Valley Utility

Review of the proposed Project will result in the production of a comprehensive set of draft Conditions of Approval that will be available for public review prior to consideration of the Project for approval by the City of Moreno Valley. If approved, the Project would be required to comply with all imposed Conditions of Approval.

Conditions of Approval and other applicable regulations, codes, and requirements that the Project is required to comply with and that result in the reduction or avoidance of an environmental impact are specified throughout the analysis presented in this MND.

3.4 SUMMARY OF REQUESTED ACTIONS

The City of Moreno Valley has primary approval responsibility for the proposed Project. As such, the City is the Lead Agency for this MND pursuant to CEQA Guidelines Section 15050. The City will consider the information contained in this MND and this MND's Administrative Record in its decision-making processes.

In the event of approval of the Project and this MND, the City would conduct administrative reviews and issue ministerial permits to implement the Project. A list of the primary actions under City jurisdiction and the jurisdiction of other agencies is provided in Table 3-1, *Matrix of Project Approvals/Permits*. This MND covers all federal, state, local government and quasi-government approvals which may be needed to construct or implement the Project, whether or not they are explicitly listed in Table 3-1, or elsewhere in this MND (CEQA Guidelines § 15124(d)).

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Table 3-1 Matrix of Project Approvals/Permits

Public Agency	Approvals and Decisions
City of Moreno Valley	
Proposed Project – City of Moreno Valley Discretionary Approvals	
City of Moreno Valley City Council	• Approve or deny General Plan Amendment (PEN18-0024) and Change of Zone (PEN18-0025). • Approve, conditionally approve, or deny Plot Plan (PEN18-0023). • Reject or adopt this MND along with the appropriate CEQA Findings.
Subsequent City of Moreno Valley Discretionary and Ministerial Approvals	
City of Moreno Valley Implementing Approvals	• Approve Final Maps. • Approve Conditional or Temporary Use Permits, if required. • Issue Grading Permits. • Issue Building Permits. • Approve Road Improvement Plans. • Issue Encroachment Permits. • Accept public-right-of way dedications. • Approvals by Moreno Valley Utility associated with installing electrical infrastructure.
Other Agencies – Subsequent Approvals and Permits	
Riverside County Flood Control and Water Conservation District	• Administrative approvals for the design of drainage infrastructure.
Eastern Municipal Water District	• Administrative approvals for the design of on and off-site water and sewer infrastructure.
Santa Ana Regional Water Quality Control Board	• Issuance of a Construction Activity General Construction Permit. • Issuance of a National Pollutant Discharge Elimination System (NPDES) Permit.
Riverside County Airport Land Use Commission	• Determination of consistency with the ALUCP.

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4.0 INITIAL STUDY CHECKLIST

INITIAL STUDY/
ENVIRONMENTAL CHECKLIST FORM
CITY OF MORENO VALLEY

1. **Project Title:** Centerpointe Commerce Center

2. **Lead Agency Name and Address:** City of Moreno Valley Community Development Department, Planning Division, 14177 Frederick Street, Moreno Valley, CA 92552

3. **Contact Person and Phone Number:** Seda Yaghoubian, Planning Consultant, (714) 401-9514

4. **Project Location:** Northwest corner of the Brodiaea Avenue/Frederick Street intersection.

5. **Project Sponsor's Name and Address:** Newcastle Partners, 4740 Green River Road, Suite 118, Corona, CA 92880

6. **General Plan Designation:** Office

7. **Zoning:** Office

8. **Description of the Project:** Refer to Section 2.0 of this Initial Study/Mitigated Negative Declaration

9. **Surrounding Land Uses and Setting:** The Project site is bounded on the west by Frederick Street. West of Frederick Street is the City of Moreno Valley Civic Center complex and office/business park land uses. The Project site is bounded on the east by a large warehouse facility. The Project site is bounded on the north by vacant, undeveloped property and bounded on the south by Brodiaea Avenue. South of Brodiaea Avenue are office and warehouse land uses.

10. **Other public agencies whose approval is required:** Riverside County Airport Land Use Commission (Airport Land Use Plan Consistency Determination); Santa Ana Regional Water Quality Control Board (NPDES Permit), Riverside County Flood Control and Water Conservation District (drainage infrastructure design); and Eastern Municipal Water District (domestic water and sewer system design).

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ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below (✓) would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

	Aesthetics		Hazards & Hazardous Materials		Recreation
	Agriculture and Forestry Resources		Hydrology/Water Quality		Transportation/Traffic
	Air Quality		Land Use/Planning		Tribal Cultural Resources
	Biological Resources		Mineral Resources		Utilities/Service Systems
	Cultural Resources		Noise		Mandatory Findings of Significance
	Geology/Soils		Population/Housing		
	Greenhouse Gas Emissions		Public Services		

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	
I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.	✓
I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.	
I find that the proposed project MAY have a "potential significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.	
I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.	

Signature 9/13/2018 Date

SEDA YAGHOUBIAN, City of Moreno Valley Case Planner
Printed Name

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EVALUATION OF ENVIRONMENTAL IMPACTS

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g. the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g. the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Potentially Significant Unless Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section 17, "Earlier Analysis," may be cross-referenced).

5) Earlier analysis may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063 (c) (3) (d). In this case, a brief discussion should identify the following:

   (a) Earlier Analysis Used. Identify and state where they are available for review.

   (b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   (c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g. general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The analysis of each issue should identify: (a) the significance criteria or threshold used to evaluate each question; and (b) the mitigation measure identified, if any, to reduce the impact to less than significance.

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Issues and Supporting Information	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. AESTHETICS. Would the project:				
A) Have a substantial adverse effect on a scenic vista?			✓	

Source: (City of Moreno Valley, 2006; Google Earth, 2018)

The Project site is located in a relatively flat valley floor, approximately 2.6 miles southeast of the Box Springs Mountains and Rec Canyon foothills, respectively, approximately 9.5 miles west of the Badlands, and approximately 4.1 miles northwest of Mount Russe According to General Plan EIR Figure 5.11-1, *Major Scenic Resources*, the Project site is not located within a view corridor for the B Springs Mountains, Reche Canyon, the Badlands, or Mount Russell. Notwithstanding, Box Springs Mountains is visible from Brodia Avenue along the Project site frontage; however, views of this feature are not prominent in the Project area and the views that are provid are relatively common in Moreno Valley and not unique to the site. Views of Reche Canyon foothills and the Badlands are mos obscured from Frederick Street by existing landscaping along the Project site frontage that will be retained and supplemented. Views Mount Russell also are obscured along Frederick Street by existing landscaping and intervening development. No prominent views Reche Canyon foothills, the Badlands, and Mount Russell are provided from Brodiaea Avenue and the Project would not alter the vie of these resources offered from Brodiaea Avenue. (City of Moreno Valley, 2006, Figure 5.11-1; Google Earth, 2018) Accordingly, t proposed Project would not have a substantial effect on a scenic vista. Impacts would be less than significant.

B) Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?				✓

Source: (City of Moreno Valley, 2006; Google Earth, 2018; Caltrans, 2017)

The Project site is not located within or adjacent to a scenic highway corridor and does not contain scenic resources, such as trees of scer value, rock outcroppings, or historic buildings. There are no State-designated or eligible scenic highways within the City of More Valley or within the vicinity of the Project site (Caltrans, 2017). The Project site also is located approximately 1.8 miles south of SR-6 which the City of Moreno Valley General Plan Figure 7-2 identifies as a "Scenic Route." (Google Earth, 2018; City of Moreno Valle 2006, p. 5.11-1) The Project's proposed physical features – one warehouse building with screen walls, gates, parking lots, truck yar landscaping, etc. – would not be visible from SR-60 due to intervening development and distance. Accordingly, the Project site is r located within a State scenic highway corridor and implementation of the proposed Project would not have a substantial effect on scer resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway corridor. Thus, impact would occur.

C) Substantially degrade the existing visual character or quality of the site and its surroundings?			✓	

Source: (Project Application Materials, 2018; City of Moreno Valley, 2016)

Under existing conditions, the Project site and the surrounding area consist entirely of developed or disturbed land. Immediately ea south, and west of the Project site are fully built-out light industrial and business/office park land uses. Land to the north of the Proj site is vacant and undeveloped. Implementation of the Project would convert vacant, undeveloped land to a warehouse facility with loading/unloading area, parking lot, drive aisles, landscaping, exterior lighting, and signage.

All Project-related construction activities would be temporary in nature and all construction equipment and materials would be remov from the Project site following completion of the Project's construction activities. Project-related changes to local visual character wou be less than significant during near-term construction activities because construction activity is common in the City, would be tempora in nature, and would not substantially degrade the visual character of the area, which currently contains vacant, undeveloped land, n warehouse construction, and established office and warehouse uses.

The Project site is located in a portion of the City of Moreno Valley that has developed with a mix of land uses, with, generally, offi and business park land uses west of Frederick Street and warehouse and light industrial land uses east of Frederick Street. The Projec architecture incorporates design elements on its western façade, including but not limited to decorative glass, stone veneer, and decorati canopies at office entries, that emulate the quality and character of existing office and business park uses located west of Frederick Stre The Project also incorporates other architectural features on its western façade, such as offsets, a varied roofline, glass, and a varied co palette – all complemented with landscaping – to minimize the scale of the proposed building and provide a gradual visual transition fr the existing office and business park uses west of the Project site to the larger scale warehousing and light industrial land uses located e of the site. Therefore, although the Project would alter the visual character of the site, due to its similarity to the character of other existi buildings in the surrounding area, such an alteration would not result in a substantial degradation to the existing visual character. T Project's impacts to visual character would be less than significant.

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Issues and Supporting Information	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact

Although the Project would change the aesthetic conditions on the Project site relative to existing conditions, the Project incorporates number of features to enhance the aesthetic quality of the Project. The Project's architecture incorporates a color palette that would n be visually offensive and also incorporates accent elements, such as colored glass and decorative building elements, for visual intere The Project's landscape plan incorporates attractive plant species that can maintain vibrancy during drought conditions. Additionally, t Project places loading docks and truck parking areas on the east side of the building, which is the furthest point on the property fro public roadways and viewpoints, and would install solid screen walls to shield views of the loading and truck parking area from pub views. The Project's visual features would complement surrounding development and would be consistent with the design standards f industrial development provided by the Moreno Valley General Plan. Based on the foregoing, the Project's impacts to visual qual would be less than significant.

D) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			✓	

Source: (City of Moreno Valley, 2017c; Project Application Materials, 2018)

Under existing conditions, the Project site is vacant and undeveloped and generates no day or nighttime light or glare, although there a existing street lights along the Project's frontages with Frederick Street and Brodiaea Avenue. The proposed Project would inclu exterior lighting; however, the installation of exterior lighting would be ancillary to the proposed industrial building. The proposed Proj would be required to adhere to the lighting requirements as set forth in the Moreno Valley Municipal Code. The Moreno Valley Municip Code Chapter 9.08.100 requires that all outdoor lighting associated with nonresidential uses shall be fully shielded and directed away fro surrounding residential uses to reduce glare and light trespass and shall not exceed one-quarter-foot-candle measured from within five (feet of any property line. The Moreno Valley Municipal Code also specifies that exterior lighting associated with nonresidential uses sh not blink, flash, oscillate, or be of unusually high intensity or brightness. (City of Moreno Valley, 2017c) The Project would be requir to demonstrate compliance with the aforementioned requirements prior to issuance of building permits. The Project's mandato compliance with the City of Moreno Valley Municipal Code would ensure that the Project would not produce a new source of substant light or glare from artificial lighting sources that would adversely affect day or nighttime views in the area.

The Project would involve the construction of one (1) warehouse building with exterior building surfaces that consist of concrete tilt- panels and blue glass. While window glazing has a potential to result in minor glare effects, such effects would not adversely affe daytime views of any surrounding properties, including motorists on adjacent roadways, because the glass used by the Project would low-reflective. Areas proposed for window glazing would be limited, as shown on the Project's application materials. Additionally, t Project does not propose to install rooftop solar panels; however, the roof of the proposed warehouse building could accommodate t potential future installation of solar panels. Because solar panels absorb light – and do not reflect it – they are not expected to result substantial adverse glare effects in the event they are installed on the site in the future. In addition, any solar panels installed on the s in the future would need to be designed to minimize glare in accordance with Riverside County ALUC requirements (refer to analy under Response 7(E)). Accordingly, a less-than-significant daytime glare impact would occur.

In conclusion, the proposed Project would not create a new source of substantial light or glare and would not adversely affect daytime nighttime views of the area. Impacts would be less than significant.

2. AGRICULTURE AND FORESTRY RESOURCES: In determining whether impacts to agricultural resources are significa environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepar by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determini whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to informati compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the For and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in For Protocols adopted by the California Air Resources Board. Would the project:

A) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency to non-agricultural use?				✓

Source: (CDC, n.d.)

According to Farmland Mapping and Monitoring Program mapping information available from the California Department Conservation, the Project site does not contain any soils mapped by the Department of Conservation as "Prime Farmland," "Uniq Farmland," or "Farmland of Statewide Importance." (CDC, n.d.) As such, the Project would not convert Prime Farmland, Uniq Farmland, or Farmland of Statewide Importance to a non-agricultural use. No impact would occur.

B) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				✓

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Issues and Supporting Information	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact

Source: (City of Moreno Valley, 2017b; DOC, 2016; City of Moreno Valley, 2006)

The Project site is zoned for "Office" land uses under existing conditions. There are no properties zoned for agricultural land uses in t Project vicinity. (City of Moreno Valley, 2017b) Therefore, implementation of the Project has no potential to conflict with existi zoning for an agricultural use.

As disclosed in the City of Moreno Valley General Plan FEIR and supported mapping information from the California Department Conservation, no land within the City is under a Williamson Act Contract (DOC, 2016; City of Moreno Valley, 2006, p. 5.8-9). As suc the Project would not conflict with a Williamson Act contract.

C) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				✓

Source: (City of Moreno Valley, 2006)

The Project site is not zoned as forest land, timberland, or Timberland Production, nor is it surrounded by forest land, timberland, Timberland Production land. There are no lands located within the City of Moreno Valley that are zoned for forest land, timberland, timberland zoned Timberland Production. (City of Moreno Valley, 2006, Figure 5.8-1) Therefore, the Project has no potential to confl with any areas currently zoned as forest, timberland, or Timberland Production and would not result in the rezoning of any such lands. such, no impact would occur.

D) Result in the loss of forest land or conversion of forest land to non-forest use?				✓

Source: (City of Moreno Valley, 2006)

The Project site does not contain a forest and is not designated as forest land; thus, the proposed Project would not result in the loss forest land or the conversion of forest land to non-forest use (City of Moreno Valley, 2006, Figure 5.8-1). As such, no impact wou occur.

E) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				✓

Source: (City of Moreno Valley, 2017b; CDC, n.d.)

"Farmland" is defined in Section II(a) of Appendix G of the CEQA Guidelines to mean "Prime Farmland," "Unique Farmland" "Farmland of Statewide Importance." As described above in Response 2(A), the Project site does not contain any soils mapped by t Department of Conservation as "Farmland." Additionally, as described above in Responses 2(C) and 2(D), the Project site and surroundi areas do not contain forest lands and are not designated for forest land uses. Thus, implementation of the Project would not result in t conversion of Farmland to non-agricultural use or the conversion of forest land to non-forest use.

3. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

A) Conflict with or obstruct implementation of the applicable air quality plan?			✓	

Source: (Urban Crossroads, 2018a)

The Project site is located within the South Coast Air Basin (SCAB or "Basin"). The SCAB encompasses approximately 6,745 squa miles and includes Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The SCAB bound by the Pacific Ocean to the west; the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east, respective and the San Diego County line to the south. In these areas, the SCAQMD is principally responsible for air pollution control, and wor directly with the Southern California Association of Governments (SCAG), county transportation commissions, local governments, well as State and federal agencies to reduce emissions from stationary, mobile, and indirect sources to meet State and federal ambient quality standards.

Currently, State and federal air quality standards are exceeded in most parts of the Basin. In response, the SCAQMD has adopted a ser of Air Quality Management Plans (AQMPs) to meet the State and federal ambient air quality standards. AQMPs are updated regularly order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control

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Issues and Supporting Information	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact

the economy. The current AQMP, the *2016 AQMP*, was adopted by SCAQMD in March 2017. Criteria for determining consistency w the *AQMP* are defined in Chapter 12, Section 12.2 and Section 12.3 of the SCAQMD's *CEQA Air Quality Handbook (1993)*. The Projec consistency with these criteria is discussed below.

Consistency Criterion No. 1: The Project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.

Consistency Criterion No. 1 refers to violations of the California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS). As evaluated under Responses 3(B), (C), and (D), below, the Project would not exceed regional or localized significance thresholds for any criteria pollutant during construction or during long-term operation with the application of mandatory regulatory requirements. Therefore, the Project would not violate either the CAAQS or NAAQS. Accordingly, the Project's regional and localized emissions would not contribute substantially to an existing or potential future air quality violation or delay the attainment of air quality standards.

Consistency Criterion No. 2: The Project will not exceed the assumptions in the AQMP based on the years of Project build-out phase.

The growth forecasts used in the *AQMP* to calculate future emissions levels are based in part on land use planning data provided by lead agencies via their general plan documentation. Projects that increase the intensity of use on a subject property may result in increased stationary area source emissions and/or vehicle source emissions when compared to the *AQMP* assumptions. However, if a project does not exceed the growth projections in the applicable local general plan, then the project is considered to be consistent with the growth assumptions in the *AQMP*. The prevailing planning document for the Project site is the City of Moreno Valley General Plan. The City of Moreno Valley General Plan Land Use Map designates the Project site for Office (O) land use. The Project proposes to change the General Plan land use designation to Business Park/Light Industrial (BP/LI). However, daily emissions are largely independent of land use assignments, but rather a function of the specific scope and intensity of development. Irrespective of the site's land use designation, development of the site to its maximum potential would likely occur and was assumed by the *AQMP* accordingly. As evaluated under Responses 3(B), (C), and (D), below, the Project would not exceed regional or localized significance thresholds for any criteria pollutant during construction or during long-term operation with the application of mandatory regulatory requirements; therefore, the Project would not cause any new air quality impacts that were not previously anticipated by the *AQMP*. Accordingly, although the Project would alter the planned land uses for the Project site, the proposed alteration would not result in a significant adverse effect to air quality in the SCAB and would not exceed the emissions assumptions in the *AQMP*.

For the reasons stated above, the Project would not result in an increase in the frequency or severity of existing air quality violations cause or contribute to new violations, delay the timely attainment of air quality standards or the interim emissions reductions specified the *AQMP*. Furthermore, the Project would not exceed the emissions assumptions in the *AQMP*. As such, the Project would be consiste with the *AQMP* and impacts would be less-than-significant.

B) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.			✓	

Source: (Urban Crossroads, 2018a)

The proposed Project has the potential to generate substantial pollutant concentrations during both construction activities and long-te operation. The following analysis is based on the applicable significance thresholds established by the SCAQMD (which are based federal and State air quality standards). This analysis assumes that the proposed Project would comply with applicable, mandatory regio air quality standards, including: SCAQMD Rule 403, "Fugitive Dust;" SCAQMD Rule 431.2, "Sulfur Content of Liquid Fuel SCAQMD Rule 1113, "Architectural Coatings;" SCAQMD Rule 1186, "PM_{10} Emissions from Paved and Unpaved Roads, and Livesto Operations;" SCAQMD Rule 1186.1, "Less-Polluting Street Sweepers," and Title 13, Chapter 10, Section 2485, Division 3 of t California Code of Regulations "Airborne Toxic Control Measure." For a detailed description of the health effects of air pollutants re to Section 2.6 of the Project's Air Quality Report *(Technical Appendix A)*. In general, air pollutants have adverse effects to human hea including, but not limited to, respiratory illness and carcinogenic effects.

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Impact Analysis for Construction Emissions

For purposes of this analysis, construction is conservatively expected to begin in December 2018 and end in September 2019. T California Emissions Estimator Model (CalEEMod) accounts for the implementation and enforcement of California's progressively mo restrictive regulatory requirements for construction equipment and the ongoing replacement of older construction fleet equipment w newer, less-polluting equipment. Thus, according to the CalEEMod, construction activities that occur in the near future are expected generate more air pollutant emissions than the same activities that may occur farther into the future. Accordingly, in the unexpected eve that the Project's construction occurs at a later date than expected by this analysis, the Project's construction emissions would not exce the values presented herein. (Urban Crossroads, 2018a, p. 31) The Project's construction characteristics and construction equipment fle assumptions used in the analysis were previously described in Section 3.0, *Project Description*. The calculated maximum daily emissio associated with Project construction are presented in Table 1, *Summary of Construction-Related Emissions*.

Table 1 Summary of Construction-Related Emissions

Year	Emissions (pounds per day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
2018	3.21	38.45	14.72	0.04	4.66	2.82
2019	23.79	35.94	32.11	0.07	4.56	2.72
Maximum Daily Emissions	**23.79**	**38.45**	**32.11**	**0.07**	**4.66**	**2.82**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Source: (Urban Crossroads, 2018a, Table 3-4)

As shown in Table 1, the Project's daily construction emissions of volatile organic compounds (VOCs), nitrogen oxides (NO_X) carb monoxide (CO), sulfur oxides (SO_X), and particulate matter (PM_{10} and $PM_{2.5}$) would not exceed SCAQMD regional criteria threshol Accordingly, the Project would not emit substantial concentrations of these pollutants during construction and would not contribute to existing or projected air quality violation, on a direct or cumulatively-considerable basis. Impacts associated with construction-relat emissions of VOCs, NO_X, CO, SO_X, PM_{10} and $PM_{2.5}$ would be less than significant and mitigation is not required.

Impact Analysis for Operational Emissions

Operational activities associated with the Project are expected to generate air pollutant emissions from the operation of motor vehic (including trucks), landscape maintenance activities, application of architectural coatings, and the use of electricity and natural gas. Lo term operational emissions associated with the Project are presented in Table 2, *Summary of Peak Operational Emissions.*

As summarized in Table 2, Project-related operational emissions of VOCs, NO_X, CO, SO_X, PM_{10} and $PM_{2.5}$ would not exceed SCAQM regional criteria thresholds. Accordingly, the Project would not emit substantial concentrations of these pollutants during long-te operation and would not contribute to an existing or projected air quality violation. The Project's long-term emissions of VOCs, NO CO, SO_X, PM_{10} and $PM_{2.5}$ would be less than significant.

Table 2 Summary of Peak Operational Emissions

Summer Scenario	Emissions (pounds per day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Area Source	4.59	3.50E-04	0.04	0.00	1.40E-04	1.40E-04
Energy Source	0.05	0.45	0.37	2.67E-03	0.03	0.03
Mobile (Trucks)	1.61	43.54	13.09	0.16	5.62	1.78
Mobile (Passenger Cars)	1.12	2.78	41.13	0.15	17.72	4.77
Total Maximum Daily Emissions	**7.37**	**46.77**	**54.64**	**0.32**	**23.37**	**6.58**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

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Table 2 (cont.) Summary of Peak Operational Emissions

Winter Scenario	Emissions (pounds per day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Area Source	4.59	3.50E-04	0.04	0.00	1.40E-04	1.40E-04
Energy Source	0.05	0.45	0.37	2.67E-03	0.03	0.03
Mobile (Trucks)	1.62	44.95	13.66	0.17	5.62	1.78
Mobile (Passenger Cars)	1.03	3.02	35.72	0.14	17.72	4.77
Total Maximum Daily Emissions	**7.29**	**48.42**	**49.79**	**0.31**	**23.37**	**6.58**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Source: (Urban Crossroads, 2018a, Table 3-5)

C) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			✓	

Source: (Urban Crossroads, 2018a)

SCAQMD considers air pollutant emissions that exceed the SCAQMD's project-level thresholds to also be cumulatively-considerab Conversely, if a project does not exceed the SCAQMD project-level thresholds, then SCAQMD considers that project's air pollut emissions to be less than cumulatively-considerable. The evaluation of Project-specific air pollutant emissions presented under Respor 3(B) demonstrates that the Project would not exceed any applicable thresholds that are designed to assist the region in attaining t applicable national air quality standards. Therefore, the Project's air pollutant emissions would be less than cumulatively considerab and would not contribute to the non-attainment of applicable State and federal standards.

D) Expose sensitive receptors to substantial pollutant concentrations?			✓	

Source: (Urban Crossroads, 2018a)

The following provides an analysis of the Project's potential to expose sensitive receptors in the immediate vicinity of the Project site substantial pollutant concentrations during Project construction and long-term operation. For a detailed description of the health effe of air pollutants refer to Section 2.6 of the Project's Air Quality Report *(Technical Appendix A)*. In general, air pollutants have adver effects to human health including, but not limited to, respiratory illness and carcinogenic effects. The following analysis is based on t applicable significance thresholds established by the SCAQMD.

Sensitive receptors are people who are especially sensitive to air pollution. Sensitive receptors could include children, the elderly, perso with preexisting respiratory or cardiovascular illness, and those who engage in frequent exercise. The four sensitive receptor locatio used in this analysis include:

- **R1:** Located approximately 794 feet north of the Project site, R1 represents existing residential homes north of Alessand Boulevard.
- **R2:** Location R2 represents existing Riverside County Department of Waste Resources facilities and offices at roughly 146 f south of the Project site.
- **R3:** Location R3 represents the existing offices located west of the Project site at approximately 146 feet on Frederick Street.
- **R4:** Located approximately 109 feet west of the Project site, R4 represents the existing Moreno Valley City Hall. (Urb Crossroads, 2018a, p. 40)

Impact Analysis for Construction Localized Emissions

As summarized in Table 3, *Summary of Construction Localized Emissions*, the Project would not exceed the SCAQMD's localiz significant threshold for any criteria pollutants during construction. Impacts would be less than significant.

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Table 3 Summary of Construction Localized Emissions

On-Site Site Preparation Emissions	Emissions (pounds per day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**2.63**	**2.34**	**0.19**	**0.17**
SCAQMD Localized Threshold	335	4,359	67	20
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**
On-Site Grading Emissions	**Emissions (pounds per day)**			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**38.39**	**14.13**	**4.51**	**2.78**
SCAQMD Localized Threshold	422	7,070	91	33
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**

Source: (Urban Crossroads, 2018a, Table 3-7)

Impact Analysis for Operational Localized Emissions

The Project's estimated operational localized emissions are presented in Table 4, *Summary of Operational Localized Emissions*. shown, the Project's calculated long-term operational emissions would not exceed the localized thresholds established by the SCAMQ Accordingly, long-term operation of the Project would not result in the exposure of any sensitive receptors to substantial pollut concentrations. Impacts would be less than significant.

Table 4 Summary of Operational Localized Emissions

Peak Operational Emissions	Emissions (pounds per day)			
	NO_x	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**2.76**	**3.12**	**1.20**	**0.36**
SCAQMD Localized Threshold	488	6,860	23	8
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**

Source: (Urban Crossroads, 2018a, Table 3-8)

Impact Analysis for CO "Hot Spots"

Localized areas where ambient CO concentrations exceed the CAAQS and/or NAAQS are termed CO "hot spots." Emissions of CO a produced in greatest quantities from motor vehicle combustion and are usually concentrated at or near ground level because they do n readily disperse into the atmosphere, particularly under cool, stable (i.e., low or no wind) atmospheric conditions. Consequently, t highest CO concentrations are generally found within close proximity to congested intersection locations.

For purposes of providing a conservative, worst-case impact analysis, the Project's potential to cause or contribute to CO hotspots w evaluated by comparing the study area intersections that would receive Project traffic (both intersection geometry and traffic volume with prior studies conducted by the SCAQMD in support of their AQMPs. In the *2003 AQMP*, the SCAQMD evaluated CO concentratio at four (4) busy intersections in the City of Los Angeles that were determined to be the most congested intersections in the SCAB. Ea of the evaluated intersections were primary thoroughfares, some of which were located near major freeway on/off ramps, and experienc traffic volumes of approximately 100,000 vehicles per day. The SCAQMD's analysis at these busy intersections did not identify any C hotspots. Based on an analysis of the intersections in the Project's study area, Urban Crossroads determined that none of the intersectio in the Project's study area would be subject to the extreme traffic volumes and vehicle congestion of the intersections modeled by t SCAQMD in the *2003 AQMP*. (Urban Crossroads, 2018a, pp. 44-45) Therefore, Project-related vehicular emissions would not create CO hot spot and would not substantially contribute to an existing or projected CO hot spot. Impacts would be less than significant.

Impact Analysis for Diesel Particulate Emissions

Diesel-fueled trucks would travel to/from the Project site during operation of the Project. Diesel trucks produce diesel particulate mat (DPM), which is known to be associated with health hazards, including cancer. To evaluate the Project's potential to expose sensiti receptors within ¼-mile of the Project site and the Project's primary travel routes to substantial amounts of DPM during long-te operation, a Mobile Source Health Risk Assessment was prepared for the proposed Project (*Technical Appendix B*). Project-related DP

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health risks were evaluated under the residential and worker receptor scenarios, which are summarized below. Potential DPM health ris were not calculated for the school child receptor scenario because there are no schools within ¼-mile of the Project site or the Projec primary travel routes. Detailed air dispersion model outputs and risk calculations are presented in Appendices 2.1 and 2.2, respective of *Technical Appendix B*.

At the maximally exposed individual receptor (MEIR) – the existing residential apartment building located along Frederick Street a approximately 150 feet north of Alessandro Boulevard – the maximum cancer risk attributable to the Project's DPM emissions is calculat to be 0.24 in one million. The cancer risk attributable to the Project at the MEIR (i.e., 0.24 in one million) would not exceed the SCAQM cancer risk threshold of 10 in one million. At this same receptor location, the non-cancer health risk index attributable to the Project wou be 0.00009, which would not exceed the SCAQMD non-cancer health risk index of 1.0. (Urban Crossroads, 2018b, p. 1) According long-term operations at the Project site would not directly cause or contribute in a cumulatively-considerable manner to the exposure residential receptors to substantial DPM emissions. Therefore, the Project would result in a less-than-significant impact.

At the maximally exposed individual worker (MEIW), identified as the existing warehouse building immediately to the east of the Proj site, the maximum cancer risk attributable to the Project's DPM emissions is calculated to be 0.23. The cancer risk attributable to t Project at the MEIW (i.e., 0.23 in one million) would not exceed the SCAQMD cancer risk threshold of 10 in one million. At this sa receptor location, the non-cancer health risk index attributable to the proposed Project would be 0.0007, which would not exceed t SCAQMD non-cancer health risk index of 1.0. (Urban Crossroads, 2018b, p. 1) Accordingly, long-term operations at the Project s would not directly cause or contribute in a cumulatively considerable manner to the exposure of nearby workers to substantial DP emissions. Therefore, the Project would result in a less-than-significant impact.

E) Create objectionable odors affecting a substantial number of people?			✓	

Source: (Urban Crossroads, 2018a)

The Project could produce odors during proposed construction activities resulting from construction equipment exhaust, application asphalt, and/or the application of architectural coatings; however, standard construction practices would minimize the odor emissions a their associated impacts. Furthermore, any odors emitted during construction would be temporary, short-term, and intermittent in natu and would cease upon the completion of the respective phase of construction. In addition, construction activities on the Project site wou be required to comply with SCAQMD Rule 402, which prohibits the discharge of odorous emissions that would create a public nuisan (Urban Crossroads, 2018a, p. 1) Accordingly, the proposed Project would not create objectionable odors affecting a substantial numb of people during construction, and short-term impacts would be less than significant.

During long-term operation, the Project would include warehouse distribution land use, which is not typically associated w objectionable odors. The temporary storage of refuse associated with the proposed Project's long-term operational use could be a potent source of odor; however, Project-generated refuse is required to be stored in covered containers and removed at regular intervals compliance with the City's solid waste regulations, thereby precluding any significant odor impact. Furthermore, the proposed Proj would be required to comply with SCAQMD Rule 402, which prohibits the discharge of odorous emissions that would create a pub nuisance, during long-term operation. (Urban Crossroads, 2018a, p. 1) As such, long-term operation of the proposed Project would n create objectionable odors affecting a substantial number of people.

4. BIOLOGICAL RESOURCES. Would the project:

A) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U. S. Fish and Wildlife Service?		✓		

Source: (Ecological Sciences, 2018a)

As documented by the Project's biologist (Ecological Sciences, Inc., hereafter "Ecological Sciences"), no special-status plants we detected or have the potential to occur within the Project site (Ecological Sciences, 2018a, p. 10). Accordingly, there is no potential f the Project to directly impact special-status plant species. No impact would occur.

According to Ecological Sciences, the Project site contains suitable habitat for the Burrowing Owl, which is a California Species of Spec Concern. There were no other special-status wildlife species detected within the Project site. (Ecological Sciences, 2018a, p. 9) With t exception of the Burrowing Owl, all special-status wildlife species with the potential to occur on the Project site are covered by the Weste Riverside County Multiple Species Habitat Conservation Plan (MSHCP) and the Stephens' Kangaroo Rat Habitat Conservation Pl (HCP). For properties, such as the Project site, that are located outside of the Western Riverside County MSHCP Criteria Area o

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Stephens' Kangaroo Rat Reserve area, impacts to covered wildlife species are authorized by the City's incidental take permits associat with the respective conservation plans. Pursuant to the Moreno Valley Municipal Code, the Project Applicant will be required to pay t Western Riverside County MSHCP Mitigation Fee as well as the Stephens' Kangaroo Rat HCP Mitigation Fee, which pays for n development's share of the financing, acquisition, and long-term management of lands supporting species covered by the Weste Riverside County MSHCP and the Stephens' Kangaroo Rat HCP (City of Moreno Valley, 2017c, Title 3, Chapter 3.48, 8.60). I additional mitigation is required for species covered by the Western Riverside County MSHCP and/or Stephens' Kangaroo Rat HCP.

The burrowing owl is classified as a Covered Species not adequately conserved by the MSHCP. Although the Project site supports suitab habitat, no burrowing owl individuals or signs of burrowing owl use were observed on the Project improvement area during focus surveys conducted by Ecological Services (Ecological Sciences, 2018b, p. 9). However, the burrowing owl is a nomadic species and the is the potential that the species could migrate onto the Project site prior to construction. If burrowing owls are present on the Project s during grading activities, the Project's impact to the species would be significant and mitigation would be required.

The Project would result in removal of vegetation across the Project site that has the potential to support nesting migratory birds that a protected by the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code. The Project's potential to impact nesting bir and migratory birds is a significant direct impact for which mitigation is required.

MM BR-1 and MM BR-2 would reduce potential impacts to the burrowing owl and nesting migratory birds to less-than-significant lev by ensuring that pre-construction surveys are conducted to determine the presence or absence on the Project site of the burrowing o and/or protected nesting bird species prior to the commencement of construction activities. If the burrowing owl or protected nesting bi species are present, the mitigation measures provide performance criteria that require avoidance and/or relocation of the species accordance with accepted protocols.

Mitigation

MM BR-1: Within 30 days prior to grading, a qualified biologist shall conduct a survey of suitable habitat on site and make determination regarding the presence or absence of the burrowing owl. The determination shall be documented in a rep and shall be submitted, reviewed, and accepted by the City of Moreno Valley prior to the issuance of a grading permit a subject to the following provisions:

a) In the event that the pre-construction survey identifies no burrowing owls on the property, a grading permit may issued without restriction.

b) In the event that the pre-construction survey identifies the presence of at least one individual but less than three (mating pairs of burrowing owl, then prior to the issuance of a grading permit and prior to the commencement of groun disturbing activities on the property, the qualified biologist shall passively or actively relocate any burrowing ow Passive relocation, including the required use of one-way doors to exclude owls from the site and the collapsing burrows, will occur if the biologist determines that the proximity and availability of alternate habitat is suitable f successful passive relocation. Passive relocation shall follow California Department of Fish and Wildlife (CDFW relocation protocol and shall only occur between September 15 and February 1. If proximate alternate habitat is n present as determined by the biologist, active relocation shall follow CDFW relocation protocol. The biologist sh confirm in writing that the species has fledged the site or been relocated prior to the issuance of a grading permit.

c) In the event that the pre-construction survey identifies the presence of three (3) or more mating pairs of burrowing ov the requirements of MSHCP Species-Specific Conservation Objectives 5 for the burrowing owl shall be followe Objective 5 states that if the site (including adjacent areas) supports three (3) or more pairs of burrowing owls a supports greater than 35 acres of suitable habitat, at least 90 percent of the area with long-term conservation value a burrowing owl pairs will be conserved onsite until it is demonstrated that Objectives 1-4 have been met. A gradi permit shall be issued, either:

i. Upon approval and implementation of a property-specific Determination of Biologically Superior Preservati (DBESP) report for the burrowing owl by the CDFW; or

ii. A determination by the biologist that the site is part of an area supporting less than 35 acres of suitable Habitat, a upon passive or active relocation of the species following accepted CDFW protocols. Passive relocation, includi the required use of one-way doors to exclude owls from the site and the collapsing of burrows, will occur if t

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biologist determines that the proximity and availability of alternate habitat is suitable for successful passi relocation. Passive relocation shall follow CDFW relocation protocol and shall only occur between September and February 1. If proximate alternate habitat is not present as determined by the biologist, active relocation sh follow CDFW relocation protocol. The biologist shall confirm in writing that the species has fledged the site been relocated prior to the issuance of a grading permit.

MM BR-2 Vegetation clearing and ground disturbance shall be prohibited during the migratory bird nesting season (February 1 throu September 15), unless a migratory bird nesting survey is completed in accordance with the following requirements:

a) A migratory bird nesting survey of the Project's impact footprint, including suitable habitat within a 500-foot radi shall be conducted by a qualified biologist within three (3) days prior to initiating vegetation clearing or grou disturbance.

b) A copy of the migratory nesting bird survey results report shall be provided to the City of Moreno Valley. If the surv identifies the presence of active nests, then the qualified biologist shall provide the City with a copy of maps showi the location of all nests and an appropriate buffer zone around each nest sufficient to protect the nest from direct a indirect impact. The size and location of all buffer zones, if required, shall be subject to review and approval by t City and shall be no less than a 100-foot radius around the nest for non-raptors and no more than a 500-foot radi around the nest for raptors. The nests and buffer zones shall be field checked weekly by a qualified biological monit The approved buffer zone shall be marked in the field with construction fencing, within which no vegetation clearing ground disturbance shall commence until the qualified biologist and the City verify that the nests are no longer occupi and juvenile birds can survive independently from the nests.

B) Have a substantially adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U. S. Wildlife Service?				✓

Source: (Ecological Sciences, 2018a)

According to the field survey conducted by Ecological Sciences, no riparian habitats or other sensitive natural biological communit were found on or adjacent to the Project site (Ecological Sciences, 2018a, p. 10). Accordingly, there is no potential for the Project to ha a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, polici regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. No impact would occur.

C) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				✓

Source: (Ecological Sciences, 2018a)

According to the field survey conducted by Ecological Sciences, the Project site does not contain any protected wetland or aqua resources, including but not limited to, natural drainages or water courses, wetland habitat, marsh, vernal pool, or coastal resourc (Ecological Sciences, 2018a, p. 10). Therefore, the Project would not result in a substantial adverse effect on federally protected wetlan as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means. No impa would occur and mitigation is not required.

D) Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established native resident migratory wildlife corridors, or impede the use of native wildlife nursery sites?		✓		

Source: (Ecological Sciences, 2018b; City of Moreno Valley, 2006; RCA, 2018; Ecological Sciences, 2018a; Google Earth, 2018)

According to the field survey conducted by Ecological Sciences, the Project site does not support a diversity of native vegetation wildlife. In addition, there are no natural water bodies on the Project site; therefore, there is no potential for the Project to interfere w the movement of fish. There are also no native wildlife nurseries on-site; therefore, there is no potential for the Project to impede the u of a native wildlife nursery site. (Ecological Sciences, 2018a, p. 6, Attachment E-4; Google Earth, 2018) No impact would occur.

Wildlife movement corridors in Western Riverside County and the City of Moreno Valley are addressed by the conservation requiremer specified in the Western Riverside County MSHCP, and the Project site is not identified for conservation or designated as a wildl

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movement corridor as part of the MSHCP. (City of Moreno Valley, 2006, Figure 5.9-2; RCA, 2018) Accordingly, the site is not consider to be a wildlife movement corridor.

Ecological Sciences did not observe active or inactive bird nests on the Project site during field surveys (Ecological Sciences, 2018b, 9). Regardless, the Project would result in removal of vegetation across the Project site that has the potential to support nesting migrato birds that are protected by the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code and, out of an abundance caution, this MND concludes the Project's potential to impact nesting birds and migratory birds is a significant direct impact for whi mitigation is required.

MM BR-2 would reduce potential impacts to nesting migratory birds to less-than-significant levels by ensuring that pre-constructi surveys are conducted to determine the presence or absence of protected nesting bird species on the Project site prior to the commenceme of construction activities. If protected nesting bird species are present, this mitigation measure provides performance criteria that requ avoidance and/or relocation of the species in accordance with accepted protocols.

Mitigation

MM BR-2 shall apply; refer to Response 4(A).

E) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			✓	

Source: (Moreno Valley, 2017c)

The Moreno Valley Municipal Code contains provisions for the collection of mitigation fees to further the implementation of the Weste Riverside County MSHCP (refer to Title 3, Chapter 3.48 of the Municipal Code). The Project Applicant is required to contribute a loc mitigation fee, which requires a fee payment to assist the City in implementing the Western Riverside County MSHCP reserve syste (including the acquisition, management, and long-term maintenance of sensitive habitat areas). With mandatory compliance with standa regulatory requirements (i.e., mitigation fee payment), the proposed Project would not conflict with any City policies or ordinances relat to the mitigation fee program associated with Western Riverside County MSHCP.

The Moreno Valley Municipal Code also contains provisions for the protection of the Stephens' Kangaroo Rat pursuant to the Stephen Kangaroo Rat HCP (refer to Title 8, Chapter 8.60 of the Municipal Code). The Project site is not located within an identified reserve ar for the Stephens' Kangaroo Rat and the species has a low potential to occur on the Project site. Accordingly, the Project is exempt fro the focused survey requirements for the Stephens' Kangaroo Rat established by the Moreno Valley Municipal Code. The Project Applica is required to contribute a local development impact and mitigation fee, which requires a fee payment to assist the City in implementi the habitat conservation plan for the Stephens' Kangaroo Rat. With mandatory compliance with standard regulatory requirements (i. development impact and mitigation fee payment), the proposed Project would not conflict with any City policies or ordinances related the protection of the Stephens' Kangaroo Rat.

The City of Moreno Valley does not have any additional policies or ordinances in place to protect biological resources that are applicab to the Project.

F) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan?		✓		

Source: (Ecological Sciences, 2018a; RCA, 2018; Ecological Sciences, 2018b)

The Project site is located within the Reche Canyon/Badlands Area Plan portion of the Western Riverside County MSHCP; but is n located in a Criteria Cell or Conservation Area. The MSHCP's intent is to preserve native vegetation and meet the regional habitat nee of multiple species, rather than focusing preservation efforts on one species at a time. The MSHCP provides coverage (including ta authorization for listed species) for special-status plant and animal species, as well as mitigation for impacts to special-status species a associated native habitats.

The following analysis evaluates the Project's compliance with the Western Riverside County MSHCP's Reserve Assembly Requiremer as well as other applicable MSHCP requirements pursuant to the following sections of the MSHCP. Section 6.1.2, *Protection of Spec Associated with Riparian/Riverine areas and Vernal Pools*; Section 6.1.3, *Protection of Narrow Endemic Plant Species*; Section 6.1 *Guidelines Pertaining to the Urban/Wildland Interface*; and Section 6.3.2, *Additional Survey Needs and Procedures*.

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Project Relation to Reserve Assembly

The Project site is located within the MSHCP Reche Canyon/Badlands Area Plan, but is not located within an MSHCP Criteria Cell, included within the MSHCP Reserve Assembly (RCA, 2018). By being located outside of a Criteria Cell and MSHCP Reserve Assemb the Project is not required to conserve land. Therefore, the proposed Project would not conflict with the Western Riverside Cour MSHCP Reserve Assembly requirements.

Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools

The Project site does not contain wetland/riparian features, or vernal pools on or adjacent to the site regulated by the MSHCP; therefo the Project would not conflict with Section 6.1.2, *Protection of Species Associated with Riparian/Riverine areas and Vernal Poo* (Ecological Sciences, 2018a, p. 10)

Protection of Narrow Endemic Plants

The Project is located within the Narrow Endemic Plant Species Survey Area (NEPSSA); however, the entire site is highly disturbed (i discing) and does not support suitable habitat for any NEPSSA sensitive species. The site does not support alkaline marshes, wet meadov vernal pools, wetlands, or chaparral/coastal sage scrub habitats; therefore, no suitable habitat is present for all of the species identified potentially occurring by the MSHCP. (Ecological Sciences, 2018a, p. 10) Based on the foregoing information, the Project would r impact any sensitive plant species and the Project would be consistent with Section 6.1.3, *Protection of Narrow Endemic Plant Species*

Guidelines Pertaining to Urban/Wildland Interface

According to Section 6.1.4 of the MSHCP, the Urban/Wildlands Interface Guidelines are intended to address indirect effects associat with locating development in proximity to MSHCP conservation areas. The Project site is not adjacent to any MSHCP conservation area therefore, there is no potential for the project to directly or indirectly affect MSHCP open space areas (RCA, 2018). Thus, the propos Project would be consistent with Section 6.1.4 of the Western Riverside County MSHCP.

Additional Needs Survey and Procedures

Western Riverside County MSHCP Section 6.3.2 identifies that in addition to the Narrow Endemic Plant Species addressed in Secti 6.1.3, additional surveys may be needed for other certain plant and wildlife species in conjunction with MSHCP implementation in orc to achieve full coverage for these species. Within areas of suitable habitat, focused surveys are required for additional plant species i project site occurs within a designated Criteria Area Species Survey Area (CASSA), or special wildlife species survey area (i.e., burrowi owl, amphibians, and mammals).

The Project site is not located within the CASSA but is located within the Burrowing Owl Survey Area (RCA, 2018). Ecological Scienc conducted a focused survey for the burrowing owl in 2018 in accordance with the Western Riverside County MSHCP Burrowing O Survey Requirements. As discussed above under Response 4(A), Ecological Sciences did not observe any burrowing owls or signs of t species use of the property (i.e., scat, tracks, pellets, or feathers) (Ecological Sciences, 2018b, p. 9). However, the species is migratc and could use/occupy the property prior to ground-disturbing construction activities. Therefore, mitigation is required to ensure that t Project does not result in a substantial adverse effect to the burrowing owl in the event the species occupies the Project site at the time construction.

Mitigation

MM-BR-1 shall apply; refer to Response 4(A).

5. CULTURAL RESOURCES. Would the project:				
A) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?				✓

Source: (BFSA, 2018a; City of Moreno Valley, 2006)

A cultural resources survey conducted by Brian F. Smith and Associates (BFSA), which included a comprehensive site survey and archiv records search, identified no historic resources on the Project site (BFSA, 2018a, p. 1.0-1). Additionally, the Project site is not identifi as containing a historic resource by the City of Moreno Valley General Plan FEIR, Exhibit 5.10-1, *Locations of Listed Historic Resour*

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Inventory Structures. Accordingly, the Project has no potential to impact a historical resource as defined by California Code of Regulatio Section 15064.5.

B) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?			✓	

Source: (BFSA, 2018a)

No prehistoric archaeological resources were observed on the Project site during a comprehensive field survey conducted by BFSA a no prehistoric archaeological resources are known to exist within a one-mile radius of the Project site based on an archival records sear conducted by BFSA at the Eastern Information Center at the University of California, Riverside (BFSA, 2018a, p. 1.0-1). The Project s historically been used for agriculture and does not contain bedrock outcrops, natural sources of water, or other landforms that are typica associated with prehistoric use areas. Based on the findings of the field survey and archival research and due to historic agricultu activities on the Project site – which resulted in pervasive physical disturbances across the subject property – BFSA concluded the Proj site has a low potential for buried or masked prehistoric archaeological resources (BFSA, 2018a, p. 5.0-3). Based on the foregoing, t Project would result in a less-than-significant impact to prehistoric archaeological resources defined by California Code of Regulatio Section 15064.5.

C) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		✓		

Source: (BFSA, 2018b)

The Project site is underlain by lower Pleistocene very old alluvial fan deposits, which have a high potential to contain significa nonrenewable paleontological resources according to the San Bernardino County Museum (SBCM). Furthermore, the County of Riversi designates the entire Project site as having a "Medium" sensitivity for paleontological resources, which is based on the presence of geolog formations or mappable rock units where fossilized body elements, and trace fossils such as tracks, nests, and eggs have been discover elsewhere in Southern California. The category "Medium" indicates that fossils are likely to be encountered at or below four feet of dep and may be impacted during excavation by construction activities. (BFSA, 2018b, p. 2) The Project's potential to directly or indirec destroy unknown, unique paleontological resources that may be buried beneath the ground surface is a significant impact and mitigati is required.

Implementation of MM CR-1 through MM CR-4 would ensure the proper identification and subsequent treatment of any paleontologi resources that may be encountered during ground-disturbing activities associated with implementation of the proposed Project. Therefo with implementation of MM CR-1 through MM CR-4, the Project's potential impacts related to paleontological resources would reduced to less-than-significant levels.

Mitigation

MM CR-1 Prior to the issuance of a grading permit, the Project Applicant shall provide evidence to the City of Moreno Valley tha qualified paleontologist has been retained by the Project Applicant to conduct monitoring of excavation activities and h the authority to halt and redirect earthmoving activities in the event that suspected paleontological resources are unearthe

MM CR-2 The paleontological monitor shall conduct full-time monitoring during grading and excavation operations in undisturbe very old alluvial fan sediments at or below four (4) feet below ground surface and shall be equipped to salvage fossils they are unearthed to avoid construction delays and to remove samples of sediments that are likely to contain the remai of small fossil invertebrates and vertebrates. The paleontological monitor shall be empowered to temporarily halt or div equipment to allow of removal of abundant and large specimens in a timely manner. Monitoring may be reduced if t potentially fossiliferous units are not present in the subsurface, or if present, are determined upon exposure a examination by qualified paleontological personnel to have a low potential to contain or yield fossil resources.

MM CR-3 Recovered specimens shall be properly prepared to a point of identification and permanent preservation, including scre washing sediments to recover small invertebrates and vertebrates, if necessary. Identification and curation of specime into a professional, accredited public museum repository with a commitment to archival conservation and permane retrievable storage, such as the Western Science Museum in Hemet, California, is required for significant discoveries.

MM CR-4 A final monitoring and mitigation report of findings and significance shall be prepared, including lists of all foss recovered and written repository agreements, if any, and necessary maps and graphics to accurately record the origi location of the specimens. The report shall be submitted to the City of Moreno Valley prior to building final.

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D) Disturb any human remains, including those interred outside of formal cemeteries?			✓	

Source: (City of Moreno Valley, 2006; BFSA, 2018a)

The Project site does not contain a cemetery, and no known formal cemeteries are located within the immediate site vicinity (City Moreno Valley, 2006, p. 5.10-10; BFSA, 2018a, p. 5.0-2). Nevertheless, the remote potential exists that human remains may be unearth during grading and excavation activities associated with Project construction. If human remains are unearthed during Project constructio the construction contractor would be required by law to comply with Health and Safety Code, Section 7050.5 "Disturbance of Hum Remains." According to Section 7050.5(b) and (c), if human remains are discovered, the County Coroner must be contacted and if t Coroner recognizes the human remains to be those of a Native American or has reason to believe that they are those of a Native Americ the Coroner is required to contact, by telephone within 24 hours, the Native American Heritage Commission (NAHC). Pursuant to Pub Resources Code Section 5097.98, whenever the NAHC receives notification of a discovery of Native American human remains from county coroner, the NAHC is required to immediately notify those persons it believes to be most likely descended from the deceas Native American. The descendants may, with the permission of the owner of the land, or his or her authorized representative, inspect t site of the discovery of the Native American human remains and may recommend to the owner or the person responsible for the excavati work means for treatment or disposition, with appropriate dignity, of the human remains and any associated grave goods. The descenda shall complete their inspection and make recommendations or preferences for treatment within 48 hours of being granted access to t site. According to Public Resources Code Section 5097.94(k), the NAHC is authorized to mediate disputes arising between landowne and known descendants relating to the treatment and disposition of Native American human burials, skeletal remains, and items associat with Native American burials.

With mandatory compliance with Health and Safety Code Section 7050.5 and Public Resources Code Section 5097.98, any potent impacts to human remains, including human remains of Native American ancestry, would be less than significant.

6. GEOLOGY AND SOILS. Would the project:				
A) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving:				
(I) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				✓

Source: (NorCal Engineering, 2017)

The Project site is not located within an Alquist-Priolo Earthquake Fault Zone, and no known faults traverse or underlie the site (NorC Engineering, 2017, p. 6). Because there are no known faults located on the Project site, there is no potential for the Project to expo people or structures to substantial adverse effects related to ground rupture. Thus, no impact would occur.

(II) Strong seismic ground shaking?			✓	

Source: (City of Moreno Valley, 2017c; CBSC, 2016)

The Project site is located in a seismically active area of Southern California and is expected to experience moderate-to-severe grou shaking during the lifetime of the Project. This risk is not considered substantially different than that of other similar properties in t Southern California area. As a mandatory condition of Project approval, the Project would be required to construct the proposed warehou building in accordance with the California Building Standards Code (CBSC), also known as California Code of Regulations (CCR), Ti 24 (Part 2), and the Moreno Valley Building Code (Moreno Valley Municipal Code, Chapter 8.20), which is based on the CBSC w local amendments. The CBSC and City of Moreno Valley Building Code have been tailored specifically for California earthqua conditions and provide standards that must be met to safeguard life or limb, health, property, and public welfare by regulating a controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures. addition, the CBSC (Chapter 18) and the Moreno Valley Building Code require development projects to prepare geologic engineeri reports to identify site-specific geologic and seismic conditions and implement the design and construction recommendations contain therein, including, but not limited to, recommendations related to ground stabilization, selection of appropriate foundation type and depth selection of appropriate structural systems, to preclude adverse effects related to strong seismic ground-shaking. (CBSC, 2016) Such report has been prepared for the Project site and is included as *Technical Appendix E* to this Initial Study. The City will condition t Project to comply with the site-specific ground preparation and construction recommendations contained in this report. (City of More Valley, 2017c) With mandatory compliance with required building codes and site-specific design and construction measures, potent impacts related to seismic ground shaking would be less than significant. As such, the Project would not expose people or structures substantial adverse effects, including loss, injury, or death, involving seismic ground shaking. Impacts would be less than significant.

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(III) Seismic-related ground failure, including liquefaction?			✓	

Source: (City of Moreno Valley, 2006; NorCal Engineering, 2017; City of Moreno Valley, 2017c; CBSC, 2016)

According to General Plan FEIR Figure 5.6-2, *Seismic Hazards*, the Project site is not located in an area with the potential for liquefactio Furthermore, the geotechnical investigation prepared for the Project site concludes that the potential for liquefaction at the site is very lo due to the presence of stiff and dense subsurface soils on-site and a relatively deep groundwater table (NorCal Engineering, 2017, p. The City of Moreno Valley will require that the property be developed in accordance with the latest applicable seismic safety guidelin including the standard requirements of the CBSC and Moreno Valley Municipal Code Section 9.08.160 (City of Moreno Valley, 201 CBSC, 2016). Furthermore, the Project would be required to comply with the site-specific grading and construction recommendatio contained within the Project site's geotechnical report *(Technical Appendix E)*, which the City would impose as a standard condition Project approval (Moreno Valley Municipal Code Section 8.21.050), to further reduce the risk of seismic-related ground failure due liquefaction (City of Moreno Valley, 2017c). Thus, less-than-significant effects involving seismic-related ground failure, includi liquefaction, would occur.

(IV) Landslides?			✓	

Source: (Project Application Materials, 2018; Google Earth, 2018)

The Project site is virtually flat and contains no substantial natural or man-made slopes under existing conditions and proposed gradi would not create manufactured slopes on the site. There are no substantial natural or man-made slopes in the Project site vicinity, eith Accordingly, the Project site is located in an area with a low potential for landslides. Accordingly, development on the subject prope would not be exposed to landslide risks, and the Project would not pose a landslide risk to surrounding properties and a less-than-significa impact would occur.

(B) Result in substantial soil erosion or the loss of topsoil?			✓	

Source: (SCAQMD, 2005; REC, 2018b)

The analysis below summarizes the likelihood of the Project to result in substantial soil erosion during temporary construction activiti and/or long-term operation.

Impact Analysis for Temporary Construction-Related Activities

Construction of the Project would involve grading, paving, utility installation, building construction, and landscaping installation, whi has the potential to temporarily expose on-site soils that would be subject to erosion during rainfall events or high winds. Pursuant State Water Resources Control Board requirements, the Project Applicant is required to obtain a National Pollutant Discharge Eliminati System (NPDES) permit for construction activities, including proposed grading. The NPDES permit is required for all projects th include construction activities, such as clearing, grading, and/or excavation that disturb at least one (1) acre of total land area. The City Municipal Separate Storm Sewer System (MS4) NPDES Permit requires the Project Applicant to prepare and submit to the City f approval a Project-specific Storm Water Pollution Prevention Plan (SWPPP) (City of Moreno Valley, 2017c, Section 8.21.170). T SWPPP would identify a combination of erosion control and sediment control measures (i.e., Best Management Practices) to reduce eliminate sediment discharge to surface water from storm water and non-storm water discharges during construction. In addition, t Project would be required to comply with SCAQMD Rule 403, which would reduce the amount of particulate matter in the air a minimize the potential for wind erosion (SCAQMD, 2005). With mandatory compliance to the requirements noted in the Projec SWPPP, as well as applicable regulatory requirements, the potential for water and/or wind erosion impacts during Project constructi would be less than significant.

Long-Term Operational Activities

Following construction, wind and water erosion on the Project site would be less than existing conditions because the Project site wou be landscaped or covered with impervious surfaces and surface runoff would be captured and treated by an on-site storm drain syste Implementation of the Project would result in less long-term erosion and loss of topsoil than under the site's existing conditions.

The City's MS4 NPDES Permit requires the Project Applicant to prepare and submit to the City for approval a Water Quality Manageme Plan (WQMP) (City of Moreno Valley, 2017c, Section 8.21.170). The WQMP identifies an effective combination of erosion control a sediment control measures (i.e., Best Management Practices) to reduce or eliminate sediment discharge to surface water from storm wa and non-storm water discharges. The Preliminary WQMP for the Project, prepared by REC Consultants, Inc. (REC) (attached hereto *Technical Appendix I*), incorporates catch basin/inlet filters, one (1) underground storage vault, and one (1) bioretention basin (RE 2018b, WQMP Site Plan). The catch basin/inlet filters and bioretention basin would remove waterborne pollutants from storm wa

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flows, including silt and sediment. The underground infiltration basin would facilitate percolation to maximize on-site infiltration a minimize the amount of stormwater – which could, potentially, carry sediment – discharged from the site. These design features wou be effective at removing silt and sediment from storm water runoff, and the Preliminary WQMP requires post-construction maintenan and operational measures to ensure ongoing erosion protection. Compliance with the Preliminary WQMP would be required as a conditi of Project approval and long-term maintenance of on-site water quality features is required. Therefore, the proposed Project would r result in substantial erosion or loss of top soil during long-term operation. The Project's impact would be less than significant.

(C) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			✓	

Source: (NorCal Engineering, 2017; City of Moreno Valley, 2017c)

The Project site's geotechnical report (*Technical Appendix E*) indicates that the site's settlement potential would be attenuated through t proposed removal of near surface soils down to competent materials and replacement with properly compacted fill (NorCal Engineeri 2017, pp. 7-9). Through standard conditions of approval, the proposed Project would be required by the City to incorporate t recommendations contained within the Project site's geotechnical report into the grading plan for the Project (City of Moreno Valle 2017c, Section 9.08.080). As such, implementation of the Project would result in less-than-significant impacts associated with s shrinkage/subsidence and collapse.

As discussed in Responses 6(A)(III) and (IV), development of the Project would result in a less-than-significant impact involving grou failure, including liquefaction and landslide, and a less-than-significant impact involving landslides.

(D) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			✓	

Source: (NorCal Engineering, 2017; City of Moreno Valley, 2017c)

As determined by NorCal Engineering, the near surface on-site soils possess a very low expansion potential (Expansion Index rangi from 0-20) (NorCal Engineering, 2017, Table II). The minimal expansive characteristics of on-site soils would be further attenuated implementation of the foundation and floor slab design recommendations included in the Project's geotechnical report, which the C will require as a condition of approval pursuant to Section 9.08.080 of the Moreno Valley Municipal Code (NorCal Engineering, 2017, 13). According to the above, implementation of the Project would result in less-than-significant impacts associated with expansive so and would not create substantial risks to life or property.

(E) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				✓

Source: (Project Application Materials, 2018)

The Project does not propose the use of septic tanks or alternative waste water disposal systems. Accordingly, no impact would occur.

7. GREENHOUSE GAS EMISSIONS. Would the project?

A) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			✓	

Source: (CAPCOA, 2008; SCAQMD, 2008; Urban Crossroads, 2018c)

While estimated Project-related GHG emissions can be calculated, the direct impacts of such emissions on global climate change (GC and global warming cannot be determined on the basis of available science because GCC is a global phenomenon and not limited to specific locale such as the Project site and its immediate vicinity. Furthermore, there is no evidence that would indicate that the emissio from a project the size of the proposed Project could directly or indirectly affect the global climate. Because global climate change is t result of GHG emissions, and GHGs are emitted by innumerable sources worldwide, the proposed Project would not result in a dire impact to global climate change; rather, Project-related impacts to global climate change only could be potentially significant on cumulative basis. Therefore, the analysis below focuses on the Project's potential to contribute to global climate change in a cumulativel considerable way.

The City of Moreno Valley has not adopted a numerical threshold for determining the significance of GHG emissions; however, the C has discretion to select an appropriate significance criterion used by other agencies, based on substantial evidence (Urban Crossroa

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2018c, p. 39). The SCAQMD adopted a numerical GHG emissions threshold for industrial projects for which SCAQMD is the le agency. The threshold adopted by SCAQMD, 10,000 metric tons of carbon dioxide equivalent ($MTCO_2e$) per year, is a widely accept threshold used by numerous lead agencies in the South Coast Air Basin (SCAB) and was established based on the recommendations the California Air Pollution Controls Officers Association (CAPCOA) in a report titled "CEQA and Climate Change" (dated Janua 2008), which serves as a resource for public agencies as they establish agency procedures for reviewing GHG emissions from proje under CEQA. The CAPCOA report provides three recommendations for evaluating a development project's GHG emissions. Wh establishing their significance threshold, SCAQMD selected the CAPCOA non-zero approach which establishes a numerical thresh based on capture of approximately 90 percent of emissions from future development (Approach 2, Threshold 2.5). A 90 percent emissi capture rate means that 90 percent of total emissions from all new or modified projects would be subject to evaluation under CEQ Based on SCAQMD's research of 1,297 major, industrial source point (i.e., stationary) emission sources in the SCAB, SCAQMD fou that source point industrial facilities that generate at least 10,000 $MTCO_2e$ per year produce approximately 90 percent of the carb dioxide equivalent emissions in the SCAB per year. As such, SCAQMD established their significance criterion at 10,000 $MTCO_2e$ as t threshold that would capture 90 percent of total emissions from future industrial development in accordance with CAPC recommendations. (CAPCOA, 2008, pp. 46-47; SCAQMD, 2008, pp. 3-5)

Based on the foregoing, the City of Moreno Valley selects SCAQMD's industrial threshold of 10,000 $MTCO_2e$ as the threshold significance against which to evaluate the Project's GHG emissions. If the Project would emit less than 10,000 $MTCO_2e$ of GHGs p year, the project would not be considered a substantial GHG emitter. On the other hand, if the Project's GHG emissions would exce 10,000 $MTCO_2e$ per year, the project would be considered a substantial source of GHG emissions. The SCAQMD's industrial thresh was selected by the City because the proposed Project's operating characteristics, which include a large building with loading bays a truck courts that are expected to house businesses that serve mid-stream functions in the goods movement chain, are characteristic of industrial land use more so than any other land use type, including commercial and/or residential uses. Furthermore, evaluating t Project's GHG emissions against SCAQMD's industrial threshold will provide a conservative analysis, as SCAQMD only intended th threshold be used to evaluate stationary source GHG emissions, while the analysis presented below applies the threshold to all of the GH emissions related to the Project (stationary source, mobile source, area source, or other). (Urban Crossroads, 2018c, p. 39)

The Project's annual GHG emissions are summarized in Table 5, *Total Annual Project Greenhouse Gas Emissions.* The methodolo used to calculate the Project's GHG emissions is described in detail in *Technical Appendix F*.

Table 5 Total Annual Project Greenhouse Gas Emissions

Emission Source	Emissions (metric tons per year)			
	CO_2	CH_4	N_2O	Total CO_2e
Annual construction-related emissions amortized over 30 years	16.96	0.00	0.00	17.01
Area	9.13E-03	2.00E-05	0.00	9.75E-03
Energy	350.433	0.01	3.86E-03	351.90
Mobile Sources (Passenger Cars)	1,895.67	0.04	0.00	1,896.64
Mobile Sources (Trucks)	2,883.01	0.13	0.00	2,886.30
Waste	41.41	2.45	0.00	102.60
Water Usage	210.71	1.55	0.04	260.66
Total CO_2e (All Sources)	**5,515.11**			
Screening Threshold (CO_2e)	**10,000**			
Threshold Exceeded?	**NO**			

Source: (Urban Crossroads, 2018c, Table 3-1)

As shown in Table 5, the Project is estimated to generate approximately 5,515.11 $MTCO_2e$ annually, which is less than the significan threshold of 10,000 $MTCO_2e$. Because the Project's total annual GHG emissions would not exceed 10,000 $MTCO_2e$, the Project wou not generate substantial GHG emissions – either directly or indirectly – that would have a significant impact on the environment. Impa would be less than significant.

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B) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			✓	

Source: (Urban Crossroads, 2018c)

The Project would comply with a number of regulations, policies, plans, and policy goals that would further reduce GHG emissio including the City of Moreno Valley Energy Efficiency and Climate Action Strategy, Title 24 California Building Standards Code (CBS Assembly Bill 32 (AB 32), and Senate Bill 32 (SB 32), which are regulations particularly applicable to the Project. For more informati on these regulations as well as other state-wide plans, policies, and regulations associated with GHG emissions that are not applicable the Project, refer to *Technical Appendix F*.

On October 9, 2012, the Moreno Valley City Council approved an Energy Efficiency and Climate Action Strategy and related GH analysis. The Energy Efficiency and Climate Action Strategy document identifies potential programs and policies to reduce overall C energy consumption and increase the use of renewable energy. The majority of the policies are directed at municipal operations of t City, but the document also contains recommended policies for the community at large (including private development projects). The recommended policies include but are not limited to: energy efficiency, water use reduction, trip reduction, solid waste diversion, a educational policies. The overall goal of the Energy Efficiency and Climate Action Strategy is to ensure that the City is consistent w and would not otherwise conflict with the provisions of AB 32. As demonstrated by the analysis below, the Project would not confl with the provisions of AB 32 and, therefore, would not obstruct implementation of the components of the City's Energy Efficiency a Climate Action Strategy that are applicable to the Project.

The Project would include the construction and operation of a warehouse building, which would include contemporary, energ efficient/energy-conserving design features and operational procedures. Warehouse land uses are not inherently energy-intensive and t total Project energy demands would be comparable to, or less than, other warehouse projects of similar scale and configuration due to t Project's modern construction and requirement to be constructed in accordance with the most recent CBSC. The CBSC includes t California Energy Code, or Title 24, Part 6 of the California Code of Regulations, also titled The Energy Efficiency Standards f Residential and Nonresidential Buildings. The California Energy Code was established in 1978 in response to a legislative mandate reduce California's energy consumption. The standards are updated approximately every three years to allow consideration and possib incorporation of new energy efficiency technologies and methods. The Project would be required to comply with all applicable provisio of the CBSC. As such, the Project's energy demands would be minimized through design features and operational programs that, aggregate, would ensure that Project energy efficiencies would comply with – or exceed – incumbent CBSC energy efficien requirements, thereby minimizing GHG emissions produced during from energy consumption. The Project has no potential to inconsistent with the mandatory regulations of the CBSC. (Urban Crossroads, 2018c, pp. 18-20)

The Global Warming Solutions Act of 2006 (AB 32) is the State of California's primary GHG emissions regulation. AB 32 requires th by year 2020 the State's GHG emissions must be reduced to year 1990 levels. The California Air Resources Board (CARB) identifi measures in its Scoping Plan that would reduce statewide GHG emissions and achieve the emissions reductions goals of AB 32. Thu projects that are consistent with the CARB Scoping Plan would not conflict with AB 32's mandate to reduce statewide GHG emissio A detailed description of the Project's consistency with the CARB Scoping Plan is presented in Section 2.7 of *Technical Appendix F* this Initial Study. As presented in *Technical Appendix F*, the Project would not conflict with any applicable measures of the CAR Scoping Plan. (Urban Crossroads, 2018c, pp. 22-25)

In April 2015, Governor Edmund Brown Jr. signed Executive Order (EO) B-30-15, which advocated for a statewide GHG-reduction targ of 40 percent below year 1990 levels by 2030 and 80 percent below 1990 levels by 2050. In September 2016, Governor Brown sign the Senate Bill (SB) 32. SB 32 formally established a statewide goal to reduce GHG emissions to 40 percent below year 1990 levels 2030. To date, no statutes or regulations have been adopted to translate the year 2050 GHG reduction goal into comparable, scientifical based statewide emission reduction targets.

According to research conducted by the Lawrence Berkeley National Laboratory and supported by the CARB, California, under its existi GHG reduction policies, is on track to meet the years 2020 and 2030 reduction targets established by AB 32 and SB 32, respective (Urban Crossroads, 2018c, p. 25). As described above, the Project would not conflict with or obstruct implementation of the CAR Scoping Plan; therefore, the Project would not interfere with the State's ability to achieve the year 2030 GHG-reduction target establish by SB 32.

Rendering a significance determination for year 2050 GHG emissions relative to EO B-30-15 would be speculative because EO B-30- establishes a goal 32 years into the future; no agency with GHG subject matter expertise has adopted regulations to achieve the statewi goal at the project-level; and, available analytical models cannot presently quantify all project-related emissions in those future yea

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Further, due to the technological shifts anticipated and the unknown parameters of the regulatory framework in 2050, available GH models and the corresponding technical analyses are subject to limitations for purposes of quantitatively estimating the Project's emissio in 2050. (Urban Crossroads, 2018c, p. 25)

As described on the preceding pages, the Project would not conflict with the State's ability to achieve the State-wide GHG reducti targets defined in AB 32 and would be consistent with applicable policies and plans related to GHG emissions reductions. Therefore, t Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs a would result in a less-than-significant impact.

7. HAZARDS AND HAZARDOUS MATERIALS. Would the project?

A) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			✓	

Source: (Arcadis, 2018a; Arcadis, 2018b)

Impact Analysis for Existing Site Conditions

A Phase I Environmental Site Assessment (ESA) and Phase II ESA was prepared for the Project site by Arcadis U.S., Inc. (Arcad (included as *Technical Appendix G1* and *Appendix G2* to this Initial Study). As part of the Phase I and Phase II ESA efforts, Arca conducted a property and adjacent site reconnaissance; interviews with key personnel; a review of historical sources; a review of regulatc agency records; and performed limited soil sampling/testing. Refer to *Technical Appendices G1* and *G2* for a detailed discussion of t analysis methodologies followed and reference sources consulted during preparation of the Phase I and Phase II ESAs.

A Recognized Environmental Condition (REC) is defined as "the presence or likely presence of any hazardous substances or petroleu products in, on, or at a property: 1) due to release to the environment; 2) under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment (Arcadis, 2018a, p. 1)." Based on a review of histo regulatory agency hazardous materials databases, historic site aerial photographs, interviews with current property owners, reconnaissance of the Project site, and limited soil sampling/testing, Arcadis determined that the Project site does not contain any RE (Arcadis, 2018a, p. 19; Arcadis, 2018b, p. 4).

Based on a review of historical topographic maps and aerial photographs, which date back to 1901, the Project site was never develope there is no evidence of agriculture, structures or other uses on the subject property (Arcadis, 2018a, p. ES-1). The Project site was locat adjacent to a former firing range associated with MARB; however, soil sampling/testing performed by Arcadis determined that on-s soils did not contain any compounds above the applicable soil screening criteria (Arcadis, 2018b, p. 4). Additionally, there were petroleum products, underground storage tanks (USTs), above-ground storage tanks (ASTs), polychlorinated biphenyls (PCBs) drun sumps, ponds, pits, lagoons, stained soil or pavement, stressed vegetation, wells, septic systems, or cesspools found on the Project si Two pad-mounted transformers located in the southwest corner of the Project site appear to be in good condition and no evidence seepage or releases were observed. A stormwater drainage feature is located on the southeastern corner of the Project site; however, concerns were noted. (Arcadis, 2018a, pp. 15-17)

According to the National Pipeline Mapping System, a gas transmission line runs in an east/west direction beneath Brodiaea Avenu however, this pipeline would not pose or present a substantial hazard to the Project. (Arcadis, 2018a, p. ES-2)

The Project site is located approximately ¼-mile north of the March Air Reserve Base (MARB), where numerous releases of hazardo materials have occurred over time and resulted in localized groundwater contamination. A plume of groundwater containing VOCs h been documented to extend east and southeast of the Base (i.e., flowing away from the Project site). Based on a review of historical vap migration data and the flow direction of the groundwater plume, it is unlikely that there is the risk of vapor migration at the Project si (Arcadis, 2018a, p. ES-2)

Based on the foregoing information, the Project would not create significant hazard to the public or the environment through routi transport, use, or disposal of hazardous materials. A less-than-significant impact would occur.

Impact Analysis for Temporary Construction-Related Activities

Heavy equipment (e.g., dozers, excavators) would operate on the Project site during construction. Heavy equipment is typically fuel and maintained by petroleum-based substances such as diesel fuel, gasoline, oil, and hydraulic fluid, which is considered hazardous improperly stored or handled. In addition, materials such as paints, adhesives, solvents, and other substances typically used in buildi construction would be located on the Project site during construction. Improper use, storage, or transportation of hazardous materials c

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result in accidental releases or spills, potentially posing health risks to workers, the public, and the environment. This is a standard ri on all construction sites, and there would be no greater risk for improper handling, transportation, or spills associated with the propos Project than would occur on any other similar construction site. Construction contractors would be required to comply with all applicat federal, state, and local laws and regulations regarding the transport, use, and storage of hazardous construction-related materials, includi but not limited requirements imposed by the EPA, California Department of Toxic Substances Control (DTSC), SCAQMD, and San Ana Regional Water Quality Control Board (RWQCB). With mandatory compliance to applicable hazardous materials regulations, t Project would not create a significant hazard to the public or the environment through routine transport, use, or disposal of hazardo materials during the construction phase. Impacts would be less than significant.

Impact Analysis for Long-Term Operational Activities

The future building occupant(s) for the Project site are not yet identified. However, the Project is designed to house warehouse distributi and light industrial occupants and it is possible that hazardous materials could be used during the course of a future building user's da operations. State and federal Community-Right-to-Know laws allow the public access to information about the amounts and types chemicals in use at local businesses. Laws also are in place that requires businesses to plan and prepare for possible chemical emergenci Any business that occupies a building on the Project site and that handles hazardous materials (as defined in Section 25500 of Health a Safety Code, Division 20, Chapter 6.95) will require a permit from the Moreno Valley City Fire Department Hazardous Materials Divisi in order to register the business as a hazardous materials handler. Such businesses also are required to comply with California's Hazardo Materials Release Response Plans and Inventory Law, which requires immediate reporting to the County of Riverside Fire Departme and the State Office of Emergency Services regarding any release or threatened release of a hazardous material, regardless of the amou handled by the business. In addition, any business handling at any one time, greater than 500 pounds of solid, 55 gallons of liquid, or 2 cubic feet of gaseous hazardous material, is required, under Assembly Bill 2185 (AB 2185), to file a Hazardous Materials Busine Emergency Plan (HMBEP). A HMBEP is a written set of procedures and information created to help minimize the effects and extent a release or threatened release of a hazardous material. The HMBEP satisfies federal and State Community Right-To-Know laws a provides detailed information for use by emergency responders.

If businesses that use or store hazardous materials occupy the Project, the business owners and operators would be required to comp with all applicable federal, State, and local regulations to ensure proper use, storage, use, emission, and disposal of hazardous substanc (as described above). With mandatory regulatory compliance, the Project is not expected to pose a significant hazard to the public or t environment through the routine transport, use, storage, emission, or disposal of hazardous materials, nor would the Project increase t potential for accident conditions which could result in the release of hazardous materials into the environment. In addition, the Proje would be required to comply with Moreno Valley Municipal Code Section 9.20.12, which establishes development and performan standards, as well as reporting and permitting requirements for the use, handling, storage, and transportation of hazardous materials.

With mandatory regulatory compliance, along with mandatory compliance with the Moreno Valley Municipal Code, potential hazardo materials impacts associated with long-term operation of the Project are determined to be less than significant.

B) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			✓	

Source: (Project Application Materials, 2018)

Accidents involving hazardous materials that could pose a significant hazard to the public or the environment would be highly unlike during the construction and long-term operation of the Project and are not reasonably foreseeable. As discussed above under Respor 7(A), the transport, use, and handling of hazardous materials on the Project site during construction is a standard risk on all constructi sites, and there would be no greater risk for upset and accidents than would occur on any other similar construction site. Upon buildo the Project would operate as a warehouse distribution/light industrial center. Based on the operational characteristics of warehou distribution and light industrial centers, it is possible that hazardous materials could be used during the course of a future occupan routine, daily operations; however, as discussed above under Response 7(A), the Project would be required to comply with all applicat local, State, and federal regulations related to the transport, handling, and usage of hazardous material. Accordingly, impacts associat with the accidental release of hazardous materials would be less than significant during both construction and long-term operation of t Project.

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C) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				✓

Source: (Google Earth, 2018)

There are no schools located within ¼-mile of the Project site. The nearest school to the Project site is the Moreno Valley High Scho located approximately 0.7-mile northeast of the Project site. (Google Earth, 2018) Thus, the Project would not have a significant effe in emitting hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of existing or proposed school. No impact would occur.

D) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result would it create a significant hazard to the public or the environment?				✓

Source: (CDTSC, n.d.)

The Project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (CDTS n.d.). Accordingly, no impact would occur.

E) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?			✓	

Source: (RCALUC, 2014; City of Moreno Valley, 2017b)

The Project site is located approximately 0.9-mile north of MARB. According to the MARB Compatible Use Zone Study commission by the United States Air Force and as depicted on Figure 6-5, *Air Crash Hazards*, of the Moreno Valley General Plan, the Project site not located within a zone subject to hazards related to air crashes. Furthermore, according to the MARB/Inland Port Airport Land U Compatibility Plan (ALUCP), the Project site is located in Compatibility Zone D. Properties located in Zone D are subject to safety ris associated with aircraft operations, but the impacts are sufficiently minimal that land use restrictions are unnecessary and the lig industrial land uses proposed by the Project are permitted. (RCALUC, 2014, Table MA-1). The building proposed by the Project wou not exceed 45 feet in height and does not include an air travel component (e.g., runway, helipad); therefore, the Project would not interfe with flight operations at MARB. Based on the foregoing analysis, the Project would not result in safety hazards for people residing working in the Project area. Impacts would be less than significant.

The Project was reviewed by the Riverside County Airport Land Use Commission (ALUC), which determined the Project would r conflict with the MARB / Inland Port ALUCP. Nonetheless, the ALUC recommended conditions for the Project that would ensure tl no hazards are created during the Project's construction or long-term operation that would be detrimental to safe operations at MAR (The ALUC's conditions reflect standard regulations and design requirements imposed by the Riverside County ALUC for projects locat within the AIA of any public airport.) The City of Moreno Valley will enforce the ALUC's recommendations as conditions of approv for the Project. Mandatory compliance with these conditions of approval would ensure that the Project does not result in a safety haza for people residing or working in the Project area.

F) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				✓

Source: (Google Earth, 2018)

There are no private airfields, or airstrips in the vicinity of the Project site (Google Earth, 2018). Because no private airports are locat nearby, there is no potential for the Project to result in a safety hazard for people residing or working the Project area. No impact wou occur.

G) Impair implementation of, or physically interfere with an adopted emergency response plan or emergency evacuation plan?				✓

Source: (Project Application Materials, 2018; City of Moreno Valley, 2006)

The Project site does not contain any emergency facilities under existing conditions nor does it serve as an emergency evacuation rou so there is no potential for the Project to adversely affect an existing emergency response or evacuation plan. During construction and Project buildout, the proposed Project would be required to maintain adequate emergency access for emergency vehicles. As part of t City's discretionary review process, the City of Moreno Valley confirmed the Project would provide adequate emergency ingress a

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egress and determined that the Project would not substantially impede emergency response times in the local area. According implementation of the proposed Project would not impair implementation of or physically interfere with an adopted emergency respor plan or an emergency evacuation plan, and no impact would occur.

H) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?			✓	

Source: (City of Moreno Valley, 2006; Google Earth, 2018)

According to City of Moreno Valley General Plan FEIR Figure 5.5-2, *Floodplains and High Fire Hazard Areas*, the Project site is r located in an area with a high fire risk. The Project site is located in an area of the City that has been largely developed. No wildlan are located on or adjacent to the Project site and the Project site is largely disturbed and devoid of vegetation and is surrounded on all sic by developed or maintained properties and paved roads (Google Earth, 2018). Thus, implementation of the proposed Project would r expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjace to urbanized areas or where residences are intermixed with wildlands. Impacts would be less than significant.

8. HYDROLOGY AND WATER QUALITY. Would the project:

A) Violate any water quality standards or waste discharge requirements?			✓	

Source: (SARWQCB, 2011; SAWPA, 2014; City of Moreno Valley, 2017c; REC, 2018b)

The California Porter-Cologne Water Quality Control Act (Section 13000 *et seq*., of the California Water Code), and the Federal Wa Pollution Control Act Amendment of 1972 (also referred to as the Clean Water Act (CWA)) require that comprehensive water qual control plans be developed for all waters within the State of California. The Project site is located within the jurisdiction of the Santa A RWQCB. Water quality information for the Santa Ana River is contained in the Santa Ana RWQCB's *Santa Ana River Basin Wa Quality Control Plan* (updated June 2011) and the *One Water, One Watershed Plan 2.0 (OWOW) for the Santa Ana River Watershed* (al referred to as "Integrated Regional Water Management Plan," dated February 4, 2014), prepared by the Santa Ana Watershed Proj Authority. These documents are herein incorporated by reference and are available for public review at the Santa Ana RWQCB offi located at 3737 Main Street, Suite 500, Riverside, CA 92501. (SARWQCB, 2011; SAWPA, 2014)

The CWA requires all states to conduct water quality assessments of their water resources to identify water bodies that do not meet wa quality standards. Water bodies that do not meet water quality standards are placed on a list of impaired waters pursuant to t requirements of Section 303(d) of the CWA. The Project site is located within the Santa Ana River Watershed. Receiving waters for t site's stormwater runoff include: the City of Moreno Valley Public Storm Drain, Perris Valley Storm Drain, San Jacinto River Reach Canyon Lake, San Jacinto River Reach 1, Lake Elsinore Temescal Creek and the Santa Ana River, which ultimately discharge into t Pacific Ocean. Canyon Lake is impaired by nutrients and pathogens; and Lake Elsinore is impaired by PCBs, nutrients, orga enrichment/low dissolved oxygen, and sediment toxicity. (REC, 2018b, Table A.1)

A specific provision of the CWA applicable to the proposed Project is CWA Section 402, which authorizes the NPDES permit progra that covers point sources of pollution discharging to a water body. The NPDES program also requires operators of construction sites o acre or larger to prepare a SWPPP and obtain authorization to discharge stormwater under an NPDES construction stormwater permit.

Temporary Construction-Related Activities

Construction of the proposed Project would involve clearing, grading, paving, utility installation, building construction, and landscapi activities. Construction activities would result in the generation of potential water quality pollutants such as silt, debris, chemicals, pain and solvents, and other chemicals with the potential to adversely affect water quality. As such, short-term water quality impacts have t potential to occur during construction of the Project in the absence of any protective or avoidance measures.

Pursuant to the requirements of the Santa Ana RWQCB and the Moreno Valley Municipal Code Chapter 8.10 and Section 8.21.170, t Project would be required to obtain a NPDES Municipal Stormwater Permit for construction activities. The NPDES permit is requir for all projects that include construction activities, such as clearing, soil stockpiling, grading, and/or excavation that disturb at least o (1) acre of total land area. In addition, the Project would be required to comply with the Santa Ana RWQCB's *Santa Ana River Bas Water Quality Control Program*. Compliance with the NPDES permit and the *Santa Ana River Basin Water Quality Control Progr* involves the preparation and implementation of a SWPPP for construction-related activities, including grading. The SWPPP will spec the Best Management Practices (BMPs) that the Project would be required to implement during construction activities to ensure that potential pollutants of concern are prevented, minimized, and/or otherwise appropriately treated prior to being discharged from the subj

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property. Mandatory compliance with the SWPPP would ensure that the proposed Project does violate any water quality standards waste discharge requirements during construction activities. Therefore, water quality impacts associated with construction activities wou be less than significant and no mitigation measures would be required.

Post-Development Water Quality Impacts

Stormwater pollutants commonly associated with the warehouse and light industrial land uses proposed by the Project include bacter indicators, metals, nutrients, pesticides, toxic organic compounds, sediments, trash and debris, and oil and grease. Based on curre receiving water impairments (pursuant to the CWA's Section 303(d) list), the Project's pollutants of concern are nutrients, pesticid toxic organic compounds, and sediments. (REC, 2018b, Table E.1)

Pursuant to the Moreno Valley Municipal Code Chapter 8.10 and Section 8.21.170, the Project would be required to implement a WQM to demonstrate compliance with the City's NPDES permit, and to minimize the release of potential waterborne pollutants, includi pollutants of concern for downstream receiving waters. The WQMP is a site-specific post-construction water quality management progra designed to address the pollutants of concern of a development project via BMPs, implementation of which ensures the on-going protecti of the watershed basin. The Project's Preliminary WQMP, prepared by REC, is appended as *Technical Appendix I* to this MND. identified in *Technical Appendix I*, the proposed Project is designed to include on-site, structural source control BMPs (including bioretention basin, an underground storage vault, and on-site storm drain catch basins/inlets with filters) as well as operational sour controls (including but not limited to: drainage system maintenance, proper waste disposal, landscape maintenance, and implementati of minimal pesticide use) to minimize, prevent, and/or otherwise appropriately treat stormwater runoff flows before they are discharg from the site. Compliance with the Preliminary WQMP would be required as a condition of Project approval pursuant to Moreno Vall Municipal Code Chapter 8.10 and Section 8.21.170, and long-term maintenance of on-site BMPs would be required to ensure their lor term effectiveness. Therefore, water quality impacts associated with long-term operational activities would be less than significant.

In addition to the WQMP, the NDPES program also requires certain land uses, including industrial land uses as proposed by the Proje to prepare a SWPPP for operational activities and to implement a long-term water quality sampling and monitoring program, unless exemption has been granted. On April 1, 2014, the California State Water Resources Control Board adopted an updated new NPDI permit for storm water discharge associated with industrial activities (referred to as the "Industrial General Permit"). Under the new effective NPDES Industrial General Permit, the Project is required to prepare a SWPPP for operational activities and implement a lor term water quality sampling and monitoring program or receive an exemption. Because the permit is dependent upon the operatio activities of the buildings, and the Project's future building occupants and their operations are not known at this time, details of the SWP (including BMPs) or potential exemption to the SWPPP operational activities requirement cannot be determined at this time. Howev based on the requirements of the NPDES Industrial General Permit, it is assured that the Project's mandatory compliance with applicable regulations would further reduce potential water quality impacts during long-term operation.

Based on the foregoing analysis, the Project would not violate any water quality standards or waste discharge requirements during lor term operation. Impacts would be less than significant.

B) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			✓	

Source: (City of Moreno Valley, 2006)

No potable groundwater wells are proposed by the Project. The Project would receive potable water service from EMWD. The EMW relies on local potable groundwater as a source of its water supply (in addition to imported water from the Metropolitan Water District Southern California, desalted ground water, and recycled water). The EMWD has indicated it has sufficient available water resourc including groundwater resources, to adequately serve the Project in addition to past, present, and future commitments to supply wa (refer to Response 17(D)). Accordingly, the proposed Project would not directly or indirectly extract groundwater that would substantia deplete groundwater supplies in the Project area. Impacts would be less than significant.

The Project would increase impervious surface coverage on the Project site, which would incrementally reduce the amount of wa percolating down into the underground aquifer that underlies the Project site (and a majority of the City). However, and as noted in t City's General Plan EIR, the impact to groundwater resources due to an increase in impervious surface coverage throughout the C would "not be significant as domestic water supplies are not reliant on groundwater as a primary source." (City of Moreno Valley, 20(

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pp. 5.7-12) Additionally, water captured by the proposed Project's bioretention BMP basin, underground infiltration chamber, a landscaped areas would have the opportunity to percolate into the ground. Thus, buildout of the Project would not interfere substantia with groundwater recharge.

For the reasons stated above, the Project would neither substantially deplete groundwater supplies nor interfere substantially w groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. Impa would be less than significant.

C) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?			✓	

Source: (REC, 2018a)

Under existing conditions, stormwater on the Project site sheet flows in a southwesterly direction into two (2) existing storm drain inl that merge into an existing storm drain (Line P) located beneath Brodiaea Avenue. Stormwater runoff originating off-site – from t undeveloped parcel north of the site – generally sheet flows in a southerly direction onto the Project site.

The Project would grade the entire property and construct one warehouse/light industrial building and associated improvements, whi would change the site's existing ground contours and alter the site's existing drainage patterns. Although the Project would alter t subject property's internal drainage patterns, such changes would not result in substantial erosion or siltation on- or off-site. Under po development conditions, a majority of the site would be covered with impervious surfaces and, therefore, the amount of exposed soils the Project site that would potentially be subject to erosion or sedimentation would be minimal. Also, as discussed under Response 8(A the Project would construct an integrated storm drain system on-site with BMPs to minimize the amount of water-borne pollutants carri from the Project site. The BMPs provided by the Project via its Preliminary Water Quality Management Plan, including a bioretenti basin, catch basins/inlets with filters, and an underground bioretention basin are highly effective at removing sediment from stormwa runoff flows. Therefore, stormwater runoff flows leaving the Project site would not carry substantial amounts of sediment. Once sto water runoff leaves the Project site, it would be discharged into a storm drain pipe beneath Brodiaea Avenue. Because there are no expos soils at the Project's discharge point, there is no potential for the Project's stormwater runoff to result in erosion as it leaves the Proj site. Accordingly, the Project would not result in substantial erosion or siltation on- site or off-site, and a less-than-significant impa would occur.

D) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or surface runoff in a manner which would result in flooding on- or off site?			✓	

Source: (REC, 2018a; Project Application Materials, 2018)

As described above under Response 8(C), proposed grading and earthwork activities on the Project site would alter the site's existi internal drainage patterns but would not substantially alter the general drainage pattern of the local area. According to the Projec Hydrology Report, under long-term development conditions, the peak storm water runoff flows discharged from the Project site wou not exceed the available capacity of the existing storm drain line (Line P) beneath Brodiaea Avenue (REC, 2018a, p. 1). The storm dra line beneath Brodiaea Avenue is a master-planned facility that is designed to accept peak stormwater runoff flows from the Project ar and safely convey these flows downstream to preclude flooding. Because the proposed Project is consistent with the applicable mas drainage plan, Project implementation would not result in flooding on- or off-site due to the introduction of substantial, unanticipat storm water flows. Impacts associated with flooding would be less than significant.

E) Create or contribute runoff which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			✓	

Source: (REC, 2018a; REC, 2018b)

As discussed above under Response 8(D), existing storm drain facilities have sufficient capacity to convey storm water runoff generat by the Project. Accordingly, the Project would not create or contribute runoff which would exceed the capacity of any planned sto water drainage system, and impacts would be less than significant.

As discussed under Response 8(A), the proposed Project would be required to comply with a future SWPPP and the Project's Prelimina WQMP (*Technical Appendix I*), which identify required BMPs to be incorporated into the Project to ensure that near-term constructi

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activities and long-term post-development activities of the proposed Project would not result in substantial amounts of polluted runo Therefore, with mandatory compliance with the Project's SWPPP and Preliminary WQMP, the proposed Project would not create contribute substantial additional sources of polluted runoff, and impacts would be less than significant.

F) Otherwise substantially degrade water quality?				✓

Source: (REC, 2018a)

Refer to Responses 8(A), (C), and (D) above. The Project does not contain any other features that would have the potential to substantia degrade water quality. Thus, no impact would occur.

G) Place housing within a 100-year floodplain, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				✓

Source: (FEMA, 2008)

The proposed Project does not include housing. In addition, according to the Federal Emergency Management Agency (FEMA) Flo Insurance Rate Map (FIRM) No. 06065C0745G (dated August 28, 2008), the Project site is not located within a 100-year flood haza area. Accordingly, the Project would not place structures or housing within a 100-year flood hazard area. No impact would occur.

H) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				✓

Source: (FEMA, 2008)

See Response 8(G).

I) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?			✓	

Source: (City of Moreno Valley, 2006)

The nearest dam to the Project site is Lake Perris, located approximately 5.6 miles southeast of the Project site. According to City Moreno Valley General Plan FEIR Figure 5.5-2, *Floodplains, and High Fire Hazard Areas*, the Project site is not located in an identifi dam inundation area. There are no levees in the vicinity of the Project site. Accordingly, and also based on the information provid under Responses 8(D), (G), and (H), the Project would not expose people or structures to a significant risk of loss, injury, or death involvi flooding. Impacts would be less than significant.

J) Inundation by seiche, tsunami, or mudflow?				✓

Source: (Google Earth, 2018)

The Pacific Ocean is located more than 40 miles from the Project site; consequently, there is no potential for tsunamis to impact the Proj site. In addition, the Project site and immediate surrounding area do not contain steep hillsides that may be susceptible to mudflow. T nearest large body of surface water to the site is Lake Perris, located approximately 5.6 miles southeast of the Project site. (Google Ear 2018) Due to the distance of Lake Perris from the Project site, a seiche in Lake Perris would have no impact on the Project site. Therefo the Project site would not be subject to seiches, mudflows, and/or tsunamis. Thus, no impact would occur.

9. LAND USE AND PLANNING. Would the project:

A) Physically divide an established community?				✓

Source: (Google Earth, 2018)

Development of the Project site with a warehouse/light industrial building and associated improvements would not physically disrupt divide the arrangement of an established community. The property to the north of the Project site is undeveloped and the properties to t west and south are physically separated from the site by Frederick Street and Brodiaea Avenue, respectively. The property to the east the Project site is developed as a warehouse; therefore, the Project would serve as an extension of the existing development patterns in t area.

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Issues and Supporting Information	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
B) Conflict with an applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?		✓		

Source: (City of Moreno Valley, 2017a; City of Moreno Valley, 2017b)

Under existing conditions, the Project site is designated for "Office" land uses by the City's General Plan Land Use Plan and the Zoni Map (City of Moreno Valley, 2017a; City of Moreno Valley, 2017b). Although the proposed Project would be inconsistent with t subject property's existing General Plan land use and Zoning designations, such inconsistency would only be significant if it were to res in significant, adverse physical effects to the environment that would not otherwise occur with implementation of the "Office" designatic As disclosed in this MND, implementation of the Project would result in the development of a warehouse/light industrial facility, whi would result in several adverse effects to the environment. This MND provides mitigation to reduce all of the Project's effects on t environment to less-than-significant levels. Accordingly, after mitigation, the Project's conflict with the site's existing General Plan la use and Zoning designations would be less than significant. The Project otherwise would not conflict with any goals, objectives, polici or regulations of land use and planning documents applicable to the Project area, including the SCAQMD *AQMP*, SCAG *RTP/SCS*, a *SCAG Regional Comprehensive Plan*.

C) Conflict with any applicable habitat conservation plan or natural community conservation plan?		✓		

Source: (City of Moreno Valley, 2006; Ecological Sciences, 2018a)

Please refer to the analysis provided for Response 4(F). The Project would not conflict with any applicable habitat conservation plan natural community conservation plan.

10. MINERAL RESOURCES. Would the project:

A) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				✓

Source: (City of Moreno Valley, 2006)

The Project site is not located within an area known to be underlain by regionally- or locally-important mineral resources or within area that has the potential to be underlain by regionally- or locally-important mineral resources. Implementation of the proposed Proj would not result in the loss of availability of a known mineral resource that would be of value to the region or the residents of the State California. In addition, the City's General Plan EIR does not identify any locally-important mineral resource recovery sites on-site within proximity to the Project site. (City of Moreno Valley, 2006, p. 5.14-2)

B) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?				✓

Source: (City of Moreno Valley, 2006)

Please refer to Response 10(A), above.

11. **NOISE.** Would the project result in:

A) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			✓	

Source: (Urban Crossroads, 2018d; City of Moreno Valley, 2017c)

Noise generated at the Project site under existing conditions is limited to vehicles traveling to and from the Project site and routi maintenance activities on the Project site (i.e., discing), which both occur sporadically. No known unusual or loud noises occur on t Project site on a regular basis. Primary noise sources near the site include vehicular noise from Frederick Street and Brodiaea Aven For more information about the existing noise environment surrounding the Project site, refer to *Technical Appendix J*.

Near-term (i.e., temporary) and long-term (i.e., permanent) noise level increases that would be associated with the Project are describ below.

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Issues and Supporting Information	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact

Impact Analysis for Near-Term Construction Noise

The Moreno Valley Municipal Code Chapter 11.80 "Noise Regulation" (Noise Ordinance) establishes noise limits for maximu continuous sound, maximum impulsive sound, and maximum non-impulsive sound. For purposes of analysis, the Project's constructi noise is evaluated against the City's standards for non-impulsive sound (i.e., ambient noise) from non-residential sources (65 A-weight decibels, dBA, during daytime hours and 60 dBA during nighttime hours, measured 200 feet from the property line) and continuous noi (90 dBA Leq over eight hours) because these standards are the best metrics against which to evaluate the scope and intensity of t Project's proposed construction activities (Urban Crossroads, 2018d, pp. 19, 26).

Based on noise samples collected from construction sites across Southern California and logarithmic noise modeling performed by Urb Crossroads, none of the Project's construction activities would exceed 90 dBA Leq; refer to Tables 10-2 through 10-6 from *Technic Appendix J* (Urban Crossroads, 2018d, pp. 58-62). As also shown on Tables 10-2 through 10-6 from *Technical Appendix J*, the Proje would not exceed the City's 65 dBA standard during daytime hours or 60 dBA standard during nighttime hours, as measured 200 fe from the property line, during any stage of construction. (When calculated at a receptor distance 182 feet from the site, the Projec construction noise falls below the applicable 65 dBA daytime and 60 dBA nighttime noise standards; the Project's construction noi would be even lower if calculated at 200 feet). (Urban Crossroads, 2018d, pp. 58-63) Refer to *Technical Appendix J* for a detail description of the methodology used to calculate the Project's operational noise levels. Accordingly, the Project would not expose perso to or generate noise levels in excess of applicable City of Moreno Valley standards during construction. Impacts would be less th significant and mitigation is not required.

Impact Analysis for Long-Term Operational Noise

The City of Moreno Valley's non-impulsive noise standard, which allows non-residential land uses to produce up to 65 dBA duri daytime hours and 60 dBA during nighttime hours, as measured 200 feet from the property line of the noise source, is the most appropria standard against which to evaluate the Project's operational noise because the Project's land uses will not produce substantial impulsi noise (short bursts of loud noise) and does not include exterior mechanical equipment or uses that would produce substantial continuo noise (Urban Crossroads, 2018d, p. 18). Using the reference noise levels collected from other warehouse facilities in the Inland Emp area – which include noise associated with idling trucks, delivery truck activities, parking, backup alarms, and HVAC equipment – represent the proposed warehouse operations on the Project site, Urban Crossroads calculated the operational source noise levels that a expected to be generated at the Project site. The Project's calculated operational noise levels are presented in Table 6, *Project Operation Noise Levels At 200 Feet*. Refer to *Technical Appendix J* for a detailed description of the methodology used to calculate the Projec operational noise levels.

Table 6 Project Operational Noise Levels At 200 Feet

Noise Source	Ref. Noise Level (dBA Leq)	Distance Atten. @ 200 ft. (dBA Leq)	Hourly Activity (Mins.)	Hourly Activity Adjustment (dBA Leq)	Noise Level @ 200 ft. (dBA Leq)
Truck Unloading/Docking Activity	67.2	-16.5	60	0.0	50.7
Roof-Top Air Conditioning Units	77.2	-32.0	39	-1.9	43.3
Parking Lot Vehicle Movements	52.2	-19.5	60	0.0	32.7
				Combined Total:	51.5

Source: (Urban Crossroads, 2018d, Table 9-2)

As shown in Table 6, the Project's operational noise levels are calculated to be 51.5 dBA Leq at a distance of 200 feet from the Proje site, which would fall below both the City's applicable daytime (65 dBA) and nighttime (60 dBA) standards. (Urban Crossroads, 2018 p. 52). Accordingly, the Project site would be consistent with the City of Moreno Valley standard for daytime and nighttime exterior noi levels, respectively. Accordingly, the Project would not expose persons to or generate noise levels in excess of applicable City of More Valley standards during operation. Impacts would be less than significant and mitigation is not required.

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Issues and Supporting Information	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
B) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			✓	

Source: (Urban Crossroads, 2018d)

Impact Analysis for Near-Term Construction Vibration

Construction activities on the Project site would utilize heavy equipment that has the potential to generate low levels of intermitte localized ground-borne vibration. Refer to *Technical Appendix J* for a detailed description of the methodology used to calcula construction vibration levels.

Vibration levels from Project-related construction activities were calculated at four (4) receiver locations near the Project site. (See Figu 1, *Noise Receiver Locations*, for locations of the modeled receptors and refer to *Technical Appendix J* for a detailed description of t receptors). The results of the vibration analysis for Project-related construction activities are summarized in Table 7, *Constructi Vibration Levels.*

Table 7 Construction Vibration Levels

Receiver Location[1]	Distance to Construction Activity (Feet)	Receiver Vibration Levels (VdB)[2]					Threshold Exceeded ?[3]
		Small Bulldozer	Jackhammer	Loaded Trucks	Large Bulldozer	Highest Vibration Level	
R1	824	12.5	33.5	40.5	41.5	41.5	No
R2	182	32.1	53.1	60.1	61.1	61.1	No
R3	174	32.7	53.7	60.7	61.7	61.7	No
R4	134	36.1	57.1	64.1	65.1	65.1	No

[1]Noise receiver locations are shown on Exhibit 10-A of *Technical Appendix J.*
[2]Based on the Vibration Source Levels of Construction Equipment included on Table 6-7 of *Technical Appendix J.*
[3]Does the peak vibration exceed the FTA maximum acceptable vibration standard of 80 VdB?
Source: (Urban Crossroads, 2018d, Table 10-9)

As shown in Table 7, Project construction activities would generate a maximum vibration level of 65.1 vibration decibels (VdB), whi is less than the City's significance threshold of 80 VdB (Urban Crossroads, 2018d, p. 66). Accordingly, the Project's construction activiti would not expose persons to or generate excessive groundborne vibration or groundborne noise levels. The Project would result in les than-significant impacts associated with construction vibration and groundborne noise.

Impact Analysis for Long-Term Operational Vibration

Under long-term conditions, the proposed Project would not include nor require equipment, facilities, or activities that would result substantial or perceptible groundborne vibration. Trucks would travel to-and-from the Project site during long-term operation; howev according to the Federal Transit Administration, vibration levels for heavy trucks operating at low-to-normal speeds on smooth, pav surfaces – as is expected on the Project site and along surrounding roadways – typically do not exceed 65 VdB, which is less than t City's significance threshold of 80 VdB (Urban Crossroads, 2018d, p. 54). Accordingly, long-term operation of the Project would r expose persons to or generate excessive groundborne vibration or groundborne noise levels, and a less-than-significant impact wou occur.

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Source(s): Urban Crossroads (05-25-2018)

NOT TO SCALE

Figure 1

NOISE RECEIVER LOCATIONS

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Issues and Supporting Information	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
C) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			✓	

Source: (Urban Crossroads, 2018d)

The Federal Interagency Committee on Noise (FICON) developed guidance to be used for the assessment of project-generated increas in noise levels that take into account the ambient noise environment. Although the FICON recommendations were specifically develop to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use cumulative exposure metrics, such as the average-daily noise level (i.e., CNEL). The CNEL is the weighted average of the intensity o sound, with corrections for time of day, and averaged over 24 hours. For example, if the ambient noise environment is very quiet and new noise source substantially increases localized noise levels, a perceived impact may occur even though the numerical noise thresho might not be exceeded. Therefore, for the purpose of this analysis, when the ambient noise environment is less than 60 dBA CNEL, a dBA or more increase (i.e., "readily perceptible") resulting from Project-related noise is considered cumulatively considerable when noi sensitive receptors are affected. Where the ambient noise levels range from 60 to 65 dBA CNEL, a 3 dBA or more increase (i.e., "bare perceptible") resulting from Project-related noise is considered cumulatively considerable when noise sensitive receptors are affected. areas where the ambient noise levels exceed 65 dBA CNEL, a 1.5 dBA or more increase resulting from Project-related noise is consider cumulatively considerable when noise sensitive receptors are affected. (Urban Crossroads, 2018d, p. 24)

Impact Analysis for Stationary Noise

As summarized in Table 8, *Project Noise Level Contributions*, the Project would not contribute substantial noise at nearby sensiti receptors during daytime or nighttime hours. Accordingly, the Project would not contribute to a substantial permanent increase in ambie noise levels in the project vicinity above levels existing without the Project. Impacts would be less than significant.

Table 8 Project Noise Level Contributions

Daytime Noise Levels (8:00 a.m. – 10:00 p.m.)

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Contribution[6]	Threshold Exceeded?[7]
R1	39.0	L1	57.4	57.5	0.1	No
R2	35.7	L2	58.9	58.9	0.0	No
R3	38.2	L3	66.5	66.5	0.0	No
R4	42.7	L4	59.0	59.1	0.1	No

Table 8 (cont.) Project Noise Level Contributions

Nighttime Noise Levels (10:01 p.m. – 7:59 a.m.)

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Contribution[6]	Threshold Exceeded?[7]
R1	39.0	L1	55.5	55.6	0.1	No
R2	35.7	L2	57.9	57.9	0.0	No
R3	38.2	L3	62.9	62.9	0.0	No
R4	42.7	L4	55.5	55.7	0.2	No

[1]Noise receiver locations are shown on Figure 1.
[2]Estimated Project stationary source noise levels based on data presented in Table 6.
[3]Reference noise level measurements as shown on Exhibit 5-A of *Technical Appendix J*.
[4]Observed daytime ambient noise levels as shown on Table 5-1 of *Technical Appendix J*.
[5]Represents the combined reference ambient noise levels plus Project operational noise level.
[6]The noise level increase expected with the addition of the Project.
[7]As defined under Response 11(C) of this Initial Study.
Source: (Urban Crossroads, 2018d, Table 9-4 and Table 9-5)

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Issues and Supporting Information	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact

Impact Analysis for Traffic-Related Noise

To evaluate permanent, off-site noise increases that could result from Project-related traffic, noise levels were modeled for the followi traffic scenarios:

- Existing: This scenario refers to the existing traffic noise conditions without and with the proposed Project.
- Project Opening Year (2023): This scenario refers to the background noise conditions in the year 2023 without and with t Project, including reasonably foreseeable cumulative development projects.
- Project Buildout (2040): This scenario refers to the General Plan Buildout noise conditions in the year 2040 without and with t Project, including reasonably foreseeable cumulative development projects.

Traffic noise contours and noise levels were established based on existing and projected future traffic conditions on off-site roadw segments within the Project's study area, and do not take into account the effect of any existing noise barriers or topography that m affect ambient noise levels. Refer to *Technical Appendix J* for a detailed description of the methodology used to evaluate the Projec traffic-related noise effects.

Table 9, *Existing plus Project Traffic Noise Impacts*, presents a comparison of the existing noise conditions along Project study ar roadway segments and the noise levels that would result with addition of Project-related traffic. Noise levels along roadway segmer within the Project study area would increase between 0.0 to 2.4 dBA CNEL with development of the Project; however, the Project's noi contributions would not exceed the threshold of significance due to the existing noise environment and the lack of noise sensitive receiv in the vicinity of the Project site. Accordingly, the Project would not result in a substantial permanent increase in noise levels abo ambient conditions. Therefore, the Project's off-site, traffic-related noise impacts would be less than significant under Existing pl Project conditions.

Table 10, *Year 2023 Traffic Noise Impacts*, presents a comparison of the expected Year 2023 noise conditions along Project study ar roadway segments, including reasonably foreseeable cumulative development projects, and the noise levels that would result with additi of Project-related traffic. Noise levels along roadway segments within the Project study area would increase between 0.0 to 2.2 dE CNEL with development of the Project; however, the Project's noise contributions would not exceed the threshold of significance due the projected noise environment and the lack of noise sensitive receivers in the vicinity of the Project site. Accordingly, the Project wou not result in a substantial permanent increase in noise levels above ambient conditions. Therefore, the Project's off-site traffic-relat noise impacts would be less than significant under Year 2023 plus cumulative development conditions.

Table 9 Existing plus Project Traffic Noise Impacts

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[1]			Noise-Sensitive Land Use?[2]	Threshold Exceeded?[3]
			No Project	With Project	Project Addition		
1	Frederick St.	s/o Alessandro Bl.	70.1	70.5	0.4	No	No
2	Frederick St.	n/o Brodiaea Av.	69.0	69.3	0.3	No	No
3	Frederick St.	n/o Cactus Av.	69.3	69.8	0.5	No	No
4	Graham St.	s/o Brodiaea Av.	68.2	68.5	0.3	No	No
5	Alessandro Bl.	w/o Frederick St.	73.4	73.5	0.1	Yes	No
6	Calle San Juan De Los Lagos	w/o Frederick St.	64.2	64.3	0.1	No	No
7	Calle San Juan De Los Lagos	e/o Veterans Wy.	61.8	61.9	0.1	No	No
8	Brodiaea Av.	w/o Graham St.	58.7	61.1	2.4	No	No
9	Cactus Av.	w/o Frederick St.	75.2	75.3	0.1	No	No

[1]The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2]"Yes" = Existing, noise-sensitive land uses adjacent to the study area roadway segment.
[3] As defined under Response 11(C) of this Initial Study.
Source: (Urban Crossroads, 2018d, Table 7-7)

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Issues and Supporting Information	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact

Table 10 Year 2023 Traffic Noise Impacts

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[1]			Noise-Sensitive Land Use?[2]	Threshold Exceeded?[3]
			No Project	With Project	Project Addition		
1	Frederick St.	s/o Alessandro Bl.	72.0	72.3	0.3	No	No
2	Frederick St.	n/o Brodiaea Av.	71.4	71.6	0.2	No	No
3	Frederick St.	n/o Cactus Av.	71.6	71.9	0.3	No	No
4	Graham St.	s/o Brodiaea Av.	70.0	70.2	0.2	No	No
5	Alessandro Bl.	w/o Frederick St.	74.2	74.3	0.1	Yes	No
6	Calle San Juan De Los Lagos	w/o Frederick St.	65.1	65.2	0.1	No	No
7	Calle San Juan De Los Lagos	e/o Veterans Wy.	62.2	62.3	0.1	No	No
8	Brodiaea Av.	w/o Graham St.	59.2	61.4	2.2	No	No
9	Cactus Av.	w/o Frederick St.	77.5	77.6	0.1	No	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2]"Yes" = Existing, noise-sensitive land uses adjacent to the study area roadway segment.
[3] As defined under Response 11(C) of this Initial Study.
Source: (Urban Crossroads, 2018d, Table 7-8)

Table 11, *General Plan Buildout Year 2040 Traffic Noise Impacts*, presents a comparison of the expected 2040 noise conditions alo Project study area roadway segments plus reasonably foreseeable cumulative development projects and the noise levels that would res with addition of Project-related traffic. Noise levels along roadway segments within the Project study area would increase between 0.0 1.7 dBA CNEL with development of the Project. As shown in Table 11, the Project's noise contributions would not exceed the significan thresholds based on existing ambient noise levels and the lack of nearby noise-sensitive land uses. Accordingly, the Project would neith substantially contribute to noise levels in excess of applicable noise standards nor result in a substantial permanent increase in noise lev above ambient conditions. Therefore, the Project's off-site traffic-related noise impacts would be less than significant under Year 20 plus cumulative development conditions.

Table 11 General Plan Buildout Year 2040 Traffic Noise Impacts

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[1]			Noise-Sensitive Land Use?[2]	Threshold Exceeded?[3]
			No Project	With Project	Project Addition		
1	Frederick St.	s/o Alessandro Bl.	72.4	72.6	0.2	No	No
2	Frederick St.	n/o Brodiaea Av.	71.8	72.0	0.2	No	No
3	Frederick St.	n/o Cactus Av.	72.0	72.3	0.3	No	No
4	Graham St.	s/o Brodiaea Av.	70.4	70.6	0.2	No	No
5	Alessandro Bl.	w/o Frederick St.	75.3	75.4	0.1	Yes	No
6	Calle San Juan De Los Lagos	w/o Frederick St.	66.1	66.1	0.0	No	No
7	Calle San Juan De Los Lagos	e/o Veterans Wy.	63.7	63.8	0.1	No	No
8	Brodiaea Av.	w/o Graham St.	60.6	62.3	1.7	No	No
9	Cactus Av.	w/o Frederick St.	77.1	77.2	0.1	No	No

[1]The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2]"Yes" = Existing, noise-sensitive land uses adjacent to the study area roadway segment.
[3] As defined under Response 11(C) of this Initial Study.
Source: (Urban Crossroads, 2018d, Table 7-9)

In summary, long-term operation of the proposed Project would not result in a substantial permanent increase in off-site, traffic-related noise levels under any analysis scenario. The Project's traffic-related noise impacts would be less than significant.

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Issues and Supporting Information	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
D) A substantially temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			✓	

Source: (Urban Crossroads, 2018d)

The Project would only have the potential to cause a substantial temporary or periodic increase in ambient noise levels during construction phase. Construction activities on the Project site, especially those activities involving the use of heavy equipment, wou create intermittent, temporary increases in ambient noise levels in the vicinity of the Project site. Noise generated by heavy constructi equipment, including trucks, graders, bulldozers, concrete mixers, and portable generators, can reach high levels. However, constructio related noise increases: 1) would be transitory (i.e., varying from day-to-day and throughout the day), 2) would completely cease up completion of Project construction, and 3) would not represent a recurring, periodic source of noise (although periodic and tempora construction noise has the potential to be substantial compared to existing ambient noise levels).

As discussed above under Response 11(A), the construction noise generated by the Project would be consistent with the City's Noi Ordinance, which requires noise levels to be quantified at a distance of 200 feet from the noise source, regardless of the distance betwe the noise source and potential sensitive (i.e., residential) receptors. Notwithstanding the Project's consistency with the City's Noi Ordinance, construction activities on the Project site, especially those activities involving heavy equipment, would create intermitte temporary increases in ambient noise levels that have the potential to adversely affect receptors in the vicinity of the Project site. T Project's construction-related noise levels, as calculated at nearby receptor locations, are presented in Table 12, *Project Constructi Noise Level Summary*. (Receptor locations were previously depicted on Figure 1). To present a conservative analysis, all receptors in t Project site vicinity – including the existing office/worker receptor locations (i.e., R2 through R4) – are evaluated as sensitive recepto The noise levels summarized in Table 12 are based on reference noise levels collected from construction sites throughout Southe California (refer to *Technical Appendix J* for a detailed description of reference construction noise levels).

As shown on Table 12, Project-related construction activities are calculated to reach maximum noise levels between 49.1 and 6 equivalent-level decibels (dBA Leq) when measured at nearby receptors. The City does not consider noise levels less than 65 dBA L to be excessive for sensitive receptors; therefore, the Project's temporary or periodic noise impacts would be less-than-significant a mitigation would not be required. (Urban Crossroads, 2018d, p. 62)

Table 12 Project Construction Noise Level Summary

Receiver Location	Distance to Receiver (Feet)	Daytime Construction Noise Levels (dBA L_{eq})						Nighttime Concrete Pour Noise Levels (dBA L_{eq})	Threshold Exceeded?	
		Site Prep.	Grading	Building Const.	Paving	Architectural Coating	Highest Outdoor Const. Noise Levels		Daytime (65 dBA L_{eq})	Nighttime (60 dBA L_{eq})
R1	824	39.8	49.1	43.8	47.3	43.1	49.1	47.3	No	No
R2	182	47.9	57.2	51.9	55.4	51.2	57.2	55.4	No	n/a
R3	174	53.3	62.6	57.3	60.8	56.6	62.6	60.8	No	n/a
R4	134	55.6	64.9	59.6	63.0	58.9	64.9	63.0	No	n/a

Source: (Urban Crossroads, 2018d, Table 10-8)

E) For a project located within an airport land use plan, or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?			✓	

Source: (Google Earth, 2018; RCALUC, 2014; Urban Crossroads, 2018d)

The Project site is located approximately 1.2 miles northeast of the nearest runway for MARB. Based on the *Airport Land U Compatibility Plan* (ALUCP) for MARB, the Project is located outside of the Airport's 60 dBA CNEL noise level contours, and therefo is a "*clearly acceptable*" use for the subject property based on the ALUCP's land use compatibility criteria. A *clearly acceptable* la use indicates that "the activities associated with the specified land use can be carried out with essentially no interference from the noi exposure" (RCALUC, 2014, Table 2B; Urban Crossroads, 2018d, p. 21). Accordingly, the proposed Project would not expose peop residing or working in the Project area to excessive noise levels from a public airport; therefore, impacts would be less-than-significan

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F) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				✓

Source: (Google Earth, 2018)

There are no private airfields or airstrips in the vicinity of the Project site (Google Earth, 2018). Therefore, the Project would not expo people to excessive noise levels associated with operations at a private airstrip. No impact would occur.

12. POPULATION AND HOUSING. Would the project:

A) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			✓	

Source: (City of Moreno Valley, 2006; City of Moreno Valley, 2016)

The Project would develop the Project site with employment land uses. The Project site is located in an area of Moreno Valley that already developing with employment land uses – and on a site that is planned for employment land uses by the Moreno Valley Gene Plan. Accordingly, development of the Project would sustain the ongoing trend of the development of employment land uses in the C of Moreno Valley and would not generate job growth that substantially exceeds what was already anticipated by the City in their Gene Plan and evaluated in the General Plan FEIR. Additionally, the Project site is located in an area of Moreno Valley that is served by existi roadways and public utility infrastructure and the Project would not require the extension or expansion of any infrastructure. According the Project would not induce direct or indirect substantial growth in the area and impacts would be less than significant.

B) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				✓

Source: (Project Application Materials, 2018; Google Earth, 2018)

The Project site does not contain any residential structures and no people live on the site under existing conditions. According implementation of the Project would not displace substantial numbers of existing housing or people and would not necessitate t construction of replacement housing elsewhere. No impact would occur.

C) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				✓

Source: (Project Application Materials, 2018; Google Earth, 2018)

Refer to Response 12(B).

13. PUBLIC SERVICES. Would the project result in substantial adverse physical impacts associated with the provision of new physically altered government facilities, need for new or physically altered government facilities, the construction of which could cau significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for a of the public services:

A) Fire protection?			✓	

Source: (Google Earth, 2018; City of Moreno Valley, 2017c)

Fire protection services to the Project site are provided by the Moreno Valley Fire Department (MVFD). The Project site is served by t Towngate Fire Station (Station No. 6) located at 22280 Eucalyptus Avenue, approximately 2.1 roadway miles to the northwest of t Project site, and the Kennedy Park Fire Station (Station No. 65) located at 15111 Indian Avenue, approximately 3.6 roadway miles to t southeast of the Project site (Google Earth, 2018). Based on the Project site's proximity to the two (2) existing fire stations, the Proje would be adequately served by fire protection services, and no new or expanded unplanned facilities would be required. The Project required to comply with the provisions of the City of Moreno Valley's Development Impact Fee (DIF) Ordinance (Ordinance No. 69 which requires a fee payment that the City applies to the funding of public facilities, including fire protection facilities (City of More Valley, 2017c). Mandatory compliance with the DIF Ordinance would be required prior to the issuance of a building permit.

The Project would feature fire safety and fire suppression activities, including type of building construction, fire sprinklers, a fire hydra system, and paved access. The proposed building would be of concrete tilt-up construction that contains a low fire hazard risk rating. addition, a fire alarm system is proposed to be installed, as well as an ESFR (Early Suppression, Fast Response) ceiling mounted f sprinklers. ESFR provides protection that exceeds that of in-rack systems. ESFR high output, high volume systems are located in ceili spaces and incorporate large, high-volume, high-pressure heads designed to suppress a fire and to provide the necessary fire protection

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warehouse/light industrial buildings that may contain high-piled storage. (To suppress a fire does not necessarily mean it will extingui the fire but rather it is meant to "knock" the fire back down to its source and control its spread until emergency personnel arrive.)

Based on the foregoing, the proposed Project would receive adequate fire protection service and would not result in the need for new physically altered fire protection facilities. Impacts to fire protection facilities would be less than significant.

B) Police protection?			✓	

Source: (City of Moreno Valley, 2017c)

The Project would introduce a new building structure and employees to the Project site, which would result in an incremental increase demand for police protection services, but is not anticipated to require or result in the construction of new or physically altered poli facilities. Furthermore, prior to the issuance of building permits, the Project Applicant would be required to comply with the provisio of Moreno Valley's DIF Ordinance (Ordinance No. 695), which requires a fee payment that the City applies to the funding of pub facilities, including police protection facilities (City of Moreno Valley, 2017c). Mandatory compliance with the DIF Ordinance would required prior to the issuance of a building permit. Based on the foregoing, the proposed Project would receive adequate police protecti service, and would not result in the need for new or physically altered police protection facilit would therefore be less than significant.

C) Schools?			✓	

Source: (Project Application Materials, 2018; City of Moreno Valley, 2006; City of Moreno Valley, 2017c)

The Project would not create a direct demand for public school services, as the subject property would contain non-residential uses th would not generate any school-aged children requiring public education. The proposed Project is not expected to draw a substant number of new residents to the region and would, therefore, not indirectly generate school-aged students requiring public educatio Because the proposed Project would not directly generate students and is not expected to indirectly draw students to the area, the propos Project would not cause or contribute to a need to construct new or physically altered public school facilities. Although the Project wou not create a direct demand for additional public-school services, the Project Applicant would be required to contribute development impa fees to the Moreno Valley Unified School District (MVUSD) in compliance with California Senate Bill 50 (Greene), which allows scho districts to collect fees from new developments to offset the costs associated with increasing school capacity needs (City of Moreno Valle 2017c). Mandatory payment of school fees would be required prior to the issuance of building permits. Impacts to public schools wou be less than significant.

D) Parks?				✓

Source: (Project Application Materials, 2018)

As discussed under Responses 14(A) and (B) below, the Project would not create a demand for public park facilities and would not res in the need to modify existing or construct new park facilities. Accordingly, implementation of the Project would not adversely affect a park facility. Thus, no impact would occur.

e) Other public facilities?				✓

Source: (Project Application Materials, 2018)

The Project is not expected to result in a demand for other public facilities/services, including libraries, community recreation cente post offices, and/or animal shelters. As such, implementation of the Project would not adversely affect other public facilities or requ the construction of new or modified public facilities and no impact would occur.

14. RECREATION

A) Would the project increase the use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				✓

Source: (Project Application Materials, 2018)

The Project would develop the subject property with an employment land use (i.e., warehousing/light industrial). The Project does n propose any type of residential use or other land use that may generate a population that would increase the use of existing neighborho and regional parks or other recreational facilities. Accordingly, implementation of the proposed Project would not result in the increas use or substantial physical deterioration of an existing neighborhood or regional park, thus, no impact would occur.

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B) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				✓

Source: (Project Application Materials, 2018)

The Project does not propose to construct any new on- or off-site recreation facilities. Additionally, the Project would not expand a existing off-site recreational facilities. Therefore, environmental effects related to the construction or expansion of recreational facilit would not occur.

15. TRANSPORTATION/TRAFFIC. Would the project:				
A) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?			✓	

Source: (Urban Crossroads, 2018e)

A Traffic Impact Analysis was prepared for the Project by Urban Crossroads to evaluate the potential circulation system deficiencies that may result from the development of the proposed Project and to recommend improvements to achieve acceptable circulation syste operational conditions. This report is included as *Technical Appendix K* to this Initial Study and its findings are incorporated into the analysis presented herein.

Project Study Area

For purposes of analyzing the Project's potential impacts to the local circulation system, the traffic impact study area (hereafter "Proj study area" or "study area") was based on the City of Moreno Valley's Traffic Study Guidelines and in consultation with City of More Valley staff, and includes the intersections listed in Table 13, *Intersection Analysis Locations* (Urban Crossroads, 2018e, p. 4) .

Table 13 Intersection Analysis Locations

ID	Intersection Location	Jurisdiction	CMP?
1	Veterans Wy. & Calle San Juan de Los Lagos	Moreno Valley	No
2	Frederick St. & Alessandro Bl.	Moreno Valley, March JPA	No
3	Frederick St. & Driveway 1 – Future Intersection	Moreno Valley	No
4	Frederick St. & Calle San Juan de Los Lagos/Driveway 2	Moreno Valley	No
5	Frederick St. & Brodiaea Av.	Moreno Valley	No
6	Frederick St. & Cactus Av.	Moreno Valley	No
7	Driveway 3 & Brodiaea Av. – Future Intersection	Moreno Valley	No
8	Graham St. & Brodiaea Av.	Moreno Valley	No

Source: (Urban Crossroads, 2018e, Table 1-1)

Existing traffic counts were collected in the study area in April 2018 during representative, typical weekday peak hour traffic conditio No observations were made in the field during the traffic count collection period that would indicate atypical traffic conditions. Based the collected traffic counts, all intersections in the Project study area operate at a level of service (LOS) of "B" or better during the A and PM peak hours (7:00-9:00am and 4:00-6:00pm, respectively). (Urban Crossroads, 2018e, p. 29, Table 3-1) Refer to *Techni Appendix K* for more information about existing traffic conditions in the Project's study area.

Thresholds of Significance

The Project would result in a significant direct impact to the City of Moreno Valley's circulation system if the Project would contribu substantial traffic (i.e., 50 or more peak hour trips) that would cause any study area intersection to degrade from an acceptable level service (LOS D or better) to an unacceptable level of service (LOS E or F). If the Project would contribute less than 50 peak hour trips a particular intersection but that intersection would degrade from an acceptable LOS to an unacceptable LOS with the addition of Proj

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traffic, the Project's direct impact would be considered significant if the Project increased the delay at the affected intersection by 1.0 more seconds relative to conditions without the Project. (Urban Crossroads, 2018e, pp. 19-20)

If the Project contributes substantial traffic (i.e., 50 or more peak hour trips) to an intersection that already operates at an unacceptal level of service (i.e., LOS E or LOS F) without the Project, a cumulatively-considerable impact would occur. If the Project wou contribute less than 50 peak hour trips to a particular intersection that already operates at unacceptable LOS, the Project's cumulati impact would be considered significant if the Project increased the delay at the affected intersection by 1.0 or more seconds relative conditions without the Project. (Urban Crossroads, 2018e, pp. 19-20)

Project Trip Generation and Distribution

Trip generation represents the amount of traffic that is attracted to and produced by a development project. Although the Project propos warehouse land uses, the Project's traffic analysis evaluated the Project as a mix of "Warehouse" (80 percent) and "General Lig Industrial" (20 percent) uses. According to vehicle trip generation rates published by the Institute of Transportation Engineers (IT General Light Industrial Land Uses are expected to generate substantially more traffic than Warehouse land uses; therefore, the Projec traffic analysis intentionally selected a land use mix that would overstate the amount of traffic generated by the Project in order to provi a conservative, "worst-case" analysis of the Project's potential impacts. Based on land use-specific vehicle trip generation rates publish by the ITE and vehicle fleet mixes published in the City of Fontana Truck Trip Generation Study, the Project is estimated to genera approximately 486 daily vehicle trips, including 56 trips during the AM peak hour (7:00-9:00am) and 57 trips during the PM peak ho (4:00-6:00pm). (Urban Crossroads, 2018e, pp. 41-42, Table 4-2)

Of the Project's estimated 486 daily vehicle trips, 43 trips would be from trucks with two or more axles. In conformance with standa traffic engineering practices in Southern California, the Project's daily vehicle trips were converted to a passenger car equivalent (PC PCE factors allow the typical "real-world" mix of vehicle types to be represented as a single, standardized unit (i.e., the passenger ca for purposes of capacity and LOS analyses. A PCE factor of 1.5 was applied to two-axle truck trips, a factor of 2.0 was applied to thre axle truck trips, and a factor of 3.0 was applied to four plus-axle truck trips. After converting Project trips to PCE, the Project is estimat to produce an estimated 629 daily PCE trips, including 72 PCE trips during the AM peak hour and 74 PCE trips during the PM peak ho (Urban Crossroads, 2018e, Table 4-1) The Project's PCE vehicle trips were used for purposes of evaluating the Project's potential effe on the circulation system. For more information about the Project's trip generation, refer to *Technical Appendix K.*

Trip distribution is the process of identifying the probable destinations, directions, or traffic routes that would be utilized by Project traff The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the routes whe Project traffic would distribute. The trip distribution for the proposed Project was developed based on anticipated passenger car and tru travel patterns to-and-from the Project site. The total volume on each roadway was divided by the Project's total traffic generation indicate the percentage of Project traffic that would use each component of the roadway system in each relevant direction. The Projec trip distribution patterns are graphically depicted on Figure 2, *Project Truck Trip Distribution*, and Figure 3, *Project Car Trip Distributio*

The assignment of traffic from the Project area to the adjoining roadway system is based on the Project trip generation, trip distributio and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Bas on the identified Project traffic generation and trip distribution patterns, PCE factored Project average daily traffic (ADT) volumes for t weekday are shown on Figure 4, *Project Average Daily Traffic*.

Analysis Scenarios

The Project's potential impacts to traffic and circulation have been assessed for each of the following conditions:

- Near-Term Construction
- Existing (2018) plus Project;
- Opening Year (2023) and cumulative development projects with and without Project; and
- General Plan Buildout (Post-2040) and cumulative development projects with and without Project.

The Near-Term Construction conditions analysis determines the potential for the Project's construction-related traffic to result in adverse effect to the local roadway system. Types of traffic anticipated during construction include construction workers traveling to/fr the Project site as well as deliveries of construction materials to the Project site.

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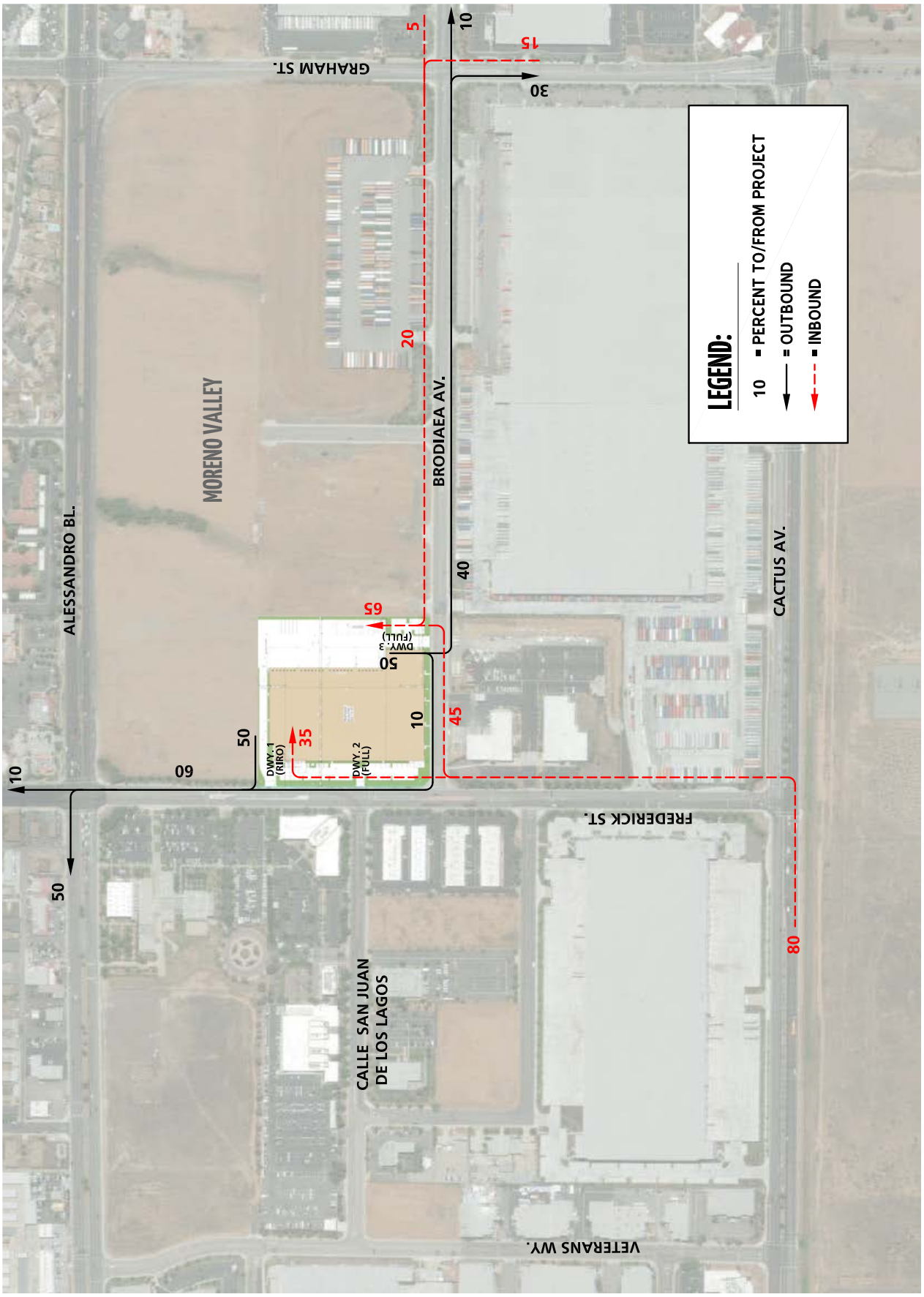

Source(s): Urban Crossroads (05-24-2018)

NOT TO SCALE

Figure 7

PROJECT TRUCK TRIP DISTRIBUTION

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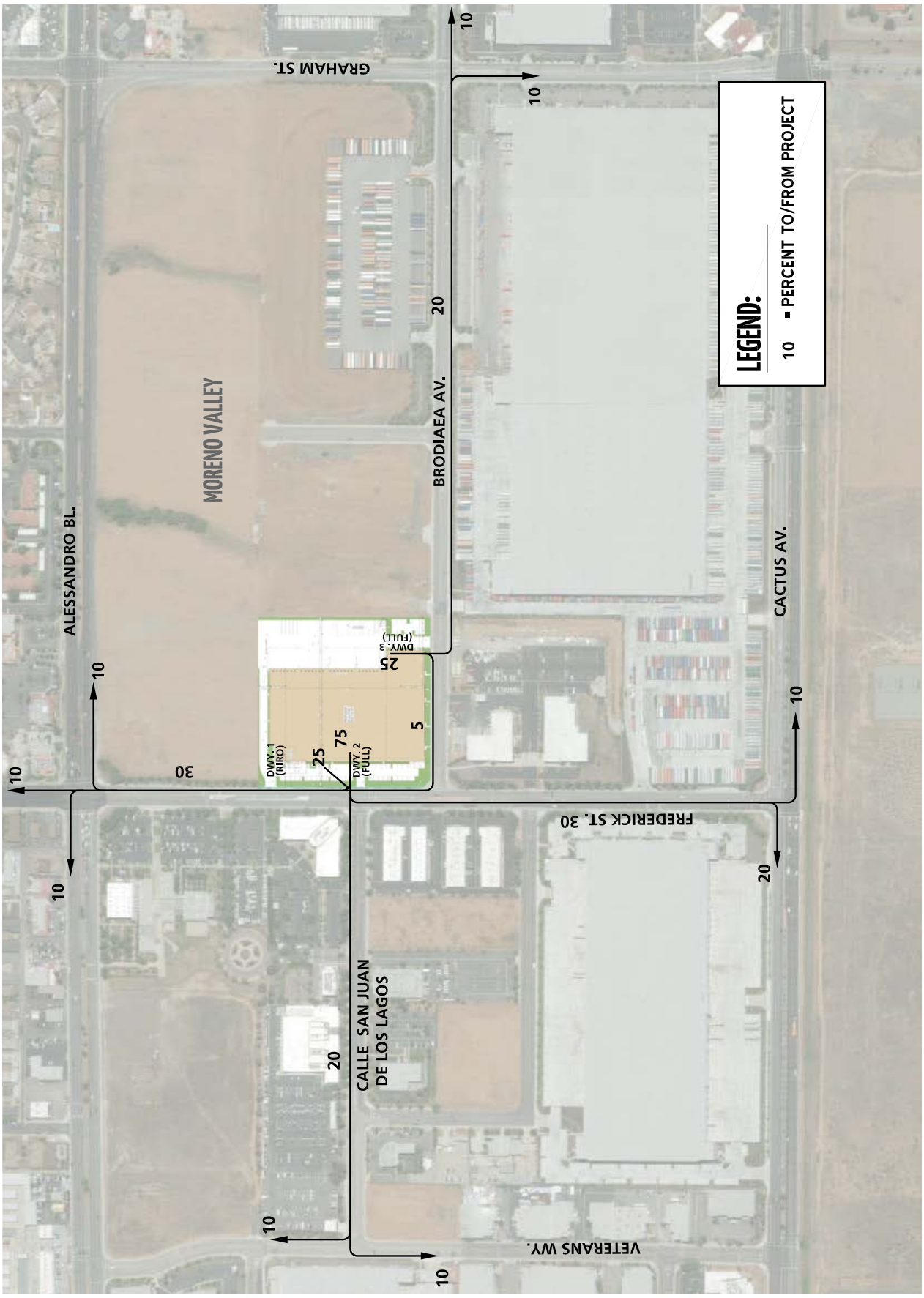

Source(s): Urban Crossroads (05-24-2018)

NOT TO SCALE

Figure 3

PROJECT CAR TRIP DISTRIBUTION

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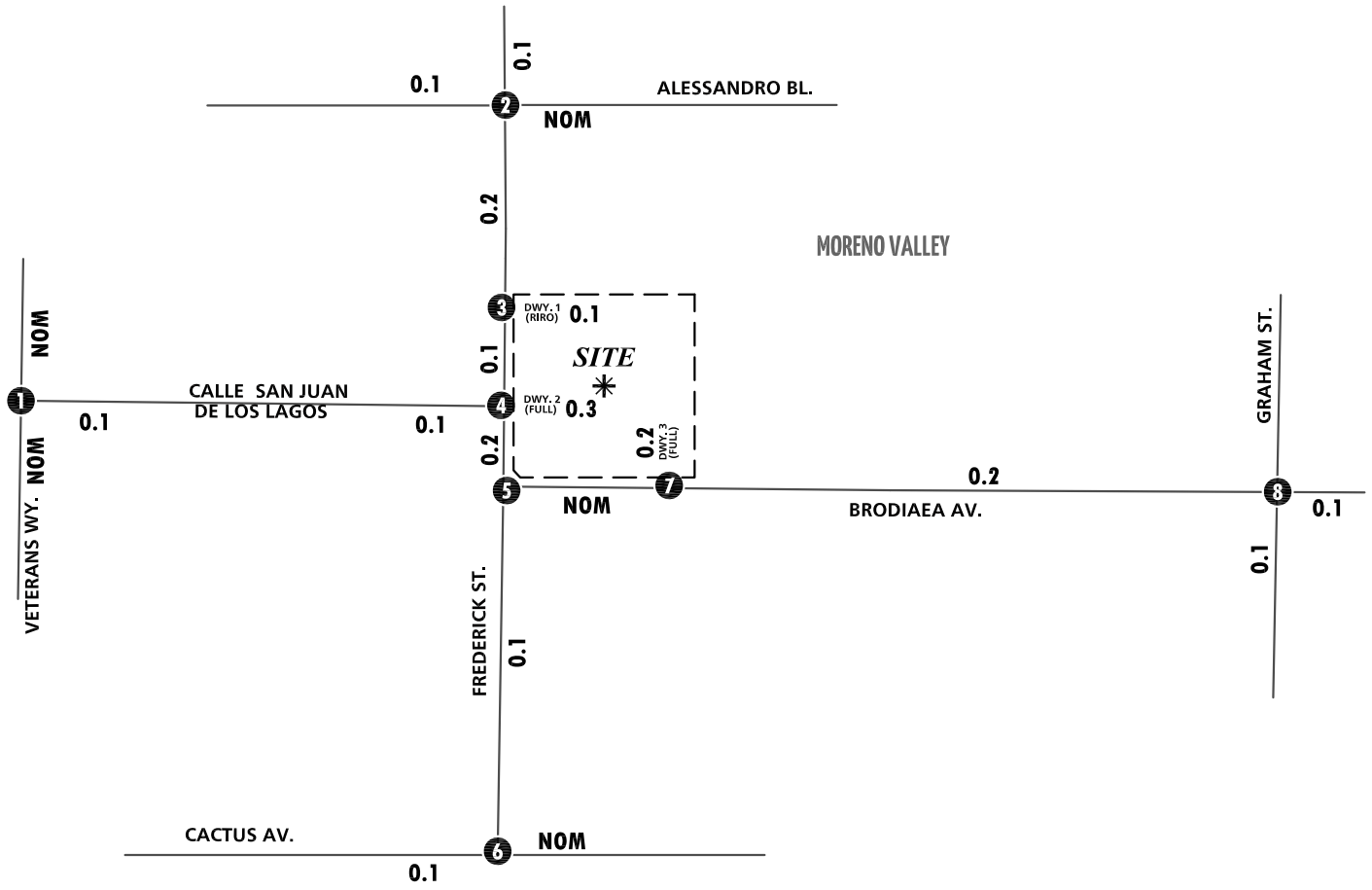

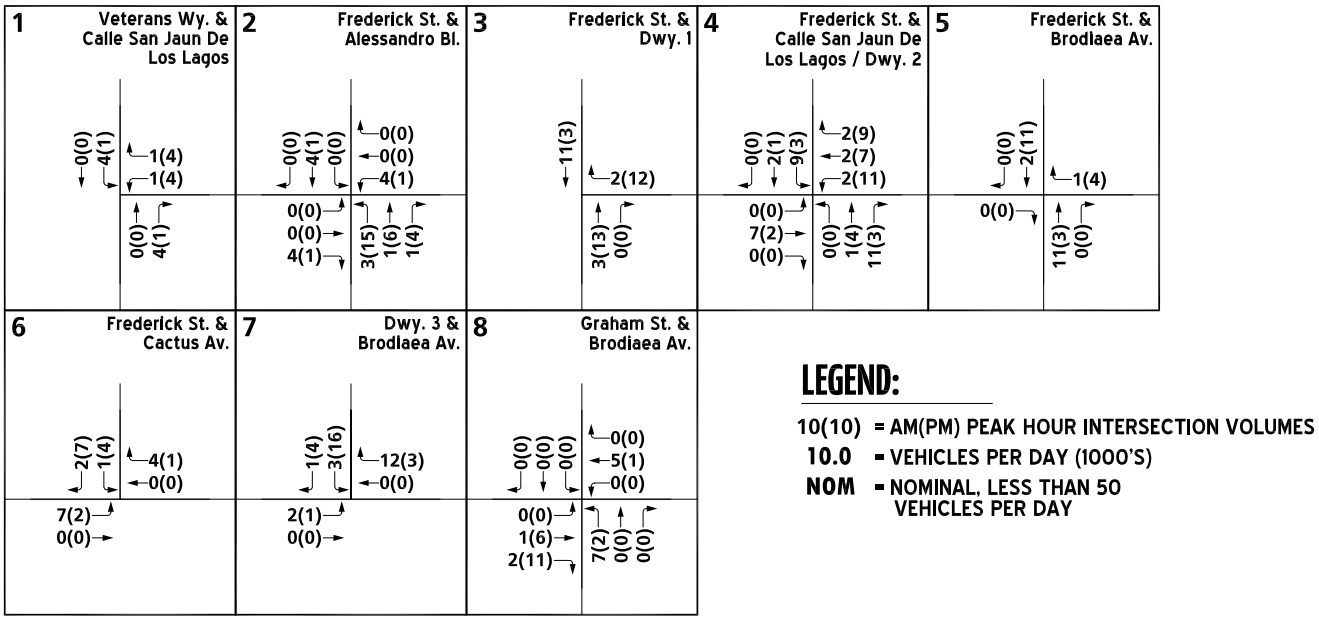

LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)
NOM = NOMINAL, LESS THAN 50 VEHICLES PER DAY

Source(s): Urban Crossroads (05-24-2018)

NOT TO SCALE

Figure 4

PROJECT AVERAGE DAILY TRAFFIC

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The Existing (2018) plus Project (E+P) analysis determines direct Project-related traffic impacts that would occur on the roadway syste under the theoretical scenario where the Project is added to existing conditions. The E+P scenario is presented to disclose direct impac as required by CEQA. In the case of the proposed Project, the estimated time period between the commencement of the Projec environmental review (2018) and estimated Project occupancy (2020) is two (2) years. During this time period, traffic conditions are r static – other projects are being constructed, the transportation network is evolving, and traffic patterns are changing. Therefore, the E scenario is very unlikely to materialize in real world conditions and thus does not accurately describe the environment that will exist wh the proposed Project is constructed and becomes operational. Regardless, the E+P scenario is evaluated to satisfy CEQA requirements identify the Project's impacts to the existing environment.

The Opening Year (2023) analysis includes an evaluation of traffic conditions at the Project's "opening year." Pursuant to the methodolo established by the City of Moreno Valley Transportation Engineering Division, a project's "opening year" is defined as existing conditio plus five (5) years. In the case of the Project, 2018 represents the existing condition; therefore, the Opening Year is defined as 2023. T Opening Year (2023) analysis is utilized to determine the Project's contribution to potential cumulative traffic impacts within the stu area with consideration of existing traffic + ambient growth + Project-related traffic + traffic from cumulative development projects.

The General Plan Buildout (Post-2040) conditions analysis determines the potential for long-term cumulative circulation syste deficiencies when the Moreno Valley General Plan reaches full buildout in the year 2040. The General Plan Buildout (2040) traf forecasts were derived from the SCAG transportation model. In addition, traffic associated with reasonably foreseeable cumulati projects in the area was also added in addition to Project traffic for General Plan Buildout (2040) conditions.

Refer to Technical *Appendix K* for a detailed discussion of the methodologies and assumptions for each analysis scenario, and a list cumulative development projects considered in the analysis.

Impact Analysis for Near-term Construction Traffic Conditions

During the Project's construction phase, traffic to-and-from the subject property would be generated by activities such as constructi employee trips, delivery of construction materials, and use of heavy equipment. Vehicular traffic associated with construction employe would be substantially less than daily and peak hour traffic volumes generated during Project operational activities, especially becau construction activities typically begin/end outside of the peak hour; therefore, a majority of the construction employees would not driving to/from the Project site during hours of peak congestion. Traffic from construction workers is not expected to result in a substant adverse effect to the local roadway system because most trips would occur during non-peak hours and the total volumes of trips would less than the Project's operational trips, which are shown below to have a less-than-significant impact (see "Impact Analysis for Existi plus Project Traffic Conditions," below). Deliveries of construction materials to the Project site would also have a nominal effect to t local roadway network because most trips would occur during non-peak hours and the total volumes of trips would be less than t Project's operational trips, which are shown below to have a less-than-significant impact. Construction materials would be delivered the site throughout the construction phase based on need and would not occur on an everyday basis. Heavy equipment would be utiliz on the Project site during the construction phase. As most heavy equipment is not authorized to be driven on public roadways, mo equipment would be delivered and removed from the site via flatbed trucks. As with the delivery of construction materials, the delive of heavy equipment to the Project site would not occur on a daily basis, but would occur periodically throughout the construction pha based on need. Accordingly, traffic generated by the Project's construction phase would not result in a conflict with an applicable pla ordinance, or policy establishing measures of effectiveness for the performance of the circulation system. Impacts during the Projec construction phase would be less than significant.

Impact Analysis for Existing plus Project (E+P) Traffic Conditions

Study area intersection levels of service for E+P conditions are summarized in Table 14, *Existing plus Project Conditions Intersectio Analysis*. As shown in Table 14, Project-related traffic would not exceed applicable significance thresholds under E+P traffic condition Under E+P conditions, the Frederick Street and Alessandro Boulevard intersection (Intersection #2) is calculated to have insufficie stacking length for the southbound left turn movement; however, because this intersection is calculated to operate at acceptable LOS w the addition of Project traffic and because the Project would contribute less than 50 PCE peak hour trips at this intersection, queui impacts would be less than significant (Urban Crossroads, 2018e, p. 59). Accordingly, the Project would result in a less-than-significa impact to the local roadway network under E+P traffic conditions.

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Table 14 Existing plus Project Conditions Intersections Analysis

#	Intersection	Traffic Control[2]	Existing (2018) Delay[1] (secs.) AM	Existing (2018) Delay[1] (secs.) PM	Existing (2018) Level of Service AM	Existing (2018) Level of Service PM	E+P Delay[1] (secs.) AM	E+P Delay[1] (secs.) PM	E+P Level of Service AM	E+P Level of Service PM
1	Veterans Wy. & Calle San Juan de Los Lagos	CSS	9.7	9.7	A	A	9.8	9.7	A	A
2	Frederick St. & Alessandro Bl.	TS	38.8	48.6	D	D	39.5	49.0	D	D
3	Frederick St. & Driveway 1	**CSS**	Future Intersection				9.3	9.8	A	A
4	Frederick St. & Calle San Juan de Los Lagos/Driveway 2	TS	6.4	11.7	A	B	9.1	12.5	B	B
5	Frederick St. & Brodiaea Av.	CSS	9.6	10.0	A	B	9.6	10.0	A	B
6	Frederick St. & Cactus Av.	TS	14.1	12.1	B	B	14.2	12.5	B	B
7	Driveway 3 & Brodiaea Av.	**CSS**	Future Intersection				9.1	9.1	A	A
8	Graham St. & Brodiaea Av.	TS	13.2	13.3	B	B	13.5	14.2	B	B

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).
[1]Per the 2010 Highway Capacity Manual (HCM), overall average intersection delay and level of service are shown for intersections with a traffic signal. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. LOS calculated using Synchro (Version 9.1).
[2]TS = Traffic Signal; CSS = Cross-street Stop
Source: (Urban Crossroads, 2018e, Table 5-1)

Impact Analysis for Opening Year (2023) Traffic Conditions

As shown in Table 15, *Opening Year Intersections Analysis*, all intersections in the Project study area would operate at acceptable LO under Opening Year traffic conditions, with the exception of Intersection #2, which would operate at LOS E during the PM peak ho with or without the Project. Additionally, Intersection #2 is calculated to have insufficient stacking length for the southbound left tu and westbound left turn movements. The Project would contribute less than 50 PCE peak hour trips at Intersection #2 and would increa the delay by less than 1.0 second; therefore, the Project's contribution to the deficiencies at this intersection would not be cumulative considerable (Urban Crossroads, 2018e, p. 66). Accordingly, the Project would result in a less-than-significant impact to the local roadw network under Opening Year traffic conditions.

Table 15 Opening Year Intersections Analysis

#	Intersection	Traffic Control[2]	2023 Without Project Delay[1] (secs.) AM	2023 Without Project Delay[1] (secs.) PM	2023 Without Project Level of Service AM	2023 Without Project Level of Service PM	2023 With Project Delay[1] (secs.) AM	2023 With Project Delay[1] (secs.) PM	2023 With Project Level of Service AM	2023 With Project Level of Service PM
1	Veterans Wy. & Calle San Juan de Los Lagos	CSS	10.1	10.2	B	B	10.2	10.3	B	B
2	Frederick St. & Alessandro Bl.	TS	48.7	**72.1**	D	**E**	49.6	**72.9**	D	**E**
3	Frederick St. & Driveway 1	**CSS**	Future Intersection				9.7	10.4	A	B
4	Frederick St. & Calle San Juan de Los Lagos/Driveway 2	TS	7.5	11.8	A	B	10.3	12.7	B	B
5	Frederick St. & Brodiaea Av.	CSS	10.3	11.3	B	B	10.4	11.3	B	B
6	Frederick St. & Cactus Av.	TS	19.3	19.6	B	B	20.7	21.5	C	C
7	Driveway 3 & Brodiaea Av.	**CSS**	Future Intersection				9.1	9.1	A	A
8	Graham St. & Brodiaea Av.	TS	14.0	14.2	B	B	14.3	15.1	B	B

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).
[1]Per the 2010 Highway Capacity Manual (HCM), overall average intersection delay and level of service are shown for intersections with a traffic signal. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. LOS calculated using Synchro (Version 9.1).
[2]TS = Traffic Signal; CSS = Cross-street Stop
Source: (Urban Crossroads, 2018e, Table 6-1)

Impact Analysis for General Plan Buildout (Post-2040) Traffic Conditions

As shown in Table 16, *General Plan Buildout Intersections Analysis*, all intersections in the Project study area would operate at acceptal LOS under General Plan Buildout (Post-2040) traffic conditions, with the exception of Intersection #2, which would operate at LOS

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during the PM peak hour with or without the Project. Additionally, Intersection #2 is calculated to have insufficient stacking length f the southbound left turn, eastbound left turn, eastbound right turn, and westbound left turn movements. The Frederick Street / Calle S Juan intersection (Intersection #4) also would experience insufficient stacking at the eastbound left turn movement as would the Frederi Street / Cactus Avenue intersection (Intersection #6) at the eastbound left turn and westbound right turn movements. The Project wou contribute less than 50 PCE peak hour trips at Intersections #2, #4, and #6 and would increase the delay at each intersection by less th 1.0 second; therefore, the Project's contribution to the deficiencies at these intersections would not be cumulatively considerable (Urb Crossroads, 2018e, p. 78). Accordingly, the Project would result in a less-than-significant impact to the local roadway network unc General Plan Buildout traffic conditions.

Table 16 General Plan Buildout Intersections Analysis

#	Intersection	Traffic Control[2]	Post-2040 Without Project Delay[1] (secs.) AM	Post-2040 Without Project Delay[1] (secs.) PM	Post-2040 Without Project Level of Service AM	Post-2040 Without Project Level of Service PM	Post-2040 With Project Delay[1] (secs.) AM	Post-2040 With Project Delay[1] (secs.) PM	Post-2040 With Project Level of Service AM	Post-2040 With Project Level of Service PM
1	Veterans Wy. & Calle San Juan de Los Lagos	CSS	10.5	10.7	B	B	10.6	10.8	B	B
2	Frederick St. & Alessandro Bl.	TS	**112.1**	**>200.0**	**F**	**F**	**112.5**	**>200.0**	**F**	**F**
3	Frederick St. & Driveway 1	CSS	Future Intersection				10.0	10.9	B	B
4	Frederick St. & Calle San Juan de Los Lagos/Driveway 2	TS	7.9	13.7	A	B	11.2	15.1	B	B
5	Frederick St. & Brodiaea Av.	CSS	10.8	11.8	B	B	10.8	11.8	B	B
6	Frederick St. & Cactus Av.	TS	39.6	24.9	D	C	40.0	29.5	D	C
7	Driveway 3 & Brodiaea Av.	CSS	Future Intersection				9.3	9.2	A	A
8	Graham St. & Brodiaea Av.	TS	14.6	15.6	B	B	14.8	15.8	B	B

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).
[1]Per the 2010 Highway Capacity Manual (HCM), overall average intersection delay and level of service are shown for intersections with a traffic signal. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. LOS calculated using Synchro (Version 9.1).
[2]TS = Traffic Signal; CSS = Cross-street Stop
Source: (Urban Crossroads, 2018e, Table 7-1)

Conclusion

Based on the foregoing analysis, the Project would not conflict with an applicable plan, ordinance or policy establishing measures effectiveness for the performance of the circulation system during projected near- or long-term development conditions. The Proj would result in a less-than-significant impact to the local circulation system and no mitigation would be required.

B) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?				✓

Source: (Urban Crossroads, 2018e; Caltrans, 2014)

No Riverside County Congestion Management Program (CMP) arterial roadways are located within the Project study area; therefore, the is no potential for the Project to cause or contribute to adverse effects to CMP arterial roadways (Urban Crossroads, 2018e, p. 6).

The Project would contribute fewer than 50 two-way peak hour trips to the two nearest freeways to the Project site, SR-60 and I-21 which are part of the CMP roadway network. Projects that contribute fewer than 50 two-way peak hour trips to a freeway do not exce Caltrans' typical screening threshold for requiring an analysis of potential impacts to freeway mainline segments because when a projec peak hour trips are less than 50 they become unrecognizable from other traffic on the State highway system (Caltrans, 2014). According the Project would not contribute substantial traffic to SR-60 and I-215 mainline segments and impacts to these freeway facilities wou be less than significant.

Although the Project would not contribute substantial traffic to SR-60 or I-215, Project-related traffic would continue to travel throughc the Southern California region along the State highway system, dissipating as distance from the Project site increases. As such, Proje related traffic has the potential to travel along freeway mainline segments that experience unacceptable levels of service, including but r limited to Riverside County CMP segments of SR-71, SR-91, and I-15, as well as freeway segments located outside of Riverside Coun

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such as I-5, I-15, I-110, I-405, and I-710, among others. All State highway system facilities that operate at an unacceptable LOS a considered to be cumulatively impacted; however, because the Project would contribute fewer than 50 peak hour trips to these congest freeway segments, the Project's effect on Riverside County CMP freeway mainline facilities and other freeway mainline facilities locat outside of Riverside County would be less than cumulatively considerable under all traffic scenarios.

Based on the foregoing analysis, the Project would not conflict with the applicable CMP and impacts would be less-than-significant.

C) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?			✓	

Source: (Project Application Materials, 2018)

The proposed Project would not include an air travel component (e.g., runways, helipads) and products directly transported to and fro the Project site would not be transported via air travel. In addition, the Riverside County ALUC reviewed the Project for consistency w the MARB ALUCP and determined that the Project would not conflict with airport operations at the MARB. Accordingly, the Proj would not substantially affect air traffic patterns, including an increase in traffic levels or a change in flight path location that results substantial safety risks. A less-than-significant impact would occur.

D) Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?			✓	

Source: (Project Application Materials, 2018)

City staff reviewed the Project's application materials and determined that no unsafe design features are proposed as part of the Proje All improvements planned as part of the Project would be in conformance with applicable City of Moreno Valley standards and wou not result in any hazards due to a design feature. Additionally, the proposed Project would be compatible with existing and plann industrial land uses in the surrounding area and would not substantially increase safety hazards due to incompatible uses. Thus, impa would be less than significant.

E) Result in inadequate emergency access?			✓	

Source: (Project Application Materials, 2018)

The Project would construct one warehouse/light industrial building on the Project site, which would require the need for emergen access to-and-from the site. During the course of the City of Moreno Valley's review of the proposed Project, the City confirmed that t Project would provide adequate access to-and-from the Project site for emergency vehicles. The City also confirmed the layout of t Project's proposed warehouse building, drive aisles, parking lots, and truck courts was sufficient to provide adequate on-site circulati for emergency vehicles. The Project's proposed driveways would connect directly to Brodiaea Avenue and Frederick Street, and t Project does not propose any changes to public roads other than frontage improvements along Brodiaea Avenue and Frederick Street th are designed to improve local traffic circulation. Furthermore, the City of Moreno Valley will review all future Project constructi drawings to ensure that adequate emergency access is maintained along abutting public streets during temporary construction activiti Impacts would be less than significant.

F) Conflict with adopted policies or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?			✓	

Source: (Urban Crossroads, 2018e; Google Earth, 2018; City of Moreno Valley, 2016; City of Moreno Valley, 2014)

The proposed Project would contain a light industrial warehouse building, which is a land use that is not likely to attract large volumes pedestrian, bicycle, or transit traffic. Regardless, the Project is designed to comply with all applicable City of Moreno Valley transportati policies.

According to City of Moreno Valley General Plan Figure 9-4, *Bikeway Plan*, the Project site is not located near any City-designat bikeways (City of Moreno Valley, 2016, p. 9-29). In 2015, the City of Moreno Valley adopted a Bicycle Master Plan, which updates a supersedes the recommendations of the General Plan. The Bicycle Master Plan identifies a planned Class 2 bike lane along Frederi Street and a Class 3 bike lane on Brodiaea Avenue (City of Moreno Valley, 2014, Figure 14). The Project would be required to comp with the City's Bicycle Master Plan; therefore, the Project has no potential to conflict with any City-designated bikeways. Sight distan at each Project driveway would be reviewed by the City of Moreno Valley at the time future improvement plans are considered to ensu that sight distance meets applicable City standards and provides for safe bicycle and pedestrian circulation. Furthermore, bicycle parki would be provided on the Project site in accordance with Moreno Valley Municipal Code requirements for bicycle parking facilities.

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The Project area is served by the Riverside Transit Authority (RTA), which provides bus service along Frederick Street and Cactus Aven via RTA Bus Route 11 and along Alessandro Boulevard via RTA Bus Route 20. The Project proposes a bus turnout along the frontage Frederick Street, which would be designed in accordance with the City's adopted policies, plans, and programs. (Urban Crossroa 2018e, p. 23) Accordingly, the Project would not conflict with RTA bus transit operations nor with local public transit service.

As demonstrated by the foregoing analysis, the Project would not conflict with adopted policies, plans or programs related to alternati transportation, or otherwise substantially decrease the performance or safety of such facilities, and a less-than-significant impact wou occur.

16. TRIBAL CULTURAL RESOURCES. Would the project cause a substantial adverse change in the significance of a tribal cultu resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defin in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and tl is:

A) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or B) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.		✓		

Source: (BFSA, 2018a)

BFSA conducted a pedestrian field survey, an archival records search, a Sacred Lands File records search, and sent information reque to the Native American tribes with potential knowledge of the Project area (refer to *Technical Appendix D1* for additional details). As the date of the cultural resources report (*Technical Appendix D1*), a response has not been received from NAHC. (BFSA, 2018a, p. 1 1) Additionally, no prehistoric archaeological resources were observed on the surface of the Project site or have been previously record within the Project site's immediate vicinity.

Notwithstanding, the Project is subject to compliance with California Senate Bill (SB) 18, which requires that lead agencies consult w California Native American tribes during the local planning process for the purposes of protecting Traditional Tribal Cultural Plac whenever a project proposes to amend or adopt any general plan or specific plan, or designate land as open space. Because the propos Project includes a General Plan Amendment, the City of Moreno Valley is subject to all requirements associated with the SB 18 proce for Native American consultation. Additionally, the Project is subject to compliance with Assembly Bill 52 (AB 52), which applies projects that have a notice of preparation or a notice of negative declaration or mitigated negative declaration filed on or after July 1, 201 The primary intent of AB 52 is to establish a consultation process between potentially affected Native American tribes and CEQA le agencies that aims to identify tribal cultural resources that would potentially be impacted by a proposed project.

During the AB 52 and SB 18 consultation process, the City of Moreno Valley was notified by Native American tribes with a traditio use areas that encompasses the Project site that tribal cultural resources had the potential to be uncovered on the Project site duri construction. Accordingly, although not anticipated, implementation of the Project could cause a substantial adverse change in t significance of a tribal cultural resource as defined in Public Resources Code Section 21074. Mitigation would be required.

Implementation of MM TR-1 through MM TR-6 would ensure the proper identification and subsequent treatment of any tribal cultu resources that may be encountered during ground-disturbing activities associated with the Project's implementation. Therefore, w implementation of MM TR-1 through MM TR-6, the Project's potential impacts related to tribal cultural resources would be reduced less-than-significant levels.

Mitigation

MM TR-1 Prior to the issuance of a grading permit, the Developer shall retain a professional archaeologist to conduct monitoring all mass grading and trenching activities. The Project Archaeologist shall have the authority to temporarily redir earthmoving activities in the event that suspected archaeological resources are unearthed during Project construction. T Project Archaeologist, in consultation with the Consulting Tribe(s), the contractor, and the City, shall develop a Cultu Resources Management Plan (CRMP) in consultation pursuant to the definition in AB52 to address the details, timing a

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responsibility of all archaeological and cultural activities that will occur on the project site. A consulting tribe is defin as a tribe that initiated the AB 52 tribal consultation process for the Project, has not opted out of the AB52 consultati process, and has completed AB 52 consultation with the City as provided for in Cal Pub Res Code Section 21080.3.2(b)(of AB52. Details in the Plan shall include:

a) Project grading and development scheduling;

b) The Project archeologist and the Consulting Tribes(s) as defined in CR-1 shall attend the pre-grading meeting with the City, the construction manager and any contractors and will conduct a mandatory Cultural Resources Worker Sensitivity Training to those in attendance. The Training will include a brief review of the cultural sensitivity of tl Project and the surrounding area; what resources could potentially be identified during earthmoving activities; the requirements of the monitoring program; the protocols that apply in the event inadvertent discoveries of cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated; and any other appropriate protocols. All new construction personnel that will conduct earthwork or grading activities that begin work on the Project following the initial Training must take the Cultural Sensitivity Training prior to beginning work and the Project archaeologist and Consulting Tribe(s) shall make themselves available to provide the training on an as-needed basis;

c) The protocols and stipulations that the contractor, City, Consulting Tribe(s) and Project archaeologist will follow the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits tl shall be subject to a cultural resources evaluation.

MM TR-2 Prior to the issuance of a grading permit, the Developer shall secure agreements with the Pechanga Band of Luise Indians and Soboba Band of Luiseño Indians for tribal monitoring. The Developer is also required to provide a minimu of 30 days advance notice to the tribes of all mass grading and trenching activities. The Native American Trib Representatives shall have the authority to temporarily halt and redirect earth moving activities in the affected area in t event that suspected archaeological resources are unearthed. If the Native American Tribal Representatives suspect tl an archaeological resource may have been unearthed, the Project Archaeologist or the Tribal Representatives sh immediately redirect grading operations in a 100-foot radius around the find to allow identification and evaluation of t suspected resource. In consultation with the Native American Tribal Representatives, the Project Archaeologist sh evaluate the suspected resource and make a determination of significance pursuant to California Public Resources Co Section 21083.2.

MM TR-3 In the event that Native American cultural resources are discovered during the course of grading (inadvertent discoverie the following procedures shall be carried out for final disposition of the discoveries:

a) One or more of the following treatments, in order of preference, shall be employed with the tribes. Evidence of su shall be provided to the City of Moreno Valley Planning Department:

i. Preservation-In-Place of the cultural resources, if feasible. Preservation in place means avoiding the resourc leaving them in the place they were found with no development affecting the integrity of the resources.

ii. Onsite reburial of the discovered items as detailed in the treatment plan required pursuant to Mitigation Measu CR-1. This shall include measures and provisions to protect the future reburial area from any future impacts perpetuity. Reburial shall not occur until all legally required cataloging and basic recordation have been complete No recordation of sacred items is permitted without the written consent of all Consulting Native American Trib Governments as defined in CR-1.

MM TR-4 The City shall verify that the following note is included on the Grading Plan: “If any suspected archaeological resourc are discovered during ground-disturbing activities and the Project Archaeologist or Native American Trib Representatives are not present, the construction supervisor is obligated to halt work in a 100-foot radius around the fi and call the Project Archaeologist and the Tribal Representatives to the site to assess the significance of the find."

MM TR-5 If potential historic or cultural resources are uncovered during excavation or construction activities at the project site, wo in the affected area must cease immediately and a qualified person meeting the Secretary of the Interior's standards (CFR 61), Tribal Representatives, and all site monitors per the Mitigation Measures, shall be consulted by the City

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evaluate the find, and as appropriate recommend alternative measures to avoid, minimize or mitigate negative effects the historic, or prehistoric resource. Determinations and recommendations by the consultant shall be immediate submitted to the Planning Division for consideration, and implemented as deemed appropriate by the Commun Development Director, in consultation with the State Historic Preservation Officer (SHPO) and any and all Consulti Native American Tribes as defined in CR-1 before any further work commences in the affected area.

MM TR-6 If human remains are discovered, no further disturbance shall occur in the affected area until the County Coroner has ma necessary findings as to origin. If the County Coroner determines that the remains are potentially Native American, t California Native American Heritage Commission shall be notified within 24 hours of the published finding to be given reasonable opportunity to identify the "most likely descendant". The "most likely descendant" shall then ma recommendations, and engage in consultations concerning the treatment of the remains (California Public Resources Co 5097.98). (GP Objective 23.3, CEQA).

17. UTILITIES AND SERVICE SYSTEMS. Would the project:

A) Exceed wastewater treatment requirements of the Santa Ana Regional Water Quality Control Board?			✓	

Source: (SARWQCB, 2011)

Wastewater treatment services would be provided to the Project site by EMWD. EMWD is required to operate their wastewater treatme facilities in compliance with the waste treatment and discharge standards/requirements established by the Santa Ana RWQCB. Therefo the Project's contribution of wastewater to the EMWD wastewater treatment facilities would not have any potential to exceed wastewa treatment requirements of the Santa Ana RWQCB. Additionally, the Project would not install or utilize septic systems or alterna wastewater treatment systems; therefore, the Project would have no potential to exceed the applicable wastewater treatment requiremer established by the Santa Ana RWQCB. Accordingly, a less-than-significant impact would occur.

B) Require or result in construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			✓	

Source: (Project Application Materials, 2018)

Refer to Response 17(E), below, for an analysis of the Project's potential effects to wastewater treatment facilities.

The Project would construct an on-site network of water and sewer pipes that would connect to existing water and sewer lines benea Brodiaea Avenue. The installation of water and sewer line connections as proposed by the Project would result in physical impac however, these impacts are considered to be part of the Project's construction phase and are evaluated throughout this Initial Stu accordingly. In instances where significant impacts have been identified for the Project's construction phase, mitigation measures a recommended in each applicable subsection of this Initial Study to reduce impacts to less-than-significant levels. The construction water and sewer lines necessary to serve the proposed Project would not result in any significant physical effects on the environment tl are not already identified and disclosed as part of this Initial Study. Accordingly, additional mitigation measures beyond those identifi throughout this Initial Study would not be required.

C) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			✓	

Source: (Project Application Materials, 2018)

The Project would involve the construction of stormwater drainage facilities, including an underground stormwater storage (infiltratic vault, a bioretention BMP basin, storm drain pipes, and catch basins. The construction of stormwater drainage facilities proposed by t Project would result in physical impacts to the surface and subsurface of the Project site, as well as physical impacts within Brodia Avenue. These impacts are considered to be part of the Project's construction phase and are evaluated throughout the Initial Stu accordingly. In instances where potentially significant impacts may occur during the Project's construction phase, such potential impa have been identified under the appropriate issue area in this Initial Study. The construction of storm drain infrastructure as necessary serve the proposed Project would not result in any potentially-significant physical effects on the environment that are not already identifi and disclosed as part of this Initial Study.

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D) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?			✓	

Source: (EMWD, 2016b; City of Moreno Valley, 2006; EMWD, 2007)

EMWD is responsible for supplying potable water to the Project site and its region. The Project proposes to change the land use a zoning designation from commercial development ("Office") to industrial development ("Light Industrial"). According to EMWI *Water System Planning & Design*, commercial and industrial development have the same average day water demand rate (2,000 gpd p acre) (EMWD, 2007, p. 4) As discussed in the *2015 EMWD Urban Water Management Plan*, herein incorporated by reference as t "UWMP," which applies to and was adopted by the EMWD, adequate water supplies are projected to be available to meet EMWI estimated water demand through 2040 under normal, historic single-dry and historic multiple-dry year conditions (EMWD, 2016b, p. XV EMWD forecasts for projected water demand are based on the population projections of SCAG, which rely on the adopted land u designations contained within the general plans that cover the geographic area within EMWD's service. Because the Project's wa demand would be identical to the projection for the site's existing land use designation (as mentioned above), EMWD would ha sufficient water supplies available to serve the Project from existing entitlements/resources and no new or expanded entitlements a needed. The Project's impact would be less than significant.

E) Result in a determination by the wastewater treatment provider which services or may serve the project determined that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			✓	

Source: (EMWD, 2016a; Project Application Materials, 2018; EMWD, 2006)

Wastewater generated by the Project would be treated by the EMWD, which operates the Moreno Valley Regional Water Reclamati Facility. Based upon EMWD's wastewater generation rate of 1,700 gallons per day (gpd) per acre for industrial light land uses, t proposed Project would generate approximately 14,960 gallons (0.015 million gallons) of wastewater per day (1,700 gpd per acre × 8 Project acres = 14,960 gpd) (EMWD, 2006, Table 1). Under existing conditions, the Moreno Valley Regional Water Reclamation Facil has an excess treatment capacity of approximately 4.8 million gallons per day (mgpd). Implementation of the Project would utili approximately 0.3 percent of the Moreno Valley Regional Water Reclamation Facility daily excess treatment capacity (0.015 mgd ÷ 4 mgpd = 0.3 percent). (EMWD, 2016a; Project Application Materials, 2018). Accordingly, the Moreno Valley Regional Wa Reclamation Facility has sufficient capacity to treat wastewater generated by the Project in addition to existing commitments. The Proj would not create the need for any new or expanded wastewater facility (such as conveyance lines, treatment facilities, or lift station Because there is adequate capacity at existing treatment facilities to serve the Project's projected sewer demand, impacts would be le than significant.

F) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			✓	

Source: (EPA, 2009; CA Legislative Information, 2015; CalRecycle, Multi-year County Destination, n.d.; CalRecycle, El Sobra Landfill, 2017; CalRecycle, Badlands Sanitary Landfill, 2017; CalRecycle, Lamb Canyon Sanitary Landfill, 2016; CalRecycle, n.d.)

Implementation of the proposed Project would generate an incremental increase in solid waste volumes requiring off-site disposal duri short-term construction and long-term operational activities. The Project would be required to comply with City of Moreno Vall Ordinance No. 706, which requires a minimum of 50 percent of all construction waste and debris to be recycled. Additionally, the Proj would be required to comply with mandatory waste reduction requirements as described below in Response 17(G). Solid waste generat by the Project would be disposed at the El Sobrante Landfill, the Badlands Sanitary Landfill, and/or the Lamb Canyon Sanitary Landf Existing capacities at each of these landfills is discussed below.

The El Sobrante Landfill is permitted to accept a maximum of 16,054 tons of solid waste per day. In August 2017, the most recent ti period for which disposal data was publicly available, the El Sobrante Landfill was receiving an average of 10,684 tons of waste per da which is approximately 66.5 percent of the facility's maximum permitted daily intake. The El Sobrante Landfill has available capac until at least the year 2045; however, future landfill expansion opportunities exist at this site. (CalRecycle, El Sobrante Landfill, 2017)

The Badlands Sanitary landfill is permitted to accept a maximum of 4,800 tons of solid waste per day. In August 2017, the most rece time period for which disposal data was publicly available, the Badlands Sanitary Landfill was receiving an average of 2,668 tons of wa per day, which is approximately 55.6 percent of the facility's maximum permitted daily intake. The Badlands Sanitary Landfill h available capacity until at least the year 2021; however, future landfill expansion opportunities may exist at this site. (CalRecycle, Badlan Sanitary Landfill, 2017)

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The Lamb Canyon Sanitary Landfill is permitted to accept a maximum of 5,500 tons of solid waste per day. In July 2016, the most rece time period for which disposal data was publicly available, the Lamb Canyon Sanitary Landfill was receiving an average of 1,548 tons waste per day, which is approximately 28.1 percent of the facility's maximum permitted daily intake. The Lamb Canyon Landfill h available capacity until at least the year 2029; however, future landfill expansion opportunities may exist at this site. (CalRecycle, Lar Canyon Sanitary Landfill, 2016)

Construction Impact Analysis

Solid waste requiring disposal would be generated by the construction process, primarily consisting of discarded materials and packagi Based on the size of the Project (i.e., 203,712 s,f, building) and the United States Environmental Protection Agency's (U.S. EP construction waste generation factor of 4.34 pounds per s.f. for non-residential uses, approximately 442.1 tons of waste is expected to generated during the Project's construction phase ([203,712 s.f. × 4.34 pounds per s.f.] ÷ 2,000 pounds per ton = 442.1 tons) (EPA, 20(p. 10). California Assembly Bill 939 (AB 939) requires that a minimum of 50% of all solid waste be diverted from landfills (by recyclir reusing, and other waste reduction strategies); therefore, the Project is estimated to generate approximately 221.1 tons during construction phase. The Project's construction phase is estimated to last for up to 304 days; therefore, the Project is estimated to genera approximately 0.73 tons of solid waste per day (221.1 tons ÷ 304 days = 0.73 tons per day) requiring landfill during construction.

Non-recyclable construction waste generated by the Project would be disposed at the El Sobrante Landfill, the Badlands Sanitary Landf and/or the Lamb Canyon Sanitary Landfill. As described above, these landfills receive well below their maximum permitted daily dispo volume; thus, the relatively minimal construction waste generated by the Project is not anticipated to cause the landfill to exceed maximum permitted daily disposal volume. Furthermore, the El Sobrante Landfill, the Badlands Sanitary Landfill, and the Lamb Cany Sanitary Landfill are not expected to reach its total maximum permitted disposal capacities during the Project's construction period. T El Sobrante Landfill, the Badlands Sanitary Landfill, and the Lamb Canyon Sanitary Landfill have sufficient daily capacity to accept so waste generated by the Project's construction phase; therefore, impacts to landfill capacity associated with the Project's near-te construction activities would be less than significant.

Operational Impact Analysis

Based on a daily waste generation factor of 1.42 pounds of waste per 100 square feet of industrial building area obtained from CalRecyc long-term, on-going operation of the Project would generate approximately 1.45 tons of solid waste per day ([[1.42 pounds / 100 s.f.] 203,712 s.f.] ÷ 2,000 pounds = 1.45 tons per day) (CalRecycle, n.d.). Pursuant to AB 939, at least 50 percent of the Project's solid wa is required to be diverted from landfills; therefore, the Project would generate a maximum of 0.73 tons of solid waste per day requiri landfilling (1.45 tons per day × 50% = 0.73 tons per day). (CA Legislative Information, 2015)

Non-recyclable solid waste generated during long-term operation of the Project would be disposed at the El Sobrante Landfill, the Badlan Sanitary Landfill, and/or the Lamb Canyon Sanitary Landfill. As described above, these landfills receive well below their maximu permitted daily disposal volume; thus, waste generated by the Project's operation is not anticipated to cause the landfill to exceed maximum permitted daily disposal volume. Because the Project would generate a relatively small amount of solid waste per day compared to the permitted daily capacities at receiving landfills, impacts to regional landfill facilities during the Project's long-te operational activities would be less than significant.

F) Comply with federal, state, and local statues and regulations related to solid waste?			✓	

Source: (CA Legislative Information, 2015; CA Legislative Information, 2011; CA Legislative Information, 2005)

The California Integrated Waste Management Act (AB 939), signed into law in 1989, established an integrated waste management syste that focused on source reduction, recycling, composting, and land disposal of waste. In addition, the bill established a 50 percent wa reduction requirement for cities and counties by the year 2000, along with a process to ensure environmentally safe disposal of waste tl could not be diverted. Per the requirements of the Integrated Waste Management Act, t Riverside County Board of Supervisors adopted the County of Riverside Countywide Integrated Waste Management Plan (CIWM which outlines the goals, policies, and programs the County and its cities implement to create an integrated and cost-effective wa management system that complies with the provisions of AB 939 and its diversion mandates. (CA Legislative Information, 2015)

In order to assist the City of Moreno Valley and the County of Riverside in achieving the mandated goals of the Integrated Wa Management Act, the Project's building tenant(s) would be required to work with future refuse haulers to develop and implement feasil waste reduction programs, including source reduction, recycling, and composting. Additionally, in accordance with the California So Waste Reuse and Recycling Act of 1991 (Public Resources Code § 42911), the Project is required to provide adequate areas for collecti and loading recyclable materials where solid waste is collected. The collection areas are required to be shown on construction drawin

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and be in place before occupancy permits are issued. (CA Legislative Information, 2005) Additionally, in compliance with AB 3 (Mandatory Commercial Recycling Program), the future occupant(s) of the proposed Project would be required to arrange for recycli services, if the occupant generates four (4) or more cubic yards of solid waste per week (CA Legislative Information, 2011). T implementation of these mandatory requirements would reduce the amount of solid waste generated by the Project and diverted to landfil which in turn will aid in the extension of the life of affected disposal sites. The Project would be required to comply with all applicat solid waste statutes and regulations; as such, impacts related to solid waste statutes and regulations would be less than significant.

18. MANDATORY FINDINGS OF SIGNIFICANCE.

A) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?		✓		

All impacts to the environment, including impacts to habitat for fish and wildlife species, fish and wildlife populations, plant and anin communities, rare and endangered plants and animals, and historical and pre-historical resources were evaluated as part of this Init Study. Throughout this Initial Study, where impacts were determined to be potentially significant, mitigation measures have been impos to reduce those impacts to less-than-significant levels. Accordingly, with incorporation of the mitigation measures imposed throughc this Initial Study, the Project would not substantially degrade the quality of the environment and impacts would be less than significan

B) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of the past projects, the effects of other current projects, and the effects of probable future projects)?		✓		

As discussed throughout this Initial Study, implementation of the proposed Project has the potential to result in effects to the environme that are individually limited, but cumulatively considerable. In all instances where the Project has the potential to contribute tc cumulatively-considerable impact to the environment, mitigation measures have been imposed to reduce potential effects to less-tha significant levels.

Aesthetics

New development on the Project site and in the surrounding area would change the existing character of the Project's viewshed; howev all development in the immediate vicinity of the Project would be required to comply with the development regulations and desi standards contained in the City's Development Code, which would ensure that minimum standards related to visual character and qual are met to preclude adverse aesthetic effects (e.g., size, scale, building materials, lighting). Accordingly, the Project's aesthetic impa would not be cumulatively-considerable.

Agriculture Resources

The Project would have no impact on agricultural resources. Therefore, there is no potential for the Project to contribute to a cumulativel considerable impact under this topic.

Air Quality

Based on SCAQMD guidance, any direct exceedance of a regional or localized threshold also is considered to be a cumulative considerable effect, while air pollutant emissions below applicable regional and/or localized thresholds are not considered cumulative considerable. As discussed in Responses 3(A) through (E), Project-related construction and operation emissions would not exceed t applicable SCAQMD thresholds and, therefore, the Project's air quality impacts would not be cumulatively considerable.

Biological Resources

The Project site does not support any sensitive plant or wildlife species, riparian, or sensitive natural habitat, or federally-protect wetlands; therefore, there is no potential for the Project to contribute to a cumulatively-considerable impact under these resourc Although the Project site is highly disturbed and fragmented from other open space areas under existing conditions, the site does conta quality habitat for the burrowing owl and nesting birds. Therefore, there is the potential that the burrowing owl and/or nesting birds cou

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Issues and Supporting Information	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact

be present on the Project site prior to construction and there also is the potential that other development projects in the Riverside ar could support the burrowing owl and/or bird nests. The Project's potential impact to the burrowing owl and nesting birds would cumulatively-considerable. MM BR-1 and MM BR-2 would reduce the Project's cumulative effects to less-than-significant levels ensuring that no direct take of burrowing owls or nesting birds occurs during construction.

Cultural Resources

The Project site does not contain historic or prehistoric archaeological resources and mandatory compliance with State law would preclu impacts to human remains; therefore, there is no potential for the Project to contribute to a cumulatively-considerably impact to the resources. Although development activities on the Project site would not impact any known paleontological resources, there is the remo potential that such resources are buried beneath the surface of the Project site and could be impacted during construction. Other proje within region would similarly have the potential to impact unknown, subsurface paleontological resources during ground-disturbi activities. Therefore, the potential for development on the Project site to impact subsurface paleontological resource deposits is cumulatively-considerable impact. Application of MMs CR-1 through CR-4 would reduce the Project's cumulative impacts to less-tha significant levels.

Geology and Soils

Potential effects related to geology and soils are inherently site-specific; therefore, there is no potential for the Project to contribute t cumulatively-considerable impact under this topic. Furthermore, all development proposals would be required to comply with applicabl federal, State, and local regulations that are in place to preclude adverse geology and soils effects, including effects related to stro seismic ground shaking, fault rupture, soil erosion, and hazardous soil conditions (e.g., liquefaction, expansive soils, landslides).

Greenhouse Gas Emissions

As described in the preceding analysis, global climate change (GCC) occurs as the result of global emissions of GHGs. An individu development project does not have the potential to result in direct and significant GCC-related effects in the absence of cumulative sourc of GHGs. The CEQA Guidelines also emphasize that the effects of GHG emissions are cumulative and should be analyzed in the conte of CEQA's requirements for cumulative impacts analysis (See CEQA Guidelines § 15130(f)). Accordingly, the preceding analysis refle a cumulative impact analysis of the GHG emissions related to the Project. As concluded under Responses 7(A) and (B), the Project wou not result in a cumulatively considerable impact related to GHG emissions.

Hazards and Hazardous Materials

Potential effects related to hazards and hazardous materials are inherently site-specific; therefore, there is no potential for the Project contribute to a cumulatively-considerable impact under this topic.

Hydrology and Water Quality

Construction and operation of the Project and other projects in the Santa Ana River watershed would have the potential to result in cumulative water quality impact, including erosion and sedimentation. However, in accordance with applicable federal, State, and loc regulations, all development projects would be required to implement plans during construction and operation (e.g., SWPPP and WQM to minimize adverse effects to water quality, which would avoid a cumulatively-considerable impact.

The Project and other projects in the Santa Ana River Basin would be required to comply with federal, State, and local regulations in orc to preclude flood hazards both on- and off-site. Compliance with federal, State, and local regulations would require on-site areas to protected, at a minimum, from flooding during peak storm events (i.e., 100-year storm) and that proposed development would not expo downstream properties to increased flooding risks during peak storm events. Accordingly, a cumulatively-considerable effect related flooding would not occur.

Land Use and Planning

The Project would not physically divide an established community, or conflict with applicable land use/planning documents; therefo there is no potential for the Project to contribute to a cumulatively-considerable impact related to land use and planning.

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Issues and Supporting Information	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact

Mineral Resources

The Project would have no impact on mineral resources. Therefore, there is no potential for the Project to contribute to a cumulativel considerable impact under this topic.

Noise

Noise levels diminish rapidly with distance; therefore, for a development project to contribute to a noise-related cumulative impact it mu be located in close proximity to another development project or source of substantial noise. There are no construction projects in t immediate vicinity of the Project site that would overlap with Project-related construction activities. Accordingly, cumulative considerable impacts related to periodic noise and construction-related vibration would not occur. Under long-term operating conditio the Project would comply with the City of Moreno Valley Noise Ordinance and would not produce noticeable levels of vibration; therefo cumulatively considerable impacts related to these issue areas would not occur. The analysis provided under Response 12(A) demonstrat that the Project would not result in a cumulatively considerable impact related to transportation noise under long-term conditions.

Population and Housing

The Project would not implement land uses that generate new residents and would not require the construction of replacement housir Accordingly, the City has anticipated – and planned for – the growth that would occur on the Project site and there is no potential for t Project to result in an adverse, cumulatively-considerable environmental effect related to population and housing.

Public Services

All development projects in the City of Moreno Valley, including the Project, would be required to pay development impact fees, a porti of which would be used by the City for the provision of public services, to offset the incremental increase in demand for fire protecti and police protection services. Furthermore, future development would generate an on-going stream of property tax revenue and sales t revenue, which would provide funds that could be used by the City of Moreno Valley for the provision of fire and police protecti services. The Project would not directly result in the introduction of new residents to the City and, therefore, would have no potential result in cumulatively-considerable impacts to resident-serving public facilities such as schools, parks, libraries, and other public faciliti or services.

Recreation

The Project would have no impact to recreation facilities. Therefore, there is no potential for the Project to contribute to a cumulativel considerable impact under this topic.

Transportation/Traffic

The Project's potential to result in cumulatively considerable effects to the circulation network were evaluated in the preceding analy under Responses 15 (A) and (B) – see the analysis for the Opening Year (2023) and General Plan Buildout (Post-2040) traffic conditio As demonstrated in the analysis, the Project would not contribute to any cumulatively considerable adverse effects to the circulati network.

Tribal Cultural Resources

Development activities on the Project site would not impact any known tribal cultural resources; however, there is the remote potent that such resources are buried beneath the surface of the Project site and could be impacted during construction. Other projects with region would similarly have the potential to impact unknown, subsurface tribal cultural resources during ground-disturbing activiti Therefore, the potential for development on the Project site to impact subsurface tribal cultural resource deposits is a cumulativel considerable impact. Application of MMs TR-1 though TR-6 would reduce the Project's cumulative impacts to less-than-significa levels.

Utilities and Service Systems

The Project would require water and wastewater infrastructure, as well as solid waste disposal for building operation. Development public utility infrastructure is part of an extensive planning process involving utility providers and jurisdictions with discretionary revie

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Issues and Supporting Information	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact

authority. The coordination process associated with the preparation of infrastructure plans is intended to ensure that adequate public util services and resources are available to serve both individual development projects and cumulative growth in the region. Each individu development project is subject to review for utility capacity to avoid unanticipated interruptions in service or inadequate suppli Coordination with the utility providers would allow for the provision of utility services to the Project and other developments. The Proj and other planned projects are subject to connection and service fees to offset increased demand and assist in facility expansion and servi improvements (at the time of need). Because of the utility planning and coordination activities described above, cumulatively-considerab impacts to utilities and service systems would not occur.

C) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		✓		

The Project's potential to result in environmental effects that could adversely affect human beings, either directly or indirectly, has be discussed throughout this Initial Study. In instances where the Project has potential to result in direct or indirect adverse effects to hum beings (air quality and associated effects on human health from air pollutants, and construction-related noise and potential effects hearing impairment), project design feature best practices and mitigation measures have been applied to ensure impacts to not rise abo a level of significance. With required implementation of project design features and the mitigation measures identified in this Init Study, construction and operation of the proposed Project would not involve any activities that would result in environmental effe which would cause substantial adverse effects on human beings, either directly or indirectly.

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5.0 Mitigation Monitoring and Reporting Program

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5.0 Mitigation Monitoring and Reporting Program (MMRP)

Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
Biological Resources					
Threshold a & f: There is potential for the project to impact the burrowing owl species and/or protected nesting bird species.	**MM BR-1:** Within 30 days prior to grading, a qualified biologist shall conduct a survey of suitable habitat on site and make a determination regarding the presence or absence of the burrowing owl. The determination shall be documented in a report and shall be submitted, reviewed, and accepted by the County of Riverside prior to the issuance of a grading permit and subject to the following provisions: a) In the event that the pre-construction survey identifies no burrowing owls on the property a grading permit may be issued without restriction. b) In the event that the pre-construction survey identifies the presence of at least one individual but less than three (3) mating pairs of burrowing owl, then prior to the issuance of a grading permit and prior to the commencement of ground-disturbing activities on the property, the qualified biologist shall passively or actively relocate any burrowing owls. Passive relocation, including the required use of one-way doors to exclude owls from the site and the collapsing of burrows, will occur if the biologist determines that the proximity and availability of alternate habitat is suitable for successful passive relocation. Passive relocation shall follow California Department of Fish and Wildlife (CDFW) relocation protocol and shall only occur between September 15 and February 1. If proximate alternate habitat is not present as determined by the biologist, active relocation shall follow	Project Applicant, Project Biologist	City of Moreno Valley Planning Division & Land Development Division	Within 30 days prior to grading	Less than significant with mitigation incorporated

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce

Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
	CDFW relocation protocol. The biologist shall confirm in writing that the species has fledged the site or been relocated prior to the issuance of a grading permit. c) In the event that the pre-construction survey identifies the presence of three (3) or more mating pairs of burrowing owl, the requirements of MSHCP Species-Specific Conservation Objectives 5 for the burrowing owl shall be followed. Objective 5 states that if the site (including adjacent areas) supports three (3) or more pairs of burrowing owls and supports greater than 35 acres of suitable habitat, at least 90 percent of the area with long-term conservation value and burrowing owl pairs will be conserved onsite until it is demonstrated that Objectives 1-4 have been met. A grading permit shall be issued, either: i. Upon approval and implementation of a property-specific Determination of Biologically Superior Preservation (DBESP) report for the burrowing owl by the CDFW; or ii. A determination by the biologist that the site is part of an area supporting less than 35 acres of suitable Habitat, and upon passive or active relocation of the species following accepted CDFW protocols. Passive relocation, including the required use of one-way doors to exclude owls from the site and the collapsing of burrows, will occur if the biologist determines that the proximity and availability of alternate habitat is suitable for successful passive relocation. Passive relocation shall follow CDFW relocation protocol and shall only occur between September 15 and February 1. If proximate alternate habitat is not				

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Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
	present as determined by the biologist, active relocation shall follow CDFW relocation protocol. The biologist shall confirm in writing that the species has fledged the site or been relocated prior to the issuance of a grading permit.				
	MM BR-2: Vegetation clearing and ground disturbance shall be prohibited during the migratory bird nesting season (February 1 through September 15), unless a migratory bird nesting survey is completed in accordance with the following requirements: a) A migratory bird nesting survey of the Project's impact footprint, including suitable habitat within a 500-foot radius, shall be conducted by a qualified biologist within three (3) days prior to initiating vegetation clearing or ground disturbance. b) A copy of the migratory nesting bird survey results report shall be provided to the City of Moreno Valley. If the survey identifies the presence of active nests, then the qualified biologist shall provide the City with a copy of maps showing the location of all nests and an appropriate buffer zone around each nest sufficient to protect the nest from direct and indirect impact. The size and location of all buffer zones, if required, shall be subject to review and approval by the City and shall be no less than a 100-foot radius around the nest for non-raptors and no more than a 500-foot radius around the nest for raptors. The nests and buffer zones shall be field checked weekly by a qualified biological monitor. The approved buffer zone shall be marked in the field with construction fencing, within which no vegetation clearing or ground disturbance shall commence until the	Project Biologist, Project Construction Contractor	City of Moreno Valley Planning Division	Within 3 days prior to initiating vegetation clearing or ground disturbance	Less than significant with mitigation incorporated

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce

Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
	qualified biologist and the City verify that the nests are no longer occupied and juvenile birds can survive independently from the nests.				
Threshold d: The Project would be removing trees and low-lying vegetation across the Project site that has the potential to support nesting migratory birds that are protected by the Migratory Bird Treaty Act and California Fish and Game Code, including the burrowing owl.	**MM BR-1** and **MM BR-2** shall apply.	Refer to MM BR-1 and MM BR-2	Refer to MM BR-1 and MM BR-2	Refer to MM BR-1 and MM BR-2	Refer to MM BR-1 and MM BR-2
Cultural Resources					
Threshold c: The Project site has "High Potential/Sensitivity (High B)," which indicates that fossils are likely to be encountered at or below four feet of depth, and may be impacted during excavation by construction activities.	**MM CR-1:** Prior to the issuance of a grading permit, the Project Applicant shall provide evidence to the City of Moreno Valley that a qualified paleontologist has been retained by the Project Applicant to conduct monitoring of excavation activities and has the authority to halt and redirect earthmoving activities in the event that suspected paleontological resources are unearthed.	Project Applicant/ Project Construction Contractor, Project Paleontologist	City of Moreno Valley Planning Division	Prior to the issuance of a grading permit	Less than significant with mitigation incorporated
	MM CR-2: The paleontological monitor shall conduct full-time monitoring during grading and excavation operations in undisturbed, very old alluvial fan sediments at or below four (4) feet below ground surface and shall be equipped to salvage fossils if they are unearthed to avoid construction delays and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. The paleontological monitor shall be empowered to temporarily halt or divert equipment to allow of removal of abundant and large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not present in the	Project Applicant/ Project Construction Contractor, Project Paleontologist	City of Moreno Valley Planning Division	Concurrent with grading activities	

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce

Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
	subsurface, or if present, are determined upon exposure and examination by qualified paleontological personnel to have a low potential to contain or yield fossil resources.				
	MM CR-3: Recovered specimens shall be properly prepared to a point of identification and permanent preservation, including screen washing sediments to recover small invertebrates and vertebrates, if necessary. Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage, such as the Western Science Museum in Hemet, California, is required for significant discoveries. The paleontological program should include a written repository agreement prior to the initiation of mitigation activities.	Project Applicant/ Project Construction Contractor, Project Paleontologist	City of Moreno Valley Planning Division	Prior to grading permit final inspection	
	MM CR-4: A final monitoring and mitigation report of findings and significance shall be prepared, including lists of all fossils recovered, if any, and necessary maps and graphics to accurately record the original location of the specimens. The report shall be submitted to the City of Moreno Valley prior to building final.	Project Applicant/ Project Construction Contractor, Project Paleontologist	City of Moreno Valley Planning Division	Prior to building final	
Land Use and Planning					
Threshold b: The Project would be inconsistent with the City's General Plan Land Use Plan and Zoning Ordinance, which would result in significant, adverse physical effects to the environment.	MM BR-1 and MM BR-2, MM CR-1 through MM CR-4, and TR-1 through TR-4 shall apply.	Project Applicant	City of Moreno Valley Planning Division	Prior to the issuance of a building permits	Less than significant with Mitigation Incorporated
Tribal Cultural Resources					
Thresholds a & b: Project construction has the potential to uncover tribal cultural resources	**MM TR-1:** Prior to the issuance of a grading permit, the Developer shall retain a professional archaeologist to conduct monitoring of all mass	Project Archaeologist, Project Applicant, Construction	City of Moreno Valley Planning Division	Prior to the issuance of a grading permit	Less than significant with Mitigation Incorporated

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce

Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
and is subject to compliance with Assembly Bill 52.	grading and trenching activities. The Project Archaeologist shall have the authority to temporarily redirect earthmoving activities in the event that suspected archaeological resources are unearthed during Project construction. The Project Archaeologist, in consultation with the Consulting Tribe(s), the contractor, and the City, shall develop a Cultural Resources Management Plan (CRMP) in consultation pursuant to the definition in AB52 to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the project site. A consulting tribe is defined as a tribe that initiated the AB 52 tribal consultation process for the Project, has not opted out of the AB52 consultation process, and has completed AB 52 consultation with the City as provided for in Cal Pub Res Code Section 21080.3.2(b)(1) of AB52. Details in the Plan shall include: a.) Project grading and development scheduling; b) The Project archeologist and the Consulting Tribes(s) as defined in CR-1 shall attend the pre-grading meeting with the City, the construction manager and any contractors and will conduct a mandatory Cultural Resources Worker Sensitivity Training to those in attendance. The Training will include a brief review of the cultural sensitivity of the Project and the surrounding area; what resources could potentially be identified during earthmoving activities; the requirements of the monitoring program; the protocols that apply in the event inadvertent discoveries of cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated; and any	Contractor, Consulting Native American Tribe(s)			

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce

Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
	other appropriate protocols. All new construction personnel that will conduct earthwork or grading activities that begin work on the Project following the initial Training must take the Cultural Sensitivity Training prior to beginning work and the Project archaeologist and Consulting Tribe(s) shall make themselves available to provide the training on an as-needed basis; c) The protocols and stipulations that the contractor, City, Consulting Tribe(s) and Project archaeologist will follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits that shall be subject to a cultural resources evaluation.				
	MM TR-2: Prior to the issuance of a grading permit, the Developer shall secure agreements with the Pechanga Band of Luiseño Indians and Soboba Band of Luiseño Indians for tribal monitoring. The Developer is also required to provide a minimum of 30 days advance notice to the tribes of all mass grading and trenching activities. The Native American Tribal Representatives shall have the authority to temporarily halt and redirect earth moving activities in the affected area in the event that suspected archaeological resources are unearthed. If the Native American Tribal Representatives suspect that an archaeological resource may have been unearthed, the Project Archaeologist or the Tribal Representatives shall immediately redirect grading operations in a 100-foot radius around the find to allow identification and evaluation of the suspected resource. In consultation with the Native American Tribal Representatives, the Project Archaeologist shall evaluate the suspected resource and make a determination of	Project Applicant, Native American Monitor	City of Moreno Valley Planning Division	Prior to the issuance of a grading permit	

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce

Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
	significance pursuant to California Public Resources Code Section 21083.2. **MM TR-3:** In the event that Native American cultural resources are discovered during the course of grading (inadvertent discoveries), the following procedures shall be carried out for final disposition of the discoveries: a) One or more of the following treatments, in order of preference, shall be employed with the tribes. Evidence of such shall be provided to the City of Moreno Valley Planning Department: i. Preservation-In-Place of the cultural resources, if feasible. Preservation in place means avoiding the resources, leaving them in the place they were found with no development affecting the integrity of the resources. ii. Onsite reburial of the discovered items as detailed in the treatment plan required pursuant to Mitigation Measure CR-1. This shall include measures and provisions to protect the future reburial area from any future impacts in perpetuity. Reburial shall not occur until all legally required cataloging and basic recordation have been completed. No recordation of sacred items is permitted without the written consent of all Consulting Native American Tribal Governments as defined in CR-1. **MM TR-4:** The City shall verify that the following note is included on the Grading Plan: "If any suspected archaeological resources are	Construction Contractor, Project Archaeologist, Native American Monitor Project Applicant, City of Moreno	City of Moreno Valley Planning Division and Building & Safety Division City of Moreno Valley Planning	Concurrent with grading activities Concurrent with grading activities	

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce

Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
	discovered during ground-disturbing activities and the Project Archaeologist or Native American Tribal Representatives are not present, the construction supervisor is obligated to halt work in a 100-foot radius around the find and call the Project Archaeologist and the Tribal Representatives to the site to assess the significance of the find."	Valley Planning Division	Division and Building & Safety Division		
	MM TR-5: If potential historic or cultural resources are uncovered during excavation or construction activities at the project site, work in the affected area must cease immediately and a qualified person meeting the Secretary of the Interior's standards (36 CFR 61), Tribal Representatives, and all site monitors per the Mitigation Measures, shall be consulted by the City to evaluate the find, and as appropriate recommend alternative measures to avoid, minimize or mitigate negative effects on the historic, or prehistoric resource. Determinations and recommendations by the consultant shall be immediately submitted to the Planning Division for consideration, and implemented as deemed appropriate by the Community Development Director, in consultation with the State Historic Preservation Officer (SHPO) and any and all Consulting Native American Tribes as defined in CR-1 before any further work commences in the affected area.	Construction Contractor, Native American Monitor	City of Moreno Valley Planning Division, Consulting Native American Tribes, State Historic Preservation Officer	Concurrent with grading activities	
	MM TR-6: If human remains are discovered, no further disturbance shall occur in the affected area until the County Coroner has made necessary findings as to origin. If the County Coroner determines that the remains are potentially Native American, the California Native American Heritage Commission shall be notified within 24 hours of the published finding to be given a reasonable opportunity to identify	Construction Contractor	County Coroner, California Native American Heritage Commission	Concurrent with grading activities	

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce

Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
	the "most likely descendant". The "most likely descendant" shall then make recommendations, and engage in consultations concerning the treatment of the remains (California Public Resources Code 5097.98). (GP Objective 23.3, CEQA).				

Attachment: Project 1_Exhibit A to Resolution No 2018-XXIS-MND (3321 : Centerpointe Commerce

Attachment: Project 1_Exhibit B MMRP to Resolution No 2018-XX MND (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Mitigation Monitoring and Report Program (MMRP)

Centerpointe Commerce Center

Moreno Valley, California

Lead Agency
City of Moreno Valley
14177 Frederick Street
Moreno Valley, CA 92552

Applicant
Newcastle Partners
4740 Green River Road, Suite 118
Corona, CA 92880

CEQA Consultant
T&B Planning, Inc.
17542 East 17th Street, Suite 100
Tustin, CA 92780

Lead Agency Discretionary Permits
Plot Plan (PEN18-0023)
General Plan Amendment (PEN18-0024)
Change of Zone (PEN18-0025)

October 2018

Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
Biological Resources					
Threshold a & f: There is potential for the project to impact the burrowing owl species and/or protected nesting bird species.	**MM BR-1:** Within 30 days prior to grading, a qualified biologist shall conduct a survey of suitable habitat on site and make a determination regarding the presence or absence of the burrowing owl. The determination shall be documented in a report and shall be submitted, reviewed, and accepted by the County of Riverside prior to the issuance of a grading permit and subject to the following provisions: a) In the event that the pre-construction survey identifies no burrowing owls on the property a grading permit may be issued without restriction. b) In the event that the pre-construction survey identifies the presence of at least one individual but less than three (3) mating pairs of burrowing owl, then prior to the issuance of a grading permit and prior to the commencement of ground-disturbing activities on the property, the qualified biologist shall passively or actively relocate any burrowing owls. Passive relocation, including the required use of one-way doors to exclude owls from the site and the collapsing of burrows, will occur if the biologist determines that the proximity and availability of alternate habitat is suitable for successful passive relocation. Passive relocation shall follow California Department of Fish and Wildlife (CDFW) relocation protocol and shall only occur between September 15 and February 1. If proximate alternate habitat is not present as determined by the biologist, active relocation shall follow CDFW relocation protocol. The biologist shall confirm in writing that the species has fledged the site	Project Applicant, Project Biologist	City of Moreno Valley Planning Division & Land Development Division	Within 30 days prior to grading	Less than significant with mitigation incorporated

Attachment: Project 1_Exhibit B MMRP to Resolution No 2018-XX MND (3321 : Centerpointe Commerce

Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
	or been relocated prior to the issuance of a grading permit. c) In the event that the pre-construction survey identifies the presence of three (3) or more mating pairs of burrowing owl, the requirements of MSHCP Species-Specific Conservation Objectives 5 for the burrowing owl shall be followed. Objective 5 states that if the site (including adjacent areas) supports three (3) or more pairs of burrowing owls and supports greater than 35 acres of suitable habitat, at least 90 percent of the area with long-term conservation value and burrowing owl pairs will be conserved onsite until it is demonstrated that Objectives 1-4 have been met. A grading permit shall be issued, either: i. Upon approval and implementation of a property-specific Determination of Biologically Superior Preservation (DBESP) report for the burrowing owl by the CDFW; or ii. A determination by the biologist that the site is part of an area supporting less than 35 acres of suitable Habitat, and upon passive or active relocation of the species following accepted CDFW protocols. Passive relocation, including the required use of one-way doors to exclude owls from the site and the collapsing of burrows, will occur if the biologist determines that the proximity and availability of alternate habitat is suitable for successful passive relocation. Passive relocation shall follow CDFW relocation protocol and shall only occur between September 15 and February 1. If proximate alternate habitat is not				

Attachment: Project 1_Exhibit B MMRP to Resolution No 2018-XX MND (3321 : Centerpointe Commerce

Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
	present as determined by the biologist, active relocation shall follow CDFW relocation protocol. The biologist shall confirm in writing that the species has fledged the site or been relocated prior to the issuance of a grading permit. **MM BR-2:** Vegetation clearing and ground disturbance shall be prohibited during the migratory bird nesting season (February 1 through September 15), unless a migratory bird nesting survey is completed in accordance with the following requirements: a) A migratory bird nesting survey of the Project's impact footprint, including suitable habitat within a 500-foot radius, shall be conducted by a qualified biologist within three (3) days prior to initiating vegetation clearing or ground disturbance. b) A copy of the migratory nesting bird survey results report shall be provided to the City of Moreno Valley. If the survey identifies the presence of active nests, then the qualified biologist shall provide the City with a copy of maps showing the location of all nests and an appropriate buffer zone around each nest sufficient to protect the nest from direct and indirect impact. The size and location of all buffer zones, if required, shall be subject to review and approval by the City and shall be no less than a 100-foot radius around the nest for non-raptors and no more than a 500-foot radius around the nest for raptors. The nests and buffer zones shall be field checked weekly by a qualified biological monitor. The approved buffer zone shall be marked in the field with construction fencing, within which no vegetation clearing or ground disturbance shall commence until the	Project Biologist, Project Construction Contractor	City of Moreno Valley Planning Division	Within 3 days prior to initiating vegetation clearing or ground disturbance	Less than significant with mitigation incorporated

Attachment: Project 1_Exhibit B MMRP to Resolution No 2018-XX MND (3321 : Centerpointe Commerce

Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
	qualified biologist and the City verify that the nests are no longer occupied and juvenile birds can survive independently from the nests.				
Threshold d: The Project would be removing trees and low-lying vegetation across the Project site that has the potential to support nesting migratory birds that are protected by the Migratory Bird Treaty Act and California Fish and Game Code, including the burrowing owl.	**MM BR-1** and **MM BR-2** shall apply.	Refer to MM BR-1 and MM BR-2	Refer to MM BR-1 and MM BR-2	Refer to MM BR-1 and MM BR-2	Refer to MM BR-1 and MM BR-2
Cultural Resources					
Threshold c: The Project site has "High Potential/Sensitivity (High B)," which indicates that fossils are likely to be encountered at or below four feet of depth, and may be impacted during excavation by construction activities.	**MM CR-1:** Prior to the issuance of a grading permit, the Project Applicant shall provide evidence to the City of Moreno Valley that a qualified paleontologist has been retained by the Project Applicant to conduct monitoring of excavation activities and has the authority to halt and redirect earthmoving activities in the event that suspected paleontological resources are unearthed.	Project Applicant/ Project Construction Contractor, Project Paleontologist	City of Moreno Valley Planning Division	Prior to the issuance of a grading permit	Less than significant with mitigation incorporated
	MM CR-2: The paleontological monitor shall conduct full-time monitoring during grading and excavation operations in undisturbed, very old alluvial fan sediments at or below four (4) feet below ground surface and shall be equipped to salvage fossils if they are unearthed to avoid construction delays and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. The paleontological monitor shall be empowered to temporarily halt or divert equipment to allow of removal of abundant and large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface, or if	Project Applicant/ Project Construction Contractor, Project Paleontologist	City of Moreno Valley Planning Division	Concurrent with grading activities	

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Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
	present, are determined upon exposure and examination by qualified paleontological personnel to have a low potential to contain or yield fossil resources. **MM CR-3:** Recovered specimens shall be properly prepared to a point of identification and permanent preservation, including screen washing sediments to recover small invertebrates and vertebrates, if necessary. Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage, such as the Western Science Museum in Hemet, California, is required for significant discoveries. The paleontological program should include a written repository agreement prior to the initiation of mitigation activities. **MM CR-4:** A final monitoring and mitigation report of findings and significance shall be prepared, including lists of all fossils recovered, if any, and necessary maps and graphics to accurately record the original location of the specimens. The report shall be submitted to the City of Moreno Valley prior to building final.	Project Applicant/ Project Construction Contractor, Project Paleontologist Project Applicant/ Project Construction Contractor, Project Paleontologist	City of Moreno Valley Planning Division City of Moreno Valley Planning Division	Prior to grading permit final inspection Prior to building final	
Land Use and Planning					
Threshold b: The Project would be inconsistent with the City's General Plan Land Use Plan and Zoning Ordinance, which would result in significant, adverse physical effects to the environment.	MM BR-1 and MM BR-2, MM CR-1 through MM CR-4, and TR-1 through TR-4 shall apply.	Project Applicant	City of Moreno Valley Planning Division	Prior to the issuance of a building permits	Less than significant with Mitigation Incorporated
Tribal Cultural Resources					
Thresholds a & b: Project construction has the potential to uncover tribal cultural resources	**MM TR-1:** Prior to the issuance of a grading permit, the Project Applicant shall provide evidence to the City of Moreno Valley that a	Project Archaeologist, Project Applicant, Construction	City of Moreno Valley Planning Division	Prior to the issuance of a grading permit	Less than significant with Mitigation Incorporated

Attachment: Project 1_Exhibit B MMRP to Resolution No 2018-XX MND (3321 : Centerpointe Commerce

Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
and is subject to compliance with Assembly Bill 52.	professional archaeologist (hereafter "Project Archaeologist") has been retained to conduct monitoring of all mass grading and trenching activities. The Project Archaeologist shall have the authority to temporarily redirect earthmoving activities in the event that suspected archaeological resources are unearthed during Project construction. The Project Archaeologist, in consultation with the Consulting Native American Tribes, the contractor, and the City, shall develop a Cultural Resources Management Plan (CRMP) to address the details, timing and responsibility of all archaeological and cultural monitoring activities that will occur on the project site. A Consulting Native American Tribe is defined as a tribe that initiated the AB 52 tribal consultation process for the Project, has not opted out of the AB52 consultation process, and has completed AB 52 consultation with the City as provided for in Public Resources Code Section 21080.3.2(b)(1), and includes the Soboba Band of Luiseño Indians and the Pechanga Band of Luiseño Indians. Details in the Plan shall include: a.) Project grading and development scheduling; b) The Project archeologist and the Consulting Native American Tribe(s) as defined in TR-1 shall attend the pre-grading meeting with the City, the construction manager and any contractors and will conduct a mandatory Cultural Resources Worker Sensitivity Training to those in attendance. The Training will include a brief review of the cultural sensitivity of the Project and the surrounding area; what resources could potentially be identified during earthmoving activities; the	Contractor, Consulting Native American Tribe(s)			

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Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
	requirements of the monitoring program; the protocols that apply in the event inadvertent discoveries of cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated; and any other appropriate protocols. All new construction personnel that will conduct earthwork or grading activities that begin work on the Project following the initial Training must take the Cultural Sensitivity Training prior to beginning work and the Project archaeologist and Consulting Native American Tribe(s) shall make themselves available to provide the training on an as-needed basis; c) The protocols and stipulations that the contractor, City, Consulting Native American Tribe(s) and Project archaeologist will follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits that shall be subject to a cultural resources evaluation.				
	MM TR-2: Prior to the issuance of a grading permit, the Project Applicant shall provide evidence to the City of Moreno Valley that Consulting Native American Tribe(s), as defined in Mitigation Measure TR-1, shall receive a minimum of 30 days advance notice of all mass grading and trenching activities. The Project Applicant also shall provide the City of Moreno Valley with copies of any monitoring agreement(s) with the Consulting Native American Tribe(s). During mass grading and trenching activities, the Native American Tribal Representatives shall have the authority to temporarily halt and redirect earth moving activities in the affected area in the event that suspected archaeological	Project Applicant, Native American Monitor	City of Moreno Valley Planning Division	Prior to the issuance of a grading permit	

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Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
	resources are unearthed. If the Native American Tribal Representatives suspect that an archaeological resource may have been unearthed, the Project Archaeologist or the Tribal Representatives shall immediately redirect grading operations in a 100-foot radius around the find to allow identification and evaluation of the suspected resource.				
	MM TR-3: If potential tribal cultural resources are uncovered during mass grading and/or excavation activities, the Project Archaeologist shall evaluate the suspected resource in consultation with the Native American Tribal Representatives and the City of Moreno Valley and shall: make a determination of significance pursuant to Public Resources Code Section 21083.2; and recommend measures to avoid, minimize or mitigate negative effects on the tribal cultural resource. Determinations and recommendations by the Project Archaeologist shall be immediately submitted to the City of Moreno Valley Planning Division for consideration, and implemented as deemed appropriate by the Community Development Director and all Consulting Native American Tribes, as defined in Mitigation Measure TR-1, before any further work commences in the affected area.	Construction Contractor, Project Archaeologist, Native American Monitor	City of Moreno Valley Planning Division and Building & Safety Division	Concurrent with grading activities	
	MM TR-4: In the event that Native American cultural resources are discovered during the course of grading (inadvertent discoveries), the following procedures shall be carried out for final disposition of the discoveries: a) One or more of the following treatments, in order of preference, shall be employed based on consultation with the City of Moreno Valley and the Native American Tribe(s). Evidence of such shall be provided	Construction Contractor, Project Archaeologist, Native American Monitor	City of Moreno Valley Planning Division and Building & Safety Division	Concurrent with grading activities	

Attachment: Project 1_Exhibit B MMRP to Resolution No 2018-XX MND (3321 : Centerpointe Commerce

Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
	to the City of Moreno Valley Planning Department: i. Preservation-In-Place of the cultural resources, if feasible. Preservation in place means avoiding the resources, leaving them in the place they were found with no development affecting the integrity of the resources. ii. Onsite reburial of the discovered items as detailed in the treatment plan required pursuant to Mitigation Measure TR-1. This shall include measures and provisions to protect the future reburial area from any future impacts in perpetuity. Reburial shall not occur until all legally required cataloging and basic recordation have been completed. No recordation of sacred items is permitted without the written consent of all Native American Tribe(s) as defined in Mitigation Measure TR-1. iii. Donation of the discovered items and associated records to a qualified repository within Riverside County that meets federal standards per 36 CFR Part 79.				
	MM TR-5: The City shall verify that the following note is included on the Grading Plan: "If any suspected archaeological resources are discovered during ground-disturbing activities and the Project Archaeologist or Native American Tribal Representatives are not present, the construction supervisor is obligated to halt work in a 100-foot radius around the find and call the Project	Project Applicant, City of Moreno Valley Planning Division	City of Moreno Valley Planning Division and Building & Safety Division	Concurrent with grading activities	

Attachment: Project 1_Exhibit B MMRP to Resolution No 2018-XX MND (3321 : Centerpointe Commerce

Impact	Mitigation Measure (MM)	Responsible Party	Monitoring Party	Implementation Stage	Level of Significance
	Archaeologist and the Tribal Representatives to the site to assess the significance of the find."				

Attachment: Project 1_Exhibit B MMRP to Resolution No 2018-XX MND (3321 : Centerpointe Commerce

ORDINANCE NO. _____

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, APPROVING APPLICATION NO. PEN18-0025: AN AMENDMENT TO THE OFFICIAL ZONING ATLAS, CHANGING THE ZONING CLASSIFICATION FROM OFFICE (O) TO LIGHT INDUSTRIAL (LI) FOR APPROXIMATELY 8.8 ACRES GENERALLY LOCATED ON THE NORTHEAST CORNER OF FREDRICK STREET AND BRODIAEA AVENUE, ASSESSOR PARCEL NUMBER (APN) 297-170-029

The City Council of the City of Moreno Valley does ordain as follows

SECTION 1 GENERAL:

1.1. The applicant, Newcastle Partners, Inc., filed Application No. PEN18-0025 requesting an Amendment to Page 96 of the official Zoning Atlas to change the zoning classification for certain property as described in the title of this ordinance and the attached Exhibit A.

1.2. Pursuant to the provisions of the law, a public hearing was held before the City Council December 4, 2018, for deliberations and decision.

1.3. The matter was fully discussed, and the public and other agencies were given opportunity to present testimony and documentation.

1.4. An Initial Study has been prepared for the project for the purpose of compliance with the California Environmental Quality Act (CEQA). Based on the initial Study, it was determined that the project impacts are less than significant and approval of a Mitigated Negative Declaration is recommended.

SECTION 2 FINDINGS:

2.1. Based upon substantial evidence presented to this City Council during the above-referenced meeting on December 4, 2018, including written and oral staff reports, the recommendation of the Planning Commission and the record from the public hearing, this City Council hereby specifically finds as follows:

A. Conformance with General Plan Policies – The proposed Change of Zone is consistent with the General Plan, and its goals, objectives, policies and programs.

FACT: The General Plan encourages a mix of industrial uses to provide a diverse economic base and ample employment opportunities. The existing General Plan Land Use Designation for the project site is “Office” which provides for administrative, professional, legal, medical and financial offices. The proposed Project includes a request for a General Plan Amendment to change the General Plan Land Use Designation of the

Attachment: Project 1_Ordinance No 2018-XX CZ (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

subject site to Business Park which provides for manufacturing, research and development, warehousing and distribution, as well as office and support commercial activities.

With the approval of the proposed General Plan Amendment PEN18-0024, the proposed Change of Zone from Office to Light Industrial will be consistent with the General Plan Land Use Designation of Business Park.

The intent of the General Plan, as expressed in Objective 2.5 of Community Development Element, is to promote a mix of industrial uses which provide a sound and diversified economic base and ample employment opportunities for the citizens of Moreno Valley with the establishment of industrial activities that have good access to the regional transportation system, accommodate the personal needs of workers and business visitors; and which meets the service needs of local businesses.

B. Conformance with the Zoning Regulations – The proposed zoning is consistent with the purposes and intent of Title 9 of the City of Moreno Valley Municipal Code.

As proposed, the Change of Zone from Office to Light Industrial for the 8.8 acre project site is consistent with the purposes and intent of Title 9. Future warehouse development under the Light Industrial zoning district provides for light manufacturing, light industrial, research and development, warehousing and distribution and multi-tenant industrial uses, as well as certain supporting administrative and professional offices, and commercial uses on a limited basis. This district is intended as an area for light industrial uses (including buildings over 50,000 square feet) that can meet high performance standards.

The proposed warehouse development complies with all established development standards for Light Industrial zoning districts, including setbacks, height, site coverage and landscaping and site and building design considerations.

Although the proposed Zoning designation for the project site will change from Office to Light Industrial, it will be compatible with the existing developments immediately to the east, south and the southwest which are zoned Light Industrial (LI) and Business Park (BP). The property immediately to the north of the site along Alessandro Boulevard is currently undeveloped, and zoned Community Commercial (CC) with a Mixed Use Institutional (MUI) Overlay, which is compatible with the City Hall complex to the west.

C. Health, Safety and Welfare – The proposed amendment will not adversely affect the public health, safety or general welfare.

FACT: The proposed Change of Zone will change the project site's existing zoning designation from Office to Light Industrial which will allow the

Attachment: Project 1_Ordinance No 2018-XX CZ (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

construction and operation of a proposed 204,022 square-foot warehouse facility including associated 10,000 square feet of office and mezzanine space. This proposed designation and use would be compatible with the surrounding area which primarily consists of similar light industrial uses, as well as professional office and commercial developments. Therefore, the project will not have adverse effects on residential neighborhoods or other types of sensitive land uses.

The proposed Change of Zone has been reviewed by the Riverside County Airport Land Use Commission (ALUC) for consistency with the March Air Reserve Base Land Use Compatibility Plan (ALUCP). The project was found to be compatible with the ALUCP with specific conditions of approval which have been incorporated in the project.

The implementation of the proposed Change of Zone for the 8.8-acre site, as designed and conditioned will not adversely affect the public health, safety and welfare, and is consistent with General Plan Objectives 6.1 and 6.2 to minimize the potential for loss of life and protect residents, workers and visitors from physical injury and property damage due to seismic ground shaking and flooding.

The analysis presented in the Initial Study/Mitigated Negative Declaration prepared for the Project (including the Change of Zone), pursuant to California Environmental Quality Act (CEQA), Public Resources Code 21000, indicates that the Project will not have a significant environmental impact as designed and mitigated.

SECTION 3 AMENDMENT OF THE OFFICIAL ZONING ATLAS:

3.1 The City of Moreno Valley Official Zoning Atlas, as adopted by Ordinance No. 359 on April 14, 1992, of the City of Moreno Valley, and as amended thereafter from time to time by the City Council of the City of Moreno Valley, is further amended by placing in effect the zone or zone classification to page 96 of the Official Zoning Atlas as shown on the attached map marked “Exhibit A” and included herein by reference and on file in the office of the City Clerk.

SECTION 4 EFFECT OF ENACTMENT:

4.1 Except as specifically provided herein, nothing contained in this ordinance shall be deemed to modify or supersede any prior enactment of the City Council which addresses the same subject addressed herein.

SECTION 5 NOTICE OF ADOPTION:

5.1 Within fifteen days after the date of adoption hereof, the City Clerk shall certify to the adoption of this ordinance and cause it to be posted in three public places within the City.

SECTION 6 EFFECTIVE DATE:

6.1 This ordinance shall take effect thirty days after the date of its adoption.

APPROVED AND ADOPTED this ____ day of _____, _____.

_____
Mayor

ATTEST:

_____
City Clerk

APPROVED AS TO FORM:

_____

City Attorney

Attachment: Project 1_Ordinance No 2018-XX CZ (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

ORDINANCE JURAT

STATE OF CALIFORNIA)

COUNTY OF RIVERSIDE) ss.

CITY OF MORENO VALLEY)

I, Pat Jacquez-Nares, City Clerk of the City of Moreno Valley, California, do hereby certify that Ordinance No. YYYY-___ was duly and regularly adopted by the City Council of the City of Moreno Valley at a regular meeting thereof held on the ____ day of _____, YYYY, by the following vote.

AYES:

NOES:

ABSENT:

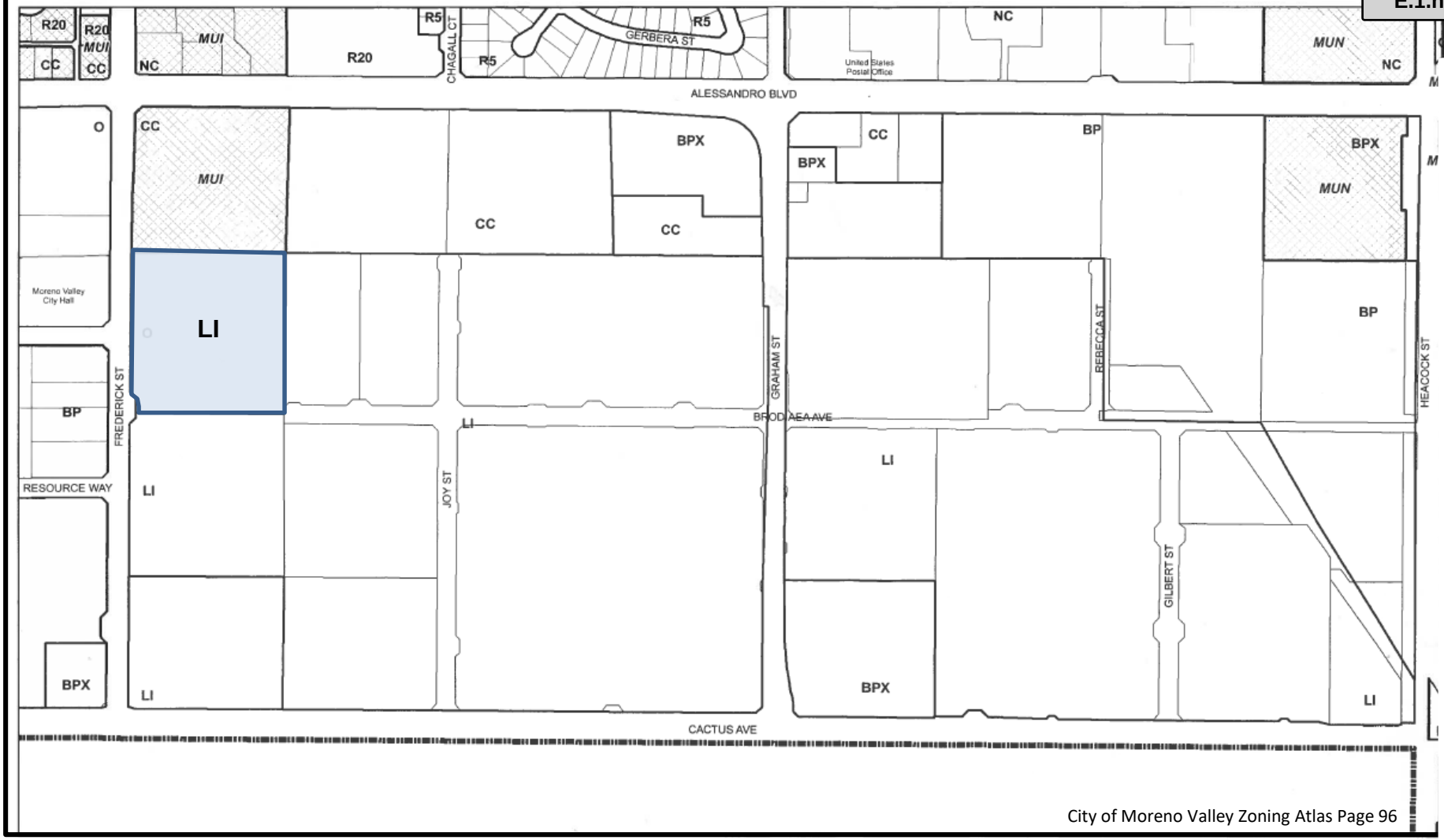
ABSTAIN:

(Council Members, Mayor Tem and Mayor)

_____
City Clerk

(SEAL)

Attachment: Project 1_Ordinance No 2018-XX CZ (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



City of Moreno Valley Zoning Atlas Page 96

PEN18-0025 - Change of Zone

Light Industrial (LI)

Exhibit A to 2018-XX

Attachment: Project 1_Exhibit A to Ordinance No 2018-XX CZ (3321 : Centerpointe

Attachment: Project 1_Resolution No 2018-XX Plot Plan [Revision 2] (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

RESOLUTION NO. 2018-XX

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, APPROVING PEN18-0023, PLOT PLAN FOR THE CONSTRUCTION OF A 204,022 SQUARE FOOT WAREHOUSE BUILDING ON APPROXIMATELY 8.8 ACRES LOCATED AT THE NORTHEAST CORNER OF FREDERICK STREET AND BRODIAEA AVENUE, ASSESSOR PARCEL NUMBER (APN) 297-170-029

WHEREAS, the applicant, Newcastle Partners, Inc. filed Application No. PEN18-0023, requesting approval of a Plot Plan on the property as described in the title of this resolution; and

WHEREAS, the application has been evaluated in accordance with established City of Moreno Valley (City) procedures, and with consideration of the General Plan and other applicable regulations; and

WHEREAS, approval of the Plot Plan for the proposed warehouse is subject to approval of a General Plan Amendment from Office to Business Park (case number PEN18-0024) and a Zone Change from Office to Light Industrial (case number PEN18-0025); and

WHEREAS, an Initial Study and Mitigated Negative Declaration have been prepared for the project consistent with the California Environment Quality Act (CEQA). Based on a thorough analysis of potential environmental impacts, the Mitigated Negative Declaration represents the City's independent judgement and analysis; and

WHEREAS, on October 11, 2018, the Planning Commission of the City of Moreno Valley conducted a meeting to consider the subject application and all environmental documentation prepared for the project and recommended approval of the project by the City Council; and

WHEREAS, all legal prerequisites to the adoption of this Resolution have occurred; and

WHEREAS, the public hearing notice for this project was published in the local newspaper on November 23, 2018. The public notice was sent to all property owners of record within 300 feet of the project site on November XX, 2018. The public hearing notice for this project was also posted on the project site on November XX, 2018; and

WHEREAS, pursuant to Government Code Section 66020(d)(1), NOTICE IS HEREBY GIVEN that this project is subject to certain fees, dedications, reservations and other exactions as provided herein.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, DOES HEREBY FIND, DETERMINE AND RESOLVE AS FOLLOWS:

A. This City Council specifically finds that all of the facts set forth above in the Resolution are true and correct.

B. Based upon substantial evidence presented to this City Council during the above-referenced meeting on December 4, 2018, including written and oral staff reports, public testimony and the record from the public hearing, this City Council hereby specifically finds as follows:

1. Conformance with General Plan Policies – The proposed use is consistent with the General Plan, and its goals, objectives, policies and programs.

FACT: The proposed Project includes a request for a General Plan Amendment (PEN18-0024) to change the General Plan Land Use Designation of the subject site from Office to Business Park which provides for manufacturing, research and development, warehousing and distribution, as well as office and support commercial activities. The General Plan Amendment would allow for the development of the proposed 204,022 square-foot warehouse building on the 8.8-acre site. The intent of the General Plan, as expressed in Objective 2.5 of the Community Development Element is to promote a mix of industrial uses which provide a sound and diversified economic base and ample employment opportunities for the citizens of Moreno Valley with the establishment of industrial activities that have good access to the regional transportation system, accommodate the personal needs of workers and business visitors; and which meets the service needs of local businesses.

With the approval of the General Plan Amendment, the Project would be consistent with the land use designation of the General Plan, and would address Objective 2.5 of the Community Development Element. The Project site's proximity to Alessandro Boulevard, a major commercial and industrial corridor and Interstate Highway 215 (I-215), the primary regional route for north-south travel which links Moreno Valley to neighboring and outlying communities provides the Project good access to the regional transportation system.

The proposed Business Park land use designation is consistent with the applicable goals, objectives, policies and programs of the General Plan.

2. Conformance with Zoning Regulations – The proposed use complies with all applicable zoning and other regulations.

FACT: With the approval of the Change of Zone, the project site would be zoned Light Industrial which provides for the proposed industrial warehouse building. The use at this location will be compatible with the existing developments immediately to the

east, south and the southwest which are zoned Light Industrial (LI) and Business Park (BP). The property immediately to the north of the site along Alessandro Boulevard is currently undeveloped, and is zoned Community Commercial (CC) with a Mixed Use Institutional (MUI) Overlay, which is compatible with the City Hall complex to the west.

As designed, the project will be consistent with all development standards of the Municipal Code.

3. Health, Safety and Welfare – The proposed use will not be detrimental to the public health, safety and welfare or materially injurious to properties or improvements in the vicinity.

FACT: The proposed project with a total of 204,022 square-foot warehouse facility including associated 10,000 square feet of office and mezzanine space is located within 2.1 miles of Towngate Fire Station (Station No.6), and nearby Moreno Valley Police and Riverside County Sheriff stations. This proximity to emergency and safety services furthers General Plan Goal 9.6.2 requiring emergency services that are adequate to meet minor emergency and major catastrophic situations.

The project was reviewed by the Airport Land Use Commission. The project was evaluated for consistency with the March Air Reserve Base Land Use Compatibility Plan (ALUCP), and was deemed consistent with the ALUCP with specific conditions of approval that have been incorporated into the City's conditions of approval.

The proposed project, as designed and conditioned, will result in a development that will be consistent with General Plan Objectives 61 and 6.2 which aim to minimize the potential for loss of life and protect residents, workers and visitors to the City from physical injury and property damage due to seismic ground shaking and flooding.

The analysis presented in the Initial Study/Mitigated Negative Declaration prepared for the Project (including the General Plan Amendment), pursuant to California Environmental Quality Act (CEQA), Public Resources Code 21000, indicates that the Project will not have a significant environmental impact as designed and mitigated.

4. Location, Design and Operation – The location, design and operation of the proposed project will be compatible with existing and planned land uses in the vicinity.

FACTS: The project is located on the north side of Brodiaea Avenue, east of Frederick Street with easy access to Alessandro Boulevard and Cactus Avenue, and less than two miles east of Interstate 215 (I-215). The surrounding land uses are a combination of warehouse and business park uses to the south, east and the southwest. The northern boundary of the site is vacant and zoned for commercial uses, compatible with the City Hall complex to the northwest.

Attachment: Project 1_Resolution No 2018-XX Plot Plan [Revision 2] (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Attachment: Project 1_Resolution No 2018-XX Plot Plan [Revision 2] (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

The physical design and architecture of the proposed building is contemporary in style, and compatible with the surrounding existing developments. The scale of the proposed development and landscape treatments are consistent with the surrounding area.

C. FEES, DEDICATIONS, RESERVATIONS, AND OTHER EXACTIONS

1. FEES

Impact, mitigation and other fees are due and payable under currently applicable ordinances and resolutions. These fees may include but are not limited to: Development Impact Fee; Transportation Uniform Mitigation Fee (TUMF); Multi-species Habitat Conservation Plan (MSHCP) Mitigation Fee, Stephens Kangaroo Rat Habitat Fee, Underground Utilities in lieu Fee; Area Drainage Plan Fee; Bridge and Thoroughfare Mitigation Fee (Future); and Traffic Signal Mitigation Fee. The final amount of fees payable is dependent upon information provided by the applicant and will be determined at the time the fees become due and payable.

Unless otherwise provided for by this resolution, all impact fees shall be calculated and collected at the time and in the manner provided in Chapter 3.32 of the City of Moreno Valley Municipal Code or as so provided in the applicable ordinances and resolutions. The City expressly reserves the right to amend the fees and the fee calculations consistent with applicable law.

2. DEDICATIONS, RESERVATIONS, AND OTHER EXACTIONS

The adopted Conditions of Approval for PEN18-0023, incorporated herein by reference, may include dedications, reservations, and exactions pursuant to Government Code Section 66020 (d) (1).

3. CITY RIGHT TO MODIFY/ADJUST; PROTEST LIMITATIONS

The City expressly reserve the right to establish, modify or adjust any fee, dedication, reservation or other exaction to the extent permitted and as authorized by law.

Pursuant to Government Code Section 66020(d) (1), NOTICE IS FURTHER GIVEN that the 90-day period to protest the imposition of any impact fee, dedication, reservation, or other exaction described in this resolution begins on the effective date of this resolution and any such protest must be in a manner that complies with Section 66020 (a) and failure to timely follow this procedure will bar any subsequent legal action to attack, review, set aside, void or annul imposition.

The right to protest the fees, dedications, reservation, or other exactions does not apply to planning, zoning, grading, or other similar application processing fees or service fees in connection with this project and it does not apply to any fees, dedication, reservation, or other exactions of which a notice has been given similar to this, nor does

it revive challenges to any fees for which the Statute of Limitations has previously expired.

BE IT FURTHER RESOLVED that the City Council HEREBY APPROVES Resolution No. 2018-XX, and thereby:

1. APPROVES PEN18-0023 Plot Plan, subject to conditions of approval attached as Exhibit A.

APPROVED AND ADOPTED this 11th day of December 2018.

_____
Mayor of the City of Moreno Valley

ATTEST:

_____
City Clerk

APPROVED AS TO FORM:

_____
City Attorney

Attachment: Project 1_Resolution No 2018-XX Plot Plan [Revision 2] (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

RESOLUTION JURAT

STATE OF CALIFORNIA)

COUNTY OF RIVERSIDE) ss.

CITY OF MORENO VALLEY)

I, Pat Jacquez-Nares, City Clerk of the City of Moreno Valley, California, do hereby certify that Resolution No. 2018-XX was duly and regularly adopted by the City Council of the City of Moreno Valley at a special meeting thereof held on the 11th day of December, 2018 by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

(Council Members, Mayor Pro Tem and Mayor)

_____

CITY CLERK

(SEAL)

Attachment: Project 1_Resolution No 2018-XX Plot Plan [Revision 2] (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

CITY OF MORENO VALLEY
CONDITIONS OF APPROVAL
Plot Plan (PEN18-0023)

EFFECTIVE DATE:
EXPIRATION DATE:

COMMUNITY DEVELOPMENT DEPARTMENT

Planning Division

1. Any expansion to this use or exterior alterations will require the submittal of a separate application(s) and shall be reviewed and approved under separate permit(s). (MC 9.02.080)

2. The developer, or the developer's successor-in-interest, shall be responsible for maintaining any undeveloped portion of the site in a manner that provides for the control of weeds, erosion and dust. (MC 9.02.030)

3. This approval shall expire three years after the approval date of this project unless used or extended as provided for by the City of Moreno Valley Municipal Code. (MC 9.02.230)

4. All landscaped areas shall be maintained in a healthy and thriving condition, free from weeds, trash and debris. (MC 9.02.030)

5. Any signs indicated on the submitted plans are not included with this approval. Any signs, whether permanent (e.g. wall, monument) or temporary (e.g. banner, flag), require separate application and approval by the Planning Division. No signs are permitted in the public right of way. (MC 9.12)

6. All site plans, grading plans, landscape and irrigation plans, fence/wall plans, lighting plans and street improvement plans shall be coordinated for consistency with this approval.

7. A change or modification to the land use or the approved site plans may require a separate approval. Prior to any change or modification, the property owner shall contact the City of Moreno Valley Community Development Department to determine if a separate approval is required.

8. The site shall be developed in accordance with the approved plans on file in the Community Development Department - Planning Division, the Municipal Code regulations, General Plan, and the conditions contained herein. Prior to any use of the project site or business activity being commenced thereon, all Conditions of

Attachment: Project 1_Exhibit A Plot Plan Conditions of Approval (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Attachment: Project 1_Exhibit A Plot Plan Conditions of Approval (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Approval shall be completed to the satisfaction of the Planning Official. (MC 9.14.020)

9. The required parking for this use shall comply with the Parking Analysis on file and all applicable requirements of the City of Moreno Valley Municipal Code (MC 9.11.040).

Special Conditions

10. The site has been approved for a 194,022 square foot industrial warehouse, 5,000 square foot office and 5,000 square foot mezzanine office building located on approximately 8.8 acres. The approval includes 23 loading dock doors, loading bays, required parking and truck trailers per the approved plans. A change or modification shall require separate approval.

11. Speaker systems shall not be detectable above daytime ambient noise levels beyond the property line boundaries, and shall no exceed fifty-five (55) dBA at any one time beyond the boundaries of the property line. (MC 9.09.080 C.6 and 9.10.140)

12. Prior to the start of any construction, temporary security fencing shall be erected. The fencing shall be a minimum of six (6) feet high with locking, gated access and shall remain through the duration of construction. Security shall remain in place until the project is completed or the above conditions no longer exist. (Security fencing is required if there is: construction, unsecured structures, unenclosed storage of materials and/or equipment, and/or the condition of the site constitutes a public hazard).

13. The following Cultural Resources Mitigation Measures shall apply to this project:

MM CR-1 Prior to the issuance of a grading permit, the Project Applicant shall provide evidence to the City of Moreno Valley that a qualified paleontologist has been retained by the Project Applicant to conduct monitoring of excavation activities and has the authority to halt and redirect earthmoving activities in the event that suspected paleontological resources are unearthed.

MM CR-2 The paleontological monitor shall conduct full-time monitoring during grading and excavation operations in undisturbed, very old alluvial fan sediments at or below four (4) feet below ground surface and shall be equipped to salvage fossils if they are unearthed to avoid construction delays and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. The paleontological monitor shall be empowered to temporarily halt or divert equipment to allow of removal of abundant and large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not

present in the subsurface, or if present, are determined upon exposure and examination by qualified paleontological personnel to have a low potential to contain or yield fossil resources.

MM CR-3 Recovered specimens shall be properly prepared to a point of identification and permanent preservation, including screen washing sediments to recover small invertebrates and vertebrates, if necessary. Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage, such as the Western Science Museum in Hemet, California, is required for significant discoveries.

MM CR-4 A final monitoring and mitigation report of findings and significance shall be prepared, including lists of all fossils recovered and written repository agreements, if any, and necessary maps and graphics to accurately record the original location of the specimens. The report shall be submitted to the City of Moreno Valley prior to building final.

14. The following Tribal Resources Mitigation Measures shall apply to this project:

TR-1 Prior to the issuance of a grading permit, the Developer shall retain a professional archaeologist to conduct monitoring of all mass grading and trenching activities. The Project Archaeologist shall have the authority to temporarily redirect earthmoving activities in the event that suspected archaeological resources are unearthed during Project construction. The Project Archaeologist, in consultation with the Consulting Tribe(s), the contractor, and the City, shall develop a Cultural Resources Management Plan (CRMP) in consultation pursuant to the definition in AB52 to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the project site. A consulting tribe is defined as a tribe that initiated the AB 52 tribal consultation process for the Project, has not opted out of the AB52 consultation process, and has completed AB 52 consultation with the City as provided for in Cal Pub Res Code Section 21080.3.2(b)(1) of AB52. Details in the Plan shall include:

a. Project grading and development scheduling;

b. The Project archeologist and the Consulting Tribes(s) as defined in CR-1 shall attend the pre-grading meeting with the City, the construction manager and any contractors and will conduct a mandatory Cultural Resources Worker Sensitivity Training to those in attendance. The Training will include a brief review of the cultural sensitivity of the Project and the surrounding area; what resources could potentially be identified during earthmoving activities; the requirements of the monitoring program; the protocols that apply in the event inadvertent discoveries of cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated; and any other appropriate protocols. All new construction personnel that will conduct earthwork or

Attachment: Project 1_Exhibit A Plot Plan Conditions of Approval (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

grading activities that begin work on the Project following the initial Training must take the Cultural Sensitivity Training prior to beginning work and the Project archaeologist and Consulting Tribe(s) shall make themselves available to provide the training on an as-needed basis;

c. The protocols and stipulations that the contractor, City, Consulting Tribe(s) and Project archaeologist will follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits that shall be subject to a cultural resources evaluation.

TR-2 Prior to the issuance of a grading permit, the Developer shall secure agreements with the Pechanga Band of Luiseño Indians and Soboba Band of Luiseño Indians for tribal monitoring. The Developer is also required to provide a minimum of 30 days advance notice to the tribes of all mass grading and trenching activities. The Native American Tribal Representatives shall have the authority to temporarily halt and redirect earth moving activities in the affected area in the event that suspected archaeological resources are unearthed. If the Native American Tribal Representatives suspect that an archaeological resource may have been unearthed, the Project Archaeologist or the Tribal Representatives shall immediately redirect grading operations in a 100-foot radius around the find to allow identification and evaluation of the suspected resource. In consultation with the Native American Tribal Representatives, the Project Archaeologist shall evaluate the suspected resource and make a determination of significance pursuant to California Public Resources Code Section 21083.2.

15. The following Tribal Resources Mitigation Measures shall apply to this project:

TR-3 In the event that Native American cultural resources are discovered during the course of grading (inadvertent discoveries), the following procedures shall be carried out for final disposition of the discoveries:

a) One or more of the following treatments, in order of preference, shall be employed with the tribes. Evidence of such shall be provided to the City of Moreno Valley Planning Department:

i. Preservation-In-Place of the cultural resources, if feasible. Preservation in place means avoiding the resources, leaving them in the place they were found with no development affecting the integrity of the resources.

ii. Onsite reburial of the discovered items as detailed in the treatment plan required pursuant to Mitigation Measure CR-1. This shall include measures and provisions to protect the future reburial area from any future impacts in perpetuity. Reburial shall not occur until all legally required cataloging and basic recordation have been completed. No recordation of sacred items is permitted without the written consent of all Consulting Native American Tribal Governments as defined in CR-1.

TR-4 The City shall verify that the following note is included on the Grading

Attachment: Project 1_Exhibit A Plot Plan Conditions of Approval (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Plan:
"If any suspected archaeological resources are discovered during ground-disturbing activities and the Project Archaeologist or Native American Tribal Representatives are not present, the construction supervisor is obligated to halt work in a 100-foot radius around the find and call the Project Archaeologist and the Tribal Representatives to the site to assess the significance of the find."

TR-5 If potential historic or cultural resources are uncovered during excavation or construction activities at the project site, work in the affected area must cease immediately and a qualified person meeting the Secretary of the Interior's standards (36 CFR 61), Tribal Representatives, and all site monitors per the Mitigation Measures, shall be consulted by the City to evaluate the find, and as appropriate recommend alternative measures to avoid, minimize or mitigate negative effects on the historic, or prehistoric resource. Determinations and recommendations by the consultant shall be immediately submitted to the Planning Division for consideration, and implemented as deemed appropriate by the Community Development Director, in consultation with the State Historic Preservation Officer (SHPO) and any and all Consulting Native American Tribes as defined in CR-1 before any further work commences in the affected area.

TR-6 If human remains are discovered, no further disturbance shall occur in the affected area until the County Coroner has made necessary findings as to origin. If the County Coroner determines that the remains are potentially Native American, the California Native American Heritage Commission shall be notified within 24 hours of the published finding to be given a reasonable opportunity to identify the "most likely descendant". The "most likely descendant" shall then make recommendations, and engage in consultations concerning the treatment of the remains (California Public Resources Code 5097.98). (GP Objective 23.3, CEQA).

16. Parking, access and circulation of the Project are approved based on the Plot Plan PEN 18-0023 site plan and the trip generation rates analyzed in the Plot Plan PEN 18-0023 traffic study and related technical documents. Any proposed changes in use that are not consistent with the approved Plot Plan PEN 18-0023 site plan and trip generation rates shall require a supplemental traffic study and parking study, if necessary, and if these studies identify any significant impacts that were not previously identified, the Project shall mitigate those impacts.

17. The follow Airport Land Use Commission Conditions of Approval apply to the project. Prior to the issuance of a grading permit, the applicant shall demonstrate to the City of Moreno Valley that the Airport Land Use Commission Conditions of Approval have been satisfied.

ALUC-1 Any outdoor lighting installed shall be hooded or shielded to prevent either the spillage of lumens or reflection into the sky. Outdoor lighting shall be downward

Attachment: Project 1_Exhibit A Plot Plan Conditions of Approval (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

facing.

18. ALUC-2 The following uses shall be prohibited:

A. Any use which would direct a steady light or flashing light of red, white, green, or amber colors associated with airport operations toward an aircraft engaged in an initial straight climb following takeoff or toward an aircraft engaged in a straight final approach toward a landing at an airport, other than an FAA-approved navigational signal light or visual approach slope indicator.

B. Any use which would cause sunlight to be reflected towards an aircraft engaged in an initial straight climb following takeoff or towards an aircraft engaged in a straight final approach towards a landing at an airport.

C. Any use which would generate smoke or water vapor or which would attract large concentrations of birds, or which may otherwise affect safe air navigation within the area. (Such uses include landscaping utilizing water features, aquaculture, production of cereal grains, sunflower, and row crops, composting operations, trash transfer stations that are open on one or more sides, recycling centers containing putrescible wastes, construction and demolition debris facilities, fly ash disposal, and incinerators).

D. Any use which would generate electrical interference that may be detrimental to the operation of aircraft and/or aircraft instrumentation.

19. ALUC-3 The following disclosure notice shall be provided to all potential purchasers of the property and to any lessees of the structure (s) thereon, and shall be recorded as a deed of notice:

NOTICE OF AIRPORT IN VICINITY

This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances can vary from person to person. You may wish to consider what airport annoyances, if any are associated with the property before you complete your purchase and determine whether they are acceptable to you. Business & Professions Code Section 1101 (b)(13)(A)."

20. ALUC-4 No detention basins are shown on the Plot Plan. Any new-ground level or above ground water detention basins or facilities on the site (including water quality management basins) shall be designed so as to provide for a maximum 48-hour detention period following the conclusion of the storm event for the design storm

Attachment: Project 1_Exhibit A Plot Plan Conditions of Approval (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

(may be less, but not more), and to remain totally dry between rainfalls. Vegetation in and around the detention basins that would provide food or cover for bird species that would be incompatible with airport operations shall not be utilized in project landscaping.

21. ALUC-5 March Air Reserve Base must be notified of any land use having an electromagnetic radiation component to assess whether a potential conflict with Air Base radio communications could result. Sources of electromagnetic radiation include radio wave transmission in conjunction with remote equipment inclusive of irrigation controllers, access gates, etc.

22. ALUC-6 The Federal Aviation Administration has conducted an aeronautical study of the proposed project (Aeronautical Study Nos. 2018-AWP-15456-OE) and has determined that neither marking nor lighting of these structures is necessary for aviation safety. However, if marking and/or lighting for aviation safety are accomplished on a voluntary basis, such marking and/or lighting (if any) shall be installed in accordance with Federal Advisory Circular 70/7460-1 L Change 1 and shall be maintained in accordance therewith for the life of the project.

23. ALUC-7 The proposed building shall not exceed a height of 45 feet above ground level, and the maximum elevation at top point of 1,608 feet above mean sea level.

24. ALUC-8 The maximum heights, and top point elevations specified above shall not be amended without further review by the Airport Land Use Commission and the Federal Aviation Administration; provided, however, that reduction in building height or elevation shall not require further review by the Airport Land Use Commission.

25. ALUC-9 Temporary construction equipment used during actual construction of the structure (s) shall not exceed 45 feet in height and a maximum elevation of 1,608 feet above mean sea level, unless separate notice is provided to the Federal Aviation Administration through the Form 7460-1 process.

26. ALUC-10 Within five (5) days after construction of any individual building reaches its greatest height, FAA Form 7460-2 (Part II), Notice of Actual Construction or Alteration, shall be completed by the project proponent or his/her designee, and e-filed with the Federal Aviation Administration. (Go to https://oeaaa.faa.gov for instructions.) This requirement is also applicable in the event the project is abandoned or a decision is made not to construct the applicable building.

Prior to Grading Permit

27. At least thirty days prior to issuance of any grading permit, the developer shall retain a qualified archaeologist, provide a letter identifying the name and qualifications of the archaeologist to the Planning Division for approval, to monitor all ground

Attachment: Project 1_Exhibit A Plot Plan Conditions of Approval (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

disturbing activities in an effort to identify any unknown archaeological resources and to evaluate and recommend appropriate actions for any archaeological deposits exposed by construction activity.

At least thirty days prior to issuance of a grading permit, the applicant shall provide evidence that contact has been established with the appropriate Native American Tribe(s), providing notification of grading, excavation and the proposed monitoring program and to coordinate with the City and Tribe(s) to develop a cultural resources treatment and monitoring agreement. The agreement shall address treatment of known cultural resources, the designation, responsibilities and participation of Tribal monitors during grading, excavation and ground disturbing activities; project grading and development scheduling; terms of compensation; and treatment and final disposition of any cultural resources, sacred sites, and human remains discovered on the site.

A report documenting the proposed methodology for grading monitoring shall be submitted to and approved by the Planning Division prior to issuance of any grading permit. The monitoring archaeologist shall be empowered to stop and redirect grading in the vicinity of an exposed archaeological deposit until that deposit can be fully evaluated. The archaeologist shall consult with affected Tribe(s) to evaluate any archaeological resources discovered on the project site. Tribal monitors shall be allowed to monitor all grading, excavation and groundbreaking activities, and shall also have authority to stop and redirect grading activities in consultation with the project archaeologist.

The property owner shall relinquish ownership to the Tribe(s) of all Native American cultural resources, including sacred items, burial goods and all archaeological artifacts that are found on the project site for proper treatment and disposition. All sacred sites, should they be encountered with the project site, shall be avoided and preserved as the preferred mitigation.
If any inadvertent discoveries of subsurface archaeological or cultural resources occur during grading, the applicant, project archaeologist, and Tribe(s) shall assess the significance of such resources and shall meet and confer regarding mitigation of such resources. Avoidance is the preferred method of preservation of archaeological resources. If the applicant, project archaeologist and Tribe(s) cannot agree on the significance or mitigation for such resources, the issue(s) will be presented to the Planning Official with adequate documentation. The Official shall make a determination based on the provisions of CEQA and consideration of the religious beliefs, customs and practices of the Tribe(s).

28. Prior to issuance of any grading permit, all Conditions of Approval, Mitigation Measures and Airport Land Use Commission Conditions of Approval shall be printed on the grading plans.

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29. Prior to the issuance of grading permits, decorative (e.g. colored/scored concrete or as approve by the Planning Official) pedestrian pathways across circulation aisles/paths shall be provided throughout the development to connect dwellings with open spaces and/or recreational uses or commercial/industrial buildings with open space and/or parking. and/or the public right-of-way. The pathways shall be shown on the precise grading plan. (GP Objective 46.8, DG)

30. Prior to approval of any grading permits, plans for any security gate system shall be submitted to and approved by to the Planning Division.

31. Prior to issuance of any grading permits, mitigation measures contained in the Mitigation Monitoring Program approved with this project shall be implemented as provided therein. A mitigation monitoring fee, as provided by City ordinance, shall be paid by the applicant within 30 days of project approval. No City permit or approval shall be issued until such fee is paid. (CEQA)

32. Prior to issuance of grading permits, the developer shall pay the applicable Stephens' Kangaroo Rat (SKR) Habitat Conservation Plan mitigation fee. (Ord)

33. Within thirty (30) days prior to any grading or other land disturbance, a pre-construction survey for Burrowing Owls shall be conducted pursuant to the established guidelines of Multiple Species Habitat Conservation Plan. The pre-construction survey shall be submitted to the Planning Division prior to any disturbance of the site and/or grading permit issuance.

34. Prior to issuance of grading permits, the developer shall submit wall/fence plans to the Planning Division for review and approval as follows:

    A. A 3-foot high decorative wall, solid hedge or berm shall be placed in any setback areas between a public right of way and a parking lot for screening.

    B. Any proposed retaining walls shall also be decorative in nature, while the combination of retaining and other walls on top shall not exceed the height requirement.

    C. Screening walls for truck loading areas and required loading docks shall also include decorative walls with pilasters and a height up to fourteen (14) feet to fully screen trucks. Screening along northern and eastern property line shall be constructed with concrete tilt-up panels to match the building, or if approved by the Planning Official, other material as approved in consideration of future development of adjacent properties.

    D. Perimeter 6-foot walls along northern and eastern boundaries shall be constructed with concrete tilt-up panels with decorative design and pilasters to

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match screening walls and the building.

E. The final design for all open-rail fencing, including the decorative metal fence around the water detention basin along Brodiaea, shall be approved by the Planning Official.

35. Prior to the issuance of grading permits, a temporary project identification sign shall be erected on the site in a secure and visible manner. The sign shall be conspicuously posted at the site and remain in place until occupancy of the project. The sign shall include the following:

    a. The name (if applicable) and address of the development.
    b. The developer's name, address, and a 24-hour emergency telephone number.

36. Prior to issuance of grading permits, the location of the trash enclosure shall be included on the plans.

Building Division

37. The proposed non-residential project shall comply with the latest Federal Law, Americans with Disabilities Act, and State Law, California Code of Regulations, Title 24, Chapter 11B for accessibility standards for the disabled including access to the site, exits, bathrooms, work spaces, etc.

38. Prior to submittal, all new development, including residential second units, are required to obtain a valid property address prior to permit application. Addresses can be obtained by contacting the Building Safety Division at 951.413.3350.

39. Contact the Building Safety Division for permit application submittal requirements.

40. All new buildings 10,000 square feet and over, shall include building commissioning in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements (OPR). All requirements in The 2016 California Green Building Standards Code, sections 5.410.2 - 5.410.2.6 must be met.

41. Any construction within the city shall only be completed between the hour of seven a.m. to seven p.m. Monday through Friday, excluding holidays and from eight a.m. to four p.m. on Saturday, unless written approval is obtained from the city building official or city engineer (Municipal Code Section 8.14.040.E).

42. Building plans submitted shall be signed and sealed by a California licensed design

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professional as required by the State Business and Professions Code.

43. The proposed development is subject to the payment of applicable processing fees as required by the City's current Fee Ordinance at the time a building permit application is submitted or prior to the issuance of permits as determined by the City.

44. The proposed project will be subject to approval by the Eastern Municipal Water District and all applicable fees and charges shall be paid prior to permit issuance. Contact the water district at 951.928.3777 for specific details.

45. All new structures shall be designed in conformance to the latest design standards adopted by the State of California in the California Building Code, (CBC) Part 2, Title 24, California Code of Regulations including requirements for allowable area, occupancy separations, fire suppression systems, accessibility, etc. The current code edition is the 2016 CBC.

46. The proposed non-residential project shall comply with 2016 California Green Building Standards Code, Section 5.106.5.3, mandatory requirements for Electric Vehicle Charging Station (EVCS).

47. The proposed project's occupancy shall be classified by the Building Official and must comply with exiting, occupancy separation(s) and minimum plumbing fixture requirements. Minimum plumbing fixtures shall be provided per the 2016 California Plumbing Code, Table 422.1. The occupant load and occupancy classification shall be determined in accordance with the California Building Code.

48. Prior to permit issuance, every applicant shall submit a properly completed Waste Management Plan (WMP), as a portion of the building or demolition permit process. (MC 8.80.030)

FIRE DEPARTMENT

Fire Prevention Bureau

49. Prior to issuance of Certificate of Occupancy or Building Final, all commercial buildings shall display street numbers in a prominent location on the street side and rear access locations. The numerals shall be a minimum of twelve inches in height. (CFC 505.1, MVMC 8.36.060[I])

50. Prior to issuance of Certificate of Occupancy or Building Final, the applicant/developer shall install a fire alarm system monitored by an approved Underwriters Laboratory listed central station based on a requirement for monitoring the sprinkler system, occupancy or use. Fire alarm panel shall be accessible from

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exterior of building in an approved location. Plans shall be submitted to the Fire Prevention Bureau for approval prior to installation. (CFC Chapter 9 and MVMC 8.36.100)

51. Prior to issuance of Building Permits, the applicant/developer shall participate in the Fire Impact Mitigation Program. (Fee Resolution as adopted by City Council)

52. Prior to issuance of Certificate of Occupancy or Building Final, the applicant/developer shall install a fire sprinkler system based on square footage and type of construction, occupancy or use. Fire sprinkler plans shall be submitted to the Fire Prevention Bureau for approval prior to installation. (CFC Chapter 9, MVMC 8.36.100[D])

53. All Fire Department access roads or driveways shall not exceed 12 percent grade. (CFC 503.2.7 and MVMC 8.36.060[G])

54. The Fire Department emergency vehicular access road shall be (all weather surface) capable of sustaining an imposed load of 80,000 lbs. GVW, based on street standards approved by the Public Works Director and the Fire Prevention Bureau. The approved fire access road shall be in place during the time of construction. Temporary fire access roads shall be approved by the Fire Prevention Bureau. (CFC 501.4, and MV City Standard Engineering Plan 108d)

55. The angle of approach and departure for any means of Fire Department access shall not exceed 1 ft drop in 20 ft (0.3 m drop in 6 m), and the design limitations of the fire apparatus of the Fire Department shall be subject to approval by the AHJ. (CFC 503 and MVMC 8.36.060)

56. Prior to construction, all locations where structures are to be built shall have an approved Fire Department access based on street standards approved by the Public Works Director and the Fire Prevention Bureau. (CFC 501.4)

57. Prior to issuance of Building Permits, the applicant/developer shall provide the Fire Prevention Bureau with an approved site plan for Fire Lanes and signage. (CFC 501.3)

58. Prior to issuance of Certificate of Occupancy or Building Final, “Blue Reflective Markers” shall be installed to identify fire hydrant locations in accordance with City specifications. (CFC 509.1 and MVLT 440A-0 through MVLT 440C-0)

59. Existing fire hydrants on public streets are allowed to be considered available. Existing fire hydrants on adjacent properties shall not be considered available unless fire apparatus access roads extend between properties and easements are established to prevent obstruction of such roads. (CFC 507, 501.3) a - After the local water company signs the plans, the originals shall be presented to the Fire

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Prevention Bureau for signatures. The required water system, including fire hydrants, shall be installed, made serviceable, and be accepted by the Moreno Valley Fire Department prior to beginning construction. They shall be maintained accessible.

60. Final fire and life safety conditions will be addressed when the Fire Prevention Bureau reviews building plans. These conditions will be based on occupancy, use, California Building Code (CBC), California Fire Code (CFC), and related codes, which are in effect at the time of building plan submittal.

61. The Fire Code Official is authorized to enforce the fire safety during construction requirements of Chapter 33. (CFC Chapter 33 & CBC Chapter 33)

62. Fire lanes and fire apparatus access roads shall have an unobstructed width of not less than twenty–four (24) feet and an unobstructed vertical clearance of not less the thirteen (13) feet six (6) inches. (CFC 503.2.1 and MVMC 8.36.060[E])

63. Prior to issuance of the building permit for development, independent paved access to the nearest paved road, maintained by the City shall be designed and constructed by the developer within the public right of way in accordance with City Standards. (MVMC 8.36.060, CFC 501.4)

64. Prior to issuance of a Certificate of Occupancy or Building Final, a "Knox Box Rapid Entry System" shall be provided. The Knox-Box shall be installed in an accessible location approved by the Fire Code Official. All exterior security emergency access gates shall be electronically operated and be provided with Knox key switches for access by emergency personnel. (CFC 506.1)

65. The minimum number of fire hydrants required, as well as the location and spacing of fire hydrants, shall comply with the C.F.C., MVMC, and NFPA 24. Fire hydrants shall be located no closer than 40 feet to a building. A fire hydrant shall be located within 50 feet of the fire department connection for buildings protected with a fire sprinkler system. The size and number of outlets required for the approved fire hydrants are (6" x 4" x 2 ½" x 2 ½") (CFC 507.5.1, 507.5.7, Appendix C, NFPA 24-7.2.3, MVMC 912.2.1)

66. Fire Department access driveways over 150 feet in length shall have a turn-around as determined by the Fire Prevention Bureau capable of accommodating fire apparatus. (CFC 503 and MVMC 8.36.060, CFC 501.4)

67. During phased construction, dead end roadways and streets which have not been completed shall have a turn-around capable of accommodating fire apparatus. (CFC 503.1 and 503.2.5)

68. If construction is phased, each phase shall provide an approved emergency

vehicular access way for fire protection prior to any building construction. (CFC 501.4)

69. Plans for private water mains supplying fire sprinkler systems and/or private fire hydrants shall be submitted to the Fire Prevention Bureau for approval. (CFC 105 and CFC 3312.1)

70. The Fire Prevention Bureau is required to set a minimum fire flow for the remodel or construction of all commercial buildings per CFC Appendix B and Table B105.1. The applicant/developer shall provide documentation to show there exists a water system capable of delivering said waterflow for 2 hour(s) duration at 20-PSI residual operating pressure. The required fire flow may be adjusted during the approval process to reflect changes in design, construction type, or automatic fire protection measures as approved by the Fire Prevention Bureau. Specific requirements for the project will be determined at time of submittal. (CFC 507.3, Appendix B)

71. Prior to construction, all traffic calming designs/devices must be approved by the Fire Marshal and City Engineer.

72. Prior to building construction, dead end roadways and streets which have not been completed shall have a turnaround capable of accommodating fire apparatus. (CFC 503.2.5)

73. Prior to issuance of Building Permits, the applicant/developer shall furnish one copy of the water system plans to the Fire Prevention Bureau for review. Plans shall: a. Be signed by a registered civil engineer or a certified fire protection engineer; b. Contain a Fire Prevention Bureau approval signature block; and c. Conform to hydrant type, location, spacing of new and existing hydrants and minimum fire flow required as determined by the Fire Prevention Bureau. The required water system, including fire hydrants, shall be installed, made serviceable, and be accepted by the Moreno Valley Fire Department prior to beginning construction. They shall be maintained accessible.

FINANCIAL & MANAGEMENT SERVICES DEPARTMENT

Moreno Valley Utility

74. This project requires the installation of electric distribution facilities. A non-exclusive easement shall be provided to Moreno Valley Utility and shall include the rights of ingress and egress for the purpose of operation, maintenance, facility repair, and meter reading.

75. This project requires the installation of electric distribution facilities. The developer shall submit a detailed engineering plan showing design, location and schematics

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for the utility system to be approved by the City Engineer. In accordance with Government Code Section 66462, the Developer shall execute an agreement with the City providing for the installation, construction, improvement and dedication of the utility system following recordation of final map and/or concurrent with trenching operations and other improvements so long as said agreement incorporates the approved engineering plan and provides financial security to guarantee completion and dedication of the utility system.

The Developer shall coordinate and receive approval from the City Engineer to install, construct, improve, and dedicate to the City all utility infrastructure including but not limited to, conduit, equipment, vaults, ducts, wires, switches, conductors, transformers, and "bring-up" facilities including electrical capacity to serve the identified development and other adjoining, abutting, or benefiting projects as determined by Moreno Valley Utility – collectively referred to as "utility system", to and through the development, along with any appurtenant real property easements, as determined by the City Engineer necessary for the distribution and/or delivery of any and all "utility services" to and within the project. For purposes of this condition, "utility services" shall mean electric, cable television, telecommunication (including video, voice, and data) and other similar services designated by the City Engineer. "Utility services" shall not include sewer, water, and natural gas services, which are addressed by other conditions of approval.

The City, or the City's designee, shall utilize dedicated utility facilities to ensure safe, reliable, sustainable and cost effective delivery of utility services and maintain the integrity of streets and other public infrastructure. Developer shall, at developer's sole expense, install or cause the installation of such interconnection facilities as may be necessary to connect the electrical distribution infrastructure within the project to the Moreno Valley Utility owned and controlled electric distribution system.

76. Existing Moreno Valley Utility electrical infrastructure shall be preserved in place. The developer will be responsible, at developer's expense, for any and all costs associated with the relocation of any of Moreno Valley Utility's underground electrical distribution facilities, as determined by Moreno Valley Utility, which may be in conflict with any developer planned construction on the project site.

PUBLIC WORKS DEPARTMENT

Land Development

77. The developer shall comply with all applicable City ordinances and resolutions including the City's Municipal Code (MC) and if subdividing land, the Government Code (GC) of the State of California, specifically Sections 66410 through 66499.58, said sections also referred to as the Subdivision Map Act (SMA). [MC 9.14.010]

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78. The final approved conditions of approval (COAs) and any applicable Mitigation Measures issued by the Planning Division shall be photographically or electronically placed on mylar sheets and included in the Grading and Street Improvement plans.

79. The developer shall monitor, supervise and control all construction related activities, so as to prevent these activities from causing a public nuisance, including but not limited to, insuring strict adherence to the following:
(a) Removal of dirt, debris, or other construction material deposited on any public street no later than the end of each working day.
(b) Observance of working hours as stipulated on permits issued by the Land Development Division.
(c) The construction site shall accommodate the parking of all motor vehicles used by persons working at or providing deliveries to the site.
(d) All dust control measures per South Coast Air Quality Management District (SCAQMD) requirements during the grading operations.
Violation of any condition, restriction or prohibition set forth in these conditions shall subject the owner, applicant, developer or contractor(s) to remedy as noted in City Municipal Code 8.14.090. In addition, the City Engineer or Building Official may suspend all construction related activities for violation of any condition, restriction or prohibition set forth in these conditions until such time as it has been determined that all operations and activities are in conformance with these conditions.

80. Drainage facilities (e.g., catch basins, water quality basins, etc.) with sump conditions shall be designed to convey the tributary 100-year storm flows. Secondary emergency escape shall also be provided.

81. If improvements associated with this project are not initiated within two (2) years of the date of approval of the Public Improvement Agreement (PIA), the City Engineer may require that the engineer's estimate for improvements associated with the project be modified to reflect current City construction costs in effect at the time of request for an extension of time for the PIA or issuance of a permit. [MC 9.14.210(B)(C)]

82. The developer shall protect downstream properties from damage caused by alteration of drainage patterns (i.e. concentration or diversion of flow, etc). Protection shall be provided by constructing adequate drainage facilities, including, but not limited to, modifying existing facilities or by securing a drainage easement. [MC 9.14.110]

83. Public drainage easements, when required, shall be a minimum of 25 feet wide and shall be shown on the map and plan, and noted as follows: “Drainage Easement – no structures, obstructions, or encroachments by land fills are allowed.” In addition, the grade within the easement area shall not exceed a 3:1 (H:V) slope, unless approved by the City Engineer.

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84. The proposed private storm drain system shall connect to the existing Line "P" and Lateral "P-2" public storm drain within Brodiaea Avenue. A storm drain manhole shall be placed at the right-of-way line, at each connection, to mark the beginning of the publicly maintained portion of this storm drain.

85. This project shall submit civil engineering design plans, reports and/or documents (prepared by a registered/licensed civil engineer) for review and approval by the City Engineer per the current submittal requirements, prior to the indicated threshold or as required by the City Engineer. The submittal consists of, but is not limited to, the following:
    a. Rough grading w/ erosion control plan (prior to grading permit issuance);
    b. Precise grading w/ erosion control plan (prior to building permit issuance);
    c. Final drainage study (prior to grading plan approval);
    d. Final WQMP (prior to grading plan approval);
    e. Offers of Dedication (prior to precise grading plan approval);
    f. As-Built revision for all plans (prior to Occupancy release)

86. Water quality best management practices (BMPs) designed to meet Water Quality Management Plan (WQMP) requirements for single-family residential development shall not be used as a construction BMP. Water quality BMPs shall be maintained for the entire duration of the project construction and be used to treat runoff from those developed portions of the project. Water quality BMPs shall be protected from upstream construction related runoff by having proper best management practices in place and maintained. Water quality BMPs shall be graded per the approved design plans and once landscaping and irrigation has been installed, it and its maintenance shall be turned over to an established Homeowner's Association (HOA). The Homeowner's Association shall enter into an agreement with the City for basin maintenance.

Prior to Grading Plan Approval

87. Resolution of all drainage issues shall be as approved by the City Engineer.

88. A final detailed drainage study (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer. The study shall include, but not be limited to: existing and proposed hydrologic conditions as well as hydraulic calculations for all drainage control devices and storm drain lines. The study shall analyze 1, 3, 6 and 24-hour duration events for the 2, 5, 10 and 100-year storm events [MC 9.14.110(A.1)]. A digital (pdf) copy of the approved drainage study shall be submitted to the Land Development Division.

89. Emergency overflow areas shall be shown at all applicable drainage improvement locations in the event that the drainage improvement fails or exceeds full capacity.

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This may include, but not be limited to, overflow structures or emergency spillways within basins.

90. A final project-specific Water Quality Management Plan (WQMP) shall be submitted for review and approved by the City Engineer, which:

a. Addresses Site Design Best Management Practices (BMPs) such as minimizing impervious areas, maximizing permeability, minimizes directly connected impervious areas to the City's street and storm drain systems, and conserves natural areas;

b. Incorporates Source Control BMPs and provides a detailed description of their implementation;

c. Describes the long-term operation and maintenance requirements for BMPs requiring maintenance; and

d. Describes the mechanism for funding the long-term operation and maintenance of the BMPs.

A copy of the final WQMP template can be obtained on the City's Website or by contacting the Land Development Division. A digital (pdf) copy of the approved final project-specific Water Quality Management Plan (WQMP) shall be submitted to the Land Development Division.

91. The developer shall ensure compliance with the City Grading ordinance, these Conditions of Approval and the following criteria:

a. The project street and lot grading shall be designed in a manner that perpetuates the existing natural drainage patterns with respect to tributary drainage area and outlet points. Unless otherwise approved by the City Engineer, lot lines shall be located at the top of slopes.

b. Any grading that creates cut or fill slopes adjacent to the street shall provide erosion control, sight distance control, and slope easements as approved by the City Engineer.

c. All improvement plans are substantially complete and appropriate clearance letters are provided to the City.

d. A soils/geotechnical report (addressing the soil's stability and geological conditions of the site) shall be submitted to the Land Development Division for review. A digital (pdf) copy of the soils/geotechnical report shall be submitted to the Land Development Division.

92. Grading plans (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal requirements.

93. The developer shall select Low Impact Development (LID) Best Management Practices (BMPs) designed per the latest version of the Water Quality Management Plan (WQMP) - a guidance document for the Santa Ana region of Riverside County.

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94. The developer shall pay all remaining plan check fees.

95. A Storm Water Pollution Prevention Plan (SWPPP) shall be prepared in conformance with the State's current Construction Activities Storm Water General Permit. A copy of the current SWPPP shall be kept at the project site and be available for review upon request.

96. Any proposed trash enclosure(s) shall be dual bin (1 for trash and 1 for recycables) [MC 9.03.040 (G)]. The enclosure shall have a solid roof and appropriate drainage collection for water quality purposes. The architecture shall be approved by the Planning Division and any structural approvals shall be made by the Building & Safety Division.

97. For projects that will result in discharges of storm water associated with construction with a soil disturbance of one or more acres of land, the developer shall submit a Notice of Intent (NOI) and obtain a Waste Discharger's Identification number (WDID#) from the State Water Quality Control Board (SWQCB) which shall be noted on the grading plans.

98. Prior to rough grading plan approval, the Applicant shall prepare and submit for approval final, project-specific water quality management plan (F-WQMP). The F-WQMP shall be consistent with the approved P-WQMP, as well as in full conformance with the document; "Water Quality Management Plan - A Guidance Document for the Santa Ana Region of Riverside County" dated October 22, 2012. The F-WQMP shall be submitted and approved prior to application for and issuance of grading permits. At a minimum, the F-WQMP shall include the following: Site Design BMPs; Source Control BMPs, treatment Control BMPs, Operation and Maintenance requirements for BMPs and sources of funding for BMP implementation.

(a) The Applicant has proposed to incorporate the use of one (1) bio-retention basin and one (1) Modular Wetland System. Final design and sizing details of all BMPs must be provided in the first submittal of the F-WQMP. This will include further exploration of LID BMP options such as incorporating bio-retention basin(s) into the landscaping strip along the eastern project boundary and performing deeper percolation testing to determine if dry wells are feasible. This will also include treating the runoff from the increase of impervious surface within the proposed busbay along Frederick Street. The Applicant acknowledges that more area than currently shown on the plans may be required to treat site runoff as required by the WQMP guidance document.
(b) The Applicant shall substantiate the applicable Hydrologic Condition of Concerns (HCOC) in Section F of the F-WQMP.
(c) All proposed LID BMP's shall be designed in accordance with the RCFC&WCD's Design Handbook for Low Impact Development Best Management

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Practices, dated September 2011.
(d) The proposed LID BMP's as identified in the project-specific P-WQMP shall be incorporated into the Final WQMP.
(e) The NPDES notes per City Standard Drawing No. MVFE-350-0 shall be included in the grading plans.
(f) Post-construction treatment control BMPs, once placed into operation for post-construction water quality control, shall not be used to treat runoff from construction sites or unstabilized areas of the site.
(g) Prior to precise grading plan approval, the grading plan shall show any proposed trash enclosure to include a cover (roof) and sufficient size for dual bin; one bin for trash and one bin for recyclables.

Prior to Grading Permit

99. A receipt showing payment of the Area Drainage Plan (ADP) fee to Riverside County Flood Control and Water Conservation District shall be submitted. [MC 9.14.100(O)]

100. A digital (pdf) copy of all approved grading plans shall be submitted to the Land Development Division.

101. Security, in the form of a cash deposit (preferable), or letter of credit shall be submitted as a guarantee of the implementation and maintenance of erosion control measures. At least twenty-five (25) percent of the required security shall be in the form of a cash deposit with the City. [MC 8.21.160(H)]

102. Security, in the form of a cash deposit (preferable), or letter of credit shall be submitted as a guarantee of the completion of the grading operations for the project. [MC 8.21.070]

103. The developer shall pay all applicable inspection fees.

Prior to Improvement Plan Approval

104. The developer is required to bring any existing access ramps adjacent to and fronting the project to current ADA (Americans with Disabilities Act) requirements. However, when work is required in an intersection that involves or impacts existing access ramps, all access ramps in that intersection shall be retrofitted to comply with current ADA requirements, unless otherwise approved by the City Engineer.

105. The developer shall submit clearances from all applicable agencies, and pay all applicable plan check fees.

106. Drainage facilities (i.e. catch basins, etc.) with sump conditions shall be designed to

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convey the tributary 100-year storm flows. Secondary emergency escape shall also be provided.

107. Any missing or deficient existing improvements along the project frontage within Frederick Street and Brodiaea Avenue shall be constructed or secured for construction. The City Engineer may require the ultimate structural section for pavement to half-street width plus 18 feet or provide core test results confirming that existing pavement section is per current City Standards; additional signing & striping to accommodate increased traffic imposed by the development, etc.

108. For non-subdivision projects, all street dedications shall be free of encumbrances, irrevocably offered to the public and shall continue in force until the City accepts or abandons such offers, unless otherwise approved by the City Engineer.

109. The plans shall indicate any restrictions on trench repair pavement cuts to reflect the City's moratorium on disturbing newly-constructed pavement less than three (3) years old and recently slurry sealed streets less than one (1) year old. Pavement cuts for trench repairs may be allowed for emergency repairs or as specifically approved by the City Engineer.

110. All dry and wet utilities shall be shown on the plans and any crossings shall be potholed to determine actual location and elevation. Any conflicts shall be identified and addressed on the plans. The pothole survey data shall be submitted to Land Development with the public improvement plans for reference purposes only. The developer is responsible to coordinate with all affected utility companies and bear all costs of any utility relocation.

111. All driveway approaches shall be constructed per City Standard Plan No. MVSI-112C-0. This includes a four (4) foot Offer of Dedication at the back of the approaches.

Prior to Encroachment Permit

112. A digital (pdf) copy of all approved improvement plans shall be submitted to the Land Development Division.

113. All applicable inspection fees shall be paid.

114. For non-subdivision projects, execution of a Public Improvement Agreement (PIA) and/or security (in the form of a cash deposit or other approved means) may be required as determined by the City Engineer. [MC 9.14.220]

115. Any work performed within public right-of-way requires an encroachment permit.

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Prior to Building Permit

116. An engineered-fill certification, rough grade certification and compaction report shall be submitted for review and approved by the City Engineer. A digital (pdf) copy of the approved compaction report shall be submitted to the Land Development Division. All pads shall meet pad elevations per approved grading plans as noted by the setting of "blue-top" markers installed by a registered land surveyor or licensed civil engineer.

117. For non-subdivision projects, the developer shall guarantee the completion of all related public improvements required for this project by executing a Public Improvement Agreement (PIA) with the City and posting the required security. [MC 9.14.220]

118. For non-subdivision projects, the developer shall comply with the requirements of the City Engineer based on recommendations of the Riverside County Flood Control District regarding the construction of County Master Plan Facilities.

119. For Commercial/Industrial projects, the owner may have to secure coverage under the State's General Industrial Activities Storm Water Permit as issued by the State Water Resources Control Board.

120. For non-subdivision projects, all street dedications shall be free of encumbrances, irrevocably offered to the public and shall continue in force until the City accepts or abandons such offers, unless otherwise approved by the City Engineer.

121. A walk through with a Land Development Inspector shall be scheduled to inspect existing improvements within public right of way along project frontage. Any missing, damaged or substandard improvements including handicap access ramps that do not meet current City standards shall be required to be installed, replaced and/or repaired. The applicant shall post security to cover the cost of the repairs and complete the repairs within the time allowed in the public improvement agreement used to secure the improvements.

122. Certification to the line, grade, flow test and system invert elevations for the water quality control BMPs shall be submitted for review and approved by the City Engineer (excluding models homes).

Prior to Occupancy

123. All outstanding fees shall be paid.

124. All required as-built plans (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal

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requirements.

125. The final/precise grade certification shall be submitted for review and approved by the City Engineer.

126. For commercial, industrial and multi-family projects, in compliance with Proposition 218, the developer shall agree to approve the City of Moreno Valley NPDES Regulatory Rate Schedule that is in place at the time of certificate of occupancy issuance. Under the current permit for storm water activities required as part of the National Pollutant Discharge Elimination System (NPDES) as mandated by the Federal Clean Water Act, this project is subject to the following requirements:

a. Select one of the following options to meet the financial responsibility to provide storm water utilities services for the required continuous operation, maintenance, monitoring system evaluations and enhancements, remediation and/or replacement, all in accordance with Resolution No. 2002-46.

i. Participate in the mail ballot proceeding in compliance with Proposition 218, for the Common Interest, Commercial, Industrial and Quasi-Public Use NPDES Regulatory Rate Schedule and pay all associated costs with the ballot process; or

ii. Establish an endowment to cover future City costs as specified in the Common Interest, Commercial, Industrial and Quasi-Public Use NPDES Regulatory Rate Schedule.

b. Notify the Special Districts Division of the intent to request building permits 90 days prior to their issuance and the financial option selected. The financial option selected shall be in place prior to the issuance of certificate of occupancy. [California Government Code & Municipal Code]

127. The developer shall complete all public improvements in conformance with current City standards, except as noted in the Special Conditions, including but not limited to the following:

a. Street improvements including, but not limited to: pavement, base, curb and/or gutter, cross gutters, spandrel, sidewalks, drive approaches, pedestrian ramps, street lights, signing, striping, under sidewalk drains, landscaping and irrigation, medians, pavement tapers/transitions and traffic control devices as appropriate.

b. Storm drain facilities including, but not limited to: storm drain pipe, storm drain laterals, open channels, catch basins and local depressions.

c. City-owned utilities.

d. Sewer and water systems including, but not limited to: sanitary sewer, potable water and recycled water.

e. Under grounding of all existing and proposed utilities adjacent to and on-site. [MC 9.14.130]

f. Relocation of overhead electrical utility lines including, but not limited to: electrical, cable and telephone.

128. For commercial, industrial and multi-family projects, a "Stormwater Treatment Device and Control Measure Access and Maintenance Covenant" shall be recorded to provide public notice of the maintenance requirements to be implemented per the approved final project-specific WQMP. A boilerplate copy of the "Stormwater Treatment Device and Control Measure Access and Maintenance Covenant" can be obtained by contacting the Land Development Division.

129. The applicant shall ensure the following, pursuant to Section XII. I. of the 2010 NPDES Permit:

a. Field verification that structural Site Design, Source Control and Treatment Control BMPs are designed, constructed and functional in accordance with the approved Final Water Quality Management Plan (WQMP).

b. Certification of best management practices (BMPs) from a state licensed civil engineer. An original WQMP BMP Certification shall be submitted for review and approved by the City Engineer.

130. The Developer shall comply with the following water quality related items:

a. Notify the Land Development Division prior to construction and installation of all structural BMPs so that an inspection can be performed.

b. Demonstrate that all structural BMPs described in the approved final project-specific WQMP have been constructed and installed in conformance with the approved plans and specifications;

c. Demonstrate that Developer is prepared to implement all non-structural BMPs described in the approved final project-specific WQMP; and

d. Demonstrate that an adequate number of copies of the approved final project-specific WQMP are available for future owners/occupants.

e. Clean and repair the water quality BMP's, including re-grading to approved civil drawing if necessary.

f. Obtain approval and complete installation of the irrigation and landscaping.

Special Districts Division

131. This project is conditioned for a proposed district to provide a funding source for the operation and maintenance of public improvements and/or services associated with new development in that territory. The Developer shall satisfy this condition with one of the options outlined below.

a. Participate in a special election for maintenance/services and pay all associated costs of the election process and formation, if any. Financing may be structured through a Community Facilities District, Landscape and Lighting Maintenance District, or other financing structure as determined by the City; or

b. Establish an endowment fund to cover the future maintenance and/or service

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Attachment: Project 1_Exhibit A Plot Plan Conditions of Approval (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

costs.

The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org when submitting the application for building permit issuance. If the first building permit is pulled prior to formation of the district, this condition will not apply. If the district has been or is in the process of being formed the Developer must inform the Special Districts Division of its selected financing option (a. or b. above). The option for participating in a special election requires 90 days to complete the special election process. This allows adequate time to be in compliance with the provisions of Article 13C of the California Constitution.

The financial option selected shall be in place prior to the issuance of the first certificate of occupancy for the project.

132. This project is conditioned to provide a funding source for the following special financing program(s):

a. Street Lighting Services for capital improvements, energy charges, and maintenance.

The Developer's responsibility is to provide a funding source for the capital improvements and the continued maintenance. The Developer shall satisfy this condition with one of the options below.

i. Participate in a special election (mail ballot proceeding) and pay all associated costs of the special election and formation, if any. Financing may be structured through a Community Services District zone, Community Facilities District, Landscape and Lighting Maintenance District, or other financing structure as determined by the City; or

ii. Establish a Property Owner's Association (POA) or Home Owner's Association (HOA) which will be responsible for any and all operation and maintenance costs

The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org of its selected financial option when submitting the application for building permit issuance. The option for participating in a special election requires approximately 90 days to complete the special election process. This allows adequate time to be in compliance with the provisions of Article 13C of the California Constitution.

The financial option selected shall be in place prior to the issuance of the first certificate of occupancy for the project and prior to acceptance of any improvements.

133. This project is located within the boundary of Community Facilities District No. 4–Maintenance (CFD No. 4-M) and is subject to hydrology study determination based upon the final tentative parcel map. The project is conditioned to provide a funding source which will be used for maintenance of stormwater and detention basin improvements. The Developer shall satisfy the condition with one of the financing options outlined below.

a. In compliance with Proposition 218, the property owner shall agree to approve the special election for annexation into CFD No. 4-M and pay all associated costs with the special election process and formation costs, if any; or

b. Establish an endowment fund which shall be used to cover future maintenance costs for storm water and detention basin improvements benefiting this project.

The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org of its selected financing option when submitting the application for building permit issuance. The option for participating in a special election requires 90 days to complete the special election process. This allows adequate time to be in compliance with the provisions of Article 13C of the California Constitution.

The financial option selected shall be in place prior to the first issuance of certificate of occupancy for this project.

134. Commercial (BP) If Land Development, a Division of the Public Works Department, requires this project to supply a funding source necessary to provide for, but not limited to, stormwater utilities services for the continuous operation, remediation and/or replacement, monitoring, systems evaluations and enhancement of on-site facilities and performing annual inspections of the affected areas to ensure compliance with state mandated stormwater regulations, a funding source needs to be established. The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org of its selected financial option for the National Pollution Discharge Elimination System (NPDES) program when submitting the application for the first building permit issuance (see Land Development's related condition). Participating in a special election the process requires a 90 day period prior to the City's issuance of a building permit. This allows adequate time to be in compliance with the provisions of Article 13D of the California Constitution. (California Health and Safety Code Sections 5473 through 5473.8 (Ord. 708 Section 3.1, 2006) & City of Moreno Valley Municipal Code Title 3, Section 3.50.050.)

135. This project has been identified to be included in the formation of a Community Facilities District (Mello-Roos) for Public Safety services, including but not limited to Police, Fire Protection, Paramedic Services, Park Rangers, and Animal Control

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services. The property owner(s) shall not protest the formation; however, they retain the right to object to the rate and method of maximum special tax. In compliance with Proposition 218, the property owner shall agree to approve the mail ballot proceeding (special election) for either formation of the CFD or annexation into an existing district. The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org when submitting the application for building permit issuance to determine the requirement for participation. If the first building permit is pulled prior to formation of the district, this condition will not apply. If the condition applies, the special election will require a minimum of 90 days prior to issuance of the first building permit. This allows adequate time to be in compliance with the provisions of Article 13C of the California Constitution. (California Government Code Section 53313 et. seq.)

136. Inspection fees for the monitoring of landscape installation associated with the City of Moreno Valley maintained parkways/medians are due prior to the required pre-construction meeting. (MC 3.32.040)

137. The ongoing maintenance of any landscaping required to be installed behind the curb on Brodiaea Ave. shall be the responsibility of the property owner.

138. Modification of existing irrigation systems for parkway improvements may be required per the direction of, approval by and coordination with the Special Districts Division. Please contact Special District Division staff at 951.413.3480 or specialdistricts@moval.org to coordinate the modifications.

139. Any damage to existing landscape areas maintained by the City of Moreno Valley due to project construction shall be repaired/replaced by the Developer, or Developer's successors in interest, at no cost to the City of Moreno Valley.

140. The removal of existing trees with four-inch or greater trunk diameters (calipers), shall be replaced, at a three to one ratio, with minimum twenty-four (24) inch box size trees of the same species, or a minimum thirty-six (36) inch box for a one to one replacement, where approved. (MC 9.17.030)

141. The parcel(s) associated with this project have been incorporated into the Moreno Valley Community Services Districts Zones A (Parks & Community Services), C (Arterial Street Lighting), and E-7 (Extensive Landscape Maintenance). All assessable parcels therein shall be subject to annual parcel taxes for Zone A and Zone C and an annual parcel charge for Zone E-7 for operations and capital improvements.

142. The existing parkway along the frontage of the project on Frederick St. shall be brought to current City Standards. Improvements may include but are not limited to: plant material, irrigation, and hardscape.

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143. Existing landscape to remain in place on Frederick St.

Transportation Engineering Division

144. Conditions of approval may be modified or added if a phasing plan is submitted for this development.

145. All proposed on-site traffic signing and striping should be accordance with the latest California Manual on Uniform Traffic Control Devices (CAMUTCD).

146. Frederick Street is designated as a Minor Arterial (88'RW/64'CC) at the project location per City Standard Plan No. MVSI-105A-1. Any improvements undertaken by this project shall be consistent with the City's standards for this facility.

147. Brodiaea Avenue is designated as an industrial collector (78'RW/56'CC) at the project location per City Standard Plan No. MVSI-106A-0. Any improvements undertaken by this project shall be consistent with the City's standards for this facility.

148. The driveways shall conform to City of Moreno Valley Standard No. MVSI-112C-0 for Commercial Driveway Approaches. Access at the driveways shall be allowed as follows:

- Frederick Street north driveway (trucks only access): right-turn in/out only. A raised concrete median on Frederick Street shall restrict left-turn in/out.
- Frederick Street south driveway at Calle San Juan de Los Lagos intersection (passenger cars only access): full access. This driveway shall have one inbound lane, one outbound left-turn lane and one outbound shared through-right lane.
- Brodiaea Avenue driveway (both passenger cars and trucks access): full access.

149. Any gated entrance shall be provided with the following:

a) A storage lane with sufficient queuing length for entering vehicles.
b) Signing and striping.
c) A separate pedestrian entry.

150. Prior to final approval of the landscape plans and construction plans for any type of fencing or monument sign, the project plans shall demonstrate that sight distance at the project driveway conforms to City Standard Plan No. MVSI-164A-0 through MVSI-164C-0. Trees, plants, shrubs, fence and monument sign shall not be located in an area that obstructs the drivers' line-of-sight.

151. Prior to the final approval of the street improvement plans, a signing and striping

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plan shall be prepared per City of Moreno Valley Standard Plans - Section 4 for all streets along the project frontages. Signing and striping plans shall be prepared per the latest edition of the California Manual on Uniform Traffic Control Devices (CAMUTCD) and current City of Moreno Valley Standard Plans by a qualified registered civil or traffic engineer..

152. Prior to the final approval of the street improvement plans, a median improvement plan shall be prepared by a registered civil engineer for a raised concrete median on Frederick Street in front of the project north driveway.

153. Prior to the final approval of the street improvement plans, a traffic signal modification plan shall be prepared for the existing traffic signal at Frederick Street/Calle San Juan de Los Lagos intersection. The existing traffic signal shall be modified to accommodate one inbound lane, one outbound left-turn lane and one outbound shared through-right lane for the project driveway. Traffic signal modification plan shall be prepared per the latest edition of the California Manual on Uniform Traffic Control Devices (CAMUTCD) and current City of Moreno Valley Standard Plans by a qualified registered civil engineer.

154. Prior to the final approval of the street improvement plans, a bus turnout shall be designed per the latest City of Moreno Valley Standard Plans for northbound traffic and shall be located on the east side of Frederick Street, between the project north driveway and Frederick Street/Calle San Juan de Los Lagos intersection.

155. Prior to issuance of an encroachment permit for work within the public right-of-way, construction traffic control plans prepared by a qualified, registered Civil or Traffic engineer shall be required for plan approval by the City Traffic Engineer.

156. Prior to issuance of Certificate of Occupancy, all signing and striping shall be installed per current City Standards and the approved plans.

157. Prior to issuance of Certificate of Occupancy, raised median improvement on Frederick Street in front of the project north driveway shall be completed and fully operational per the approved plans to the satisfaction of the City Engineer. Median construction shall include but not be limited to: paving, concrete curbs, median hardscape, signing and striping.

158. Prior to issuance of Certificate of Occupancy, all modification work for the existing traffic signal at the intersection of Frederick Street/Calle San Juan de Los Lagos shall be completed and fully operational per the approved plans, to the satisfaction of the City Engineer. Signal modifications may include, but not be limited to, signal pole replacement or relocation, new video detector installation, controller cabinet relocation, controller replacement, signing & striping, curb and gutter replacement, and ADA access ramp replacement.

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159. Prior to issuance of Certificate of Occupancy, a bus turnout shall be installed for northbound traffic and be located on the east side of Frederick Street, between the project north driveway and Frederick Street/Calle San Juan de Los Lagos intersection.

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Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Centerpointe

AIR QUALITY IMPACT ANALYSIS

CITY OF MORENO VALLEY

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JUNE 4, 2018

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LIST OF ABBREVIATED TERMS

(1)	Reference
µg/m3	Microgram per Cubic Meter
AADT	Annual Average Daily Trips
AQIA	Air Quality Impact Analysis
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
BACMs	Best Available Control Measures
BMPs	Best Management Practices
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DPM	Diesel Particulate Matter
EPA	Environmental Protection Agency
LST	Localized Significance Threshold
MMs	Mitigation Measures
NAAQS	National Ambient Air Quality Standards
NO2	Nitrogen Dioxide
NOx	Oxides of Nitrogen
Pb	Lead
PM10	Particulate Matter 10 microns in diameter or less
PM2.5	Particulate Matter 2.5 microns in diameter or less
PPM	Parts Per Million
Project	Centerpointe
ROG	Reactive Organic Gases
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SIPs	State Implementation Plans
SRA	Source Receptor Area

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TAC	Toxic Air Contaminant
TIA	Traffic Impact Analysis
TOG	Total Organic Gases
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds

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EXECUTIVE SUMMARY

CONSTRUCTION-SOURCE EMISSIONS

REGIONAL IMPACTS

For regional emissions, the Project would not exceed the numerical thresholds of significance established by the SCAQMD for any criteria pollutants. Therefore, a less than significant impact would occur for Project-related construction-source emissions.

LOCALIZED IMPACTS

For localized emissions, the Project would not exceed the SCAQMD's localized significance threshold for any criteria pollutant. Therefore, a less than significant impact would occur.

ODORS

Established requirements addressing construction equipment operations, and construction material use, storage, and disposal requirements act to minimize odor impacts that may result from construction activities. Moreover, construction-source odor emissions would be temporary, short-term, and intermittent in nature and would not result in persistent impacts that would affect substantial numbers of people. Potential construction-source odor impacts are therefore considered less-than-significant.

OPERATIONAL-SOURCE EMISSIONS

REGIONAL IMPACTS

For regional emissions, the Project would not exceed the numerical thresholds of significance established by the SCAQMD. Therefore, Project operational-source emissions would be considered less than significant.

LOCALIZED IMPACTS

For localized emissions, the Project would not exceed the numerical thresholds established by the SCAQMD for any criteria pollutants. The proposed Project would not result in a significant CO "hotspot" as a result of Project related traffic during ongoing operations.

Project operational-source emissions would not conflict with the applicable AQMP.

Odors

Substantial odor-generating sources include land uses such as agricultural activities, feedlots, wastewater treatment facilities, landfills or various heavy industrial uses. The Project does not propose any such uses or activities that would result in potentially significant operational-source odor impacts. Potential sources of operational odors generated by the Project would include disposal of miscellaneous refuse. Moreover, SCAQMD Rule 402 acts to prevent occurrences of odor nuisances (1). Consistent with City requirements, all Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with solid waste

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regulations. Potential operational-source odor impacts are therefore considered less-than-significant.

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1 INTRODUCTION

This report presents the results of the air quality impact analysis (AQIA) prepared by Urban Crossroads, Inc., for the proposed Centerpointe development ("Project"). The purpose of this AQIA is to evaluate the potential impacts to air quality associated with construction and operation of the proposed Project and recommend measures to mitigate impacts considered potentially significant in comparison to thresholds established by the South Coast Air Quality Management District (SCAQMD).

1.1 SITE LOCATION

The proposed Centerpointe site is located on the northeast corner of Frederick Street and Brodiaea Avenue in the City of Moreno Valley, as shown on Exhibit 1-A. Existing uses in the Project study area include a commercial-designated vacant lot north of the Project site, existing business park/warehouse use to the east, the Riverside County Department of Waste Resources facilities to the south, and existing City of Moreno Valley offices to the west. The closest existing residential homes to the Project site are located approximately 800 feet north of the Project site across Alessandro Boulevard. The March Air Reserve Base/Inland Port Airport (MARB/IPA) runway is located approximately 1.2 miles southwest of the Project site, and Interstate 215 (I-215) is located roughly 1.2 miles west of the Project site.

1.2 PROJECT DESCRIPTION

The Project is proposed to consist of up to 163,218 square feet (sf) of warehouse (without cold storage) use (80 percent of the total square footage) and 40,804 sf of general light industrial use (20 percent of the total square footage) for a total of 204,022 sf within a single building, as shown on Exhibit 1-B. The Project is anticipated to have an Opening Year of 2020[1]. At the time this air quality analysis was prepared the future tenants of the proposed Project were unknown. The Project business operations would primarily be conducted within the enclosed buildings, except for traffic movement, parking, as well as loading and unloading of trucks at designated loading bays. This air quality analysis is intended to describe air quality level impacts associated with the expected typical warehouse and distribution storage activities at the Project site. At the time of this analysis, no cold storage was planned at the Project site, and therefore is not analyzed in this report.

[1] The Traffic Impact Analysis (TIA) prepared for the Project evaluates an Opening Year of 2023 since the City of Moreno Valley traffic study guidelines require the Opening Year to be a minimum of 5 years from baseline (2018) conditions. Utilizing a 2020 Opening Year for purposes of this AQIA would generate more emissions than if the Project utilized a 2023 Opening Year consistent with the traffic study because as the analysis year increases, vehicle emission factors would decrease as a result of emissions regulations becoming more stringent. Utilizing a 2020 Opening Year for purposes of the AQIA herein represents a conservative estimate of emissions compared to if a 2023 Opening Year, consistent with the traffic study, were utilized.

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EXHIBIT 1-A: LOCATION MAP

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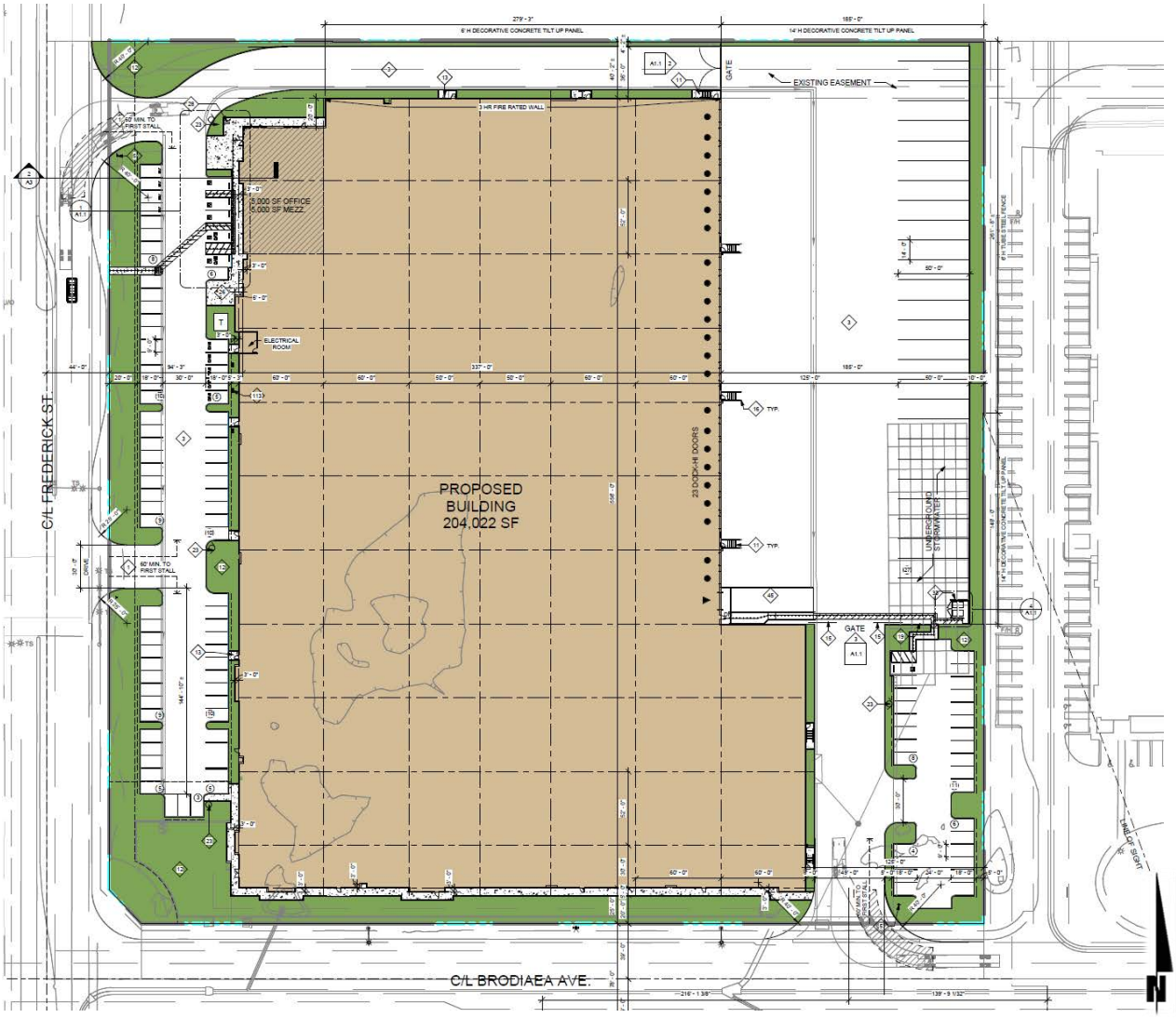
EXHIBIT 1-B: SITE PLAN



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According to the *Centerpointe Traffic Impact Analysis* prepared by Urban Crossroads, Inc., the Project is expected to generate a net total of approximately 486 trip-ends per day (actual vehicles) (2). The Project trip generation includes 100 truck trip-ends per day from the proposed buildings within the Project site. This air quality study relies on the net Project trips to accurately account for the effect of individual truck trips on the study area roadway network.

1.3 Construction-Source Air Pollutant Emissions Mitigation Measures

1.3.1 Monitoring of and Compliance With Standard Regulatory Requirements/Best Available Control Measures (BACMs)

Measures listed below (or equivalent language) shall appear on all Project grading plans, construction specifications and bid documents, and the City shall ensure such language is incorporated prior to issuance of any development permits. City monitoring of construction activities shall be conducted to ensure mitigation compliance.

SCAQMD Rules that are currently applicable during construction activity for this Project include but are not limited to: Rule 1113 (Architectural Coatings) (3); Rule 431.2 (Low Sulfur Fuel) (4); Rule 403 (Fugitive Dust) (5); and Rule 1186 / 1186.1 (Street Sweepers) (6). In order to facilitate monitoring and compliance, applicable SCAQMD regulatory requirements are summarized below.

BACM AQ-1

The following measures shall be incorporated into Project plans and specifications as implementation of Rule 403.

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Project are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.
- The contractor shall ensure that traffic speeds on unpaved roads and Project site areas are reduced to 15 miles per hour or less.

BACM AQ-2

Only "Low-Volatile Organic Compounds" paints (no more than 50 gram/liter of VOC) and/or High Pressure Low Volume (HPLV) applications consistent with South Coast Air Quality Management District Rule 1113 shall be used.

1.4 Construction and Operational-Source Air Pollutant Emissions Mitigation Measures

The Project would not result in any significant impacts during construction and operational activity. Therefore, no mitigation measures are required.

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2 AIR QUALITY SETTING

This section provides an overview of the existing air quality conditions in the Project area and region.

2.1 SOUTH COAST AIR BASIN

The Project site is located in the South Coast Air Basin (SCAB) within the jurisdiction of SCAQMD (7). The SCAQMD was created by the 1977 Lewis-Presley Air Quality Management Act, which merged four county air pollution control bodies into one regional district. Under the Act, the SCAQMD is responsible for bringing air quality in areas under its jurisdiction into conformity with federal and state air quality standards. As discussed above, the Project site is located within the South Coast Air Basin, a 6,745-square mile subregion of the SCAQMD, which includes portions of Los Angeles, Riverside, and San Bernardino Counties, and all of Orange County. The larger South Coast district boundary includes 10,743 square miles.

The SCAB is bound by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Los Angeles County portion of the Mojave Desert Air Basin is bound by the San Gabriel Mountains to the south and west, the Los Angeles / Kern County border to the north, and the Los Angeles / San Bernardino County border to the east. The Riverside County portion of the Salton Sea Air Basin is bound by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley.

2.2 REGIONAL CLIMATE

The regional climate has a substantial influence on air quality in the Basin. In addition, the temperature, wind, humidity, precipitation, and amount of sunshine influence the air quality.

The annual average temperatures throughout the Basin vary from the low to middle 60s (degrees Fahrenheit). Due to a decreased marine influence, the eastern portion of the Basin shows greater variability in average annual minimum and maximum temperatures. January is the coldest month throughout the Basin, with average minimum temperatures of 47°F in downtown Los Angeles and 36°F in San Bernardino. All portions of the Basin have recorded maximum temperatures above 100°F.

Although the climate of the Basin can be characterized as semi-arid, the air near the land surface is quite moist on most days because of the presence of a marine layer. This shallow layer of sea air is an important modifier of Basin climate. Humidity restricts visibility in the Basin, and the conversion of sulfur dioxide to sulfates is heightened in air with high relative humidity. The marine layer provides an environment for that conversion process, especially during the spring and summer months. The annual average relative humidity within the Basin is 71 percent along the coast and 59 percent inland. Since the ocean effect is dominant, periods of heavy early morning fog are frequent and low stratus clouds are a characteristic feature. These effects decrease with distance from the coast.

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More than 90 percent of the Basin's rainfall occurs from November through April. The annual average rainfall varies from approximately nine inches in Riverside to fourteen inches in downtown Los Angeles. Monthly and yearly rainfall totals are extremely variable. Summer rainfall usually consists of widely scattered thunderstorms near the coast and slightly heavier shower activity in the eastern portion of the Basin with frequency being higher near the coast.

Due to its generally clear weather, about three-quarters of available sunshine is received in the Basin. The remaining one-quarter is absorbed by clouds. The ultraviolet portion of this abundant radiation is a key factor in photochemical reactions. On the shortest day of the year there are approximately 10 hours of possible sunshine, and on the longest day of the year there are approximately 14½ hours of possible sunshine.

The importance of wind to air pollution is considerable. The direction and speed of the wind determines the horizontal dispersion and transport of the air pollutants. During the late autumn to early spring rainy season, the Basin is subjected to wind flows associated with the traveling storms moving through the region from the northwest. This period also brings five to ten periods of strong, dry offshore winds, locally termed "Santa Anas" each year. During the dry season, which coincides with the months of maximum photochemical smog concentrations, the wind flow is bimodal, typified by a daytime onshore sea breeze and a nighttime offshore drainage wind. Summer wind flows are created by the pressure differences between the relatively cold ocean and the unevenly heated and cooled land surfaces that modify the general northwesterly wind circulation over southern California. Nighttime drainage begins with the radiational cooling of the mountain slopes. Heavy, cool air descends the slopes and flows through the mountain passes and canyons as it follows the lowering terrain toward the ocean. Another characteristic wind regime in the Basin is the "Catalina Eddy," a low level cyclonic (counterclockwise) flow centered over Santa Catalina Island which results in an offshore flow to the southwest. On most spring and summer days, some indication of an eddy is apparent in coastal sections.

In the Basin, there are two distinct temperature inversion structures that control vertical mixing of air pollution. During the summer, warm high-pressure descending (subsiding) air is undercut by a shallow layer of cool marine air. The boundary between these two layers of air is a persistent marine subsidence/inversion. This boundary prevents vertical mixing which effectively acts as an impervious lid to pollutants over the entire Basin. The mixing height for the inversion structure is normally situated 1,000 to 1,500 feet above mean sea level.

A second inversion-type forms in conjunction with the drainage of cool air off the surrounding mountains at night followed by the seaward drift of this pool of cool air. The top of this layer forms a sharp boundary with the warmer air aloft and creates nocturnal radiation inversions. These inversions occur primarily in the winter, when nights are longer and onshore flow is weakest. They are typically only a few hundred feet above mean sea level. These inversions effectively trap pollutants, such as NO_x and CO from vehicles, as the pool of cool air drifts seaward. Winter is therefore a period of high levels of primary pollutants along the coastline.

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2.3 WIND PATTERNS AND PROJECT LOCATION

The distinctive climate of the Project area and the SCAB is determined by its terrain and geographical location. The Basin is located in a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean in the southwest quadrant with high mountains forming the remainder of the perimeter.

Wind patterns across the south coastal region are characterized by westerly and southwesterly on-shore winds during the day and easterly or northeasterly breezes at night. Winds are characteristically light although the speed is somewhat greater during the dry summer months than during the rainy winter season.

2.4 EXISTING AIR QUALITY

Existing air quality is measured at established SCAQMD air quality monitoring stations. Monitored air quality is evaluated and in the context of ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) currently in effect, as well health effects of each pollutant regulated under these standards are shown in Table 2-1 (8) (9).

The determination of whether a region's air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to the state and federal standards presented in Table 2-1. The air quality in a region is considered to be in attainment by the state if the measured ambient air pollutant levels for O_3, CO, SO_2, NO_2, PM_{10}, and $PM_{2.5}$ are not equaled or exceeded at any time in any consecutive three-year period; and the federal standards (other than O_3, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not exceeded more than once per year. The O_3 standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

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TABLE 2-1: AMBIENT AIR QUALITY STANDARDS (1 OF 2)

Ambient Air Quality Standards						
Pollutant	**Averaging Time**	**California Standards [1]**		**National Standards [2]**		
		Concentration [3]	**Method [4]**	**Primary [3,5]**	**Secondary [3,6]**	**Method [7]**
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.070 ppm (137 µg/m^3)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

See footnotes on next page ...

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TABLE 2-1: AMBIENT AIR QUALITY STANDARDS (2 OF 2)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.

8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

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2.5 REGIONAL AIR QUALITY

The SCAQMD monitors levels of various criteria pollutants at 38 permanent monitoring stations and 5 single-pollutant source Lead (Pb) air monitoring sites throughout the air district (10). In 2015, the federal and state ambient air quality standards (NAAQS and CAAQS) were exceeded on one or more days for ozone, PM_{10}, and $PM_{2.5}$ at most monitoring locations (11). No areas of the SCAB exceeded federal or state standards for NO_2, SO_2, CO, sulfates or lead. See Table 2-2, for attainment designations for the SCAB (12) (13). Appendix 2.1 provides geographic representation of the state and federal attainment status for applicable criteria pollutants within the SCAB.

TABLE 2-2: ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SOUTH COAST AIR BASIN (SCAB)

Criteria Pollutant	State Designation	Federal Designation
Ozone - 1hour standard	Nonattainment	Nonattainment ("extreme")
Ozone - 8 hour standard	Nonattainment	Nonattainment ("extreme")
PM_{10}	Nonattainment	Attainment (Maintenance)
$PM_{2.5}$	Nonattainment	Nonattainment ("serious")
Carbon Monoxide	Attainment	Attainment (Maintenance)
Nitrogen Dioxide	Attainment	Unclassifiable/Attainment
Sulfur Dioxide	Attainment	Unclassifiable/Attainment
Lead[2]	Attainment	Nonattainment (Partial)

Source: State/Federal designations were taken from http://www.arb.ca.gov/desig/adm/adm.htm
Note: See Appendix 2.1 for a detailed map of State/National Area Designations within the South Coast Air Basin

2.6 LOCAL AIR QUALITY

Relative to the Project site, the nearest long-term air quality monitoring site for Ozone (O_3) and Particulate Matter ≤ 10 Microns (PM_{10}) is the South Coast Air Quality Management District Perris Valley monitoring station (SRA 24), located approximately 8.45 miles south of the Project site (14). Data for Carbon Monoxide (CO), Nitrogen Dioxide (NO_2), and Ultra-Fine Particulates ($PM_{2.5}$) was obtained from the Metropolitan Riverside County 3 monitoring station (SRA 23), located approximately 10.65 miles northwest Project site, respectively. It should be noted that the Metropolitan Riverside County 3 monitoring station was utilized in lieu of the Perris Valley monitoring station only where data was not available from the nearest monitoring site.

The most recent three (3) years of data available is shown on Table 2-3 and identifies the number of days ambient air quality standards were exceeded for the study area, which is was considered to be representative of the local air quality at the Project site (15) (16). Additionally, data for SO_2 has been omitted as attainment is regularly met in the South Coast Air Basin and few monitoring stations measure SO_2 concentrations.

[2] The Federal nonattainment designation for lead is only applicable towards the Los Angeles County portion of the SCAB.

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TABLE 2-3: PROJECT AREA AIR QUALITY MONITORING SUMMARY 2014-2016

POLLUTANT	STANDARD	YEAR		
		2014	2015	2016
Ozone (O_3)				
Maximum 1-Hour Concentration (ppm)		0.117	0.124	0.131
Maximum 8-Hour Concentration (ppm)		0.094	0.102	0.098
Number of Days Exceeding State 1-Hour Standard	> 0.09 ppm	16	25	23
Number of Days Exceeding State 8-Hour Standard	> 0.07 ppm	63	50	56
Number of Days Exceeding Federal 1-Hour Standard	> 0.12 ppm	0	0	1
Number of Days Exceeding Federal 8-Hour Standard	> 0.07 ppm	59	49	55
Carbon Monoxide (CO)				
Maximum 1-Hour Concentration (ppm)		2.0	2.5	1.9
Maximum 8-Hour Concentration (ppm)		2.4	1.7	1.4
Nitrogen Dioxide (NO_2)*				
Maximum 1-Hour Concentration (ppm)		0.058	0.068	0.065
Annual Arithmetic Mean Concentration (ppm)		0.014	0.013	0.014
Particulate Matter ≤ 10 Microns (PM_{10})				
Maximum 24-Hour Concentration ($\mu g/m^3$)		87	74	76
Annual Arithmetic Mean ($\mu g/m^3$)		35.1	30.3	32.2
Number of Samples		60	57	57
Number of Samples Exceeding State Standard	> 50 $\mu g/m^3$	6	3	5
Particulate Matter ≤ 2.5 Microns ($PM_{2.5}$)*				
Maximum 24-Hour Concentration ($\mu g/m^3$)		73.6	56.6	45.6
Annual Arithmetic Mean ($\mu g/m^3$)		14.5	13.3	14.0
Number of Samples Exceeding Federal 24-Hour Standard	> 35 $\mu g/m^3$	9	17	6

-- = data not available from SCAQMD or ARB; *Data from the Riverside County 2 monitoring station is only available up to year 2014. As such, data from the Lake Elsinore monitoring station is used for the year 2015 and 2016.

Criteria pollutants are pollutants that are regulated through the development of human health based and/or environmentally based criteria for setting permissible levels. Criteria pollutants, their typical sources, and effects are identified below:

- Carbon Monoxide (CO): Is a colorless, odorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline or wood. CO concentrations tend to be the highest during the winter morning, when little to no wind and surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone, motor vehicles operating at slow speeds are the primary source of CO in the Basin. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.
- Sulfur Dioxide (SO_2): Is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal and from chemical

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processes occurring at chemical plants and refineries. When SO_2 oxidizes in the atmosphere, it forms sulfates (SO_4). Collectively, these pollutants are referred to as sulfur oxides (SO_x).

- Nitrogen Oxides (Oxides of Nitrogen, or NO_x): Nitrogen oxides (NO_x) consist of nitric oxide (NO), nitrogen dioxide (NO_2) and nitrous oxide (N_2O) and are formed when nitrogen (N_2) combines with oxygen (O_2). Their lifespan in the atmosphere ranges from one to seven days for nitric oxide and nitrogen dioxide, to 170 years for nitrous oxide. Nitrogen oxides are typically created during combustion processes, and are major contributors to smog formation and acid deposition. NO_2 is a criteria air pollutant, and may result in numerous adverse health effects; it absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility. Of the seven types of nitrogen oxide compounds, NO_2 is the most abundant in the atmosphere. As ambient concentrations of NO_2 are related to traffic density, commuters in heavy traffic may be exposed to higher concentrations of NO_2 than those indicated by regional monitors.
- Ozone (O_3): Is a highly reactive and unstable gas that is formed when volatile organic compounds (VOCs) and nitrogen oxides (NO_x), both byproducts of internal combustion engine exhaust, undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.
- PM_{10} (Particulate Matter less than 10 microns): A major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the lungs where they may be deposited, resulting in adverse health effects. PM_{10} also causes visibility reduction and is a criteria air pollutant.
- $PM_{2.5}$ (Particulate Matter less than 2.5 microns): A similar air pollutant consisting of tiny solid or liquid particles which are 2.5 microns or smaller (which is often referred to as fine particles). These particles are formed in the atmosphere from primary gaseous emissions that include sulfates formed from SO_2 release from power plants and industrial facilities and nitrates that are formed from NO_x release from power plants, automobiles and other types of combustion sources. The chemical composition of fine particles highly depends on location, time of year, and weather conditions. $PM_{2.5}$ is a criteria air pollutant.
- Volatile Organic Compounds (VOC): Volatile organic compounds are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and/or may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form ozone to the same extent when exposed to photochemical processes. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include: carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. VOCs are a criteria pollutant since they are a precursor to O_3, which is a criteria pollutant. The SCAQMD uses the terms VOC and ROG (see below) interchangeably.
- Reactive Organic Gases (ROG): Similar to VOC, Reactive Organic Gases (ROG) are also precursors in forming ozone and consist of compounds containing methane, ethane, propane, butane, and longer chain hydrocarbons, which are typically the result of some type of combustion/decomposition process. Smog is formed when ROG and nitrogen oxides react in the presence of sunlight. ROGs are a criteria pollutant since they are a precursor to O_3, which is a criteria pollutant. The SCAQMD uses the terms ROG and VOC (see previous) interchangeably.

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- Lead (Pb): Lead is a heavy metal that is highly persistent in the environment. In the past, the primary source of lead in the air was emissions from vehicles burning leaded gasoline. As a result of the removal of lead from gasoline, there have been no violations at any of the SCAQMD's regular air monitoring stations since 1982. Currently, emissions of lead are largely limited to stationary sources such as lead smelters. It should be noted that the Project is not anticipated to generate a quantifiable amount of lead emissions. Lead is a criteria air pollutant.

Health Effects of Air Pollutants

Ozone

Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible sub-groups for ozone effects. Short-term exposure (lasting for a few hours) to ozone at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated ozone levels are associated with increased school absences. In recent years, a correlation between elevated ambient ozone levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple sports and live in communities with high ozone levels.

Ozone exposure under exercising conditions is known to increase the severity of the responses described above. Animal studies suggest that exposure to a combination of pollutants that includes ozone may be more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.

Carbon Monoxide

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of decreased oxygen supply to the heart. Inhaled CO has no direct toxic effect on the lungs, but exerts its effect on tissues by interfering with oxygen transport and competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include fetuses, patients with diseases involving heart and blood vessels, and patients with chronic hypoxemia (oxygen deficiency) as seen at high altitudes.

Reduction in birth weight and impaired neurobehavioral development have been observed in animals chronically exposed to CO, resulting in COHb levels similar to those observed in smokers. Recent studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels; these include pre-term births and heart abnormalities.

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Particulate Matter

A consistent correlation between elevated ambient fine particulate matter (PM_{10} and $PM_{2.5}$) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. In recent years, some studies have reported an association between long-term exposure to air pollution dominated by fine particles and increased mortality, reduction in life-span, and an increased mortality from lung cancer.

Daily fluctuations in $PM_{2.5}$ concentration levels have also been related to hospital admissions for acute respiratory conditions in children, to school and kindergarten absences, to a decrease in respiratory lung volumes in normal children, and to increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with long term exposure to particulate matter.

The elderly, people with pre-existing respiratory or cardiovascular disease, and children appear to be more susceptible to the effects of high levels of PM_{10} and $PM_{2.5}$.

Nitrogen Dioxide

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposure to NO_2 at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO_2 in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups.

In animals, exposure to levels of NO_2 considerably higher than ambient concentrations results in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of ozone and NO_2.

Sulfur Dioxide

A few minutes of exposure to low levels of SO_2 can result in airway constriction in some asthmatics, all of whom are sensitive to its effects. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO_2. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO_2.

Animal studies suggest that despite SO_2 being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract.

Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO_2 levels. In these studies, efforts to

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separate the effects of SO_2 from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.

Lead

Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. Exposure to low levels of Pb can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased Pb levels are associated with increased blood pressure.

Pb poisoning can cause anemia, lethargy, seizures, and death; although it appears that there are no direct effects of Pb on the respiratory system. Pb can be stored in the bone from early age environmental exposure, and elevated blood Pb levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland) and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of Pb because of previous environmental Pb exposure of their mothers.

Odors

The science of odor as a health concern is still new. Merely identifying the hundreds of VOCs that cause odors poses a big challenge. Offensive odors can potentially affect human health in several ways. First, odorant compounds can irritate the eye, nose, and throat, which can reduce respiratory volume. Second, studies have shown that the VOCs that cause odors can stimulate sensory nerves to cause neurochemical changes that might influence health, for instance, by compromising the immune system. Finally, unpleasant odors can trigger memories or attitudes linked to unpleasant odors, causing cognitive and emotional effects such as stress.

2.7 REGULATORY BACKGROUND

2.7.1 FEDERAL REGULATIONS

The U.S. EPA is responsible for setting and enforcing the NAAQS for O_3, CO, NO_x, SO_2, PM_{10}, and lead (8). The U.S. EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside state waters (Outer Continental Shelf). The U.S. EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of the CARB.

The Federal Clean Air Act (CAA) was first enacted in 1955 and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The CAA establishes the federal air quality standards, the NAAQS, and specifies future dates for achieving compliance (17). The CAA also mandates that states submit and implement State Implementation Plans (SIPs) for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA that identify specific emission reduction goals for areas not meeting the NAAQS require a demonstration of reasonable further progress toward attainment

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and incorporate additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA most directly applicable to the development of the Project site include Title I (Non-Attainment Provisions) and Title II (Mobile Source Provisions). Title I provisions were established with the goal of attaining the NAAQS for the following criteria pollutants O_3, NO_2, SO_2, PM_{10}, CO, $PM_{2.5}$, and lead. The NAAQS were amended in July 1997 to include an additional standard for O_3 and to adopt a NAAQS for $PM_{2.5}$. Table 2-1 (previously presented) provides the NAAQS within the basin.

Mobile source emissions are regulated in accordance with Title II provisions. These provisions require the use of cleaner burning gasoline and other cleaner burning fuels such as methanol and natural gas. Automobile manufacturers are also required to reduce tailpipe emissions of hydrocarbons and nitrogen oxides (NO_x). NO_x is a collective term that includes all forms of nitrogen oxides (NO, NO_2, NO_3) which are emitted as byproducts of the combustion process.

2.7.2 CALIFORNIA REGULATIONS

The CARB, which became part of the California EPA in 1991, is responsible for ensuring implementation of the California Clean Air Act (AB 2595), responding to the federal CAA, and for regulating emissions from consumer products and motor vehicles. The California CAA mandates achievement of the maximum degree of emissions reductions possible from vehicular and other mobile sources in order to attain the state ambient air quality standards by the earliest practical date. The CARB established the CAAQS for all pollutants for which the federal government has NAAQS and, in addition, establishes standards for sulfates, visibility, hydrogen sulfide, and vinyl chloride. However, at this time, hydrogen sulfide and vinyl chloride are not measured at any monitoring stations in the SCAB because they are not considered to be a regional air quality problem. Generally, the CAAQS are more stringent than the NAAQS (9) (8).

Local air quality management districts, such as the SCAQMD, regulate air emissions from stationary sources such as commercial and industrial facilities. All air pollution control districts have been formally designated as attainment or non-attainment for each CAAQS.

Serious non-attainment areas are required to prepare air quality management plans that include specified emission reduction strategies in an effort to meet clean air goals. These plans are required to include:

- Application of Best Available Retrofit Control Technology to existing sources;
- Developing control programs for area sources (e.g., architectural coatings and solvents) and indirect sources (e.g. motor vehicle use generated by residential and commercial development);
- A District permitting system designed to allow no net increase in emissions from any new or modified permitted sources of emissions;
- Implementing reasonably available transportation control measures and assuring a substantial reduction in growth rate of vehicle trips and miles traveled;
- Significant use of low emissions vehicles by fleet operators;
- Sufficient control strategies to achieve a five percent or more annual reduction in emissions or 15 percent or more in a period of three years for ROGs, NO_x, CO and PM_{10}. However, air basins may

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use alternative emission reduction strategy that achieves a reduction of less than five percent per year under certain circumstances.

2.7.3 AIR QUALITY MANAGEMENT PLANNING

Currently, the NAAQS and CAAQS are exceeded in most parts of the SCAB. In response, the SCAQMD has adopted a series of Air Quality Management Plans (AQMPs) to meet the state and federal ambient air quality standards (18). AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy. A detailed discussion on the AQMP and Project consistency with the AQMP is provided in Section 3.8.

2.8 REGIONAL AIR QUALITY IMPROVEMENT

The Project is within the jurisdiction of the SCAQMD. In 1976, California adopted the Lewis Air Quality Management Act which created SCAQMD from a voluntary association of air pollution control districts in Los Angeles, Orange, Riverside, and San Bernardino counties. The geographic area of which SCAQMD consists is known as the Basin. SCAQMD develops comprehensive plans and regulatory programs for the region to attain federal standards by dates specified in federal law. The agency is also responsible for meeting state standards by the earliest date achievable, using reasonably available control measures.

SCAQMD rule development through the 1970s and 1980s resulted in dramatic improvement in Basin air quality. Nearly all control programs developed through the early 1990s relied on (i) the development and application of cleaner technology; (ii) add-on emission controls, and (iii) uniform CEQA review throughout the Basin. Industrial emission sources have been significantly reduced by this approach and vehicular emissions have been reduced by technologies implemented at the state level by CARB.

As discussed above, the SCAQMD is the lead agency charged with regulating air quality emission reductions for the entire Basin. SCAQMD created AQMPs which represent a regional blueprint for achieving healthful air on behalf of the 16 million residents of the South Coast Basin. The remarkable historical improvement in air quality since the 1970's is the direct result of Southern California's comprehensive, multiyear strategy of reducing air pollution from all sources as outlined in its Air Quality Management Plans (AQMPs) and by utilizing uniform CEQA review throughout the Basin.

The 2012 AQMP states, "the remarkable historical improvement in air quality since the 1970's is the direct result of Southern California's comprehensive, multiyear strategy of reducing air pollution from all sources as outlined in its AQMPs," (19). Ozone, NO_x, VOC, and CO have been decreasing in the Basin since 1975 and are projected to continue to decrease through 2020 (20). These decreases result primarily from motor vehicle controls and reductions in evaporative emissions. Although vehicle miles traveled in the Basin continue to increase, NO_x and VOC levels are decreasing because of the mandated controls on motor vehicles and the replacement of older polluting vehicles with lower-emitting vehicles. NO_x emissions from electric utilities have also decreased due to use of cleaner fuels and renewable energy. Ozone contour maps show that the number of days exceeding the national 8-hour standard has decreased between 1997 and 2007.

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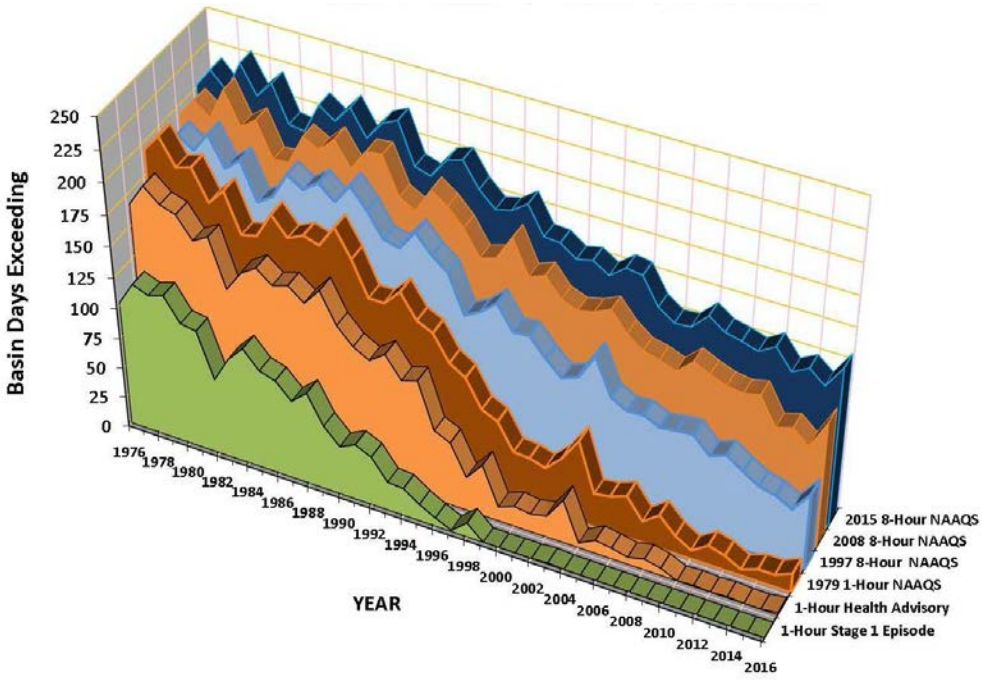
In the 2007 period, there was an overall decrease in exceedance days compared with the 1997 period. Ozone levels in the SCAB have decreased substantially over the last 30 years as shown in Table 2-4 (21). Today, the maximum measured concentrations are approximately one-third of concentrations within the late 70's.

TABLE 2-4: SOUTH COAST AIR BASIN OZONE TREND



The overall trends of PM_{10} and $PM_{2.5}$ in the air (not emissions) show an overall improvement since 1975. Direct emissions of PM_{10}PM have remained somewhat constant in the Basin and direct emissions of $PM_{2.5}$ have decreased slightly since 1975. Area wide sources (fugitive dust from roads, dust from construction and demolition, and other sources) contribute the greatest amount of direct particulate matter emissions.

As with other pollutants, the most recent PM_{10}PM statistics also show overall improvement as illustrated in Table 2-5. During the period for which data are available, the 24-hour national annual average decreased by approximately 50 percent, from 103.7 µg/m³ in 1989 to 52.3 µg/m³ in 2016. Although the values in the late 1990's show some variability, this is probably due to meteorology rather than a change in emissions. Despite the overall decrease, ambient concentrations still exceed the State annual and 24-hour PM_{10} standards. Similar to the ambient concentrations, the calculated number of days above the 24-hour PM_{10} standards has also shown an overall drop. The most recent report to include information on the number of days above the national standard was in 2015, in which there were 6.6 calculated national standard exceedance days (22).

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TABLE 2-5: SOUTH COAST AIR BASIN PM_{10} TREND

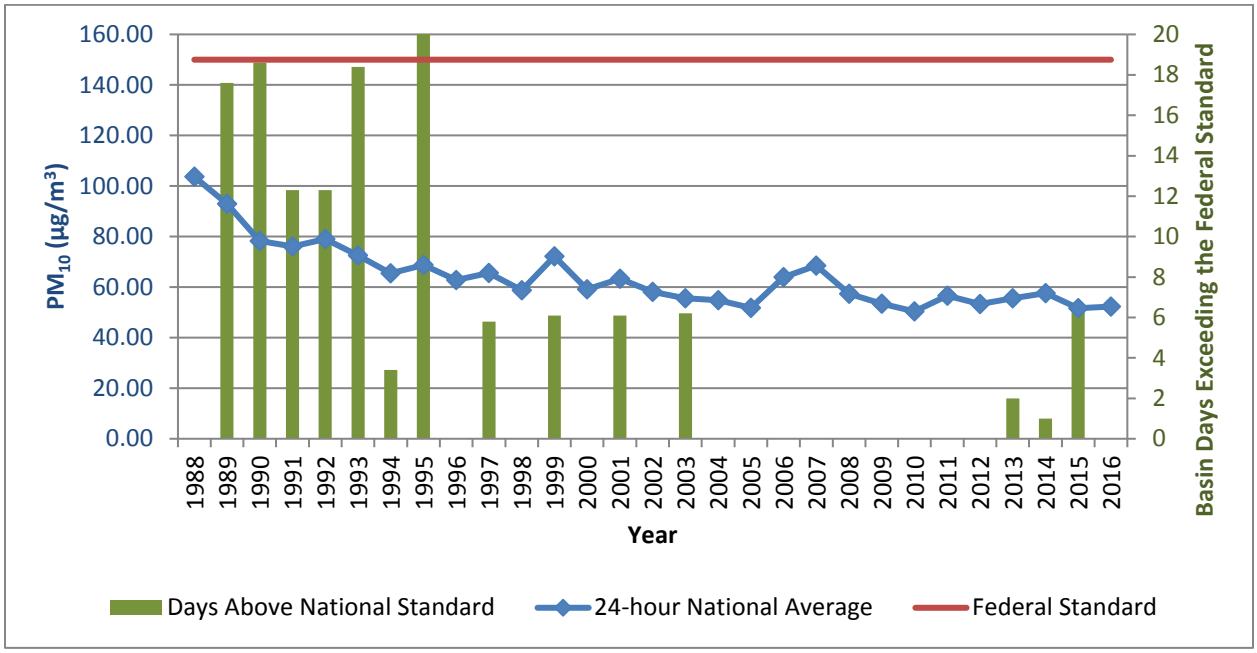

Table 2-6 shows the most recent 24-hour average $PM_{2.5}$ concentrations (national) in the SCAB from 1999 through 2016. Overall, the annual average concentrations have decreased by almost 51 percent. The calculated number of days above the national standard also decreased, from about 88 days in 1999 to about 7 days in 2016. The SCAB is currently designated as nonattainment for the State and national $PM_{2.5}$ standards.

While the 2012 AQMP PM_{10} attainment demonstration and the 2015 associated supplemental SIP submission indicated that attainment of the 24-hour standard was predicted to occur by the end of 2015, it could not anticipate the effect of the ongoing drought on the measured $PM_{2.5}$. The 2006 to 2010 base period used for the 2012 attainment demonstration had near-normal rainfall. While the trend of $PM_{2.5}$- equivalent emission reductions continued through 2015, the severe drought conditions contributed to the $PM_{2.5}$ increases observed after 2012. As a result of the disrupted progress toward attainment of the federal 24-hour $PM_{2.5}$ standard, SCAQMD submitted a request and the U.S. EPA approved, in January 2016, a "bump up" to the nonattainment classification from "moderate" to "serious," with a new attainment deadline as soon as practicable, but not beyond December 31, 2019.

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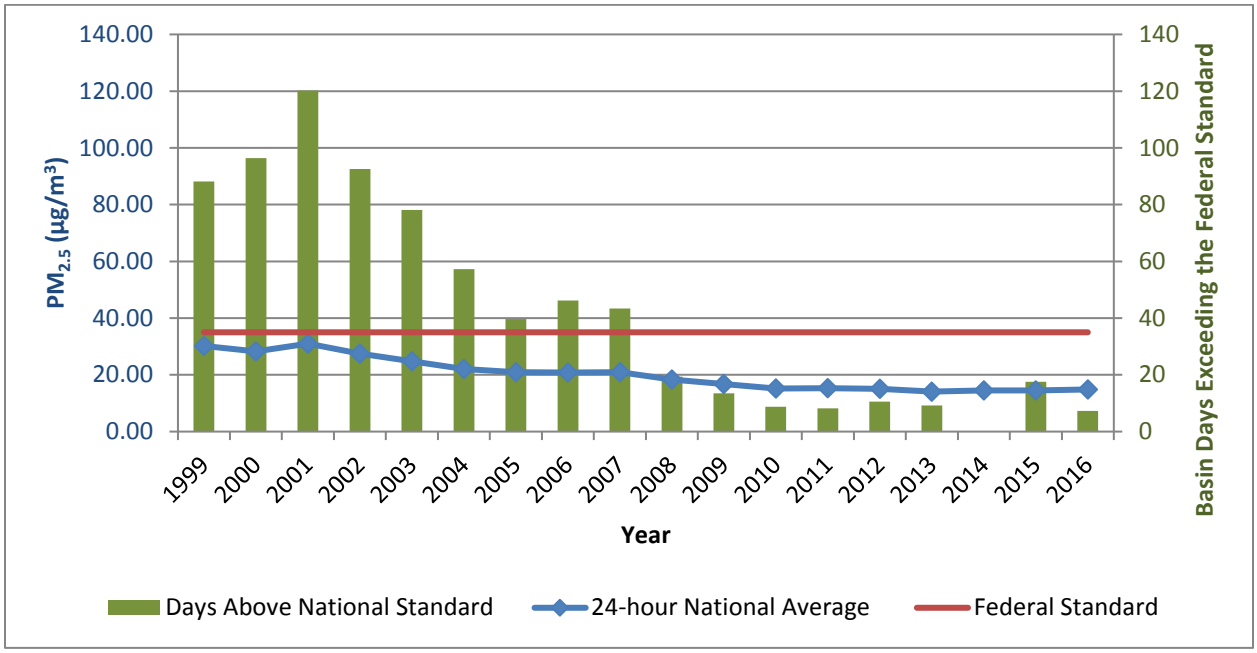
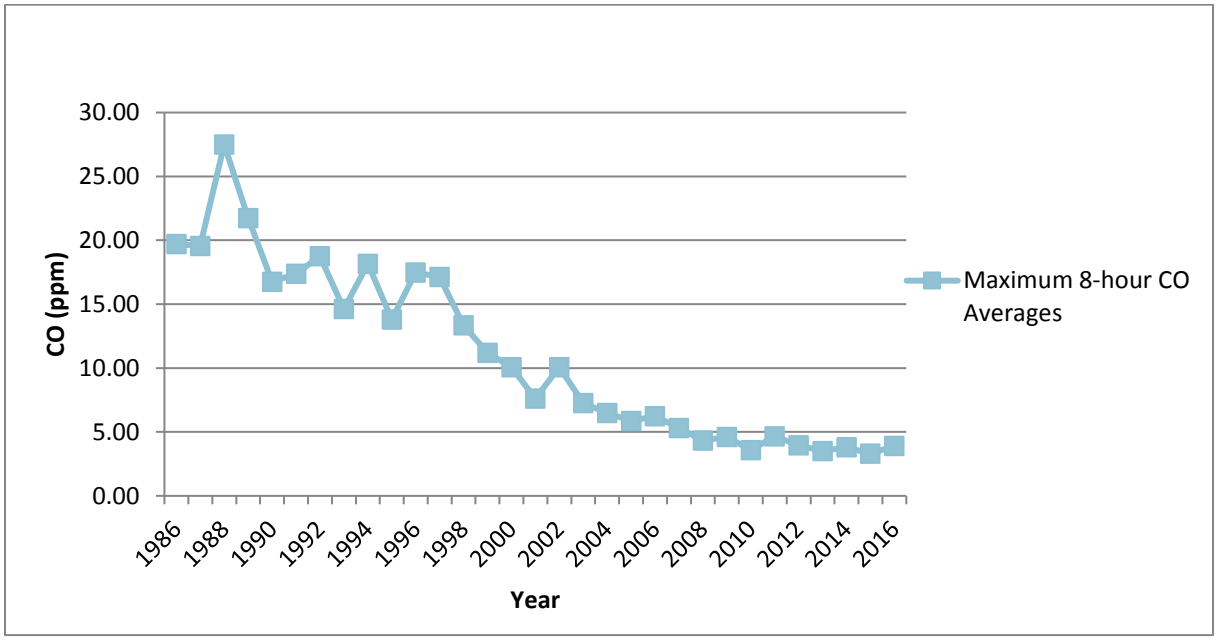
TABLE 2-6: SOUTH COAST AIR BASIN $PM_{2.5}$ TREND



The most recent CO concentrations in the SCAB 1986 are shown in Table 2-7 (23). CO concentrations in the SCAB have decreased markedly — a total decrease of more about 80 percent in the peak 8-hour concentration since 1986. The number of exceedance days has also declined. The entire SCAB is now designated as attainment for both the state and national CO standards. Ongoing reductions from motor vehicle control programs should continue the downward trend in ambient CO concentrations.

TABLE 2-7: SOUTH COAST AIR BASIN CARBON MONOXIDE TREND



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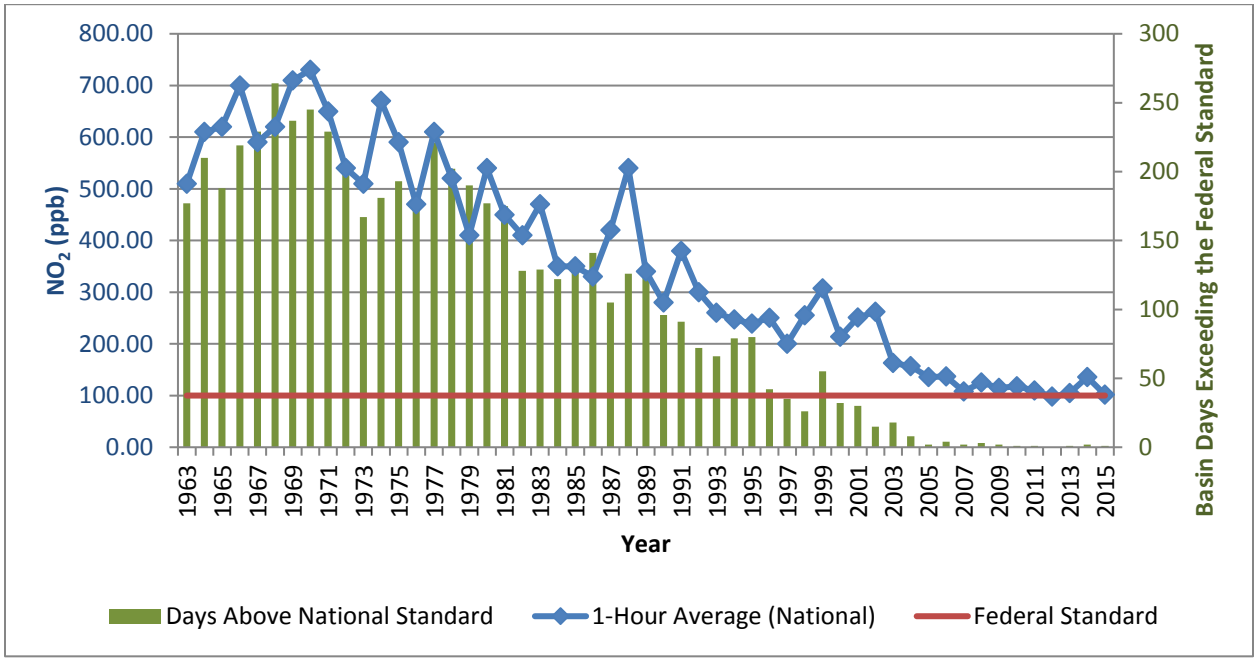
Part of the control process of the SCAQMD's duty to greatly improve the air quality in the Basin is the uniform CEQA review procedures required by SCAQMD's CEQA Handbook (24). The single threshold of significance used to assess Project direct and cumulative impacts has in fact "worked" as evidenced by the track record of the air quality in the Basin dramatically improving over the course of the past decades. As stated by the SCAQMD, the District's thresholds of significance are based on factual and scientific data and are therefore appropriate thresholds of significance to use for this Project.

The most recent NO_2 data for the SCAB is shown in Table 2-8 (23). Over the last 50 years, NO_2 values have decreased significantly; the peak 1-hour average for 2016 was approximately 81 percent lower than what it was during 1963. The SCAB attained the State 1-hour NO_2 standard in 1994, bringing the entire State into attainment. A new state annual average standard of 0.030 parts per million was adopted by the ARB in February 2007 (25). The new standard is just barely exceeded in the South Coast. NO_2 is formed from NO_x emissions, which also contribute to ozone. As a result, the majority of the future emission control measures will be implemented as part of the overall ozone control strategy. Many of these control measures will target mobile sources, which account for more than three-quarters of California's NO_x emissions. These measures are expected to bring the South Coast into attainment of the State annual average standard.

TABLE 2-8: SOUTH COAST AIR BASIN NITROGEN DIOXIDE TREND



The American Lung Association website includes data collected from State air quality monitors that are used to compile an annual State of the Air report. The latest State of the Air Report compiled for the Basin was in 2015 (26). As noted in this report, air quality in the Basin has significantly improved in terms of both pollution levels and high pollution days over the past three decades. The area's average number of high ozone days dropped from 38% regionally in the initial

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2000 State of the Air report (1996–1998) to 69% in the 2004 report. The region has also seen dramatic reduction in particle pollution since the initial 2000 State of the Air report (26).

TOXIC AIR CONTAMINANTS (TACS) TRENDS

In 1984, as a result of public concern for exposure to airborne carcinogens, the CARB adopted regulations to reduce the amount of air toxic contaminant emissions resulting from mobile and area sources, such as cars, trucks, stationary products, and consumer products. According to the *Ambient and Emission Trends of Toxic Air Contaminants in California* journal article (27) which was prepared for CARB, results show that between 1990-2012, ambient concentration and emission trends for the seven TACs responsible for most of the known cancer risk associated with airborne exposure in California have declined significantly (between 1990 and 2012). The seven TACs studied include those that are derived from mobile sources: diesel particulate matter (DPM), benzene, and 1,3-butadiene; those that are derived from stationary sources: perchloroethylene and hexavalent chromium; and those derived from photochemical reactions of emitted VOCs: formaldehyde and acetaldehyde[3]. TACs data was gathered at monitoring sites from both the Bay Area and South Coast Air Basins, as shown on Exhibit 2-A; Several of the sites in the SCAB include Reseda, Compton, Rubidoux, Burbank, and Fontana. The decline in ambient concentration and emission trends of these TACs are a result of various regulations CARB has implemented to address cancer risk.

Mobile Source TACs

CARB introduced two programs that aimed at reducing mobile emissions for light and medium duty vehicles through vehicle emissions controls and cleaner fuel. In California, light-duty vehicles sold after 1996 are equipped with California's second-generation On-Board Diagnostic (OBD-II) system. The OBD II system monitors virtually every component that can affect the emission performance of the vehicle to ensure that the vehicle remains as clean as possible over its entire life, and assists repair technicians in diagnosing and fixing problems with the computerized engine controls. If a problem is detected, the OBD II system illuminates a warning lamp on the vehicle instrument panel to alert the driver. This warning lamp typically contains the phrase Check Engine or Service Engine Soon. The system will also store important information about the detected malfunction so that a repair technician can accurately find and fix the problem. ARB has recently developed similar OBD requirements for heavy-duty vehicles over 14,000 lbs. CARB's phase II Reformulated Gasoline (RFG-2) regulation, adopted in 1996, also led to a reduction of mobile source emissions. Through such regulations, benzene levels declined 88% from 1990-2012. 1,3-Butadiene concentrations also declined 85% from 1990-2012 as a result of the use of reformulated gasoline and motor vehicle regulations (27).

[3] It should be noted that ambient DPM concentrations are not measured directly. Rather, a surrogate method using the coefficient of haze (COH) and elemental carbon (EC) is used to estimate DPM concentrations.

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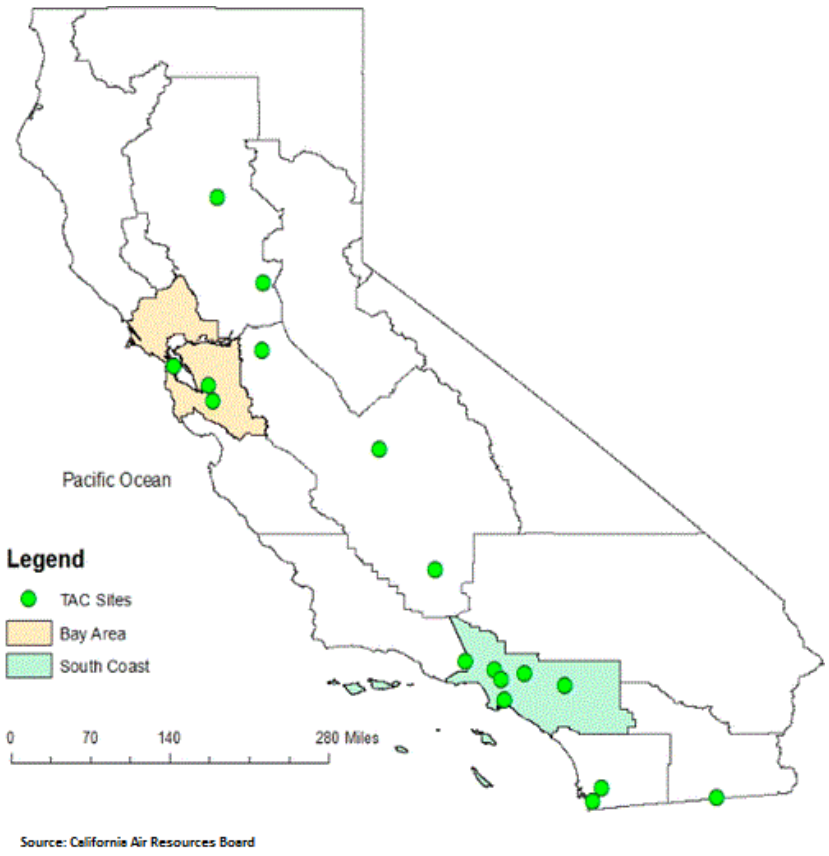
EXHIBIT 2-A: CALIFORNIA TOXIC AIR CONTAMINANT SITES



In 2000, CARB's Diesel Risk Reduction Plan (DRRP) recommended the replacement and retrofit of diesel-fueled engines and the use of ultra-low-sulfur (<15ppm) diesel fuel. As a result of these measures, DPM concentrations have declined 68% since 2000, even though the state's population increased 31% and the amount of diesel vehicles miles traveled increased 81%, as shown on Exhibit 2-B. With the implementation of these diesel-related control regulations, ARB expects a DPM decline of 71% for 2000-2020.

Stationary Source TACs

Various regulations led to a decrease in perchloroethylene and hexavalent chromium, with a 92% and 86% decline, respectively. By 1993, several local air districts required dry cleaning businesses to use a carbon absorber and refrigerated condenser, as well as, dry-to-dry machines and closed-looped machines instead of vented transfer machines. Starting in 2003, California provided financial incentives for dry cleaners to use other solvents and soon after, the CARB banned the use of perchloroethylene in automotive products, aerosol coatings, and most consumer products. In 2007, CARB's dry-cleaning regulation was amended to require phase-out of perchloroethylene machines by 2023, which would further reduce emissions to minimal levels (27).

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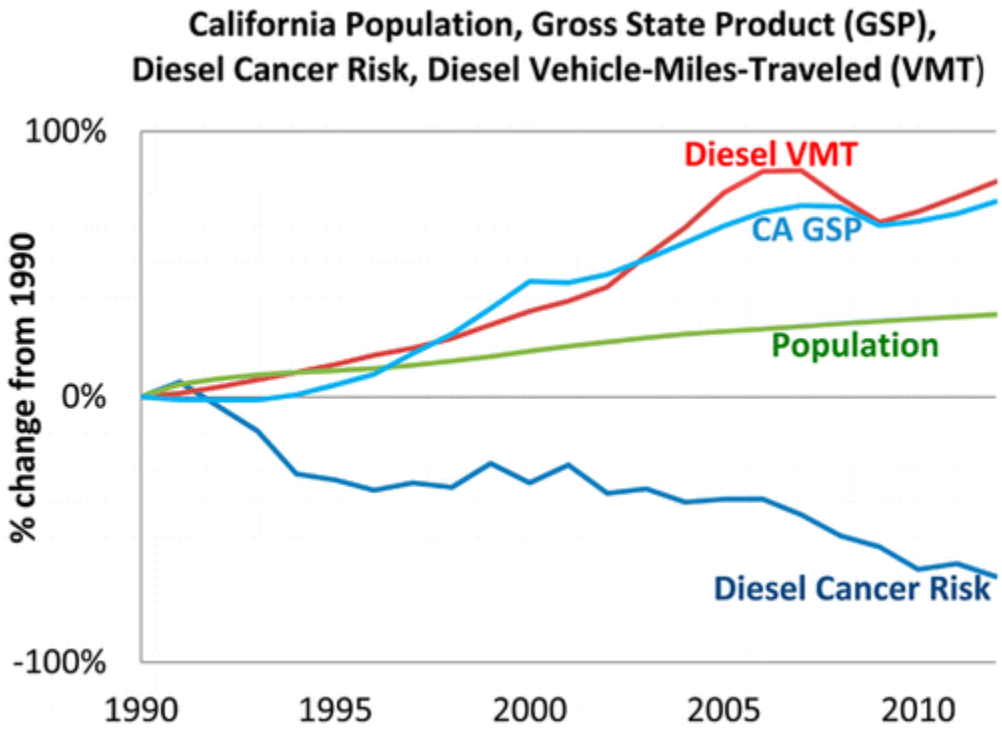
EXHIBIT 2-B: DIESEL PARTICULATE MATTER AND DIESEL VEHICLE MILES TREND



Source: California Air Resources Board

Hexavalent chromium emissions began to decline in 1988 with the ARB-regulated regulations contributing to more than 97% emission reduction within four years. The various regulations include prohibiting the use of hexavalent chromium in cooling towers (1989), in motor vehicle and mobile equipment coatings (2001), and in thermal spraying operations (2005). By 2005, hexavalent chromium emissions were 99.97% less than in 1987, far exceeding expectations. In 2006, hexavalent chromium emissions were further reduced with the 2006 ARB regulation requiring add-on air pollution control devices and chemical fume suppressants.

Between 1996-2012, ambient concentrations of formaldehyde and acetaldehyde declined 22% and 21%, respectively. The decline in these TACs are attributed from increasingly stringent motor vehicle exhaust emission standards, vehicle fleet turnover, fuel reformulation, and the switch from MTBE (formaldehyde precursor) to ethanol in gasoline (27).

As previously discussed, ambient and emissions levels of TACs have reduced significantly from 1990-2012. The overall declining trend in TACs is expected to continue in California from implementation of toxic air controls.

DIESEL REGULATIONS

The CARB and the Ports of Los Angeles and Long Beach have adopted several iterations of regulations for diesel trucks that are aimed at reducing diesel particulate matter (DPM). More specifically, the CARB Drayage Truck Regulation (28), the CARB statewide On-road Truck and Bus Regulation (29), and the Ports of Los Angeles and Long Beach "Clean Truck Program" (CTP)

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require accelerated implementation of "clean trucks" into the statewide truck fleet (30). In other words, older more polluting trucks will be replaced with newer, cleaner trucks as a function of these regulatory requirements.

Moreover, the average statewide DPM emissions for Heavy Duty Trucks (HDT), in terms of grams of DPM generated per mile traveled, will dramatically be reduced due to the aforementioned regulatory requirements.

Diesel emissions identified in this analysis would therefore overstate future DPM emissions since not all the regulatory requirements are reflected in the modeling.

CANCER RISK TRENDS

Based on information available from CARB, overall cancer risk throughout the basin has had a declining trend since 1990. In 1998, following an exhaustive 10-year scientific assessment process, the State of California Air Resources Board (ARB) identified particulate matter from diesel-fueled engines as a toxic air contaminant. The SCAQMD initiated a comprehensive urban toxic air pollution study, called MATES-II (for Multiple Air Toxics Exposure Study). Diesel particulate matter (DPM) accounts for more than 70 percent of the cancer risk.

In 2008 the SCAQMD prepared an update to the MATES-II study, referred to as MATES-III. MATES-III estimates the average excess cancer risk level from exposure to TACs is an approximately 17% decrease in comparison to the MATES-II study.

Nonetheless, the SCAQMD's most recent in-depth analysis of the toxic air contaminants and their resulting health risks for all of Southern California was from the *Multiple Air Toxics Exposure Study in the South Coast Air Basin, MATES IV,"* which shows that cancer risk has decreased more than 55% between MATES III (2005) and MATES IV (2012) (25).

MATES-IV study represents the baseline health risk for a cumulative analysis. MATES-IV calculated cancer risks based on monitoring data collected at ten fixed sites within the South Coast Air Basin (SCAB). None of the fixed monitoring sites are within the local area of the Project site. However, MATES-IV has extrapolated the excess cancer risk levels throughout the basin by modeling the specific grids. MATES-IV modeling predicted an excess cancer risk of 587.29 in one million for the Project area. DPM is included in this cancer risk along with all other TAC sources. DPM accounts for 68% of the total risk shown in MATES-IV. Cumulative Project generated TACs are limited to DPM.

2.9 EXISTING PROJECT SITE AIR QUALITY CONDITIONS

The Project site is currently vacant and as such, existing air quality conditions at the Project site would generally reflect ambient monitored conditions previously presented previously at Table 2-3.

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3 PROJECT AIR QUALITY IMPACT

3.1 INTRODUCTION

The Project has been evaluated to determine if it will violate an air quality standard or contribute to an existing or projected air quality violation. Additionally, the Project has been evaluated to determine if it will result in a cumulatively considerable net increase of a criteria pollutant for which the SCAB is non-attainment under an applicable federal or state ambient air quality standard. The significance of these potential impacts is described in the following section.

3.2 STANDARDS OF SIGNIFICANCE

The SCAQMD has developed regional and localized significance thresholds for regulated The SCAQMD has developed regional and localized significance thresholds for regulated pollutants, as summarized at Table 3-1 (31). The SCAQMD's CEQA Air Quality Significance Thresholds (March 2015) indicate that any projects in the SCAB with daily emissions that exceed any of the indicated thresholds should be considered as having an individually and cumulatively significant air quality impact.

TABLE 3-1: MAXIMUM DAILY EMISSIONS THRESHOLDS[A]

Pollutant	Construction	Operations
Regional Thresholds		
NO_x	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
SO_x	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Localized Thresholds		
NO_x	335 lbs/day (site preparation) 422 lbs/day (grading)	488 lbs/day
CO	4,359 lbs/day (site preparation) 7,070 lbs/day (grading)	6,860 lbs/day
PM_{10}	67 lbs/day (site preparation) 91 lbs/day (grading)	23 lbs/day
$PM_{2.5}$	20 lbs/day (site preparation) 33 lbs/day (grading)	8 lbs/day

[A]: Based on SCAQMD Air Quality Significance Thresholds, March 2015

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3.3 CALIFORNIA EMISSIONS ESTIMATOR MODEL™ EMPLOYED TO ESTIMATE AQ EMISSIONS

Land uses such as the Project affect air quality through construction-source and operational-source emissions.

On October 17, 2017, the SCAQMD in conjunction with the California Air Pollution Control Officers Association (CAPCOA) and other California air districts, released the latest version of the California Emissions Estimator Model™ (CalEEMod™) v2016.3.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (NO_x, VOC, PM_{10}, $PM_{2.5}$, SO_x, and CO) and greenhouse gas (GHG) emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (32). Accordingly, the latest version of CalEEMod™ has been used for this Project to determine construction and operational air quality emissions. Output from the model runs for both construction and operational activity are provided in Appendix 3.1 through Appendix 3.3.

3.4 CONSTRUCTION EMISSIONS

Construction activities associated with the Project will result in emissions NO_x, VOC, PM_{10}, $PM_{2.5}$, SO_x, and CO. Construction related emissions are expected from the following construction activities:

- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

Construction is expected to commence in December 2018 and will last through September 2019. The duration of construction activity was estimated based on information provided by the client. The construction schedule utilized in the analysis, shown in Table 3-2, represents a "worst-case" analytical scenario. The reason this schedule represents a "worst-case" analytical scenario is due to the fact that emission factors for construction equipment and vehicles decrease as time passes and as the analysis year increases due to emission regulations becoming more stringent and the natural turnover of older fleets that are replaced by newer fleets that are less polluting[4]. A detailed summary of construction, shown in Table 3-3, was estimated based on past project experience and CalEEMod model defaults. The site specific construction fleet may vary due to specific project needs at the time of construction. The duration of construction activity and associated equipment both represent a reasonable approximation of the expected construction fleet as required per CEQA guidelines. Please refer to specific detailed modeling inputs/outputs contained in Appendix 3.1 of this analysis.

[4] As shown in the California Emissions Estimator Model (CalEEMod) User's Guide Version 2016.3.2, Section 4.3"OFFROAD Equipment" as the analysis year increases, emission factors for the same equipment pieces decrease due to the natural turnover of older equipment being replaced by newer less polluting equipment and new regulatory requirements.

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Dust is typically a major concern during rough grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. As per information provided by the Project Applicant, it is our understanding the Project will be balanced (will not require import/export of soil).

Construction emissions for construction worker vehicles traveling to and from the Project site, as well as vendor trips (construction materials delivered to the Project site) were estimated based on information from the applicant and the CalEEMod model.

TABLE 3-2: CONSTRUCTION DURATION

Phase Name	Start Date	End Date	Days
Site Preparation	12/10/2018	12/21/2018	10
Grading	12/22/2018	01/18/2019	20
Building Construction	01/19/2019	10/25/2019	200
Paving	08/01/2019	08/28/2019	20
Architectural Coating	07/01/2019	09/06/2019	50

TABLE 3-3: CONSTRUCTION EQUIPMENT ASSUMPTIONS

Activity	Equipment	Number	Hours Per Day
Site Preparation	Crawler Tractors	1	8
Grading	Crawler Tractors	1	8
	Excavators	1	8
	Graders	2	8
	Rubber Tired Dozer	1	8
Building Construction	Cranes	1	8
	Forklifts	3	8
	Generator Sets	2	8
	Welders	1	8
Paving	Pavers	1	8
	Paver Equipment	1	8
	Rollers	1	8
Architectural Coating	Air Compressors	1	8

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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OFF-SITE UTILITY AND INFRASTRUCTURE IMPROVEMENTS

Construction emissions associated with off-site utility and infrastructure improvements may occur, however at this time, a specific schedule of off-site utility and infrastructure improvements is unknown. However, impacts associated with these expected activities are not expected to exceed the emissions identified for Project-related construction activities. As such, no impacts beyond what has already been identified in this report are expected to occur.

3.4.1 CONSTRUCTION EMISSIONS SUMMARY

Impacts without mitigation assume compliance with applicable SCAQMD Rules. The SCAQMD Rules that are currently applicable during construction activity for this Project include but are not limited to: Rule 1113 (Architectural Coatings) (3); Rule 431.2 (Low Sulfur Fuel) (4); Rule 403 (Fugitive Dust) (5); and Rule 1186 / 1186.1 (Street Sweepers) (6). As such, credit for Rule 403(BACM AQ-1) and Rule 1113 (BACM AQ-2) have been taken.

The estimated maximum daily construction emissions without mitigation are summarized on Table 3-4. Detailed construction model outputs are presented in Appendix 3.1. Under the assumed scenarios, emissions resulting from the Project construction would not exceed criteria pollutant thresholds established by the SCAQMD.

TABLE 3-4: MAXIMUM DAILY PEAK CONSTRUCTION EMISSIONS SUMMARY (WITHOUT MITIGATION)

Year	Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
2018	3.21	38.45	14.72	0.04	4.66	2.82
2019	23.79	35.94	32.11	0.07	4.56	2.72
Maximum Daily Emissions	**23.79**	**38.45**	**32.11**	**0.07**	**4.66**	**2.82**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

3.5 OPERATIONAL EMISSIONS

Operational activities associated with the proposed Project will result in emissions of NO_x, VOC, PM_{10}, $PM_{2.5}$, SO_x, and CO. Operational emissions would be expected from the following primary sources:

- Area Source Emissions
- Energy Source Emissions
- Mobile Source Emissions
- On-Site Equipment Emissions

3.5.1 AREA SOURCE EMISSIONS

Architectural Coatings

Over a period of time the buildings that are part of this Project will be subject to emissions resulting from the evaporation of solvents contained in paints, varnishes, primers, and other surface coatings as part of Project maintenance. The emissions associated with architectural coatings were calculated using the CalEEMod model.

Consumer Products

Consumer products include, but are not limited to detergents, cleaning compounds, polishes, personal care products, and lawn and garden products. Many of these products contain organic compounds which when released in the atmosphere can react to form ozone and other photochemically reactive pollutants. The emissions associated with use of consumer products were calculated based on defaults provided within the CalEEMod model.

Landscape Maintenance Equipment

Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shedders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. The emissions associated with landscape maintenance equipment were calculated based on assumptions provided in the CalEEMod model.

3.5.2 ENERGY SOURCE EMISSIONS

Combustion Emissions Associated with Natural Gas and Electricity

Electricity and natural gas are used by almost every project. Criteria pollutant emissions are emitted through the generation of electricity and consumption of natural gas. However, because electrical generating facilities for the Project area are located either outside the region (state) or offset through the use of pollution credits (RECLAIM) for generation within the SCAB, criteria pollutant emissions from offsite generation of electricity is generally excluded from the evaluation of significance and only natural gas use is considered. The emissions associated with natural gas use were calculated using the CalEEMod model.

3.5.3 MOBILE SOURCE EMISSIONS

Vehicles

Project-related operational air quality impacts derive predominantly from mobile sources. In this regard, over 85 percent (by weight) of all Project operational-source emissions would be generated by mobile sources (vehicles). Neither the Project Applicant nor the City has any regulatory control over these tail pipe emissions. Rather, vehicle tail pipe source emissions are regulated by CARB and USEPA. As summarized previously herein, as the result of CARB and USEPA actions, Basin-wide vehicular-source emissions have been reduced dramatically over the past years and are expected to further decline as clean vehicle and fuel technologies improve.

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The Project related operational air quality impacts derive primarily from vehicle trips generated by the Project. Trip characteristics available from the report, *Centerpointe Traffic Impact Analysis* (Urban Crossroads 2018) were utilized in this analysis (33).

Per the *Centerpointe Traffic Impact Analysis*, the Project is expected to generate a net total of approximately 486 trip-ends per day (actual vehicles) (33). The Project trip generation includes 100 truck trip-ends per day from the proposed Project site including 37.4% 2-axle trucks, 18.2% 3-axle trucks, and 44.4% 4+-axle trucks for General Light Industrial use, 16.7% 2-axle trucks, 20.7% 3-axle trucks, and 62.6% 4+-axle trucks for Warehousing use.

3.5.3.1 Trip Length

Background

A technical deficiency inherent in calculating the projected vehicle emissions associated with any project is related to the estimation of trip length and vehicle miles traveled (VMT). VMT for a given project is calculated by the total number of vehicle trips to/from the Project x average trip length. This method of estimating VMT for use in calculating vehicle emissions likely results in the over-estimation and double-counting of emissions because, for a distribution warehouse center such as the Project, the land use is likely to attract (divert) existing vehicle trips that are already on the circulation system as opposed to generating new trips. In this regard, the Project would, to a large extent, redistribute existing mobile-source emissions rather than generate additional emissions within the Basin. As such, the estimation of the Centerpointe Project's vehicular-source emissions are likely overstated in that no credit for, or reduction in, emissions is assumed based on diversion of existing trips.

Provided below is a summary of the VMT recommendations of the SCAQMD and SCAG, followed by a description of the methodology used to calculate the VMT rates used in this AQIA.

SCAQMD Recommendation

In the last five years, the SCAQMD has provided numerous comments on the trip length for warehouse/distribution and industrial land use projects (34). The SCAQMD asserts that the model-default trip length in CalEEMod™ and the URBan EMISsions (URBEMIS) 2007 model (version 9.2.4) would underestimate emissions. The SCAQMD asserts that for warehouse, distribution center, and industrial land use projects, most of the heavy-duty trucks would be hauling consumer goods, often from the Ports of Long Beach and Los Angeles (POLA and POLB) and/or to destinations outside of California. The SCAQMD states that for this reason, the CalEEMod™ and the URBan EMISsions model default trip length (approximately 12.6 miles) would not be representative of activities at like facilities. The SCAQMD generally recommends the use of a 40-mile one-way trip length.

Southern California Association of Government (SCAG) Heavy Duty Truck Model

SCAG is comprised of six counties (Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura) and 190 cities in Southern California, and is the organization charged with addressing and resolving short- and long-term regional policy issues. The SCAG region also consists of 14 sub-regional entities recognized by the Regional Council as partners in the regional policy

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planning process. The SCAG region has more than 19 million residents and encompasses more than 38,000 square miles, representing the largest and most diverse region in the country.

SCAG maintains a regional transportation model. In its most recent (2008) transportation validation for the 2003 Regional Model, SCAG indicates the average internal truck trip length for the SCAG region is 5.92 miles for Light Duty Trucks, 13.06 miles for Medium Duty Trucks, and 24.11 miles for Heavy Duty Trucks.

Approach for Analysis of the Project

Trip lengths and VMT estimates employed in this AQIA report generate vehicular-source emissions that would represent a maximum impact scenario. Other CEQA compliance documents for similar land use projects within the region have utilized these same or similar estimates. Though the VMT analyzed in this analysis may differ from the Project's traffic impact analysis, to maintain analytic consistency and establish the maximum impact scenario noted above, the following approach has been utilized in calculating emissions associated with vehicles accessing the Project. This approach is consistent with professional industry practice (35) (36) (37).

For passenger car trips, the CalEEMod default for a one-way trip length of 16.6 miles was assumed. For heavy duty trucks, an average trip length was derived from distances from the Project site to the far edges of the South Coast Air Basin (SCAB) as follows.

- Project site to the Port of Los Angeles/Long Beach: 78 miles;
- Project site to East on State Route 60: 30 miles;
- Project site to San Diego County line: 60 miles;
- Project site to Inland Empire: 50 miles;
- Project site to Perris destinations: 10 miles;
- Project site to Moreno Valley destinations: 10 miles;

Assuming that 50% of all delivery trips will travel to and from the Project and the Port of Los Angeles/Long Beach, 10% go East on the State Route 60, 20% go to San Diego, 10% go to the Inland Empire, 5% go to Perris destinations and the remainder as Moreno Valley destinations. The average truck trip length is calculated as 60 miles.

Two separate model runs were utilized in order to more accurately model emissions resulting from vehicle operations. The first run analyzed passenger car emissions, which incorporated a default trip length of 16.6 miles for passenger cars and a fleet mix of 100% Light-Duty-Auto vehicles (LDA). The second run analyzed truck emissions, which incorporated an average truck trip length of 60 miles.

The vehicle fleet mix, in terms of actual trucks, as derived from the traffic study for the Project is comprised of the following based on land use:

- General Light Industrial: 37.42% LHD, 18.19% MHD, and 44.39% HHD
- Warehouse (without cold storage): 16.67% LHD, 20.69% MHD, and 62.64% HHD

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The estimated emissions resulting from vehicle operations are summarized in Table 3-5 (presented later in this report.) Detailed emission calculations are provided in Appendix 3.2 and 3.3.

Fugitive Dust Related to Vehicular Travel

Vehicles traveling on paved roads would be a source of fugitive emissions due to the generation of road dust inclusive of tire wear particulates. The emissions estimates for travel on paved roads were calculated using the CalEEMod model.

3.5.4 On-Site Equipment Emissions

As part of the Project's design, all on-site indoor and outdoor cargo handling equipment (CHE) (including yard trucks, hostlers, yard goats, pallet jacks, forklifts, and other on-site equipment) will be powered by non-combustion engines (e.g. electric). Since there are no exhaust emissions associated with the equipment, for purposes of the Project, emissions associated with yard trucks and forklifts are not included in the emissions totals.

3.5.5 Operational Emissions Summary

Operational-source emissions are summarized on Table 3-5. Detailed construction model outputs are presented in Appendix 3.2 and 3.3. As indicated, the Project would not exceed the applicable regional thresholds of significance established by the SCAQMD for any criteria pollutant. Therefore, a less than significant impact would occur and no mitigation measures are required.

TABLE 3-5: SUMMARY OF OPERATIONAL EMISSIONS (WITHOUT MITIGATION)

Operational Activities – Summer Scenario	**Emissions (pounds per day)**					
	VOC	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Area Source	4.59	3.50E-04	0.04	0.00	1.40E-04	1.40E-04
Energy Source	0.05	0.45	0.37	2.67E-03	0.03	0.03
Mobile (Trucks)	1.61	43.54	13.09	0.16	5.62	1.78
Mobile (Passenger Cars)	1.12	2.78	41.13	0.15	17.72	4.77
Total Maximum Daily Emissions	**7.37**	**46.77**	**54.64**	**0.32**	**23.37**	**6.58**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
Operational Activities – Winter Scenario	**Emissions (pounds per day)**					
	VOC	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Area Source	4.59	3.50E-04	0.04	0.00	1.40E-04	1.40E-04
Energy Source	0.05	0.45	0.37	2.67E-03	0.03	0.03
Mobile (Trucks)	1.62	44.95	13.66	0.17	5.62	1.78
Mobile (Passenger Cars)	1.03	3.02	35.72	0.14	17.72	4.77
Total Maximum Daily Emissions	**7.29**	**48.42**	**49.79**	**0.31**	**23.37**	**6.58**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

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3.6 LOCALIZED SIGNIFICANCE- CONSTRUCTION ACTIVITY

BACKGROUND ON LOCALIZED SIGNIFICANCE THRESHOLD (LST) DEVELOPMENT

The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (Methodology) (19). The SCAQMD has established that impacts to air quality are significant if there is a potential to contribute or cause localized exceedances of the federal and/or state ambient air quality standards (NAAQS/CAAQS). Collectively, these are referred to as Localized Significance Thresholds (LSTs).

The significance of localized emissions impacts depends on whether ambient levels in the vicinity of any given project are above or below State standards. In the case of CO and NO_2, if ambient levels are below the standards, a project is considered to have a significant impact if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a state or federal standard, then project emissions are considered significant if they increase ambient concentrations by a measurable amount. This would apply to PM_{10} and $PM_{2.5}$; both of which are non-attainment pollutants.

The SCAQMD established LSTs in response to the SCAQMD Governing Board's Environmental Justice Initiative I-4. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest residence or sensitive receptor. The SCAQMD states that lead agencies can use the LSTs as another indicator of significance in its air quality impact analyses.

LSTs were developed in response to environmental justice and health concerns raised by the public regarding exposure of individuals to criteria pollutants in local communities. To address the issue of localized significance, the SCAQMD adopted LSTs that show whether a project would cause or contribute to localized air quality impacts and thereby cause or contribute to potential localized adverse health effects. The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (LST Methodology) (38).

APPLICABILITY OF LSTS FOR THE PROJECT

For this Project, the appropriate Source Receptor Area (SRA) for the LST is the Perris Valley monitoring station (SRA 24). LSTs apply to carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter ≤ 10 microns (PM_{10}), and particulate matter ≤ 2.5 microns ($PM_{2.5}$). The SCAQMD produced look-up tables for projects less than or equal to 5 acres in size.

In order to determine the appropriate methodology for determining localized impacts that could occur as a result of Project-related construction, the following process is undertaken:

- The CalEEMod model is utilized to determine the maximum daily on-site emissions that will occur during construction activity.
- The SCAQMD's Fact Sheet for Applying CalEEMod to Localized Significance Thresholds (21) is used to determine the maximum site acreage that is actively disturbed based on the construction equipment fleet and equipment hours as estimated in CalEEMod.

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- If the total acreage disturbed is less than or equal to five acres per day, then the SCAQMD's screening look-up tables are utilized to determine if a Project has the potential to result in a significant impact (the SCAQMD recommends that Projects exceeding the screening look-up tables undergo dispersion modeling to determine actual impacts). The look-up tables establish a maximum daily emissions threshold in pounds per day that can be compared to CalEEMod outputs.

EMISSIONS CONSIDERED

SCAQMD's Methodology clearly states that "off-site mobile emissions from the Project should NOT be included in the emissions compared to LSTs (39)." Therefore, for purposes of the construction LST analysis only emissions included in the CalEEMod "on-site" emissions outputs were considered.

MAXIMUM DAILY DISTURBED-ACREAGE

Table 3-6 is used to determine the maximum daily disturbed-acreage during site grading for purposes of modeling localized emissions. Based on Table 3-6, the proposed Project could actively disturb approximately 0.5 acres per day during the site preparation phase and 2 acres per day during the grading phase of construction.

TABLE 3-6: MAXIMUM DAILY DISTURBED-ACREAGE

Construction Phase	Equipment Type	Equipment Quantity	Acres graded per 8-hour day	Operating Hours per Day	Acres graded per day
Site Preparation	Crawler Tractors	1	0.5	8	0.5
	Graders	0	0.5	8	0
	Rubber Tired Dozers	0	0.5	8	0
	Scrapers	0	1	8	0
Total acres graded per day during Site Preparation					0.5
Construction Phase	**Equipment Type**	**Equipment Quantity**	**Acres graded per 8-hour day**	**Operating Hours per Day**	**Acres graded per day**
Grading	Crawler Tractors	1	0.5	8	0.5
	Graders	2	0.5	8	1
	Rubber Tired Dozers	1	0.5	8	0.5
	Scrapers	0	1	8	0
Total acres graded per day during Grading					2

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Sensitive Receptors

Some people are especially sensitive to air pollution and are given special consideration when evaluating air quality impacts from projects. These groups of people include children, the elderly, persons with preexisting respiratory or cardiovascular illness, and athletes and others who engage in frequent exercise. Structures that house these persons or places where they gather to exercise are defined as "sensitive receptors". The nearest sensitive receptor is an existing residential tract located approximately 794 feet/242.01 meters north of the Project site.

To assess the potential for long-term operational and short-term construction air quality impacts, the following four receptor locations, as shown on Exhibit 3-A, were identified as representative locations for analysis. Sensitive receptors are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Representative sensitive receptors in the Project study area include single-family residential homes and existing office uses as described below:

R1: Located approximately 794 feet north of the Project site, R1 represents existing residential homes north of Alessandro Boulevard.

R2: Location R2 represents existing Riverside County Department of Waste Resources facilities and offices at roughly 146 feet south of the Project site.

R3: Location R3 represents the existing offices located west of the Project site at approximately 146 feet on Frederick Street.

R4: Located approximately 109 feet west of the Project site, R4 represents the existing Moreno Valley City Hall building and offices.

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EXHIBIT 3-A: RECEIVER LOCATIONS

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CONSTRUCTION-SOURCE EMISSIONS LST ANALYSIS

Since the total acreage disturbed is less than five acres per day for the site preparation and grading phase of construction, the SCAQMD's screening look-up tables are utilized in determining impacts. A 242.01-meter receptor distance is conservatively utilized as a screening threshold to determine the LSTs for emissions of CO, NO_2, PM_{10}, and $PM_{2.5}$.

Table 3-7 identifies the localized impacts at the nearest receptor location in the vicinity of the Project. Outputs from the model runs for construction LSTs are provided in Appendix 3.1. It should be noted that credit for BACMs AQ-1 and AQ-2 has been taken. As shown, localized construction emissions would not exceed the applicable SCAQMD LSTs for any criteria pollutants. Therefore, a less than significant impact is expected.

TABLE 3-7: LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION

On-Site Site Preparation Emissions	Emissions (pounds per day)			
	NO_x	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**2.63**	**2.34**	**0.19**	**0.17**
SCAQMD Localized Threshold	335	4,359	67	20
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**
On-Site Grading Emissions	**Emissions (pounds per day)**			
	NO_x	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**38.39**	**14.13**	**4.51**	**2.78**
SCAQMD Localized Threshold	422	7,070	91	33
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**

3.7 LOCALIZED SIGNIFICANCE – LONG-TERM OPERATIONAL ACTIVITY

Generally, the maximum acreage would be the Project's building square footage, which consists of 163,218 square feet (sf) of warehouse (without cold storage) use (80 percent of the total square footage) and 40,804 sf of general light industrial use (20 percent of the total square footage) for a total of 204,022 sf within a single building , or 4.68 acres. However, for the purposes of this analysis, and as a conservative measure, the SCAQMD look-up tables of 5-acres are used to determine localized significance thresholds for operational activity. Table 3-8 shows the calculated emissions for the Project's operational activities compared with the applicable LSTs. The LST analysis includes on-site sources only; however, the CalEEMod outputs do not separate on-site and off-site emissions from mobile sources. In an effort to establish a maximum potential impact scenario for analytic purposes, the emissions shown on Table 3-9 represent all on-site Project-related stationary (area) sources and five percent (5%) of the Project-related mobile sources. Considering that the weighted trip length used in CalEEMod™ for the Project is approximately 16.6 miles for passenger cars and 60.0 miles for trucks, 5% of this total would represent an on-site travel distance of approximately 0.83 mile/4,383 feet for each passenger car and approximately 3.0 miles/ 15,840 feet for each truck. Thus the 5% assumption is conservative and would tend to overstate the actual impact. Modeling based on these assumptions

demonstrates that even within broad encompassing parameters, Project operational-source emissions would not exceed applicable LSTs.

As previously noted, a 242.01-meter receptor distance is utilized to determine the LSTs for emissions of CO, NO_2, PM_{10}, and $PM_{2.5}$.

LOCALIZED THRESHOLDS FOR OPERATIONAL ACTIVITY

Applicable localized thresholds from the SCAQMD's mass-rate LST lookup tables for a five-acre project site are as follows:

- NOx: 488 pounds per day;
- CO: 6,860 pounds per day.
- PM_{10}: 23 pounds per day; or
- $PM_{2.5}$: 8 pounds per day.

If emissions exceed the applicable LSTs for the Project site, then additional dispersion modeling needs to be conducted to determine if there is an actual exceedance of the AAQS.

TABLE 3-8: LOCALIZED SIGNIFICANCE OPERATIONS SUMMARY

Peak Operational Emissions	Emissions (pounds per day)			
	NO_x	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**2.76**	**3.12**	**1.20**	**0.36**
SCAQMD Localized Threshold	488	6,860	23	8
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**

As shown on Table 3-8 operational emissions will not exceed the LST thresholds for the nearest sensitive receptor. Therefore, the Project will have a less than significant localized impact during operational activity.

3.8 CO "HOT SPOT" ANALYSIS

As discussed below, the Project would not result in potentially adverse CO concentrations or "hot spots." Further, detailed modeling of Project-specific carbon monoxide (CO) "hot spots" is not needed to reach this conclusion.

An adverse CO concentration, known as a "hot spot", would occur if an exceedance of the state one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur. At the time of the 1993 Handbook, the SCAB was designated nonattainment under the California AAQS and National AAQS for CO (40).

It has long been recognized that CO hotspots are caused by vehicular emissions, primarily when idling at congested intersections. In response, vehicle emissions standards have become increasingly stringent in the last twenty years. Currently, the allowable CO emissions standard in California is a maximum of 3.4 grams/mile for passenger cars (there are requirements for certain vehicles that are more stringent). With the turnover of older vehicles, introduction of cleaner

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fuels, and implementation of increasingly sophisticated and efficient emissions control technologies, CO concentration in the SCAB is now designated as attainment, as previously noted in Table 2-2. Also, CO concentrations in the Project vicinity have steadily declined, as indicated by historical emissions data presented previously at Table 2-3.

To establish a more accurate record of baseline CO concentrations affecting the SCAB, SCAQMD conducted a CO "hot spot" analysis at four busy intersections in Los Angeles at the peak morning and afternoon time periods. The results of the SCAQMD CO "hot spot" analysis did not predict any violation of CO standards, as shown on Table 3-9.

TABLE 3-9: CO MODEL RESULTS

Intersection Location	Carbon Monoxide Concentrations (ppm)		
	Morning 1-hour	Afternoon 1-hour	8-hour
Wilshire-Veteran	4.6	3.5	4.2
Sunset-Highland	4	4.5	3.9
La Cienega-Century	3.7	3.1	5.8
Long Beach-Imperial	3	3.1	9.3

Based on the SCAQMD's 2003 AQMP and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan), peak carbon monoxide concentrations in the SCAB were a result of unusual meteorological and topographical conditions and not a result of traffic volumes and congestion at a particular intersection. As evidence of this, for example, 9.3 ppm 8-hr CO concentration measured at the Long Beach Blvd. and Imperial Hwy. intersection (highest CO generating intersection within the SCAQMD CO "hot spot" analysis), only 0.7 ppm was attributable to the traffic volumes and congestion at this intersection; the remaining 8.6 ppm were due to the ambient air measurements at the time the 2003 AQMP was prepared (40). In contrast, the ambient 8-hr CO concentration within the Project study area is estimated at 1.4 ppm—1.6 ppm (please refer to previous Table 2-3). Therefore, even if the traffic volumes for the proposed Project were double or even triple of the traffic volumes generated at the Long Beach Blvd. and Imperial Hwy. intersection, coupled with the on-going improvements in ambient air quality, the Project would not be capable of resulting in a CO "hot spot" at any study area intersections.

Similar considerations are also employed by other Air Districts when evaluating potential CO concentration impacts. More specifically, the Bay Area Air Quality Management District (BAAQMD) concludes that under existing and future vehicle emission rates, a given project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact (41).

Traffic volumes generating the CO concentrations for the SCAQMD CO "hot spot" analysis, shown on Table 3-10. The busiest intersection evaluated was that at Wilshire Blvd. and Veteran Ave., which has a daily traffic volume of approximately 100,000 vehicles per day. The 2003 AQMP estimated that the 1-hour concentration for this intersection was 4.6 ppm; this indicates that, should the daily traffic volume increase four times to 400,000 vehicles per day, CO concentrations (4.6 ppm x 4= 18.4 ppm) would still not likely exceed the most stringent 1-hour CO standard (20.0

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ppm).[5] At buildout of the Project, the highest average daily trips on a segment of road would be 80,600 daily trips on east Frederick Street and Cactus Avenue which is lower than the highest daily traffic volumes generated at the busiest intersection in the SCAQMD CO "hot spot" analysis (42).

TABLE 3-10: TRAFFIC VOLUMES FOR INTERSECTIONS EVALUATED IN AQMP

Intersection Location	Peak Traffic Volumes (vph)				
	Eastbound (AM/PM)	Westbound (AM/PM)	Southbound (AM/PM)	Northbound (AM/PM)	Total (AM/PM)
Wilshire-Veteran	4,954/2,069	1,830/3,317	721/1,400	560/933	8,062/7,719
Sunset-Highland	1,417/1,764	1,342/1,540	2,304/1,832	1,551/2,238	6,614/5,374
La Cienega-Century	2,540/2,243	1,890/2,728	1,384/2,029	821/1,674	6,634/8,674
Long Beach-Imperial	1,217/2,020	1,760/1,400	479/944	756/1,150	4,212/5,514

The proposed Project considered herein would not produce the volume of traffic required to generate a CO "hot spot" either in the context of the 2003 SCAQMD CO hot spot study, or based on representative BAAQMD CO threshold considerations, as shown on Table 3-11. Therefore, CO "hot spots" are not an environmental impact of concern for the proposed Project. Localized air quality impacts related to mobile-source emissions would therefore be less than significant.

TABLE 3-11: PROJECT PEAK HOUR TRAFFIC VOLUMES

Intersection Location	Peak Traffic Volumes (vph)				
	Northbound (AM/PM)	Southbound (AM/PM)	Eastbound (AM/PM)	Westbound (AM/PM)	Total (AM/PM)
Frederick St./Alessandro Bl.	533/710	905/1,292	1,081/2,704	2,403/1,853	4,922/6,560
Frederick St./Dwy. 1	524/692	521/906	0/0	2/12	1,048/1,610
Frederick St./Calle San Juan De Los Lagos/Dwy. 2	590/509	521/907	65/281	6/27	1,182/1,724
Frederick St./Cactus Av.	0/0	372/916	2,124/3,507	3,449/2,468	5,945/6,892

Source: Centerpointe Traffic Impact Analysis (Urban Crossroads, Inc., 2018).

3.9 AIR QUALITY MANAGEMENT PLANNING

The Project site is located within the SCAB, which is characterized by relatively poor air quality. The SCAQMD has jurisdiction over an approximately 10,743 square-mile area consisting of the four-county Basin and the Los Angeles County and Riverside County portions of what use to be referred to as the Southeast Desert Air Basin. In these areas, the SCAQMD is principally responsible for air pollution control, and works directly with the Southern California Association of Governments (SCAG), county transportation commissions, local governments, as well as state and federal agencies to reduce emissions from stationary, mobile, and indirect sources to meet state and federal ambient air quality standards.

5 Based on the ratio of the CO standard (20.0 ppm) and the modeled value (4.6 ppm).

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Currently, these state and federal air quality standards are exceeded in most parts of the Basin. In response, the SCAQMD has adopted a series of Air Quality Management Plans (AQMPs) to meet the state and federal ambient air quality standards. AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy.

In March 2017, the AQMD released the Final 2016 AQMP. The 2016 AQMP continues to evaluate current integrated strategies and control measures to meet the NAAQS, as well as, explore new and innovative methods to reach its goals. Some of these approaches include utilizing incentive programs, recognizing existing co-benefit programs from other sectors, and developing a strategy with fair-share reductions at the federal, state, and local levels (43). Similar to the 2012 AQMP, the 2016 AQMP incorporates scientific and technological information and planning assumptions, including the 2016 RTP/SCS and updated emission inventory methodologies for various source categories (44). The Project's consistency with the AQMP will be determined using the 2016 AQMP is discussed below:

Criteria for determining consistency with the AQMP are defined in Chapter 12, Section 12.2 and Section 12.3 of the SCAQMD's CEQA Air Quality Handbook (1993) (24). These indicators are discussed below:

- Consistency Criterion No. 1: The proposed Project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.

Construction Impacts

The violations that Consistency Criterion No. 1 refers to are the CAAQS and NAAQS. CAAQS and NAAQS violations would occur if localized significance thresholds (LSTs) or regional significance thresholds were exceeded. The Project would not exceed the applicable LST thresholds or regional significance thresholds for construction activity. Therefore, the Project would not conflict with the AQMP according to this criterion.

Operational Impacts

The Project would not exceed the applicable LST thresholds for operational activity. Therefore, the Project would not conflict with the AQMP according to this criterion.

On the basis of the preceding discussion, the Project is consistent with the first criterion.

- Consistency Criterion No. 2: The Project will not exceed the assumptions in the AQMP based on the years of Project build-out phase.

Overview

The 2016 AQMP demonstrates that the applicable ambient air quality standards can be achieved within the timeframes required under federal law. Growth projections from local general plans adopted by cities in the district are provided to the Southern California Association of Governments (SCAG), which develops regional growth forecasts, which are then used to develop

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future air quality forecasts for the AQMP. Development consistent with the growth projections in City of Moreno Valley General Plan Update is considered to be consistent with the AQMP.

Construction Impacts

Peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance. Irrespective of the site's land use designation, development of the site to its maximum potential would likely occur, with disturbance of the entire site occurring during construction activities.

Operational Impacts

The Project site is currently vacant. The City of Moreno Valley's General Plan Land Use designation for the Project site is Office (O). The primary purpose of areas designated as Office is to provide for office uses, including, administrative, professional, legal, medical and financial offices. The Project is proposed to consist of up to 163,218 square feet (sf) of warehouse (without cold storage) use (80 percent of the total square footage) and 40,804 sf of general light industrial use (20 percent of the total square footage) for a total of 204,022 sf within a single building. The Project's industrial land use and development are not consistent with the land use designation stated in the General Plan. As such, the Project would require a zoning change. However, since the Project construction and operational regional and localized emissions do not exceed the thresholds of significance, the Project would not cause an exceedance of an air quality violation and is therefore considered consistent with this criterion.

On the basis of the preceding discussion, the Project is determined to be consistent with the second criterion.

AQMP Consistency Conclusion

The Project would not result in or cause NAAQS or CAAQS violations. Although the Project would not be consistent with the site land use and zoning designations, construction and operational-source impacts would not exceed the applicable SCAQMD regional and localized thresholds. As such, the Project would not have a significant impact with respect to the AQMP.

3.10 Potential Impacts to Sensitive Receptors

The potential impact of Project-generated air pollutant emissions at sensitive receptors has also been considered. Sensitive receptors can include uses such as long term health care facilities, rehabilitation centers, and retirement homes. Residences, schools, playgrounds, child care centers, and athletic facilities can also be considered as sensitive receptors.

Results of the LST analysis indicate that, with application of mitigation, the Project will not exceed the SCAQMD localized significance thresholds during construction. Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations during Project construction.

Results of the LST analysis indicate that the Project will not exceed the SCAQMD localized significance thresholds during operational activity. Further Project traffic would not create or

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result in a CO "hotspot." Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations as the result of Project operations.

3.11 ODORS

The potential for the Project to generate objectionable odors has also been considered. Land uses generally associated with odor complaints include:

- Agricultural uses (livestock and farming)
- Wastewater treatment plants
- Food processing plants
- Chemical plants
- Composting operations
- Refineries
- Landfills
- Dairies
- Fiberglass molding facilities

The Project does not propose any such uses or activities that would result in potentially significant operational-source odor impacts. Potential sources of operational odors generated by the Project would include disposal of miscellaneous commercial refuse. Consistent with City requirements, all Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with solid waste regulations, thereby precluding substantial generation of odors due to temporary holding of refuse on-site Moreover, SCAQMD Rule 402 acts to prevent occurrences of odor nuisances (1).

3.12 CUMULATIVE IMPACTS

The Project area is designated as an extreme non-attainment area for ozone, and a non-attainment area for PM_{10}, $PM_{2.5}$, and lead.

The SCAQMD has published a report on how to address cumulative impacts from air pollution: *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution* (45). In this report the SCAQMD clearly states (Page D-3):

"…the SCAQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for toxic air contaminant (TAC) emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.

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Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."

Therefore, this analysis assumes that individual projects that do not generate operational or construction emissions that exceed the SCAQMD's recommended daily thresholds for project-specific impacts would also not cause a cumulatively considerable increase in emissions for those pollutants for which the Basin is in nonattainment, and, therefore, would not be considered to have a significant, adverse air quality impact. Alternatively, individual project-related construction and operational emissions that exceed SCAQMD thresholds for project-specific impacts would be considered cumulatively considerable.

Construction Impacts

Project construction-source air pollutant emissions would not exceed the SCAQMD regional thresholds for any criteria pollutant. Therefore, the Project would not result in a cumulatively considerable significant impact with respect to construction activity.

Operational Impacts

Project operational-source air pollutant emissions would not exceed applicable SCAQMD regional thresholds. Therefore, the Project would not result in a cumulatively considerable significant impact with respect to operational activity.

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4 FINDINGS & CONCLUSIONS

CONSTRUCTION-SOURCE EMISSIONS

REGIONAL IMPACTS

For regional emissions, the Project would not exceed the numerical thresholds of significance established by the SCAQMD for any criteria pollutants. Therefore, a less than significant impact would occur for Project-related construction-source emissions.

LOCALIZED IMPACTS

For localized emissions, the Project would not exceed the SCAQMD's localized significance threshold for any criteria pollutant. Therefore, a less than significant impact would occur.

ODORS

Established requirements addressing construction equipment operations, and construction material use, storage, and disposal requirements act to minimize odor impacts that may result from construction activities. Moreover, construction-source odor emissions would be temporary, short-term, and intermittent in nature and would not result in persistent impacts that would affect substantial numbers of people. Potential construction-source odor impacts are therefore considered less-than-significant.

OPERATIONAL-SOURCE EMISSIONS

REGIONAL IMPACTS

For regional emissions, the Project would not exceed the numerical thresholds of significance established by the SCAQMD. Therefore, Project operational-source emissions would be considered less than significant.

LOCALIZED IMPACTS

For localized emissions, the Project would not exceed the numerical thresholds established by the SCAQMD for any criteria pollutants. The proposed Project would not result in a significant CO "hotspot" as a result of Project related traffic during ongoing operations.

Project operational-source emissions would not conflict with the applicable AQMP.

Odors

Substantial odor-generating sources include land uses such as agricultural activities, feedlots, wastewater treatment facilities, landfills or various heavy industrial uses. The Project does not propose any such uses or activities that would result in potentially significant operational-source odor impacts. Potential sources of operational odors generated by the Project would include disposal of miscellaneous refuse. Moreover, SCAQMD Rule 402 acts to prevent occurrences of odor nuisances (1). Consistent with City requirements, all Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with solid waste

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regulations. Potential operational-source odor impacts are therefore considered less-than-significant.

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6 CERTIFICATION

The contents of this air study report represent an accurate depiction of the environmental impacts associated with the proposed Centerpointe Project. The information contained in this air quality impact report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 336-5987.

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AEP – Association of Environmental Planners
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ASTM – American Society for Testing and Materials

PROFESSIONAL CERTIFICATIONS

Environmental Site Assessment – American Society for Testing and Materials • June, 2013
Planned Communities and Urban Infill – Urban Land Institute • June, 2011
Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April, 2008
Principles of Ambient Air Monitoring – California Air Resources Board • August, 2007
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APPENDIX 2.1:

STATE/FEDERAL ATTAINMENT STATUS OF CRITERIA POLLUTANTS

TABLE 2-3

National Ambient Air Quality Standards (NAAQS) Attainment Status - South Coast Air Basin

Criteria Pollutant	Averaging Time	Designation[a]	Attainment Date[b]
Ozone (O_3)	(1979) **1-Hour** (0.12 ppm)[c]	Nonattainment ("extreme")	2/26/2023 (revised deadline)
	(2015) **8-Hour** (0.070 ppm)[d]	Pending – Expect Nonattainment ("extreme")	Pending (beyond 2032)
	(2008) **8-Hour** (0.075 ppm)[d]	Nonattainment ("extreme")	7/20/2032
	(1997) **8-Hour** (0.08 ppm)[d]	Nonattainment ("extreme")	6/15/2024
PM2.5[e]	(2006) **24-Hour** (35 µg/m³)	Nonattainment ("serious")	12/31/2019
	(2012) **Annual** (12.0 µg/m³)	Nonattainment ("moderate")	12/31/2021
	(1997) **Annual** (15.0 µg/m³)	Attainment (final determination pending)	4/5/2015 (attained 2013)
PM10[f]	(1987) **24-hour** (150 µg/m³)	Attainment (Maintenance)	7/26/2013 (attained)
Lead (Pb)[g]	(2008) **3-Months Rolling** (0.15 µg/m³)	Nonattainment (Partial) (Attainment determination to be requested)	12/31/2015
CO	(1971) **1-Hour** (35 ppm)	Attainment (Maintenance)	6/11/2007 (attained)
	(1971) **8-Hour** (9 ppm)	Attainment (Maintenance)	6/11/2007 (attained)
NO_2[h]	(2010) **1-Hour** (100 ppb)	Unclassifiable/Attainment	N/A (attained)
	(1971) **Annual** (0.053 ppm)	Attainment (Maintenance)	9/22/1998 (attained)
SO_2[i]	(2010) **1-Hour** (75 ppb)	Designations Pending (expect Unclassifiable/Attainment)	N/A (attained)
	(1971) **24-Hour** (0.14 ppm) (1971) **Annual** (0.03 ppm)	Unclassifiable/Attainment	3/19/1979 (attained)

a) U.S. EPA often only declares Nonattainment areas; everywhere else is listed as Unclassifiable/Attainment or Unclassifiable

b) A design value below the NAAQS for data through the full year or smog season prior to the attainment date is typically required for an attainment demonstration

c) The 1979 1-hour ozone NAAQS (0.12 ppm) was revoked, effective 6/15/05 ; however, the Basin has not attained this standard and therefore has some continuing obligations with respect to the revoked standard; original attainment date was 11/15/2010; the revised attainment date is 2/6/23

d) The 2008 8-hour ozone NAAQS (0.075 ppm) was revised to 0.070 ppm, effective 12/28/15 with classifications and implementation goals to be finalized by 10/1/17; the 1997 8-hour ozone NAAQS (0.08 ppm) was revoked in the 2008 ozone NAAQS implementation rule, effective 4/6/15; there are continuing obligations under the revoked 1997 and revised 2008 ozone NAAQS until they are attained

e) The attainment deadline for the 2006 24-hour PM2.5 NAAQS was 12/31/15 for the former "moderate" classification; U.S.EPA approved reclassification to "serious," effective 2/12/16 with an attainment deadline of 12/31/2019; the 2012 (proposal year) annual PM2.5 NAAQS was revised on 1/15/13, effective 3/18/13, from 15 to 12 µg/m³; new annual designations were final 1/15/15, effective 4/15/15; on July 25, 2016 U.S. EPA finalized a determination that the Basin attained the 1997 annual (15.0 µg/m³) and 24-hour PM2.5 (65 µg/m³) NAAQS, effective August 24, 2016

f) The annual PM10 NAAQS was revoked, effective 12/18/06; the 24-hour PM10 NAAQS deadline was 12/31/2006; the Basin's Attainment Re-designation Request and PM10 Maintenance Plan was approved by U.S. EPA on 6/26/13, effective 7/26/13

g) Partial Nonattainment designation – Los Angeles County portion of the Basin only for near-source monitors; expect to remain in attainment based on current monitoring data; attainment re-designation request pending

h) New 1-hour NO_2 NAAQS became effective 8/2/10, with attainment designations 1/20/12; annual NO_2 NAAQS retained

i) The 1971 annual and 24-hour SO2 NAAQS were revoked, effective 8/23/10; however, these 1971 standards will remain in effect until one year after U.S. EPA promulgates area designations for the 2010 SO2 1-hour NAAQS; final area designations expected by 12/31/20 due to new source-specific monitoring requirements; Basin expected to be in attainment due to ongoing clean data

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TABLE 2-4

National Ambient Air Quality Standards (NAAQS) Attainment Status
Coachella Valley Portion of the Salton Sea Air Basin

Criteria Pollutant	Averaging Time	Designation[a]	Attainment Date[b]
Ozone (O_3)	(1979) **1-Hour** (0.12 ppm)[c]	Attainment	11/15/2007 (attained 12/31/2013)
	(2015) **8-Hour** (0.070 ppm)[d]	Pending – Expect Nonattainment (Severe)	Pending
	(2008) **8-Hour** (0.075 ppm)[d]	Nonattainment (Severe-15)	7/20/2027
	(1997) **8-Hour** (0.08 ppm)[d]	Nonattainment (Severe-15)	6/15/2019
PM2.5[e]	(2006) **24-Hour** (35 µg/m^3)	Unclassifiable/Attainment	N/A (attained)
	(2012) **Annual** (12.0 µg/m^3)	Unclassifiable/Attainment	N/A (attained)
	(1997) **Annual** (15.0 µg/m^3)	Unclassifiable/Attainment	N/A (attained)
PM10[f]	(1987) **24-hour** (150 µg/m^3)	Nonattainment ("serious")	12/31/2006
Lead (Pb)	(2008) **3-Months Rolling** (0.15 µg/m^3)	Unclassifiable/Attainment	Unclassifiable/ Attainment
CO	(1971) **1-Hour** (35 ppm)	Unclassifiable/Attainment	N/A (attained)
	(1971) **8-Hour** (9 ppm)	Unclassifiable/Attainment	N/A (attained)
NO_2[g]	(2010) **1-Hour** (100 ppb)	Unclassifiable/Attainment	N/A (attained)
	(1971) **Annual** (0.053 ppm)	Unclassifiable/Attainment	N/A (attained)
SO_2[h]	(2010) **1-Hour** (75 ppb)	Designations Pending	N/A
	(1971) **24-Hour** (0.14 ppm) (1971) **Annual** (0.03 ppm)	Unclassifiable/Attainment	Unclassifiable/ Attainment

a) U.S. EPA often only declares Nonattainment areas; everywhere else is listed as Unclassifiable/Attainment or Unclassifiable

b) A design value below the NAAQS for data through the full year or smog season prior to the attainment date is typically required for an attainment demonstration

c) The 1979 1-hour ozone NAAQS (0.12 ppm) was revoked, effective 6/15/05; the Southeast Desert Modified Air Quality Management Area, including the Coachella Valley, had not timely attained this standard by the 11/15/07 "severe-17" deadline, based on 2005-2007 data; on 8/25/14, U.S. EPA proposed a clean data finding based on 2011–2013 data and a determination of attainment for the former 1-hour ozone NAAQS for the Southeast Desert nonattainment area; this rule was finalized by U.S. EPA on 4/15/15, effective 5/15/15, that included preliminary 2014 data

d) The 2008 8-hour ozone NAAQS (0.075 ppm) was revised to 0.070 ppm, effective 12/28/15 with classifications and implementation goals to be finalized by 10/1/17; the 1997 8-hour ozone NAAQS (0.08 ppm) was revoked in the 2008 ozone NAAQS implementation rule, effective 4/6/15; there are continuing obligations under the 1997 and 2008 ozone NAAQS until they are attained

e) The annual PM2.5 standard was revised on 1/15/13, effective 3/18/13, from 15 to 12 µg/m^3

f) The annual PM10 standard was revoked, effective 12/18/06; the 24-hour PM10 NAAQS attainment deadline was 12/31/2006; the Coachella Valley Attainment Re-designation Request and PM10 Maintenance Plan was postponed by U.S. EPA pending additional monitoring and analysis in the southeastern Coachella Valley

g) New 1-hour NO_2 NAAQS became effective 8/2/10; attainment designations 1/20/12; annual NO_2 NAAQS retained

h) The 1971 Annual and 24-hour SO_2 NAAQS were revoked, effective 8/23/10; however, these 1971 standards will remain in effect until one year after U.S. EPA promulgates area designations for the 2010 SO_2 1-hour standard; final area designations expected by 12/31/2020 with SSAB expected to be designated Unclassifiable/Attainment

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

The current status of CAAQS attainment for the pollutants with State standards is presented in Table 2-5 for the Basin and the Riverside County portion of the SSAB (Coachella Valley).

TABLE 2-5

California Ambient Air Quality Standards (CAAQS) Attainment Status
South Coast Air Basin and Coachella Valley portion of Salton Sea Air Basin

Pollutant	Averaging Time and Level[b]	Designation[a]	
		South Coast Air Basin	Coachella Valley
Ozone (O_3)	**1-Hour** (0.09 ppm)[c]	Nonattainment	Nonattainment
	8-Hour (0.070 ppm)[d]	Nonattainment	Nonattainment
PM2.5	**Annual** (12.0 µg/m^3)	Nonattainment	Attainment
PM10	**24-Hour** (50 µg/m^3)	Nonattainment	Nonattainment
	Annual (20 µg/m^3)	Nonattainment	Nonattainment
Lead (Pb)	**30-Day Average** (1.5 µg/m^3)	Attainment	Attainment
CO	**1-Hour** (20 ppm)	Attainment	Attainment
	8-Hour (9.0 ppm)	Attainment	Attainment
NO_2	**1-Hour** (0.18 ppm)	Attainment	Attainment
	Annual (0.030 ppm)	Attainment	Attainment
SO_2	**1-Hour** (0.25 ppm)	Attainment	Attainment
	24-Hour (0.04 ppm)	Attainment	Attainment
Sulfates	**24-Hour** (25 µg/m^3)	Attainment	Attainment
H_2S[c]	**1-Hour** (0.03 ppm)	Unclassified	Unclassified [c)]

a) CA State designations shown were updated by CARB in 2016, based on the 2013–2015 3-year period; stated designations are based on a 3-year data period after consideration of outliers and exceptional events; Source: http://www.arb.ca.gov/desig/statedesig.htm#current

b) CA State standards, or CAAQS, for ozone, CO, SO_2, NO_2, PM10 and PM2.5 are values not to be exceeded; lead, sulfates, and H_2S standards are values not to be equaled or exceeded; CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations

c) SCAQMD began monitoring H_2S in the southeastern Coachella Valley in November 2013 due to odor events related to the Salton Sea; three full years of data are not yet available for a State designation, but nonattainment is anticipated for the H_2S CAAQS in at least part of the Coachella Valley

The 1979 federal 1-hour ozone standard (0.12 ppm) was revoked by the U.S. EPA and replaced by the 8-hour average ozone standard (0.08 ppm), effective June 15, 2005. However, the Basin and the former Southeast Desert Modified Air Quality Management Area (which included the Coachella Valley) had not attained the 1-hour federal ozone NAAQS by the attainment dates in 2010 and 2007, respectively, and, therefore, had continuing obligations under the former standard. On August 25, 2014, U.S. EPA

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 3.1:

CALEEMOD CONSTRUCTION EMISSIONS MODEL OUTPUTS (UNMITIGATED)

Centerpointe (Construction - Unmitigated)

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	163.22	1000sqft	3.75	163,218.00	0
General Light Industry	40.80	1000sqft	0.94	40,804.00	0
Parking Lot	164.00	Space	3.11	65,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Project Characteristics -

Land Use - Lot acreage obtained from the Site Plan. Total Lot acreage is 8.78 acres.

Construction Phase - Construction schedule adjsuted as per direction provided by the Client.

Off-road Equipment - Equipment adjusted as per information provided by the Client.

Off-road Equipment - Equipment adjusted as per information provided by the Client.

Off-road Equipment - Equipment adjusted as per information provided by the Client.

Off-road Equipment - Equipment adjusted as per information provided by the Client.

Off-road Equipment - Hours are based on an 8-hour workday.

Grading -

Architectural Coating - Rule 1113

Vehicle Trips - Operations Run Only.

Energy Use - Operations Run Only.

Water And Wastewater - Operations Run Only.

Solid Waste - Operations Run Only.

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	102,011.00	102,010.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	306,033.00	306,030.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	50.00
tblArchitecturalCoating	EF_Parking	100.00	50.00
tblAreaCoating	Area_Nonresidential_Exterior	102011	102010
tblAreaCoating	Area_Nonresidential_Interior	306033	306030
tblConstructionPhase	NumDays	20.00	50.00
tblConstructionPhase	NumDays	230.00	200.00
tblConstructionPhase	PhaseEndDate	2/28/2020	9/6/2019

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

tblConstructionPhase	PhaseEndDate	1/3/2020	10/25/2019
tblConstructionPhase	PhaseEndDate	2/15/2019	1/18/2019
tblConstructionPhase	PhaseEndDate	1/31/2020	8/28/2019
tblConstructionPhase	PhaseEndDate	1/18/2019	12/21/2018
tblConstructionPhase	PhaseStartDate	2/1/2020	7/1/2019
tblConstructionPhase	PhaseStartDate	2/16/2019	1/19/2019
tblConstructionPhase	PhaseStartDate	1/19/2019	12/22/2018
tblConstructionPhase	PhaseStartDate	1/4/2020	8/1/2019
tblConstructionPhase	PhaseStartDate	1/5/2019	12/10/2018
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	0.35	0.00
tblEnergyUse	LightingElect	1.17	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	0.82	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	0.03	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	0.37	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	2.00	0.00
tblLandUse	LotAcreage	1.48	3.11
tblOffRoadEquipment	LoadFactor	0.43	0.43
tblOffRoadEquipment	LoadFactor	0.43	0.43
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblSolidWaste	SolidWasteGenerationRate	50.59	0.00
tblSolidWaste	SolidWasteGenerationRate	153.43	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CNW_TTP	41.00	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TTP	59.00	0.00
tblVehicleTrips	CW_TTP	59.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	0.00
tblVehicleTrips	PR_TP	92.00	0.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	ST_TR	1.68	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	SU_TR	1.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblVehicleTrips	WD_TR	1.68	0.00
tblWater	IndoorWaterUseRate	9,435,000.00	0.00
tblWater	IndoorWaterUseRate	37,744,625.00	0.00

2.0 Emissions Summary

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.2094	38.4467	14.7230	0.0363	7.7582	1.5461	9.3043	3.5205	1.4224	4.9430	0.0000	3,656.1095	3,656.1095	1.0971	0.0000	3,683.5368
2019	23.7871	35.9358	32.1095	0.0685	7.7582	1.7683	9.2003	3.5205	1.6859	4.8473	0.0000	6,753.7798	6,753.7798	1.0951	0.0000	6,777.8505
Maximum	**23.7871**	**38.4467**	**32.1095**	**0.0685**	**7.7582**	**1.7683**	**9.3043**	**3.5205**	**1.6859**	**4.9430**	**0.0000**	**6,753.7798**	**6,753.7798**	**1.0971**	**0.0000**	**6,777.8505**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.2094	38.4467	14.7230	0.0363	3.1143	1.5461	4.6605	1.3965	1.4224	2.8190	0.0000	3,656.1095	3,656.1095	1.0971	0.0000	3,683.5368
2019	23.7871	35.9358	32.1095	0.0685	3.1143	1.7683	4.5565	1.3965	1.6859	2.7233	0.0000	6,753.7798	6,753.7798	1.0951	0.0000	6,777.8505
Maximum	**23.7871**	**38.4467**	**32.1095**	**0.0685**	**3.1143**	**1.7683**	**4.6605**	**1.3965**	**1.6859**	**2.8190**	**0.0000**	**6,753.7798**	**6,753.7798**	**1.0971**	**0.0000**	**6,777.8505**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**59.86**	**0.00**	**50.19**	**60.33**	**0.00**	**43.39**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**4.5896**	**3.5000e-004**	**0.0378**	**0.0000**	**0.0000**	**1.4000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**1.4000e-004**		**0.0805**	**0.0805**	**2.2000e-004**	**0.0000**	**0.0859**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**4.5896**	**3.5000e-004**	**0.0378**	**0.0000**	**0.0000**	**1.4000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**1.4000e-004**		**0.0805**	**0.0805**	**2.2000e-004**	**0.0000**	**0.0859**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	12/10/2018	12/21/2018	5	10	
2	Grading	Grading	12/22/2018	1/18/2019	5	20	
3	Building Construction	Building Construction	1/19/2019	10/25/2019	5	200	
4	Architectural Coating	Architectural Coating	7/1/2019	9/6/2019	5	50	
5	Paving	Paving	8/1/2019	8/28/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 30

Acres of Paving: 3.11

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 306,030; Non-Residential Outdoor: 102,010; Striped Parking Area: 3,936 (Architectural Coating – sqft)

OffRoad Equipment

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Centerpointe (Construction - Unmitigated) - South Coast AQMD Air District, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	8.00	78	0.48
Site Preparation	Crawler Tractors	0		212	0.43
Grading	Crawler Tractors	1	8.00	212	0.43
Grading	Excavators	1	8.00	158	0.38
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	2	8.00	84	0.74
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	1	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Graders	2	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Paving	Paving Equipment	1	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	113.00	44.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	23.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.2661	2.6297	2.3367	3.1100e-003		0.1863	0.1863		0.1714	0.1714		312.7760	312.7760	0.0974		315.2102
Total	**0.2661**	**2.6297**	**2.3367**	**3.1100e-003**	**0.0000**	**0.1863**	**0.1863**	**0.0000**	**0.1714**	**0.1714**		**312.7760**	**312.7760**	**0.0974**		**315.2102**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0176	0.0127	0.1362	3.4000e-004	0.0335	2.7000e-004	0.0338	8.8900e-003	2.5000e-004	9.1400e-003		34.2204	34.2204	1.1700e-003		34.2496
Total	**0.0176**	**0.0127**	**0.1362**	**3.4000e-004**	**0.0335**	**2.7000e-004**	**0.0338**	**8.8900e-003**	**2.5000e-004**	**9.1400e-003**		**34.2204**	**34.2204**	**1.1700e-003**		**34.2496**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.2661	2.6297	2.3367	3.1100e-003		0.1863	0.1863		0.1714	0.1714	0.0000	312.7760	312.7760	0.0974		315.2102
Total	**0.2661**	**2.6297**	**2.3367**	**3.1100e-003**	**0.0000**	**0.1863**	**0.1863**	**0.0000**	**0.1714**	**0.1714**	**0.0000**	**312.7760**	**312.7760**	**0.0974**		**315.2102**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0176	0.0127	0.1362	3.4000e-004	0.0335	2.7000e-004	0.0338	8.8900e-003	2.5000e-004	9.1400e-003		34.2204	34.2204	1.1700e-003		34.2496
Total	**0.0176**	**0.0127**	**0.1362**	**3.4000e-004**	**0.0335**	**2.7000e-004**	**0.0338**	**8.8900e-003**	**2.5000e-004**	**9.1400e-003**		**34.2204**	**34.2204**	**1.1700e-003**		**34.2496**

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.6128	0.0000	7.6128	3.4820	0.0000	3.4820			0.0000			0.0000
Off-Road	3.1332	38.3917	14.1326	0.0348		1.5450	1.5450		1.4214	1.4214		3,507.8212	3,507.8212	1.0920		3,535.1220
Total	**3.1332**	**38.3917**	**14.1326**	**0.0348**	**7.6128**	**1.5450**	**9.1578**	**3.4820**	**1.4214**	**4.9034**		**3,507.8212**	**3,507.8212**	**1.0920**		**3,535.1220**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.3 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0762	0.0550	0.5903	1.4900e-003	0.1453	1.1600e-003	0.1465	0.0385	1.0700e-003	0.0396		148.2883	148.2883	5.0600e-003		148.4148
Total	**0.0762**	**0.0550**	**0.5903**	**1.4900e-003**	**0.1453**	**1.1600e-003**	**0.1465**	**0.0385**	**1.0700e-003**	**0.0396**		**148.2883**	**148.2883**	**5.0600e-003**		**148.4148**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9690	0.0000	2.9690	1.3580	0.0000	1.3580			0.0000			0.0000
Off-Road	3.1332	38.3917	14.1326	0.0348		1.5450	1.5450		1.4214	1.4214	0.0000	3,507.8212	3,507.8212	1.0920		3,535.1220
Total	**3.1332**	**38.3917**	**14.1326**	**0.0348**	**2.9690**	**1.5450**	**4.5140**	**1.3580**	**1.4214**	**2.7794**	**0.0000**	**3,507.8212**	**3,507.8212**	**1.0920**		**3,535.1220**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.3 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0762	0.0550	0.5903	1.4900e-003	0.1453	1.1600e-003	0.1465	0.0385	1.0700e-003	0.0396		148.2883	148.2883	5.0600e-003		148.4148
Total	**0.0762**	**0.0550**	**0.5903**	**1.4900e-003**	**0.1453**	**1.1600e-003**	**0.1465**	**0.0385**	**1.0700e-003**	**0.0396**		**148.2883**	**148.2883**	**5.0600e-003**		**148.4148**

3.3 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.6128	0.0000	7.6128	3.4820	0.0000	3.4820			0.0000			0.0000
Off-Road	2.9774	35.8872	13.7958	0.0348		1.4410	1.4410		1.3257	1.3257		3,446.9221	3,446.9221	1.0906		3,474.1864
Total	**2.9774**	**35.8872**	**13.7958**	**0.0348**	**7.6128**	**1.4410**	**9.0539**	**3.4820**	**1.3257**	**4.8077**		**3,446.9221**	**3,446.9221**	**1.0906**		**3,474.1864**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.3 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0693	0.0485	0.5270	1.4400e-003	0.1453	1.1300e-003	0.1464	0.0385	1.0400e-003	0.0396		143.6053	143.6053	4.4900e-003		143.7174
Total	**0.0693**	**0.0485**	**0.5270**	**1.4400e-003**	**0.1453**	**1.1300e-003**	**0.1464**	**0.0385**	**1.0400e-003**	**0.0396**		**143.6053**	**143.6053**	**4.4900e-003**		**143.7174**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9690	0.0000	2.9690	1.3580	0.0000	1.3580			0.0000			0.0000
Off-Road	2.9774	35.8872	13.7958	0.0348		1.4410	1.4410		1.3257	1.3257	0.0000	3,446.9221	3,446.9221	1.0906		3,474.1864
Total	**2.9774**	**35.8872**	**13.7958**	**0.0348**	**2.9690**	**1.4410**	**4.4100**	**1.3580**	**1.3257**	**2.6837**	**0.0000**	**3,446.9221**	**3,446.9221**	**1.0906**		**3,474.1864**

3.3 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0693	0.0485	0.5270	1.4400e-003	0.1453	1.1300e-003	0.1464	0.0385	1.0400e-003	0.0396		143.6053	143.6053	4.4900e-003		143.7174
Total	**0.0693**	**0.0485**	**0.5270**	**1.4400e-003**	**0.1453**	**1.1300e-003**	**0.1464**	**0.0385**	**1.0400e-003**	**0.0396**		**143.6053**	**143.6053**	**4.4900e-003**		**143.7174**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2571	19.4720	15.1290	0.0261		1.1379	1.1379		1.0910	1.0910		2,478.7187	2,478.7187	0.4380		2,489.6679
Total	**2.2571**	**19.4720**	**15.1290**	**0.0261**		**1.1379**	**1.1379**		**1.0910**	**1.0910**		**2,478.7187**	**2,478.7187**	**0.4380**		**2,489.6679**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1772	5.0382	1.3555	0.0111	0.2816	0.0339	0.3155	0.0811	0.0324	0.1135		1,180.5916	1,180.5916	0.0864		1,182.7519
Worker	0.6026	0.4218	4.5808	0.0125	1.2631	9.8300e-003	1.2729	0.3350	9.0600e-003	0.3440		1,248.2610	1,248.2610	0.0390		1,249.2360
Total	**0.7798**	**5.4600**	**5.9363**	**0.0236**	**1.5447**	**0.0437**	**1.5884**	**0.4160**	**0.0415**	**0.4575**		**2,428.8526**	**2,428.8526**	**0.1254**		**2,431.9879**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2571	19.4720	15.1290	0.0261		1.1379	1.1379		1.0910	1.0910	0.0000	2,478.7187	2,478.7187	0.4380		2,489.6679
Total	**2.2571**	**19.4720**	**15.1290**	**0.0261**		**1.1379**	**1.1379**		**1.0910**	**1.0910**	**0.0000**	**2,478.7187**	**2,478.7187**	**0.4380**		**2,489.6679**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1772	5.0382	1.3555	0.0111	0.2816	0.0339	0.3155	0.0811	0.0324	0.1135		1,180.5916	1,180.5916	0.0864		1,182.7519
Worker	0.6026	0.4218	4.5808	0.0125	1.2631	9.8300e-003	1.2729	0.3350	9.0600e-003	0.3440		1,248.2610	1,248.2610	0.0390		1,249.2360
Total	**0.7798**	**5.4600**	**5.9363**	**0.0236**	**1.5447**	**0.0437**	**1.5884**	**0.4160**	**0.0415**	**0.4575**		**2,428.8526**	**2,428.8526**	**0.1254**		**2,431.9879**

3.5 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	19.0951					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717		375.2641	375.2641	0.0317		376.0565
Total	**19.4504**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**		**375.2641**	**375.2641**	**0.0317**		**376.0565**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.5 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1226	0.0859	0.9324	2.5500e-003	0.2571	2.0000e-003	0.2591	0.0682	1.8400e-003	0.0700		254.0708	254.0708	7.9400e-003		254.2693
Total	**0.1226**	**0.0859**	**0.9324**	**2.5500e-003**	**0.2571**	**2.0000e-003**	**0.2591**	**0.0682**	**1.8400e-003**	**0.0700**		**254.0708**	**254.0708**	**7.9400e-003**		**254.2693**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	19.0951					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717	0.0000	375.2641	375.2641	0.0317		376.0565
Total	**19.4504**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**	**0.0000**	**375.2641**	**375.2641**	**0.0317**		**376.0565**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.5 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1226	0.0859	0.9324	2.5500e-003	0.2571	2.0000e-003	0.2591	0.0682	1.8400e-003	0.0700		254.0708	254.0708	7.9400e-003		254.2693
Total	**0.1226**	**0.0859**	**0.9324**	**2.5500e-003**	**0.2571**	**2.0000e-003**	**0.2591**	**0.0682**	**1.8400e-003**	**0.0700**		**254.0708**	**254.0708**	**7.9400e-003**		**254.2693**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7272	7.6220	7.3324	0.0114		0.4123	0.4123		0.3793	0.3793		1,128.5012	1,128.5012	0.3571		1,137.4274
Paving	0.4074					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1346**	**7.6220**	**7.3324**	**0.0114**		**0.4123**	**0.4123**		**0.3793**	**0.3793**		**1,128.5012**	**1,128.5012**	**0.3571**		**1,137.4274**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0427	0.0299	0.3243	8.9000e-004	0.0894	7.0000e-004	0.0901	0.0237	6.4000e-004	0.0244		88.3725	88.3725	2.7600e-003		88.4415
Total	**0.0427**	**0.0299**	**0.3243**	**8.9000e-004**	**0.0894**	**7.0000e-004**	**0.0901**	**0.0237**	**6.4000e-004**	**0.0244**		**88.3725**	**88.3725**	**2.7600e-003**		**88.4415**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7272	7.6220	7.3324	0.0114		0.4123	0.4123		0.3793	0.3793	0.0000	1,128.5012	1,128.5012	0.3571		1,137.4274
Paving	0.4074					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1346**	**7.6220**	**7.3324**	**0.0114**		**0.4123**	**0.4123**		**0.3793**	**0.3793**	**0.0000**	**1,128.5012**	**1,128.5012**	**0.3571**		**1,137.4274**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0427	0.0299	0.3243	8.9000e-004	0.0894	7.0000e-004	0.0901	0.0237	6.4000e-004	0.0244		88.3725	88.3725	2.7600e-003		88.4415
Total	**0.0427**	**0.0299**	**0.3243**	**8.9000e-004**	**0.0894**	**7.0000e-004**	**0.0901**	**0.0237**	**6.4000e-004**	**0.0244**		**88.3725**	**88.3725**	**2.7600e-003**		**88.4415**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956
Parking Lot	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956
Unrefrigerated Warehouse-No Rail	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Unmitigated	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.0629					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.5600e-003	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Total	**4.5896**	**3.5000e-004**	**0.0378**	**0.0000**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**		**0.0805**	**0.0805**	**2.2000e-004**		**0.0859**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.0629					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.5600e-003	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Total	**4.5896**	**3.5000e-004**	**0.0378**	**0.0000**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**		**0.0805**	**0.0805**	**2.2000e-004**		**0.0859**

7.0 Water Detail

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Centerpointe (Construction - Unmitigated)

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	163.22	1000sqft	3.75	163,218.00	0
General Light Industry	40.80	1000sqft	0.94	40,804.00	0
Parking Lot	164.00	Space	3.11	65,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Project Characteristics -

Land Use - Lot acreage obtained from the Site Plan. Total Lot acreage is 8.78 acres.

Construction Phase - Construction schedule adjsuted as per direction provided by the Client.

Off-road Equipment - Equipment adjusted as per information provided by the Client.

Off-road Equipment - Equipment adjusted as per information provided by the Client.

Off-road Equipment - Equipment adjusted as per information provided by the Client.

Off-road Equipment - Equipment adjusted as per information provided by the Client.

Off-road Equipment - Hours are based on an 8-hour workday.

Grading -

Architectural Coating - Rule 1113

Vehicle Trips - Operations Run Only.

Energy Use - Operations Run Only.

Water And Wastewater - Operations Run Only.

Solid Waste - Operations Run Only.

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	102,011.00	102,010.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	306,033.00	306,030.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	50.00
tblArchitecturalCoating	EF_Parking	100.00	50.00
tblAreaCoating	Area_Nonresidential_Exterior	102011	102010
tblAreaCoating	Area_Nonresidential_Interior	306033	306030
tblConstructionPhase	NumDays	20.00	50.00
tblConstructionPhase	NumDays	230.00	200.00
tblConstructionPhase	PhaseEndDate	2/28/2020	9/6/2019

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

tblConstructionPhase	PhaseEndDate	1/3/2020	10/25/2019
tblConstructionPhase	PhaseEndDate	2/15/2019	1/18/2019
tblConstructionPhase	PhaseEndDate	1/31/2020	8/28/2019
tblConstructionPhase	PhaseEndDate	1/18/2019	12/21/2018
tblConstructionPhase	PhaseStartDate	2/1/2020	7/1/2019
tblConstructionPhase	PhaseStartDate	2/16/2019	1/19/2019
tblConstructionPhase	PhaseStartDate	1/19/2019	12/22/2018
tblConstructionPhase	PhaseStartDate	1/4/2020	8/1/2019
tblConstructionPhase	PhaseStartDate	1/5/2019	12/10/2018
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	LightingElect	0.35	0.00
tblEnergyUse	LightingElect	1.17	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24E	0.82	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	NT24NG	0.03	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24E	0.37	0.00
tblEnergyUse	T24NG	15.36	0.00
tblEnergyUse	T24NG	2.00	0.00
tblLandUse	LandUseSquareFeet	163,220.00	163,218.00
tblLandUse	LandUseSquareFeet	40,800.00	40,804.00
tblLandUse	LotAcreage	1.48	3.11
tblOffRoadEquipment	LoadFactor	0.43	0.43
tblOffRoadEquipment	LoadFactor	0.43	0.43
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblSolidWaste	SolidWasteGenerationRate	50.59	0.00
tblSolidWaste	SolidWasteGenerationRate	153.43	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CNW_TTP	41.00	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TTP	59.00	0.00

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

tblVehicleTrips	CW_TTP	59.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	0.00
tblVehicleTrips	PR_TP	92.00	0.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	ST_TR	1.68	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	SU_TR	1.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblVehicleTrips	WD_TR	1.68	0.00
tblWater	IndoorWaterUseRate	9,435,000.00	0.00
tblWater	IndoorWaterUseRate	37,744,625.00	0.00

2.0 Emissions Summary

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.2032	38.4419	14.7849	0.0364	7.7582	1.5461	9.3043	3.5205	1.4224	4.9430	0.0000	3,666.3369	3,666.3369	1.0974	0.0000	3,693.7728
2019	23.7169	35.9315	32.6040	0.0699	7.7582	1.7678	9.2003	3.5205	1.6854	4.8473	0.0000	6,898.4749	6,898.4749	1.0954	0.0000	6,922.4828
Maximum	**23.7169**	**38.4419**	**32.6040**	**0.0699**	**7.7582**	**1.7678**	**9.3043**	**3.5205**	**1.6854**	**4.9430**	**0.0000**	**6,898.4749**	**6,898.4749**	**1.0974**	**0.0000**	**6,922.4828**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.2032	38.4419	14.7849	0.0364	3.1143	1.5461	4.6605	1.3965	1.4224	2.8190	0.0000	3,666.3369	3,666.3369	1.0974	0.0000	3,693.7728
2019	23.7169	35.9315	32.6040	0.0699	3.1143	1.7678	4.5565	1.3965	1.6854	2.7233	0.0000	6,898.4749	6,898.4749	1.0954	0.0000	6,922.4828
Maximum	**23.7169**	**38.4419**	**32.6040**	**0.0699**	**3.1143**	**1.7678**	**4.6605**	**1.3965**	**1.6854**	**2.8190**	**0.0000**	**6,898.4749**	**6,898.4749**	**1.0974**	**0.0000**	**6,922.4828**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**59.86**	**0.00**	**50.19**	**60.33**	**0.00**	**43.39**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**4.5896**	**3.5000e-004**	**0.0378**	**0.0000**	**0.0000**	**1.4000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**1.4000e-004**		**0.0805**	**0.0805**	**2.2000e-004**	**0.0000**	**0.0859**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**4.5896**	**3.5000e-004**	**0.0378**	**0.0000**	**0.0000**	**1.4000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**1.4000e-004**		**0.0805**	**0.0805**	**2.2000e-004**	**0.0000**	**0.0859**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	12/10/2018	12/21/2018	5	10	
2	Grading	Grading	12/22/2018	1/18/2019	5	20	
3	Building Construction	Building Construction	1/19/2019	10/25/2019	5	200	
4	Architectural Coating	Architectural Coating	7/1/2019	9/6/2019	5	50	
5	Paving	Paving	8/1/2019	8/28/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 30

Acres of Paving: 3.11

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 306,030; Non-Residential Outdoor: 102,010; Striped Parking Area: 3,936 (Architectural Coating – sqft)

OffRoad Equipment

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Centerpointe (Construction - Unmitigated) - South Coast AQMD Air District, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	8.00	78	0.48
Site Preparation	Crawler Tractors	0		212	0.43
Grading	Crawler Tractors	1	8.00	212	0.43
Grading	Excavators	1	8.00	158	0.38
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	2	8.00	84	0.74
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	1	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Graders	2	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Paving	Paving Equipment	1	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	113.00	44.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	23.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.2661	2.6297	2.3367	3.1100e-003		0.1863	0.1863		0.1714	0.1714		312.7760	312.7760	0.0974		315.2102
Total	**0.2661**	**2.6297**	**2.3367**	**3.1100e-003**	**0.0000**	**0.1863**	**0.1863**	**0.0000**	**0.1714**	**0.1714**		**312.7760**	**312.7760**	**0.0974**		**315.2102**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0162	0.0116	0.1505	3.7000e-004	0.0335	2.7000e-004	0.0338	8.8900e-003	2.5000e-004	9.1400e-003		36.5806	36.5806	1.2500e-003		36.6117
Total	**0.0162**	**0.0116**	**0.1505**	**3.7000e-004**	**0.0335**	**2.7000e-004**	**0.0338**	**8.8900e-003**	**2.5000e-004**	**9.1400e-003**		**36.5806**	**36.5806**	**1.2500e-003**		**36.6117**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.2661	2.6297	2.3367	3.1100e-003		0.1863	0.1863		0.1714	0.1714	0.0000	312.7760	312.7760	0.0974		315.2102
Total	**0.2661**	**2.6297**	**2.3367**	**3.1100e-003**	**0.0000**	**0.1863**	**0.1863**	**0.0000**	**0.1714**	**0.1714**	**0.0000**	**312.7760**	**312.7760**	**0.0974**		**315.2102**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0162	0.0116	0.1505	3.7000e-004	0.0335	2.7000e-004	0.0338	8.8900e-003	2.5000e-004	9.1400e-003		36.5806	36.5806	1.2500e-003		36.6117
Total	**0.0162**	**0.0116**	**0.1505**	**3.7000e-004**	**0.0335**	**2.7000e-004**	**0.0338**	**8.8900e-003**	**2.5000e-004**	**9.1400e-003**		**36.5806**	**36.5806**	**1.2500e-003**		**36.6117**

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.6128	0.0000	7.6128	3.4820	0.0000	3.4820			0.0000			0.0000
Off-Road	3.1332	38.3917	14.1326	0.0348		1.5450	1.5450		1.4214	1.4214		3,507.8212	3,507.8212	1.0920		3,535.1220
Total	**3.1332**	**38.3917**	**14.1326**	**0.0348**	**7.6128**	**1.5450**	**9.1578**	**3.4820**	**1.4214**	**4.9034**		**3,507.8212**	**3,507.8212**	**1.0920**		**3,535.1220**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.3 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0701	0.0502	0.6523	1.5900e-003	0.1453	1.1600e-003	0.1465	0.0385	1.0700e-003	0.0396		158.5157	158.5157	5.4100e-003		158.6508
Total	**0.0701**	**0.0502**	**0.6523**	**1.5900e-003**	**0.1453**	**1.1600e-003**	**0.1465**	**0.0385**	**1.0700e-003**	**0.0396**		**158.5157**	**158.5157**	**5.4100e-003**		**158.6508**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9690	0.0000	2.9690	1.3580	0.0000	1.3580			0.0000			0.0000
Off-Road	3.1332	38.3917	14.1326	0.0348		1.5450	1.5450		1.4214	1.4214	0.0000	3,507.8212	3,507.8212	1.0920		3,535.1220
Total	**3.1332**	**38.3917**	**14.1326**	**0.0348**	**2.9690**	**1.5450**	**4.5140**	**1.3580**	**1.4214**	**2.7794**	**0.0000**	**3,507.8212**	**3,507.8212**	**1.0920**		**3,535.1220**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.3 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0701	0.0502	0.6523	1.5900e-003	0.1453	1.1600e-003	0.1465	0.0385	1.0700e-003	0.0396		158.5157	158.5157	5.4100e-003		158.6508
Total	**0.0701**	**0.0502**	**0.6523**	**1.5900e-003**	**0.1453**	**1.1600e-003**	**0.1465**	**0.0385**	**1.0700e-003**	**0.0396**		**158.5157**	**158.5157**	**5.4100e-003**		**158.6508**

3.3 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.6128	0.0000	7.6128	3.4820	0.0000	3.4820			0.0000			0.0000
Off-Road	2.9774	35.8872	13.7958	0.0348		1.4410	1.4410		1.3257	1.3257		3,446.9221	3,446.9221	1.0906		3,474.1864
Total	**2.9774**	**35.8872**	**13.7958**	**0.0348**	**7.6128**	**1.4410**	**9.0539**	**3.4820**	**1.3257**	**4.8077**		**3,446.9221**	**3,446.9221**	**1.0906**		**3,474.1864**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.3 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0637	0.0443	0.5841	1.5400e-003	0.1453	1.1300e-003	0.1464	0.0385	1.0400e-003	0.0396		153.5286	153.5286	4.8000e-003		153.6486
Total	**0.0637**	**0.0443**	**0.5841**	**1.5400e-003**	**0.1453**	**1.1300e-003**	**0.1464**	**0.0385**	**1.0400e-003**	**0.0396**		**153.5286**	**153.5286**	**4.8000e-003**		**153.6486**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9690	0.0000	2.9690	1.3580	0.0000	1.3580			0.0000			0.0000
Off-Road	2.9774	35.8872	13.7958	0.0348		1.4410	1.4410		1.3257	1.3257	0.0000	3,446.9221	3,446.9221	1.0906		3,474.1864
Total	**2.9774**	**35.8872**	**13.7958**	**0.0348**	**2.9690**	**1.4410**	**4.4100**	**1.3580**	**1.3257**	**2.6837**	**0.0000**	**3,446.9221**	**3,446.9221**	**1.0906**		**3,474.1864**

3.3 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0637	0.0443	0.5841	1.5400e-003	0.1453	1.1300e-003	0.1464	0.0385	1.0400e-003	0.0396		153.5286	153.5286	4.8000e-003		153.6486
Total	**0.0637**	**0.0443**	**0.5841**	**1.5400e-003**	**0.1453**	**1.1300e-003**	**0.1464**	**0.0385**	**1.0400e-003**	**0.0396**		**153.5286**	**153.5286**	**4.8000e-003**		**153.6486**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2571	19.4720	15.1290	0.0261		1.1379	1.1379		1.0910	1.0910		2,478.7187	2,478.7187	0.4380		2,489.6679
Total	**2.2571**	**19.4720**	**15.1290**	**0.0261**		**1.1379**	**1.1379**		**1.0910**	**1.0910**		**2,478.7187**	**2,478.7187**	**0.4380**		**2,489.6679**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1696	5.0347	1.2171	0.0114	0.2816	0.0334	0.3150	0.0811	0.0319	0.1130		1,215.3667	1,215.3667	0.0804		1,217.3771
Worker	0.5534	0.3851	5.0775	0.0134	1.2631	9.8300e-003	1.2729	0.3350	9.0600e-003	0.3440		1,334.5176	1,334.5176	0.0417		1,335.5610
Total	**0.7230**	**5.4198**	**6.2946**	**0.0248**	**1.5447**	**0.0432**	**1.5879**	**0.4160**	**0.0410**	**0.4570**		**2,549.8843**	**2,549.8843**	**0.1222**		**2,552.9381**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2571	19.4720	15.1290	0.0261		1.1379	1.1379		1.0910	1.0910	0.0000	2,478.7187	2,478.7187	0.4380		2,489.6679
Total	**2.2571**	**19.4720**	**15.1290**	**0.0261**		**1.1379**	**1.1379**		**1.0910**	**1.0910**	**0.0000**	**2,478.7187**	**2,478.7187**	**0.4380**		**2,489.6679**

3.4 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1696	5.0347	1.2171	0.0114	0.2816	0.0334	0.3150	0.0811	0.0319	0.1130		1,215.3667	1,215.3667	0.0804		1,217.3771
Worker	0.5534	0.3851	5.0775	0.0134	1.2631	9.8300e-003	1.2729	0.3350	9.0600e-003	0.3440		1,334.5176	1,334.5176	0.0417		1,335.5610
Total	**0.7230**	**5.4198**	**6.2946**	**0.0248**	**1.5447**	**0.0432**	**1.5879**	**0.4160**	**0.0410**	**0.4570**		**2,549.8843**	**2,549.8843**	**0.1222**		**2,552.9381**

3.5 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	19.0951					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717		375.2641	375.2641	0.0317		376.0565
Total	**19.4504**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**		**375.2641**	**375.2641**	**0.0317**		**376.0565**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.5 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1126	0.0784	1.0335	2.7300e-003	0.2571	2.0000e-003	0.2591	0.0682	1.8400e-003	0.0700		271.6275	271.6275	8.5000e-003		271.8399
Total	**0.1126**	**0.0784**	**1.0335**	**2.7300e-003**	**0.2571**	**2.0000e-003**	**0.2591**	**0.0682**	**1.8400e-003**	**0.0700**		**271.6275**	**271.6275**	**8.5000e-003**		**271.8399**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	19.0951					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717	0.0000	375.2641	375.2641	0.0317		376.0565
Total	**19.4504**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**	**0.0000**	**375.2641**	**375.2641**	**0.0317**		**376.0565**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.5 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1126	0.0784	1.0335	2.7300e-003	0.2571	2.0000e-003	0.2591	0.0682	1.8400e-003	0.0700		271.6275	271.6275	8.5000e-003		271.8399
Total	**0.1126**	**0.0784**	**1.0335**	**2.7300e-003**	**0.2571**	**2.0000e-003**	**0.2591**	**0.0682**	**1.8400e-003**	**0.0700**		**271.6275**	**271.6275**	**8.5000e-003**		**271.8399**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7272	7.6220	7.3324	0.0114		0.4123	0.4123		0.3793	0.3793		1,128.5012	1,128.5012	0.3571		1,137.4274
Paving	0.4074					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1346**	**7.6220**	**7.3324**	**0.0114**		**0.4123**	**0.4123**		**0.3793**	**0.3793**		**1,128.5012**	**1,128.5012**	**0.3571**		**1,137.4274**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.6 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0392	0.0273	0.3595	9.5000e-004	0.0894	7.0000e-004	0.0901	0.0237	6.4000e-004	0.0244		94.4791	94.4791	2.9500e-003		94.5530
Total	**0.0392**	**0.0273**	**0.3595**	**9.5000e-004**	**0.0894**	**7.0000e-004**	**0.0901**	**0.0237**	**6.4000e-004**	**0.0244**		**94.4791**	**94.4791**	**2.9500e-003**		**94.5530**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7272	7.6220	7.3324	0.0114		0.4123	0.4123		0.3793	0.3793	0.0000	1,128.5012	1,128.5012	0.3571		1,137.4274
Paving	0.4074					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1346**	**7.6220**	**7.3324**	**0.0114**		**0.4123**	**0.4123**		**0.3793**	**0.3793**	**0.0000**	**1,128.5012**	**1,128.5012**	**0.3571**		**1,137.4274**

3.6 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0392	0.0273	0.3595	9.5000e-004	0.0894	7.0000e-004	0.0901	0.0237	6.4000e-004	0.0244		94.4791	94.4791	2.9500e-003		94.5530
Total	**0.0392**	**0.0273**	**0.3595**	**9.5000e-004**	**0.0894**	**7.0000e-004**	**0.0901**	**0.0237**	**6.4000e-004**	**0.0244**		**94.4791**	**94.4791**	**2.9500e-003**		**94.5530**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956
Parking Lot	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956
Unrefrigerated Warehouse-No Rail	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Unmitigated	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.0629					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.5600e-003	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Total	**4.5896**	**3.5000e-004**	**0.0378**	**0.0000**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**		**0.0805**	**0.0805**	**2.2000e-004**		**0.0859**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.0629					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.5600e-003	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Total	**4.5896**	**3.5000e-004**	**0.0378**	**0.0000**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**		**0.0805**	**0.0805**	**2.2000e-004**		**0.0859**

7.0 Water Detail

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

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Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 3.2:

CALEEMOD OPERATIONAL EMISSIONS MODEL OUTPUTS (TRUCKS)

Centerpointe (Operations - Trucks)

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	163.22	1000sqft	3.75	163,218.00	0
General Light Industry	40.80	1000sqft	0.94	40,804.00	0
Parking Lot	164.00	Space	3.11	65,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Lot Acreage based on information provided in the Site Plan. Total Lot Acreage is 8.78.

Construction Phase - Operations Run Only.

Off-road Equipment - Operations Run Only.

Trips and VMT - Operations Run Only.

Vehicle Trips - Operations Run Only.

Fleet Mix - Operations Run Only.

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Centerpointe (Operations - Trucks) - South Coast AQMD Air District, Summer

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	PhaseEndDate	1/18/2019	12/10/2018
tblConstructionPhase	PhaseStartDate	1/5/2019	12/10/2018
tblFleetMix	HHD	0.03	0.44
tblFleetMix	HHD	0.03	0.63
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LHD1	0.02	0.37
tblFleetMix	LHD1	0.02	0.17
tblFleetMix	LHD2	5.8620e-003	0.00
tblFleetMix	LHD2	5.8620e-003	0.00
tblFleetMix	MCY	4.7770e-003	0.00
tblFleetMix	MCY	4.7770e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	9.5600e-004	0.00
tblFleetMix	MH	9.5600e-004	0.00
tblFleetMix	MHD	0.02	0.18
tblFleetMix	MHD	0.02	0.21
tblFleetMix	OBUS	2.0370e-003	0.00
tblFleetMix	OBUS	2.0370e-003	0.00
tblFleetMix	SBUS	7.0500e-004	0.00

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

tblFleetMix	SBUS	7.0500e-004	0.00
tblFleetMix	UBUS	1.9440e-003	0.00
tblFleetMix	UBUS	1.9440e-003	0.00
tblLandUse	LandUseSquareFeet	163,220.00	163,218.00
tblLandUse	LandUseSquareFeet	40,800.00	40,804.00
tblLandUse	LotAcreage	1.48	3.11
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CNW_TTP	41.00	0.00
tblVehicleTrips	CW_TL	16.60	60.00
tblVehicleTrips	CW_TL	16.60	60.00
tblVehicleTrips	CW_TL	16.60	60.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.32	1.06
tblVehicleTrips	ST_TR	1.68	0.35
tblVehicleTrips	SU_TR	0.68	1.06
tblVehicleTrips	SU_TR	1.68	0.35
tblVehicleTrips	WD_TR	6.97	1.06

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

tblVehicleTrips	WD_TR	1.68	0.35

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Centerpointe (Operations - Trucks) - South Coast AQMD Air District, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Energy	0.0490	0.4451	0.3739	2.6700e-003		0.0338	0.0338		0.0338	0.0338		534.1030	534.1030	0.0102	9.7900e-003	537.2769
Mobile	1.6100	43.5439	13.0930	0.1643	5.3284	0.2947	5.6230	1.4994	0.2818	1.7812		17,518.0782	17,518.0782	0.7920		17,537.8781
Total	**6.2486**	**43.9893**	**13.5047**	**0.1669**	**5.3284**	**0.3286**	**5.6570**	**1.4994**	**0.3158**	**1.8152**		**18,052.2617**	**18,052.2617**	**0.8025**	**9.7900e-003**	**18,075.2409**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Energy	0.0490	0.4451	0.3739	2.6700e-003		0.0338	0.0338		0.0338	0.0338		534.1030	534.1030	0.0102	9.7900e-003	537.2769
Mobile	1.6100	43.5439	13.0930	0.1643	5.3284	0.2947	5.6230	1.4994	0.2818	1.7812		17,518.0782	17,518.0782	0.7920		17,537.8781
Total	**6.2486**	**43.9893**	**13.5047**	**0.1669**	**5.3284**	**0.3286**	**5.6570**	**1.4994**	**0.3158**	**1.8152**		**18,052.2617**	**18,052.2617**	**0.8025**	**9.7900e-003**	**18,075.2409**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	12/10/2018	12/10/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 3.11

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.6100	43.5439	13.0930	0.1643	5.3284	0.2947	5.6230	1.4994	0.2818	1.7812		17,518.0782	17,518.0782	0.7920		17,537.8781
Unmitigated	1.6100	43.5439	13.0930	0.1643	5.3284	0.2947	5.6230	1.4994	0.2818	1.7812		17,518.0782	17,518.0782	0.7920		17,537.8781

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	43.29	43.29	43.29	945,427	945,427
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	56.80	56.80	56.80	1,240,524	1,240,524
Total	100.09	100.09	100.09	2,185,952	2,185,952

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	60.00	8.40	6.90	100.00	0.00	0.00	100	0	0
Parking Lot	60.00	8.40	6.90	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	60.00	8.40	6.90	100.00	0.00	0.00	100	0	0

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4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.000000	0.000000	0.000000	0.000000	0.374200	0.000000	0.181900	0.443900	0.000000	0.000000	0.000000	0.000000	0.000000
Parking Lot	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956
Unrefrigerated Warehouse-No Rail	0.000000	0.000000	0.000000	0.000000	0.166700	0.000000	0.206900	0.626400	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0490	0.4451	0.3739	2.6700e-003		0.0338	0.0338		0.0338	0.0338		534.1030	534.1030	0.0102	9.7900e-003	537.2769
NaturalGas Unmitigated	0.0490	0.4451	0.3739	2.6700e-003		0.0338	0.0338		0.0338	0.0338		534.1030	534.1030	0.0102	9.7900e-003	537.2769

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	3632.11	0.0392	0.3561	0.2991	2.1400e-003		0.0271	0.0271		0.0271	0.0271		427.3076	427.3076	8.1900e-003	7.8300e-003	429.8469
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	907.76	9.7900e-003	0.0890	0.0748	5.3000e-004		6.7600e-003	6.7600e-003		6.7600e-003	6.7600e-003		106.7953	106.7953	2.0500e-003	1.9600e-003	107.4300
Total		**0.0490**	**0.4451**	**0.3739**	**2.6700e-003**		**0.0338**	**0.0338**		**0.0338**	**0.0338**		**534.1030**	**534.1030**	**0.0102**	**9.7900e-003**	**537.2769**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	3.63211	0.0392	0.3561	0.2991	2.1400e-003		0.0271	0.0271		0.0271	0.0271		427.3076	427.3076	8.1900e-003	7.8300e-003	429.8469
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0.90776	9.7900e-003	0.0890	0.0748	5.3000e-004		6.7600e-003	6.7600e-003		6.7600e-003	6.7600e-003		106.7953	106.7953	2.0500e-003	1.9600e-003	107.4300
Total		**0.0490**	**0.4451**	**0.3739**	**2.6700e-003**		**0.0338**	**0.0338**		**0.0338**	**0.0338**		**534.1030**	**534.1030**	**0.0102**	**9.7900e-003**	**537.2769**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Unmitigated	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.0629					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.5600e-003	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Total	**4.5896**	**3.5000e-004**	**0.0378**	**0.0000**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**		**0.0805**	**0.0805**	**2.2000e-004**		**0.0859**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.0629					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.5600e-003	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Total	**4.5896**	**3.5000e-004**	**0.0378**	**0.0000**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**		**0.0805**	**0.0805**	**2.2000e-004**		**0.0859**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Centerpointe (Operations - Trucks)

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	163.22	1000sqft	3.75	163,218.00	0
General Light Industry	40.80	1000sqft	0.94	40,804.00	0
Parking Lot	164.00	Space	3.11	65,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Lot Acreage based on information provided in the Site Plan. Total Lot Acreage is 8.78.

Construction Phase - Operations Run Only.

Off-road Equipment - Operations Run Only.

Trips and VMT - Operations Run Only.

Vehicle Trips - Operations Run Only.

Fleet Mix - Operations Run Only.

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Centerpointe (Operations - Trucks) - South Coast AQMD Air District, Winter

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	PhaseEndDate	1/18/2019	12/10/2018
tblConstructionPhase	PhaseStartDate	1/5/2019	12/10/2018
tblFleetMix	HHD	0.03	0.44
tblFleetMix	HHD	0.03	0.63
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LHD1	0.02	0.37
tblFleetMix	LHD1	0.02	0.17
tblFleetMix	LHD2	5.8620e-003	0.00
tblFleetMix	LHD2	5.8620e-003	0.00
tblFleetMix	MCY	4.7770e-003	0.00
tblFleetMix	MCY	4.7770e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	9.5600e-004	0.00
tblFleetMix	MH	9.5600e-004	0.00
tblFleetMix	MHD	0.02	0.18
tblFleetMix	MHD	0.02	0.21
tblFleetMix	OBUS	2.0370e-003	0.00
tblFleetMix	OBUS	2.0370e-003	0.00
tblFleetMix	SBUS	7.0500e-004	0.00

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

tblFleetMix	SBUS	7.0500e-004	0.00
tblFleetMix	UBUS	1.9440e-003	0.00
tblFleetMix	UBUS	1.9440e-003	0.00
tblLandUse	LandUseSquareFeet	163,220.00	163,218.00
tblLandUse	LandUseSquareFeet	40,800.00	40,804.00
tblLandUse	LotAcreage	1.48	3.11
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CNW_TTP	41.00	0.00
tblVehicleTrips	CW_TL	16.60	60.00
tblVehicleTrips	CW_TL	16.60	60.00
tblVehicleTrips	CW_TL	16.60	60.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.32	1.06
tblVehicleTrips	ST_TR	1.68	0.35
tblVehicleTrips	SU_TR	0.68	1.06
tblVehicleTrips	SU_TR	1.68	0.35
tblVehicleTrips	WD_TR	6.97	1.06

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

tblVehicleTrips	WD_TR	1.68	0.35

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Centerpointe (Operations - Trucks) - South Coast AQMD Air District, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Energy	0.0490	0.4451	0.3739	2.6700e-003		0.0338	0.0338		0.0338	0.0338		534.1030	534.1030	0.0102	9.7900e-003	537.2769
Mobile	1.6218	44.9475	13.2458	0.1635	5.3284	0.2955	5.6238	1.4994	0.2826	1.7820		17,432.6581	17,432.6581	0.8038		17,452.7537
Total	**6.2603**	**45.3930**	**13.6575**	**0.1661**	**5.3284**	**0.3294**	**5.6578**	**1.4994**	**0.3165**	**1.8159**		**17,966.8417**	**17,966.8417**	**0.8143**	**9.7900e-003**	**17,990.1165**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Energy	0.0490	0.4451	0.3739	2.6700e-003		0.0338	0.0338		0.0338	0.0338		534.1030	534.1030	0.0102	9.7900e-003	537.2769
Mobile	1.6218	44.9475	13.2458	0.1635	5.3284	0.2955	5.6238	1.4994	0.2826	1.7820		17,432.6581	17,432.6581	0.8038		17,452.7537
Total	**6.2603**	**45.3930**	**13.6575**	**0.1661**	**5.3284**	**0.3294**	**5.6578**	**1.4994**	**0.3165**	**1.8159**		**17,966.8417**	**17,966.8417**	**0.8143**	**9.7900e-003**	**17,990.1165**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	12/10/2018	12/10/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 3.11

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.6218	44.9475	13.2458	0.1635	5.3284	0.2955	5.6238	1.4994	0.2826	1.7820		17,432.6581	17,432.6581	0.8038		17,452.7537
Unmitigated	1.6218	44.9475	13.2458	0.1635	5.3284	0.2955	5.6238	1.4994	0.2826	1.7820		17,432.6581	17,432.6581	0.8038		17,452.7537

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	43.29	43.29	43.29	945,427	945,427
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	56.80	56.80	56.80	1,240,524	1,240,524
Total	100.09	100.09	100.09	2,185,952	2,185,952

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	60.00	8.40	6.90	100.00	0.00	0.00	100	0	0
Parking Lot	60.00	8.40	6.90	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	60.00	8.40	6.90	100.00	0.00	0.00	100	0	0

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.000000	0.000000	0.000000	0.000000	0.374200	0.000000	0.181900	0.443900	0.000000	0.000000	0.000000	0.000000	0.000000
Parking Lot	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956
Unrefrigerated Warehouse-No Rail	0.000000	0.000000	0.000000	0.000000	0.166700	0.000000	0.206900	0.626400	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0490	0.4451	0.3739	2.6700e-003		0.0338	0.0338		0.0338	0.0338		534.1030	534.1030	0.0102	9.7900e-003	537.2769
NaturalGas Unmitigated	0.0490	0.4451	0.3739	2.6700e-003		0.0338	0.0338		0.0338	0.0338		534.1030	534.1030	0.0102	9.7900e-003	537.2769

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	3632.11	0.0392	0.3561	0.2991	2.1400e-003		0.0271	0.0271		0.0271	0.0271		427.3076	427.3076	8.1900e-003	7.8300e-003	429.8469
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	907.76	9.7900e-003	0.0890	0.0748	5.3000e-004		6.7600e-003	6.7600e-003		6.7600e-003	6.7600e-003		106.7953	106.7953	2.0500e-003	1.9600e-003	107.4300
Total		**0.0490**	**0.4451**	**0.3739**	**2.6700e-003**		**0.0338**	**0.0338**		**0.0338**	**0.0338**		**534.1030**	**534.1030**	**0.0102**	**9.7900e-003**	**537.2769**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	3.63211	0.0392	0.3561	0.2991	2.1400e-003		0.0271	0.0271		0.0271	0.0271		427.3076	427.3076	8.1900e-003	7.8300e-003	429.8469
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0.90776	9.7900e-003	0.0890	0.0748	5.3000e-004		6.7600e-003	6.7600e-003		6.7600e-003	6.7600e-003		106.7953	106.7953	2.0500e-003	1.9600e-003	107.4300
Total		**0.0490**	**0.4451**	**0.3739**	**2.6700e-003**		**0.0338**	**0.0338**		**0.0338**	**0.0338**		**534.1030**	**534.1030**	**0.0102**	**9.7900e-003**	**537.2769**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Unmitigated	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.0629					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.5600e-003	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Total	**4.5896**	**3.5000e-004**	**0.0378**	**0.0000**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**		**0.0805**	**0.0805**	**2.2000e-004**		**0.0859**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.0629					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.5600e-003	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Total	**4.5896**	**3.5000e-004**	**0.0378**	**0.0000**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**		**0.0805**	**0.0805**	**2.2000e-004**		**0.0859**

7.0 Water Detail

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

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Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 3.3:

CALEEMOD OPERATIONAL EMISSIONS MODEL OUTPUTS (PASSENGER CARS)

Centerpointe (Operations - Passenger Cars)

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	163.22	1000sqft	3.75	163,218.00	0
General Light Industry	40.80	1000sqft	0.94	40,804.00	0
Parking Lot	164.00	Space	3.11	65,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Centerpointe (Operations - Passenger Cars) - South Coast AQMD Air District, Summer

Project Characteristics -

Land Use - Lot acreaged based on information from Site Plan. Total Lot acreage is 8.78 acres.

Construction Phase - Operations Run Only.

Off-road Equipment - Operations Run Only.

Trips and VMT - Operations Run Only.

On-road Fugitive Dust - Operations Run Only.

Vehicle Trips - Trip Rates based on information provided in the TIA (2018)

Fleet Mix - Based on information provided in the TIA (2018)

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	PhaseEndDate	1/18/2019	12/10/2018
tblConstructionPhase	PhaseStartDate	1/5/2019	12/10/2018
tblFleetMix	HHD	0.03	0.00
tblFleetMix	HHD	0.03	0.00
tblFleetMix	LDA	0.55	1.00
tblFleetMix	LDA	0.55	1.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.8620e-003	0.00
tblFleetMix	LHD2	5.8620e-003	0.00
tblFleetMix	MCY	4.7770e-003	0.00
tblFleetMix	MCY	4.7770e-003	0.00

tblFleetMix	MDV	0.12	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	9.5600e-004	0.00
tblFleetMix	MH	9.5600e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	2.0370e-003	0.00
tblFleetMix	OBUS	2.0370e-003	0.00
tblFleetMix	SBUS	7.0500e-004	0.00
tblFleetMix	SBUS	7.0500e-004	0.00
tblFleetMix	UBUS	1.9440e-003	0.00
tblFleetMix	UBUS	1.9440e-003	0.00
tblLandUse	LandUseSquareFeet	163,220.00	163,218.00
tblLandUse	LandUseSquareFeet	40,800.00	40,804.00
tblLandUse	LotAcreage	1.48	3.11
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOnRoadDust	HaulingPercentPave	100.00	0.00
tblOnRoadDust	VendorPercentPave	100.00	0.00
tblOnRoadDust	WorkerPercentPave	100.00	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CNW_TTP	41.00	0.00
tblVehicleTrips	CW_TL	16.60	60.00
tblVehicleTrips	CW_TL	16.60	60.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	CW_TTP	59.00	100.00

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tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.32	2.54
tblVehicleTrips	ST_TR	1.68	0.15
tblVehicleTrips	SU_TR	0.68	1.24
tblVehicleTrips	SU_TR	1.68	0.06
tblVehicleTrips	WD_TR	6.97	3.90
tblVehicleTrips	WD_TR	1.68	1.39

2.0 Emissions Summary

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Energy	0.0490	0.4451	0.3739	2.6700e-003		0.0338	0.0338		0.0338	0.0338		534.1030	534.1030	0.0102	9.7900e-003	537.2769
Mobile	1.1186	2.7766	41.1349	0.1548	17.6078	0.1092	17.7170	4.6676	0.1007	4.7683		15,443.2052	15,443.2052	0.3205		15,451.2188
Total	**5.7572**	**3.2221**	**41.5466**	**0.1574**	**17.6078**	**0.1432**	**17.7509**	**4.6676**	**0.1347**	**4.8023**		**15,977.3887**	**15,977.3887**	**0.3310**	**9.7900e-003**	**15,988.5816**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Energy	0.0490	0.4451	0.3739	2.6700e-003		0.0338	0.0338		0.0338	0.0338		534.1030	534.1030	0.0102	9.7900e-003	537.2769
Mobile	1.1186	2.7766	41.1349	0.1548	17.6078	0.1092	17.7170	4.6676	0.1007	4.7683		15,443.2052	15,443.2052	0.3205		15,451.2188
Total	**5.7572**	**3.2221**	**41.5466**	**0.1574**	**17.6078**	**0.1432**	**17.7509**	**4.6676**	**0.1347**	**4.8023**		**15,977.3887**	**15,977.3887**	**0.3310**	**9.7900e-003**	**15,988.5816**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	12/10/2018	12/10/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 3.11

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.1186	2.7766	41.1349	0.1548	17.6078	0.1092	17.7170	4.6676	0.1007	4.7683		15,443.2052	15,443.2052	0.3205		15,451.2188
Unmitigated	1.1186	2.7766	41.1349	0.1548	17.6078	0.1092	17.7170	4.6676	0.1007	4.7683		15,443.2052	15,443.2052	0.3205		15,451.2188

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	159.08	103.63	50.59	2,962,814	2,962,814
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	227.20	24.48	9.79	3,651,297	3,651,297
Total	386.28	128.12	60.39	6,614,111	6,614,111

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	60.00	8.40	6.90	100.00	0.00	0.00	100	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	60.00	8.40	6.90	100.00	0.00	0.00	100	0	0

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Parking Lot	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956
Unrefrigerated Warehouse-No Rail	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0490	0.4451	0.3739	2.6700e-003		0.0338	0.0338		0.0338	0.0338		534.1030	534.1030	0.0102	9.7900e-003	537.2769
NaturalGas Unmitigated	0.0490	0.4451	0.3739	2.6700e-003		0.0338	0.0338		0.0338	0.0338		534.1030	534.1030	0.0102	9.7900e-003	537.2769

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	3632.11	0.0392	0.3561	0.2991	2.1400e-003		0.0271	0.0271		0.0271	0.0271		427.3076	427.3076	8.1900e-003	7.8300e-003	429.8469
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	907.76	9.7900e-003	0.0890	0.0748	5.3000e-004		6.7600e-003	6.7600e-003		6.7600e-003	6.7600e-003		106.7953	106.7953	2.0500e-003	1.9600e-003	107.4300
Total		**0.0490**	**0.4451**	**0.3739**	**2.6700e-003**		**0.0338**	**0.0338**		**0.0338**	**0.0338**		**534.1030**	**534.1030**	**0.0102**	**9.7900e-003**	**537.2769**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	3.63211	0.0392	0.3561	0.2991	2.1400e-003		0.0271	0.0271		0.0271	0.0271		427.3076	427.3076	8.1900e-003	7.8300e-003	429.8469
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0.90776	9.7900e-003	0.0890	0.0748	5.3000e-004		6.7600e-003	6.7600e-003		6.7600e-003	6.7600e-003		106.7953	106.7953	2.0500e-003	1.9600e-003	107.4300
Total		**0.0490**	**0.4451**	**0.3739**	**2.6700e-003**		**0.0338**	**0.0338**		**0.0338**	**0.0338**		**534.1030**	**534.1030**	**0.0102**	**9.7900e-003**	**537.2769**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Unmitigated	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.0629					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.5600e-003	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Total	**4.5896**	**3.5000e-004**	**0.0378**	**0.0000**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**		**0.0805**	**0.0805**	**2.2000e-004**		**0.0859**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.0629					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.5600e-003	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Total	**4.5896**	**3.5000e-004**	**0.0378**	**0.0000**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**		**0.0805**	**0.0805**	**2.2000e-004**		**0.0859**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Centerpointe (Operations - Passenger Cars)

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	163.22	1000sqft	3.75	163,218.00	0
General Light Industry	40.80	1000sqft	0.94	40,804.00	0
Parking Lot	164.00	Space	3.11	65,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Project Characteristics -

Land Use - Lot acreaged based on information from Site Plan. Total Lot acreage is 8.78 acres.

Construction Phase - Operations Run Only.

Off-road Equipment - Operations Run Only.

Trips and VMT - Operations Run Only.

On-road Fugitive Dust - Operations Run Only.

Vehicle Trips - Trip Rates based on information provided in the TIA (2018)

Fleet Mix - Based on information provided in the TIA (2018)

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	PhaseEndDate	1/18/2019	12/10/2018
tblConstructionPhase	PhaseStartDate	1/5/2019	12/10/2018
tblFleetMix	HHD	0.03	0.00
tblFleetMix	HHD	0.03	0.00
tblFleetMix	LDA	0.55	1.00
tblFleetMix	LDA	0.55	1.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.8620e-003	0.00
tblFleetMix	LHD2	5.8620e-003	0.00
tblFleetMix	MCY	4.7770e-003	0.00
tblFleetMix	MCY	4.7770e-003	0.00

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

tblFleetMix	MDV	0.12	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	9.5600e-004	0.00
tblFleetMix	MH	9.5600e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	2.0370e-003	0.00
tblFleetMix	OBUS	2.0370e-003	0.00
tblFleetMix	SBUS	7.0500e-004	0.00
tblFleetMix	SBUS	7.0500e-004	0.00
tblFleetMix	UBUS	1.9440e-003	0.00
tblFleetMix	UBUS	1.9440e-003	0.00
tblLandUse	LandUseSquareFeet	163,220.00	163,218.00
tblLandUse	LandUseSquareFeet	40,800.00	40,804.00
tblLandUse	LotAcreage	1.48	3.11
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOnRoadDust	HaulingPercentPave	100.00	0.00
tblOnRoadDust	VendorPercentPave	100.00	0.00
tblOnRoadDust	WorkerPercentPave	100.00	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CNW_TTP	41.00	0.00
tblVehicleTrips	CW_TL	16.60	60.00
tblVehicleTrips	CW_TL	16.60	60.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	CW_TTP	59.00	100.00

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.32	2.54
tblVehicleTrips	ST_TR	1.68	0.15
tblVehicleTrips	SU_TR	0.68	1.24
tblVehicleTrips	SU_TR	1.68	0.06
tblVehicleTrips	WD_TR	6.97	3.90
tblVehicleTrips	WD_TR	1.68	1.39

2.0 Emissions Summary

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Energy	0.0490	0.4451	0.3739	2.6700e-003		0.0338	0.0338		0.0338	0.0338		534.1030	534.1030	0.0102	9.7900e-003	537.2769
Mobile	1.0256	3.0243	35.7227	0.1443	17.6078	0.1092	17.7170	4.6676	0.1007	4.7683		14,408.0518	14,408.0518	0.2942		14,415.4068
Total	**5.6641**	**3.4697**	**36.1344**	**0.1470**	**17.6078**	**0.1432**	**17.7509**	**4.6676**	**0.1347**	**4.8023**		**14,942.2353**	**14,942.2353**	**0.3047**	**9.7900e-003**	**14,952.7696**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Energy	0.0490	0.4451	0.3739	2.6700e-003		0.0338	0.0338		0.0338	0.0338		534.1030	534.1030	0.0102	9.7900e-003	537.2769
Mobile	1.0256	3.0243	35.7227	0.1443	17.6078	0.1092	17.7170	4.6676	0.1007	4.7683		14,408.0518	14,408.0518	0.2942		14,415.4068
Total	**5.6641**	**3.4697**	**36.1344**	**0.1470**	**17.6078**	**0.1432**	**17.7509**	**4.6676**	**0.1347**	**4.8023**		**14,942.2353**	**14,942.2353**	**0.3047**	**9.7900e-003**	**14,952.7696**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	12/10/2018	12/10/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 3.11

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0256	3.0243	35.7227	0.1443	17.6078	0.1092	17.7170	4.6676	0.1007	4.7683		14,408.0518	14,408.0518	0.2942		14,415.4068
Unmitigated	1.0256	3.0243	35.7227	0.1443	17.6078	0.1092	17.7170	4.6676	0.1007	4.7683		14,408.0518	14,408.0518	0.2942		14,415.4068

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	159.08	103.63	50.59	2,962,814	2,962,814
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	227.20	24.48	9.79	3,651,297	3,651,297
Total	386.28	128.12	60.39	6,614,111	6,614,111

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	60.00	8.40	6.90	100.00	0.00	0.00	100	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	60.00	8.40	6.90	100.00	0.00	0.00	100	0	0

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Parking Lot	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956
Unrefrigerated Warehouse-No Rail	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0490	0.4451	0.3739	2.6700e-003		0.0338	0.0338		0.0338	0.0338		534.1030	534.1030	0.0102	9.7900e-003	537.2769
NaturalGas Unmitigated	0.0490	0.4451	0.3739	2.6700e-003		0.0338	0.0338		0.0338	0.0338		534.1030	534.1030	0.0102	9.7900e-003	537.2769

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	3632.11	0.0392	0.3561	0.2991	2.1400e-003		0.0271	0.0271		0.0271	0.0271		427.3076	427.3076	8.1900e-003	7.8300e-003	429.8469
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	907.76	9.7900e-003	0.0890	0.0748	5.3000e-004		6.7600e-003	6.7600e-003		6.7600e-003	6.7600e-003		106.7953	106.7953	2.0500e-003	1.9600e-003	107.4300
Total		**0.0490**	**0.4451**	**0.3739**	**2.6700e-003**		**0.0338**	**0.0338**		**0.0338**	**0.0338**		**534.1030**	**534.1030**	**0.0102**	**9.7900e-003**	**537.2769**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	3.63211	0.0392	0.3561	0.2991	2.1400e-003		0.0271	0.0271		0.0271	0.0271		427.3076	427.3076	8.1900e-003	7.8300e-003	429.8469
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0.90776	9.7900e-003	0.0890	0.0748	5.3000e-004		6.7600e-003	6.7600e-003		6.7600e-003	6.7600e-003		106.7953	106.7953	2.0500e-003	1.9600e-003	107.4300
Total		**0.0490**	**0.4451**	**0.3739**	**2.6700e-003**		**0.0338**	**0.0338**		**0.0338**	**0.0338**		**534.1030**	**534.1030**	**0.0102**	**9.7900e-003**	**537.2769**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Unmitigated	4.5896	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.0629					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.5600e-003	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Total	**4.5896**	**3.5000e-004**	**0.0378**	**0.0000**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**		**0.0805**	**0.0805**	**2.2000e-004**		**0.0859**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5232					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.0629					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.5600e-003	3.5000e-004	0.0378	0.0000		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004		0.0805	0.0805	2.2000e-004		0.0859
Total	**4.5896**	**3.5000e-004**	**0.0378**	**0.0000**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**		**0.0805**	**0.0805**	**2.2000e-004**		**0.0859**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea

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Attachment: Project 1_Air Quality Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Centerpointe

MOBILE SOURCE HEALTH RISK ASSESSMENT

CITY OF MORENO VALLEY

PREPARED BY:

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JUNE 4, 2018

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Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

LIST OF ABBREVIATED TERMS

(1)	Reference
µg	Microgram
AERMOD	Atmospheric Dispersion Modeling System
APS	Auxiliary Power System
AQMD	Air Quality Management District
ARB	Air Resources Board
CEQA	California Environmental Quality Act
CPF	Cancer Potency Factor
DPM	Diesel Particulate Matter
EMFAC	Emission Factor Model
EPA	Environmental Protection Agency
HHD	Heavy Heavy-Duty
HI	Hazard Index
HRA	Health Risk Assessment
LHD	Light Heavy-Duty
MATES	Multiple Air Toxics Exposure Study
MEIR	Maximally Exposed Individual Receptor
MEISC	Maximally Exposed Individual School Child
MEIW	Maximally Exposed Individual Worker
MHD	Medium Heavy-Duty
NAD	North American Datum
OEHHA	Office of Environmental Health Hazard
PCE	Passenger Car Equivalent
PM10	Particulate Matter 10 microns in diameter or less
Project	Centerpointe
REL	Reference Exposure Level
RM	Recommended Measures
SCAQMD	South Coast Air Quality Management District
SRA	Source Receptor Area
TAC	Toxic Air Contaminant
TIA	Traffic Impact Analysis
URF	Unit Risk Factor
UTM	Universal Transverse Mercator
VMT	Vehicle Miles Traveled

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

EXECUTIVE SUMMARY

This report evaluated the potential mobile source health risk impacts to sensitive receptors (residents) and adjacent workers associated with the development of the proposed Project, more specifically, health risk impacts as a result of exposure to diesel particulate matter (DPM) as a result of heavy-duty diesel trucks accessing the site. This section summarizes the significance criteria and Project mobile source health risks.

The results of the health risk assessment of lifetime cancer risk from Project-generated DPM emissions are provided in Table ES-1 below for the Project.

Residential Exposure Scenario:

The residential land use with the greatest potential exposure to Project DPM source emissions is located north of Alessandro Boulevard and west of Frederick Street at an existing residential home. At the maximally exposed individual receptor (MEIR), the maximum incremental cancer risk attributable to Project DPM source emissions is estimated at 0.24 in one million, which is less than the threshold of 10 in one million. At this same location, non-cancer risks were estimated to be 0.00009, which would not exceed the applicable threshold of 1.0. As such, the Project will not cause a significant human health or cancer risk to adjacent residences.

Worker Exposure Scenario:

The worker receptor land use with the greatest potential exposure to Project DPM source emissions is located immediately adjacent to the east of the Project site at an existing warehouse building. At the maximally exposed individual worker (MEIW), the maximum incremental cancer risk impact at this location is 0.23 in one million which is less than the threshold of 10 in one million. Maximum non-cancer risks at this same location were estimated to be 0.0007, which would not exceed the applicable threshold of 1.0. As such, the Project will not cause a significant human health or cancer risk to adjacent workers.

School Child Exposure Scenario:

There are no schools located within a ¼ mile of the Project site. As such, there would be no significant impacts that would occur to any schools in the vicinity of the Project.

TABLE ES-1: SUMMARY OF CANCER AND NON-CANCER RISKS

Time Period	Location	Maximum Lifetime Cancer Risk (Risk per Million)	Significance Threshold (Risk per Million)	Exceeds Significance Threshold
30 Year Exposure	Maximum Exposed Sensitive Receptor	0.24	10	NO
25 Year Exposure	Maximum Exposed Worker Receptor	0.23	10	NO
Time Period	**Location**	**Maximum Hazard Index**	**Significance Threshold**	**Exceeds Significance Threshold**
30 Year Exposure	Maximum Exposed Sensitive Receptor	0.00009	1.0	NO
25 Year Exposure	Maximum Exposed Worker Receptor	0.0007	1.0	NO

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1 INTRODUCTION

The purpose of this Health Risk Assessment (HRA) is to evaluate Project-related impacts to sensitive receptors (residential) and adjacent workers as a result of heavy-duty diesel trucks accessing the site.

The South Coast Air Quality Management District (SCAQMD) typically issues a comment letter on the Notice of Preparation of a CEQA Document. Per the SCAQMD's typical comment letter, if a proposed Project is expected to generate/attract diesel trucks, which emit diesel particulate matter (DPM), preparation of a HRA is necessary. This document serves to meet the SCAQMD's request for preparation of a HRA. The mobile source HRA has been prepared in accordance with the document Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis (1) and is comprised of all relevant and appropriate procedures presented by the U.S. EPA, California Environmental Protection Agency and SCAQMD. Cancer risk is expressed in terms of expected incremental incidence per million population. The SCAQMD has established an incidence rate of ten (10) persons per million as the maximum acceptable incremental cancer risk due to DPM exposure. This threshold serves to determine whether or not a given project has a potentially significant development-specific and cumulative impact.

The SCAQMD has published a report on how to address cumulative impacts from air pollution: *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution* (2). In this report the SCAQMD clearly states (Page D-3):

"…the SCAQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for toxic air contaminant (TAC) emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.

Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."

The SCAQMD has also established non-carcinogenic risk parameters for use in HRAs. Non-carcinogenic risks are quantified by calculating a "hazard index," expressed as the ratio between the ambient pollutant concentration and its toxicity or Reference Exposure Level (REL). An REL is a concentration at or below which health effects are not likely to occur. A hazard index less of than one (1.0) means that adverse health effects are not expected. Within this analysis, non-carcinogenic exposures of less than 1.0 are considered less-than-significant.

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1.1 SITE LOCATION

The proposed Centerpointe site is located on the northeast corner of Frederick Street and Brodiaea Avenue in the City of Moreno Valley, as shown on Exhibit 1-A. Existing uses in the Project study area include a commercial-designated vacant lot north of the Project site, existing business park/warehouse use to the east, the Riverside County Department of Waste Resources facilities to the south, and existing City of Moreno Valley offices to the west. The closest existing residential homes to the Project site are located approximately 800 feet north of the Project site across Alessandro Boulevard. The March Air Reserve Base/Inland Port Airport (MARB/IPA) runway is located approximately 1.2 miles southwest of the Project site, and Interstate 215 (I-215) is located roughly 1.2 miles west of the Project site.

1.2 PROJECT DESCRIPTION

The Project is proposed to consist of up to 163,218 square feet (sf) of warehouse (without cold storage) use (80 percent of the total square footage) and 40,804 sf of general light industrial use (20 percent of the total square footage) for a total of 204,022 sf within a single building, as shown on Exhibit 1-B. The Project is anticipated to have an Opening Year of 2020[1]. At the time this air quality analysis was prepared the future tenants of the proposed Project were unknown. The Project business operations would primarily be conducted within the enclosed buildings, except for traffic movement, parking, as well as loading and unloading of trucks at designated loading bays. This air quality analysis is intended to describe air quality level impacts associated with the expected typical warehouse and distribution storage activities at the Project site. At the time of this analysis, no cold storage was planned at the Project site, and therefore is not analyzed in this report.

[1] The Traffic Impact Analysis (TIA) prepared for the Project evaluates an Opening Year of 2023 since the City of Moreno Valley traffic study guidelines require the Opening Year to be a minimum of 5 years from baseline (2018) conditions. Utilizing a 2020 Opening Year for purposes of this AQIA would generate more emissions than if the Project utilized a 2023 Opening Year consistent with the traffic study because as the analysis year increases, vehicle emission factors would decrease as a result of emissions regulations becoming more stringent. Utilizing a 2020 Opening Year for purposes of the HRA herein represents a conservative estimate of emissions compared to if a 2023 Opening Year, consistent with the traffic study, were utilized.

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EXHIBIT 1-A: LOCATION MAP

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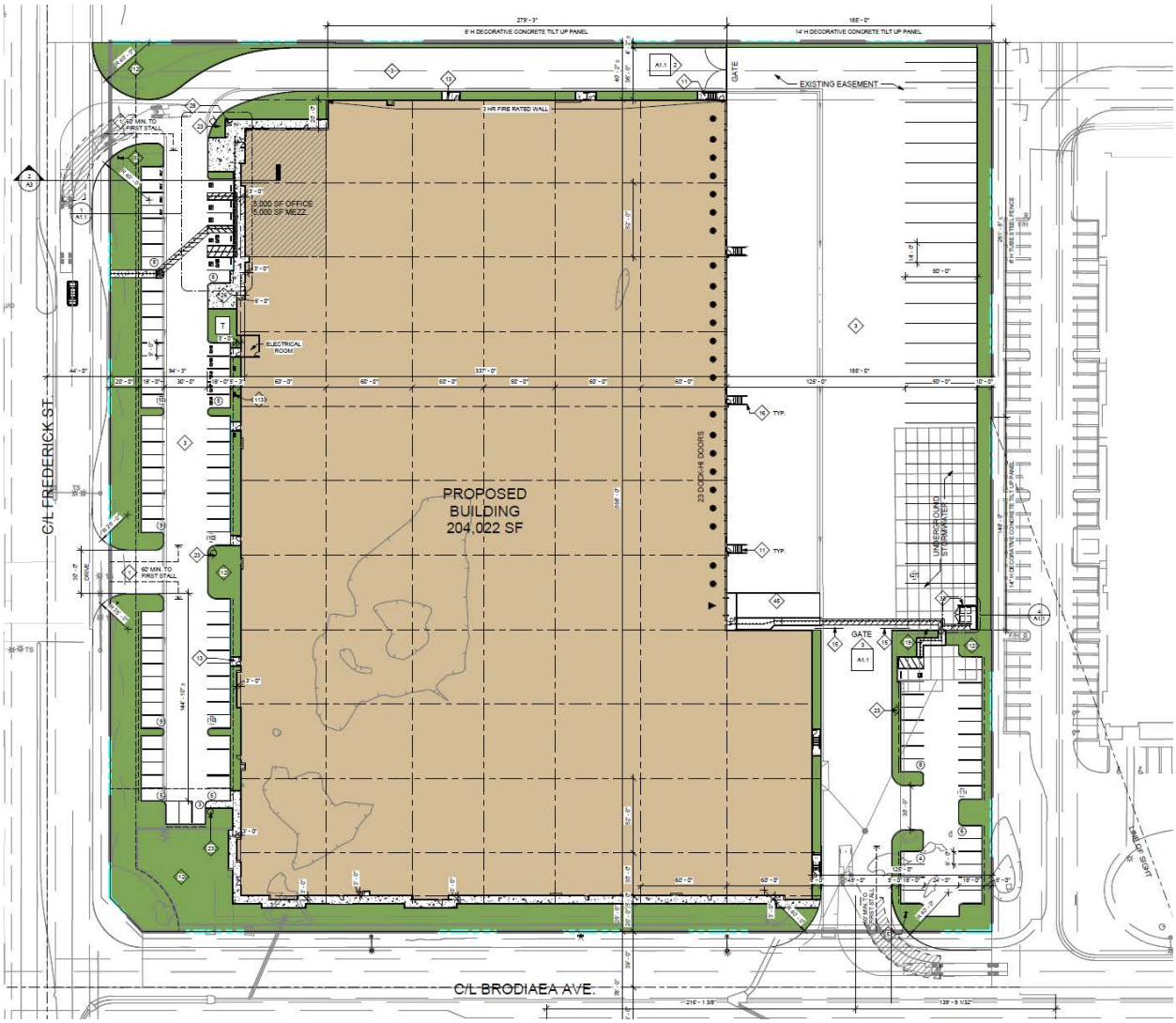
EXHIBIT 1-B: SITE PLAN



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2 BACKGROUND

2.1 REGULATORY SETTING

ARB estimates that the average Californian is exposed to 1.2-1.8 µg/m^3 of DPM annually, this exposure results in an average cancer risk of 360-540 in one million for the average Californian exposed to DPM (3).

As noted above, this HRA is based on SCAQMD guidelines to produce conservative estimates of risk posed by exposure to DPM. The conservative nature of this analysis is due primarily to the following factors:

- The ARB-adopted diesel exhaust Unit Risk Factor (URF) of 300 in one million per µg/m3 is based upon the upper 95 percentile of estimated risk for each of the epidemiological studies utilized to develop the URF. Using the 95th percentile URF represents a very conservative (health-protective) risk posed by DPM.
- The risk estimates assume sensitive receptors will be subject to DPM for 24 hours a day, 350 days a year.
- The emissions derived assume that every truck accessing the project site will idle for 15 minutes under the unmitigated scenario, this is an overestimation of actual idling times and thus conservative.[2] It should be noted that ARB's anti-idling requirements impose a 5-minute maximum idling time and therefore the analysis conservatively overestimates DPM emissions from idling by a factor of 3.

2.2 EMISSIONS ESTIMATION

2.2.1 ON-SITE AND OFF-SITE TRUCK ACTIVITY

Vehicle DPM emissions were estimated using emission factors for particulate matter less than 10µm in diameter (PM_{10}) generated with the 2014 version of the Emission FACtor model (EMFAC) developed by the ARB. EMFAC 2014 is a mathematical model that was developed to calculate emission rates from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the ARB to project changes in future emissions from on-road mobile sources (4). The most recent version of this model, EMFAC 2014, incorporates regional motor vehicle data, information and estimates regarding the distribution of vehicle miles traveled (VMT) by speed, and number of starts per day.

Several distinct emission processes are included in EMFAC 2014. Emission factors calculated using EMFAC 2014 are expressed in units of grams per vehicle miles traveled (g/VMT) or grams per idle-hour (g/idle-hr), depending on the emission process. The emission processes and corresponding emission factor units associated with diesel particulate exhaust for this Project are presented below.

[2] Although the Project is required to comply with ARB's idling limit of 5 minutes, staff at SCAQMD recommends that the on-site idling emissions should be estimated for 15 minutes of truck idling (personal communication, in person, with Jillian Wong, December 22, 2016), which would take into account on-site idling which occurs while the trucks are waiting to pull up to the truck bays, idling at the bays, idling at check-in and check-out, etc.

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For this Project, annual average PM_{10} emission factors were generated by running EMFAC 2014 in EMFAC Mode for vehicles in the SCAQMD jurisdiction. The EMFAC Mode generates emission factors in terms of grams of pollutant emitted per vehicle activity and can calculate a matrix of emission factors at specific values of temperature, relative humidity, and vehicle speed. The model was run for speeds traveled in the vicinity of the Project. The vehicle travel speeds for each segment modeled are summarized below.

- Idling – on-site loading/unloading and truck gate
- 5 miles per hour – on-site vehicle movement including driving and maneuvering
- 25 miles per hour – off-site vehicle movement including driving and maneuvering.

Calculated emission factors are shown at Table 2-1. As a conservative measure, a 2020 EMFAC 2014 run was conducted and a static 2020 emissions factor data set was used for the entire duration of analysis herein (e.g., 30 years). Use of 2020 emission factors would overstate potential impacts since this approach assumes that emission factors remain "static" and do not change over time due to fleet turnover or cleaner technology with lower emissions that would incorporated after 2020. Additionally, based on EMFAC2014, Light-Heavy-Duty Trucks comprise of 43.15% diesel, Medium-Heavy-Duty Trucks comprise of 87.2% diesel, and Heavy-Heavy-Duty Trucks comprise of 99.15% diesel trucks and have been accounted for accordingly in the emissions factor generation.

The vehicle DPM exhaust emissions were calculated for running exhaust emissions. The running exhaust emissions were calculated by applying the running exhaust PM10 emission factor (g/VMT) from EMFAC over the total distance traveled. The following equation was used to estimate off-site emissions for each of the different vehicle classes comprising the mobile sources (4):

$Emissions_{speedA}$ (g/s) = $EF_{RunExhaust}$ (g/VMT) * Distance (VMT/trip) * Number of Trips (trips/day) / seconds per day

Where:

$Emissions_{speedA}$ (g/s): Vehicle emissions at a given speed A;

$EF_{RunExhaust}$ (g/VMT): EMFAC running exhaust PM_{10} emission factor at speed A;

Distance (VMT/trip): Total distance traveled per trip.

Similar to off-site traffic, on-site vehicle running emissions were calculated by applying the running exhaust PM_{10} emission factor (g/VMT) from EMFAC and the total vehicle trip number over the length of the driving path using the same formula presented above for on-site emissions. In addition, on-site vehicle idling exhaust emissions were calculated by applying the idle exhaust PM_{10} emission factor (g/idle-hr) from EMFAC and the total truck trip over the total idle time (15 minutes). The following equation was used to estimate the on-site vehicle idling emissions for each of the different vehicle classes (4):

$Emissions_{idle}$ (g/s) = EF_{idle} (g/hr) * Number of Trips (trips/day) * Idling Time (min/trip) *

60 minutes per hour / seconds per day

Where:

$Emissions_{idle}$ (g/s): Vehicle emissions during idling;

EF_{idle}(g/s): EMFAC idle exhaust PM_{10} emission factor.

TABLE 2-1: 2020 WEIGHTED AVERAGE DPM EMISSIONS FACTORS

Speed	Weighted Average
0 (idling)	0.12132 (g/idle-hr)
5	0.04603 (g/s)
25	0.02494 (g/s)

Each roadway was modeled as a line source (made up of multiple adjacent volume sources). Due to the large number of volume sources modeled for this analysis, the corresponding coordinates of each volume source have not been included in this report but are included in Appendix "2.1". The DPM emission rate for each volume source was calculated by multiplying the emission factor (based on the average travel speed along the roadway) by the number of trips and the distance traveled along each roadway segment and dividing the result by the number of volume sources along that roadway, as illustrated on Table 2-2. The modeled emission sources are illustrated on Exhibits 2-A and 2-B. The modeled truck travel routes included in the HRA are based on the truck trip distributions (inbound and outbound) available from the Project's Traffic Impact Analysis (TIA) (5). The modeled truck route is consistent with the trip distribution patterns identified in the Project's traffic study is supported by substantial evidence and was modeled to determine the potential impacts to sensitive receptors along the primary truck routes. The modeling domain is limited to the Project's primary truck route and includes off-site sources in the study area for approximately ¼ mile to over ½ mile. This modeling domain is consistent with and more conservative than using only a ¼ mile modeling domain which is supported by substantial evidence since several studies have shown that the greatest potential risks occur within a ¼ mile of the primary source of emissions (in the case of the Project this is the on-site idling, and on-site travel).

On-site truck idling was estimated to occur as trucks enter and travel through the facility. Although the Project is required to comply with CARB's idling limit of 5 minutes, staff at SCAQMD recommends that the on-site idling emissions should be estimated for 15 minutes of truck idling (6), which would take into account on-site idling which occurs while the trucks are waiting to pull up to the truck bays, idling at the bays, idling at check-in and check-out, etc. As such, this analysis estimated truck idling at 15 minutes, consistent with SCAQMD's recommendation.

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TABLE 2-2: DPM EMISSIONS FROM PROJECT TRUCKS

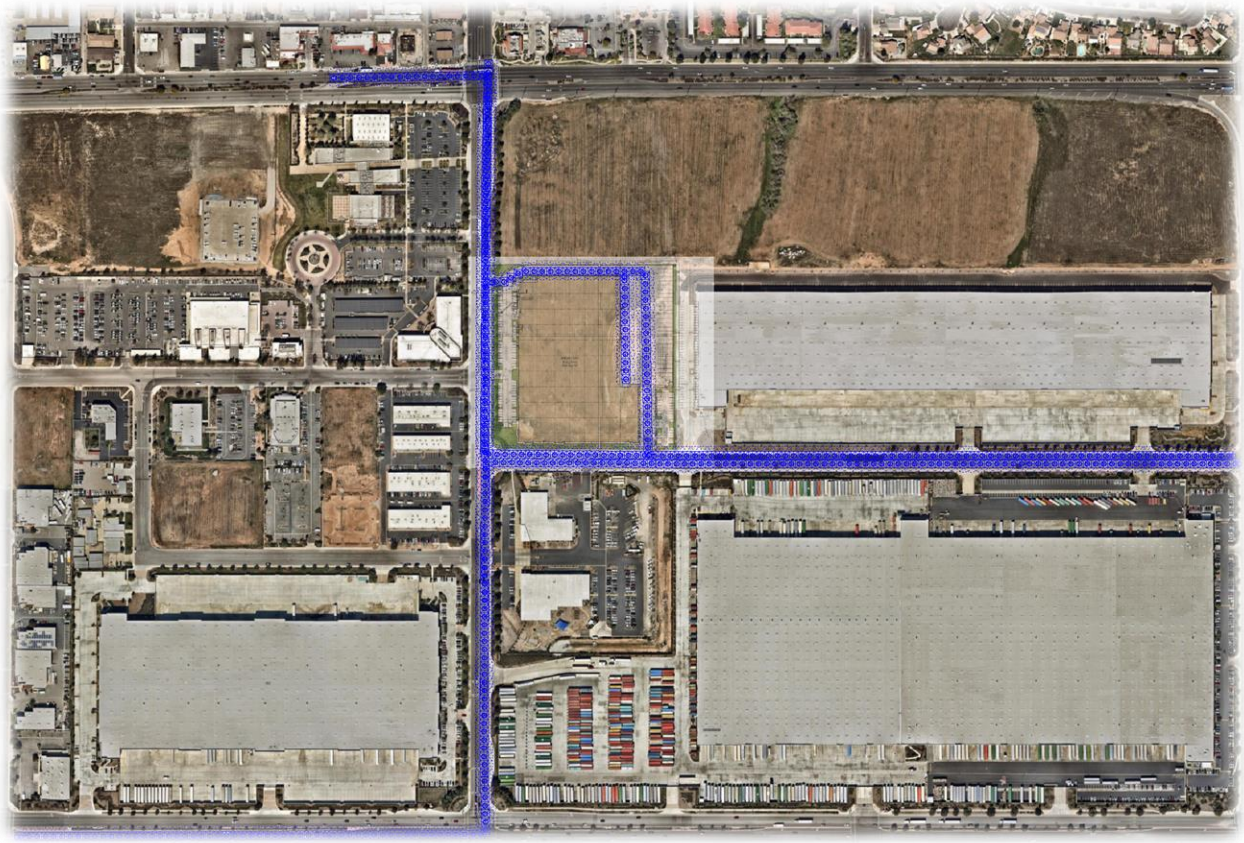
Truck Emission Rates						
Source	Trucks Per Day	VMT [a] (miles/day)	Truck Emission Rate [b] (grams/mile)	Truck Emission Rate [b] (grams/idle-hour)	Daily Truck Emissions [c] (grams/day)	Modeled Emission Rates (g/second)
On-Site Idling	50			0.1213	1.52	1.755E-05
On-Site Travel	100	21.65	0.0460		1.00	1.154E-05
Off-Site Travel 20% Inbound on Brodiea Av.	10	3.81	0.0249		0.09	1.099E-06
Off-Site Travel 40% Outbound on Brodiea Av.	20	7.62	0.0249		0.19	2.198E-06
Off-Site Travel 35% Inbound Dwy 1	18	11.61	0.0249		0.29	3.350E-06
Off-Site Travel 45% Inbound Dwy 3	23	14.72	0.0249		0.37	4.250E-06
Off-Site Travel 10% Outbound Dwy 3	5	1.82	0.0249		0.05	5.247E-07
Off-Site Travel 50% Outbound Dwy 1	25	5.95	0.0249		0.15	1.718E-06

[a] Vehicle miles traveled are for modeled truck route only.

[b] Emission rates determined using EMFAC 2014. Idle emission rates are expressed in grams per idle hour rather than grams per mile.

[c] This column includes the total truck travel and truck idle emissions. For idle emissions this column includes emissions based on the assumption that each truck idles for 15 minutes.

EXHIBIT 2-A: MODELED EMISSION SOURCES



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According to the *Centerpointe Traffic Impact Analysis* prepared by Urban Crossroads, Inc., the Project is expected to generate a net total of approximately 486 trip-ends per day (actual vehicles) (5). The Project trip generation includes 100 truck trip-ends per day from the proposed buildings within the Project site. This air quality study relies on the net Project trips to accurately account for the effect of individual truck trips on the study area roadway network.

The vehicle fleet mix, in terms of actual trucks, as derived from the traffic study for the Project is comprised of the following based on land use:

- General Light Industrial: 37.42% LHD, 18.19% MHD, and 44.39% HHD
- Warehouse (without cold storage): 16.67% LHD, 20.69% MHD, and 62.64% HHD

2.3 EXPOSURE QUANTIFICATION

The analysis herein has been conducted in accordance with the guidelines in the Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis (1). SCAQMD recommends using the Environmental Protection Agency's (U.S. EPA's) AERMOD model. For purposes of this analysis, the model was used to calculate annual average particulate concentrations associated with site operations.

The model offers additional flexibility by allowing the user to assign an initial release height and vertical dispersion parameters for mobile sources representative of a roadway. For this HRA, the roadways were modeled as adjacent volume sources. Roadways were modeled using the U.S. EPA's haul route methodology for modeling of on-site and off-site truck movement. More specifically, the Haul Road Volume Source Calculator in AERMOD View has been utilized to determine the release height parameters. Based on the US EPA methodology, the Project's modeled sources would result in a release height of 3.49 meters, and an initial lateral dimension of 4.0 meters, and an initial vertical dimension of 3.25 meters.

SCAQMD required model parameters are presented in Table 2-4 (7). The model requires additional input parameters including emission data and local meteorology. Meteorological data from the SCAQMD's Perris Monitoring Station (SRA 24) was used to represent local weather conditions and prevailing winds (8).

TABLE 2-4: AERMOD MODEL PARAMETERS

Dispersion Coefficient (Urban/Rural)	Urban
Terrain (Flat/Elevated)	Elevated (Regulatory Default)
Averaging Time	1 year (5-year Meteorological Data Set)
Receptor Height	0 meters (Regulatory Default)

Universal Transverse Mercator (UTM) coordinates for World Geodetic System (WGS) 84 were used to locate the project boundaries, each volume source location, and receptor locations in the project vicinity. The AERMOD dispersion model summary output files for the proposed facility are presented in Appendix "2.1".

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Modeled sensitive receptors were placed at residential and non-residential locations. Based on recommendations from SCAMD staff, a receptor grids with a maximum of 100 meters spacing were placed at residential and worker locations to ensure that the maximum impacts are properly analyzed.

Receptors may be placed at applicable structure locations for residential and worker property and not the necessarily the boundaries of these uses. It should be noted that the primary purpose of receptor placement is focused on long-term exposure. For example, the HRA evaluates the potential health risks to residential and worker over a period of 30 or 25 years of exposure respectively. As such, even though it is unlikely to occur in practical terms (because the amount of time spent indoors), this study assumes that a resident or worker would be exposed over a long-period of time for 12 or 24-hours per day at the structure they reside or work.

Furthermore, worker receptors immediately adjacent to the Project site have been evaluated in the HRA. Any impacts to workers located further away from the Project site than the modeled worker receptors would have a lesser impact than what has already been disclosed in the HRA at the MEIW.

Discrete variants for daily breathing rates, exposure frequency, and exposure duration were obtained from relevant distribution profiles presented in the 2015 OEHHA Guidelines. Tables 2-5 and 2-6 summarize the Exposure Parameters for Residents and Offsite Worker scenarios based on 2015 OEHHA Guidelines. Appendix 2.2 includes the detailed risk calculation.

TABLE 2-5: EXPOSURE ASSUMPTIONS FOR INDIVIDUAL CANCER RISK (30 YEAR RESIDENTIAL)

Age	Daily Breathing Rate (L/kg-day)	Age Specific Factor	Exposure Duration (years)	Fraction of Time at Home	Exposure Frequency (days/year)	Exposure Time (hours/day)
-0.25 to 0	361	10	0.25	1	350	24
0 to 2	1090	10	2	1	350	24
2 to 16	572	3	14	1	350	24
16 to 30	261	1	14	0.73	350	24

TABLE 2-6: EXPOSURE ASSUMPTIONS FOR INDIVIDUAL CANCER RISK (25 YEAR WORKER)

Age	Daily Breathing Rate (L/kg-day)	Age Specific Factor	Exposure Duration (years)	Exposure Frequency (days/year)	Exposure Time (hours/day)
16 to 41	271	1	25	250	12

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2.4 CARCINOGENIC CHEMICAL RISK

The SCAQMD CEQA Air Quality Handbook (1993) states that emissions of toxic air contaminants (TACs) are considered significant if a HRA shows an increased risk of greater than 10 in one million. Based on guidance from the SCAQMD in the document Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis (1), for purposes of this analysis, 10 in one million is used as the cancer risk threshold for the proposed Project.

Excess cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer over a lifetime as a direct result of exposure to potential carcinogens over a specified exposure duration. The estimated risk is expressed as a unitless probability. The cancer risk attributed to a chemical is calculated by multiplying the chemical intake or dose at the human exchange boundaries (e.g., lungs) by the chemical-specific cancer potency factor (CPF). A risk level of 10 in one million implies a likelihood that up to 10 people, out of one million equally exposed people would contract cancer if exposed continuously (24 hours per day) to the levels of toxic air contaminants over a specified duration of time. As an example, the risk of dying from accidental drowning is 1,000 in a million which is 100 times more than the SCAQMD's threshold of 10 in one million, the nearest comparison to 10 in one million is the 7 in one million lifetime chance that an individual would be struck by lightning.

Guidance from CARB and the California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA) recommends a refinement to the standard point estimate approach when alternate human body weights and breathing rates are utilized to assess risk for susceptible subpopulations such as children. For the inhalation pathway, the procedure requires the incorporation of several discrete variates to effectively quantify dose. Once determined, contaminant dose is multiplied by the cancer potency factor (CPF) in units of inverse dose expressed in milligrams per kilogram per day (mg/kg/day)-1 to derive the cancer risk estimate. Therefore, to assess exposures, the following dose algorithm was utilized.

$$DOSEair = (Cair \times [BR/BW] \times A \times EF) \times (1 \times 10^{-6})$$

Where:

DOSEair	=	chronic daily intake (mg/kg/day)
Cair	=	concentration of contaminant in air (ug/m3)
[BR/BW]	=	daily breathing rate normalized to body weight (L/kg BW-day)
A	=	inhalation absorption factor
EF	=	exposure frequency (days/365 days)
BW	=	body weight (kg)
1 x 10 -6	=	conversion factors (ug to mg, L to m3)

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RISKair = DOSEair x CPF x ED/AT

Where:

DOSEair	=	chronic daily intake (mg/kg/day)
CPF	=	cancer potency factor
ED	=	number of years within particular age group
AT	=	averaging time

2.5 NON-CARCINOGENIC EXPOSURES

An evaluation of the potential noncarcinogenic effects of chronic exposures was also conducted. Adverse health effects are evaluated by comparing a compound's annual concentration with its toxicity factor or Reference Exposure Level (REL). The REL for diesel particulates was obtained from OEHHA for this analysis. The chronic reference exposure level (REL) for DPM was established by OEHHA as 5 µg/m^3 (OEHHA Toxicity Criteria Database, http://www.oehha.org/risk/chemicaldb/index.asp).

The non-cancer hazard index was calculated (consistent with SCAQMD methodology) as follows:

The relationship for the non-cancer health effects of DPM is given by the following equation:

$$HI_{DPM} = C_{DPM}/REL_{DPM}$$

Where:

HI_{DPM}	=	Hazard Index; an expression of the potential for non-cancer health effects.
C_{DPM}	=	Annual average DPM concentration (µg/m^3).
REL_{DPM}	=	Reference exposure level (REL) for DPM; the DPM concentration at which no adverse health effects are anticipated.

For purposes of this analysis the hazard index for the respiratory endpoint totaled less than one for all receptors in the project vicinity, and thus is less than significant.

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2.6 POTENTIAL PROJECT-RELATED DPM SOURCE CANCER AND NON-CANCER RISKS[3]

Residential Exposure Scenario:

The residential land use with the greatest potential exposure to Project DPM source emissions is located north of Alessandro Boulevard and west of Frederick Street at an existing residential home. At the maximally exposed individual receptor (MEIR), the maximum incremental cancer risk attributable to Project DPM source emissions is estimated at 0.24 in one million, which is less than the threshold of 10 in one million. At this same location, non-cancer risks were estimated to be 0.00009, which would not exceed the applicable threshold of 1.0. As such, the Project will not cause a significant human health or cancer risk to adjacent residences. The nearest modeled receptors are illustrated on Exhibit 2-B.

Worker Exposure Scenario:

The worker receptor land use with the greatest potential exposure to Project DPM source emissions is located immediately adjacent to the east of the Project site at an existing warehouse building. At the maximally exposed individual worker (MEIW), the maximum incremental cancer risk impact at this location is 0.23 in one million which is less than the threshold of 10 in one million. Maximum non-cancer risks at this same location were estimated to be 0.0007, which would not exceed the applicable threshold of 1.0. As such, the Project will not cause a significant human health or cancer risk to adjacent workers. The nearest modeled receptors are illustrated on Exhibit 2-B.

3 SCAQMD guidance does not require assessment of the potential health risk to on-site workers. Excerpts from the document OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines—The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (OEHHA 2003), also indicate that it is not necessary to examine the health effects to on-site workers unless required by RCRA (Resource Conservation and Recovery Act) / CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) or the worker resides on-site.

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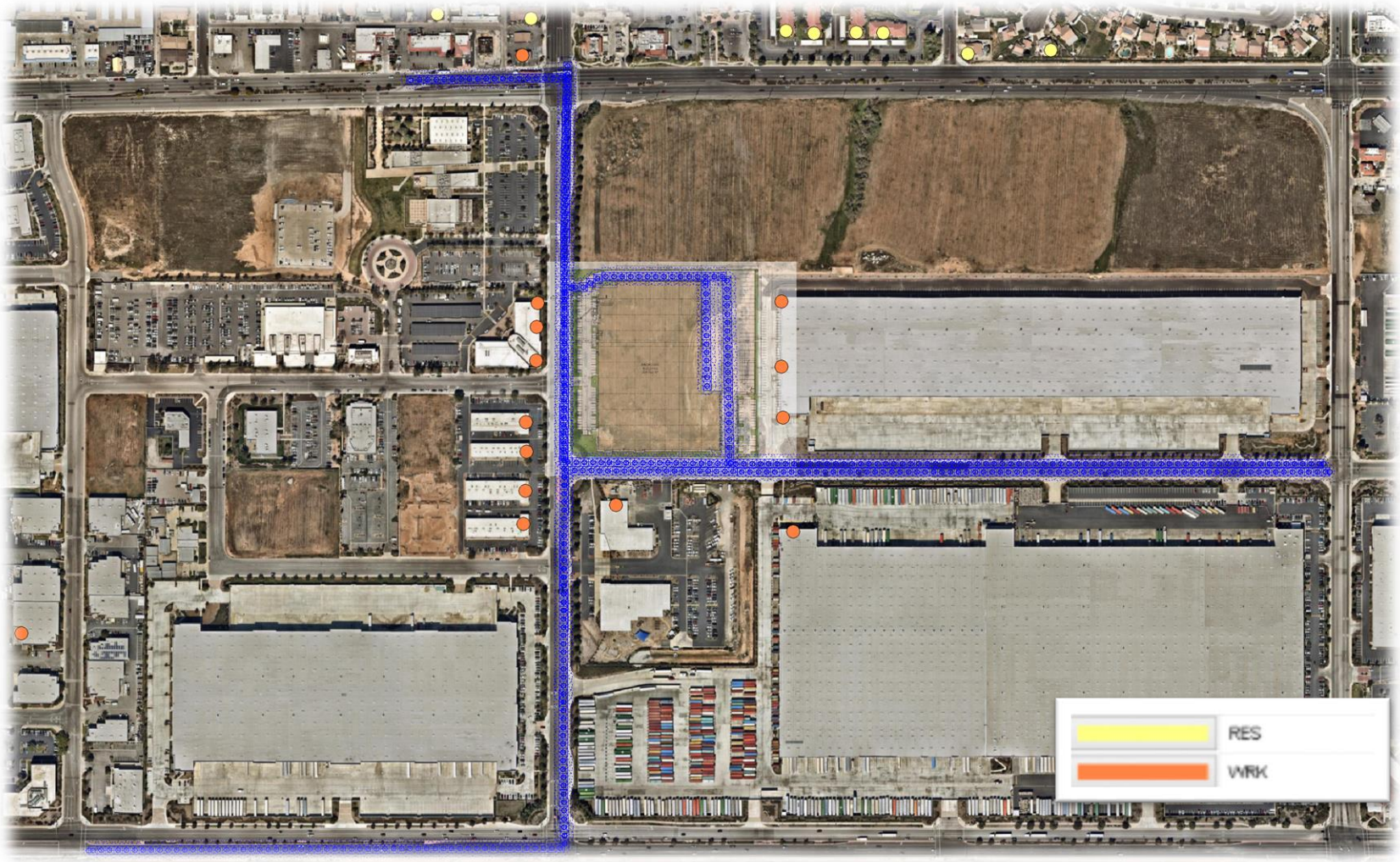
EXHIBIT 2-B: MODELED RECEPTORS



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3 REFERENCES

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3. **South Coast Air Quality Management District.** RULE 403. Fugitive Dust. [Online] http://www.aqmd.gov/rules/reg/reg04/r403.pdf.
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Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

4 CERTIFICATION

The contents of this health risk assessment represent an accurate depiction of the impacts to sensitive receptors associated with the proposed Centerpointe Project. The information contained in this health risk assessment report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 336-5987.

Haseeb Qureshi
Senior Associate
URBAN CROSSROADS, INC.
260 E. Baker, Suite 200
Costa Mesa, CA 92626
(949) 336-5987
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EDUCATION

Master of Science in Environmental Studies
California State University, Fullerton • May, 2010

Bachelor of Arts in Environmental Analysis and Design
University of California, Irvine • June, 2006

PROFESSIONAL AFFILIATIONS

AEP – Association of Environmental Planners
AWMA – Air and Waste Management Association
ASTM – American Society for Testing and Materials

PROFESSIONAL CERTIFICATIONS

Environmental Site Assessment – American Society for Testing and Materials • June, 2013
Planned Communities and Urban Infill – Urban Land Institute • June, 2011
Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April, 2008
Principles of Ambient Air Monitoring – California Air Resources Board • August, 2007
AB2588 Regulatory Standards – Trinity Consultants • November, 2006
Air Dispersion Modeling – Lakes Environmental • June, 2006

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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APPENDIX 2.1:

AERMOD MODEL INPUT/OUTPUT

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Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

```
** Lakes Environmental AERMOD MPI
**
****************************************
**
** AERMOD INPUT PRODUCED BY:
** AERMOD VIEW VER. 9.5.0
** LAKES ENVIRONMENTAL SOFTWARE INC.
** DATE: 5/24/2018
** FILE: C:\LAKES\AERMOD VIEW\11411 HRA\11411 HRA.ADI
**
****************************************
**
**
****************************************
** AERMOD CONTROL PATHWAY
****************************************
**
**
CO STARTING
   TITLEONE C:\LAKES\AERMOD VIEW\11411 HRA\11411 HRA.ISC
   MODELOPT DFAULT CONC
   AVERTIME ANNUAL
   URBANOPT 2189641
   POLLUTID DPM
   RUNORNOT RUN
   ERRORFIL "11411 HRA.ERR"
CO FINISHED
**
****************************************
** AERMOD SOURCE PATHWAY
****************************************
**
**
SO STARTING
** SOURCE LOCATION **
** SOURCE ID - TYPE - X COORD. - Y COORD. **
** ------------------------------------------------------------------------
** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE1
** DESCRSRC ON-SITE IDLING
** PREFIX
** LENGTH OF SIDE = 8.59
** CONFIGURATION = ADJACENT
** EMISSION RATE = 0.00001755
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 2
** 476010.540, 3752803.313, 476.87, 3.49, 4.00
** 476011.884, 3752689.849, 476.00, 3.49, 4.00
** ------------------------------------------------------------------------
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   LOCATION L0002468     VOLUME   476010.693 3752790.429 476.62
   LOCATION L0002469     VOLUME   476010.794 3752781.839 476.42
   LOCATION L0002470     VOLUME   476010.896 3752773.250 476.26
   LOCATION L0002471     VOLUME   476010.998 3752764.660 476.18
   LOCATION L0002472     VOLUME   476011.100 3752756.071 476.09
   LOCATION L0002473     VOLUME   476011.202 3752747.482 476.01
   LOCATION L0002474     VOLUME   476011.303 3752738.892 476.00
   LOCATION L0002475     VOLUME   476011.405 3752730.303 476.00
   LOCATION L0002476     VOLUME   476011.507 3752721.713 476.00
   LOCATION L0002477     VOLUME   476011.609 3752713.124 476.00
   LOCATION L0002478     VOLUME   476011.710 3752704.535 476.00
   LOCATION L0002479     VOLUME   476011.812 3752695.945 476.00
** END OF LINE VOLUME SOURCE ID = SLINE1
** ------------------------------------------------------------------------
** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE2
```


Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

```
** DESCRSRC ON-SITE TRAVEL
** PREFIX
** LENGTH OF SIDE = 8.59
** CONFIGURATION = ADJACENT
** EMISSION RATE = 0.00001154
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 6
** 475871.803, 3752797.129, 476.00, 3.49, 4.00
** 475885.515, 3752797.666, 476.00, 3.49, 4.00
** 475893.581, 3752802.775, 476.03, 3.49, 4.00
** 475903.530, 3752808.421, 476.03, 3.49, 4.00
** 476032.050, 3752808.421, 476.64, 3.49, 4.00
** 476035.007, 3752623.170, 475.46, 3.49, 4.00
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   LOCATION L0002481     VOLUME   475884.678 3752797.634 476.00
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   LOCATION L0002484     VOLUME   475907.475 3752808.421 476.30
   LOCATION L0002485     VOLUME   475916.065 3752808.421 476.57
   LOCATION L0002486     VOLUME   475924.655 3752808.421 476.84
   LOCATION L0002487     VOLUME   475933.245 3752808.421 476.89
   LOCATION L0002488     VOLUME   475941.835 3752808.421 476.62
   LOCATION L0002489     VOLUME   475950.425 3752808.421 476.35
   LOCATION L0002490     VOLUME   475959.015 3752808.421 476.08
   LOCATION L0002491     VOLUME   475967.605 3752808.421 476.31
   LOCATION L0002492     VOLUME   475976.195 3752808.421 476.58
   LOCATION L0002493     VOLUME   475984.785 3752808.421 476.85
   LOCATION L0002494     VOLUME   475993.375 3752808.421 477.00
   LOCATION L0002495     VOLUME   476001.965 3752808.421 477.00
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   LOCATION L0002498     VOLUME   476027.735 3752808.421 476.75
   LOCATION L0002499     VOLUME   476032.118 3752804.146 476.54
   LOCATION L0002500     VOLUME   476032.255 3752795.557 476.37
   LOCATION L0002501     VOLUME   476032.392 3752786.968 476.20
   LOCATION L0002502     VOLUME   476032.529 3752778.380 476.03
   LOCATION L0002503     VOLUME   476032.666 3752769.791 476.00
   LOCATION L0002504     VOLUME   476032.803 3752761.202 476.00
   LOCATION L0002505     VOLUME   476032.941 3752752.613 476.00
   LOCATION L0002506     VOLUME   476033.078 3752744.024 476.00
   LOCATION L0002507     VOLUME   476033.215 3752735.435 476.00
   LOCATION L0002508     VOLUME   476033.352 3752726.846 476.00
   LOCATION L0002509     VOLUME   476033.489 3752718.257 476.00
   LOCATION L0002510     VOLUME   476033.626 3752709.668 476.00
   LOCATION L0002511     VOLUME   476033.763 3752701.079 476.00
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   LOCATION L0002513     VOLUME   476034.038 3752683.902 476.00
   LOCATION L0002514     VOLUME   476034.175 3752675.313 476.00
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   LOCATION L0002516     VOLUME   476034.449 3752658.135 476.00
   LOCATION L0002517     VOLUME   476034.586 3752649.546 475.88
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   LOCATION L0002519     VOLUME   476034.860 3752632.368 475.59
   LOCATION L0002520     VOLUME   476034.997 3752623.779 475.45
** END OF LINE VOLUME SOURCE ID = SLINE2
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** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE3
** DESCRSRC 20% INBOUND ON BRODIEA AV.
** PREFIX
** LENGTH OF SIDE = 8.59
** CONFIGURATION = ADJACENT
** EMISSION RATE = 1.099E-06
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
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Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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** NODES = 2
** 476646.810, 3752615.821, 475.00, 3.49, 4.00
** 476034.005, 3752615.821, 475.45, 3.49, 4.00
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   LOCATION L0002597     VOLUME   476599.565 3752615.821 475.67
   LOCATION L0002598     VOLUME   476590.975 3752615.821 475.96
   LOCATION L0002599     VOLUME   476582.385 3752615.821 476.00
   LOCATION L0002600     VOLUME   476573.795 3752615.821 476.00
   LOCATION L0002601     VOLUME   476565.205 3752615.821 476.00
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   LOCATION L0002603     VOLUME   476548.025 3752615.821 476.00
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   LOCATION L0002612     VOLUME   476470.715 3752615.821 475.03
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   LOCATION L0002642     VOLUME   476213.015 3752615.821 475.84
   LOCATION L0002643     VOLUME   476204.425 3752615.821 475.94
   LOCATION L0002644     VOLUME   476195.835 3752615.821 476.00
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   LOCATION L0002653     VOLUME   476118.525 3752615.821 475.55
   LOCATION L0002654     VOLUME   476109.935 3752615.821 475.36
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Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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   LOCATION L0002655     VOLUME   476101.345 3752615.821 475.26
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   LOCATION L0002658     VOLUME   476075.575 3752615.821 475.00
   LOCATION L0002659     VOLUME   476066.985 3752615.821 475.00
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   LOCATION L0002661     VOLUME   476049.805 3752615.821 475.00
   LOCATION L0002662     VOLUME   476041.215 3752615.821 475.18
** END OF LINE VOLUME SOURCE ID = SLINE3
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** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE6
** DESCRSRC 40%OUTBOUND ON BRODIEA AV.
** PREFIX
** LENGTH OF SIDE = 8.59
** CONFIGURATION = ADJACENT
** EMISSION RATE = 2.198E-06
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 2
** 476653.087, 3752607.396, 475.00, 3.49, 4.00
** 476040.282, 3752607.396, 475.00, 3.49, 4.00
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   LOCATION L0002776     VOLUME   476288.012 3752607.396 475.00
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Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

```
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   LOCATION L0002795     VOLUME   476124.802 3752607.396 475.82
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   LOCATION L0002797     VOLUME   476107.622 3752607.396 475.59
   LOCATION L0002798     VOLUME   476099.032 3752607.396 475.41
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   LOCATION L0002801     VOLUME   476073.262 3752607.396 475.00
   LOCATION L0002802     VOLUME   476064.672 3752607.396 475.00
   LOCATION L0002803     VOLUME   476056.082 3752607.396 475.00
   LOCATION L0002804     VOLUME   476047.492 3752607.396 475.03
** END OF LINE VOLUME SOURCE ID = SLINE6
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** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE4
** DESCRSRC 35% INBOUND DWY 1
** PREFIX
** LENGTH OF SIDE = 8.59
** CONFIGURATION = ADJACENT
** EMISSION RATE = 3.35E-06
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 4
** 475375.353, 3752217.462, 472.00, 3.49, 4.00
** 475865.271, 3752220.037, 472.00, 3.49, 4.00
** 475863.725, 3752305.039, 473.00, 3.49, 4.00
** 475865.271, 3752797.533, 476.00, 3.49, 4.00
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   LOCATION L0002936     VOLUME   475439.777 3752217.800 472.00
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   LOCATION L0002940     VOLUME   475474.136 3752217.981 472.00
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   LOCATION L0002942     VOLUME   475491.316 3752218.071 472.00
   LOCATION L0002943     VOLUME   475499.906 3752218.116 472.00
   LOCATION L0002944     VOLUME   475508.496 3752218.162 472.00
   LOCATION L0002945     VOLUME   475517.086 3752218.207 472.00
   LOCATION L0002946     VOLUME   475525.676 3752218.252 472.00
   LOCATION L0002947     VOLUME   475534.266 3752218.297 472.00
   LOCATION L0002948     VOLUME   475542.855 3752218.342 472.00
   LOCATION L0002949     VOLUME   475551.445 3752218.387 472.00
   LOCATION L0002950     VOLUME   475560.035 3752218.433 472.00
   LOCATION L0002951     VOLUME   475568.625 3752218.478 472.00
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LOCATION	L0002952	VOLUME	475577.215	3752218.523 472.00
LOCATION	L0002953	VOLUME	475585.805	3752218.568 472.00
LOCATION	L0002954	VOLUME	475594.395	3752218.613 472.00
LOCATION	L0002955	VOLUME	475602.985	3752218.658 472.00
LOCATION	L0002956	VOLUME	475611.575	3752218.704 472.00
LOCATION	L0002957	VOLUME	475620.164	3752218.749 472.00
LOCATION	L0002958	VOLUME	475628.754	3752218.794 472.00
LOCATION	L0002959	VOLUME	475637.344	3752218.839 472.00
LOCATION	L0002960	VOLUME	475645.934	3752218.884 472.00
LOCATION	L0002961	VOLUME	475654.524	3752218.929 472.00
LOCATION	L0002962	VOLUME	475663.114	3752218.975 472.00
LOCATION	L0002963	VOLUME	475671.704	3752219.020 472.00
LOCATION	L0002964	VOLUME	475680.294	3752219.065 472.00
LOCATION	L0002965	VOLUME	475688.883	3752219.110 472.00
LOCATION	L0002966	VOLUME	475697.473	3752219.155 472.00
LOCATION	L0002967	VOLUME	475706.063	3752219.200 472.00
LOCATION	L0002968	VOLUME	475714.653	3752219.246 472.00
LOCATION	L0002969	VOLUME	475723.243	3752219.291 472.00
LOCATION	L0002970	VOLUME	475731.833	3752219.336 472.00
LOCATION	L0002971	VOLUME	475740.423	3752219.381 472.00
LOCATION	L0002972	VOLUME	475749.013	3752219.426 472.00
LOCATION	L0002973	VOLUME	475757.603	3752219.471 472.00
LOCATION	L0002974	VOLUME	475766.192	3752219.517 472.00
LOCATION	L0002975	VOLUME	475774.782	3752219.562 472.00
LOCATION	L0002976	VOLUME	475783.372	3752219.607 472.00
LOCATION	L0002977	VOLUME	475791.962	3752219.652 472.00
LOCATION	L0002978	VOLUME	475800.552	3752219.697 472.00
LOCATION	L0002979	VOLUME	475809.142	3752219.742 472.00
LOCATION	L0002980	VOLUME	475817.732	3752219.787 472.00
LOCATION	L0002981	VOLUME	475826.322	3752219.833 472.00
LOCATION	L0002982	VOLUME	475834.911	3752219.878 472.00
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LOCATION	L0002984	VOLUME	475852.091	3752219.968 472.00
LOCATION	L0002985	VOLUME	475860.681	3752220.013 472.00
LOCATION	L0002986	VOLUME	475865.198	3752224.037 472.00
LOCATION	L0002987	VOLUME	475865.042	3752232.626 472.00
LOCATION	L0002988	VOLUME	475864.886	3752241.214 472.16
LOCATION	L0002989	VOLUME	475864.730	3752249.803 472.44
LOCATION	L0002990	VOLUME	475864.573	3752258.391 472.73
LOCATION	L0002991	VOLUME	475864.417	3752266.980 473.00
LOCATION	L0002992	VOLUME	475864.261	3752275.569 473.00
LOCATION	L0002993	VOLUME	475864.105	3752284.157 473.00
LOCATION	L0002994	VOLUME	475863.949	3752292.746 473.00
LOCATION	L0002995	VOLUME	475863.793	3752301.334 473.00
LOCATION	L0002996	VOLUME	475863.741	3752309.924 473.00
LOCATION	L0002997	VOLUME	475863.768	3752318.514 473.00
LOCATION	L0002998	VOLUME	475863.794	3752327.104 473.00
LOCATION	L0002999	VOLUME	475863.821	3752335.694 473.00
LOCATION	L0003000	VOLUME	475863.848	3752344.283 473.00
LOCATION	L0003001	VOLUME	475863.875	3752352.873 473.00
LOCATION	L0003002	VOLUME	475863.902	3752361.463 473.03
LOCATION	L0003003	VOLUME	475863.929	3752370.053 473.09
LOCATION	L0003004	VOLUME	475863.956	3752378.643 473.14
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LOCATION	L0003008	VOLUME	475864.064	3752413.003 473.90
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LOCATION	L0003010	VOLUME	475864.118	3752430.183 474.00
LOCATION	L0003011	VOLUME	475864.145	3752438.773 474.00
LOCATION	L0003012	VOLUME	475864.172	3752447.363 474.00
LOCATION	L0003013	VOLUME	475864.199	3752455.953 474.00
LOCATION	L0003014	VOLUME	475864.226	3752464.543 474.00
LOCATION	L0003015	VOLUME	475864.253	3752473.133 474.00
LOCATION	L0003016	VOLUME	475864.280	3752481.723 474.00
LOCATION	L0003017	VOLUME	475864.307	3752490.313 474.00
LOCATION	L0003018	VOLUME	475864.334	3752498.903 474.00

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   LOCATION L0003019     VOLUME   475864.361 3752507.493 474.03
   LOCATION L0003020     VOLUME   475864.388 3752516.083 474.32
   LOCATION L0003021     VOLUME   475864.414 3752524.673 474.60
   LOCATION L0003022     VOLUME   475864.441 3752533.263 474.89
   LOCATION L0003023     VOLUME   475864.468 3752541.852 475.00
   LOCATION L0003024     VOLUME   475864.495 3752550.442 475.00
   LOCATION L0003025     VOLUME   475864.522 3752559.032 475.00
   LOCATION L0003026     VOLUME   475864.549 3752567.622 475.00
   LOCATION L0003027     VOLUME   475864.576 3752576.212 475.00
   LOCATION L0003028     VOLUME   475864.603 3752584.802 475.00
   LOCATION L0003029     VOLUME   475864.630 3752593.392 475.00
   LOCATION L0003030     VOLUME   475864.657 3752601.982 475.00
   LOCATION L0003031     VOLUME   475864.684 3752610.572 475.00
   LOCATION L0003032     VOLUME   475864.711 3752619.162 475.00
   LOCATION L0003033     VOLUME   475864.738 3752627.752 475.00
   LOCATION L0003034     VOLUME   475864.765 3752636.342 475.00
   LOCATION L0003035     VOLUME   475864.792 3752644.932 475.00
   LOCATION L0003036     VOLUME   475864.819 3752653.522 475.00
   LOCATION L0003037     VOLUME   475864.846 3752662.112 475.19
   LOCATION L0003038     VOLUME   475864.873 3752670.702 475.47
   LOCATION L0003039     VOLUME   475864.900 3752679.292 475.76
   LOCATION L0003040     VOLUME   475864.927 3752687.882 476.00
   LOCATION L0003041     VOLUME   475864.954 3752696.472 476.00
   LOCATION L0003042     VOLUME   475864.981 3752705.062 476.00
   LOCATION L0003043     VOLUME   475865.008 3752713.652 476.00
   LOCATION L0003044     VOLUME   475865.034 3752722.242 476.00
   LOCATION L0003045     VOLUME   475865.061 3752730.832 476.00
   LOCATION L0003046     VOLUME   475865.088 3752739.422 476.00
   LOCATION L0003047     VOLUME   475865.115 3752748.011 476.00
   LOCATION L0003048     VOLUME   475865.142 3752756.601 476.00
   LOCATION L0003049     VOLUME   475865.169 3752765.191 476.00
   LOCATION L0003050     VOLUME   475865.196 3752773.781 476.00
   LOCATION L0003051     VOLUME   475865.223 3752782.371 476.00
   LOCATION L0003052     VOLUME   475865.250 3752790.961 476.00
** END OF LINE VOLUME SOURCE ID = SLINE4
** ----------------------------------------------------------------------
** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE5
** DESCRSRC 45% INBOUND DWY 3
** PREFIX
** LENGTH OF SIDE = 8.59
** CONFIGURATION = ADJACENT
** EMISSION RATE = 4.25E-06
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 5
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** 475865.271, 3752220.037, 472.00, 3.49, 4.00
** 475863.725, 3752305.039, 473.00, 3.49, 4.00
** 475864.983, 3752608.618, 475.00, 3.49, 4.00
** 476039.663, 3752607.883, 475.00, 3.49, 4.00
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   LOCATION L0003176     VOLUME   475379.648 3752217.484 472.00
   LOCATION L0003177     VOLUME   475388.238 3752217.529 472.00
   LOCATION L0003178     VOLUME   475396.827 3752217.575 472.00
   LOCATION L0003179     VOLUME   475405.417 3752217.620 472.00
   LOCATION L0003180     VOLUME   475414.007 3752217.665 472.00
   LOCATION L0003181     VOLUME   475422.597 3752217.710 472.00
   LOCATION L0003182     VOLUME   475431.187 3752217.755 472.00
   LOCATION L0003183     VOLUME   475439.777 3752217.800 472.00
   LOCATION L0003184     VOLUME   475448.367 3752217.846 472.00
   LOCATION L0003185     VOLUME   475456.957 3752217.891 472.00
   LOCATION L0003186     VOLUME   475465.547 3752217.936 472.00
   LOCATION L0003187     VOLUME   475474.136 3752217.981 472.00
   LOCATION L0003188     VOLUME   475482.726 3752218.026 472.00
   LOCATION L0003189     VOLUME   475491.316 3752218.071 472.00
   LOCATION L0003190     VOLUME   475499.906 3752218.116 472.00
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Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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LOCATION	L0003191	VOLUME	475508.496	3752218.162 472.00
LOCATION	L0003192	VOLUME	475517.086	3752218.207 472.00
LOCATION	L0003193	VOLUME	475525.676	3752218.252 472.00
LOCATION	L0003194	VOLUME	475534.266	3752218.297 472.00
LOCATION	L0003195	VOLUME	475542.855	3752218.342 472.00
LOCATION	L0003196	VOLUME	475551.445	3752218.387 472.00
LOCATION	L0003197	VOLUME	475560.035	3752218.433 472.00
LOCATION	L0003198	VOLUME	475568.625	3752218.478 472.00
LOCATION	L0003199	VOLUME	475577.215	3752218.523 472.00
LOCATION	L0003200	VOLUME	475585.805	3752218.568 472.00
LOCATION	L0003201	VOLUME	475594.395	3752218.613 472.00
LOCATION	L0003202	VOLUME	475602.985	3752218.658 472.00
LOCATION	L0003203	VOLUME	475611.575	3752218.704 472.00
LOCATION	L0003204	VOLUME	475620.164	3752218.749 472.00
LOCATION	L0003205	VOLUME	475628.754	3752218.794 472.00
LOCATION	L0003206	VOLUME	475637.344	3752218.839 472.00
LOCATION	L0003207	VOLUME	475645.934	3752218.884 472.00
LOCATION	L0003208	VOLUME	475654.524	3752218.929 472.00
LOCATION	L0003209	VOLUME	475663.114	3752218.975 472.00
LOCATION	L0003210	VOLUME	475671.704	3752219.020 472.00
LOCATION	L0003211	VOLUME	475680.294	3752219.065 472.00
LOCATION	L0003212	VOLUME	475688.883	3752219.110 472.00
LOCATION	L0003213	VOLUME	475697.473	3752219.155 472.00
LOCATION	L0003214	VOLUME	475706.063	3752219.200 472.00
LOCATION	L0003215	VOLUME	475714.653	3752219.246 472.00
LOCATION	L0003216	VOLUME	475723.243	3752219.291 472.00
LOCATION	L0003217	VOLUME	475731.833	3752219.336 472.00
LOCATION	L0003218	VOLUME	475740.423	3752219.381 472.00
LOCATION	L0003219	VOLUME	475749.013	3752219.426 472.00
LOCATION	L0003220	VOLUME	475757.603	3752219.471 472.00
LOCATION	L0003221	VOLUME	475766.192	3752219.517 472.00
LOCATION	L0003222	VOLUME	475774.782	3752219.562 472.00
LOCATION	L0003223	VOLUME	475783.372	3752219.607 472.00
LOCATION	L0003224	VOLUME	475791.962	3752219.652 472.00
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LOCATION	L0003234	VOLUME	475865.042	3752232.626 472.00
LOCATION	L0003235	VOLUME	475864.886	3752241.214 472.16
LOCATION	L0003236	VOLUME	475864.730	3752249.803 472.44
LOCATION	L0003237	VOLUME	475864.573	3752258.391 472.73
LOCATION	L0003238	VOLUME	475864.417	3752266.980 473.00
LOCATION	L0003239	VOLUME	475864.261	3752275.569 473.00
LOCATION	L0003240	VOLUME	475864.105	3752284.157 473.00
LOCATION	L0003241	VOLUME	475863.949	3752292.746 473.00
LOCATION	L0003242	VOLUME	475863.793	3752301.334 473.00
LOCATION	L0003243	VOLUME	475863.745	3752309.924 473.00
LOCATION	L0003244	VOLUME	475863.781	3752318.514 473.00
LOCATION	L0003245	VOLUME	475863.817	3752327.103 473.00
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LOCATION	L0003247	VOLUME	475863.888	3752344.283 473.00
LOCATION	L0003248	VOLUME	475863.923	3752352.873 473.00
LOCATION	L0003249	VOLUME	475863.959	3752361.463 473.03
LOCATION	L0003250	VOLUME	475863.995	3752370.053 473.09
LOCATION	L0003251	VOLUME	475864.030	3752378.643 473.14
LOCATION	L0003252	VOLUME	475864.066	3752387.233 473.21
LOCATION	L0003253	VOLUME	475864.101	3752395.823 473.44
LOCATION	L0003254	VOLUME	475864.137	3752404.413 473.67
LOCATION	L0003255	VOLUME	475864.173	3752413.003 473.90
LOCATION	L0003256	VOLUME	475864.208	3752421.593 474.00
LOCATION	L0003257	VOLUME	475864.244	3752430.183 474.00

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   LOCATION L0003258     VOLUME   475864.279 3752438.773 474.00
   LOCATION L0003259     VOLUME   475864.315 3752447.362 474.00
   LOCATION L0003260     VOLUME   475864.351 3752455.952 474.00
   LOCATION L0003261     VOLUME   475864.386 3752464.542 474.00
   LOCATION L0003262     VOLUME   475864.422 3752473.132 474.00
   LOCATION L0003263     VOLUME   475864.457 3752481.722 474.00
   LOCATION L0003264     VOLUME   475864.493 3752490.312 474.00
   LOCATION L0003265     VOLUME   475864.529 3752498.902 474.00
   LOCATION L0003266     VOLUME   475864.564 3752507.492 474.03
   LOCATION L0003267     VOLUME   475864.600 3752516.082 474.32
   LOCATION L0003268     VOLUME   475864.635 3752524.672 474.60
   LOCATION L0003269     VOLUME   475864.671 3752533.262 474.89
   LOCATION L0003270     VOLUME   475864.707 3752541.852 475.00
   LOCATION L0003271     VOLUME   475864.742 3752550.442 475.00
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   LOCATION L0003291     VOLUME   475978.606 3752608.140 475.24
   LOCATION L0003292     VOLUME   475987.195 3752608.104 475.35
   LOCATION L0003293     VOLUME   475995.785 3752608.068 475.38
   LOCATION L0003294     VOLUME   476004.375 3752608.032 475.38
   LOCATION L0003295     VOLUME   476012.965 3752607.996 475.38
   LOCATION L0003296     VOLUME   476021.555 3752607.959 475.36
   LOCATION L0003297     VOLUME   476030.145 3752607.923 475.25
   LOCATION L0003298     VOLUME   476038.735 3752607.887 475.14
** END OF LINE VOLUME SOURCE ID = SLINE5
** ----------------------------------------------------------------------
** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE7
** DESCRSRC 10% OUTBOUND
** PREFIX
** LENGTH OF SIDE = 8.59
** CONFIGURATION = ADJACENT
** EMISSION RATE = 5.247E-07
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 5
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** 475868.377, 3753030.620, 478.00, 3.49, 4.00
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   LOCATION L0003368     VOLUME   476023.143 3752616.009 475.57
   LOCATION L0003369     VOLUME   476014.553 3752616.087 475.65
   LOCATION L0003370     VOLUME   476005.963 3752616.165 475.65
   LOCATION L0003371     VOLUME   475997.374 3752616.242 475.66
   LOCATION L0003372     VOLUME   475988.784 3752616.320 475.64
   LOCATION L0003373     VOLUME   475980.194 3752616.397 475.45
   LOCATION L0003374     VOLUME   475971.605 3752616.475 475.26
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Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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                                                    11411 HRA
   LOCATION L0003375     VOLUME   475963.015 3752616.553 475.07
   LOCATION L0003376     VOLUME   475954.425 3752616.630 475.00
   LOCATION L0003377     VOLUME   475945.836 3752616.708 475.00
   LOCATION L0003378     VOLUME   475937.246 3752616.786 475.00
   LOCATION L0003379     VOLUME   475928.656 3752616.863 475.00
   LOCATION L0003380     VOLUME   475920.067 3752616.941 475.00
   LOCATION L0003381     VOLUME   475911.477 3752617.019 475.00
   LOCATION L0003382     VOLUME   475902.888 3752617.096 475.00
   LOCATION L0003383     VOLUME   475894.298 3752617.174 475.00
   LOCATION L0003384     VOLUME   475885.708 3752617.252 475.00
   LOCATION L0003385     VOLUME   475877.119 3752617.329 475.00
   LOCATION L0003386     VOLUME   475868.529 3752617.407 475.00
   LOCATION L0003387     VOLUME   475864.060 3752621.539 475.00
   LOCATION L0003388     VOLUME   475864.121 3752630.129 475.00
   LOCATION L0003389     VOLUME   475864.183 3752638.718 475.00
   LOCATION L0003390     VOLUME   475864.244 3752647.308 475.00
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   LOCATION L0003406     VOLUME   475865.227 3752784.745 476.00
   LOCATION L0003407     VOLUME   475865.289 3752793.334 476.00
   LOCATION L0003408     VOLUME   475865.350 3752801.924 476.00
   LOCATION L0003409     VOLUME   475865.399 3752810.514 476.13
   LOCATION L0003410     VOLUME   475865.399 3752819.104 476.42
   LOCATION L0003411     VOLUME   475865.399 3752827.694 476.70
   LOCATION L0003412     VOLUME   475865.399 3752836.284 476.99
   LOCATION L0003413     VOLUME   475865.399 3752844.874 477.00
   LOCATION L0003414     VOLUME   475865.399 3752853.464 477.00
   LOCATION L0003415     VOLUME   475865.399 3752862.054 477.00
   LOCATION L0003416     VOLUME   475865.399 3752870.644 477.00
   LOCATION L0003417     VOLUME   475865.399 3752879.234 477.00
   LOCATION L0003418     VOLUME   475865.399 3752887.824 477.00
   LOCATION L0003419     VOLUME   475865.399 3752896.414 477.00
   LOCATION L0003420     VOLUME   475865.399 3752905.004 477.24
   LOCATION L0003421     VOLUME   475865.599 3752913.592 477.49
   LOCATION L0003422     VOLUME   475865.803 3752922.179 477.74
   LOCATION L0003423     VOLUME   475866.007 3752930.767 477.89
   LOCATION L0003424     VOLUME   475866.211 3752939.354 477.93
   LOCATION L0003425     VOLUME   475866.415 3752947.942 477.97
   LOCATION L0003426     VOLUME   475866.619 3752956.530 478.00
   LOCATION L0003427     VOLUME   475866.822 3752965.117 478.00
   LOCATION L0003428     VOLUME   475867.026 3752973.705 478.00
   LOCATION L0003429     VOLUME   475867.230 3752982.292 478.00
   LOCATION L0003430     VOLUME   475867.434 3752990.880 478.00
   LOCATION L0003431     VOLUME   475867.638 3752999.467 478.00
   LOCATION L0003432     VOLUME   475867.842 3753008.055 478.00
   LOCATION L0003433     VOLUME   475868.046 3753016.643 478.00
   LOCATION L0003434     VOLUME   475868.249 3753025.230 478.00
** END OF LINE VOLUME SOURCE ID = SLINE7
** ----------------------------------------------------------------------
** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE8
** DESCRSRC 50% OUTBOUND
** PREFIX
** LENGTH OF SIDE = 8.59
```

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** CONFIGURATION = ADJACENT
** EMISSION RATE = 1.718E-06
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 3
** 475865.179, 3752791.853, 476.00, 3.49, 4.00
** 475867.870, 3753013.306, 478.00, 3.49, 4.00
** 475706.153, 3753010.884, 478.00, 3.49, 4.00
** ------------------------------------------------------------------
   LOCATION L0003480     VOLUME   475865.231 3752796.148 476.00
   LOCATION L0003481     VOLUME   475865.336 3752804.737 476.00
   LOCATION L0003482     VOLUME   475865.440 3752813.327 476.23
   LOCATION L0003483     VOLUME   475865.544 3752821.916 476.51
   LOCATION L0003484     VOLUME   475865.649 3752830.505 476.80
   LOCATION L0003485     VOLUME   475865.753 3752839.095 477.00
   LOCATION L0003486     VOLUME   475865.857 3752847.684 477.00
   LOCATION L0003487     VOLUME   475865.962 3752856.273 477.00
   LOCATION L0003488     VOLUME   475866.066 3752864.863 477.00
   LOCATION L0003489     VOLUME   475866.171 3752873.452 477.00
   LOCATION L0003490     VOLUME   475866.275 3752882.042 477.00
   LOCATION L0003491     VOLUME   475866.379 3752890.631 477.00
   LOCATION L0003492     VOLUME   475866.484 3752899.220 477.08
   LOCATION L0003493     VOLUME   475866.588 3752907.810 477.34
   LOCATION L0003494     VOLUME   475866.692 3752916.399 477.59
   LOCATION L0003495     VOLUME   475866.797 3752924.988 477.85
   LOCATION L0003496     VOLUME   475866.901 3752933.578 477.93
   LOCATION L0003497     VOLUME   475867.005 3752942.167 477.96
   LOCATION L0003498     VOLUME   475867.110 3752950.756 477.98
   LOCATION L0003499     VOLUME   475867.214 3752959.346 478.00
   LOCATION L0003500     VOLUME   475867.319 3752967.935 478.00
   LOCATION L0003501     VOLUME   475867.423 3752976.525 478.00
   LOCATION L0003502     VOLUME   475867.527 3752985.114 478.00
   LOCATION L0003503     VOLUME   475867.632 3752993.703 478.00
   LOCATION L0003504     VOLUME   475867.736 3753002.293 478.00
   LOCATION L0003505     VOLUME   475867.840 3753010.882 478.00
   LOCATION L0003506     VOLUME   475861.705 3753013.214 478.00
   LOCATION L0003507     VOLUME   475853.116 3753013.085 478.00
   LOCATION L0003508     VOLUME   475844.527 3753012.956 478.00
   LOCATION L0003509     VOLUME   475835.938 3753012.828 478.00
   LOCATION L0003510     VOLUME   475827.349 3753012.699 478.00
   LOCATION L0003511     VOLUME   475818.759 3753012.571 478.00
   LOCATION L0003512     VOLUME   475810.170 3753012.442 478.00
   LOCATION L0003513     VOLUME   475801.581 3753012.313 478.00
   LOCATION L0003514     VOLUME   475792.992 3753012.185 478.00
   LOCATION L0003515     VOLUME   475784.403 3753012.056 478.00
   LOCATION L0003516     VOLUME   475775.814 3753011.927 478.00
   LOCATION L0003517     VOLUME   475767.225 3753011.799 478.00
   LOCATION L0003518     VOLUME   475758.636 3753011.670 478.00
   LOCATION L0003519     VOLUME   475750.047 3753011.542 478.00
   LOCATION L0003520     VOLUME   475741.458 3753011.413 478.00
   LOCATION L0003521     VOLUME   475732.869 3753011.284 478.00
   LOCATION L0003522     VOLUME   475724.280 3753011.156 478.00
   LOCATION L0003523     VOLUME   475715.691 3753011.027 478.00
   LOCATION L0003524     VOLUME   475707.102 3753010.898 478.00
** END OF LINE VOLUME SOURCE ID = SLINE8
** SOURCE PARAMETERS **
** LINE VOLUME SOURCE ID = SLINE1
   SRCPARAM L0002467     0.00000135      3.49      4.00      3.25
   SRCPARAM L0002468     0.00000135      3.49      4.00      3.25
   SRCPARAM L0002469     0.00000135      3.49      4.00      3.25
   SRCPARAM L0002470     0.00000135      3.49      4.00      3.25
   SRCPARAM L0002471     0.00000135      3.49      4.00      3.25
   SRCPARAM L0002472     0.00000135      3.49      4.00      3.25
   SRCPARAM L0002473     0.00000135      3.49      4.00      3.25
   SRCPARAM L0002474     0.00000135      3.49      4.00      3.25
   SRCPARAM L0002475     0.00000135      3.49      4.00      3.25
   SRCPARAM L0002476     0.00000135      3.49      4.00      3.25
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Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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                                                11411 HRA
   SRCPARAM L0002477     0.00000135      3.49      4.00      3.25
   SRCPARAM L0002478     0.00000135      3.49      4.00      3.25
   SRCPARAM L0002479     0.00000135      3.49      4.00      3.25
** ----------------------------------------------------------------------
** LINE VOLUME SOURCE ID = SLINE2
   SRCPARAM L0002480     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002481     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002482     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002483     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002484     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002485     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002486     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002487     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002488     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002489     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002490     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002491     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002492     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002493     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002494     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002495     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002496     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002497     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002498     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002499     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002500     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002501     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002502     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002503     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002504     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002505     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002506     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002507     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002508     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002509     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002510     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002511     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002512     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002513     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002514     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002515     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002516     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002517     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002518     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002519     0.0000002815      3.49      4.00      3.25
   SRCPARAM L0002520     0.0000002815      3.49      4.00      3.25
** ----------------------------------------------------------------------
** LINE VOLUME SOURCE ID = SLINE3
   SRCPARAM L0002592     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002593     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002594     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002595     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002596     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002597     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002598     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002599     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002600     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002601     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002602     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002603     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002604     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002605     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002606     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002607     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002608     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002609     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002610     0.00000001548      3.49      4.00      3.25
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   SRCPARAM L0002611     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002612     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002613     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002614     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002615     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002616     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002617     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002618     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002619     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002620     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002621     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002622     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002623     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002624     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002625     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002626     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002627     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002628     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002629     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002630     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002631     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002632     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002633     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002634     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002635     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002636     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002637     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002638     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002639     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002640     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002641     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002642     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002643     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002644     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002645     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002646     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002647     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002648     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002649     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002650     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002651     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002652     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002653     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002654     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002655     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002656     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002657     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002658     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002659     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002660     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002661     0.00000001548      3.49      4.00      3.25
   SRCPARAM L0002662     0.00000001548      3.49      4.00      3.25
** ----------------------------------------------------------------
** LINE VOLUME SOURCE ID = SLINE6
   SRCPARAM L0002734     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002735     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002736     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002737     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002738     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002739     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002740     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002741     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002742     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002743     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002744     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002745     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002746     0.00000003096      3.49      4.00      3.25
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Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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                                                    11411 HRA
   SRCPARAM L0002747     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002748     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002749     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002750     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002751     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002752     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002753     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002754     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002755     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002756     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002757     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002758     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002759     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002760     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002761     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002762     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002763     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002764     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002765     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002766     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002767     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002768     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002769     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002770     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002771     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002772     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002773     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002774     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002775     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002776     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002777     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002778     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002779     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002780     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002781     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002782     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002783     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002784     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002785     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002786     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002787     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002788     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002789     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002790     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002791     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002792     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002793     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002794     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002795     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002796     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002797     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002798     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002799     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002800     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002801     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002802     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002803     0.00000003096      3.49      4.00      3.25
   SRCPARAM L0002804     0.00000003096      3.49      4.00      3.25
** ------------------------------------------------------------------
** LINE VOLUME SOURCE ID = SLINE4
   SRCPARAM L0002929     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0002930     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0002931     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0002932     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0002933     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0002934     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0002935     0.00000002702      3.49      4.00      3.25
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SRCPARAM	L0002936	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002937	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002938	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002939	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002940	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002941	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002942	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002943	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002944	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002945	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002946	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002947	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002948	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002949	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002950	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002951	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002952	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002953	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002954	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002955	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002956	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002957	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002958	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002959	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002960	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002961	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002962	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002963	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002964	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002965	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002966	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002967	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002968	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002969	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002970	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002971	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002972	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002973	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002974	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002975	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002976	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002977	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002978	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002979	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002980	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002981	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002982	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002983	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002984	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002985	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002986	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002987	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002988	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002989	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002990	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002991	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002992	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002993	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002994	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002995	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002996	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002997	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002998	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0002999	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0003000	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0003001	0.00000002702	3.49	4.00	3.25
SRCPARAM	L0003002	0.00000002702	3.49	4.00	3.25

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                                                    11411 HRA
   SRCPARAM L0003003     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003004     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003005     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003006     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003007     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003008     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003009     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003010     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003011     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003012     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003013     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003014     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003015     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003016     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003017     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003018     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003019     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003020     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003021     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003022     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003023     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003024     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003025     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003026     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003027     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003028     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003029     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003030     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003031     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003032     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003033     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003034     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003035     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003036     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003037     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003038     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003039     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003040     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003041     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003042     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003043     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003044     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003045     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003046     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003047     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003048     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003049     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003050     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003051     0.00000002702      3.49      4.00      3.25
   SRCPARAM L0003052     0.00000002702      3.49      4.00      3.25
** ------------------------------------------------------------------
** LINE VOLUME SOURCE ID = SLINE5
   SRCPARAM L0003176     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003177     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003178     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003179     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003180     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003181     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003182     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003183     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003184     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003185     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003186     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003187     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003188     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003189     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003190     0.00000003455      3.49      4.00      3.25
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SRCPARAM	L0003191	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003192	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003193	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003194	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003195	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003196	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003197	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003198	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003199	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003200	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003201	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003202	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003203	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003204	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003205	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003206	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003207	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003208	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003209	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003210	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003211	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003212	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003213	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003214	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003215	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003216	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003217	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003218	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003219	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003220	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003221	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003222	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003223	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003224	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003225	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003226	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003227	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003228	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003229	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003230	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003231	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003232	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003233	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003234	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003235	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003236	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003237	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003238	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003239	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003240	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003241	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003242	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003243	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003244	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003245	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003246	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003247	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003248	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003249	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003250	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003251	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003252	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003253	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003254	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003255	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003256	0.00000003455	3.49	4.00	3.25
SRCPARAM	L0003257	0.00000003455	3.49	4.00	3.25

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                                                    11411 HRA
   SRCPARAM L0003258     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003259     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003260     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003261     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003262     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003263     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003264     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003265     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003266     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003267     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003268     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003269     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003270     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003271     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003272     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003273     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003274     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003275     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003276     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003277     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003278     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003279     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003280     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003281     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003282     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003283     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003284     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003285     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003286     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003287     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003288     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003289     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003290     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003291     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003292     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003293     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003294     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003295     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003296     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003297     0.00000003455      3.49      4.00      3.25
   SRCPARAM L0003298     0.00000003455      3.49      4.00      3.25
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** LINE VOLUME SOURCE ID = SLINE7
   SRCPARAM L0003367     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003368     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003369     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003370     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003371     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003372     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003373     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003374     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003375     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003376     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003377     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003378     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003379     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003380     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003381     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003382     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003383     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003384     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003385     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003386     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003387     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003388     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003389     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003390     0.000000007716      3.49      4.00      3.25
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                                                    11411 HRA
   SRCPARAM L0003391     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003392     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003393     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003394     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003395     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003396     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003397     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003398     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003399     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003400     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003401     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003402     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003403     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003404     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003405     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003406     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003407     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003408     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003409     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003410     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003411     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003412     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003413     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003414     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003415     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003416     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003417     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003418     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003419     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003420     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003421     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003422     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003423     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003424     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003425     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003426     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003427     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003428     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003429     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003430     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003431     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003432     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003433     0.000000007716      3.49      4.00      3.25
   SRCPARAM L0003434     0.000000007716      3.49      4.00      3.25
** ------------------------------------------------------------------
** LINE VOLUME SOURCE ID = SLINE8
   SRCPARAM L0003480     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003481     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003482     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003483     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003484     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003485     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003486     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003487     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003488     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003489     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003490     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003491     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003492     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003493     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003494     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003495     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003496     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003497     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003498     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003499     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003500     0.00000003818      3.49      4.00      3.25
```

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                                                    11411 HRA
   SRCPARAM L0003501     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003502     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003503     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003504     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003505     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003506     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003507     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003508     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003509     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003510     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003511     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003512     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003513     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003514     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003515     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003516     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003517     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003518     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003519     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003520     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003521     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003522     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003523     0.00000003818      3.49      4.00      3.25
   SRCPARAM L0003524     0.00000003818      3.49      4.00      3.25
** ------------------------------------------------------------------
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD RECEPTOR PATHWAY
**************************************
**
**
RE STARTING
   INCLUDED "11411 HRA.ROU"
RE FINISHED
**
**************************************
** AERMOD METEOROLOGY PATHWAY
**************************************
**
**
ME STARTING
   SURFFILE PERRISADJU\PERI_V9_ADJU\PERI_V9.SFC
   PROFFILE PERRISADJU\PERI_V9_ADJU\PERI_V9.PFL
   SURFDATA 3171 2010
   UAIRDATA 3190 2010
   SITEDATA 99999 2010
   PROFBASE 442.0 METERS
ME FINISHED
**
**************************************
** AERMOD OUTPUT PATHWAY
**************************************
**
**
OU STARTING
** AUTO-GENERATED PLOTFILES
   PLOTFILE   ANNUAL ALL "11411 HRA.AD\AN00GALL.PLT" 31
   SUMMFILE "11411 HRA.SUM"
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------
```

```
 A Total of            0 Fatal Error Message(s)
 A Total of            2 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186    1323       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used          0.50
 ME W187    1323       MEOPEN: ADJ_U* Option for Low Winds used in AERMET

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

♀ *** AERMOD - VERSION 16216r ***   *** C:\LAKES\AERMOD VIEW\11411 HRA\11411 HRA.ISC                        ***
    05/24/18
 *** AERMET - VERSION  16216 ***   ***                                                                   ***
   17:41:25

   PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                          ***     MODEL SETUP OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for   556 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   2189641.0 ;  Urban Roughness Length =  1.000 m

 **Model Uses Regulatory DEFAULT Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.
         6. Urban Roughness Length of 1.0 Meter Assumed.

 **Other Options Specified:
         ADJ_U*   - Use ADJ_U* BETA option for SBL in AERMET
         CCVR_Sub - Meteorological data includes CCVR substitutions
         TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  DPM

 **Model Calculates ANNUAL Averages Only

 **This Run Includes:    556 Source(s);       1 Source Group(s); and      25 Receptor(s)

                with:      0 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:    556 VOLUME source(s)
                 and:      0 AREA type source(s)
```


Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

and: 0 LINE source(s)
and: 0 OPENPIT source(s)
and: 0 BUOYANT LINE source(s) with 0 line(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 16216

**Output Options Selected:
Model Outputs Tables of ANNUAL Averages by Receptor
Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 442.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 3.7 MB of RAM.

**Detailed Error/Message File: 11411 HRA.ERR

**File for Summary of Results: 11411 HRA.SUM

♀ *** AERMOD - VERSION 16216r *** *** C:\LAKES\AERMOD VIEW\11411 HRA\11411 HRA.ISC *** 05/24/18
*** AERMET - VERSION 16216 *** *** *** 17:41:25

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0002467	0	0.13500E-05	476010.6	3752799.0	476.8	3.49	4.00	3.25	YES	
L0002468	0	0.13500E-05	476010.7	3752790.4	476.6	3.49	4.00	3.25	YES	
L0002469	0	0.13500E-05	476010.8	3752781.8	476.4	3.49	4.00	3.25	YES	
L0002470	0	0.13500E-05	476010.9	3752773.2	476.3	3.49	4.00	3.25	YES	
L0002471	0	0.13500E-05	476011.0	3752764.7	476.2	3.49	4.00	3.25	YES	
L0002472	0	0.13500E-05	476011.1	3752756.1	476.1	3.49	4.00	3.25	YES	
L0002473	0	0.13500E-05	476011.2	3752747.5	476.0	3.49	4.00	3.25	YES	
L0002474	0	0.13500E-05	476011.3	3752738.9	476.0	3.49	4.00	3.25	YES	
L0002475	0	0.13500E-05	476011.4	3752730.3	476.0	3.49	4.00	3.25	YES	
L0002476	0	0.13500E-05	476011.5	3752721.7	476.0	3.49	4.00	3.25	YES	
L0002477	0	0.13500E-05	476011.6	3752713.1	476.0	3.49	4.00	3.25	YES	
L0002478	0	0.13500E-05	476011.7	3752704.5	476.0	3.49	4.00	3.25	YES	
L0002479	0	0.13500E-05	476011.8	3752695.9	476.0	3.49	4.00	3.25	YES	
L0002480	0	0.28150E-06	475876.1	3752797.3	476.0	3.49	4.00	3.25	YES	
L0002481	0	0.28150E-06	475884.7	3752797.6	476.0	3.49	4.00	3.25	YES	
L0002482	0	0.28150E-06	475892.1	3752801.8	476.0	3.49	4.00	3.25	YES	
L0002483	0	0.28150E-06	475899.5	3752806.1	476.0	3.49	4.00	3.25	YES	
L0002484	0	0.28150E-06	475907.5	3752808.4	476.3	3.49	4.00	3.25	YES	
L0002485	0	0.28150E-06	475916.1	3752808.4	476.6	3.49	4.00	3.25	YES	
L0002486	0	0.28150E-06	475924.7	3752808.4	476.8	3.49	4.00	3.25	YES	

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

L0002487	0	0.28150E-06	475933.2	3752808.4	476.9	3.49	4.00	3.25	YES
L0002488	0	0.28150E-06	475941.8	3752808.4	476.6	3.49	4.00	3.25	YES
L0002489	0	0.28150E-06	475950.4	3752808.4	476.4	3.49	4.00	3.25	YES
L0002490	0	0.28150E-06	475959.0	3752808.4	476.1	3.49	4.00	3.25	YES
L0002491	0	0.28150E-06	475967.6	3752808.4	476.3	3.49	4.00	3.25	YES
L0002492	0	0.28150E-06	475976.2	3752808.4	476.6	3.49	4.00	3.25	YES
L0002493	0	0.28150E-06	475984.8	3752808.4	476.9	3.49	4.00	3.25	YES
L0002494	0	0.28150E-06	475993.4	3752808.4	477.0	3.49	4.00	3.25	YES
L0002495	0	0.28150E-06	476002.0	3752808.4	477.0	3.49	4.00	3.25	YES
L0002496	0	0.28150E-06	476010.6	3752808.4	477.0	3.49	4.00	3.25	YES
L0002497	0	0.28150E-06	476019.1	3752808.4	477.0	3.49	4.00	3.25	YES
L0002498	0	0.28150E-06	476027.7	3752808.4	476.8	3.49	4.00	3.25	YES
L0002499	0	0.28150E-06	476032.1	3752804.1	476.5	3.49	4.00	3.25	YES
L0002500	0	0.28150E-06	476032.3	3752795.6	476.4	3.49	4.00	3.25	YES
L0002501	0	0.28150E-06	476032.4	3752787.0	476.2	3.49	4.00	3.25	YES
L0002502	0	0.28150E-06	476032.5	3752778.4	476.0	3.49	4.00	3.25	YES
L0002503	0	0.28150E-06	476032.7	3752769.8	476.0	3.49	4.00	3.25	YES
L0002504	0	0.28150E-06	476032.8	3752761.2	476.0	3.49	4.00	3.25	YES
L0002505	0	0.28150E-06	476032.9	3752752.6	476.0	3.49	4.00	3.25	YES
L0002506	0	0.28150E-06	476033.1	3752744.0	476.0	3.49	4.00	3.25	YES

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0002507	0	0.28150E-06	476033.2	3752735.4	476.0	3.49	4.00	3.25	YES	
L0002508	0	0.28150E-06	476033.4	3752726.8	476.0	3.49	4.00	3.25	YES	
L0002509	0	0.28150E-06	476033.5	3752718.3	476.0	3.49	4.00	3.25	YES	
L0002510	0	0.28150E-06	476033.6	3752709.7	476.0	3.49	4.00	3.25	YES	
L0002511	0	0.28150E-06	476033.8	3752701.1	476.0	3.49	4.00	3.25	YES	
L0002512	0	0.28150E-06	476033.9	3752692.5	476.0	3.49	4.00	3.25	YES	
L0002513	0	0.28150E-06	476034.0	3752683.9	476.0	3.49	4.00	3.25	YES	
L0002514	0	0.28150E-06	476034.2	3752675.3	476.0	3.49	4.00	3.25	YES	
L0002515	0	0.28150E-06	476034.3	3752666.7	476.0	3.49	4.00	3.25	YES	
L0002516	0	0.28150E-06	476034.4	3752658.1	476.0	3.49	4.00	3.25	YES	
L0002517	0	0.28150E-06	476034.6	3752649.5	475.9	3.49	4.00	3.25	YES	
L0002518	0	0.28150E-06	476034.7	3752641.0	475.7	3.49	4.00	3.25	YES	
L0002519	0	0.28150E-06	476034.9	3752632.4	475.6	3.49	4.00	3.25	YES	
L0002520	0	0.28150E-06	476035.0	3752623.8	475.4	3.49	4.00	3.25	YES	
L0002592	0	0.15480E-07	476642.5	3752615.8	475.0	3.49	4.00	3.25	YES	
L0002593	0	0.15480E-07	476633.9	3752615.8	475.0	3.49	4.00	3.25	YES	
L0002594	0	0.15480E-07	476625.3	3752615.8	475.0	3.49	4.00	3.25	YES	
L0002595	0	0.15480E-07	476616.7	3752615.8	475.1	3.49	4.00	3.25	YES	
L0002596	0	0.15480E-07	476608.2	3752615.8	475.4	3.49	4.00	3.25	YES	
L0002597	0	0.15480E-07	476599.6	3752615.8	475.7	3.49	4.00	3.25	YES	
L0002598	0	0.15480E-07	476591.0	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002599	0	0.15480E-07	476582.4	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002600	0	0.15480E-07	476573.8	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002601	0	0.15480E-07	476565.2	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002602	0	0.15480E-07	476556.6	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002603	0	0.15480E-07	476548.0	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002604	0	0.15480E-07	476539.4	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002605	0	0.15480E-07	476530.8	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002606	0	0.15480E-07	476522.3	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002607	0	0.15480E-07	476513.7	3752615.8	476.0	3.49	4.00	3.25	YES	

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

L0002608	0	0.15480E-07	476505.1	3752615.8	476.0	3.49	4.00	3.25	YES
L0002609	0	0.15480E-07	476496.5	3752615.8	475.9	3.49	4.00	3.25	YES
L0002610	0	0.15480E-07	476487.9	3752615.8	475.6	3.49	4.00	3.25	YES
L0002611	0	0.15480E-07	476479.3	3752615.8	475.3	3.49	4.00	3.25	YES
L0002612	0	0.15480E-07	476470.7	3752615.8	475.0	3.49	4.00	3.25	YES
L0002613	0	0.15480E-07	476462.1	3752615.8	475.0	3.49	4.00	3.25	YES
L0002614	0	0.15480E-07	476453.5	3752615.8	475.0	3.49	4.00	3.25	YES
L0002615	0	0.15480E-07	476444.9	3752615.8	475.0	3.49	4.00	3.25	YES
L0002616	0	0.15480E-07	476436.4	3752615.8	475.1	3.49	4.00	3.25	YES
L0002617	0	0.15480E-07	476427.8	3752615.8	475.3	3.49	4.00	3.25	YES

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0002618	0	0.15480E-07	476419.2	3752615.8	475.4	3.49	4.00	3.25	YES	
L0002619	0	0.15480E-07	476410.6	3752615.8	475.6	3.49	4.00	3.25	YES	
L0002620	0	0.15480E-07	476402.0	3752615.8	475.7	3.49	4.00	3.25	YES	
L0002621	0	0.15480E-07	476393.4	3752615.8	475.8	3.49	4.00	3.25	YES	
L0002622	0	0.15480E-07	476384.8	3752615.8	475.9	3.49	4.00	3.25	YES	
L0002623	0	0.15480E-07	476376.2	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002624	0	0.15480E-07	476367.6	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002625	0	0.15480E-07	476359.0	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002626	0	0.15480E-07	476350.5	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002627	0	0.15480E-07	476341.9	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002628	0	0.15480E-07	476333.3	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002629	0	0.15480E-07	476324.7	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002630	0	0.15480E-07	476316.1	3752615.8	475.9	3.49	4.00	3.25	YES	
L0002631	0	0.15480E-07	476307.5	3752615.8	475.6	3.49	4.00	3.25	YES	
L0002632	0	0.15480E-07	476298.9	3752615.8	475.3	3.49	4.00	3.25	YES	
L0002633	0	0.15480E-07	476290.3	3752615.8	475.0	3.49	4.00	3.25	YES	
L0002634	0	0.15480E-07	476281.7	3752615.8	475.0	3.49	4.00	3.25	YES	
L0002635	0	0.15480E-07	476273.1	3752615.8	475.0	3.49	4.00	3.25	YES	
L0002636	0	0.15480E-07	476264.6	3752615.8	475.0	3.49	4.00	3.25	YES	
L0002637	0	0.15480E-07	476256.0	3752615.8	475.1	3.49	4.00	3.25	YES	
L0002638	0	0.15480E-07	476247.4	3752615.8	475.3	3.49	4.00	3.25	YES	
L0002639	0	0.15480E-07	476238.8	3752615.8	475.4	3.49	4.00	3.25	YES	
L0002640	0	0.15480E-07	476230.2	3752615.8	475.6	3.49	4.00	3.25	YES	
L0002641	0	0.15480E-07	476221.6	3752615.8	475.7	3.49	4.00	3.25	YES	
L0002642	0	0.15480E-07	476213.0	3752615.8	475.8	3.49	4.00	3.25	YES	
L0002643	0	0.15480E-07	476204.4	3752615.8	475.9	3.49	4.00	3.25	YES	
L0002644	0	0.15480E-07	476195.8	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002645	0	0.15480E-07	476187.2	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002646	0	0.15480E-07	476178.7	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002647	0	0.15480E-07	476170.1	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002648	0	0.15480E-07	476161.5	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002649	0	0.15480E-07	476152.9	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002650	0	0.15480E-07	476144.3	3752615.8	476.0	3.49	4.00	3.25	YES	
L0002651	0	0.15480E-07	476135.7	3752615.8	475.9	3.49	4.00	3.25	YES	
L0002652	0	0.15480E-07	476127.1	3752615.8	475.7	3.49	4.00	3.25	YES	
L0002653	0	0.15480E-07	476118.5	3752615.8	475.6	3.49	4.00	3.25	YES	
L0002654	0	0.15480E-07	476109.9	3752615.8	475.4	3.49	4.00	3.25	YES	
L0002655	0	0.15480E-07	476101.3	3752615.8	475.3	3.49	4.00	3.25	YES	
L0002656	0	0.15480E-07	476092.8	3752615.8	475.2	3.49	4.00	3.25	YES	
L0002657	0	0.15480E-07	476084.2	3752615.8	475.1	3.49	4.00	3.25	YES	

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0002658	0	0.15480E-07	476075.6	3752615.8	475.0	3.49	4.00	3.25	YES	
L0002659	0	0.15480E-07	476067.0	3752615.8	475.0	3.49	4.00	3.25	YES	
L0002660	0	0.15480E-07	476058.4	3752615.8	475.0	3.49	4.00	3.25	YES	
L0002661	0	0.15480E-07	476049.8	3752615.8	475.0	3.49	4.00	3.25	YES	
L0002662	0	0.15480E-07	476041.2	3752615.8	475.2	3.49	4.00	3.25	YES	
L0002734	0	0.30960E-07	476648.8	3752607.4	475.0	3.49	4.00	3.25	YES	
L0002735	0	0.30960E-07	476640.2	3752607.4	475.0	3.49	4.00	3.25	YES	
L0002736	0	0.30960E-07	476631.6	3752607.4	475.0	3.49	4.00	3.25	YES	
L0002737	0	0.30960E-07	476623.0	3752607.4	475.0	3.49	4.00	3.25	YES	
L0002738	0	0.30960E-07	476614.4	3752607.4	475.2	3.49	4.00	3.25	YES	
L0002739	0	0.30960E-07	476605.8	3752607.4	475.5	3.49	4.00	3.25	YES	
L0002740	0	0.30960E-07	476597.3	3752607.4	475.8	3.49	4.00	3.25	YES	
L0002741	0	0.30960E-07	476588.7	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002742	0	0.30960E-07	476580.1	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002743	0	0.30960E-07	476571.5	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002744	0	0.30960E-07	476562.9	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002745	0	0.30960E-07	476554.3	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002746	0	0.30960E-07	476545.7	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002747	0	0.30960E-07	476537.1	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002748	0	0.30960E-07	476528.5	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002749	0	0.30960E-07	476519.9	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002750	0	0.30960E-07	476511.4	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002751	0	0.30960E-07	476502.8	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002752	0	0.30960E-07	476494.2	3752607.4	475.8	3.49	4.00	3.25	YES	
L0002753	0	0.30960E-07	476485.6	3752607.4	475.5	3.49	4.00	3.25	YES	
L0002754	0	0.30960E-07	476477.0	3752607.4	475.2	3.49	4.00	3.25	YES	
L0002755	0	0.30960E-07	476468.4	3752607.4	475.0	3.49	4.00	3.25	YES	
L0002756	0	0.30960E-07	476459.8	3752607.4	475.0	3.49	4.00	3.25	YES	
L0002757	0	0.30960E-07	476451.2	3752607.4	475.0	3.49	4.00	3.25	YES	
L0002758	0	0.30960E-07	476442.6	3752607.4	475.0	3.49	4.00	3.25	YES	
L0002759	0	0.30960E-07	476434.0	3752607.4	475.1	3.49	4.00	3.25	YES	
L0002760	0	0.30960E-07	476425.5	3752607.4	475.2	3.49	4.00	3.25	YES	
L0002761	0	0.30960E-07	476416.9	3752607.4	475.3	3.49	4.00	3.25	YES	
L0002762	0	0.30960E-07	476408.3	3752607.4	475.4	3.49	4.00	3.25	YES	
L0002763	0	0.30960E-07	476399.7	3752607.4	475.6	3.49	4.00	3.25	YES	
L0002764	0	0.30960E-07	476391.1	3752607.4	475.8	3.49	4.00	3.25	YES	
L0002765	0	0.30960E-07	476382.5	3752607.4	475.9	3.49	4.00	3.25	YES	
L0002766	0	0.30960E-07	476373.9	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002767	0	0.30960E-07	476365.3	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002768	0	0.30960E-07	476356.7	3752607.4	476.0	3.49	4.00	3.25	YES	

*** VOLUME SOURCE DATA ***

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0002769	0	0.30960E-07	476348.1	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002770	0	0.30960E-07	476339.6	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002771	0	0.30960E-07	476331.0	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002772	0	0.30960E-07	476322.4	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002773	0	0.30960E-07	476313.8	3752607.4	475.8	3.49	4.00	3.25	YES	
L0002774	0	0.30960E-07	476305.2	3752607.4	475.5	3.49	4.00	3.25	YES	
L0002775	0	0.30960E-07	476296.6	3752607.4	475.2	3.49	4.00	3.25	YES	
L0002776	0	0.30960E-07	476288.0	3752607.4	475.0	3.49	4.00	3.25	YES	
L0002777	0	0.30960E-07	476279.4	3752607.4	475.0	3.49	4.00	3.25	YES	
L0002778	0	0.30960E-07	476270.8	3752607.4	475.0	3.49	4.00	3.25	YES	
L0002779	0	0.30960E-07	476262.2	3752607.4	475.0	3.49	4.00	3.25	YES	
L0002780	0	0.30960E-07	476253.7	3752607.4	475.1	3.49	4.00	3.25	YES	
L0002781	0	0.30960E-07	476245.1	3752607.4	475.2	3.49	4.00	3.25	YES	
L0002782	0	0.30960E-07	476236.5	3752607.4	475.3	3.49	4.00	3.25	YES	
L0002783	0	0.30960E-07	476227.9	3752607.4	475.4	3.49	4.00	3.25	YES	
L0002784	0	0.30960E-07	476219.3	3752607.4	475.6	3.49	4.00	3.25	YES	
L0002785	0	0.30960E-07	476210.7	3752607.4	475.8	3.49	4.00	3.25	YES	
L0002786	0	0.30960E-07	476202.1	3752607.4	475.9	3.49	4.00	3.25	YES	
L0002787	0	0.30960E-07	476193.5	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002788	0	0.30960E-07	476184.9	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002789	0	0.30960E-07	476176.3	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002790	0	0.30960E-07	476167.8	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002791	0	0.30960E-07	476159.2	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002792	0	0.30960E-07	476150.6	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002793	0	0.30960E-07	476142.0	3752607.4	476.0	3.49	4.00	3.25	YES	
L0002794	0	0.30960E-07	476133.4	3752607.4	475.9	3.49	4.00	3.25	YES	
L0002795	0	0.30960E-07	476124.8	3752607.4	475.8	3.49	4.00	3.25	YES	
L0002796	0	0.30960E-07	476116.2	3752607.4	475.7	3.49	4.00	3.25	YES	
L0002797	0	0.30960E-07	476107.6	3752607.4	475.6	3.49	4.00	3.25	YES	
L0002798	0	0.30960E-07	476099.0	3752607.4	475.4	3.49	4.00	3.25	YES	
L0002799	0	0.30960E-07	476090.4	3752607.4	475.2	3.49	4.00	3.25	YES	
L0002800	0	0.30960E-07	476081.9	3752607.4	475.0	3.49	4.00	3.25	YES	
L0002801	0	0.30960E-07	476073.3	3752607.4	475.0	3.49	4.00	3.25	YES	
L0002802	0	0.30960E-07	476064.7	3752607.4	475.0	3.49	4.00	3.25	YES	
L0002803	0	0.30960E-07	476056.1	3752607.4	475.0	3.49	4.00	3.25	YES	
L0002804	0	0.30960E-07	476047.5	3752607.4	475.0	3.49	4.00	3.25	YES	
L0002929	0	0.27020E-07	475379.6	3752217.5	472.0	3.49	4.00	3.25	YES	
L0002930	0	0.27020E-07	475388.2	3752217.5	472.0	3.49	4.00	3.25	YES	
L0002931	0	0.27020E-07	475396.8	3752217.6	472.0	3.49	4.00	3.25	YES	
L0002932	0	0.27020E-07	475405.4	3752217.6	472.0	3.49	4.00	3.25	YES	

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0002933	0	0.27020E-07	475414.0	3752217.7	472.0	3.49	4.00	3.25	YES	
L0002934	0	0.27020E-07	475422.6	3752217.7	472.0	3.49	4.00	3.25	YES	
L0002935	0	0.27020E-07	475431.2	3752217.8	472.0	3.49	4.00	3.25	YES	

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

L0002936	0	0.27020E-07	475439.8	3752217.8	472.0	3.49	4.00	3.25	YES
L0002937	0	0.27020E-07	475448.4	3752217.8	472.0	3.49	4.00	3.25	YES
L0002938	0	0.27020E-07	475457.0	3752217.9	472.0	3.49	4.00	3.25	YES
L0002939	0	0.27020E-07	475465.5	3752217.9	472.0	3.49	4.00	3.25	YES
L0002940	0	0.27020E-07	475474.1	3752218.0	472.0	3.49	4.00	3.25	YES
L0002941	0	0.27020E-07	475482.7	3752218.0	472.0	3.49	4.00	3.25	YES
L0002942	0	0.27020E-07	475491.3	3752218.1	472.0	3.49	4.00	3.25	YES
L0002943	0	0.27020E-07	475499.9	3752218.1	472.0	3.49	4.00	3.25	YES
L0002944	0	0.27020E-07	475508.5	3752218.2	472.0	3.49	4.00	3.25	YES
L0002945	0	0.27020E-07	475517.1	3752218.2	472.0	3.49	4.00	3.25	YES
L0002946	0	0.27020E-07	475525.7	3752218.3	472.0	3.49	4.00	3.25	YES
L0002947	0	0.27020E-07	475534.3	3752218.3	472.0	3.49	4.00	3.25	YES
L0002948	0	0.27020E-07	475542.9	3752218.3	472.0	3.49	4.00	3.25	YES
L0002949	0	0.27020E-07	475551.4	3752218.4	472.0	3.49	4.00	3.25	YES
L0002950	0	0.27020E-07	475560.0	3752218.4	472.0	3.49	4.00	3.25	YES
L0002951	0	0.27020E-07	475568.6	3752218.5	472.0	3.49	4.00	3.25	YES
L0002952	0	0.27020E-07	475577.2	3752218.5	472.0	3.49	4.00	3.25	YES
L0002953	0	0.27020E-07	475585.8	3752218.6	472.0	3.49	4.00	3.25	YES
L0002954	0	0.27020E-07	475594.4	3752218.6	472.0	3.49	4.00	3.25	YES
L0002955	0	0.27020E-07	475603.0	3752218.7	472.0	3.49	4.00	3.25	YES
L0002956	0	0.27020E-07	475611.6	3752218.7	472.0	3.49	4.00	3.25	YES
L0002957	0	0.27020E-07	475620.2	3752218.7	472.0	3.49	4.00	3.25	YES
L0002958	0	0.27020E-07	475628.8	3752218.8	472.0	3.49	4.00	3.25	YES
L0002959	0	0.27020E-07	475637.3	3752218.8	472.0	3.49	4.00	3.25	YES
L0002960	0	0.27020E-07	475645.9	3752218.9	472.0	3.49	4.00	3.25	YES
L0002961	0	0.27020E-07	475654.5	3752218.9	472.0	3.49	4.00	3.25	YES
L0002962	0	0.27020E-07	475663.1	3752219.0	472.0	3.49	4.00	3.25	YES
L0002963	0	0.27020E-07	475671.7	3752219.0	472.0	3.49	4.00	3.25	YES
L0002964	0	0.27020E-07	475680.3	3752219.1	472.0	3.49	4.00	3.25	YES
L0002965	0	0.27020E-07	475688.9	3752219.1	472.0	3.49	4.00	3.25	YES
L0002966	0	0.27020E-07	475697.5	3752219.2	472.0	3.49	4.00	3.25	YES
L0002967	0	0.27020E-07	475706.1	3752219.2	472.0	3.49	4.00	3.25	YES
L0002968	0	0.27020E-07	475714.7	3752219.2	472.0	3.49	4.00	3.25	YES
L0002969	0	0.27020E-07	475723.2	3752219.3	472.0	3.49	4.00	3.25	YES
L0002970	0	0.27020E-07	475731.8	3752219.3	472.0	3.49	4.00	3.25	YES
L0002971	0	0.27020E-07	475740.4	3752219.4	472.0	3.49	4.00	3.25	YES
L0002972	0	0.27020E-07	475749.0	3752219.4	472.0	3.49	4.00	3.25	YES

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0002973	0	0.27020E-07	475757.6	3752219.5	472.0	3.49	4.00	3.25	YES	
L0002974	0	0.27020E-07	475766.2	3752219.5	472.0	3.49	4.00	3.25	YES	
L0002975	0	0.27020E-07	475774.8	3752219.6	472.0	3.49	4.00	3.25	YES	
L0002976	0	0.27020E-07	475783.4	3752219.6	472.0	3.49	4.00	3.25	YES	
L0002977	0	0.27020E-07	475792.0	3752219.7	472.0	3.49	4.00	3.25	YES	
L0002978	0	0.27020E-07	475800.6	3752219.7	472.0	3.49	4.00	3.25	YES	
L0002979	0	0.27020E-07	475809.1	3752219.7	472.0	3.49	4.00	3.25	YES	
L0002980	0	0.27020E-07	475817.7	3752219.8	472.0	3.49	4.00	3.25	YES	
L0002981	0	0.27020E-07	475826.3	3752219.8	472.0	3.49	4.00	3.25	YES	
L0002982	0	0.27020E-07	475834.9	3752219.9	472.0	3.49	4.00	3.25	YES	
L0002983	0	0.27020E-07	475843.5	3752219.9	472.0	3.49	4.00	3.25	YES	
L0002984	0	0.27020E-07	475852.1	3752220.0	472.0	3.49	4.00	3.25	YES	
L0002985	0	0.27020E-07	475860.7	3752220.0	472.0	3.49	4.00	3.25	YES	

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

L0002986	0	0.27020E-07	475865.2	3752224.0	472.0	3.49	4.00	3.25	YES
L0002987	0	0.27020E-07	475865.0	3752232.6	472.0	3.49	4.00	3.25	YES
L0002988	0	0.27020E-07	475864.9	3752241.2	472.2	3.49	4.00	3.25	YES
L0002989	0	0.27020E-07	475864.7	3752249.8	472.4	3.49	4.00	3.25	YES
L0002990	0	0.27020E-07	475864.6	3752258.4	472.7	3.49	4.00	3.25	YES
L0002991	0	0.27020E-07	475864.4	3752267.0	473.0	3.49	4.00	3.25	YES
L0002992	0	0.27020E-07	475864.3	3752275.6	473.0	3.49	4.00	3.25	YES
L0002993	0	0.27020E-07	475864.1	3752284.2	473.0	3.49	4.00	3.25	YES
L0002994	0	0.27020E-07	475863.9	3752292.7	473.0	3.49	4.00	3.25	YES
L0002995	0	0.27020E-07	475863.8	3752301.3	473.0	3.49	4.00	3.25	YES
L0002996	0	0.27020E-07	475863.7	3752309.9	473.0	3.49	4.00	3.25	YES
L0002997	0	0.27020E-07	475863.8	3752318.5	473.0	3.49	4.00	3.25	YES
L0002998	0	0.27020E-07	475863.8	3752327.1	473.0	3.49	4.00	3.25	YES
L0002999	0	0.27020E-07	475863.8	3752335.7	473.0	3.49	4.00	3.25	YES
L0003000	0	0.27020E-07	475863.8	3752344.3	473.0	3.49	4.00	3.25	YES
L0003001	0	0.27020E-07	475863.9	3752352.9	473.0	3.49	4.00	3.25	YES
L0003002	0	0.27020E-07	475863.9	3752361.5	473.0	3.49	4.00	3.25	YES
L0003003	0	0.27020E-07	475863.9	3752370.1	473.1	3.49	4.00	3.25	YES
L0003004	0	0.27020E-07	475864.0	3752378.6	473.1	3.49	4.00	3.25	YES
L0003005	0	0.27020E-07	475864.0	3752387.2	473.2	3.49	4.00	3.25	YES
L0003006	0	0.27020E-07	475864.0	3752395.8	473.4	3.49	4.00	3.25	YES
L0003007	0	0.27020E-07	475864.0	3752404.4	473.7	3.49	4.00	3.25	YES
L0003008	0	0.27020E-07	475864.1	3752413.0	473.9	3.49	4.00	3.25	YES
L0003009	0	0.27020E-07	475864.1	3752421.6	474.0	3.49	4.00	3.25	YES
L0003010	0	0.27020E-07	475864.1	3752430.2	474.0	3.49	4.00	3.25	YES
L0003011	0	0.27020E-07	475864.1	3752438.8	474.0	3.49	4.00	3.25	YES
L0003012	0	0.27020E-07	475864.2	3752447.4	474.0	3.49	4.00	3.25	YES

♀ *** AERMOD - VERSION 16216r *** *** C:\LAKES\AERMOD VIEW\11411 HRA\11411 HRA.ISC *** *** 05/24/18

*** AERMET - VERSION 16216 *** *** *** *** 17:41:25

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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0003013	0	0.27020E-07	475864.2	3752456.0	474.0	3.49	4.00	3.25	YES	
L0003014	0	0.27020E-07	475864.2	3752464.5	474.0	3.49	4.00	3.25	YES	
L0003015	0	0.27020E-07	475864.3	3752473.1	474.0	3.49	4.00	3.25	YES	
L0003016	0	0.27020E-07	475864.3	3752481.7	474.0	3.49	4.00	3.25	YES	
L0003017	0	0.27020E-07	475864.3	3752490.3	474.0	3.49	4.00	3.25	YES	
L0003018	0	0.27020E-07	475864.3	3752498.9	474.0	3.49	4.00	3.25	YES	
L0003019	0	0.27020E-07	475864.4	3752507.5	474.0	3.49	4.00	3.25	YES	
L0003020	0	0.27020E-07	475864.4	3752516.1	474.3	3.49	4.00	3.25	YES	
L0003021	0	0.27020E-07	475864.4	3752524.7	474.6	3.49	4.00	3.25	YES	
L0003022	0	0.27020E-07	475864.4	3752533.3	474.9	3.49	4.00	3.25	YES	
L0003023	0	0.27020E-07	475864.5	3752541.9	475.0	3.49	4.00	3.25	YES	
L0003024	0	0.27020E-07	475864.5	3752550.4	475.0	3.49	4.00	3.25	YES	
L0003025	0	0.27020E-07	475864.5	3752559.0	475.0	3.49	4.00	3.25	YES	
L0003026	0	0.27020E-07	475864.5	3752567.6	475.0	3.49	4.00	3.25	YES	
L0003027	0	0.27020E-07	475864.6	3752576.2	475.0	3.49	4.00	3.25	YES	
L0003028	0	0.27020E-07	475864.6	3752584.8	475.0	3.49	4.00	3.25	YES	
L0003029	0	0.27020E-07	475864.6	3752593.4	475.0	3.49	4.00	3.25	YES	
L0003030	0	0.27020E-07	475864.7	3752602.0	475.0	3.49	4.00	3.25	YES	
L0003031	0	0.27020E-07	475864.7	3752610.6	475.0	3.49	4.00	3.25	YES	
L0003032	0	0.27020E-07	475864.7	3752619.2	475.0	3.49	4.00	3.25	YES	
L0003033	0	0.27020E-07	475864.7	3752627.8	475.0	3.49	4.00	3.25	YES	
L0003034	0	0.27020E-07	475864.8	3752636.3	475.0	3.49	4.00	3.25	YES	
L0003035	0	0.27020E-07	475864.8	3752644.9	475.0	3.49	4.00	3.25	YES	

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

L0003036	0	0.27020E-07	475864.8	3752653.5	475.0	3.49	4.00	3.25	YES
L0003037	0	0.27020E-07	475864.8	3752662.1	475.2	3.49	4.00	3.25	YES
L0003038	0	0.27020E-07	475864.9	3752670.7	475.5	3.49	4.00	3.25	YES
L0003039	0	0.27020E-07	475864.9	3752679.3	475.8	3.49	4.00	3.25	YES
L0003040	0	0.27020E-07	475864.9	3752687.9	476.0	3.49	4.00	3.25	YES
L0003041	0	0.27020E-07	475865.0	3752696.5	476.0	3.49	4.00	3.25	YES
L0003042	0	0.27020E-07	475865.0	3752705.1	476.0	3.49	4.00	3.25	YES
L0003043	0	0.27020E-07	475865.0	3752713.7	476.0	3.49	4.00	3.25	YES
L0003044	0	0.27020E-07	475865.0	3752722.2	476.0	3.49	4.00	3.25	YES
L0003045	0	0.27020E-07	475865.1	3752730.8	476.0	3.49	4.00	3.25	YES
L0003046	0	0.27020E-07	475865.1	3752739.4	476.0	3.49	4.00	3.25	YES
L0003047	0	0.27020E-07	475865.1	3752748.0	476.0	3.49	4.00	3.25	YES
L0003048	0	0.27020E-07	475865.1	3752756.6	476.0	3.49	4.00	3.25	YES
L0003049	0	0.27020E-07	475865.2	3752765.2	476.0	3.49	4.00	3.25	YES
L0003050	0	0.27020E-07	475865.2	3752773.8	476.0	3.49	4.00	3.25	YES
L0003051	0	0.27020E-07	475865.2	3752782.4	476.0	3.49	4.00	3.25	YES
L0003052	0	0.27020E-07	475865.2	3752791.0	476.0	3.49	4.00	3.25	YES

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0003176	0	0.34550E-07	475379.6	3752217.5	472.0	3.49	4.00	3.25	YES	
L0003177	0	0.34550E-07	475388.2	3752217.5	472.0	3.49	4.00	3.25	YES	
L0003178	0	0.34550E-07	475396.8	3752217.6	472.0	3.49	4.00	3.25	YES	
L0003179	0	0.34550E-07	475405.4	3752217.6	472.0	3.49	4.00	3.25	YES	
L0003180	0	0.34550E-07	475414.0	3752217.7	472.0	3.49	4.00	3.25	YES	
L0003181	0	0.34550E-07	475422.6	3752217.7	472.0	3.49	4.00	3.25	YES	
L0003182	0	0.34550E-07	475431.2	3752217.8	472.0	3.49	4.00	3.25	YES	
L0003183	0	0.34550E-07	475439.8	3752217.8	472.0	3.49	4.00	3.25	YES	
L0003184	0	0.34550E-07	475448.4	3752217.8	472.0	3.49	4.00	3.25	YES	
L0003185	0	0.34550E-07	475457.0	3752217.9	472.0	3.49	4.00	3.25	YES	
L0003186	0	0.34550E-07	475465.5	3752217.9	472.0	3.49	4.00	3.25	YES	
L0003187	0	0.34550E-07	475474.1	3752218.0	472.0	3.49	4.00	3.25	YES	
L0003188	0	0.34550E-07	475482.7	3752218.0	472.0	3.49	4.00	3.25	YES	
L0003189	0	0.34550E-07	475491.3	3752218.1	472.0	3.49	4.00	3.25	YES	
L0003190	0	0.34550E-07	475499.9	3752218.1	472.0	3.49	4.00	3.25	YES	
L0003191	0	0.34550E-07	475508.5	3752218.2	472.0	3.49	4.00	3.25	YES	
L0003192	0	0.34550E-07	475517.1	3752218.2	472.0	3.49	4.00	3.25	YES	
L0003193	0	0.34550E-07	475525.7	3752218.3	472.0	3.49	4.00	3.25	YES	
L0003194	0	0.34550E-07	475534.3	3752218.3	472.0	3.49	4.00	3.25	YES	
L0003195	0	0.34550E-07	475542.9	3752218.3	472.0	3.49	4.00	3.25	YES	
L0003196	0	0.34550E-07	475551.4	3752218.4	472.0	3.49	4.00	3.25	YES	
L0003197	0	0.34550E-07	475560.0	3752218.4	472.0	3.49	4.00	3.25	YES	
L0003198	0	0.34550E-07	475568.6	3752218.5	472.0	3.49	4.00	3.25	YES	
L0003199	0	0.34550E-07	475577.2	3752218.5	472.0	3.49	4.00	3.25	YES	
L0003200	0	0.34550E-07	475585.8	3752218.6	472.0	3.49	4.00	3.25	YES	
L0003201	0	0.34550E-07	475594.4	3752218.6	472.0	3.49	4.00	3.25	YES	
L0003202	0	0.34550E-07	475603.0	3752218.7	472.0	3.49	4.00	3.25	YES	
L0003203	0	0.34550E-07	475611.6	3752218.7	472.0	3.49	4.00	3.25	YES	
L0003204	0	0.34550E-07	475620.2	3752218.7	472.0	3.49	4.00	3.25	YES	
L0003205	0	0.34550E-07	475628.8	3752218.8	472.0	3.49	4.00	3.25	YES	
L0003206	0	0.34550E-07	475637.3	3752218.8	472.0	3.49	4.00	3.25	YES	
L0003207	0	0.34550E-07	475645.9	3752218.9	472.0	3.49	4.00	3.25	YES	
L0003208	0	0.34550E-07	475654.5	3752218.9	472.0	3.49	4.00	3.25	YES	

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

L0003209	0	0.34550E-07	475663.1	3752219.0	472.0	3.49	4.00	3.25	YES
L0003210	0	0.34550E-07	475671.7	3752219.0	472.0	3.49	4.00	3.25	YES
L0003211	0	0.34550E-07	475680.3	3752219.1	472.0	3.49	4.00	3.25	YES
L0003212	0	0.34550E-07	475688.9	3752219.1	472.0	3.49	4.00	3.25	YES
L0003213	0	0.34550E-07	475697.5	3752219.2	472.0	3.49	4.00	3.25	YES
L0003214	0	0.34550E-07	475706.1	3752219.2	472.0	3.49	4.00	3.25	YES
L0003215	0	0.34550E-07	475714.7	3752219.2	472.0	3.49	4.00	3.25	YES

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0003216	0	0.34550E-07	475723.2	3752219.3	472.0	3.49	4.00	3.25	YES	
L0003217	0	0.34550E-07	475731.8	3752219.3	472.0	3.49	4.00	3.25	YES	
L0003218	0	0.34550E-07	475740.4	3752219.4	472.0	3.49	4.00	3.25	YES	
L0003219	0	0.34550E-07	475749.0	3752219.4	472.0	3.49	4.00	3.25	YES	
L0003220	0	0.34550E-07	475757.6	3752219.5	472.0	3.49	4.00	3.25	YES	
L0003221	0	0.34550E-07	475766.2	3752219.5	472.0	3.49	4.00	3.25	YES	
L0003222	0	0.34550E-07	475774.8	3752219.6	472.0	3.49	4.00	3.25	YES	
L0003223	0	0.34550E-07	475783.4	3752219.6	472.0	3.49	4.00	3.25	YES	
L0003224	0	0.34550E-07	475792.0	3752219.7	472.0	3.49	4.00	3.25	YES	
L0003225	0	0.34550E-07	475800.6	3752219.7	472.0	3.49	4.00	3.25	YES	
L0003226	0	0.34550E-07	475809.1	3752219.7	472.0	3.49	4.00	3.25	YES	
L0003227	0	0.34550E-07	475817.7	3752219.8	472.0	3.49	4.00	3.25	YES	
L0003228	0	0.34550E-07	475826.3	3752219.8	472.0	3.49	4.00	3.25	YES	
L0003229	0	0.34550E-07	475834.9	3752219.9	472.0	3.49	4.00	3.25	YES	
L0003230	0	0.34550E-07	475843.5	3752219.9	472.0	3.49	4.00	3.25	YES	
L0003231	0	0.34550E-07	475852.1	3752220.0	472.0	3.49	4.00	3.25	YES	
L0003232	0	0.34550E-07	475860.7	3752220.0	472.0	3.49	4.00	3.25	YES	
L0003233	0	0.34550E-07	475865.2	3752224.0	472.0	3.49	4.00	3.25	YES	
L0003234	0	0.34550E-07	475865.0	3752232.6	472.0	3.49	4.00	3.25	YES	
L0003235	0	0.34550E-07	475864.9	3752241.2	472.2	3.49	4.00	3.25	YES	
L0003236	0	0.34550E-07	475864.7	3752249.8	472.4	3.49	4.00	3.25	YES	
L0003237	0	0.34550E-07	475864.6	3752258.4	472.7	3.49	4.00	3.25	YES	
L0003238	0	0.34550E-07	475864.4	3752267.0	473.0	3.49	4.00	3.25	YES	
L0003239	0	0.34550E-07	475864.3	3752275.6	473.0	3.49	4.00	3.25	YES	
L0003240	0	0.34550E-07	475864.1	3752284.2	473.0	3.49	4.00	3.25	YES	
L0003241	0	0.34550E-07	475863.9	3752292.7	473.0	3.49	4.00	3.25	YES	
L0003242	0	0.34550E-07	475863.8	3752301.3	473.0	3.49	4.00	3.25	YES	
L0003243	0	0.34550E-07	475863.7	3752309.9	473.0	3.49	4.00	3.25	YES	
L0003244	0	0.34550E-07	475863.8	3752318.5	473.0	3.49	4.00	3.25	YES	
L0003245	0	0.34550E-07	475863.8	3752327.1	473.0	3.49	4.00	3.25	YES	
L0003246	0	0.34550E-07	475863.9	3752335.7	473.0	3.49	4.00	3.25	YES	
L0003247	0	0.34550E-07	475863.9	3752344.3	473.0	3.49	4.00	3.25	YES	
L0003248	0	0.34550E-07	475863.9	3752352.9	473.0	3.49	4.00	3.25	YES	
L0003249	0	0.34550E-07	475864.0	3752361.5	473.0	3.49	4.00	3.25	YES	
L0003250	0	0.34550E-07	475864.0	3752370.1	473.1	3.49	4.00	3.25	YES	
L0003251	0	0.34550E-07	475864.0	3752378.6	473.1	3.49	4.00	3.25	YES	
L0003252	0	0.34550E-07	475864.1	3752387.2	473.2	3.49	4.00	3.25	YES	
L0003253	0	0.34550E-07	475864.1	3752395.8	473.4	3.49	4.00	3.25	YES	
L0003254	0	0.34550E-07	475864.1	3752404.4	473.7	3.49	4.00	3.25	YES	
L0003255	0	0.34550E-07	475864.2	3752413.0	473.9	3.49	4.00	3.25	YES	

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0003256	0	0.34550E-07	475864.2	3752421.6	474.0	3.49	4.00	3.25	YES	
L0003257	0	0.34550E-07	475864.2	3752430.2	474.0	3.49	4.00	3.25	YES	
L0003258	0	0.34550E-07	475864.3	3752438.8	474.0	3.49	4.00	3.25	YES	
L0003259	0	0.34550E-07	475864.3	3752447.4	474.0	3.49	4.00	3.25	YES	
L0003260	0	0.34550E-07	475864.4	3752456.0	474.0	3.49	4.00	3.25	YES	
L0003261	0	0.34550E-07	475864.4	3752464.5	474.0	3.49	4.00	3.25	YES	
L0003262	0	0.34550E-07	475864.4	3752473.1	474.0	3.49	4.00	3.25	YES	
L0003263	0	0.34550E-07	475864.5	3752481.7	474.0	3.49	4.00	3.25	YES	
L0003264	0	0.34550E-07	475864.5	3752490.3	474.0	3.49	4.00	3.25	YES	
L0003265	0	0.34550E-07	475864.5	3752498.9	474.0	3.49	4.00	3.25	YES	
L0003266	0	0.34550E-07	475864.6	3752507.5	474.0	3.49	4.00	3.25	YES	
L0003267	0	0.34550E-07	475864.6	3752516.1	474.3	3.49	4.00	3.25	YES	
L0003268	0	0.34550E-07	475864.6	3752524.7	474.6	3.49	4.00	3.25	YES	
L0003269	0	0.34550E-07	475864.7	3752533.3	474.9	3.49	4.00	3.25	YES	
L0003270	0	0.34550E-07	475864.7	3752541.9	475.0	3.49	4.00	3.25	YES	
L0003271	0	0.34550E-07	475864.7	3752550.4	475.0	3.49	4.00	3.25	YES	
L0003272	0	0.34550E-07	475864.8	3752559.0	475.0	3.49	4.00	3.25	YES	
L0003273	0	0.34550E-07	475864.8	3752567.6	475.0	3.49	4.00	3.25	YES	
L0003274	0	0.34550E-07	475864.8	3752576.2	475.0	3.49	4.00	3.25	YES	
L0003275	0	0.34550E-07	475864.9	3752584.8	475.0	3.49	4.00	3.25	YES	
L0003276	0	0.34550E-07	475864.9	3752593.4	475.0	3.49	4.00	3.25	YES	
L0003277	0	0.34550E-07	475865.0	3752602.0	475.0	3.49	4.00	3.25	YES	
L0003278	0	0.34550E-07	475866.9	3752608.6	475.0	3.49	4.00	3.25	YES	
L0003279	0	0.34550E-07	475875.5	3752608.6	475.0	3.49	4.00	3.25	YES	
L0003280	0	0.34550E-07	475884.1	3752608.5	475.0	3.49	4.00	3.25	YES	
L0003281	0	0.34550E-07	475892.7	3752608.5	475.0	3.49	4.00	3.25	YES	
L0003282	0	0.34550E-07	475901.3	3752608.5	475.0	3.49	4.00	3.25	YES	
L0003283	0	0.34550E-07	475909.9	3752608.4	475.0	3.49	4.00	3.25	YES	
L0003284	0	0.34550E-07	475918.5	3752608.4	475.0	3.49	4.00	3.25	YES	
L0003285	0	0.34550E-07	475927.1	3752608.4	475.0	3.49	4.00	3.25	YES	
L0003286	0	0.34550E-07	475935.7	3752608.3	475.0	3.49	4.00	3.25	YES	
L0003287	0	0.34550E-07	475944.2	3752608.3	475.0	3.49	4.00	3.25	YES	
L0003288	0	0.34550E-07	475952.8	3752608.2	475.0	3.49	4.00	3.25	YES	
L0003289	0	0.34550E-07	475961.4	3752608.2	475.0	3.49	4.00	3.25	YES	
L0003290	0	0.34550E-07	475970.0	3752608.2	475.1	3.49	4.00	3.25	YES	
L0003291	0	0.34550E-07	475978.6	3752608.1	475.2	3.49	4.00	3.25	YES	
L0003292	0	0.34550E-07	475987.2	3752608.1	475.4	3.49	4.00	3.25	YES	
L0003293	0	0.34550E-07	475995.8	3752608.1	475.4	3.49	4.00	3.25	YES	
L0003294	0	0.34550E-07	476004.4	3752608.0	475.4	3.49	4.00	3.25	YES	
L0003295	0	0.34550E-07	476013.0	3752608.0	475.4	3.49	4.00	3.25	YES	

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE	NUMBER PART.	EMISSION RATE (GRAMS/SEC)	X	Y	BASE ELEV.	RELEASE HEIGHT	INIT. SY	INIT. SZ	URBAN SOURCE	EMISSION RATE SCALAR VARY

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

11411 HRA

ID	CATS.	(METERS)	(METERS)	(METERS)	(METERS)	(METERS)	(METERS)	BY
L0003296	0	0.34550E-07	476021.6	3752608.0	475.4	3.49	4.00	3.25	YES
L0003297	0	0.34550E-07	476030.1	3752607.9	475.2	3.49	4.00	3.25	YES
L0003298	0	0.34550E-07	476038.7	3752607.9	475.1	3.49	4.00	3.25	YES
L0003367	0	0.77160E-08	476031.7	3752615.9	475.4	3.49	4.00	3.25	YES
L0003368	0	0.77160E-08	476023.1	3752616.0	475.6	3.49	4.00	3.25	YES
L0003369	0	0.77160E-08	476014.6	3752616.1	475.7	3.49	4.00	3.25	YES
L0003370	0	0.77160E-08	476006.0	3752616.2	475.7	3.49	4.00	3.25	YES
L0003371	0	0.77160E-08	475997.4	3752616.2	475.7	3.49	4.00	3.25	YES
L0003372	0	0.77160E-08	475988.8	3752616.3	475.6	3.49	4.00	3.25	YES
L0003373	0	0.77160E-08	475980.2	3752616.4	475.4	3.49	4.00	3.25	YES
L0003374	0	0.77160E-08	475971.6	3752616.5	475.3	3.49	4.00	3.25	YES
L0003375	0	0.77160E-08	475963.0	3752616.6	475.1	3.49	4.00	3.25	YES
L0003376	0	0.77160E-08	475954.4	3752616.6	475.0	3.49	4.00	3.25	YES
L0003377	0	0.77160E-08	475945.8	3752616.7	475.0	3.49	4.00	3.25	YES
L0003378	0	0.77160E-08	475937.2	3752616.8	475.0	3.49	4.00	3.25	YES
L0003379	0	0.77160E-08	475928.7	3752616.9	475.0	3.49	4.00	3.25	YES
L0003380	0	0.77160E-08	475920.1	3752616.9	475.0	3.49	4.00	3.25	YES
L0003381	0	0.77160E-08	475911.5	3752617.0	475.0	3.49	4.00	3.25	YES
L0003382	0	0.77160E-08	475902.9	3752617.1	475.0	3.49	4.00	3.25	YES
L0003383	0	0.77160E-08	475894.3	3752617.2	475.0	3.49	4.00	3.25	YES
L0003384	0	0.77160E-08	475885.7	3752617.3	475.0	3.49	4.00	3.25	YES
L0003385	0	0.77160E-08	475877.1	3752617.3	475.0	3.49	4.00	3.25	YES
L0003386	0	0.77160E-08	475868.5	3752617.4	475.0	3.49	4.00	3.25	YES
L0003387	0	0.77160E-08	475864.1	3752621.5	475.0	3.49	4.00	3.25	YES
L0003388	0	0.77160E-08	475864.1	3752630.1	475.0	3.49	4.00	3.25	YES
L0003389	0	0.77160E-08	475864.2	3752638.7	475.0	3.49	4.00	3.25	YES
L0003390	0	0.77160E-08	475864.2	3752647.3	475.0	3.49	4.00	3.25	YES
L0003391	0	0.77160E-08	475864.3	3752655.9	475.0	3.49	4.00	3.25	YES
L0003392	0	0.77160E-08	475864.4	3752664.5	475.3	3.49	4.00	3.25	YES
L0003393	0	0.77160E-08	475864.4	3752673.1	475.6	3.49	4.00	3.25	YES
L0003394	0	0.77160E-08	475864.5	3752681.7	475.8	3.49	4.00	3.25	YES
L0003395	0	0.77160E-08	475864.6	3752690.3	476.0	3.49	4.00	3.25	YES
L0003396	0	0.77160E-08	475864.6	3752698.8	476.0	3.49	4.00	3.25	YES
L0003397	0	0.77160E-08	475864.7	3752707.4	476.0	3.49	4.00	3.25	YES
L0003398	0	0.77160E-08	475864.7	3752716.0	476.0	3.49	4.00	3.25	YES
L0003399	0	0.77160E-08	475864.8	3752724.6	476.0	3.49	4.00	3.25	YES
L0003400	0	0.77160E-08	475864.9	3752733.2	476.0	3.49	4.00	3.25	YES
L0003401	0	0.77160E-08	475864.9	3752741.8	476.0	3.49	4.00	3.25	YES
L0003402	0	0.77160E-08	475865.0	3752750.4	476.0	3.49	4.00	3.25	YES
L0003403	0	0.77160E-08	475865.0	3752759.0	476.0	3.49	4.00	3.25	YES

♀ *** AERMOD - VERSION 16216r *** *** C:\LAKES\AERMOD VIEW\11411 HRA\11411 HRA.ISC *** ***
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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0003404	0	0.77160E-08	475865.1	3752767.6	476.0	3.49	4.00	3.25	YES	
L0003405	0	0.77160E-08	475865.2	3752776.2	476.0	3.49	4.00	3.25	YES	
L0003406	0	0.77160E-08	475865.2	3752784.7	476.0	3.49	4.00	3.25	YES	
L0003407	0	0.77160E-08	475865.3	3752793.3	476.0	3.49	4.00	3.25	YES	
L0003408	0	0.77160E-08	475865.3	3752801.9	476.0	3.49	4.00	3.25	YES	
L0003409	0	0.77160E-08	475865.4	3752810.5	476.1	3.49	4.00	3.25	YES	

L0003410	0	0.77160E-08	475865.4	3752819.1	476.4	3.49	4.00	3.25	YES
L0003411	0	0.77160E-08	475865.4	3752827.7	476.7	3.49	4.00	3.25	YES
L0003412	0	0.77160E-08	475865.4	3752836.3	477.0	3.49	4.00	3.25	YES
L0003413	0	0.77160E-08	475865.4	3752844.9	477.0	3.49	4.00	3.25	YES
L0003414	0	0.77160E-08	475865.4	3752853.5	477.0	3.49	4.00	3.25	YES
L0003415	0	0.77160E-08	475865.4	3752862.1	477.0	3.49	4.00	3.25	YES
L0003416	0	0.77160E-08	475865.4	3752870.6	477.0	3.49	4.00	3.25	YES
L0003417	0	0.77160E-08	475865.4	3752879.2	477.0	3.49	4.00	3.25	YES
L0003418	0	0.77160E-08	475865.4	3752887.8	477.0	3.49	4.00	3.25	YES
L0003419	0	0.77160E-08	475865.4	3752896.4	477.0	3.49	4.00	3.25	YES
L0003420	0	0.77160E-08	475865.4	3752905.0	477.2	3.49	4.00	3.25	YES
L0003421	0	0.77160E-08	475865.6	3752913.6	477.5	3.49	4.00	3.25	YES
L0003422	0	0.77160E-08	475865.8	3752922.2	477.7	3.49	4.00	3.25	YES
L0003423	0	0.77160E-08	475866.0	3752930.8	477.9	3.49	4.00	3.25	YES
L0003424	0	0.77160E-08	475866.2	3752939.4	477.9	3.49	4.00	3.25	YES
L0003425	0	0.77160E-08	475866.4	3752947.9	478.0	3.49	4.00	3.25	YES
L0003426	0	0.77160E-08	475866.6	3752956.5	478.0	3.49	4.00	3.25	YES
L0003427	0	0.77160E-08	475866.8	3752965.1	478.0	3.49	4.00	3.25	YES
L0003428	0	0.77160E-08	475867.0	3752973.7	478.0	3.49	4.00	3.25	YES
L0003429	0	0.77160E-08	475867.2	3752982.3	478.0	3.49	4.00	3.25	YES
L0003430	0	0.77160E-08	475867.4	3752990.9	478.0	3.49	4.00	3.25	YES
L0003431	0	0.77160E-08	475867.6	3752999.5	478.0	3.49	4.00	3.25	YES
L0003432	0	0.77160E-08	475867.8	3753008.1	478.0	3.49	4.00	3.25	YES
L0003433	0	0.77160E-08	475868.0	3753016.6	478.0	3.49	4.00	3.25	YES
L0003434	0	0.77160E-08	475868.2	3753025.2	478.0	3.49	4.00	3.25	YES
L0003480	0	0.38180E-07	475865.2	3752796.1	476.0	3.49	4.00	3.25	YES
L0003481	0	0.38180E-07	475865.3	3752804.7	476.0	3.49	4.00	3.25	YES
L0003482	0	0.38180E-07	475865.4	3752813.3	476.2	3.49	4.00	3.25	YES
L0003483	0	0.38180E-07	475865.5	3752821.9	476.5	3.49	4.00	3.25	YES
L0003484	0	0.38180E-07	475865.6	3752830.5	476.8	3.49	4.00	3.25	YES
L0003485	0	0.38180E-07	475865.8	3752839.1	477.0	3.49	4.00	3.25	YES
L0003486	0	0.38180E-07	475865.9	3752847.7	477.0	3.49	4.00	3.25	YES
L0003487	0	0.38180E-07	475866.0	3752856.3	477.0	3.49	4.00	3.25	YES
L0003488	0	0.38180E-07	475866.1	3752864.9	477.0	3.49	4.00	3.25	YES

♀ *** AERMOD - VERSION 16216r *** *** C:\LAKES\AERMOD VIEW\11411 HRA\11411 HRA.ISC *** ***
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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0003489	0	0.38180E-07	475866.2	3752873.5	477.0	3.49	4.00	3.25	YES	
L0003490	0	0.38180E-07	475866.3	3752882.0	477.0	3.49	4.00	3.25	YES	
L0003491	0	0.38180E-07	475866.4	3752890.6	477.0	3.49	4.00	3.25	YES	
L0003492	0	0.38180E-07	475866.5	3752899.2	477.1	3.49	4.00	3.25	YES	
L0003493	0	0.38180E-07	475866.6	3752907.8	477.3	3.49	4.00	3.25	YES	
L0003494	0	0.38180E-07	475866.7	3752916.4	477.6	3.49	4.00	3.25	YES	
L0003495	0	0.38180E-07	475866.8	3752925.0	477.9	3.49	4.00	3.25	YES	
L0003496	0	0.38180E-07	475866.9	3752933.6	477.9	3.49	4.00	3.25	YES	
L0003497	0	0.38180E-07	475867.0	3752942.2	478.0	3.49	4.00	3.25	YES	
L0003498	0	0.38180E-07	475867.1	3752950.8	478.0	3.49	4.00	3.25	YES	
L0003499	0	0.38180E-07	475867.2	3752959.3	478.0	3.49	4.00	3.25	YES	
L0003500	0	0.38180E-07	475867.3	3752967.9	478.0	3.49	4.00	3.25	YES	
L0003501	0	0.38180E-07	475867.4	3752976.5	478.0	3.49	4.00	3.25	YES	
L0003502	0	0.38180E-07	475867.5	3752985.1	478.0	3.49	4.00	3.25	YES	
L0003503	0	0.38180E-07	475867.6	3752993.7	478.0	3.49	4.00	3.25	YES	
L0003504	0	0.38180E-07	475867.7	3753002.3	478.0	3.49	4.00	3.25	YES	

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

L0003505	0	0.38180E-07	475867.8	3753010.9	478.0	3.49	4.00	3.25	YES
L0003506	0	0.38180E-07	475861.7	3753013.2	478.0	3.49	4.00	3.25	YES
L0003507	0	0.38180E-07	475853.1	3753013.1	478.0	3.49	4.00	3.25	YES
L0003508	0	0.38180E-07	475844.5	3753013.0	478.0	3.49	4.00	3.25	YES
L0003509	0	0.38180E-07	475835.9	3753012.8	478.0	3.49	4.00	3.25	YES
L0003510	0	0.38180E-07	475827.3	3753012.7	478.0	3.49	4.00	3.25	YES
L0003511	0	0.38180E-07	475818.8	3753012.6	478.0	3.49	4.00	3.25	YES
L0003512	0	0.38180E-07	475810.2	3753012.4	478.0	3.49	4.00	3.25	YES
L0003513	0	0.38180E-07	475801.6	3753012.3	478.0	3.49	4.00	3.25	YES
L0003514	0	0.38180E-07	475793.0	3753012.2	478.0	3.49	4.00	3.25	YES
L0003515	0	0.38180E-07	475784.4	3753012.1	478.0	3.49	4.00	3.25	YES
L0003516	0	0.38180E-07	475775.8	3753011.9	478.0	3.49	4.00	3.25	YES
L0003517	0	0.38180E-07	475767.2	3753011.8	478.0	3.49	4.00	3.25	YES
L0003518	0	0.38180E-07	475758.6	3753011.7	478.0	3.49	4.00	3.25	YES
L0003519	0	0.38180E-07	475750.0	3753011.5	478.0	3.49	4.00	3.25	YES
L0003520	0	0.38180E-07	475741.5	3753011.4	478.0	3.49	4.00	3.25	YES
L0003521	0	0.38180E-07	475732.9	3753011.3	478.0	3.49	4.00	3.25	YES
L0003522	0	0.38180E-07	475724.3	3753011.2	478.0	3.49	4.00	3.25	YES
L0003523	0	0.38180E-07	475715.7	3753011.0	478.0	3.49	4.00	3.25	YES
L0003524	0	0.38180E-07	475707.1	3753010.9	478.0	3.49	4.00	3.25	YES

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	L0002467 , L0002468 , L0002469 , L0002470 , L0002471 , L0002472 , L0002473 , L0002474 ,
	L0002475 , L0002476 , L0002477 , L0002478 , L0002479 , L0002480 , L0002481 , L0002482 ,
	L0002483 , L0002484 , L0002485 , L0002486 , L0002487 , L0002488 , L0002489 , L0002490 ,
	L0002491 , L0002492 , L0002493 , L0002494 , L0002495 , L0002496 , L0002497 , L0002498 ,
	L0002499 , L0002500 , L0002501 , L0002502 , L0002503 , L0002504 , L0002505 , L0002506 ,
	L0002507 , L0002508 , L0002509 , L0002510 , L0002511 , L0002512 , L0002513 , L0002514 ,
	L0002515 , L0002516 , L0002517 , L0002518 , L0002519 , L0002520 , L0002592 , L0002593 ,
	L0002594 , L0002595 , L0002596 , L0002597 , L0002598 , L0002599 , L0002600 , L0002601 ,
	L0002602 , L0002603 , L0002604 , L0002605 , L0002606 , L0002607 , L0002608 , L0002609 ,
	L0002610 , L0002611 , L0002612 , L0002613 , L0002614 , L0002615 , L0002616 , L0002617 ,
	L0002618 , L0002619 , L0002620 , L0002621 , L0002622 , L0002623 , L0002624 , L0002625 ,

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             L0002626    , L0002627    , L0002628    , L0002629    , L0002630    , L0002631    , L0002632    ,
L0002633    ,

             L0002634    , L0002635    , L0002636    , L0002637    , L0002638    , L0002639    , L0002640    ,
L0002641    ,

             L0002642    , L0002643    , L0002644    , L0002645    , L0002646    , L0002647    , L0002648    ,
L0002649    ,

             L0002650    , L0002651    , L0002652    , L0002653    , L0002654    , L0002655    , L0002656    ,
L0002657    ,

             L0002658    , L0002659    , L0002660    , L0002661    , L0002662    , L0002734    , L0002735    ,
L0002736    ,

             L0002737    , L0002738    , L0002739    , L0002740    , L0002741    , L0002742    , L0002743    ,
L0002744    ,

             L0002745    , L0002746    , L0002747    , L0002748    , L0002749    , L0002750    , L0002751    ,
L0002752    ,

             L0002753    , L0002754    , L0002755    , L0002756    , L0002757    , L0002758    , L0002759    ,
L0002760    ,

             L0002761    , L0002762    , L0002763    , L0002764    , L0002765    , L0002766    , L0002767    ,
L0002768    ,
♀ *** AERMOD - VERSION 16216r ***   *** C:\LAKES\AERMOD VIEW\11411 HRA\11411 HRA.ISC                          ***
    05/24/18
 *** AERMET - VERSION  16216 ***   ***                                                                      ***
   17:41:25

   PAGE  17
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                    *** SOURCE IDs DEFINING SOURCE GROUPS ***

 SRCGROUP ID                                        SOURCE IDs
 -----------                                        ----------

             L0002769    , L0002770    , L0002771    , L0002772    , L0002773    , L0002774    , L0002775    ,
L0002776    ,

             L0002777    , L0002778    , L0002779    , L0002780    , L0002781    , L0002782    , L0002783    ,
L0002784    ,

             L0002785    , L0002786    , L0002787    , L0002788    , L0002789    , L0002790    , L0002791    ,
L0002792    ,

             L0002793    , L0002794    , L0002795    , L0002796    , L0002797    , L0002798    , L0002799    ,
L0002800    ,

             L0002801    , L0002802    , L0002803    , L0002804    , L0002929    , L0002930    , L0002931    ,
L0002932    ,

             L0002933    , L0002934    , L0002935    , L0002936    , L0002937    , L0002938    , L0002939    ,
L0002940    ,

             L0002941    , L0002942    , L0002943    , L0002944    , L0002945    , L0002946    , L0002947    ,
L0002948    ,

             L0002949    , L0002950    , L0002951    , L0002952    , L0002953    , L0002954    , L0002955    ,
L0002956    ,

             L0002957    , L0002958    , L0002959    , L0002960    , L0002961    , L0002962    , L0002963    ,
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Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

L0002964 ,

L0002965 , L0002966 , L0002967 , L0002968 , L0002969 , L0002970 , L0002971 , L0002972 ,

L0002973 , L0002974 , L0002975 , L0002976 , L0002977 , L0002978 , L0002979 , L0002980 ,

L0002981 , L0002982 , L0002983 , L0002984 , L0002985 , L0002986 , L0002987 , L0002988 ,

L0002989 , L0002990 , L0002991 , L0002992 , L0002993 , L0002994 , L0002995 , L0002996 ,

L0002997 , L0002998 , L0002999 , L0003000 , L0003001 , L0003002 , L0003003 , L0003004 ,

L0003005 , L0003006 , L0003007 , L0003008 , L0003009 , L0003010 , L0003011 , L0003012 ,

L0003013 , L0003014 , L0003015 , L0003016 , L0003017 , L0003018 , L0003019 , L0003020 ,

L0003021 , L0003022 , L0003023 , L0003024 , L0003025 , L0003026 , L0003027 , L0003028 ,

L0003029 , L0003030 , L0003031 , L0003032 , L0003033 , L0003034 , L0003035 , L0003036 ,

L0003037 , L0003038 , L0003039 , L0003040 , L0003041 , L0003042 , L0003043 , L0003044 ,

L0003045 , L0003046 , L0003047 , L0003048 , L0003049 , L0003050 , L0003051 , L0003052 ,

♀ *** AERMOD - VERSION 16216r *** *** C:\LAKES\AERMOD VIEW\11411 HRA\11411 HRA.ISC *** ***
05/24/18

*** AERMET - VERSION 16216 *** *** ***
17:41:25

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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs

L0003176 , L0003177 , L0003178 , L0003179 , L0003180 , L0003181 , L0003182 , L0003183 ,

L0003184 , L0003185 , L0003186 , L0003187 , L0003188 , L0003189 , L0003190 , L0003191 ,

L0003192 , L0003193 , L0003194 , L0003195 , L0003196 , L0003197 , L0003198 , L0003199 ,

L0003200 , L0003201 , L0003202 , L0003203 , L0003204 , L0003205 , L0003206 , L0003207 ,

L0003208 , L0003209 , L0003210 , L0003211 , L0003212 , L0003213 , L0003214 , L0003215 ,

L0003216 , L0003217 , L0003218 , L0003219 , L0003220 , L0003221 , L0003222 , L0003223 ,

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

L0003224 , L0003225 , L0003226 , L0003227 , L0003228 , L0003229 , L0003230 , L0003231 ,

L0003232 , L0003233 , L0003234 , L0003235 , L0003236 , L0003237 , L0003238 , L0003239 ,

L0003240 , L0003241 , L0003242 , L0003243 , L0003244 , L0003245 , L0003246 , L0003247 ,

L0003248 , L0003249 , L0003250 , L0003251 , L0003252 , L0003253 , L0003254 , L0003255 ,

L0003256 , L0003257 , L0003258 , L0003259 , L0003260 , L0003261 , L0003262 , L0003263 ,

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L0003272 , L0003273 , L0003274 , L0003275 , L0003276 , L0003277 , L0003278 , L0003279 ,

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L0003288 , L0003289 , L0003290 , L0003291 , L0003292 , L0003293 , L0003294 , L0003295 ,

L0003296 , L0003297 , L0003298 , L0003367 , L0003368 , L0003369 , L0003370 , L0003371 ,

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L0003388 , L0003389 , L0003390 , L0003391 , L0003392 , L0003393 , L0003394 , L0003395 ,

L0003396 , L0003397 , L0003398 , L0003399 , L0003400 , L0003401 , L0003402 , L0003403 ,

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
	L0003404 , L0003405 , L0003406 , L0003407 , L0003408 , L0003409 , L0003410 , L0003411 ,
	L0003412 , L0003413 , L0003414 , L0003415 , L0003416 , L0003417 , L0003418 , L0003419 ,
	L0003420 , L0003421 , L0003422 , L0003423 , L0003424 , L0003425 , L0003426 , L0003427 ,
	L0003428 , L0003429 , L0003430 , L0003431 , L0003432 , L0003433 , L0003434 , L0003480 ,

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

L0003481 , L0003482 , L0003483 , L0003484 , L0003485 , L0003486 , L0003487 , L0003488 ,

L0003489 , L0003490 , L0003491 , L0003492 , L0003493 , L0003494 , L0003495 , L0003496 ,

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L0003521 , L0003522 , L0003523 , L0003524 ,

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
	2189641.	L0002467 , L0002468 , L0002469 , L0002470 , L0002471 , L0002472 , L0002473 , L0002474 ,
		L0002475 , L0002476 , L0002477 , L0002478 , L0002479 , L0002480 , L0002481 , L0002482 ,
		L0002483 , L0002484 , L0002485 , L0002486 , L0002487 , L0002488 , L0002489 , L0002490 ,
		L0002491 , L0002492 , L0002493 , L0002494 , L0002495 , L0002496 , L0002497 , L0002498 ,
		L0002499 , L0002500 , L0002501 , L0002502 , L0002503 , L0002504 , L0002505 , L0002506 ,
		L0002507 , L0002508 , L0002509 , L0002510 , L0002511 , L0002512 , L0002513 , L0002514 ,
		L0002515 , L0002516 , L0002517 , L0002518 , L0002519 , L0002520 , L0002592 , L0002593 ,
		L0002594 , L0002595 , L0002596 , L0002597 , L0002598 , L0002599 , L0002600 , L0002601 ,
		L0002602 , L0002603 , L0002604 , L0002605 , L0002606 , L0002607 , L0002608 , L0002609 ,
		L0002610 , L0002611 , L0002612 , L0002613 , L0002614 , L0002615 , L0002616 , L0002617 ,
		L0002618 , L0002619 , L0002620 , L0002621 , L0002622 , L0002623 , L0002624 , L0002625 ,
		L0002626 , L0002627 , L0002628 , L0002629 , L0002630 , L0002631 , L0002632 ,

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

L0002633 ,

L0002634 , L0002635 , L0002636 , L0002637 , L0002638 , L0002639 , L0002640 , L0002641 ,

L0002642 , L0002643 , L0002644 , L0002645 , L0002646 , L0002647 , L0002648 , L0002649 ,

L0002650 , L0002651 , L0002652 , L0002653 , L0002654 , L0002655 , L0002656 , L0002657 ,

L0002658 , L0002659 , L0002660 , L0002661 , L0002662 , L0002734 , L0002735 , L0002736 ,

L0002737 , L0002738 , L0002739 , L0002740 , L0002741 , L0002742 , L0002743 , L0002744 ,

L0002745 , L0002746 , L0002747 , L0002748 , L0002749 , L0002750 , L0002751 , L0002752 ,

L0002753 , L0002754 , L0002755 , L0002756 , L0002757 , L0002758 , L0002759 , L0002760 ,

L0002761 , L0002762 , L0002763 , L0002764 , L0002765 , L0002766 , L0002767 , L0002768 ,

♀ *** AERMOD - VERSION 16216r *** *** C:\LAKES\AERMOD VIEW\11411 HRA\11411 HRA.ISC *** *** 05/24/18

*** AERMET - VERSION 16216 *** *** *** 17:41:25

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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs

L0002769 , L0002770 , L0002771 , L0002772 , L0002773 , L0002774 , L0002775 , L0002776 ,

L0002777 , L0002778 , L0002779 , L0002780 , L0002781 , L0002782 , L0002783 , L0002784 ,

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L0002793 , L0002794 , L0002795 , L0002796 , L0002797 , L0002798 , L0002799 , L0002800 ,

L0002801 , L0002802 , L0002803 , L0002804 , L0002929 , L0002930 , L0002931 , L0002932 ,

L0002933 , L0002934 , L0002935 , L0002936 , L0002937 , L0002938 , L0002939 , L0002940 ,

L0002941 , L0002942 , L0002943 , L0002944 , L0002945 , L0002946 , L0002947 , L0002948 ,

L0002949 , L0002950 , L0002951 , L0002952 , L0002953 , L0002954 , L0002955 , L0002956 ,

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Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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L0002973 , L0002974 , L0002975 , L0002976 , L0002977 , L0002978 , L0002979 , L0002980 ,

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L0002989 , L0002990 , L0002991 , L0002992 , L0002993 , L0002994 , L0002995 , L0002996 ,

L0002997 , L0002998 , L0002999 , L0003000 , L0003001 , L0003002 , L0003003 , L0003004 ,

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L0003013 , L0003014 , L0003015 , L0003016 , L0003017 , L0003018 , L0003019 , L0003020 ,

L0003021 , L0003022 , L0003023 , L0003024 , L0003025 , L0003026 , L0003027 , L0003028 ,

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L0003045 , L0003046 , L0003047 , L0003048 , L0003049 , L0003050 , L0003051 , L0003052 ,

♀ *** AERMOD - VERSION 16216r *** *** C:\LAKES\AERMOD VIEW\11411 HRA\11411 HRA.ISC *** *** 05/24/18

*** AERMET - VERSION 16216 *** *** *** 17:41:25

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs

L0003176 , L0003177 , L0003178 , L0003179 , L0003180 , L0003181 , L0003182 , L0003183 ,

L0003184 , L0003185 , L0003186 , L0003187 , L0003188 , L0003189 , L0003190 , L0003191 ,

L0003192 , L0003193 , L0003194 , L0003195 , L0003196 , L0003197 , L0003198 , L0003199 ,

L0003200 , L0003201 , L0003202 , L0003203 , L0003204 , L0003205 , L0003206 , L0003207 ,

L0003208 , L0003209 , L0003210 , L0003211 , L0003212 , L0003213 , L0003214 , L0003215 ,

L0003216 , L0003217 , L0003218 , L0003219 , L0003220 , L0003221 , L0003222 , L0003223 ,

L0003224 , L0003225 , L0003226 , L0003227 , L0003228 , L0003229 , L0003230 , L0003231 ,

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

L0003232 , L0003233 , L0003234 , L0003235 , L0003236 , L0003237 , L0003238 , L0003239 ,

L0003240 , L0003241 , L0003242 , L0003243 , L0003244 , L0003245 , L0003246 , L0003247 ,

L0003248 , L0003249 , L0003250 , L0003251 , L0003252 , L0003253 , L0003254 , L0003255 ,

L0003256 , L0003257 , L0003258 , L0003259 , L0003260 , L0003261 , L0003262 , L0003263 ,

L0003264 , L0003265 , L0003266 , L0003267 , L0003268 , L0003269 , L0003270 , L0003271 ,

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L0003396 , L0003397 , L0003398 , L0003399 , L0003400 , L0003401 , L0003402 , L0003403 ,

♀ *** AERMOD - VERSION 16216r *** *** C:\LAKES\AERMOD VIEW\11411 HRA\11411 HRA.ISC *** *** 05/24/18

*** AERMET - VERSION 16216 *** *** *** 17:41:25

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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs

L0003404 , L0003405 , L0003406 , L0003407 , L0003408 , L0003409 , L0003410 , L0003411 ,

L0003412 , L0003413 , L0003414 , L0003415 , L0003416 , L0003417 , L0003418 , L0003419 ,

L0003420 , L0003421 , L0003422 , L0003423 , L0003424 , L0003425 , L0003426 , L0003427 ,

L0003428 , L0003429 , L0003430 , L0003431 , L0003432 , L0003433 , L0003434 , L0003480 ,

L0003481 , L0003482 , L0003483 , L0003484 , L0003485 , L0003486 , L0003487 ,

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

```
L0003488    ,

             L0003489    , L0003490    , L0003491    , L0003492    , L0003493    , L0003494    , L0003495    ,
L0003496    ,

             L0003497    , L0003498    , L0003499    , L0003500    , L0003501    , L0003502    , L0003503    ,
L0003504    ,

             L0003505    , L0003506    , L0003507    , L0003508    , L0003509    , L0003510    , L0003511    ,
L0003512    ,

             L0003513    , L0003514    , L0003515    , L0003516    , L0003517    , L0003518    , L0003519    ,
L0003520    ,

             L0003521    , L0003522    , L0003523    , L0003524    ,
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*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

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     ( 475305.7, 3752441.1,     473.2,     473.2,       0.0);        ( 475356.1, 3755568.4,     505.1,     939.0,
     0.0);
     ( 472704.4, 3752072.6,     493.2,     498.0,       0.0);        ( 478401.9, 3751276.6,     467.0,     467.0,
     0.0);
     ( 476088.3, 3752782.9,     476.2,     476.2,       0.0);        ( 476088.5, 3752715.6,     476.0,     476.0,
     0.0);
     ( 476090.2, 3752663.4,     475.7,     475.7,       0.0);        ( 475836.1, 3752721.8,     476.0,     476.0,
     0.0);
     ( 475836.3, 3752756.5,     476.0,     476.0,       0.0);        ( 475837.4, 3752781.2,     476.0,     476.0,
     0.0);
     ( 475825.6, 3752658.5,     475.5,     475.5,       0.0);        ( 475826.0, 3752628.4,     475.0,     475.0,
     0.0);
     ( 475824.7, 3752587.6,     475.0,     475.0,       0.0);        ( 475823.0, 3752553.9,     475.0,     475.0,
     0.0);
     ( 475918.1, 3752573.2,     475.0,     475.0,       0.0);        ( 476100.4, 3752546.0,     475.2,     475.2,
     0.0);
     ( 476093.3, 3753061.7,     479.0,     479.0,       0.0);        ( 476122.1, 3753059.0,     479.0,     479.0,
     0.0);
     ( 476280.5, 3753038.2,     479.0,     479.0,       0.0);        ( 476165.7, 3753060.1,     479.0,     479.0,
     0.0);
     ( 476193.3, 3753059.5,     479.0,     479.0,       0.0);        ( 475733.9, 3753078.7,     478.0,     478.0,
     0.0);
     ( 475830.6, 3753074.3,     478.0,     478.0,       0.0);        ( 475821.9, 3753036.2,     478.0,     478.0,
     0.0);
     ( 476365.6, 3753041.8,     478.8,     478.8,       0.0);
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*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

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          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1
1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1
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Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

11411 HRA

```
1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1
1 1
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1 1
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1 1
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1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

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♀ *** AERMOD - VERSION 16216r ***   *** C:\LAKES\AERMOD VIEW\11411 HRA\11411 HRA.ISC                         ***
    05/24/18
 *** AERMET - VERSION  16216 ***   ***                                                                        ***
   17:41:25

   PAGE  26
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*
```

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

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   Surface file:   PERRISADJU\PERI_V9_ADJU\PERI_V9.SFC                                                Met Version:
16216
   Profile file:   PERRISADJU\PERI_V9_ADJU\PERI_V9.PFL
   Surface format: FREE

   Profile format: FREE

   Surface station no.:     3171                 Upper air station no.:     3190
                  Name: UNKNOWN                                 Name: UNKNOWN
                  Year:   2010                                  Year:   2010
```

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
10	01	01	1	01	-7.9	0.125	-9.000	-9.000	-999.	106.	21.2	0.19	0.61	1.00	1.30	335.	9.1	282.5	5.5
10	01	01	1	02	-3.9	0.088	-9.000	-9.000	-999.	62.	15.1	0.19	0.61	1.00	0.90	142.	9.1	280.9	5.5
10	01	01	1	03	-3.9	0.088	-9.000	-9.000	-999.	62.	15.1	0.19	0.61	1.00	0.90	324.	9.1	280.4	5.5
10	01	01	1	04	-1.3	0.064	-9.000	-9.000	-999.	39.	18.3	0.19	0.61	1.00	0.40	294.	9.1	278.8	5.5
10	01	01	1	05	-3.9	0.088	-9.000	-9.000	-999.	62.	15.0	0.19	0.61	1.00	0.90	205.	9.1	278.1	5.5
10	01	01	1	06	-1.3	0.065	-9.000	-9.000	-999.	39.	18.3	0.19	0.61	1.00	0.40	3.	9.1	277.0	5.5
10	01	01	1	07	-8.0	0.125	-9.000	-9.000	-999.	106.	21.0	0.19	0.61	1.00	1.30	99.	9.1	277.0	5.5
10	01	01	1	08	-3.3	0.086	-9.000	-9.000	-999.	61.	16.8	0.19	0.61	0.54	0.90	319.	9.1	278.8	5.5
10	01	01	1	09	20.1	0.128	0.307	0.010	49.	110.	-9.0	0.19	0.61	0.33	0.90	239.	9.1	284.2	5.5
10	01	01	1	10	56.7	0.087	0.560	0.010	107.	62.	-1.0	0.19	0.61	0.26	0.40	188.	9.1	289.2	

```
 5.5
 10 01 01   1 11   81.5  0.323  0.867  0.008  277.  441.    -35.9  0.19   0.61   0.23    2.70  310.    9.1  290.9
 5.5
 10 01 01   1 12   97.1  0.281  1.058  0.008  421.  357.    -19.7  0.19   0.61   0.22    2.20  357.    9.1  293.1
 5.5
 10 01 01   1 13   92.2  0.279  1.117  0.008  523.  354.    -20.4  0.19   0.61   0.22    2.20  356.    9.1  293.8
 5.5
 10 01 01   1 14   77.6  0.275  1.102  0.008  595.  347.    -23.2  0.19   0.61   0.23    2.20   50.    9.1  294.2
 5.5
 10 01 01   1 15   54.9  0.230  1.006  0.008  640.  266.    -19.2  0.19   0.61   0.27    1.80   53.    9.1  293.8
 5.5
 10 01 01   1 16   12.3  0.206  0.613  0.008  648.  225.    -61.5  0.19   0.61   0.36    1.80   11.    9.1  292.5
 5.5
 10 01 01   1 17   -3.6  0.087 -9.000 -9.000 -999.   71.     15.6  0.19   0.61   0.64    0.90  351.    9.1  290.4
 5.5
 10 01 01   1 18   -3.8  0.087 -9.000 -9.000 -999.   62.     15.2  0.19   0.61   1.00    0.90  186.    9.1  287.5
 5.5
 10 01 01   1 19   -3.8  0.087 -9.000 -9.000 -999.   62.     15.2  0.19   0.61   1.00    0.90  275.    9.1  285.9
 5.5
 10 01 01   1 20   -1.2  0.064 -9.000 -9.000 -999.   39.     18.1  0.19   0.61   1.00    0.40  181.    9.1  285.4
 5.5
 10 01 01   1 21   -7.8  0.125 -9.000 -9.000 -999.  106.     21.3  0.19   0.61   1.00    1.30  318.    9.1  284.9
 5.5
 10 01 01   1 22   -3.8  0.088 -9.000 -9.000 -999.   62.     15.1  0.19   0.61   1.00    0.90  196.    9.1  283.1
 5.5
 10 01 01   1 23   -3.8  0.088 -9.000 -9.000 -999.   62.     15.1  0.19   0.61   1.00    0.90  330.    9.1  281.4
 5.5
 10 01 01   1 24   -7.9  0.125 -9.000 -9.000 -999.  106.     21.2  0.19   0.61   1.00    1.30  332.    9.1  280.9
 5.5


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 10 01 01 01    5.5 0 -999.  -99.00   282.6   99.0  -99.00  -99.00
 10 01 01 01    9.1 1  335.    1.30  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION 16216r ***   *** C:\LAKES\AERMOD VIEW\11411 HRA\11411 HRA.ISC                        ***
    05/24/18
 *** AERMET - VERSION  16216 ***   ***                                                                    ***
   17:41:25

   PAGE  27
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                   *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   5 YEARS FOR SOURCE GROUP: ALL
 ***
                                  INCLUDING SOURCE(S):     L0002467    , L0002468    , L0002469    , L0002470    ,
L0002471    ,
                L0002472    , L0002473    , L0002474    , L0002475    , L0002476    , L0002477    , L0002478    ,
L0002479    ,
                L0002480    , L0002481    , L0002482    , L0002483    , L0002484    , L0002485    , L0002486    ,
L0002487    ,
                L0002488    , L0002489    , L0002490    , L0002491    , L0002492    , L0002493    , L0002494    ,
. . .       ,

                                          *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                                    ** CONC OF DPM      IN MICROGRAMS/M**3                          **

       X-COORD (M)   Y-COORD (M)        CONC                      X-COORD (M)   Y-COORD (M)        CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - -
        475305.71    3752441.09        0.00013                     475356.07    3755568.45        0.00002

        472704.43    3752072.64        0.00001                     478401.87    3751276.61        0.00001
```


Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

476088.27	3752782.86	0.00303	476088.54	3752715.57	0.00336
476090.16	3752663.36	0.00275	475836.07	3752721.76	0.00134
475836.34	3752756.49	0.00147	475837.41	3752781.25	0.00161
475825.57	3752658.51	0.00106	475826.02	3752628.39	0.00103
475824.70	3752587.62	0.00097	475822.95	3752553.87	0.00089
475918.06	3752573.16	0.00135	476100.40	3752545.98	0.00113
476093.34	3753061.72	0.00040	476122.11	3753058.98	0.00038
476280.46	3753038.16	0.00027	476165.67	3753060.08	0.00034
476193.34	3753059.53	0.00032	475733.93	3753078.66	0.00035
475830.56	3753074.34	0.00046	475821.92	3753036.24	0.00073
476365.61	3753041.78	0.00021			

♀ *** AERMOD - VERSION 16216r *** *** C:\LAKES\AERMOD VIEW\11411 HRA\11411 HRA.ISC *** 05/24/18
*** AERMET - VERSION 16216 *** *** *** 17:41:25

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 5 YEARS ***

** CONC OF DPM IN MICROGRAMS/M**3 **

NETWORK GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE GRID-ID
ALL	1ST HIGHEST VALUE IS	0.00336	AT (476088.54, 3752715.57, 475.99, 475.99, 0.00)	DC
	2ND HIGHEST VALUE IS	0.00303	AT (476088.27, 3752782.86, 476.21, 476.21, 0.00)	DC
	3RD HIGHEST VALUE IS	0.00275	AT (476090.16, 3752663.36, 475.65, 475.65, 0.00)	DC
	4TH HIGHEST VALUE IS	0.00161	AT (475837.41, 3752781.25, 476.01, 476.01, 0.00)	DC
	5TH HIGHEST VALUE IS	0.00147	AT (475836.34, 3752756.49, 476.00, 476.00, 0.00)	DC
	6TH HIGHEST VALUE IS	0.00135	AT (475918.06, 3752573.16, 475.00, 475.00, 0.00)	DC
	7TH HIGHEST VALUE IS	0.00134	AT (475836.07, 3752721.76, 476.00, 476.00, 0.00)	DC
	8TH HIGHEST VALUE IS	0.00113	AT (476100.40, 3752545.98, 475.22, 475.22, 0.00)	DC
	9TH HIGHEST VALUE IS	0.00106	AT (475825.57, 3752658.51, 475.51, 475.51, 0.00)	DC
	10TH HIGHEST VALUE IS	0.00103	AT (475826.02, 3752628.39, 475.03, 475.03, 0.00)	DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

```
                    DP = DISCPOLR
♀ *** AERMOD - VERSION 16216r ***   *** C:\LAKES\AERMOD VIEW\11411 HRA\11411 HRA.ISC                    ***
   05/24/18
 *** AERMET - VERSION  16216 ***   ***                                                                ***
  17:41:25

  PAGE  29
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            4 Warning Message(s)
 A Total of         2028 Informational Message(s)

 A Total of        43824 Hours Were Processed

 A Total of          978 Calm Hours Identified

 A Total of         1050 Missing Hours Identified (  2.40 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186    1323       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used           0.50
 ME W187    1323       MEOPEN: ADJ_U* Option for Low Winds used in AERMET
 MX W450   17521       CHKDAT: Record Out of Sequence in Meteorological File at:      14010101
 MX W450   17521       CHKDAT: Record Out of Sequence in Meteorological File at:    2 year gap

    ***********************************
    *** AERMOD Finishes Successfully ***
    ***********************************
```


Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

APPENDIX 2.2:

RISK CALCULATIONS

Table 1
Quantification of Carcinogenic Risks and Noncarcinogenic Risks
Resident 30-Year Exposure Scenario

Source Number*	Source	Mass GLC		Weight Fraction	Contaminant	Carcinogenic Risk				Noncarcinogenic Hazards/ Toxicological Endpoints**									
						URF	CPF	DOSE	RISK	REL	RfD	RESP	CNS/PNS	CV/BL	IMMUN	KIDN	GI/LV	REPRO	EYES
		(ug/m^3)	(mg/m^3)			(ug/m^3)$^{-1}$	(mg/kg/day)$^{-1}$	(mg/kg-day)		(ug/m^3)	(mg/kg/day)								
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)
1	Diesel	4.60E-04	4.60E-07	1.00E+00	Diesel Particulate	3.0E-04	1.1E+00	2.0E-07	2.4E-07	5.0E+00	1.4E-03	9.2E-05							
	TOTAL								2.39E-07 0.24			9.2E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

** Key to Toxicological Endpoints

RESP	Respiratory System
CNS/PNS	Central/Peripheral Nervous System
CV/BL	Cardiovascular/Blood System
IMMUN	Immune System
KIDN	Kidney
GI/LV	Gastrointestinal System/Liver
REPRO	Reproductive System (e.g. teratogenic and developmental effects)
EYES	Eye irritation and/or other effects

Note: Exposure factors used to calculate contaminant intake

exposure frequency (days/year)	350
exposure duration (years)	30
inhalation rate (L/kg-day))	461
inhalation absorption factor	1
averaging time (years)	70
fraction of time at home	1
age sensitivity factor (age third trimester to 2 ye	10
age sensitivity factor (ages 2 to 16 years old)	3
weighted age sensitivity factor	2.6

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center,

Table 2
Quantification of Carcinogenic Risks and Noncarcinogenic Risks
25-Year Worker Exposure Scenario

	Source	Mass GLC		Weight Fraction	Contaminant	Carcinogenic Risk				Noncarcinogenic Hazards/ Toxicological Endpoints**									
						URF	CPF	DOSE	RISK	REL	RfD	RESP	CNS/PNS	CV/BL	IMMUN	KIDN	GI/LV	REPRO	EYES
		(ug/m^3)	(mg/m^3)			($ug/m^3)^{-1}$	$(mg/kg/day)^{-1}$	(mg/kg-day)		(ug/m^3)	(mg/kg/day)								
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)
1	Diesel Particulates	3.36E-03	3.36E-06	1.00E+00	Diesel Particulate	3.0E-04	1.1E+00	6.2E-07	2.3E-07	5.0E+00	1.4E-03	6.7E-04							
	TOTAL								2.3E-07			6.7E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
									0.23										

** Key to Toxicological Endpoints

RESP	Respiratory System
CNS/PNS	Central/Peripheral Nervous System
CV/BL	Cardiovascular/Blood System
IMMUN	Immune System
KIDN	Kidney
GI/LV	Gastrointestinal System/Liver
REPRO	Reproductive System (e.g. teratogenic and developmental effects)
EYES	Eye irritation and/or other effects

Note: Exposure factors used to calculate contaminant intake

exposure frequency (days/year)	250
exposure duration (years)	25
inhalation rate (L/kg-day))	271
inhalation absorption factor	1
averaging time (years)	70

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center,

AVERAGE EMISSION FACTOR
SCAQMD 2020

Speed	LHD1	MHD	HHD
0	0.33522	0.13293	0.01988
5	0.0468	0.05903	0.04096
25	0.01570	0.04105	0.02327

Speed	Weighted Average Emissions
0	**0.12132**
5	**0.04603**
25	**0.02494**

Emission Rates - 2020 Emission Factors

Truck Emission Rates						
Source	Trucks Per Day	VMT [a] (miles/day)	Truck Emission Rate [b] (grams/mile)	Truck Emission Rate [b] (grams/idle-hour)	Daily Truck Emissions [c] (grams/day)	Modeled Emission Rates (g/second)
On-Site Idling	50			0.1213	1.52	1.755E-05
On-Site Travel	100	21.65	0.0460		1.00	1.154E-05
Off-Site Travel 20% Inbound on Brodiea Av.	10	3.81	0.0249		0.09	1.099E-06
Off-Site Travel 40% Outbound on Brodiea Av.	20	7.62	0.0249		0.19	2.198E-06
Off-Site Travel 35% Inbound Dwy 1	18	11.61	0.0249		0.29	3.350E-06
Off-Site Travel 45% Inbound Dwy 3	23	14.72	0.0249		0.37	4.250E-06
Off-Site Travel 10% Outbound Dwy 3	5	1.82	0.0249		0.05	5.247E-07
Off-Site Travel 50% Outbound Dwy 1	25	5.95	0.0249		0.15	1.718E-06

Attachment: Project 1_Mobile Source Health Risk Assessment 2 (3321 : Centerpointe Commerce Center,

Attachment: Project 1_General Biological Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

ECOLOGICAL SCIENCES, inc.

General Habitat Assessment

±8.78-acre Centerpointe Industrial Center Site

APN: 297-170-029

Site Location:
City of Moreno Valley, Riverside County
Riverside East 7.5-minute USGS Quadrangle Map
Township 3 South, Range 4 West, Section 13

Prepared for:
Brett Anderson / Senior Development Manager
Newcastle Partners, Inc.
4740 Green River Road, #118
Corona, CA 92880

Prepared by:
Scott Cameron
Ecological Sciences, Inc.
24307 Magic Mountain Parkway #538
Valencia, CA 91355
805.921.0583
scameron@ecosciencesinc.com

Total Area Surveyed:
±8.78 acres

Survey Conducted by:
Scott Cameron

Survey Conducted On:
January 10, 2018

Report Date:
May 17, 2018

Attachment: Project 1_General Biological Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

ECOLOGICAL SCIENCES, inc.

May 17, 2018

Brett Anderson / Senior Development Manager
Newcastle Partners, Inc.
4740 Green River Road, #118
Corona, CA 92880

SUBJECT: ***Results of a General Habitat Assessment; ±8.78-acre Site, APN 297-170-029, City of Moreno Valley, Riverside County, California***

Dear Brett:

This letter report presents findings of a field survey conducted to generally evaluate the suitability of a ±8.78-acre site to support sensitive biological resources pursuant to the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). Emphasis of the survey was placed on the presence/absence of habitat potentially suitable for the special-status ***burrowing owl*** (*Athene cunicularia*-BUOW). In addition, a ***MSHCP Consistency Analysis*** was also conducted in support of the environmental review process.

Introduction

The subject site is located in the City of Moreno Valley, Riverside County, California (***Plate 1***). Specifically, the site is located east of Frederick Street and north of Brodiaea Avenue. The site occurs on the "Riverside East" USGS quadrangle map, Township 4 South, Range 3 West, Section 13 (***Plate 2***). Projects proposed in the area that contain potentially suitable habitat to support sensitive biological resources must also demonstrate to reviewing agencies [e.g., U.S. Fish and Wildlife Service (FWS), U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), California Department of Fish and Wildlife/Game (CDFW/CDFG), and/or County of Riverside (County)] that potential project-related impacts to sensitive biological resources are adequately addressed and mitigated pursuant to the California Environmental Quality Act (CEQA) and other environmental regulations as part of project approval.

The subject parcel is not located within a MSHCP criteria area. However, the site is located within an area requiring a habitat assessment for the BUOW under Section 6.3.2 and Narrow Endemic Plant Species (NEPS) under Section 6.1.3. If suitable habitat is present for any of these species, focused surveys are required. Due to the inherent limitations of unseasonal or habitat-based data, definitive conclusions regarding the actual presence or absence of the selected sensitive biological resources cannot necessarily be made in this evaluation. Accordingly, this report is intended to provide the applicant with general information relative to the occurrence potential of the selected sensitive biological resources primarily based on the nature of habitat present.

Selected MSHCP Species and Objectives Overview

The ***burrowing owl (BUOW)*** is a small ground-dwelling owl with white eyebrows, yellow eyes, and long legs. The owl's head, back, and wings are sand-colored, with white barring on the breast and belly. Male BUOW are larger and lighter than females. The BUOW ranges across most of western North America from 200 feet below sea level to 9,000 feet above sea level (CBOC 2000). Although the BUOW is migratory throughout much of its range, in central and southern California, owls are predominantly non-

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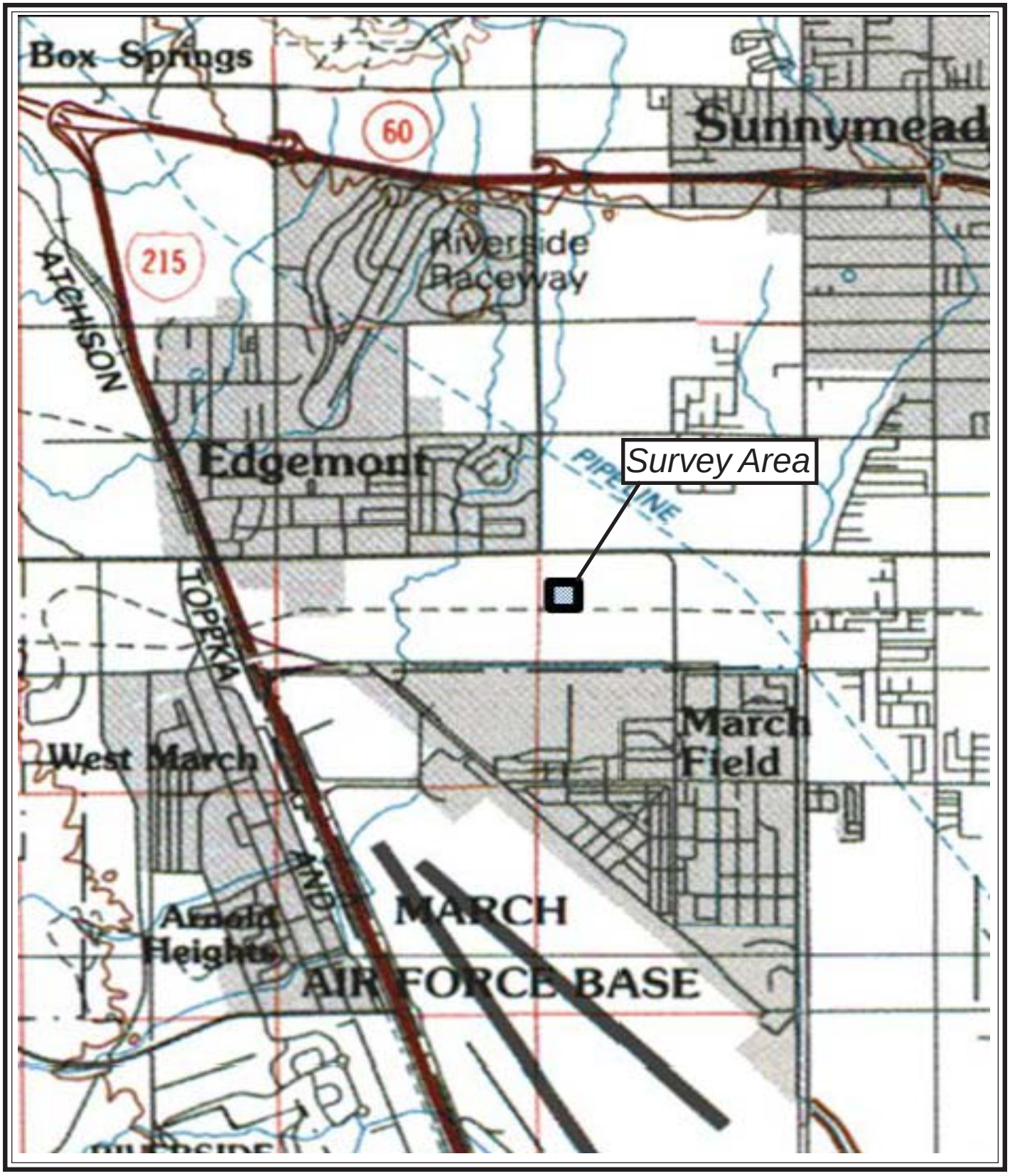
Fax: 805.921.0683 ♦ Cell: 805.415.9595 ♦ email: scameron@ecosciencesinc.com



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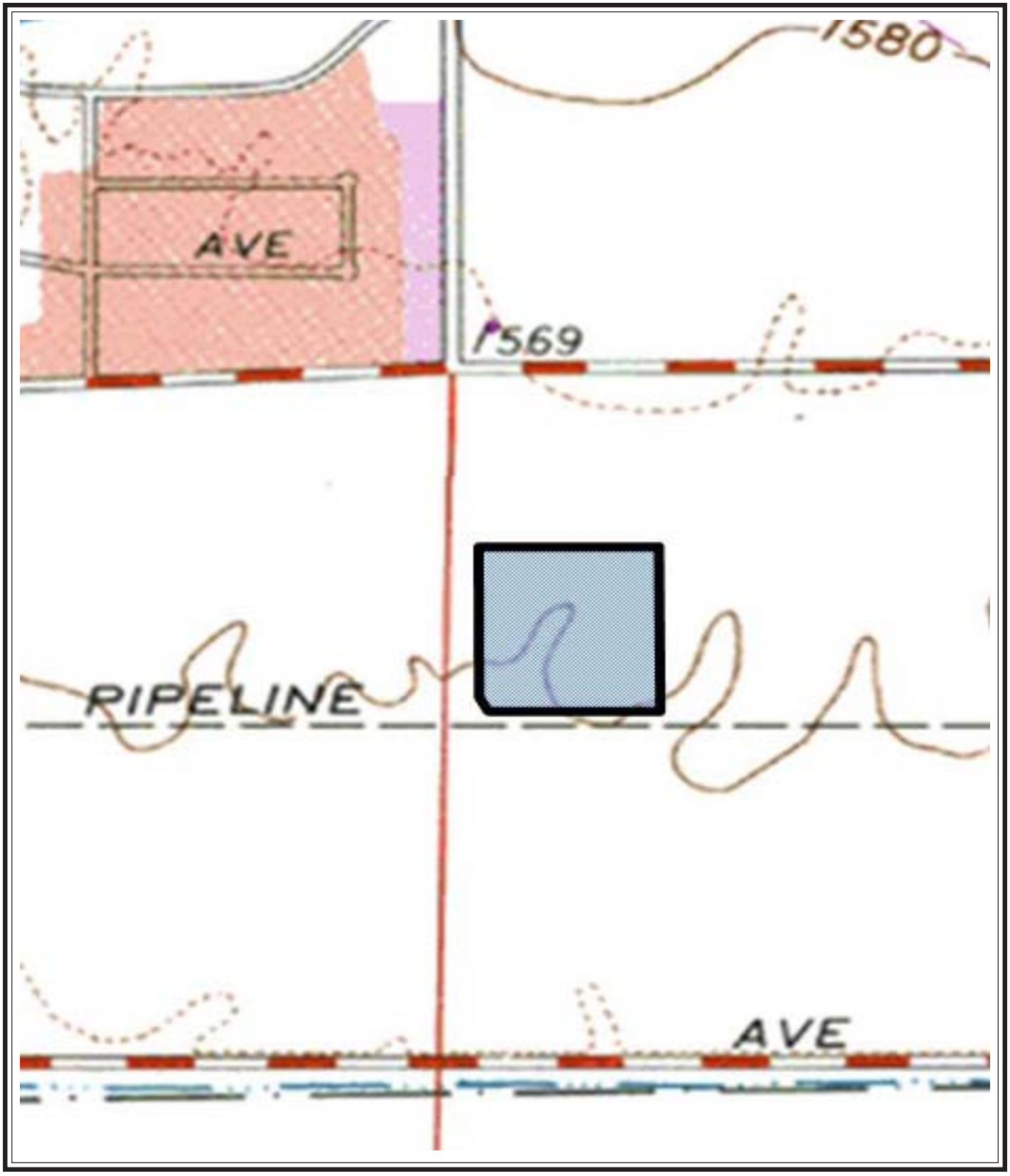
May 2018

plate **1**

Regional Site Location

8.78-acre Site

Attachment: Project 1_General Biological Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



= Study Area Boundary

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May 2018

plate **2**

USGS Topographic Vicinity Map

8.78-acre Site

Attachment: Project 1_General Biological Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

migratory (CBOC 2000). In coastal southern California, they occur in annual and perennial grasslands, agricultural areas, and coastal dunes. Habitat characteristics also include deserts and arid scrublands that contain low-growing vegetation (Zarn 1974). It is a resident in the open areas of the lowlands over much of the southern California region (Garrett and Dunn 1981). BUOW have also been observed utilizing roadway ditches, airports, vacant lots in residential/commercial areas, abandoned buildings, and irrigation ditches/flood control channels. It is believed that burrowing owls require open areas supporting sparsely vegetated habitat on gently rolling or level terrain. The BUOW generally prefers moderately to heavily grazed grasslands for nesting and roosting and avoids cultivated fields.

The BUOW also requires an abundance of active small mammal burrows as a critical habitat feature for roosting and nesting cover. The availability of numerous small mammal burrows [e.g., ground squirrel (*Spermophilus beecheyi*] is a major factor in determining whether an area with apparently suitable habitat will support burrowing owls (Coulombe 1971 in Volume II-B, Species Accounts, MSHCP 2003). The mammal burrows are modified and enlarged as needed. BUOW are also capable of digging their own burrows, and do so over a limited portion of their range. One burrow is typically selected for use as the nest, however, satellite burrows are usually found within the immediate vicinity of the nest burrow within the defended territory of the owl (Volume II-B, Species Accounts, MSHCP 2003). BUOW may utilize multiple burrows/sites throughout the year (e.g., small seasonal migrations). Burrowing owls rarely use areas unoccupied by colonies of burrowing mammals (Zarn 1974). While burrows are the essential component of burrowing owl habitat (CDFG 1995), the BUOW is also known to use artificial burrows under certain circumstances such as abandoned concrete structures and debris piles. They are commonly seen perching on fence posts or on mounds outside their burrows.

The BUOW is a crepuscular (dawn and dusk) hunter with a prey base primarily consisting of invertebrates and small vertebrates. Nesting season generally occurs between February 1 and August 30 (CDFG 1994). Actual breeding occurs between March through August, with a peak activity in April and May. Eggs are laid between March and May depending upon regional location. Incubation lasts 3-4 weeks, and after hatching, the chicks remain in the nest for 2-3 weeks. Fledging (development of flight feathers) occurs about four weeks after emergence from the burrow, so young are capable of sustained flight by about 6 weeks of age. BUOW adults feed the young for another 6-8 weeks after emergence, and the young are able to catch their own prey by about the ninth week. By mid September, the young molt into adult plumage and disperse.

Threats to the BUOW include conversion of grassland to agriculture, habitat destruction, predators, collisions with vehicles, and pesticides/poisoning of ground squirrels (Grinnell and Miller 1944, Zarn 1974, Remsen 1978 in Volume II-B, Species Accounts, MSHCP 2003).

BUOW Regulatory Summary

The BUOW is considered a MSHCP Group 3 species, California Species of Special Concern, Federal Species of Concern, Partners in Flight Priority Bird Species, and FWS Species of Management Concern. Although this special-status species is not protected by state or federal endangered species acts, the BUOW is protected under the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711) and CDFG Code sections 3503, 3503.5, and 3800. These sections prohibit take, possession, or destruction of birds, their nests or eggs. If it were later determined that active nests would be lost as a result of site-preparation, it would be in conflict with these regulations, as well as MSHCP species-specific objectives, and could also be considered a significant impact under CEQA.

MSHCP Burrowing Owl Survey Methodology

Step I of the MSHCP Burrowing Owl Survey Instructions is the ***Habitat Assessment***. The first step in the habitat assessment process is to walk the property to identify the presence of burrowing owl habitat on the project site. If habitat is found on the site, then walk a 150-meter (approximately 500 feet) buffer zone around the project boundary. If permission to access the buffer cannot be obtained, visually inspect any

Attachment: Project 1_General Biological Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

adjacent habitat areas with binoculars. If burrowing owl habitat occurs on-site, then Step II is required and 30-day preconstruction surveys will also be required; **(i)** habitat was determined to be present on the project site during the habitat assessment in the form of "several marginally suitable burrows associated with California ground squirrels"; **(ii)** was the 150-meter buffer surveyed?

Step II, ***Part A (Focused Burrow Surveys)*** requires a systematic survey for burrows including burrowing owl sign be conducted by walking through suitable habitat over the entire survey area (i.e. the project site and within 150 meters). Pedestrian survey transects need to be spaced to allow 100% visual coverage of the ground surface. The location of all suitable burrowing owl habitat, potential owl burrows, burrowing owl sign, and any owls observed should be recorded and mapped. If the survey area contains natural or man-made structures that could potentially support burrowing owls, or owls are observed during the burrow surveys, the systematic surveys should continue as prescribed in Step II, Part B (Focused Burrowing Owl Surveys). If no potential burrows are detected, no further surveys are required.

A written report including photographs of the project site, location of burrowing owl habitat surveyed, location of transects, and burrow survey methods should be prepared. If the report indicates further surveys are not required, then the report should state the reason(s) why further focused burrowing owl surveys are not necessary. Absence of burrowing owl sign cannot be used to confirm absence of the species if the focused burrow survey (Step II, Part A) is conducted within five days of rain; (**i)** Include an exhibit that depicts the burrowing owl habitat surveyed (include acreage), 150-meter buffer area, location of survey transects, and the location of the potential burrows; **(ii)** include weather information proving that it did not rain within five days before the focused burrow survey; **(iii)** include several photos of potential burrows located on the site; **(iv)** are the burrows on the site suitable for burrowing owl? If yes, then four focused breeding season surveys will be required. Breeding season is March 1 through August 31. If focused surveys are required based on your analysis please complete the surveys as soon as possible; **(v)** however, if the burrows on the site are not suitable to support burrowing owls, then proper justification must be provided for not completing focused surveys.

All project sites containing burrows or suitable habitat (based on Step I/Habitat Assessment) whether owls were found or not, require ***pre-construction surveys*** that shall be conducted within 30 days prior to ground disturbance to avoid direct take of burrowing owls (MSHCP Species-Specific Objective 6). If ground-disturbing activities are delayed or suspended for more than 30 days after the survey, the site should be resurveyed for owls if suitable habitat is present.

Additional MSHCP and other Conservation Objectives

Although the site is located outside a MSCHP criteria area, it must also be reviewed for constency with additional MSHCP Objectives such as ***Section 6.1.2-Riparian/Riverine Areas and Vernal Pools***. The MSHCP (Survey, Mapping, and Documentation Requirements) define Riparian/Riverine Areas, Vernal Pools, and Fairy Shrimp habitat as follows: ***(1) Riparian/Riverine Areas-*** lands which contain habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens, which occur close to or which depend upon soil moisture from a nearby fresh water source; or areas with fresh water flow during all or a portion of the year; ***(2) Vernal pools*** are seasonal wetlands that occur in depression areas that have wetlands indicators of all three parameters (soils, vegetation and hydrology) during the wetter portion of the growing season but normally lack wetlands indicators of hydrology and/or vegetation during the drier portion of the growing season. Obligate hydrophytes and facultative wetlands plant species are normally dominant during the wetter portion of the growing season, while upland species (annuals) may be dominant during the drier portion of the growing season. The determination that an area exhibits vernal pool characteristics, and the definition of the watershed supporting vernal pool hydrology, must be made on a case-by-case basis. Such determinations should consider the length of the time the area exhibits upland and wetland characteristics and the manner in which the area fits into the overall ecological system as a wetland. Evidence concerning the persistence of an area's wetness can be obtained from its history, vegetation, soils, and drainage characteristics, uses to which it has been

Attachment: Project 1_General Biological Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

subjected, and weather and hydrologic records; and ***(3) Fairy Shrimp-***for Riverside, vernal pool and Santa Rosa fairy shrimp, mapping of stock ponds, ephemeral pools and other features shall also be undertaken as determined appropriate by a qualified biologist.

Vegetation Mapping (Section 6.3.1)
Individual project-level vegetation mapping may be required for (1) public and private projects within the Plan Area determined to be subject to the Protection of Species Associated with Riparian/Riverine and Vernal Pools policies, (2) public and private projects within the NEPSSA and subject to NEPS policies, and (3) as part of the local CEQA review process for individual public and private projects.

Methodology

Review of Existing Information

Existing documentation pertinent to the distribution and habitat requirements of the burrowing owl and other potentially occurring MSHCP elements was reviewed and analyzed. This included a review of: (1) the California Natural Diversity Data Base (CNDDB 2018) for the "Riverside East" USGS 7.5-minute quadrangle map; (2) Final MSHCP (2003), and (3) other literature pertaining to habitat requirements of the BUOW and selected MSHCP objectives.

Burrowing Owl Habitat Assessment / General MSHCP Consistency Analysis

Ecological Sciences conducted a habitat assessment on January 10, 2018. The survey was conducted using meandering transects across the site. In addition, a general MSHCP consistency analysis (e.g., NEPS habitat assessment) was conducted during the survey. To the extent possible, the project site was surveyed such that 100 percent visual coverage was achieved. Important indicators of BUOW habitat noted during the survey included the presence/absence of small mammal burrows, percentage of vegetative cover, on-site and surrounding land use, potential burrow sites with good horizontal visibility, and soil conditions. The NEPS evaluation included soils types, vegetative components, geographic location, and current land uses. Weather conditions during the January 2018 survey were characterized as partly cloudy to overcast, wind speeds of 1-3 mph, with air temperatures of 57-59 °F.

Existing Site Conditions

The site is generally characterized as a vacant parcel that has been exposed to recent and long-standing forms of disturbances such as discing, scraping, and agriculture. Historically, the site appears to have been entirely disced based on review of historic Google maps since at least 1994, and has been exposed to other forms of anthropogenic disturbances such as adjacent development projects (roads, infrastructure, commercial buildings, etc.). Debris such as soil and gravel piles is present. Landscaping is present along the western property boundary. Existing infrastructure includes culverts and curb/gutter. Surrounding land use includes commercial and residential development. ***Plate 3*** illustrates site features. ***Plates 4a-4b*** photographically illustrate existing site conditions.

Vegetation

Dominant vegetation present on site includes short-podded mustard (*Hirschfeldia incana*), Russian thistle (*Salsola tragus*), pigweed (*Amaranthus* sp.), Mediterranean grass (*Schismus barbatus*), and slender oat (*Avena barbata*).

Soil Conservation Map Review

Based on review of the Natural Resources Conservation Service (NRCS 2018) website, the site is mapped at Monserate sandy loam (MmB). Both gravel and cobbles are mixed in the substrate.

Attachment: Project 1_General Biological Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

= Study Area
= Routinely disced ruderal vegetation

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plate **3**

Site Features Schematic

Attachment: Project 1_General Biological Assessment (3321 : Centerpointe Commerce Center, and

View to west

View to north

Attachment: Project 1_General Biological Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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plate **4a**

Site Photographs

8.78-acre Site

View to south

View to east

Attachment: Project 1_General Biological Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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plate **4b**

Site Photographs

8.78-acre Site

Results / Conclusions

No direct ***burrowing owl*** observations or sign (pellets, fecal material, or prey remains) were incidentally recorded during the January 2018 BUOW habitat assessment. No focused BUOW surveys were conducted as part of this assessment. Birds observed generally included those species that are accustomed to nearby human presence such as American crow (*Corvus brachyrhynchos*) and mourning dove (*Zenaida macroura*). Marginally suitable burrows associated with California ground squirrels were recorded that could potentially be utilized by BUOW. As such, some potential does exist for BUOW presence. Accordingly, focused and/or preconstruction surveys conducted prior to development would be required per MSHCP guidelines to determine current presence/absence on the site.

Additional MSHCP objectives reviewed for consistency during the survey included ***Section 6.1.2- Riparian/Riverine Areas and Vernal Pools***. Vernal pools are depressions in areas where a hard underground layer prevents rainwater from draining downward into the subsoils. When rain fills the pools in the winter and spring, the water collects and remains in the depressions. In the springtime the water gradually evaporates away, until the pools become completely dry in the summer and fall (CDFW 2013). Vernal pools tend to have an impermeable layer that results in ponded water. The soil texture (the amount of sand, silt, and clay particles) typically contains higher amounts of fine silts and clays that lower percolation rates. Pools that retain water for a sufficient length of time will develop hydric soils. Hydric soils form when the soil is saturated from flooding for extended periods of time and anaerobic conditions (lacking oxygen or air) develop. None of these features are present on site. In addition, no habitat is present for Narrow Endemic Plant Species under Section 6.1.3.

Although no native habitat types are present, and no listed species (currently protected by state or federal endangered species acts) are expected to occur due to absence of suitable habitat, the potential presence of certain special-status species (e.g., burrowing owl) may impose some degree of constraint to development depending upon the nature of both direct and indirect impacts on these resources (if present), as well as on the particular species and seasonal timing of construction activities. During permitting procedures, measures to avoid or further reduce project-related impacts to potentially occurring sensitive biological resources may be necessary pursuant to MSHCP guidelines.

If the proposed project demonstrates MSHCP consistency, then the MSHCP provides full mitigation under CEQA, National Environmental Policy Act, California Endangered Species Act, and Federal Endangered Species Act for impacts to the species and habitats covered by the MSHCP pursuant to agreements with USFWS, CDFW, and/or any other appropriate participating regulatory agencies (MSHCP 2003).

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I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological survey, and that the facts, statements, and information presented herein are true and correct to the best of my knowledge and belief.

Sincerely,

Ecological Sciences, Inc.

Scott D. Cameron
Principal Biologist

References

California Burrowing Owl Consortium. 1993. Burrowing Owl Survey Protocol and Mitigation Guidelines. April 1993. 12 pp.

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Natural Resource Conservation Service (NRCS). 2018. Custom Soil Resource Report for Riverside County, Southwestern Part, California. U.S. United States Department of Agriculture. NRCS website accessed January 2018.

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Attachment E-3

BIOLOGICAL REPORT SUMMARY SHEET

(Submit two copies to the County)

Applicant Name: Newcastle Partners
Assessor's Parcel Number (APN): 297-170-029
APN cont. :
Site Location: Section: 13 **Township:** 3 South **Range:** 4 West
Site Address:
Related Case Number(s): **PDB Number:**

General Habitat Assessment for	SPECIES or ENVIRONMENTAL ISSUE OF CONCERN	(Circle Yes, No or N/A regarding species findings on the referenced site)		
	Arroyo Southwestern Toad	Yes	No	(N/A)
X	Blueline Stream(s)	Yes	(No)	N/A
	Coachella Valley Fringed-Toed Lizard	Yes	No	(N/A)
	Coastal California Gnatcatcher	Yes	No	(N/A)
X	Coastal Sage Scrub	Yes	(No)	N/A
	Delhi Sands Flower-Loving Fly	Yes	No	(N/A)
	Desert Pupfish	Yes	No	(N/A)
	Desert Slender Salamander	Yes	No	(N/A)
	Desert Tortoise	Yes	No	(N/A)
	Flat-Tailed Horned Lizard	Yes	No	(N/A)
	Least Bell's Vireo	Yes	No	(N/A)
X	Oak Woodlands	Yes	(No)	N/A
	Quino Checkerspot Butterfly	Yes	No	(N/A)
	Riverside Fairy Shrimp	Yes	No	(N/A)
	Santa Ana River Woolystar	Yes	No	(N/A)
	San Bernardino Kangaroo Rat	Yes	No	(N/A)
	Slender Horned Spineflower	Yes	No	(N/A)
	Stephen's Kangaroo Rat	Yes	No	(N/A)
X	Vernal Pools	Yes	(No)	N/A
X	Wetlands	Yes	(No)	N/A

Attachment: Project 1_General Biological Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_General Biological Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

CHECK SPECIES SURVEYED FOR	SPECIES or ENVIRONMENTAL ISSUE OF CONCERN	(Circle Yes, No or N/A regarding species findings on the referenced site)		
X	Other Burrowing Owl Habitat	(Yes)	No	N/A
X	Other 6.1.3 Habitat	Yes	(No)	N/A
	Other 6.1.2 Habitat	Yes	(No)	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A

Species of concern shall be any unique, rare, endangered, or threatened species. It shall include species used to delineate wetlands and riparian corridors. It shall also include any hosts, perching, or food plants used by any animals listed as rare, endangered, threatened or candidate species by either State, or Federal regulations, or for Riverside County as listed by the California Department of Fish and Game Natural Diversity Data Base (NDDB).

I declare under penalty of perjury that the information provided on this summary sheet is in accordance with the information provided in the biological report.

Ecological Sciences, Inc. May 17, 2018

Signature and Company Name — Report Date

10(a) Permit Number (if applicable) — Permit Expiration Date

County Use Only

Received by: _____ **Date:** _____

PD-B# _____

Attachment E-4

LEVEL OF SIGNIFICANCE CHECKLIST
For Biological Resources
(Submit Two Copies)

Case Number: _____ **Lot/Parcel No.** _____ **EA Number**_____

Wildlife & Vegetation

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

(Check the level of impact the applies to the following questions)

a) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state conservation plan?

Participation in the MSHCP Required

b) Have a substantial adverse effect, either directly or through habitat modifications, on any endangered, or threatened species, as listed in Title 14 of the California Code of Regulations (Sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (Sections 17.11 or 17.12)?

c) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U. S. Wildlife Service?

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident migratory wildlife corridors, or impede the use of native wildlife nursery sites?

e) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U. S. Fish and Wildlife Service?

f) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

g) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Source: CGP Fig. VI.36-VI.40

Findings of Fact:
>No BUOW or sign observed on site during Habitat Assessments conducted in January and May 2018
>No selected narrow endemic plant habitat present on site
>No riparian/riverine/vernal pools present on site or habitat associated with 6.1.2 species due to presence of potentially suitable habitat

Proposed Mitigation: >MSHCP focused BUOW and/or preconstruction surveys prior to development

Monitoring Recommended: >None recommended unless BUOW present during construction

Attachment: Project 1_General Biological Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_Focused Burrowing Owl Survey Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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Focused Burrowing Owl Surveys

±8.78-acre Centerpointe Industrial Center Site

APN: 297-170-029

Site Location:
City of Moreno Valley, Riverside County
Riverside East 7.5-minute USGS Quadrangle Map
Township 3 South, Range 4 West, Section 13

Prepared for:

David Ornelas
T&B Planning, Inc.
3665 Ruffin Road, Ste. 208
San Diego, CA 92123

Prepared by:
Scott Cameron
Ecological Sciences, Inc.
24307 Magic Mountain Parkway #538
Valencia, CA 91355
805.921.0583
scameron@ecosciencesinc.com

Total Area Surveyed:
±8.78 acres

Survey Conducted by:
Scott Cameron

Survey Conducted On:
April 6-9, 2018

Report Date:
May 21, 2018

Attachment: Project 1_Focused Burrowing Owl Survey Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

May 21, 2018

David Ornelas
T&B Planning, Inc.
3665 Ruffin Road, Ste. 208
San Diego, CA 92123

SUBJECT: ***Results of Focused Burrowing Owl Surveys; ±8.78-acre Site; APN: 297-170-029; Riverside County, California***

Dear David:

This letter report presents findings of focused ***burrowing owl*** (*Athene cunicularia*-BUOW) surveys pursuant to the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Section 6.3.2.

Introduction

The subject site is located in the City of Moreno Valley, Riverside County, California (***Plate 1***). Specifically, the site is located east of Frederick Street and north of Brodiaea Avenue. The site occurs on the "Riverside East" USGS quadrangle map, Township 4 South, Range 3 West, Section 13 (***Plate 2***). Projects proposed in the area that contain potentially suitable habitat to support sensitive biological resources must also demonstrate to reviewing agencies [e.g., U.S. Fish and Wildlife Service (FWS), California Department of Fish and Wildlife/Game (CDFW/CDFG), and/or County of Riverside (County)] that potential project-related impacts to sensitive biological resources are adequately addressed and mitigated pursuant to the California Environmental Quality Act (CEQA) and other environmental regulations as part of project approval.

The subject parcel is not located within a MSHCP criteria area. However, the site is located within an area (Reche Canyon/Badlands Area Plan) requiring habitat assessments for BUOW (Section 6.3.2-Additional Survey Needs and Procedures). This report is intended to provide the applicant and reviewing regulatory agencies with general and specific information necessary for planning and permitting decisions concerning the proposed project relative to the occurrence potential of selected sensitive biological resources primarily based on the nature of habitat present and results of focused surveys.

Selected MSHCP Species and Objectives Overview

The ***burrowing owl (BUOW)*** is a small ground-dwelling owl with white eyebrows, yellow eyes, and long legs. The owl's head, back, and wings are sand-colored, with white barring on the breast and belly. Male BUOW are larger and lighter than females. The BUOW ranges across most of western North America from 200 feet below sea level to 9,000 feet above sea level (CBOC 2000). Although the BUOW is migratory throughout much of its range, in central and southern California, owls are predominantly non-migratory (CBOC 2000). In coastal southern California, they occur in annual and perennial grasslands, agricultural areas, and coastal dunes. Habitat characteristics also include deserts and arid scrublands that contain low-growing vegetation (Zarn 1974). It is a resident in the open areas of the lowlands over much of the southern California region (Garrett and Dunn 1981). BUOW have also been observed utilizing roadway ditches, airports, vacant lots in residential/commercial areas, abandoned buildings, and

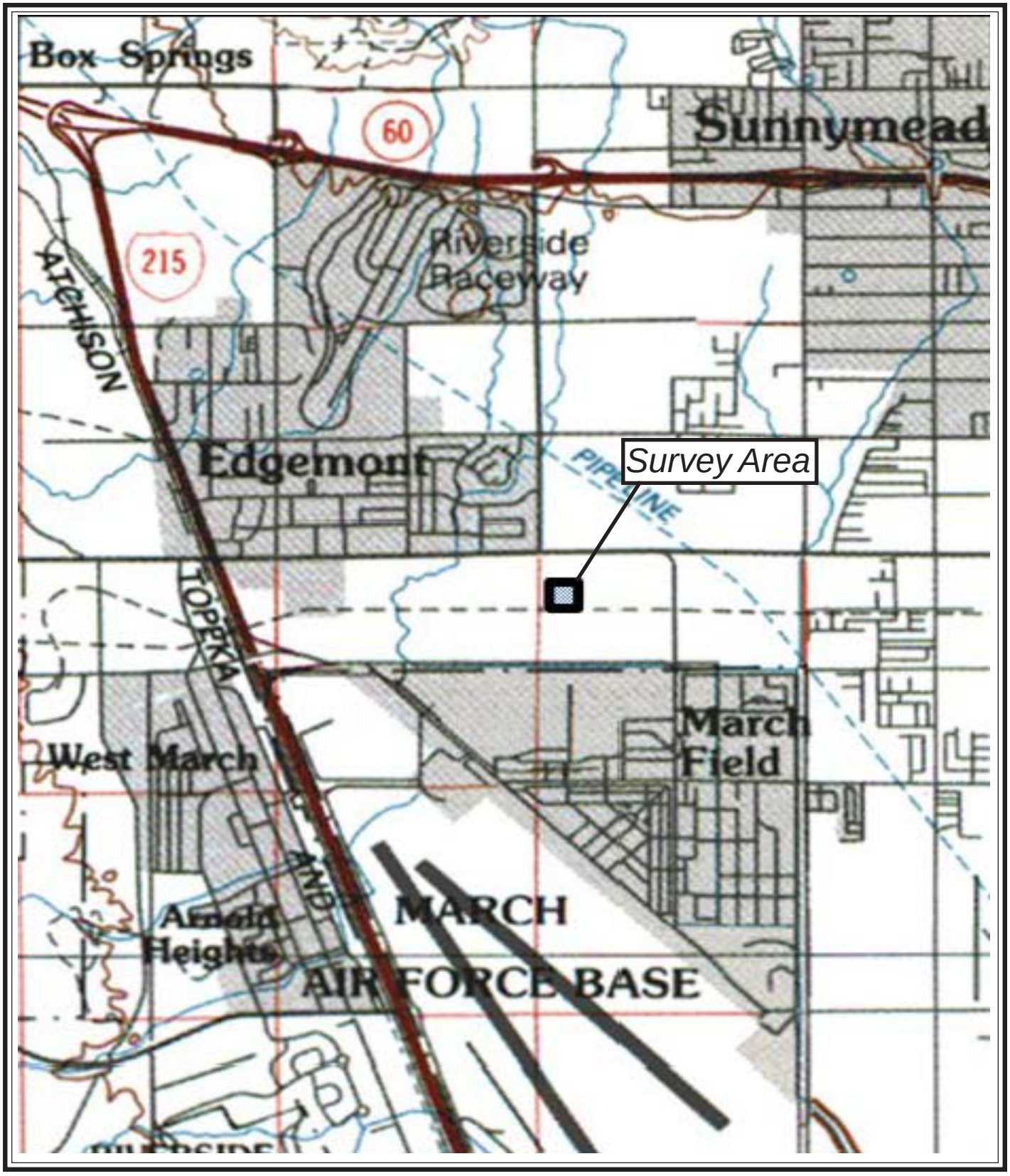

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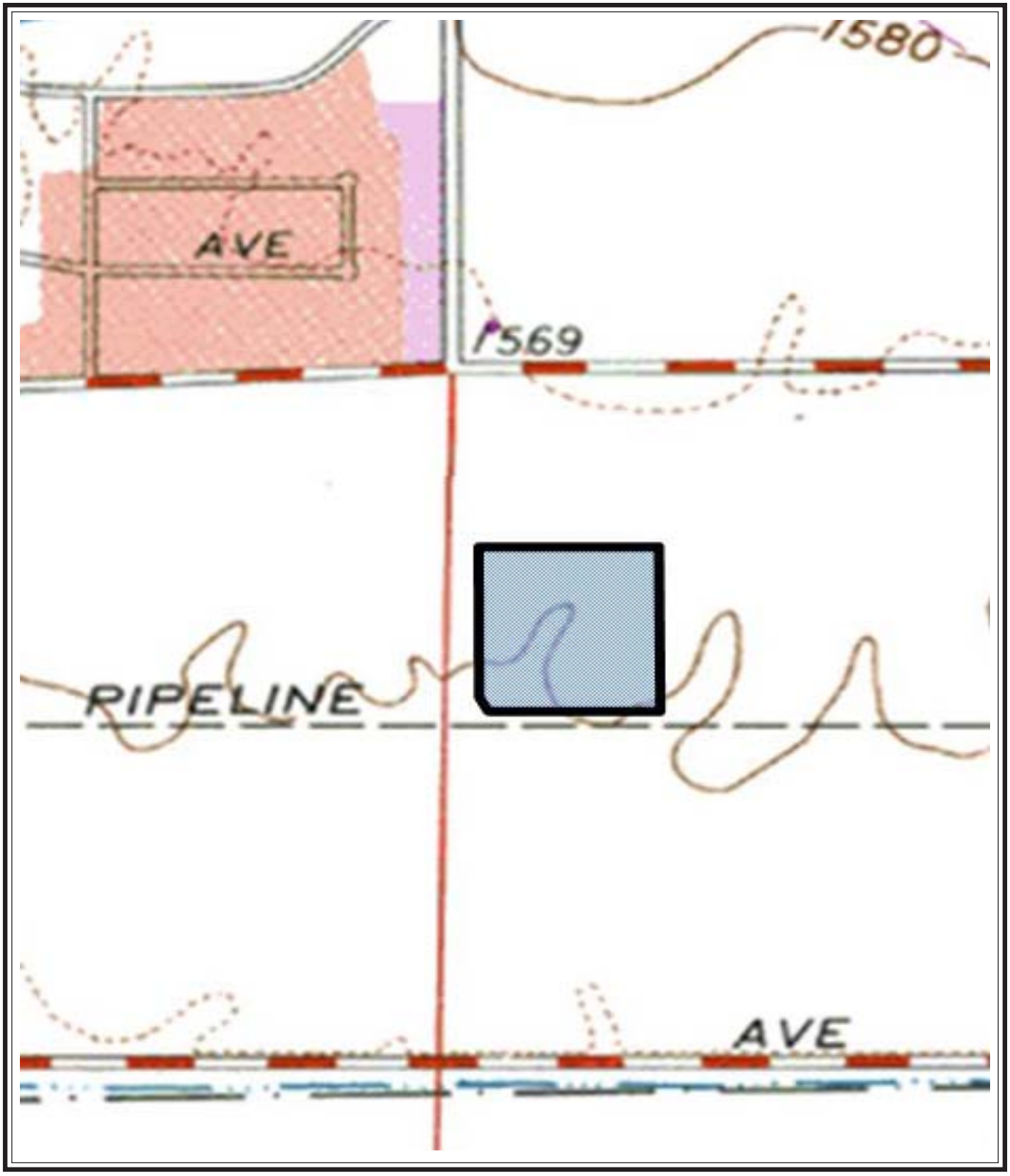
plate **1**

Regional Site Location

8.78-acre Site

Attachment: Project 1_Focused Burrowing Owl Survey Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM



= Study Area Boundary

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plate **2**

USGS Topographic Vicinity Map

8.78-acre Site

Attachment: Project 1_Focused Burrowing Owl Survey Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

irrigation ditches/flood control channels. It is believed that burrowing owls require open areas supporting sparsely vegetated habitat on gently rolling or level terrain. The BUOW generally prefers moderately to heavily grazed grasslands for nesting and roosting and avoids cultivated fields.

The BUOW also requires an abundance of active small mammal burrows as a critical habitat feature for roosting and nesting cover. The availability of numerous small mammal burrows [e.g., ground squirrel (*Spermophilus beecheyi*] is a major factor in determining whether an area with apparently suitable habitat will support burrowing owls (Coulombe 1971 in Volume II-B, Species Accounts, MSHCP 2003). The mammal burrows are modified and enlarged as needed. BUOW are also capable of digging their own burrows, and do so over a limited portion of their range. One burrow is typically selected for use as the nest, however, satellite burrows are usually found within the immediate vicinity of the nest burrow within the defended territory of the owl (Volume II-B, Species Accounts, MSHCP 2003). BUOW may utilize multiple burrows/sites throughout the year (e.g., small seasonal migrations). Burrowing owls rarely use areas unoccupied by colonies of burrowing mammals (Zarn 1974). While burrows are the essential component of burrowing owl habitat (CDFG 1995), the BUOW is also known to use artificial burrows under certain circumstances such as abandoned concrete structures and debris piles. They are commonly seen perching on fence posts or on mounds outside their burrows.

The BUOW is a crepuscular (dawn and dusk) hunter with a prey base primarily consisting of invertebrates and small vertebrates. Nesting season generally occurs between February 1 and August 30 (CDFG 1994). Actual breeding occurs between March through August, with a peak activity in April and May. Eggs are laid between March and May depending upon regional location. Incubation lasts 3-4 weeks, and after hatching, the chicks remain in the nest for 2-3 weeks. Fledging (development of flight feathers) occurs about four weeks after emergence from the burrow, so young are capable of sustained flight by about 6 weeks of age. BUOW adults feed the young for another 6-8 weeks after emergence, and the young are able to catch their own prey by about the ninth week. By mid September, the young molt into adult plumage and disperse.

Threats to the BUOW include conversion of grassland to agriculture, habitat destruction, predators, collisions with vehicles, and pesticides/poisoning of ground squirrels (Grinnell and Miller 1944, Zarn 1974, Remsen 1978 in Volume II-B, Species Accounts, MSHCP 2003).

BUOW Regulatory Summary

The BUOW is considered a MSHCP Group 3 species, California Species of Special Concern, Federal Species of Concern, Partners in Flight Priority Bird Species, and FWS Species of Management Concern. Although this special-status species is not protected by state or federal endangered species acts, the BUOW is protected under the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711) and CDFG Code sections 3503, 3503.5, and 3800. These sections prohibit take, possession, or destruction of birds, their nests or eggs. If it were later determined that active nests would be lost as a result of site-preparation, it would be in conflict with these regulations, as well as MSHCP species-specific objectives, and could also be considered a significant impact under CEQA.

MSHCP Burrowing Owl Survey Methodology

Step I of the MSHCP Burrowing Owl Survey Instructions is the ***Habitat Assessment***. The first step in the habitat assessment process is to walk the property to identify the presence of burrowing owl habitat on the project site. If habitat is found on the site, then walk a 150-meter (approximately 500 feet) buffer zone around the project boundary. If permission to access the buffer cannot be obtained, visually inspect any adjacent habitat areas with binoculars. If burrowing owl habitat occurs on-site, then Step II is required and 30-day preconstruction surveys will also be required; **(i)** habitat was determined to be present on the project site during the habitat assessment in the form of "several marginally suitable burrows associated with California ground squirrels"; **(ii)** was the 150-meter buffer surveyed?

Step II, ***Part A (Focused Burrow Surveys)*** requires a systematic survey for burrows including burrowing owl sign be conducted by walking through suitable habitat over the entire survey area (i.e. the project site and within 150 meters). Pedestrian survey transects need to be spaced to allow 100% visual coverage of the ground surface. The location of all suitable burrowing owl habitat, potential owl burrows, burrowing owl sign, and any owls observed should be recorded and mapped. If the survey area contains natural or man-made structures that could potentially support burrowing owls, or owls are observed during the burrow surveys, the systematic surveys should continue as prescribed in Step II, Part B (Focused Burrowing Owl Surveys). If no potential burrows are detected, no further surveys are required.

A written report including photographs of the project site, location of burrowing owl habitat surveyed, location of transects, and burrow survey methods should be prepared. If the report indicates further surveys are not required, then the report should state the reason(s) why further focused burrowing owl surveys are not necessary. Absence of burrowing owl sign cannot be used to confirm absence of the species if the focused burrow survey (Step II, Part A) is conducted within five days of rain; (**i)** Include an exhibit that depicts the burrowing owl habitat surveyed (include acreage), 150-meter buffer area, location of survey transects, and the location of the potential burrows; **(ii)** include weather information proving that it did not rain within five days before the focused burrow survey; **(iii)** include several photos of potential burrows located on the site; **(iv)** are the burrows on the site suitable for burrowing owl? If yes, then four focused breeding season surveys will be required. Breeding season is March 1 through August 31. If focused surveys are required based on your analysis please complete the surveys as soon as possible; **(v)** however, if the burrows on the site are not suitable to support burrowing owls, then proper justification must be provided for not completing focused surveys.

All project sites containing burrows or suitable habitat (based on Step I/Habitat Assessment) whether owls were found or not, require ***pre-construction surveys*** that shall be conducted within 30 days prior to ground disturbance to avoid direct take of burrowing owls (MSHCP Species-Specific Objective 6). If ground-disturbing activities are delayed or suspended for more than 30 days after the survey, the site should be resurveyed for owls if suitable habitat is present.

Methodology

Review of Existing Information

Existing documentation pertinent to the distribution and habitat requirements of the burrowing owl and other potentially occurring MSHCP elements was reviewed and analyzed. This included a review of: (1) the California Natural Diversity Data Base (CNDDB 2018) for the "Riverside East" USGS 7.5-minute quadrangle map; (2) Final MSHCP (2003), and (3) other literature pertaining to habitat requirements of the BUOW.

Focused BUOW Surveys

A systematic survey for burrows and breeding season BUOW surveys were conducted due to the presence of potentially suitable habitat. Focused surveys were conducted in accordance with current MSHCP guidelines (detailed above). Accordingly, a series of 4 surveys were conducted (one hour before sunrise to two hours after sunrise and two hours before sunset to one hour after sunset). Surveys were conducted April 6-9, 2018.

Pursuant to survey protocol, surveyors initially used binoculars to scan all suitable habitat/potential refugia prior to the start of pedestrian surveys. Habitat characteristics noted during the surveys included the presence of small mammal burrows, percentage of vegetative cover, on-site and surrounding land use, potential burrow sites with good horizontal visibility, and soil conditions. Weather data were recorded using a digital thermocouple and digital anemometer, and by visual estimation of cloud cover and general weather characteristics. Site photographs were taken using a Nikon digital camera. Following the initial site scan, a systematic survey for burrows, burrowing owls, and owl sign was conducted by

= Study Area
= Routinely disced ruderal vegetation

ECOLOGICAL SCIENCES, Inc.

May 2018

plate **3**

Site Features Schematic

Attachment: Project 1_Focused Burrowing Owl Survey Report (3321 : Centerpointe Commerce Center,

View to west

View to north

ECOLOGICAL SCIENCES Inc.

May 2018

plate **4a**

Site Photographs

8.78-acre Site

View to south

View to east

ECOLOGICAL SCIENCES Inc.

May 2018

plate **4b**

Site Photographs

8.78-acre Site

Attachment: Project 1_Focused Burrowing Owl Survey Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

walking through suitable habitat over the entire survey area (i.e. the project site and at least visually with binoculars within 150 meters off site). To the extent possible, pedestrian survey transects were spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines was no more than 30 meters (±100 feet) and were reduced to account for differences in terrain, vegetation density, and ground surface visibility (where necessary). Potentially suitable burrows were examined for sign of BUOW use such as the presence of owl pellets, prey remains, or feathers at potential burrow entrances. Burrows were inspected with the aid of a mirror to better view burrow interiors. Weather conditions during the April 2018 surveys included clear and partly cloudy skies, winds between 1-9 mph, and ambient air temperatures of 69-85°F.

Existing Site Conditions

The site is generally characterized as a vacant parcel that has been exposed to recent and long-standing forms of disturbances such as discing, scraping, and agriculture. Historically, the site appears to have been entirely disced based on review of historic Google maps since at least 1994, and has been exposed to other forms of anthropogenic disturbances such as adjacent development projects (roads, infrastructure, commercial buildings, etc.). Debris such as soil and gravel piles is present. Landscaping is present along the western property boundary. Existing infrastructure includes culverts and curb/gutter. Surrounding land use includes commercial and residential development. ***Plate 3*** illustrates site features. ***Plates 4a-4b*** photographically illustrate existing site conditions.

Vegetation

Dominant vegetation present on site includes short-podded mustard (*Hirschfeldia incana*), Russian thistle (*Salsola tragus*), pigweed (*Amaranthus* sp.), Mediterranean grass (*Schismus barbatus*), and slender oat (*Avena barbata*).

2018 Focused BUOW Survey Results (6.3.2)

No direct BUOW observations or sign (feathers, pellets, fecal material, prey remains, etc.) were recorded during the April 2018 focused BUOW survey. Birds observed included common raven (*Corvus corax*), American crow (*Corvus brachyrhynchos*), mourning dove (*Zenaida macroura*), northern mockingbird (*Mimus polyglottos*), European starling (*Sturnus vulgaris*), rock pigeon (*Columba livia*), house finch (*Carpodacus mexicanus*), and house sparrow (*Passer domesticus*).

Multiple potential nesting refugia (e.g., small mammal burrows) are present on site. However, none of the burrows/refugia inspected during the 2018 focused survey were determined to be currently occupied or recently used by BUOW based on the lack of owl observations and absence of sign around burrow entrances. Surveys of the site and scanning adjacent areas during peak BUOW activity times did not reveal any indication that this species was currently present or utilizing the site for foraging purposes. Nonetheless, potential nesting and foraging habitat for BUOW is present on and adjacent to the site and the subject site could be occupied by BUOW at anytime of the year. Due the presence of suitable BUOW habitat and the potential for this taxon to occur, preconstruction surveys pursuant to MSHCP guidelines would also be required prior to any development activities. If BUOW were recorded during any subsequent site surveys, their presence would impose some degree of constraint (e.g., compliance with MSHCP, CDFW, MBTA) to development depending upon the nature and extent of potential impacts [e.g., number of BUOW pair(s)] and the seasonal timing of proposed construction activities. If it were later determined that active nests would be lost as a result of site-preparation, it would be in conflict with MSHCP species-specific conservation objectives.

ϕ

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological survey, and that the facts, statements, and information presented herein are true and correct to the best of my knowledge and belief.

Sincerely,

Ecological Sciences, Inc.

Scott D. Cameron
Principal Biologist

Attachment: Project 1_Focused Burrowing Owl Survey Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

References

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Attachment: Project 1_Focused Burrowing Owl Survey Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Attachment E-3

BIOLOGICAL REPORT SUMMARY SHEET

(Submit two copies to the County)

Applicant Name: Newcastle Partners
Assessor's Parcel Number (APN): 297-170-029
APN cont. :
Site Location: Section: 13 **Township:** 3 South **Range:** 4 West
Site Address:
Related Case Number(s): **PDB Number:**

General Habitat Assessment for	SPECIES or ENVIRONMENTAL ISSUE OF CONCERN	(Circle Yes, No or N/A regarding species findings on the referenced site)		
	Arroyo Southwestern Toad	Yes	No	N/A
	Blueline Stream(s)	Yes	No	N/A
	Coachella Valley Fringed-Toed Lizard	Yes	No	N/A
	Coastal California Gnatcatcher	Yes	No	N/A
	Coastal Sage Scrub	Yes	No	N/A
	Delhi Sands Flower-Loving Fly	Yes	No	N/A
	Desert Pupfish	Yes	No	N/A
	Desert Slender Salamander	Yes	No	N/A
	Desert Tortoise	Yes	No	N/A
	Flat-Tailed Horned Lizard	Yes	No	N/A
	Least Bell's Vireo	Yes	No	N/A
	Oak Woodlands	Yes	No	N/A
	Quino Checkerspot Butterfly	Yes	No	N/A
	Riverside Fairy Shrimp	Yes	No	N/A
	Santa Ana River Woolystar	Yes	No	N/A
	San Bernardino Kangaroo Rat	Yes	No	N/A
	Slender Horned Spineflower	Yes	No	N/A
	Stephen's Kangaroo Rat	Yes	No	N/A
	Vernal Pools	Yes	No	N/A
	Wetlands	Yes	No	N/A

Attachment: Project 1_Focused Burrowing Owl Survey Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

CHECK SPECIES SURVEYED FOR	SPECIES or ENVIRONMENTAL ISSUE OF CONCERN	(Circle Yes, No or N/A regarding species findings on the referenced site)		
X	Other Burrowing Owl Habitat	(Yes)	No	N/A
X	Other Burrowing Owl	Yes	(No)	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A

Species of concern shall be any unique, rare, endangered, or threatened species. It shall include species used to delineate wetlands and riparian corridors. It shall also include any hosts, perching, or food plants used by any animals listed as rare, endangered, threatened or candidate species by either State, or Federal regulations, or for Riverside County as listed by the California Department of Fish and Game Natural Diversity Data Base (NDDB).

I declare under penalty of perjury that the information provided on this summary sheet is in accordance with the information provided in the biological report.

Ecological Sciences, Inc. May 21, 2018

Signature and Company Name — Report Date

10(a) Permit Number (if applicable) — Permit Expiration Date

County Use Only

Received by: _____ **Date:** _____

PD-B# _____

Attachment: Project 1_Focused Burrowing Owl Survey Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Attachment E-4

LEVEL OF SIGNIFICANCE CHECKLIST
For Biological Resources
(Submit Two Copies)

Case Number: _____ **Lot/Parcel No.** _____ **EA Number**_____

Wildlife & Vegetation

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

(Check the level of impact the applies to the following questions)

a) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state conservation plan?
Participation in the MSHCP Required

b) Have a substantial adverse effect, either directly or through habitat modifications, on any endangered, or threatened species, as listed in Title 14 of the California Code of Regulations (Sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (Sections 17.11 or 17.12)?

c) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U. S. Wildlife Service?

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident migratory wildlife corridors, or impede the use of native wildlife nursery sites?

e) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U. S. Fish and Wildlife Service?

f) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

g) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Source: CGP Fig. VI.36-VI.40

Findings of Fact: >No BUOW or sign observed on site during focused surveys conducted in April 2018

Proposed Mitigation: >MSHCP focused BUOW and/or preconstruction surveys prior to development

Monitoring Recommended: >None recommended unless BUOW present during construction

Attachment: Project 1_Focused Burrowing Owl Survey Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

PHASE I CULTURAL RESOURCES SURVEY FOR THE CENTERPOINTE PROJECT

CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE

APN 297-170-029

Prepared for:

T&B Planning, Inc.
17542 East 17th Street, Suite 100
Tustin, California 92780

Prepared by:

Brian F. Smith and Associates, Inc.
14010 Poway Road, Suite A
Poway, California 92064

February 12, 2018; Revised May 30, 2018

Attachment: Project 1_Cultural Resources Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Archaeological Database Information

Author(s):	Andrew J. Garrison and Brian F. Smith
Prepared by:	Brian F. Smith and Associates, Inc. 14010 Poway Road, Suite A Poway, California 92064 (858) 484-0915
Report Date:	February 12, 2018; Revised May 30, 2018
Report Title:	Phase I Cultural Resources Survey for the Centerpointe Project, City of Moreno Valley, County of Riverside
Prepared for:	T&B Planning, Inc. 17542 East 17th Street, Suite 100 Tustin, California 92780
Assessor's Parcel Numbers:	APN 297-170-029
USGS Quadrangle:	*Riverside East, California* (7.5 minute)
Study Area:	8.78 acres
Key Words:	Cultural resources survey; city of Moreno Valley; negative survey; no mitigation measures recommended.

Attachment: Project 1_Cultural Resources Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Attachment: Project 1_Cultural Resources Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendices

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Appendix C – NAHC Sacred Lands File Search Results*
**Deleted for public review and bound separately in the Confidential Appendix*

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Attachment: Project 1_Cultural Resources Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_Cultural Resources Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

1.0 MANAGEMENT SUMMARY/ABSTRACT

The following report describes the results of a Phase I cultural resources assessment conducted by Brian F. Smith and Associates, Inc. (BFSA) for the Centerpointe Project. The survey covered an 8.78-acre property located northeast of the intersection of Frederick Street and Brodiaea Avenue, within the city of Moreno Valley in Riverside County, California. Specifically, this project is located within Section 13 of the USGS 7.5-minute *Riverside East, California* topographic quadrangle (Township 3 South, Range 4 West, San Bernardino Base and Meridian). The property encompasses the entirety of Assessor's Parcel Number (APN) APN 297-170-029 and lies north of March Air Reserve Base. The project proposes to develop an approximately 203,712-square-foot industrial warehouse/logistics building with approximately 5,000 square feet of office space and 27 single load dock doors positioned on the eastern side. Additional project improvements include approximately 31 truck trailer parking stalls and an underground stormwater detention basin, along with associated public parking, landscaping, and infrastructure. In compliance with the California Environmental Quality Act (CEQA) and City of Moreno Valley environmental policies, BFSA conducted the assessment to locate and record any cultural resources present within the project.

The cultural resources investigation of the subject property also included a records search performed by BFSA at the Eastern Information Center (EIC) at the University of California at Riverside (UCR) on February 2, 2018 in order to assess previous archaeological studies and identify any previously recorded cultural resources within the project boundaries or in the immediate vicinity. Results of the records search from the EIC indicate that 114 cultural resource properties, all historic, have been recorded within a one-mile radius of the project. None of these properties include the current project. Additionally, the records search indicated that 36 cultural resource studies have been conducted within a one-mile radius of the project, none of which include the current Area of Potential Effect (APE).

BFSA requested a review of the Sacred Lands File (SLF) from the Native American Heritage Commission (NAHC) on January 29, 2018 to determine if any recorded Native American sacred sites or locations of religious or ceremonial importance are present within one mile of the project. All correspondence is provided in Appendix C.

The cultural resources survey of the property was conducted on January 29, 2018. Survey conditions were generally good and ground visibility was good to excellent. Much of the property has been disturbed by historic agricultural use, vegetation clearing, disking, grading, and development of the surrounding area. No prehistoric or historic cultural resources were identified during the survey. Because no cultural resources were identified, monitoring of grading is not recommended as a condition of approval for the project.

A copy of this report will be permanently filed with the EIC at UCR. All notes, photographs, and other materials related to this project will be curated at the archaeological laboratory of BFSA in Poway, California.

2.0 INTRODUCTION

In response to a request by T&B Planning, Inc., BFSA conducted a cultural resources assessment of the Centerpointe Project. The cultural resources survey and evaluation program for the project were conducted in order to comply with CEQA and City of Moreno Valley environmental policies. The project is located in an area of low archaeological sensitivity, as suggested by known site density and predictive modeling.

The project is an 8.78-acre property located in Moreno Valley, Riverside County, California (Figure 2.0–1). The project encompasses the entirety of APN 297-170-029 and is located north of March Air Reserve Base, northeast of the intersection of Frederick Street and Brodiaea Avenue, within Section 13 of the USGS 7.5-minute *Riverside East, California* topographic quadrangle (Township 3 South, Range 4 West, San Bernardino Base and Meridian) (Figure 2.0–2). The project proposes to develop an approximately 203.712-square-foot industrial warehouse/logistics building with approximately 5,000 square feet of office space and 27 single load dock doors positioned on the eastern side. Additional project improvements include approximately 31 truck trailer parking stalls and an underground stormwater detention basin, along with associated public parking, landscaping, and infrastructure (Figure 2.0–3).

Principal Investigator Brian F. Smith and Project Archaeologist Andrew J. Garrison directed the Phase I archaeological survey program. Senior field archaeologist Clarence Hoff conducted the field survey. The technical report was prepared by Andrew Garrison and Brian Smith. Caitlin Foote conducted technical editing and report production and Kris Reinicke created the report graphics. Qualifications of key personnel are provided in Appendix A.

Attachment: Project 1_Cultural Resources Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

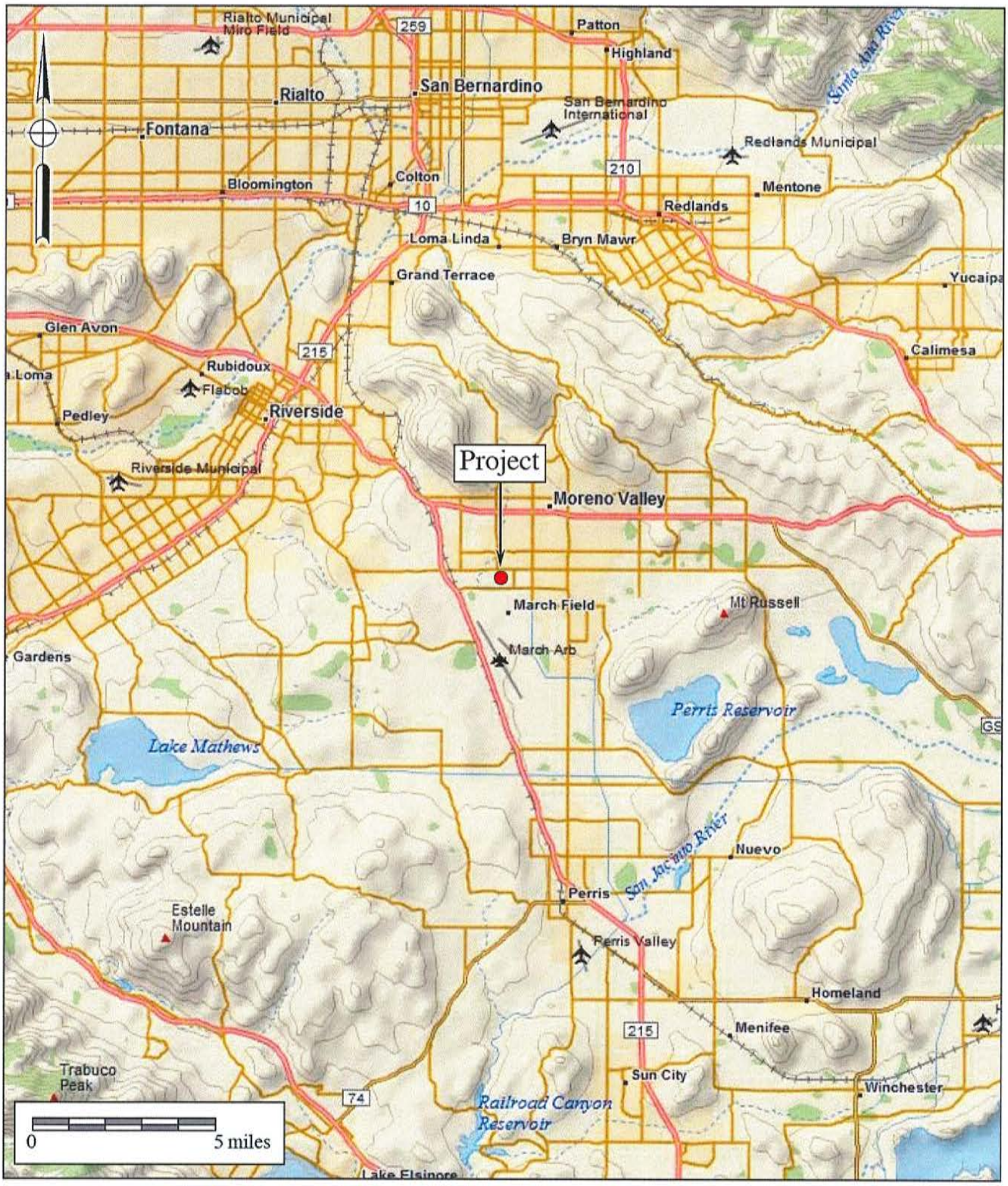

Figure 2.0–1

General Location Map

The Centerpointe Project

DeLorme (1:250,000)

Attachment: Project 1_Cultural Resources Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

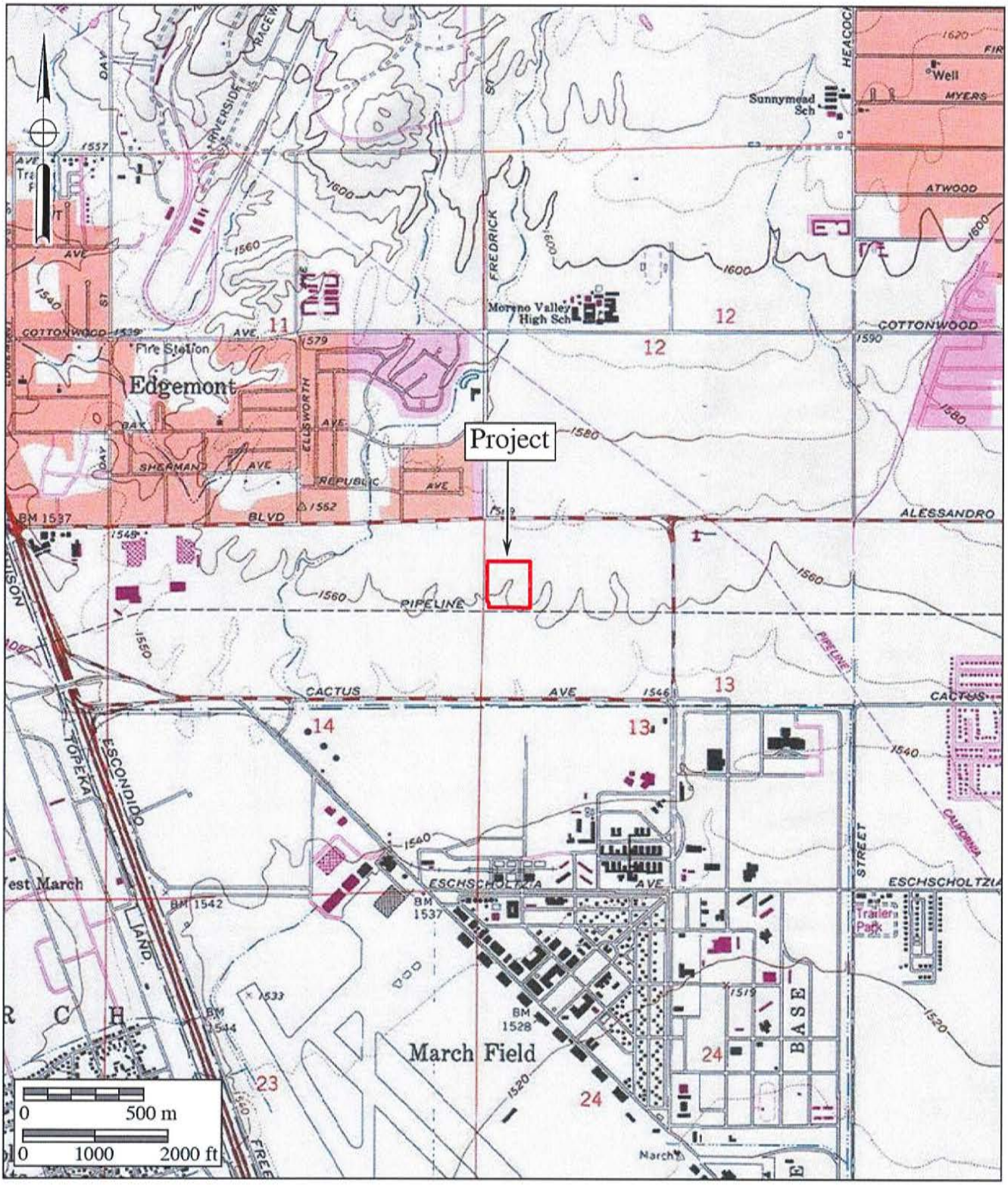

Figure 2.0–2

Project Location Map

The Centerpointe Project

USGS *Riverside East* and *Sunnymead* Quadrangles (7.5-minute series)

Attachment: Project 1_Cultural Resources Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

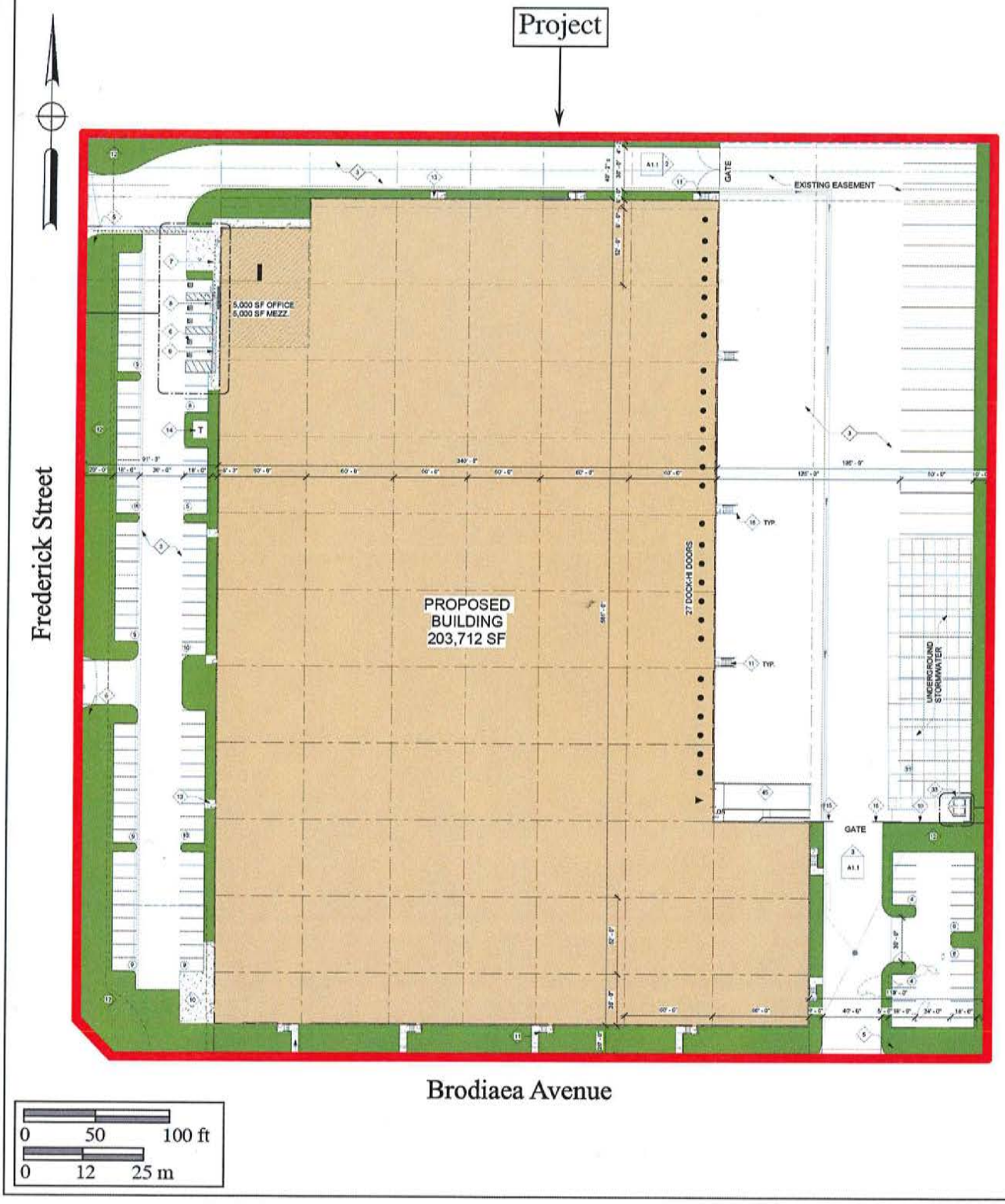

Figure 2.0–3
Project Development Map
The Centerpointe Project

Attachment: Project 1_Cultural Resources Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_Cultural Resources Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

3.0 PROJECT SETTING

The project setting includes the natural physical, geological, and biological contexts of the proposed project, as well as the cultural setting of prehistoric and historic human activities in the general area. The following sections discuss both the environmental and cultural settings at the subject property, the relationship between the two, and the relevance of that relationship to the project.

3.1 Environmental Setting

Riverside County lies in the Peninsular Range Geologic Province of southern California. The range, which lies in a northwest to southeast trend through the county, extends some 1,000 miles from the Raymond-Malibu Fault Zone in western Los Angeles County to the southern tip of Baja California. The subject property is northwest of the Perris Reservoir in the Moreno Valley, southeast of the Box Springs Mountains. The project area is relatively flat, with an elevation of approximately 1,560 feet above mean sea level (AMSL). The entire project has been disked and disturbed by past agricultural activities and appears to have been previously graded. The vegetation is dominated by newly growing non-native weeds and grasses, approximately two to six inches in height. A row of shrubs and pine trees have been planted on the western boundary of the project.

3.2 Cultural Setting

Paleo Indian, Archaic Period Milling Stone Horizon, and the Late Prehistoric Takic groups are the three general cultural periods represented in Riverside County. The following discussion of the cultural history of Riverside County references the San Dieguito Complex, Encinitas Tradition, Milling Stone Horizon, La Jolla Complex, Pauma Complex, and San Luis Rey Complex, since these culture sequences have been used to describe archaeological manifestations in the region. The Late Prehistoric component present in the Riverside County area was represented by the Cahuilla, Gabrielino, and Luiseño Indians.

Absolute chronological information, where possible, will be incorporated into this discussion to examine the effectiveness of continuing to interchangeably use these terms. Reference will be made to the geological framework that divides the culture chronology of the area into four segments: the late Pleistocene (20,000 to 10,000 YBP [years before the present]), the early Holocene (10,000 to 6,650 YBP), the middle Holocene (6,650 to 3,350 YBP), and the late Holocene (3,350 to 200 YBP).

3.2.1 Paleo Indian Period (Late Pleistocene: 11,500 to circa 9,000 YBP)

The Paleo Indian Period is associated with the terminus of the late Pleistocene (12,000 to 10,000 YBP). The environment during the late Pleistocene was cool and moist, which allowed for glaciation in the mountains and the formation of deep, pluvial lakes in the deserts and basin

lands (Moratto 1984). However, by the terminus of the late Pleistocene, the climate became warmer, which caused the glaciers to melt, sea levels to rise, greater coastal erosion, large lakes to recede and evaporate, extinction of Pleistocene megafauna, and major vegetation changes (Moratto 1984; Martin 1967, 1973; Fagan 1991). The coastal shoreline at 10,000 YBP, depending upon the particular area of the coast, was near the 30-meter isobath, or two to six kilometers further west than its present location (Masters 1983).

Paleo Indians were likely attracted to multiple habitat types, including mountains, marshlands, estuaries, and lakeshores. These people likely subsisted using a more generalized hunting, gathering, and collecting adaptation utilizing a variety of resources including birds, mollusks, and both large and small mammals (Erlandson and Colten 1991; Moratto 1984; Moss and Erlandson 1995).

3.2.2 Archaic Period (Early and Middle Holocene: circa 9,000 to 1,300 YBP)

Between 9,000 and 8,000 YBP, a widespread complex was established in the southern California region, primarily along the coast (Warren and True 1961). This complex is locally known as the La Jolla Complex (Rogers 1939; Moriarty 1966), which is regionally associated with the Encinitas Tradition (Warren 1968) and shares cultural components with the widespread Milling Stone Horizon (Wallace 1955). The coastal expression of this complex appeared in the southern California coastal areas and focused upon coastal resources and the development of deeply stratified shell middens that were primarily located around bays and lagoons. The older sites associated with this expression are located at Topanga Canyon, Newport Bay, Agua Hedionda Lagoon, and some of the Channel Islands. Radiocarbon dates from sites attributed to this complex span a period of over 7,000 years in this region, beginning over 9,000 YBP.

The Encinitas Tradition is best recognized for its pattern of large coastal sites characterized by shell middens, grinding tools that are closely associated with the marine resources of the area, cobble-based tools, and flexed human burials (Shumway et al. 1961; Smith and Moriarty 1985). While ground stone tools and scrapers are the most recognized tool types, coastal Encinitas Tradition sites also contain numerous utilized flakes, which may have been used to pry open shellfish. Artifact assemblages at coastal sites indicate a subsistence pattern focused upon shellfish collection and nearshore fishing. This suggests an incipient maritime adaptation with regional similarities to more northern sites of the same period (Koerper et al. 1986). Other artifacts associated with Encinitas Tradition sites include stone bowls, doughnut stones, discoidals, stone balls, and stone, bone, and shell beads.

The coastal lagoons in southern California supported large Milling Stone Horizon populations circa 6,000 YBP, as is shown by numerous radiocarbon dates from the many sites adjacent to the lagoons. The ensuing millennia were not stable environmentally, and by 3,000 YBP, many of the coastal sites in central San Diego County had been abandoned (Gallegos 1987, 1992). The abandonment of the area is usually attributed to the sedimentation of coastal lagoons and the resulting deterioration of fish and mollusk habitat, which is a well-documented situation

Attachment: Project 1_Cultural Resources Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

at Batiquitos Lagoon (Miller 1966; Gallegos 1987). Over a two-thousand-year period at Batiquitos Lagoon, dominant mollusk species occurring in archaeological middens shift from deep-water mollusks (*Argopecten* sp.) to species tolerant of tidal flat conditions (*Chione* sp.), indicating water depth and temperature changes (Miller 1966; Gallegos 1987).

This situation likely occurred for other small drainages (Buena Vista, Agua Hedionda, San Marcos, and Escondido creeks) along the central San Diego coast where low flow rates did not produce sufficient discharge to flush the lagoons they fed (Buena Vista, Agua Hedionda, Batiquitos, and San Elijo lagoons) (Byrd 1998). Drainages along the northern and southern San Diego coastline were larger and flushed the coastal hydrological features they fed, keeping them open to the ocean and allowing for continued human exploitation (Byrd 1998). Peñasquitos Lagoon exhibits dates as late as 2,355 YBP (Smith and Moriarty 1985) and San Diego Bay showed continuous occupation until the close of the Milling Stone Horizon (Gallegos and Kyle 1988). Additionally, data from several drainages in Camp Pendleton indicate a continued occupation of shell midden sites until the close of the period, indicating that coastal sites were not entirely abandoned during this time (Byrd 1998).

By 5,000 YBP, an inland expression of the La Jolla Complex is evident in the archaeological record, exhibiting influences from the Campbell Tradition from the north. These inland Milling Stone Horizon sites have been termed "Pauma Complex" (True 1958; Warren et al. 1961; Meighan 1954). By definition, Pauma Complex sites share a predominance of grinding implements (manos and metates), lack mollusk remains, have greater tool variety (including atlatl dart points, quarry-based tools, and crescentics), and seem to express a more sedentary lifestyle with a subsistence economy based upon the use of a broad variety of terrestrial resources. Although originally viewed as a separate culture from the coastal La Jolla Complex (True 1980), it appears that these inland sites may be part of a subsistence and settlement system utilized by the coastal peoples. Evidence from the 4S Project in inland San Diego County suggests that these inland sites may represent seasonal components within an annual subsistence round by La Jolla Complex populations (Raven-Jennings et al. 1996). Including both coastal and inland sites of this time period in discussions of the Encinitas Tradition, therefore, provides a more complete appraisal of the settlement and subsistence system exhibited by this cultural complex.

More recent work by Sutton has identified a more localized complex known as the Greven Knoll Complex. The Greven Knoll Complex is a redefined northern inland expression of the Encinitas Tradition first put forth by Mark Sutton and Jill Gardener (2010). Sutton and Gardner (2010:25) state that "[t]he early millingstone archaeological record in the northern portion of the interior southern California was not formally named but was often referred to as 'Inland Millingstone,' 'Encinitas,' or even 'Topanga.'" Therefore, they proposed that all expressions of the inland Milling Stone in southern California north of San Diego County be grouped together in the Greven Knoll Complex.

The Greven Knoll Complex, as postulated by Sutton and Gardener (2010), is broken into

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three phases and obtained its name from the type-site Greven Knoll located in Yucaipa, California. Presently, the Greven Knoll Site is part of the Yukaipa't Site (SBR-1000) and was combined with the adjacent Simpson Site. Excavations at Greven Knoll recovered manos, metates, projectile points, discoidal cogged stones, and a flexed inhumation with a possible cremation (Kowta 1969:39). It is believed that the Greven Knoll Site was occupied between 5,000 and 3,500 YBP. The Simpson Site contained mortars, pestles, side-notched points, and stone and shell beads. Based upon the data recovered at these sites, Kowta (1969:39) suggested that "coastal Milling Stone Complexes extended to and interdigitated with the desert Pinto Basin Complex in the vicinity of the Cajon Pass."

Phase I of the Greven Knoll Complex is generally dominated by the presence of manos and metates, core tools, hammerstones, large dart points, flexed inhumations, and occasional cremations. Mortars and pestles are absent from this early phase, and the subsistence economy emphasized hunting. Sutton and Gardener (2010:26) propose that the similarity of the material culture of Greven Knoll Phase I and that found in the Mojave Desert at Pinto Period sites indicates that the Greven Knoll Complex was influenced by neighbors to the north at that time. Accordingly, Sutton and Gardener (2010) believe that Greven Knoll Phase I may have appeared as early as 9,400 YBP and lasted until about 4,000 YBP.

Greven Knoll Phase II is associated with a period between 4,000 and 3,000 YBP. Artifacts common to Greven Knoll Phase II include manos and metates, Elko points, core tools, and discoidals. Pestles and mortars are present; however, they are only represented in small numbers. Finally, there is an emphasis upon hunting and gathering for subsistence (Sutton and Gardner 2010:8).

Greven Knoll Phase III includes manos, metates, Elko points, scraper planes, choppers, hammerstones, and discoidals. Again, small numbers of mortars and pestles are present. Greven Knoll Phase III spans from approximately 3,000 to 1,000 YBP and shows a reliance upon seeds and yucca. Hunting is still important, but bones seem to have been processed to obtain bone grease more often in this later phase (Sutton and Gardner 2010:8).

The shifts in food processing technologies during each of these phases indicate a change in subsistence strategies; although people were still hunting for large game, plant-based foods eventually became the primary dietary resource (Sutton 2011a). Sutton's (2011b) argument posits that the development of mortars and pestles during the middle Holocene can be attributed to the year-round exploitation of acorns as a main dietary provision. Additionally, the warmer and drier climate may have been responsible for groups from the east moving toward coastal populations, which is archaeologically represented by the interchange of coastal and eastern cultural traits (Sutton 2011a).

3.2.3 Late Prehistoric Period (Late Holocene: 1,300 YBP to 1790)

Many Luiseño hold the world view that as a population they were created in southern California; however, archaeological and anthropological data proposes a scientific perspective.

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Archaeological and anthropological evidence suggests that at approximately 1,350 YBP, Takic-speaking groups from the Great Basin region moved into Riverside County, marking the transition to the Late Prehistoric Period. An analysis of the Takic expansion by Sutton (2009) indicates that inland southern California was occupied by "proto-Yuman" populations before 1,000 YBP. The comprehensive, multi-phase model offered by Sutton (2009) employs linguistic, ethnographic, archaeological, and biological data to solidify a reasonable argument for population replacement of Takic groups to the north by Penutians (Laylander 1985). As a result, it is believed that Takic expansion occurred starting around 3,500 YBP moving toward southern California, with the Gabrielino language diffusing south into neighboring Yuman (Hokan) groups around 1,500 to 1,000 YBP, possibly resulting in the Luiseño dialect.

Based upon Sutton's model, the final Takic expansion would not have occurred until about 1,000 YBP, resulting in Vanyume, Serrano, Cahuilla, and Cupeño dialects. The model suggests that the Luiseño did not simply replace Hokan speakers, but were rather a northern San Diego County/southern Riverside County Yuman population who adopted the Takic language. This period is characterized by higher population densities and elaborations in social, political, and technological systems. Economic systems diversified and intensified during this period with the continued elaboration of trade networks, the use of shell-bead currency, and the appearance of more labor-intensive, yet effective, technological innovations. Technological developments during this period included the introduction of the bow and arrow between A.D. 400 and 600 and the introduction of ceramics. Atlatl darts were replaced by smaller arrow darts, including Cottonwood series points. Other hallmarks of the Late Prehistoric Period include extensive trade networks as far-reaching as the Colorado River Basin and cremation of the dead.

3.2.4 Protohistoric Period (Late Holocene: 1790 to Present)

Ethnohistoric and ethnographic evidence indicates that three Takic-speaking groups occupied portions of Riverside County: the Cahuilla, the Gabrielino, and the Luiseño. The geographic boundaries between these groups in pre- and proto-historic times are difficult to place, but the project is located well within the borders of ethnographic Luiseño territory. This group was a seasonal hunting and gathering people with cultural elements that were very distinct from Archaic Period peoples. These distinctions include cremation of the dead, the use of the bow and arrow, and exploitation of the acorn as a main food staple (Moratto 1984). Along the coast, the Luiseño made use of available marine resources by fishing and collecting mollusks for food. Seasonally available terrestrial resources, including acorns and game, were also sources of nourishment for Luiseño groups. Elaborate kinship and clan systems between the Luiseño and other groups facilitated a wide-reaching trade network that included trade of Obsidian Butte obsidian and other resources from the eastern deserts, as well as steatite from the Channel Islands.

According to Charles Handley (1967), the primary settlements of Late Prehistoric Luiseño Indians in the San Jacinto Plain were represented by Ivah and Soboba near Soboba

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Springs, Jusipah near the town of San Jacinto, Ararah in Webster's Canyon en route to Idyllwild, Pahsitha near Big Springs Ranch southeast of Hemet, and Corova in Castillo Canyon. These locations share features such as the availability of food and water resources. Features of this land use include petroglyphs and pictographs, as well as widespread milling, which is evident in bedrock and portable implements. Groups in the vicinity of the project, neighboring the Luiseño, include the Cahuilla and the Gabrielino. Ethnographic data for the three groups is presented below.

Luiseño

When contacted by the Spanish in the sixteenth century, the Luiseño occupied a territory bounded on the west by the Pacific Ocean, on the east by the Peninsular Ranges mountains at San Jacinto (including Palomar Mountain to the south and Santiago Peak to the north), on the south by Agua Hedionda Lagoon, and on the north by Aliso Creek in present-day San Juan Capistrano. The Luiseño were a Takic-speaking people more closely related linguistically and ethnographically to the Cahuilla, Gabrielino, and Cupeño to the north and east rather than the Kumeyaay who occupied territory to the south. The Luiseño differed from their neighboring Takic speakers in having an extensive proliferation of social statuses, a system of ruling families that provided ethnic cohesion within the territory, a distinct worldview that stemmed from the use of *datura* (a hallucinogen), and an elaborate religion that included the creation of sacred sand paintings depicting the deity *Chingichngish* (Bean and Shipek 1978; Kroeber 1976).

Subsistence and Settlement

The Luiseño occupied sedentary villages most often located in sheltered areas in valley bottoms, along streams, or along coastal strands near mountain ranges. Villages were located near water sources to facilitate acorn leaching and in areas that offered thermal and defensive protection. Villages were composed of areas that were publicly and privately (by family) owned. Publicly owned areas included trails, temporary campsites, hunting areas, and quarry sites. Inland groups had fishing and gathering sites along the coast that were used intensively from January to March when inland food resources were scarce. During October and November, most of the village would relocate to mountain oak groves to harvest acorns. The Luiseño remained at village sites for the remainder of the year, where food resources were within a day's travel (Bean and Shipek 1978; Kroeber 1976).

The most important food source for the Luiseño was the acorn, six different species of which were used (*Quercus californica, Quercus agrifolia, Quercus chrysolepis, Quercus dumosa, Quercus engelmannii,* and *Quercus wislizenii*). Seeds, particularly of grasses, composites, and mints, were also heavily exploited. Seed-bearing species were encouraged through controlled burns, which were conducted at least every third year. A variety of other stems, leaves, shoots, bulbs, roots, and fruits were also collected. Hunting augmented this vegetal diet. Animal species taken included deer, rabbit, hare, woodrat, ground squirrel,

antelope, quail, duck, freshwater fish from mountain streams, marine mammals, and other sea creatures such as fish, crustaceans, and mollusks (particularly abalone, or *Haliotis* sp.). In addition, a variety of snakes, small birds, and rodents were eaten (Bean and Shipek 1978; Kroeber 1976).

Social Organization

Social groups within the Luiseño nation consisted of patrilinear families or clans, which were politically and economically autonomous. Several clans comprised a religious party, or *nota*, which was headed by a chief who organized ceremonies and controlled economics and warfare. The chief had assistants who specialized in particular aspects of ceremonial or environmental knowledge and who, with the chief, were part of a religion-based social group with special access to supernatural power, particularly that of *Chingichngish*. The positions of chief and assistants were hereditary, and the complexity and multiplicity of these specialists' roles likely increased in coastal and larger inland villages (Bean and Shipek 1978; Kroeber 1976; Strong 1929).

Marriages were arranged by the parents, often made to forge alliances between lineages. Useful alliances included those between groups of differing ecological niches and those that resulted in territorial expansion. Residence was patrilocal (Bean and Shipek 1978; Kroeber 1976). Women were primarily responsible for plant gathering, and men principally hunted, although at times, particularly during acorn and marine mollusk harvests, there was no division of labor. Elderly women cared for children and elderly men participated in rituals, ceremonies, and political affairs. They were also responsible for manufacturing hunting and ritual implements. Children were taught subsistence skills at the earliest age possible (Bean and Shipek 1978; Kroeber 1976).

Material Culture

House structures were conical, partially subterranean, and thatched with reeds, brush, or bark. Ramadas were rectangular, protected workplaces for domestic chores such as cooking. Ceremonial sweathouses were important in purification rituals; these were round and partially subterranean thatched structures covered with a layer of mud. Another ceremonial structure was the *wámkis* (located in the center of the village, serving as the place of rituals), where sand paintings and other rituals associated with the *Chingichngish* religious group were performed (Bean and Shipek 1978; Kroeber 1976).

Clothing was minimal; women wore a cedar-bark and netted twine double apron and men wore a waist cord. In cold weather, cloaks or robes of rabbit fur, deerskin, or sea otter fur were worn by both sexes. Footwear included deerskin moccasins and sandals fashioned from yucca fibers. Adornments included bead necklaces and pendants made of bone, clay, stone, shell, bear claw, mica, deer hooves, and abalone shell. Men wore ear and nose piercings made from cane or bone, which were sometimes decorated with beads. Other adornments were commonly

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decorated with semiprecious stones including quartz, topaz, garnet, opal, opalite, agate, and jasper (Bean and Shipek 1978; Kroeber 1976).

Hunting implements included the bow and arrow. Arrows were tipped with either a carved, fire-hardened wooden tip or a lithic point, usually fashioned from locally available metavolcanic material or quartz. Throwing sticks fashioned from wood were used in hunting small game, while deer head decoys were used during deer hunts. Coastal groups fashioned dugout canoes for nearshore fishing and harvested fish with seines, nets, traps, and hooks made of bone or abalone shell (Bean and Shipek 1978; Kroeber 1976).

The Luiseño had a well-developed basket industry. Baskets were used in resource gathering, food preparation, storage, and food serving. Ceramic containers were shaped by paddle and anvil and fired in shallow, open pits to be used for food storage, cooking, and serving. Other utensils included wood implements, steatite bowls, and ground stone manos, metates, mortars, and pestles (Bean and Shipek 1978; Kroeber 1976). Additional tools such as knives, scrapers, choppers, awls, and drills were also used. Shamanistic items include soapstone or clay smoking pipes and crystals made of quartz or tourmaline (Bean and Shipek 1978; Kroeber 1976).

Cahuilla

At the time of Spanish contact in the sixteenth century, the Cahuilla occupied territory that included the San Bernardino Mountains, Orocopia Mountain, and the Chocolate Mountains to the west, Salton Sea and Borrego Springs to the south, Palomar Mountain and Lake Mathews to the west, and the Santa Ana River to the north. The Cahuilla are a Takic-speaking people closely related to their Gabrielino and Luiseño neighbors, although relations with the Gabrielino were more intense than with the Luiseño. They differ from the Luiseño and Gabrielino in that their religion is more similar to the Mohave tribes of the eastern deserts than the *Chingichngish* religious group of the Luiseño and Gabrielino. The following is a summary of ethnographic data regarding this group (Bean 1978; Kroeber 1976).

Subsistence and Settlement

Cahuilla villages were typically permanent and located on low terraces within canyons in proximity to water sources. These locations proved to be rich in food resources and also afforded protection from prevailing winds. Villages had areas that were publicly owned and areas that were privately owned by clans, families, or individuals. Each village was associated with a particular lineage and series of sacred sites that included unique petroglyphs and pictographs. Villages were occupied throughout the year; however, during a several-week period in the fall, most of the village members relocated to mountain oak groves to take part in acorn harvesting (Bean 1978; Kroeber 1976).

The Cahuilla's use of plant resources is well documented. Plant foods harvested by the Cahuilla included valley oak acorns and single-leaf pinyon pine nuts. Other important plant

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species included bean and screw mesquite, agave, Mohave yucca, cacti, palm, chia, quail brush, yellowray goldfield, goosefoot, manzanita, catsclaw, desert lily, mariposa lily, and a number of other species such as grass seed. A number of agricultural domesticates were acquired from the Colorado River tribes including corn, bean, squash, and melon grown in limited amounts. Animal species taken included deer, bighorn sheep, pronghorn antelope, rabbit, hare, rat, quail, dove, duck, roadrunner, and a variety of rodents, reptiles, fish, and insects (Bean 1978; Kroeber 1976).

Social Organization

The Cahuilla was not a political nation, but rather a cultural nationality with a common language. Two non-political, non-territorial patrimoieties were recognized, the Wildcats (túktem) and the Coyotes (?ístam). Lineage and kinship were memorized at a young age among the Cahuilla, providing a backdrop for political relationships. Clans were composed of three to 10 lineages; each lineage owned a village site and specific resource areas. Lineages within a clan cooperated in subsistence activities, defense, and rituals (Bean 1978; Kroeber 1976).

A system of ceremonial hierarchy operated within each lineage. The hierarchy included the lineage leader, who was responsible for leading subsistence activities, guarding the sacred bundle, and negotiating with other lineage leaders in matters concerning land use, boundary disputes, marriage arrangements, trade, warfare, and ceremonies. The ceremonial assistant to the lineage leader was responsible for organizing ceremonies. A ceremonial singer possessed and performed songs at rituals and trained assistant singers. The shaman cured illnesses through supernatural powers, controlled natural phenomena, and was the guardian of ceremonies, keeping evil spirits away. The diviner was responsible for finding lost objects, telling future events, and locating game and other food resources. Doctors were usually older women who cured various ailments and illnesses with their knowledge of medicinal herbs. Finally, certain Cahuilla specialized as traders, who ranged as far west as Santa Catalina and as far east as the Gila River (Bean 1978; Kroeber 1976).

Marriages were arranged by parents from opposite moieties. When a child was born, an alliance formed between the families, which included frequent reciprocal exchanges. The Cahuilla kinship system extended to relatives within five generations. Important economic decisions, primarily the distribution of goods, operated within this kinship system (Bean 1978; Kroeber 1976).

Material Culture

Cahuilla houses were dome-shaped or rectangular, thatched structures. The home of the lineage leader was the largest, located near the ceremonial house with the best access to water. Other structures within the village included the men's sweathouse and granaries (Bean 1978; Kroeber 1976).

Cahuilla clothing, like other groups in the area, was minimal. Men typically wore a

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loincloth and sandals; women wore skirts made from mesquite bark, animal skin, or tules. Babies wore mesquite bark diapers. Rabbit skin cloaks were worn in cold weather (Bean 1978; Kroeber 1976).

Hunting implements included the bow and arrow, throwing sticks, and clubs. Grinding tools used in food processing included manos, metates, and wooden mortars. The Cahuilla were known to use long, wood, grinding implements to process mesquite beans; the mortar was typically a hollowed wooden log buried in the ground. Other tools included steatite arrow shaft straighteners (Bean 1978; Kroeber 1976).

Baskets were made from rush, deer grass, and skunkbrush. Different species and leaves were chosen for different colors in the basket design. Coiled-ware baskets were either flat (for plates, trays, or winnowing), bowl-shaped (for food serving), deep, inverted, and cone-shaped (for transporting), or rounded and flat-bottomed for storing utensils and personal items (Bean 1978; Kroeber 1976).

Cahuilla pottery was made from a thin, red-colored ceramic ware that was often painted and incised. Four basic vessel types are known for the Cahuilla: small-mouthed jars, cooking pots, bowls, and dishes. Additionally, smoking pipes and flutes were fashioned from ceramic (Bean 1978; Kroeber 1976).

Gabrielino

The territory of the Gabrielino at the time of Spanish contact covers much of present-day Los Angeles and Orange counties. The southern extent of this culture area is bounded by Aliso Creek, the eastern extent is located east of present-day San Bernardino along the Santa Ana River, the northern extent includes the San Fernando Valley, and the western extent includes portions of the Santa Monica Mountains. The Gabrielino also occupied several Channel Islands including Santa Barbara Island, Santa Catalina Island, San Nicholas Island, and San Clemente Island. Because of their access to certain resources, including a steatite source from Santa Catalina Island, this group was among the wealthiest and most populous aboriginal groups in all of southern California. Trade of materials and resources controlled by the Gabrielino extended as far north as the San Joaquin Valley, as far east as the Colorado River, and as far south as Baja California (Bean and Smith 1978; Kroeber 1976).

Subsistence and Settlement

The Gabrielino lived in permanent villages and smaller resource-gathering camps occupied at various times of the year depending upon the seasonality of the resource. Larger villages were comprised of several families or clans, while smaller, seasonal camps typically housed smaller family units. The coastal area between San Pedro and Topanga Canyon was the location of primary subsistence villages, while secondary sites were located near inland sage stands, oak groves, and pine forests. Permanent villages were located along rivers and streams and in sheltered areas along the coast. As previously mentioned, the Channel Islands were also

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the locations of relatively large settlements (Bean and Smith 1978; Kroeber 1976).

Resources procured along the coast and on the islands were primarily marine in nature and included tuna, swordfish, ray and shark, California sea lion, Stellar sea lion, harbor seal, northern elephant seal, sea otter, dolphin and porpoise, various waterfowl species, numerous fish species, purple sea urchin, and mollusks, such as rock scallop, California mussel, and limpet. Inland resources included oak acorn, pine nut, Mohave yucca, cacti, sage, grass nut, deer, rabbit, hare, rodent, quail, duck, and a variety of reptiles such as western pond turtle and numerous snake species (Bean and Smith 1978; Kroeber 1976).

Social Organization

The social structure of the Gabrielino is little known; however, there appears to have been at least three social classes: 1) the elite, which included the rich, chiefs, and their immediate family; 2) a middle class, which included people of relatively high economic status or long-established lineages; and 3) a class of people that included most other individuals in the society. Villages were politically autonomous units comprised of several lineages. During times of the year when certain seasonal resources were available, the village would divide into lineage groups and move out to exploit them, returning to the village between forays (Bean and Smith 1978; Kroeber 1976).

Each lineage had its own leader, with the village chief coming from the dominant lineage. Several villages might be allied under a paramount chief. Chiefly positions were of an ascribed status, most often passed to the eldest son. Chiefly duties included providing village cohesion, leading warfare and peace negotiations with other groups, collecting tribute from the village(s) under his jurisdiction, and arbitrating disputes within the village(s). The status of the chief was legitimized by his safekeeping of the sacred bundle, a representation of the link between the material and spiritual realms and the embodiment of power (Bean and Smith 1978; Kroeber 1976).

Shamans were leaders in the spirit realm. The duties of the shaman included conducting healing and curing ceremonies, guarding the sacred bundle, locating lost items, identifying and collecting poisons for arrows, and making rain (Bean and Smith 1978; Kroeber 1976).

Marriages were made between individuals of equal social status and, in the case of powerful lineages, marriages were arranged to establish political ties between the lineages (Bean and Smith 1978; Kroeber 1976).

Men conducted the majority of the heavy labor, hunting, fishing, and trading with other groups. Women's duties included gathering and preparing plant and animal resources, and making baskets, pots, and clothing (Bean and Smith 1978; Kroeber 1976).

Material Culture

Gabrielino houses were domed, circular structures made of thatched vegetation. Houses varied in size and could house from one to several families. Sweathouses (semicircular, earth-

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covered buildings) were public structures used in male social ceremonies. Other structures included menstrual huts and a ceremonial structure called a *yuvar*, an open-air structure built near the chief's house (Bean and Smith 1978; Kroeber 1976).

Clothing was minimal; men and children most often went naked, while women wore deerskin or bark aprons. In cold weather, deerskin, rabbit fur, or bird skin (with feathers intact) cloaks were worn. Island and coastal groups used sea otter fur for cloaks. In areas of rough terrain, yucca fiber sandals were worn. Women often used red ochre on their faces and skin for adornment or protection from the sun. Adornment items included feathers, fur, shells, and beads (Bean and Smith 1978; Kroeber 1976).

Hunting implements included wooden clubs, sinew-backed bows, slings, and throwing clubs. Maritime implements included rafts, harpoons, spears, hook and line, and nets. A variety of other tools included deer scapulae saws, bone and shell needles, bone awls, scrapers, bone or shell flakers, wedges, stone knives and drills, metates, mullers, manos, shell spoons, bark platters, and wooden paddles and bowls. Baskets were made from rush, deer grass, and skunkbush. Baskets were fashioned for hoppers, plates, trays, and winnowers for leaching, straining, and gathering. Baskets were also used for storing, preparing, and serving food, and for keeping personal and ceremonial items (Bean and Smith 1978; Kroeber 1976).

The Gabrielino had exclusive access to soapstone, or steatite, procured from Santa Catalina Island quarries. This highly prized material was used for making pipes, animal carvings, ritual objects, ornaments, and cooking utensils. The Gabrielino profited well from trading steatite since it was valued so much by groups throughout southern California (Bean and Smith 1978; Kroeber 1976).

3.2.5 Ethnohistoric Period (1769 to Present)

European exploration along the California coast began in 1542 with the landing of Juan Rodriguez Cabrillo and his men at San Diego Bay. Sixty years after the Cabrillo expeditions, an expedition under Sebastian Viscaíno made an extensive and thorough exploration of the Pacific coast. Although the voyage did not extend beyond the northern limits of the Cabrillo track, Viscaíno had the most lasting effect on the nomenclature of the coast. Many of the names he gave to various locations have survived, whereas practically every one of the names given by Cabrillo has faded from use. For instance, Cabrillo gave the name "San Miguel" to the first port he stopped at in what is now the United States; 60 years later, Viscaíno changed it to "San Diego" (Rolle 1969). The early European voyages observed Native Americans living in villages along the coast but did not make any substantial, long-lasting impact. At the time of contact, the Luiseño population was estimated to have ranged from 4,000 to as many as 10,000 individuals (Bean and Shipek 1978; Kroeber 1976).

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3.2.6 Historic Period

The historic background of the project area began with the Spanish colonization of Alta California. The first Spanish colonizing expedition reached southern California in 1769 with the intention of converting and civilizing the indigenous populations, as well as expanding the knowledge of and access to new resources in the region (Brigandi 1998). In the late eighteenth century, the San Gabriel (Los Angeles County), San Juan Capistrano (Orange County), and San Luis Rey (San Diego County) missions began colonizing southern California and gradually expanded their use of the interior valley (into what is now western Riverside County) for raising grain and cattle to support the missions (Riverside County n.d.). The San Gabriel Mission claimed lands in what is now Jurupa, Riverside, San Jacinto, and the San Gorgonio Pass, while the San Luis Rey Mission claimed land in what is now Lake Elsinore, Temecula, and Murrieta (American Local History Network: Riverside County, California 1998). The indigenous groups who occupied these lands were recruited by missionaries, converted, and put to work in the missions (Pourade 1964). Throughout this period, the Native American populations were decimated by introduced diseases, a drastic shift in diet resulting in poor nutrition, and social conflicts due to the introduction of an entirely new social order (Cook 1976).

In the mid- to late 1770s, Juan Bautista de Anza passed through much of Riverside County while searching for an overland route from Sonora, Mexico to San Gabriel and Los Angeles, describing fertile valleys, lakes, and sub-desert areas (American Local History Network: Riverside County, California 1998; Riverside County n.d.). In 1797, Father Presidente Lausen, Father Norberto de Santiago, and Corporal Pedro Lisalde led an expedition from Mission San Juan Capistrano through southwestern Riverside County in search of a new mission site before constructing Mission San Luis Rey in northern San Diego County (Brigandi 1998). While no missions were ever built in what would become Riverside County (American Local History Network: Riverside County, California 1998), many mission outposts, or *asistencias*, were established in the early years of the nineteenth century to extend the missions' influence to the backcountry (Brigandi 1998). Two outposts located in Riverside County include San Jacinto and Temecula.

Mexico gained independence in 1822 and desecularized the missions in 1832, signifying the end of the Mission Period (Brigandi 1998; Riverside County n.d.). By this time, the missions owned some of the best and most fertile land in southern California. In order for California to develop, the land would have to be made productive enough to turn a profit (Brigandi 1998). The new government began distributing the vast mission holdings to wealthy and politically connected Mexican citizens. The "grants" were called "ranchos," of which Jurupa, El Rincon, La Sierra, El Sobrante de San Jacinto, La Laguna (Lake Elsinore), Santa Rosa, Temecula, Pauba, San Jacinto Nuevo y Potrero, and San Jacinto Viejo were located in present-day Riverside County. Many of these ranchos have lent their names to modern-day locales (American Local History Network: Riverside County, California 1998). The first grant in present-day Riverside County, Rancho Jurupa, was given to Juan Bandini in 1838. These ranchos were all located in

the valley environments typical of western Riverside County.

The treatment of Native Americans grew worse during the Rancho Period. Most of the Native Americans were forced off of their land or put to work on the now privately-owned ranchos, most often as slave labor. In light of the brutal ranchos, the degree to which Native Americans had become dependent upon the mission system is evident when, in 1838, a group of Native Americans from the San Luis Rey Mission petitioned government officials in San Diego to relieve suffering at the hands of the rancheros:

> We have suffered incalculable losses, for some of which we are in part to be blamed for because many of us have abandoned the Mission … We plead and beseech you … to grant us a Rev. Father for this place. We have been accustomed to the Rev. Fathers and to their manner of managing the duties. We labored under their intelligent directions, and we were obedient to the Fathers according to the regulations, because we considered it as good for us. (Brigandi 1998:21)

Native American culture had been disrupted to the point where they could no longer rely upon prehistoric subsistence and social patterns. Not only does this illustrate how dependent the Native Americans had become upon the missionaries, but it also indicates a marked contrast in the way the Spanish treated the Native Americans compared to the Mexican and United States ranchers. Spanish colonialism (missions) is based upon utilizing human resources while integrating them into their society. The Mexican and American ranchers did not accept Native Americans into their social order and used them specifically for the extraction of labor, resources, and profit. Rather than being incorporated, they were either subjugated or exterminated (Cook 1976).

In 1846, war erupted between Mexico and the United States. In 1848, with the signing of the Treaty of Guadalupe Hidalgo, the region was annexed as a territory of the United States, leading to California became a state in 1850. These events generated a steady flow of settlers into the area, including gold miners, entrepreneurs, health-seekers, speculators, politicians, adventurers, seekers of religious freedom, and individuals desiring to create utopian colonies.

In early 1852, the Native Americans of southern Riverside County, including the Luiseño and the Cahuilla, thought they had signed a treaty resulting in their ownership of all lands from Temecula to Aguanga east to the desert, including the San Jacinto Valley and the San Gorgonio Pass. The Temecula Treaty also included food and clothing provisions for the Native Americans. However, Congress never ratified the treaties, and the promise of one large reservation was rescinded (Brigandi 1998).

With the completion of the transcontinental railroad in 1869, land speculators, developers, and colonists began to invest in southern California. The first colony in what was to become Riverside County was Riverside itself. Judge John Wesley North, an abolitionist from

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Tennessee, brought a group of associates and co-investors out to southern California and founded Riverside on part of the Jurupa Rancho. A few years after, the navel orange was planted and found to be such a success that it quickly became the agricultural staple of the region (American Local History Network: Riverside County, California 1998).

By the late 1880s and early 1890s, there was growing discontent between Riverside and San Bernardino, its neighbor 10 miles to the north, due to differences in opinion concerning religion, morality, the Civil War, politics, and fierce competition to attract settlers. After a series of instances in which charges were claimed about unfair use of tax monies to the benefit of the city of only San Bernardino, several people from Riverside decided to investigate the possibility of a new county. In May 1893, voters living within portions of San Bernardino County (to the north) and San Diego County (to the south) approved the formation of Riverside County. Early business opportunities were linked to the agriculture industry, but commerce, construction, manufacturing, transportation, and tourism also provided a healthy local economy. By the time of Riverside County's formation, Riverside had grown to become the wealthiest city per capita in the country due to the successful cultivation of the navel orange (American Local History Network: Riverside County, California 1998; Riverside County n.d.).

3.3 Applicable Regulations

Resource importance is assigned to districts, sites, buildings, structures, and objects that possess exceptional value or quality illustrating or interpreting the heritage of Riverside County in history, architecture, archaeology, engineering, and culture. A number of criteria are used in demonstrating resource importance. Specifically, criteria outlined in CEQA provide the guidance for making such a determination. The following sections detail the CEQA criteria that a resource must meet in order to be determined important.

3.3.1 California Environmental Quality Act

According to CEQA (§15064.5a), the term "historical resource" includes the following:

1) A resource listed in or determined to be eligible by the State Historical Resources Commission for listing in the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14 CCR. Section 4850 et seq.).
2) A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code, or identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3) Any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural,

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engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14, Section 4852) including the following:

a) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
b) Is associated with the lives of persons important in our past;
c) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
d) Has yielded, or may be likely to yield, information important in prehistory or history.

4) The fact that a resource is not listed in, or determined eligible for listing in, the California Register of Historical Resources, not included in a local register of historical resources (pursuant to Section 5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in Section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code Section 5020.1(j) or 5024.1.

According to CEQA (§15064.5b), a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. CEQA defines a substantial adverse change as:

1) Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.
2) The significance of an historical resource is materially impaired when a project:

a) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the California Register of Historical Resources;

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b) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant;

c) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.

Section 15064.5(c) of CEQA applies to effects on archaeological sites and contains the following additional provisions regarding archaeological sites:

1. When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource, as defined in subsection (a).
2. If a lead agency determines that the archaeological site is an historical resource, it shall refer to the provisions of Section 21084.1 of the Public Resources Code, Section 15126.4 of the guidelines, and the limits contained in Section 21083.2 of the Public Resources Code do not apply.
3. If an archaeological site does not meet the criteria defined in subsection (a), but does meet the definition of a unique archaeological resource in Section 21803.2 of the Public Resources Code, the site shall be treated in accordance with the provisions of Section 21083.2. The time and cost limitations described in Public Resources Code Section 21083.2 (c-f) do not apply to surveys and site evaluation activities intended to determine whether the project location contains unique archaeological resources.
4. If an archaeological resource is neither a unique archaeological nor historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment. It shall be sufficient that both the resource and the effect on it are noted in the Initial Study or Environmental Impact Report, if one is prepared to address impacts on other resources, but they need not be considered further in the CEQA process.

Section 15064.5 (d) & (e) contain additional provisions regarding human remains. Regarding Native American human remains, paragraph (d) provides:

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(d) When an initial study identifies the existence of, or the probable likelihood of, Native American human remains within the project, a lead agency shall work with the appropriate Native Americans as identified by the NAHC, as provided in Public Resources Code SS5097.98. The applicant may develop an agreement for treating or disposing of, with appropriate dignity, the human remains and any items associated with Native American burials with the appropriate Native Americans as identified by the NAHC. Action implementing such an agreement is exempt from:

1) The general prohibition on disinterring, disturbing, or removing human remains from any location other than a dedicated cemetery (Health and Safety Code Section 7050.5)
2) The requirement of CEQA and the Coastal Act.

3.4 Research Design

The primary goal of the research design is to attempt to understand the way in which humans have used the land and resources within the project area through time, as well as to aid in the determination of resource significance. For the current project, the study area under investigation is the western portion of Riverside County and the southwestern section of the city of Moreno Valley. The scope of work for the archaeological program conducted for the Centerpointe Project included the survey of an 8.78-acre area. Given the area involved in this Phase I survey, the research design for this project was limited and general in nature. Since the main objective of the investigation was to identify the presence of and potential impacts to cultural resources, the goal here is not necessarily to answer wide-reaching theories regarding the development of early southern California, but to investigate the role and importance of the identified resources. Nevertheless, the assessment of the significance of a resource must take into consideration a variety of characteristics, as well as the ability of the resource to address regional research topics and issues.

Although survey-level investigations are limited in terms of the amount of information available, several specific research questions were developed that could be used to guide the initial investigations of any observed cultural resources. The following research questions take into account the small size and location of the project area discussed above.

Research Questions

- Can located cultural resources be situated with a specific time period, population, or individual?
- Do the types of located cultural resources allow a site activity/function to be determined from a preliminary investigation? What are the site activities? What is the site function? What resources were exploited?
- How do the located sites compare to others reported from different surveys conducted

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in the area?

- How do the located sites fit existing models of settlement and subsistence for valley environments of the region?

Data Needs

At the survey level, the principle research objective is a generalized investigation of changing settlement patterns in both the prehistoric and historic periods within the study area. The overall goal is to understand settlement and resource procurement patterns of the project area occupants. Therefore, adequate information on site function, context, and chronology from an archaeological perspective is essential for the investigation. The fieldwork and archival research was undertaken with these primary research goals in mind:

1) To identify cultural resources occurring within the project area;
2) To determine, if possible, site type and function, context of the deposit, and chronological placement of each cultural resource identified;
3) To place each cultural resource identified within a regional perspective; and
4) To provide recommendations for the treatment of each of the cultural resources identified.

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4.0 METHODOLOGY

The cultural resources assessment conducted for the Centerpointe Project consisted of a reconnaissance-level survey of the property by a qualified archaeologist and an institutional records search. This archaeological study conformed to City of Moreno Valley environmental guidelines, and the statutory requirements of CEQA were followed in evaluating potential impacts.

4.1 Field Methodology

The cultural resources survey of the project was conducted on January 29, 2018. The survey of the entire 8.78-acre property was an intensive pedestrian reconnaissance consisting of a series of parallel transects spaced at approximately five-meter intervals, which covered all areas of the project. The project is comprised of a generally rectangular APE. Ground visibility was good to excellent and only limited at times due to non-native weeds and grasses. The entire property was accessible and no constraints were encountered. Digital photographs were taken to document project conditions during the survey (see Section 5.2).

4.2 Records Search

The records search conducted at the EIC at UCR on February 6, 2018 was reviewed for an area of one mile surrounding the project in order to determine the presence of any previously recorded cultural resources. Results of the records search are provided in Appendix B and discussed in Section 5.1. During the EIC records search, a standard review of the National Register of Historic Places and the Office of Historic Preservation Historic Property Directory was completed. Land patent records held by the Bureau of Land Management (BLM) and accessible through the BLM General Land Office (GLO) website were also reviewed for pertinent project information. In addition, the BFSA research library and historic aerial photographs were also consulted for any relevant historical information.

4.3 Report Preparation and Recordation

This report contains information regarding previous studies, statutory requirements for the project, and a brief description of the setting, research methods employed, overall results, and recommendations. The report includes all appropriate illustrations and tabular information needed to make a complete and comprehensive presentation of these activities, including the methodologies employed and the personnel involved. A copy of this report will be placed at the EIC at UCR. Any newly recorded sites or sites requiring updated information will be recorded on the appropriate Department of Parks and Recreation (DPR) forms, which will be filed with the EIC.

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4.4 Native American Consultation

BFSA requested a review of the SLF at the NAHC on January 29, 2018 to determine if any recorded Native American sacred sites or locations of religious or ceremonial importance are present within one mile of the project. Original correspondence may be found in Appendix C.

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5.0 REPORT OF FINDINGS

5.1 Results of the Institutional Records Searches

A records search was conducted by BFSA at the EIC at UCR on February 6, 2018. The EIC records search indicates that there are 114 cultural resources present within a one-mile radius of the project. None of the recorded cultural resources are located within the project boundary. The resources identified by the EIC during the records search mainly consist of structures associated with the historic World War II (WWII)-era March Air Reserve Base, including the National Register March Field Historic District, buildings and a stone drainage canal that contribute to the district, non-contributing ancillary buildings and historic March Village medical campus buildings, and the former main entrance/security checkpoint to the military base. The only resources within one mile of the APE not associated with the March Field/Air Reserve area are six historic Alessandro & Day Property buildings (Table 5.1–1).

Table 5.1–1
Cultural Resources Located Within a One-Mile Radius
of the Centerpointe Project

Site	Description
P-33-009191	March Field Historic District
P-33-009200, P-33-009202, P-33-009203, P-33-009204, P-33-009205, P-33-009206, P-33-009207, P-33-009208, P-33-009211, P-33-009212, P-33-009213, P-33-009214, P-33-009215, P-33-009216, P-33-009217, P-33-009218, P-33-009222, P-33-009223, P-33-009224, P-33-009225, P-33-009226, P-33-009229, P-33-009230, P-33-009231, P-33-009232, P-33-009233, P-33-009236, P-33-009237, P-33-009238, P-33-009241, P-33-009243, P-33-009245, P-33-009246, P-33-009264, P-33-009277, P-33-009279, P-33-009280, P-33-009281, P-33-009284, P-33-009286, P-33-009287, P-33-009288, P-33-009289, P-33-009290, P-33-009291, P-33-009292, P-33-009293, P-33-009294, P-33-009295, P-33-009296, P-33-009297, P-33-009298, P-33-009299, P-33-009300, P-33-009301, P-33-009302, P-33-009303, P-33-009304, P-33-009305, P-33-009306, P-33-009307, P-33-009308, P-33-009309, P-33-009310, P-33-009311, P-33-009312, P-33-009313, P-33-009314, P-33-009315,	Historic March Air Reserve Base WWII-era military buildings (March Field Historic District contributing buildings)

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Site	Description
P-33-009321, P-33-009323, P-33-009324, P-33-009325, P-33-009326, P-33-009327, P-33-009328, P-33-009329, P-33-009330, P-33-009331, P-33-009332, P-33-009333, P-33-009334, P-33-009335, P-33-009419, P-33-009421, P-33-009422, P-33-009423, P-33-009424, P-33-009425, P-33-009426, P-33-009427, P-33-009428, P-33-009429, P-33-009430, P-33-009431, P-33-009432, P-33-009436, P-33-009437, P-33-009440, P-33-009441, and P-33-009443	
P-33-009444	Historic March Air Reserve Base WWII-era stone drainage canal (March Field Historic District contributing structure)
P-33-017971 and P-33-017972	Historic March Air Reserve Base ancillary building
P-33-018039	Historic former March Air Reserve Base main entrance/security checkpoint
P-33-017968	Historic March Village medical campus WPA canal
P-33-017969	Historic March Village medical campus ancillary building
P-33-020326, P-33-020327, P-33-020328, P-33-020329, P-33-020330, and P-33-020331	Historic Alessandro & Day Property buildings

The records search also indicated that there have been 36 cultural resource studies conducted within a one-mile radius of the project. None of the previously conducted studies include any portion of the current APE.

For the current project, the following historic sources were reviewed at the EIC:

- The National Register of Historic Places Index
- The Office of Historic Preservation, Archaeological Determinations of Eligibility
- The Office of Historic Preservation, Directory of Properties in the Historic Property Data File
- The 15' USGS *Riverside* topographic map (1897 and 1947)
- The 15' USGS *Perris* topographic map (1942)
- The 30' USGS *Elsinore* topographic map (1901)

These additional sources did not identify any cultural resources within the APE. The complete records search results are provided in Appendix B.

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An in-house assessment of historic aerial photographs show the property has historically been used for agriculture since at least 1966. The aerial photographs, as well as the historic USGS maps reviewed at the EIC, indicate that no structures have ever been located on the APE. The BLM GLO records indicate that a patent (BLM serial number CACAAA 082784) was issued to William B. Bourn on September 20, 1870 under the authority of April 24, 1820: Sale-Cash Entry (3 Stat. 566). Under the patent, Bourn acquired 10,500.6 acres spanning across Township 3 South, Range 4 West, San Bernardino Base and Meridian.

BFSA requested a review of the SLF at the NAHC on January 29, 2018 to determine if any recorded Native American sacred sites or locations of religious or ceremonial importance are present within one mile of the project. Original correspondence may be found in Appendix C.

Based on the records search results, the APE possesses a low sensitivity for cultural resources. No prehistoric resource sites have been recorded within one mile of the project, and the majority of nearby resources are associated with March Air Reserve Base. Further, the APE does not contain bedrock outcrops, natural sources of water, or other landforms that are typically associated with prehistoric use areas. Given the valley setting and lack of exposed bedrock outcrops or water sources for the property, predictive modeling would suggest that if prehistoric sites are present within the project, they will likely be isolated artifacts, artifact scatters, or specialized resource processing loci that would have developed as a result of prehistoric resource extraction practices. In addition, no buildings were ever located on the property, and as a result, any historic sites are likely to be surface deposits resulting from rural refuse dumping practices.

5.2 Results of the Field Survey

The cultural resources survey took place on January 29, 2018. The survey was directed by Principal Investigator Brian F. Smith and conducted by senior field archaeologist Clarence Hoff. The survey of the property was an intensive reconnaissance consisting of a series of parallel survey transects spaced at approximately five-meter intervals, which covered all areas of the project. The project is comprised of a generally rectangular APE that has historically been used for agriculture. Ground visibility was generally good to excellent and only limited at times due to vegetation. The entire property was accessible and no constraints were encountered. Photographs were taken to document project conditions at the time of the survey (Plates 5.2–1 and 5.2–2).

The pedestrian survey indicated that the entirety of the project had been disturbed by historic agricultural use, vegetation clearing, disking, grading, and the development of the surrounding area. The vegetation on the property mainly consists of two- to six-inch-high non-native weeds and grasses. In addition, a row of shrubs and pine trees was noted on the western boundary of the subject property along Frederick Street. Other disturbances or alterations to the property include a storm drain culvert with riprap in the southwest corner and a dirt entry road in the southeast corner. A commercial building has recently been constructed on the adjacent parcel to the east and piles of building material, possibly left over from neighboring construction, were identified in the southeast quarter of the APE. In addition, concrete and bits of gravel were located

throughout the property.

The survey did not result in the identification of any cultural resources within the APE. The potential for buried or masked cultural deposits within the project is considered low based upon the research results, lack of identified resources on this property, and previous impacts to the property.

Plate 5.2–1: Overview of the project, facing north.

Plate 5.2–2: Overview of the project, facing east.

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6.0 RECOMMENDATIONS

The cultural resources study for the Centerpointe Project was negative for the presence of archaeological sites. The EIC records search showed that while 114 cultural resource sites have been recorded within a one-mile radius of the project, no resources have ever been recorded within the current APE. Furthermore, 36 cultural resource studies have been conducted within one mile of the project. None of the previously conducted studies include any portion of the current APE. Property research indicates the APE has historically been used for agriculture and does not contain bedrock outcrops, natural sources of water, or other landforms that are typically associated with prehistoric use areas. In addition, the archaeological field survey did not identify any historic or prehistoric resources. Therefore, as a result of the research findings, the documented land use of the property, and the current survey, it is unlikely that any cultural resources exist within the project.

Given that no archaeological sites, features, or artifacts have been identified within the project, no potential impacts to cultural resources are associated with the proposed development of the project. The archaeological study was completed in accordance with the City of Moreno Valley environmental policies and CEQA significance evaluation criteria. Based upon the absence of any cultural resources within the APE, site-specific mitigation measures will not be required for this project. Further, as a result of previous ground-disturbing activities and the absence of recorded cultural resources within the project boundaries, there is little potential for cultural resources to be present or disturbed by the proposed development. No further archaeological study is recommended as a condition of permit approval based upon the records search and the results of the field survey.

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7.0 CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this archaeological report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

May 30, 2018

Brian F. Smith
Principal Investigator

Date

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APPENDIX A

Qualifications of Key Personnel

Attachment: Project 1_Cultural Resources Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Brian F. Smith, MA

Owner, Principal Investigator

Brian F. Smith and Associates, Inc.
14010 Poway Road • Suite A •
Phone: (858) 679-8218 • Fax: (858) 679-9896 • E-Mail: bsmith@bfsa-ca.com

Education

Master of Arts, History, University of San Diego, California	1982
Bachelor of Arts, History, and Anthropology, University of San Diego, California	1975

Professional Memberships

Society for California Archaeology

Experience

Principal Investigator — 1977–Present
Brian F. Smith and Associates, Inc. — Poway, California

Brian F. Smith is the owner and principal historical and archaeological consultant for Brian F. Smith and Associates. Over the past 32 years, he has conducted over 2,500 cultural resource studies in California, Arizona, Nevada, Montana, and Texas. These studies include every possible aspect of archaeology from literature searches and large-scale surveys to intensive data recovery excavations. Reports prepared by Mr. Smith have been submitted to all facets of local, state, and federal review agencies, including the US Army Crops of Engineers, the Bureau of Land Management, the Bureau of Reclamation, the Department of Defense, and the Department of Homeland Security. In addition, Mr. Smith has conducted studies for utility companies (Sempra Energy) and state highway departments (CalTrans).

Professional Accomplishments

These selected major professional accomplishments represent research efforts that have added significantly to the body of knowledge concerning the prehistoric life ways of cultures once present in the Southern California area and historic settlement since the late 18th century. Mr. Smith has been principal investigator on the following select projects, except where noted.

Downtown San Diego Mitigation and Monitoring Reporting Programs: Large numbers of downtown San Diego mitigation and monitoring projects submitted to the Centre City Development Corporation, some of which included Strata (2008), Hotel Indigo (2008), Lofts at 707 10th Avenue Project (2007), Breeza (2007), Bayside at the Embarcadero (2007), Aria (2007), Icon (2007), Vantage Pointe (2007), Aperture (2007), Sapphire Tower (2007), Lofts at 655 Sixth Avenue (2007), Metrowork (2007), The Legend (2006), The Mark (2006), Smart Corner (2006), Lofts at 677 7th Avenue (2005), Aloft on Cortez Hill (2005), Front and

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Beech Apartments (2003), Bella Via Condominiums (2003), Acqua Vista Residential Tower (2003), Northblock Lofts (2003), Westin Park Place Hotel (2001), Parkloft Apartment Complex (2001), Renaissance Park (2001), and Laurel Bay Apartments (2001).

Archaeology at the Padres Ballpark: Involved the analysis of historic resources within a seven-block area of the "East Village" area of San Diego, where occupation spanned a period from the 1870s to the 1940s. Over a period of two years, BFSA recovered over 200,000 artifacts and hundreds of pounds of metal, construction debris, unidentified broken glass, and wood. Collectively, the Ballpark Project and the other downtown mitigation and monitoring projects represent the largest historical archaeological program anywhere in the country in the past decade (2000-2007).

4S Ranch Archaeological and Historical Cultural Resources Study: Data recovery program consisted of the excavation of over 2,000 square meters of archaeological deposits that produced over one million artifacts, containing primarily prehistoric materials. The archaeological program at 4S Ranch is the largest archaeological study ever undertaken in the San Diego County area and has produced data that has exceeded expectations regarding the resolution of long-standing research questions and regional prehistoric settlement patterns.

Charles H. Brown Site: Attracted international attention to the discovery of evidence of the antiquity of man in North America. Site located in Mission Valley, in the city of San Diego.

Del Mar Man Site: Study of the now famous Early Man Site in Del Mar, California, for the San Diego Science Foundation and the San Diego Museum of Man, under the direction of Dr. Spencer Rogers and Dr. James R. Moriarty.

Old Town State Park Projects: Consulting Historical Archaeologist. Projects completed in the Old Town State Park involved development of individual lots for commercial enterprises. The projects completed in Old Town include Archaeological and Historical Site Assessment for the Great Wall Cafe (1992), Archaeological Study for the Old Town Commercial Project (1991), and Cultural Resources Site Survey at the Old San Diego Inn (1988).

Site W-20, Del Mar, California: A two-year-long investigation of a major prehistoric site in the Del Mar area of the city of San Diego. This research effort documented the earliest practice of religious/ceremonial activities in San Diego County (circa 6,000 years ago), facilitated the projection of major non-material aspects of the La Jolla Complex, and revealed the pattern of civilization at this site over a continuous period of 5,000 years. The report for the investigation included over 600 pages, with nearly 500,000 words of text, illustrations, maps, and photographs documenting this major study.

City of San Diego Reclaimed Water Distribution System: A cultural resource study of nearly 400 miles of pipeline in the city and county of San Diego.

Master Environmental Assessment Project, City of Poway: Conducted for the City of Poway to produce a complete inventory of all recorded historic and prehistoric properties within the city. The information was used in conjunction with the City's General Plan Update to produce a map matrix of the city showing areas of high, moderate, and low potential for the presence of cultural resources. The effort also included the development of the City's Cultural Resource Guidelines, which were adopted as City policy.

Draft of the City of Carlsbad Historical and Archaeological Guidelines: Contracted by the City of Carlsbad to produce the draft of the City's historical and archaeological guidelines for use by the Planning Department of the City.

The Mid-Bayfront Project for the City of Chula Vista: Involved a large expanse of undeveloped agricultural land situated between the railroad and San Diego Bay in the northwestern portion of the city. The study included the analysis of some potentially historic features and numerous prehistoric sites.

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Cultural Resources Survey and Test of Sites Within the Proposed Development of the Audie Murphy Ranch, Riverside County, California: Project manager/director of the investigation of 1,113.4 acres and 43 sites, both prehistoric and historic—included project coordination; direction of field crews; evaluation of sites for significance based on County of Riverside and CEQA guidelines; assessment of cupule, pictograph, and rock shelter sites, co-authoring of cultural resources project report. February-September 2002.

Cultural Resources Evaluation of Sites Within the Proposed Development of the Otay Ranch Village 13 Project, San Diego County, California: Project manager/director of the investigation of 1,947 acres and 76 sites, both prehistoric and historic—included project coordination and budgeting; direction of field crews; assessment of sites for significance based on County of San Diego and CEQA guidelines; co-authoring of cultural resources project report. May-November 2002.

Cultural Resources Survey for the Remote Video Surveillance Project, El Centro Sector, Imperial County: Project manager/director for a survey of 29 individual sites near the U.S./Mexico Border for proposed video surveillance camera locations associated with the San Diego Border barrier Project—project coordination and budgeting; direction of field crews; site identification and recordation; assessment of potential impacts to cultural resources; meeting and coordinating with U.S. Army Corps of Engineers, U.S. Border Patrol, and other government agencies involved; co-authoring of cultural resources project report. January, February, and July 2002.

Cultural Resources Survey and Test of Sites Within the Proposed Development of the Menifee West GPA, Riverside County, California: Project manager/director of the investigation of nine sites, both prehistoric and historic—included project coordination and budgeting; direction of field crews; assessment of sites for significance based on County of Riverside and CEQA guidelines; historic research; co-authoring of cultural resources project report. January-March 2002.

Mitigation of An Archaic Cultural Resource for the Eastlake III Woods Project for the City of Chula Vista, California: Project archaeologist/ director—included direction of field crews; development and completion of data recovery program including collection of material for specialized faunal and botanical analyses; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; co-authoring of cultural resources project report, in prep. September 2001-March 2002.

Cultural Resources Survey and Test of Sites Within the Proposed French Valley Specific Plan/EIR, Riverside County, California: Project manager/director of the investigation of two prehistoric and three historic sites—included project coordination and budgeting; survey of project area; Native American consultation; direction of field crews; assessment of sites for significance based on CEQA guidelines; cultural resources project report in prep. July-August 2000.

Cultural Resources Survey and Test of Sites Within the Proposed Lawson Valley Project, San Diego County, California: Project manager/director of the investigation of 28 prehistoric and two historic sites—included project coordination; direction of field crews; assessment of sites for significance based on CEQA guidelines; cultural resources project report in prep. July-August 2000.

Cultural Resource Survey and Geotechnical Monitoring for the Mohyi Residence Project, La Jolla, California: Project manager/director of the investigation of a single-dwelling parcel—included project coordination; field survey; assessment of parcel for potentially buried cultural deposits; monitoring of geotechnichal borings; authoring of cultural resources project report. Brian F. Smith and Associates, San Diego, California. June 2000.

Enhanced Cultural Resource Survey and Evaluation for the Prewitt/Schmucker/Cavadias Project, La Jolla, California: Project manager/director of the investigation of a single-dwelling parcel—included project coordination; direction of field crews; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. June 2000.

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Cultural Resources Survey and Test of Sites Within the Proposed Development of the Menifee Ranch, Riverside County, California: Project manager/director of the investigation of one prehistoric and five historic sites—included project coordination and budgeting; direction of field crews; feature recordation; historic structure assessments; assessment of sites for significance based on CEQA guidelines; historic research; co-authoring of cultural resources project report. February-June 2000.

Salvage Mitigation of a Portion of the San Diego Presidio Identified During Water Pipe Construction for the City of San Diego, California: Project archaeologist/director—included direction of field crews; development and completion of data recovery program; management of artifact collections cataloging and curation; data synthesis and authoring of cultural resources project report in prep. April 2000.

Enhanced Cultural Resource Survey and Evaluation for the Tyrian 3 Project, La Jolla, California: Project manager/director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. April 2000.

Enhanced Cultural Resource Survey and Evaluation for the Lamont 5 Project, Pacific Beach, California: Project manager/director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. April 2000.

Enhanced Cultural Resource Survey and Evaluation for the Reiss Residence Project, La Jolla, California: Project manager/director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. March-April 2000.

Salvage Mitigation of a Portion of Site SDM-W-95 (CA-SDI-211) for the Poinsettia Shores Santalina Development Project and Caltrans, Carlsbad, California: Project achaeologist/ director—included direction of field crews; development and completion of data recovery program; management of artifact collections cataloging and curation; data synthesis and authoring of cultural resources project report in prep. December 1999-January 2000.

Survey and Testing of Two Prehistoric Cultural Resources for the Airway Truck Parking Project, Otay Mesa, California: Project archaeologist/director—included direction of field crews; development and completion of testing recovery program; assessment of site for significance based on CEQA guidelines; authoring of cultural resources project report, in prep. December 1999-January 2000.

Cultural Resources Phase I and II Investigations for the Tin Can Hill Segment of the Immigration and Naturalization Services Triple Fence Project Along the International Border, San Diego County, California: Project manager/director for a survey and testing of a prehistoric quarry site along the border—NRHP eligibility assessment; project coordination and budgeting; direction of field crews; feature recordation; meeting and coordinating with U.S. Army Corps of Engineers; co-authoring of cultural resources project report. December 1999-January 2000.

Mitigation of a Prehistoric Cultural Resource for the Westview High School Project for the City of San Diego, California: Project archaeologist/ director—included direction of field crews; development and completion of data recovery program including collection of material for specialized faunal and botanical analyses; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; co-authoring of cultural resources project report, in prep. October 1999-January 2000.

Mitigation of a Prehistoric Cultural Resource for the Otay Ranch SPA-One West Project for the City of Chula Vista, California: Project archaeologist/director—included direction of field crews; development of data recovery program; management of artifact collections cataloging and curation; assessment of

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site for significance based on CEQA guidelines; data synthesis; authoring of cultural resources project report, in prep. September 1999-January 2000.

Monitoring of Grading for the Herschel Place Project, La Jolla, California: Project archaeologist/ monitor—included monitoring of grading activities associated with the development of a single-dwelling parcel. September 1999.

Survey and Testing of a Historic Resource for the Osterkamp Development Project, Valley Center, California: Project archaeologist/ director—included direction of field crews; development and completion of data recovery program; budget development; assessment of site for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report. July-August 1999.

Survey and Testing of a Prehistoric Cultural Resource for the Proposed College Boulevard Alignment Project, Carlsbad, California: Project manager/director —included direction of field crews; development and completion of testing recovery program; assessment of site for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report, in prep. July-August 1999.

Survey and Evaluation of Cultural Resources for the Palomar Christian Conference Center Project, Palomar Mountain, California: Project archaeologist—included direction of field crews; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report. July-August 1999.

Survey and Evaluation of Cultural Resources at the Village 2 High School Site, Otay Ranch, City of Chula Vista, California: Project manager/director —management of artifact collections cataloging and curation; assessment of site for significance based on CEQA guidelines; data synthesis; authoring of cultural resources project report. July 1999.

Cultural Resources Phase I, II, and III Investigations for the Immigration and Naturalization Services Triple Fence Project Along the International Border, San Diego County, California: Project manager/director for the survey, testing, and mitigation of sites along border—supervision of multiple field crews, NRHP eligibility assessments, Native American consultation, contribution to Environmental Assessment document, lithic and marine shell analysis, authoring of cultural resources project report. August 1997-January 2000.

Phase I, II, and II Investigations for the Scripps Poway Parkway East Project, Poway California: Project archaeologist/project director—included recordation and assessment of multicomponent prehistoric and historic sites; direction of Phase II and III investigations; direction of laboratory analyses including prehistoric and historic collections; curation of collections; data synthesis; coauthorship of final cultural resources report. February 1994; March-September 1994; September-December 1995.

Archaeological Evaluation of Cultural Resources Within the Proposed Corridor for the San Elijo Water Reclamation System Project, San Elijo, California: Project manager/director —test excavations; direction of artifact identification and analysis; graphics production; coauthorship of final cultural resources report. December 1994-July 1995.

Evaluation of Cultural Resources for the Environmental Impact Report for the Rose Canyon Trunk Sewer Project, San Diego, California: Project manager/Director —direction of test excavations; identification and analysis of prehistoric and historic artifact collections; data synthesis; co-authorship of final cultural resources report, San Diego, California. June 1991-March 1992.

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Reports/Papers

Author, coauthor, or contributor to over 2,500 cultural resources management publications, a selection of which are presented below.

2015 An Archaeological/Historical Study for the Safari Highlands Ranch Project, City of Escondido, County of San Diego.

2015 A Phase I and II Cultural Resources Assessment for the Decker Parcels II Project, Planning Case No. 36962, Riverside County, California.

2015 A Phase I and II Cultural Resources Assessment for the Decker Parcels I Project, Planning Case No. 36950, Riverside County, California.

2015 Cultural Resource Data Recovery and Mitigation Monitoring Program for Site SDI-10,237 Locus F, Everly Subdivision Project, El Cajon, California.

2015 Phase I Cultural Resource Survey for the Woodward Street Senior Housing Project, City of San Marcos, California (APN 218-120-31).

2015 An Updated Cultural Resource Survey for the Box Springs Project (TR 33410), APNs 255-230-010, 255-240-005, 255-240-006, and Portions of 257-180-004, 257-180-005, and 257-180-006.

2015 A Phase I and II Cultural Resource Report for the Lake Ranch Project, TR 36730, Riverside County, California.

2015 A Phase II Cultural Resource Assessment for the Munro Valley Solar Project, Inyo County, California.

2014 Cultural Resources Monitoring Report for the Diamond Valley Solar Project, Community of Winchester, County of Riverside.

2014 National Historic Preservation Act Section 106 Compliance for the Proposed Saddleback Estates Project, Riverside County, California.

2014 A Phase II Cultural Resource Evaluation Report for RIV-8137 at the Toscana Project, TR 36593, Riverside County, California.

2014 Cultural Resources Study for the Estates at Del Mar Project, City of Del Mar, San Diego, California (TTM 14-001).

2014 Cultural Resources Study for the Aliso Canyon Major Subdivision Project, Rancho Santa Fe, San Diego County, California.

2014 Cultural Resources Due Diligence Assessment of the Ocean Colony Project, City of Encinitas.

2014 A Phase I and Phase II Cultural Resource Assessment for the Citrus Heights II Project, TTM 36475, Riverside County, California.

2013 A Phase I Cultural Resource Assessment for the Modular Logistics Center, Moreno Valley, Riverside County, California.

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2013 A Phase I Cultural Resources Survey of the Ivey Ranch Project, Thousand Palms, Riverside County, California.

2013 Cultural Resources Report for the Emerald Acres Project, Riverside County, California.

2013 A Cultural Resources Records Search and Review for the Pala Del Norte Conservation Bank Project, San Diego County, California.

2013 An Updated Phase I Cultural Resources Assessment for Tentative Tract Maps 36484 and 36485, Audie Murphy Ranch, City of Menifee, County of Riverside.

2013 El Centro Town Center Industrial Development Project (EDA Grant No. 07-01-06386); Result of Cultural Resource Monitoring.

2013 Cultural Resources Survey Report for the Renda Residence Project, 9521 La Jolla Farms Road, La Jolla, California.

2013 A Phase I Cultural Resource Study for the Ballpark Village Project, San Diego, California.

2013 Archaeological Monitoring and Mitigation Program, San Clemente Senior Housing Project, 2350 South El Camino Real, City of San Clemente, Orange County, California (CUP No. 06-065; APN-060-032-04).

2012 Mitigation Monitoring Report for the Los Peñasquitos Recycled Water Pipeline.

2012 Cultural Resources Report for Menifee Heights (Tract 32277).

2012 A Phase I Cultural Resource Study for the Altman Residence at 9696 La Jolla Farms Road, La Jolla, California 92037.

2012 Mission Ranch Project (TM 5290-1/MUP P87-036W3): Results of Cultural Resources Monitoring During Mass Grading.

2012 A Phase I Cultural Resource Study for the Payan Property Project, San Diego, California.

2012 Phase I Archaeological Survey of the Rieger Residence, 13707 Durango Drive, Del Mar, California 92014, APN 300-369-49.

2011 Mission Ranch Project (TM 5290-1/MUP P87-036W3): Results of Cultural Resources Monitoring During Mass Grading.

2011 Mitigation Monitoring Report for the 1887 Viking Way Project, La Jolla, California.

2011 Cultural Resource Monitoring Report for the Sewer Group 714 Project.

2011 Results of Archaeological Monitoring at the 10th Avenue Parking Lot Project, City of San Diego, California (APNs 534-194-02 and 03).

2011 Archaeological Survey of the Pelberg Residence for a Bulletin 560 Permit Application; 8335 Camino Del Oro; La Jolla, California 92037 APN 346-162-01-00 .

2011 A Cultural Resources Survey Update and Evaluation for the Robertson Ranch West Project and an Evaluation of National Register Eligibility of Archaeological sites for Sites for Section 106 Review (NHPA).

2011 Mitigation Monitoring Report for the 43rd and Logan Project.

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2011 Mitigation Monitoring Report for the Sewer Group 682 M Project, City of San Diego Project #174116.

2011 A Phase I Cultural Resource Study for the Nooren Residence Project, 8001 Calle de la Plata, La Jolla, California, Project No. 226965.

2011 A Phase I Cultural Resource Study for the Keating Residence Project, 9633 La Jolla Farms Road, La Jolla, California 92037.

2010 Mitigation Monitoring Report for the 15th & Island Project, City of San Diego; APNs 535-365-01, 535-365-02 and 535-392-05 through 535-392-07.

2010 Archaeological Resource Report Form: Mitigation Monitoring of the Sewer and Water Group 772 Project, San Diego, California, W.O. Nos. 187861 and 178351.

2010 Pottery Canyon Site Archaeological Evaluation Project, City of San Diego, California, Contract No. H105126.

2010 Archaeological Resource Report Form: Mitigation Monitoring of the Racetrack View Drive Project, San Diego, California; Project No. 163216.

2010 A Historical Evaluation of Structures on the Butterfield Trails Property.

2010 Historic Archaeological Significance Evaluation of 1761 Haydn Drive, Encinitas, California (APN 260-276-07-00).

2010 Results of Archaeological Monitoring of the Heller/Nguyen Project, TPM 06-01, Poway, California.

2010 Cultural Resource Survey and Evaluation Program for the Sunday Drive Parcel Project, San Diego County, California, APN 189-281-14.

2010 Archaeological Resource Report Form: Mitigation Monitoring of the Emergency Garnet Avenue Storm Drain Replacement Project, San Diego, California, Project No. B10062

2010 An Archaeological Study for the 1912 Spindrift Drive Project

2009 Cultural Resource Assessment of the North Ocean Beach Gateway Project City of San Diego #64A-003A; Project #154116.

2009 Archaeological Constraints Study of the Morgan Valley Wind Assessment Project, Lake County, California.

2008 Results of an Archaeological Review of the Helen Park Lane 3.1-acre Property (APN 314-561-31), Poway, California.

2008 Archaeological Letter Report for a Phase I Archaeological Assessment of the Valley Park Condominium Project, Ramona, California; APN 282-262-75-00.

2007 Archaeology at the Ballpark. Brian F. Smith and Associates, San Diego, California. Submitted to the Centre City Development Corporation.

2007 Result of an Archaeological Survey for the Villages at Promenade Project (APNs 115-180-007-3,115-180-049-1, 115-180-042-4, 115-180-047-9) in the City of Corona, Riverside County.

2007 Monitoring Results for the Capping of Site CA-SDI-6038/SDM-W-5517 within the Katzer Jamul Center Project; P00-017.

2006 Archaeological Assessment for The Johnson Project (APN 322-011-10), Poway, California.

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2005 Results of Archaeological Monitoring at the El Camino Del Teatro Accelerated Sewer Replacement Project (Bid No. K041364; WO # 177741; CIP # 46-610.6.

2005 Results of Archaeological Monitoring at the Baltazar Draper Avenue Project (Project No. 15857; APN: 351-040-09).

2004 TM 5325 ER #03-14-043 Cultural Resources.

2004 An Archaeological Survey and an Evaluation of Cultural Resources at the Salt Creek Project. Report on file at Brian F. Smith and Associates.

2003 An Archaeological Assessment for the Hidden Meadows Project, San Diego County, TM 5174, Log No. 99-08-033. Report on file at Brian F. Smith and Associates.

2003 An Archaeological Survey for the Manchester Estates Project, Coastal Development Permit #02-009, Encinitas, California. Report on file at Brian F. Smith and Associates.

2003 Archaeological Investigations at the Manchester Estates Project, Coastal Development Permit #02-009, Encinitas, California. Report on file at Brian F. Smith and Associates.

2003 Archaeological Monitoring of Geological Testing Cores at the Pacific Beach Christian Church Project. Report on file at Brian F. Smith and Associates.

2003 San Juan Creek Drilling Archaeological Monitoring. Report on file at Brian F. Smith and Associates.

2003 Evaluation of Archaeological Resources Within the Spring Canyon Biological Mitigation Area, Otay Mesa, San Diego County, California. Brian F. Smith and Associates, San Diego, California.

2002 An Archaeological/Historical Study for the Otay Ranch Village 13 Project (et al.). Brian F. Smith and Associates, San Diego, California.

2002 An Archaeological/Historical Study for the Audie Murphy Ranch Project (et al.). Brian F. Smith and Associates, San Diego, California.

2002 Results of an Archaeological Survey for the Remote Video Surveillance Project, El Centro Sector, Imperial County, California. Brian F. Smith and Associates, San Diego, California.

2002 A Cultural Resources Survey and Evaluation for the Proposed Robertson Ranch Project, City of Carlsbad. Brian F. Smith and Associates, San Diego, California.

2002 Archaeological Mitigation of Impacts to Prehistoric Site SDI-7976 for the Eastlake III Woods Project, Chula Vista, California. Brian F. Smith and Associates, San Diego, California.

2002 An Archaeological/Historical Study for Tract No. 29777, Menifee West GPA Project, Perris Valley, Riverside County. Brian F. Smith and Associates, San Diego, California.

2002 An Archaeological/Historical Study for Tract No. 29835, Menifee West GPA Project, Perris Valley, Riverside County. Brian F. Smith and Associates, San Diego, California.

2001 An Archaeological Survey and Evaluation of a Cultural Resource for the Moore Property, Poway. Brian F. Smith and Associates, San Diego, California.

2001 An Archaeological Report for the Mitigation, Monitoring, and Reporting Program at the Water and Sewer Group Job 530A, Old Town San Diego. Brian F. Smith and Associates, San Diego, California.

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2001 A Cultural Resources Impact Survey for the High Desert Water District Recharge Site 6 Project, Yucca Valley. Brian F. Smith and Associates, San Diego, California.

2001 Archaeological Mitigation of Impacts to Prehistoric Site SDI-13,864 at the Otay Ranch SPA-One West Project. Brian F. Smith and Associates, San Diego, California.

2001 A Cultural Resources Survey and Site Evaluations at the Stewart Subdivision Project, Moreno Valley, County of San Diego. Brian F. Smith and Associates, San Diego, California.

2000 An Archaeological/Historical Study for the French Valley Specific Plan/EIR, French Valley, County of Riverside. Brian F. Smith and Associates, San Diego, California.

2000 Results of an Archaeological Survey and the Evaluation of Cultural Resources at The TPM#24003–Lawson Valley Project. Brian F. Smith and Associates, San Diego, California.

2000 Archaeological Mitigation of Impacts to Prehistoric Site SDI-5326 at the Westview High School Project for the Poway Unified School District. Brian F. Smith and Associates, San Diego, California.

2000 An Archaeological/Historical Study for the Menifee Ranch Project. Brian F. Smith and Associates, San Diego, California.

2000 An Archaeological Survey and Evaluation of Cultural Resources for the Bernardo Mountain Project, Escondido, California. Brian F. Smith and Associates, San Diego, California.

2000 A Cultural Resources Impact Survey for the Nextel Black Mountain Road Project, San Diego, California. Brian F. Smith and Associates, San Diego, California.

2000 A Cultural Resources Impact Survey for the Rancho Vista Project, 740 Hilltop Drive, Chula Vista, California. Brian F. Smith and Associates, San Diego, California.

2000 A Cultural Resources Impact Survey for the Poway Creek Project, Poway, California. Brian F. Smith and Associates, San Diego, California.

2000 Cultural Resource Survey and Geotechnical Monitoring for the Mohyi Residence Project. Brian F. Smith and Associates, San Diego, California.

2000 Enhanced Cultural Resource Survey and Evaluation for the Prewitt/Schmucker/ Cavadias Project. Brian F. Smith and Associates, San Diego, California.

2000 Enhanced Cultural Resource Survey and Evaluation for the Lamont 5 Project. Brian F. Smith and Associates, San Diego, California.

2000 Salvage Excavations at Site SDM-W-95 (CA-SDI-211) for the Poinsettia Shores Santalina Development Project, Carlsbad, California. Brian F. Smith and Associates, San Diego, California.

2000 Enhanced Cultural Resource Survey and Evaluation for the Reiss Residence Project, La Jolla, California. Brian F. Smith and Associates, San Diego, California.

2000 Enhanced Cultural Resource Survey and Evaluation for the Tyrian 3 Project, La Jolla, California. Brian F. Smith and Associates, San Diego, California.

2000 A Report for an Archaeological Evaluation of Cultural Resources at the Otay Ranch Village Two SPA, Chula Vista, California. Brian F. Smith and Associates, San Diego, California.

2000 An Archaeological Evaluation of Cultural Resources for the Airway Truck Parking Project, Otay Mesa, County of San Diego. Brian F. Smith and Associates, San Diego, California.

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2000 Results of an Archaeological Survey and Evaluation of a Resource for the Tin Can Hill Segment of the Immigration and Naturalization and Immigration Service Border Road, Fence, and Lighting Project, San Diego County, California. Brian F. Smith and Associates, San Diego, California.

1999 An Archaeological Survey of the Home Creek Village Project, 4600 Block of Home Avenue, San Diego, California. Brian F. Smith and Associates, San Diego, California.

1999 An Archaeological Survey for the Sgobassi Lot Split, San Diego County, California. Brian F. Smith and Associates, San Diego, California.

1999 An Evaluation of Cultural Resources at the Otay Ranch Village 11 Project. Brian F. Smith and Associates, San Diego, California.

1999 An Archaeological/Historical Survey and Evaluation of a Cultural Resource for The Osterkamp Development Project, Valley Center, California. Brian F. Smith and Associates, San Diego, California.

1999 An Archaeological Survey and Evaluation of Cultural Resources for the Palomar Christian Conference Center Project, Palomar Mountain, California. Brian F. Smith and Associates, San Diego, California.

1999 An Archaeological Survey and Evaluation of a Cultural Resource for the Proposed College Boulevard Alignment Project. Brian F. Smith and Associates, San Diego, California.

1999 Results of an Archaeological Evaluation for the Anthony's Pizza Acquisition Project in Ocean Beach, City of San Diego (with L. Pierson and B. Smith). Brian F. Smith and Associates, San Diego, California.

1996 An Archaeological Testing Program for the Scripps Poway Parkway East Project. Brian F. Smith and Associates, San Diego, California.

1995 Results of a Cultural Resources Study for the 4S Ranch. Brian F. Smith and Associates, San Diego, California.

1995 Results of an Archaeological Evaluation of Cultural Resources Within the Proposed Corridor for the San Elijo Water Reclamation System. Brian F. Smith and Associates, San Diego, California.

1994 Results of the Cultural Resources Mitigation Programs at Sites SDI-11,044/H and SDI-12,038 at the Salt Creek Ranch Project . Brian F. Smith and Associates, San Diego, California.

1993 Results of an Archaeological Survey and Evaluation of Cultural Resources at the Stallion Oaks Ranch Project. Brian F. Smith and Associates, San Diego, California.

1992 Results of an Archaeological Survey and the Evaluation of Cultural Resources at the Ely Lot Split Project. Brian F. Smith and Associates, San Diego, California.

1991 The Results of an Archaeological Study for the Walton Development Group Project. Brian F. Smith and Associates, San Diego, California.

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Andrew J. Garrison, M.A., RPA

Senior Project Archaeologist

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Education

Master of Arts, Public History, University of California, Riverside	2009
Bachelor of Science, Anthropology, University of California, Riverside	2005
Bachelor of Arts, History, University of California, Riverside	2005

Professional Memberships

Register of Professional Archaeologists
Society for California Archaeology
Society for American Archaeology
California Council for the Promotion of History
Society of Primitive Technology
Lithic Studies Society
California Preservation Foundation
Pacific Coast Archaeological Society

Experience

Senior Project Archaeologist — June 2017–Present
Brian F. Smith and Associates, Inc. — Poway, California

Project management of all phases of archaeological investigations for local, state, and federal agencies including National Register of Historic Places (NRHP) and California Environmental Quality Act (CEQA) level projects interacting with clients, sub-consultants, and lead agencies. Supervise and perform fieldwork including archaeological survey, monitoring, site testing, comprehensive site records checks, and historic building assessments. Perform and oversee technological analysis of prehistoric lithic assemblages. Author or co-author cultural resource management reports submitted to private clients and lead agencies.

Senior Archaeologist and GIS Specialist — 2009–2017
Scientific Resource Surveys, Inc. — Orange, California

Served as Project Archaeologist or Principal Investigator on multiple projects, including archaeological monitoring, cultural resource surveys, test excavations, and historic building assessments. Directed projects from start to finish, including budget and personnel hours proposals, field and laboratory direction, report writing, technical editing, Native American consultation, and final report submittal. Oversaw all GIS projects including data collection, spatial analysis, and map creation.

Preservation Researcher — 2009
City of Riverside Modernism Survey — Riverside, California

Completed DPR Primary, District, and Building, Structure and Object Forms for five sites for a grant-funded project to survey designated modern architectural resources within the City of Riverside.

Attachment: Project 1_Cultural Resources Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_Cultural Resources Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Information Officer — 2005, 2008–2009
Eastern Information Center (EIC), University of California, Riverside — Riverside, California

Processed and catalogued restricted and unrestricted archaeological and historical site record forms. Conducted research projects and records searches for government agencies and private cultural resource firms.

Reports/Papers

2017 A Phase I Cultural Resources Assessment for the Marbella Villa Project, City of Desert Hot Springs, Riverside County, California. Brian F. Smith and Associates, Inc.

2017 Phase I Cultural Resources Survey for TTM 37109, City of Jurupa Valley, County of Riverside. Brian F. Smith and Associates, Inc.

2017 A Phase I Cultural Resources Survey for the Jefferson & Ivy Project, City of Murrieta, California. Brian F. Smith and Associates, Inc.

2017 A Phase I Cultural Resources Assessment for the Nuevo Dollar General Store Project, Riverside County, California. Brian F. Smith and Associates, Inc.

2017 A Phase I Cultural Resource Study for the Westmont Project, Encinitas, California. Brian F. Smith and Associates, Inc.

2017 A Phase I Cultural Resources Assessment for the Winchester Dollar General Store Project, Riverside County, California. Brian F. Smith and Associates, Inc.

2017 Phase I Cultural Resource Assessment for TTM 31810 (42.42 acres) Predico Properties Olive Grove Project. Scientific Resource Surveys, Inc.

2016 John Wayne Airport Jet Fuel Pipeline and Tank Farm Archaeological Monitoring Plan. Scientific Resource Surveys, Inc. On file at the County of Orange, California.

2016 Phase I Cultural Resources Assessment: All Star Super Storage City of Menifee Project, 2015-156. Scientific Resource Surveys, Inc. On file at the Eastern Information Center, University of California, Riverside.

2016 Historic Resource Assessment for 220 South Batavia Street, Orange, CA 92868 Assessor's Parcel Number 041-064-4. Scientific Resource Surveys, Inc. Submitted to the City of Orange as part of Mills Act application.

2015 Historic Resource Report: 807-813 Harvard Boulevard, Los Angeles. Scientific Resource Surveys, Inc. On file at the South Central Coastal Information Center, California State University, Fullerton.

2015 Exploring a Traditional Rock Cairn: Test Excavation at CA-SDI-13/RBLI-26: The Rincon Indian Reservation, San Diego County, California. Scientific Resource Surveys, Inc.

2015 Class III Scientific Resource Surveys, Inc. Survey for The Lynx Cat Granite Quarry and Water Valley Road Widening Project County of San Bernardino, California, Near the Community of Hinkley. Scientific Resource Surveys, Inc. On file at the South Central Coastal Information Center, California State University, Fullerton.

Attachment: Project 1_Cultural Resources Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

2014 Archaeological Phase I: Cultural Resource Survey of the South West Quadrant of Fairview Park, Costa Mesa. Scientific Resource Surveys, Inc. On file at the South Central Coastal Information Center, California State University, Fullerton.

2014 Archaeological Monitoring Results: The New Los Angeles Federal Courthouse. Scientific Resource Surveys, Inc. On file at the South Central Coastal Information Center, California State University, Fullerton.

2012 Bolsa Chica Archaeological Project Volume 7, Technological Analysis of Stone Tools, Lithic Technology at Bolsa Chica: Reduction Maintenance and Experimentation. Scientific Resource Surveys, Inc.

2010 Phase II Cultural Resources Report Site CA=RIV-2160 PM No. 35164. Scientific Resource Surveys, Inc. On file at the Eastern Information Center, University of California, Riverside.

2009 Riverside Modernism Context Survey, contributing author. Available online at the City of Riverside.

Presentations

2017 "Repair and Replace: Lithic Production Behavior as Indicated by the Debitage Assemblage from CA-MRP-283 the Hackney Site." Presented at the Society for California Archaeology Annual Meeting, Fish Camp, California.

2016 "Bones, Stones, and Shell at Bolsa Chica: A Ceremonial Relationship?" Presented at the Society for California Archaeology Annual Meeting, Ontario, California.

2016 "Markers of Time: Exploring Transitions in the Bolsa Chica Assemblage." Presented at the Society for California Archaeology Annual Meeting, Ontario, California.

2016 "Dating Duress: Understanding Prehistoric Climate Change at Bolsa Chica." Presented at the Society for California Archaeology Annual Meeting, Ontario, California.

2015 "Successive Cultural Phasing Of Prehistoric Northern Orange County, California." Presented at the Society for California Archaeology Annual Meeting, Redding, California.

2015 "Southern California Cogged Stone Replication: Experimentation and Results." Presented at the Society for California Archaeology Annual Meeting, Redding, California.

2015 "Prehistoric House Keeping: Lithic Analysis of an Intermediate Horizon House Pit." Presented at the Society for California Archaeology Annual Meeting, Redding, California.

2015 "Pits and Privies: The Use and Disposal of Artifacts from Historic Los Angeles." Presented at the Society for California Archaeology Annual Meeting, Redding, California.

2015 "Grooving in the Past: A Demonstration of the Manufacturing of OGR beads and a look at Past SRS, Inc. Replicative Studies." Demonstration of experimental manufacturing techniques at the January meeting of The Pacific Coast Archaeological Society, Irvine, California.

2014 "From Artifact to Replication: Examining *Olivella* Grooved Bead Manufacturing." Presented at the Society for California Archaeology Annual Meeting, Visalia, California.

2014 "New Discoveries from an Old Collection: Comparing Recently Identified OGR Beads to Those Previously Analyzed from the Encino Village Site." Presented at the Society for California Archaeology Annual Meeting, Visalia, California.

2012 Bolsa Chica Archaeology: Part Seven: Culture and Chronology. Lithic demonstration of experimental manufacturing techniques at the April meeting of The Pacific Coast Archaeological Society, Irvine, California.

2012 "Expedient Flaked Tools from Bolsa Chica: Exploring the Lithic Technological Organization." Presented at the Society for California Archaeology Annual Meeting, San Diego, California.

2012 "Utilitarian and Ceremonial Ground Stone Production at Bolsa Chica Identified Through Production Tools." Presented at the Society for California Archaeology Annual Meeting, San Diego, California.

2012 "Connecting Production Industries at Bolsa Chica: Lithic Reduction and Bead Manufacturing." Presented at the Society for California Archaeology Annual Meeting, San Diego, California.

2011 Bolsa Chica Archaeology: Part Four: Mesa Production Industries. Co-presenter at the April meeting of The Pacific Coast Archaeological Society, Irvine, California.

2011 "Hammerstones from Bolsa Chica and Their Relationship towards Site Interpretation." Presented at the Society for California Archaeology Annual Meeting, Rohnert Park, California.

2011 "Exploring Bipolar Reduction at Bolsa Chica: Debitage Analysis and Replication." Presented at the Society for California Archaeology Annual Meeting, Rohnert Park, California.

Attachment: Project 1_Cultural Resources Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX B

Archaeological Records Search Results

(Deleted for Public Review; Bound Separately)

Attachment: Project 1_Cultural Resources Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX C

NAHC Sacred Lands File Search Results

(Deleted for Public Review; Bound Separately)

Attachment: Project 1_Cultural Resources Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Brian F. Smith and Associates, Inc.
Archaeology / Biology / History / Paleontology / Air Quality / Traffic / Acoustics

Attachment: Project 1_Paleontological Resources Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

30 January 2018

Ms. Tracy Zinn
T&B Planning, Inc.
17542 East 17th Street, Suite 100
Tustin, California 92780

Subject: Paleontological Resource and Monitoring Assessment, Centerpointe Warehouse Project, City of Moreno Valley, Riverside County, California

Dear Ms. Zinn:

Site Location: A paleontological resource assessment has been completed for the Centerpointe warehouse project located north of March Field Air Force Base and northwest of the Perris Reservoir in the City of Moreno Valley, Riverside County, California (Attachments 1 and 2). The 8.78-acre project site is bounded on the south by Brodiaea Avenue and on the west by Frederick Street and is located approximately midway between Alessandro Boulevard and Cactus Avenue. The project site and land to the immediate north are currently fallow agricultural land. On the U. S. Geological Survey 7.5-minute, 1:24,000-scale Riverside East, California topographic quadrangle map, the subject property is located in the northwest quarter of the northwest quarter of Section 13, Township 3 South, Range 4 West, San Bernardino Base and Meridian. The proposed project involves construction of a slab-on-grade warehouse building, truck parking areas, associated infrastructure, and an underground stormwater detention basin.

Geology: Published geologic reports and maps of the project area and immediate surrounding areas include those of D. M. Morton and B. Cox, 2001a (Geologic map of the Riverside East 7.5' quadrangle, Riverside County, California), and D. M. Morton and J. C. Matti, 2001b (Preliminary geologic map of the Sunnymead 7.5' quadrangle, Riverside County, California). The maps indicate that the project site is underlain by lower Pleistocene (approximately 1.8 million to perhaps 200,000 to 300,000 year old) very old alluvial fan deposits ($Qvof_a$, shown in light brown on Attachment 3). A geotechnical report prepared for a nearby project (R. G. Trazo and J. A. Seminara, 2014) identified alluvial sediments to a depth of 30 feet below ground level, but did not comment on the age of the sediments (*i.e.*, whether or not they were Holocene ["modern"] in age or older, being early to late Pleistocene). The age of the sediments is important in determining if they should be accorded a low paleontological sensitivity (Holocene) or a medium or high paleontological sensitivity (Pleistocene).

14010 Poway Road, Suite A, Poway, CA 92064; Phone (858) 679-8218 or (951) 681-9950; Fax (858) 679-9896; www.bfsa-ca.com
Business Office: 14678 Ibex Court, San Diego, CA 92129; Phone (858) 484-0915; Fax (858) 484-0988

Attachment: Project 1_Paleontological Resources Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Paleontological Sensitivity: Previous paleontological sensitivity maps generated by the Riverside County Land Information System ranked the Moreno Valley area as having a "High Potential/Sensitivity (High B)," which was "based on [the presence of] geologic formations or mappable rock units that contain[ed] fossilized body elements, and trace fossils such as tracks, nests, and eggs. These fossils occur on or below the surface." The category "High B" indicates that fossils are likely to be encountered at or below four feet of depth, and could be impacted during excavation by construction activities. The terminology previously used for a "High B" paleontological sensitivity has since been changed (2017) and is now referred to as "Medium" sensitivity (Attachment 4). Alluvial fan sediments with a Medium resource potential or Medium resource sensitivity to yield nonrenewable paleontological resources (*i.e.*, fossils) are shown in amber tint on Attachment 4.

Records Search Results: Based on a paleontological literature review and a collections and records search conducted by the Geological Sciences Division of the San Bernardino County Museum in Redlands, California for a nearby project site (Moreno Valley Logistics Center; E. G. Scott, March 12, 2015, attached), older Pleistocene alluvial fan deposits ($Qvof_a$ on Attachment 3) have a high potential to contain significant nonrenewable paleontological resources (*i.e.*, fossils), and were thus assigned a "high paleontological resource sensitivity" by Scott (2015). Similar older Pleistocene sediments throughout the lowland (valley) areas of western Riverside County and the Inland Empire have been reported to yield significant fossils of extinct terrestrial mammals from the last Ice Age (see references in Scott, 2015), such as mammoths, mastodons, giant ground sloths, dire wolves, short-faced bears, saber-toothed cats, large and small horses, camels, and bison. A collections and records search report solicited from the Vertebrate Paleontology Section of the Natural History Museum of Los Angeles County (LACM) for the nearby Brodiaea Avenue and Heacock Street Warehouse project site (S. A. McLeod, 2017, attached) also did not identify any known fossil localities within the boundaries of that project, nor within a one-mile radius. The closest recorded fossil locality cited by McLeod (2017) is LACM loc. 4540, which yielded fossil horse remains (*Equus* sp.) from a location more than eight miles to the east in the San Timoteo Badlands, east of the city of Moreno Valley. The San Timoteo Badlands have yielded a considerable number of Tertiary vertebrate and plant fossils. However, the closest recorded fossil locality may be that reported by R. E. Reynolds (2004) from a location several miles northeast of the current project site. The only fossil recovered there was a limb bone of an unidentified species of *Bison*.

Recommendations: Because of the Medium paleontological sensitivity (previously High B) assigned to the lower Pleistocene older alluvial fan deposits across the site ($Qvof_a$ on Attachment 3), full-time paleontological monitoring of mass grading and excavation (utility trenching, etc.) activities greater than four feet in depth in areas so mapped should be required in order to mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources. The age of these sediments is more important in determining the need for paleontological monitoring than the possible depth of their current burial.

However, we are unaware of the depth that earthmoving activities, including utility trenching and footing excavations, will reach at the project site. We assume that the building structure will be slab on grade, and thus may not require extensive removals, depending on the geotechnical conclusions and requirements for the project. Excavation of the retention basin in the southeast

corner of the job site will certainly need to be monitored paleontologically. The mitigation program should be consistent with the provisions of the California Environmental Quality Act (CEQA), regulations currently implemented by the City of Moreno Valley (as the lead agency for the project), the County of Riverside, and the proposed guidelines of the Society of Vertebrate Paleontology (see page 5, following).

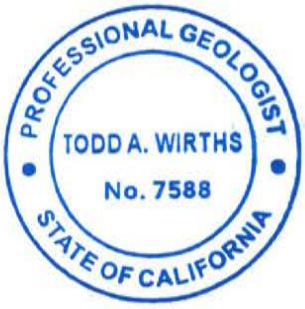
If you have any questions concerning this evaluation, please feel free to contact us at our Poway address. Thank you for the opportunity to have provided paleontological services for this project.

Sincerely,

George L. Kennedy, Ph.D.
Senior Paleontologist

Todd Wirths, M.S.
California Professional Geologist No. 7588

Attachments: Index maps, geologic map, paleontological sensitivity map, and LACM and SBCM records search reports



Attachment: Project 1_Paleontological Resources Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

References:

McLeod, S. A. 2017. Paleontological resources records search for the proposed Brodiaea Avenue & Heacock Street Warehouse project, BFSA Project # 17-166, in Moreno Valley, Riverside County, project area. Unpublished paleontological records search report prepared for Brian F. Smith and Associates, Inc., Poway by the Section of Vertebrate Paleontology, Natural History Museum of Los Angeles County, Los Angeles. (Copy attached.)

Morton, D. M., and Cox, B. 2001a. Geologic map of the Riverside East 7.5' quadrangle, Riverside County, California: U. S. Geological Survey Open-File Report 01-452, scale 1:24,000.

Morton, D. M., and Matti, J. C. 2001b. Preliminary geologic map of the Sunnymead 7.5' quadrangle, Riverside County, California: U. S. Geological Survey Open-File Report 01-450, scale 1:24,000.

Reynolds, R. E. 2004. Paleontological resource investigation, Moreno Highlands fault investigation. *In* unpublished geologic report prepared by Leighton & Associates, 2004, Preliminary fault investigation, Tentative Tract Map No. 32501, Moreno Highlands, City of Moreno Valley, Project No. 111061-1031.

Scott, E. G. 2015. Paleontology literature and records review, Moreno Valley Logistics Center, City of Moreno Valley, Riverside County, California. Unpublished paleontological records search report prepared for Brian F. Smith and Associates, Inc., Poway by the Division of Geological Sciences, San Bernardino County Museum, Redlands. (Copy attached.)

Trazo, R. G., and Seminara, J. A. 2014. Geotechnical investigation, proposed Moreno Valley Logistics Center, SWC Krameria Avenue and Indian Street, Moreno Valley, California. Unpublished geotechnical report prepared for ProLogis, Ontario, California, by Southern California Geotechnical, Inc., Yorba Linda, California.

Attachment: Project 1_Paleontological Resources Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Attachment: Project 1_Paleontological Resources Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Paleontological Mitigation Program

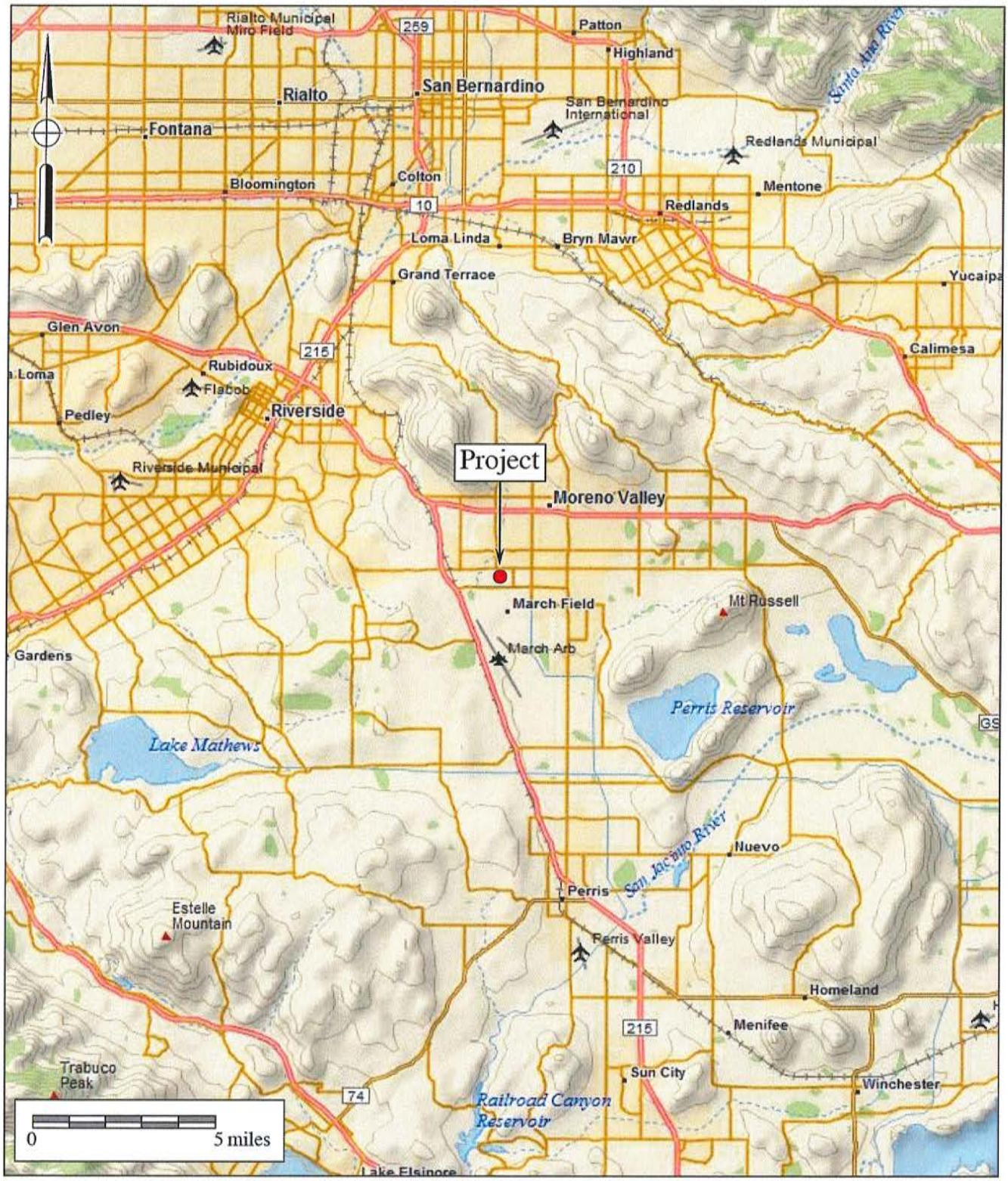
Centerpointe Warehouse Project

1. Monitoring of mass grading and excavation activities in areas identified as likely to contain paleontological resources by a qualified paleontologist or paleontological monitor. Full-time monitoring will be conducted in areas of grading or excavation in undisturbed, very old alluvial fan sediments ($Qvof_a$ on Attachment 3) at depths greater than four feet. Paleontological monitors will be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. The monitor must be empowered to temporarily halt or divert equipment to allow for the removal of abundant or large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface, or if present, are determined upon exposure and examination by qualified paleontological personnel to have a low potential to contain or yield fossil resources.

2. Preparation of recovered specimens to a point of identification and permanent preservation, including screen washing sediments to recover small invertebrates and vertebrates, if necessary. Preparation of individual vertebrate fossils is often more time-consuming than for accumulations of invertebrate fossils.

3. Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage (*e.g.*, the Western Science Center Museum, 2345 Searl Parkway, Hemet, California 92543). The paleontological program should include a written repository agreement prior to the initiation of mitigation activities.

4. Preparation of a final monitoring and mitigation report of findings and significance, including lists of all fossils recovered and necessary maps and graphics to accurately record their original location. The report, when submitted to the appropriate lead agency (City of Moreno Valley), will signify satisfactory completion of the project program to mitigate impacts to any paleontological resources.



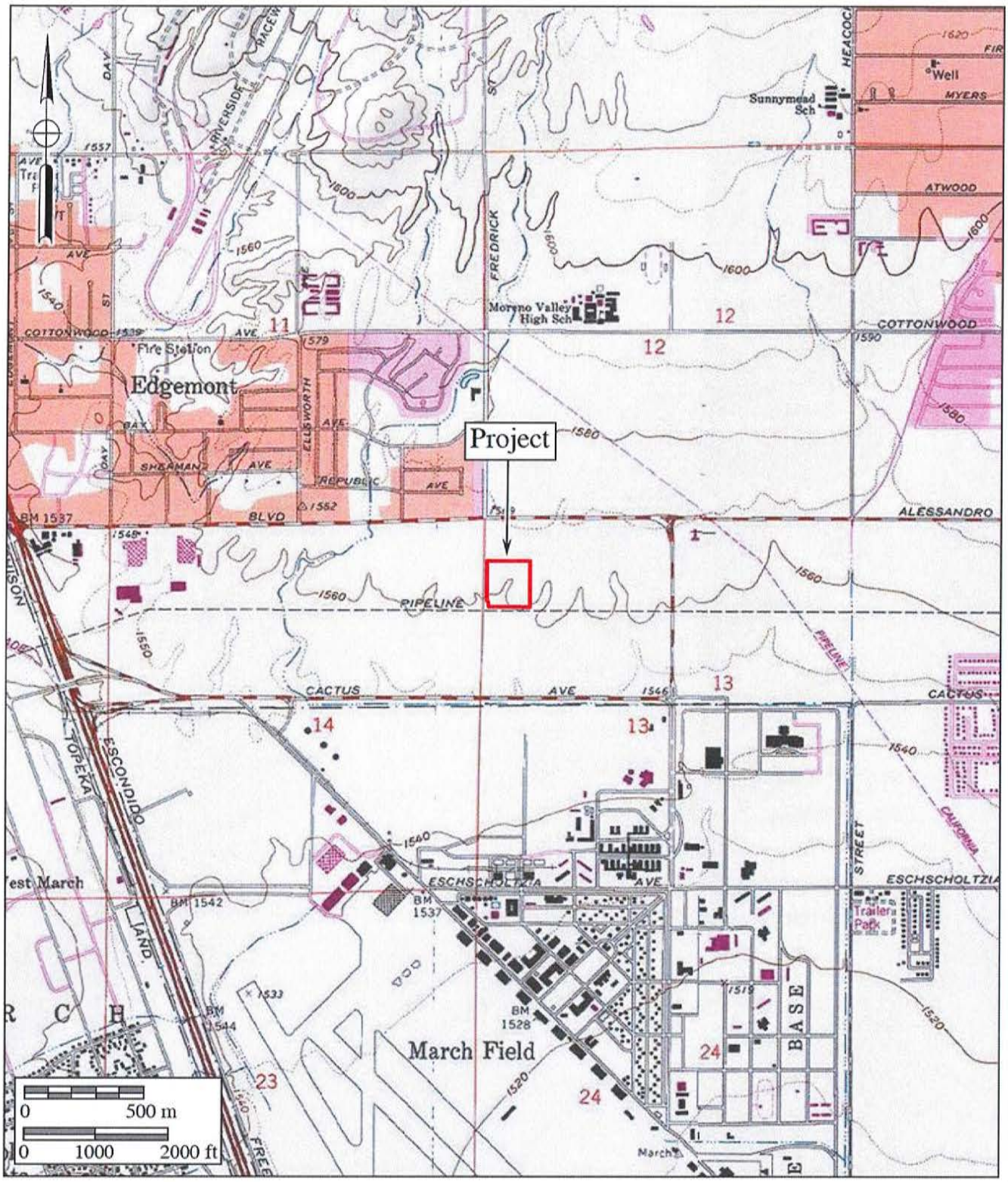
Attachment 1

General Location Map

The Centerpointe Project

DeLorme (1:250,000)

Attachment: Project 1_Paleontological Resources Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM



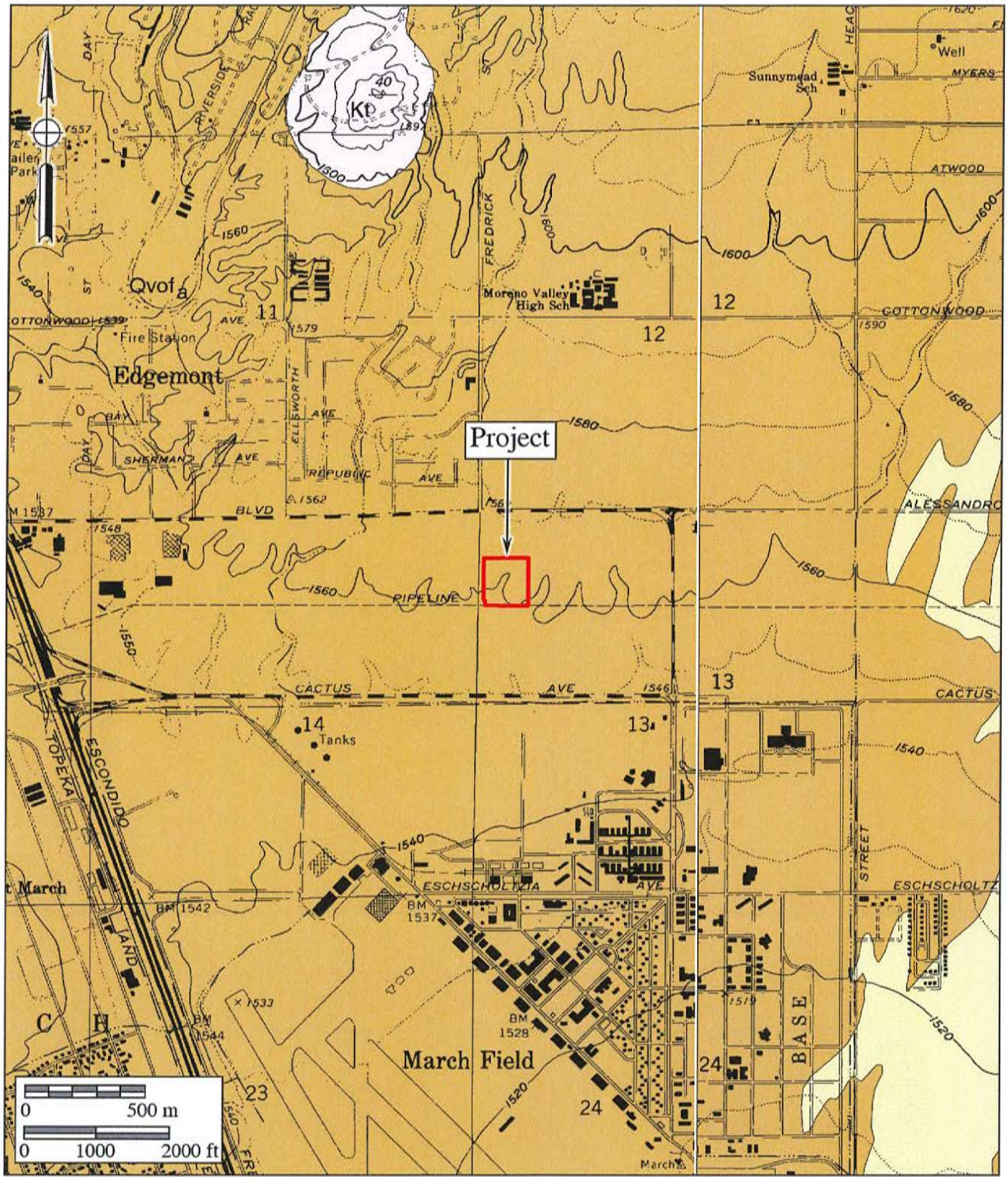
Attachment 2

Project Location Map

The Centerpointe Project

USGS *Riverside East* and *Sunnymead* Quadrangles (7.5-minute series)

Attachment: Project 1_Paleontological Resources Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM



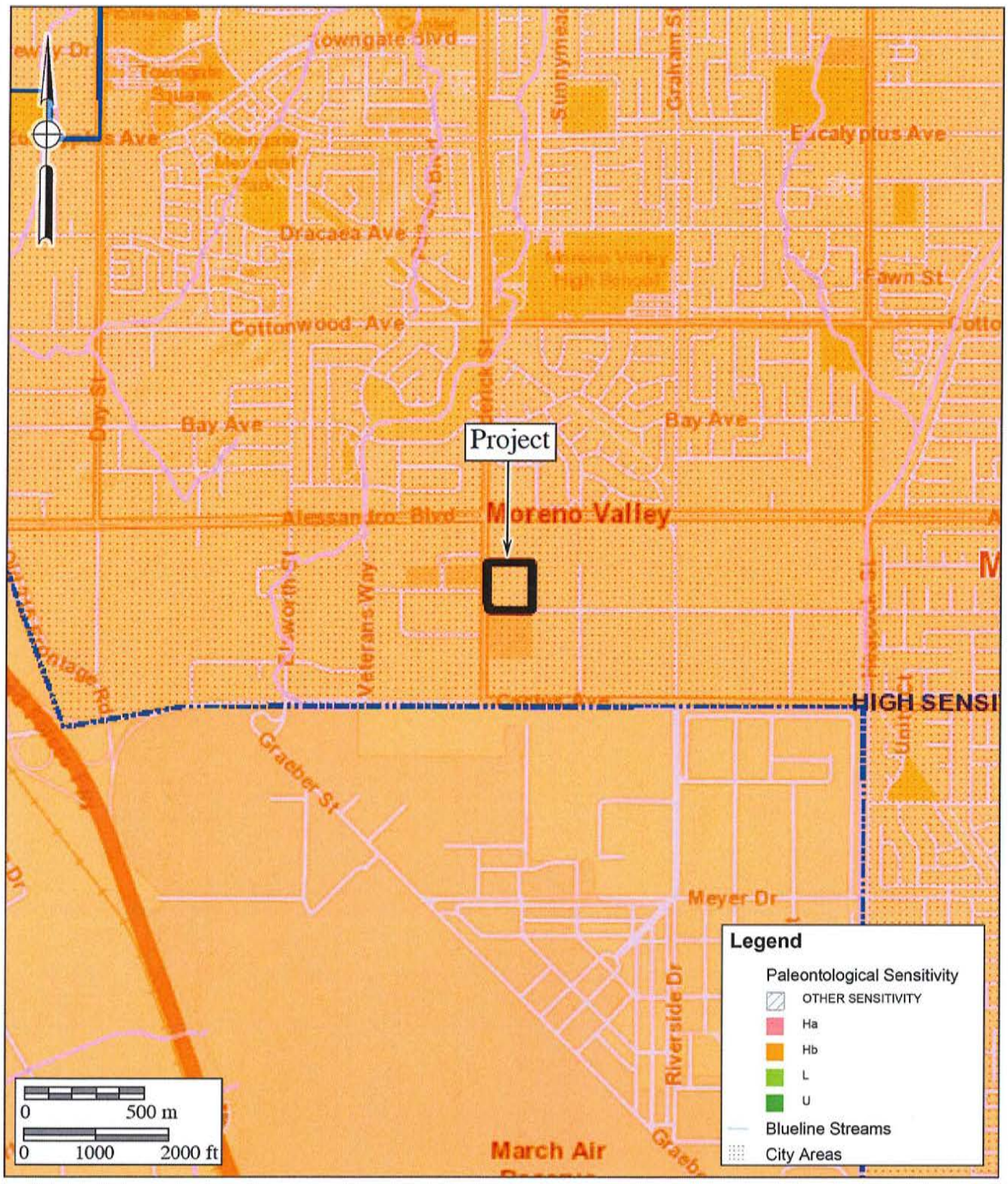
Attachment 3

Geologic Map

The Centerpointe Project

USGS *Riverside East* and *Sunnymead* Quadrangles (7.5-minute series)

Attachment: Project 1_Paleontological Resources Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM



Attachment 4

Paleontological Sensitivity Map

The Centerpointe Project

Attachment: Project 1_Paleontological Resources Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

Vertebrate Paleontology Section
Telephone: (213) 763-3325

e-mail: smcleod@nhm.org

14 September 2017

Brian F. Smith & Associates, Inc.
14010 Poway Road, Suite A
Poway, CA 92064

Attn: George L. Kennedy, Ph.D., Senior Paleontologist

re: Paleontological Resources Records Search for the proposed Brodiaea Avenue & Heacock Street Warehouse Project, BFSA Project # 17-166, in Moreno Valley, Riverside County, project area

Dear Dr. Kennedy:

I have thoroughly searched our paleontology collection records for the locality and specimen data for the proposed Brodiaea Avenue & Heacock Street Warehouse Project, BFSA Project # 17-166, in Moreno Valley, Riverside County, project area as outlined on the portion of the Sunnymead USGS topographic quadrangle map that you sent to me via e-mail on 31 August 2017. We do not have any vertebrate fossil localities that lie directly within the proposed project area boundaries, but we do have localities farther afield from sedimentary deposits similar to those that may occur subsurface in the proposed project area.

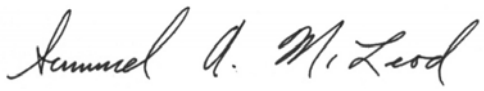
Surface deposits in the entire proposed project area consist of younger Quaternary Alluvium, derived as alluvial fan deposits from the more elevated terrain to the north. These sedimentary deposits typically do not contain significant vertebrate fossils, at least in the uppermost layers, but they may be underlain by finer-grained older Quaternary deposits that do contain significant vertebrate fossils. Our closest vertebrate fossil locality from somewhat similar deposits is LACM 4540, from the gravel pits just west of Jack Rabbit Trail east-southeast of the proposed project area on the eastern side of the San Jacinto Valley, that produced a specimen of fossil horse, *Equus*.

Attachment: Project 1_Paleontological Resources Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Shallow excavations in younger Quaternary Alluvium in the proposed project area are unlikely to uncover significant vertebrate fossil remains. Deeper excavations in the proposed project area that extend down into older Quaternary deposits, however, may well encounter significant vertebrate fossils. Any substantial excavations in the proposed project area, therefore, should be monitored closely to quickly and professionally recover any fossil remains discovered while not impeding development. Also, sediment samples should be collected and processed to determine the small fossil potential in the proposed project area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,



Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice

Attachment: Project 1_Paleontological Resources Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

2024 Orange Tree Lane, Redlands, California 92374 | Phone: 909.798.8608
www.SBCounty.

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12 March 2015

Brian F. Smith and Associates
attn: George L. Kennedy, Ph.D., Senior Paleontologist
14010 Poway Road, Suite A
Poway, CA 92064

re: **PALEONTOLOGY LITERATURE AND RECORDS REVIEW, MORENO VALLEY LOGISTICS CENTER, CITY OF MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA**

Dear Dr. Kennedy,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a literature review and records search for the above-named project in the City of Moreno Valley, Riverside County, California. Specifically, the proposed study area is located in the southwestern quadrant of section 30, Township 3 South, Range 3 West, San Bernardino Base and Meridian, as seen on the Perris, California and the Sunnymead, California 7.5' United States Geological Survey topographic quadrangle maps (1967 editions, photorevised 1973 and 1980, respectively).

Previous mapping of the proposed property (Rogers, 1965; Morton and Matti, 2001; Morton, 2003) indicates that the study area is situated entirely upon surface exposures of early Pleistocene alluvial fan deposits (= unit **$Qvof_a$**). These Pleistocene fan deposits may have high paleontologic sensitivity, depending upon their lithology. Pleistocene alluvium elsewhere throughout Riverside County and the Inland Empire has repeatedly been reported to yield significant fossils of extinct animals from the Ice Age (Jefferson, 1991; Reynolds, 1991; Anderson and others, 2002; Scott and Cox, 2008; Springer and others, 2009, 2010; Scott, 2010). Fossils recovered from these Pleistocene sediments represent extinct taxa including mammoths, mastodons, ground sloths, dire wolves, sabre-toothed cats, large and small horses, large and small camels, and bison (Jefferson, 1991; Reynolds, 1991; Scott and Cox, 2008; Springer and others, 2009, 2010; Scott, 2010), as well as plant macro- and microfossils (Anderson and others, 2002). If not previously disturbed by development, and depending upon the lithology exhibited, these sediments have high potential to contain significant nonrenewable paleontologic resources.

For this review, I conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no previously-recorded fossil resource

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Attachment: Project 1_Paleontological Resources Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

localities from Pleistocene older alluvium are present within the boundaries of the proposed development property, nor from at least within one mile in any direction.

Recommendations

The results of the literature review and the search of the RPLI at the SBCM demonstrate that the proposed study area is situated upon Pleistocene older alluvial deposits that, if not previously disturbed by development and depending upon their lithology, have high potential to contain paleontologic resources. Excavation in this older alluvium therefore has high potential to impact paleontologic resources. A qualified vertebrate paleontologist must develop a program to mitigate impacts to nonrenewable paleontologic resources. This mitigation program must be consistent with the provisions of the California Environmental Quality Act (Scott and Springer, 2003), as well as with regulations currently implemented by the County of Riverside. This program should include, but not be limited to:

1. Monitoring of excavation in areas identified as likely to contain paleontologic resources by a qualified paleontologic monitor. Areas requiring monitoring include all previously-undisturbed Pleistocene older alluvial sediments present, at the surface or at depth, within the boundaries of the property. Paleontologic monitors should be equipped to salvage fossils as they are unearthed, to avoid construction delays, and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring may be reduced or eliminated if the potentially-fossiliferous units described herein are determined upon exposure and examination by qualified paleontologic personnel to have low potential to contain fossil resources.

2. Preparation of recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils are essential in order to fully mitigate adverse impacts to the resources (Scott and others, 2004).

3. Identification and curation of specimens into an established, accredited museum repository with permanent retrievable paleontologic storage. These procedures are also essential steps in effective paleontologic mitigation (Scott and others, 2004) and CEQA compliance (Scott and Springer, 2003). The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources is not complete until such curation into an established, accredited museum repository has been fully completed and documented.

4. Preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into an established, accredited museum

Attachment: Project 1_Paleontological Resources Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

repository, would signify completion of the program to mitigate impacts to paleontologic resources.

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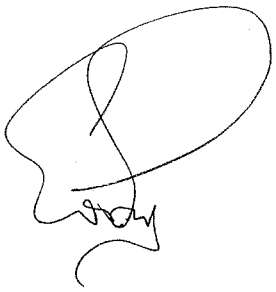
Attachment: Project 1_Paleontological Resources Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Please do not hesitate to contact us with any further questions you may have.

Sincerely,



Eric Scott, Curator of Paleontology
Division of Geological Sciences
San Bernardino County Museum

Attachment: Project 1_Paleontological Resources Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Updated Geotechnical Engineering Investigation

Proposed Industrial Warehouse Development
NWC of Frederick Street and Brodiaea Avenue
Moreno Valley, California

Newcastle Partners
4740 Green River Road, Suite 118
Corona, California 92880

Attn.: Mr. Brett Anderson

Project Number 20083-17
December 19, 2017

NorCal Engineering
Soils and Geotechnical Consultants
10641 Humbolt Street Los Alamitos, CA 90720
(562) 799-9469 Fax (562) 799-9459

December 19, 2017 Project Number 20083-17

Newcastle Partners
4740 Green River Road, Suite 118
Corona, California 92880

Attn.: Mr. Brett Anderson

RE: **Updated Geotechnical Engineering Investigation** - Proposed Industrial Warehouse Development - Located at the Northwest Corner of Frederick Street and Brodiaea Avenue, in the City of Moreno Valley, California

Dear Mr. Anderson:

Pursuant to your request, this firm has performed a Geotechnical Engineering Investigation for the above referenced project in accordance to our signed proposal dated November 22, 2017. The purpose of this investigation is to evaluate the subsurface conditions of the subject site and to provide recommendations for the proposed industrial warehouse development.

The scope of work included the following: 1) site reconnaissance; 2) subsurface geotechnical exploration and sampling; 3) laboratory testing; 4) engineering analysis of field and laboratory data; 5) and preparation of a geotechnical engineering report. It is the opinion of this firm that the proposed development is feasible from a geotechnical standpoint provided that the recommendations presented in this report are followed in the design and construction of the project.

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

1.0 Project Description

It is proposed to construct an industrial warehouse development consisting of a concrete tilt-up building totaling 203,285 square feet as shown on the attached Site Plan. The proposed building will be supported by a conventional slab-on-grade foundation system with perimeter-spread footings and isolated interior footings. Other improvements will consist of concrete and/or asphalt pavement and hardscape. It is assumed that the proposed grading for the development will include minor cut and fill procedures. Final building plans shall be reviewed by this firm prior to submittal for city approval to determine the need for any additional study and revised recommendations pertinent to the proposed development, if necessary.

2.0 Site Description

The 8.94-acre property is located at the northeast corner of Frederick Street and Brodiaea Avenue, in the City of Moreno Valley. The generally square-shaped parcel is relatively level with topography descending gradually from north to south on the order of a few feet. The site is currently an undeveloped land covered with a low growth of vegetation cover consisting of natural grasses and weeds.

3.0 Site Exploration

Our field investigation consisted of the placement of two (2) subsurface exploratory borings by a truck-mounted drill rig to a depth of 20 and 50 feet and nine (9) subsurface exploratory trenches to depths ranging between 5 and 15 feet below current ground elevations. All explorations were visually classified and logged by a field engineer with locations of the subsurface explorations shown on the attached Site Plan. The exploratory borings and trenches revealed the existing earth materials to consist of a fill and natural soil. A detailed description of the subsurface conditions is listed on the excavation logs in Appendix A.

Fill: A surficial fill and/or disturbed top soil classifying as brown clayey SAND was encountered to a depth of 1 to 2½ feet. These soils were noted to be loose and damp.

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Natural: An undisturbed alluvium soil classifying as a brown, clayey SAND was encountered directly beneath the fill and observed to be dense to very dense and damp to moist. Deeper soils consisted of silty sands and sandy silts which were noted to be very dense and stiff and damp to moist.

The overall engineering characteristics of the earth material were relatively uniform with each excavation. Groundwater was encountered at the depth of 30 feet below ground surface and no caving occurred.

4.0 Laboratory Tests

Relatively undisturbed samples of the subsurface soils were obtained to perform laboratory testing and analysis for direct shear, consolidation tests, and to determine in-place moisture/densities. These relatively undisturbed ring samples were obtained by driving a thin-walled steel sampler lined with one inch long brass rings with an inside diameter of 2.42 inches into the undisturbed soils.

Standard penetration tests were obtained by driving an unlined steel sampler with an inside diameter of 1.5 inches into the soils. This standard penetrometer sampler was driven a total of eighteen inches with blow counts tallied every six inches. Blow count data is given on the Boring Logs in Appendix A.

Bulk bag samples were obtained in the upper soils for expansion index tests and maximum density tests. All test results are included in Appendix B, unless otherwise noted.

4.1 **Field moisture content** (ASTM: D 2216) and the dry density of the ring samples were determined in the laboratory. This data is listed on the logs of explorations.

4.2 **Sieve analyses** (ASTM: D 422) and the percent by weight of soil finer than the No. 200 sieve (ASTM: 1140) were performed on selected soil samples. These results are shown later within the body of this report.

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

4.3 **Maximum density tests** (ASTM: D-1557) were performed on typical samples of the upper soils. Results of these tests are shown on Table I.

4.4 **Expansion index tests** (ASTM: D 4829) were performed on remolded samples of the upper soils. Results of these tests are provided on Table II.

4.5 **Atterberg Limits** (ASTM: D 4318) consisting of liquid limit, plastic limit and plasticity index were performed on representative soil samples. Results are shown on Table III.

4.6 **Corrosion tests** consisting of sulfate, pH, resistivity and chloride analysis to determine potential corrosive effects of soils on concrete and underground utilities. Test results are provided on Table IV.

4.7 **R-Value test** per California Test Method 301 was performed on a representative sample, which may be anticipated to be near subgrade to determine pavement design. Result provided within pavement section design section of report.

4.8 **Direct Shear tests** (ASTM: D 3080) were performed on undisturbed and disturbed samples of the subsurface soils. The test is performed under saturated conditions at loads of 1,000 lbs./sq.ft., 2,000 lbs./sq.ft., and 3,000 lbs./sq.ft. with results shown on Plates A and B.

4.9 **Consolidation tests** (ASTM: D-2435) were performed on undisturbed samples to determine the differential and total settlement which may be anticipated based upon the proposed loads. Water was added to the samples at a surcharge of one KSF and the settlement curves are plotted on Plates C and D.

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

5.0 Infiltration Characteristics

Infiltration tests within the site were performed to provide preliminary infiltration rates for the purpose of planning and design of an on-site water disposal system. The infiltration tests consisted of the double ring infiltration test per ASTM Method D 3385. Based upon the results of our testing, the soils encountered in the planned on-site drainage disposal system area exhibit the following infiltration rates. The field infiltration rate is listed below for two exploratory trenches at a depth of 5 and 10 feet measured from existing ground surface with our calculations given in Appendix C. .

Test No.	Depth	Infiltration Rate
T-1	5'	0.22 in/hr
T-2	10'	0.12 in/hr

The correction factors CF_t, CF_v and CF_s are given below based on soils in the upper 10 feet from our field tests.

a) $CF_t = R_f = 1.0$ for our double ring infiltration test holes.

b) CF_v = 1.0 based on uniform soils encountered in two trenches for infiltration tests.

c) CF_s = 3.0 for long-term siltation, plugging and maintenance. The subsurface soils are likely to have some plugging and regular maintenance of storm water discharge devices is required.

Based upon the results of our testing, the subsurface soils encountered in the proposed on-site drainage disposal system to a depth of 10 feet shall utilize a design infiltration rate of 0.05 in/hr in the upper 10 feet below existing grade. These fine grained soils have a very low permeability for use in a disposal system. All systems must meet the latest city and/or county specifications and California Regional Water Quality Control Board (CRWQCB) requirements.

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

All systems must meet the latest city and/or county specifications and California Regional Water Quality Control Board (CRWQCB) requirements. Foundations shall be set back a minimum distance of 10 feet from the drainage disposal system and the bottom of footing shall be a minimum of 10 feet from the expected zone of saturation. The boundary of the zone of saturation may be assumed to project downward from the top of the permeable portion of the disposal system at an inclination of 1 to 1 or flatter, as determined by the soils engineer.

6.0 Seismicity Evaluation

There are no known active or potentially active faults trending toward or through the site. The proposed development lies outside of any Alquist Priolo Special Studies Zone and the potential for damage due to direct fault rupture is considered very remote. The site is located in an area of high regional seismicity and the San Jacinto fault is located about 8 kilometers from the site. Ground shaking originating from earthquakes along other active faults in the region is expected to induce lower horizontal accelerations due to smaller anticipated earthquakes and/or greater distances to other faults.

The seismic design of the project has been updated to the latest 2010 ASCE 7-10 (with July 2013 errata) standards and the mapped seismic ground motions were provided by using the Java based program available from the United States Geological Survey (USGS) website: http://geohazards.usgs.gov/designmaps/us/application.php. The earthquake design parameters are listed below.

Seismic Design Parameters

Site Location	Latitude	33.915°
	Longitude	-117.225°
Site Class		D
Risk Category		I/II/III
Maximum Spectral Response Acceleration	S_S	1.566g
	S_1	0.678g
Adjusted Maximum Acceleration	S_{MS}	1.566g
	S_{M1}	1.017g
Design Spectral Response Acceleration Parameters	S_{DS}	1.044g
	S_{D1}	0.678g

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

7.0 Liquefaction Evaluation

The site is expected to experience ground shaking and earthquake activity that is typical of Southern California area. It is during severe ground shaking that loose, granular soils below the groundwater table can liquefy. A review of the exploratory boring log and the laboratory test results on selected soil samples obtained indicate the following soil classifications, field blowcounts and amounts of fines passing through the No. 200 sieve.

Field Blowcount and Gradation Data

Location	Classification	Blowcounts (blows/ft)	Relative Density	% Passing No. 200 Sieve
B-1 @ 5'	SC	45	Very Dense	36
B-1 @ 10'	SM	54	Very Dense	21
B-1 @ 15'	ML	47	Very Stiff	51
B-1 @ 20'	SM	42	Very Stiff	12
B-1 @ 25'	ML	37	Very Dense	52
B-1 @ 30'	SM	32	Dense	17
B-1 @ 35'	SM	41	Dense	27
B-1 @ 40'	SW	38	Dense	5
B-1 @ 45'	SM	61	Very Dense	30
B-1 @ 50'	SM	57	Very Dense	14

Our analysis indicates the potential for liquefaction at this site is considered to be very low due to stiff and dense subsurface soils with a groundwater depth of 30 feet. Thus, the design of the proposed construction in conformance with the latest Building Code provisions for earthquake design is expected to provide mitigation of ground shaking hazards that are typical to Southern California.

8.0 Conclusions and Recommendations

Based upon our evaluations, the proposed development is acceptable from a geotechnical engineering standpoint. By following the recommendations and guidelines set forth in our report, the structures will be safe from excessive settlements under the anticipated design loadings and conditions. The proposed development shall meet all requirements of the City Building Ordinance and will not impose any adverse effect on existing adjacent structures.

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

The following recommendations are based upon geotechnical conditions encountered in our field investigation and laboratory data. Therefore, these surface and subsurface conditions could vary across the site. Variations in these conditions may not become evident until the commencement of grading operations and any unusual conditions which may be encountered in the course of the project development may require the need for additional study and revised recommendations.

It is recommended that site inspections be performed by a representative of this firm during all grading and construction of the development to verify the findings and recommendations documented in this report. The following sections present a discussion of geotechnical related requirements for specific design recommendations of different aspects of the project.

8.1 Site Grading Recommendations

Any vegetation and or demolition debris shall be removed and hauled from proposed grading areas prior to the start of grading operations. Existing vegetation shall not be mixed or disced into the soils. Any removed soils may be reutilized as compacted fill once any deleterious material or oversized materials (in excess of eight inches) is removed. Grading operations shall be performed in accordance with the attached "Specifications for Compacted Fill Operations".

8.1.1 Removal and Recompaction Recommendations

All disturbed soils and/or fill (about 1 to 2½ feet) shall be removed to competent native material, the exposed surface scarified to a depth of 12 inches, brought to within 2% of optimum moisture content and compacted to a minimum of 90% of the laboratory standard (ASTM: D-1557) prior to placement of any additional compacted fill soils, foundations, slabs-on-grade and pavement. Grading shall extend a minimum of five horizontal feet outside the edges of foundations or equidistant to the depth of fill placed, whichever is greater.

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

It is possible that isolated areas of undiscovered fill not described in this report are present on site. If found, these areas should be treated as discussed earlier. A diligent search shall also be conducted during grading operations in an effort to uncover any underground structures, irrigation or utility lines. If encountered, these structures and lines shall be either removed or properly abandoned prior to the proposed construction.

Any imported fill material should be preferably soil similar to the upper soils encountered at the subject site. All soils shall be approved by this firm prior to importing at the site and will be subjected to additional laboratory testing to assure concurrence with the recommendations stated in this report.

Care should be taken to provide or maintain adequate lateral support for all adjacent improvements and structures at all times during the grading operations and construction phase. Adequate drainage away from the structures, pavement and slopes should be provided at all times.

If placement of slabs-on-grade and pavement is not completed immediately upon completion of grading operations, additional testing and grading of the areas may be necessary prior to continuation of construction operations. Likewise, if adverse weather conditions occur which may damage the subgrade soils, additional assessment by the geotechnical engineer as to the suitability of the supporting soils may be needed.

8.1.2 Fill Blanket Recommendations

In areas of transition between the underlying native material and engineered fill, additional overexcavation of the native material consisting of a depth of two feet below proposed foundations is required to mitigate the potential of differential settlement. This fill shall extend a minimum of five horizontal feet or to the depth of vertical overexcavation, whichever is greater, beyond the outside edge of the perimeter foundation.

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

7.2 Shrinkage and Subsidence

Results of our in-place density tests reveal that the soil shrinkage will be on the order of 5 to 10% due to excavation and recompaction, based upon the assumption that the fill is compacted to 92% of the maximum dry density per ASTM standards. Subsidence should be 0.2 feet due to earthwork operations. The volume change does not include any allowance for vegetation or organic stripping, removal of subsurface improvements or topographic approximations. Although these values are only approximate, they represent our best estimate of lost yardage which will likely occur during grading. If more accurate shrinkage and subsidence factors are needed, it is recommended that field testing using the actual equipment and grading techniques should be conducted.

8.3 Temporary Excavations

Temporary unsurcharged excavations in the existing site materials less than 4 feet high may be made at a vertical gradient unless cohesionless soils are encountered. In areas where soils with little or no binder are encountered, where adverse geological conditions are exposed, or where excavations are adjacent to existing structures, shoring, slot-cutting, or flatter excavations may be required. The temporary cut slope gradients given do not preclude local raveling and sloughing. All excavations shall be made in accordance with the requirements of CAL-OSHA and other public agencies having jurisdiction. Care should be taken to provide or maintain adequate lateral support for all adjacent improvements and structures at all times during the grading operations and construction phase.

8.4 Foundation Design

All foundations may be designed utilizing the following safe bearing capacities for an embedded depth of 18 inches into approved fill materials with the corresponding widths:

Allowable Safe Bearing Capacity (psf)

Width (ft)	Continuous Foundation	Isolated Foundation
1.5	2000	2500
2.0	2075	2575
4.0	2375	2875
6.0	2500	3000

The bearing value may be increased by 500 psf for each additional foot of depth in excess of the 18-inch minimum depth, up to a maximum of 4,000 psf. A one third increase may be used when considering short-term loading and seismic forces. All continuous foundations shall be reinforced a minimum of one No. 4 bar, top and bottom. Isolated foundations shall be reinforced per the discretion of the project structural engineer. A representative of this firm shall inspect all foundation excavations prior to pouring concrete.

8.5 Settlement Analysis

Resultant pressure curves for the consolidation tests are shown on Plates C and D. Computations utilizing these curves and the recommended safe bearing capacities reveal that the foundations will experience settlements on the order of 3/4 inch and differential settlements of less than 1/4 inch.

8.6 Lateral Resistance

The following values may be utilized in resisting lateral loads imposed on the structure. Requirements of the California Building Code should be adhered to when the coefficient of friction and passive pressures are combined.

Coefficient of Friction – 0.35

Equivalent Passive Fluid Pressure = 200 lbs./cu.ft.

Maximum Passive Pressure = 2,000 lbs./cu.ft.

The passive pressure recommendations are valid only for approved compacted fill soils.

8.7 Retaining Wall Design Parameters

Active earth pressures against retaining wall will be equal to the pressures developed by the following fluid densities. These values are for **granular backfill material** placed behind the walls at various ground slopes above the walls.

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Surface Slope of Retained Materials (Horizontal to Vertical)	Equivalent Fluid Density (lb./cu.ft.)
Level	30
5 to 1	35
4 to 1	38
3 to 1	40
2 to 1	45

Any applicable short-term construction surcharges and seismic forces should be added to the referenced lateral pressure values. An equivalent fluid pressure of 45 pcf may be utilized for the restrained wall condition with a level grade behind the wall.

All walls shall be waterproofed as needed and protected from hydrostatic pressure by a reliable permanent subdrain system. The subsurface drainage system shall consist of 4-inch diameter perforated PVC pipe encased with gravel and wrapped with filter fabric. The granular backfill to be utilized immediately adjacent to the walls shall consist of an approved granular soils with a sand equivalency greater than 30. This backfill zone of free draining material shall consist of a wedge beginning a minimum of one horizontal foot from the base of the wall extending upward at an inclination of no less than 3/4 to 1 (horizontal to vertical).

The seismic-induced lateral soil pressure for walls greater than 6 feet shall be computed using a triangular pressure distribution with the maximum value at the top of the wall. The maximum lateral pressure of (20 pcf) H, where H is the height of the retained soils above the wall footing should be utilized in final design of retaining walls. Sliding resistance values and passive fluid pressures given in our referenced report may be increased by 1/3 during short-term wind and seismic loading conditions.

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

8.8 Slab Design

All concrete slabs-on-grade shall be at least four inches in office and hardscape areas, six inches in warehouse, both reinforced with No. 3 bars at sixteen inch spacing in each direction and positioned in the center of the slab and placed on approved subgrade soils. Additional reinforcement requirements and an increase in thickness of the slabs-on-grade may be necessary based upon soils expansion potential and proposed loading conditions in the structures and should be evaluated further by the project engineers and/or architect. These slabs shall be placed on approved subgrade soils moisture conditioned to 3% above optimum moisture content to a depth of eighteen inches.

A vapor retarder (10-mil minimum thickness) should be utilized in areas which would be sensitive to the infiltration of moisture. This retarder shall meet requirements of ASTM E 96, *Water Vapor Transmission of Materials* and ASTM E 1745, *Standard Specification for Water Vapor Retarders used in Contact with Soil or Granular Fill Under Concrete Slabs.* The vapor retarder shall be installed in accordance with procedures stated in ASTM E 1643, *Standard practice for Installation of Water Vapor Retarders used in Contact with Earth or Granular Fill Under Concrete Slabs.*

The moisture retarder may be placed directly upon approved subgrade soils, although one to two inches of sand beneath the membrane is desirable. The subgrade upon which the retarder is placed shall be smooth and free of rocks, gravel or other protrusions which may damage the retarder. Use of sand above the retarder is under the purview of the structural engineer; if sand is used over the retarder, it should be placed in a dry condition.

8.9 Pavement Section Design

The table below provides a preliminary pavement design based upon an R-Value of 30 for the proposed pavement areas. Final pavement design may need to be based on R-Value testing of the subgrade soils near the conclusion of rough grading to assure that these soils are consistent with those assumed in this preliminary design.

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Type of Traffic	Traffic Index	Asphaltic Concrete (in)	Base Material (in)
Automobile Parking Stalls	4.0	3.0	4.0
Light Vehicle Circulation Areas	5.5	3.5	5.5
Heavy Truck Access Areas (GVW < 90,000 lbs.; 5 axle)	7.0	4.0	10.0

All concrete slabs to be utilized for pavement shall be a minimum of six inches in thickness and placed on approved subgrade soils. Client should submit anticipated traffic loadings, when available, so that pavement sections may be reviewed to determine adequacy to support these loads.

Any approved base material shall consist of a Class II aggregate or equivalent and should be compacted to a minimum of 95% relative compaction. All pavement materials shall conform to the requirements set forth by the City of Moreno Valley. The base material and asphaltic concrete should be tested prior to delivery to the site and during placement to determine conformance with the project specifications. A pavement engineer shall designate the specific asphalt mix design to meet the required project specifications.

All pavement areas shall have positive drainage toward an approved outlet from the site. Drain lines behind curbs and/or adjacent to landscape areas should be considered by client and the appropriate design engineers to prevent water from infiltrating beneath pavement. If such infiltration occurs, damage to pavement, curbs and flow lines, especially on sites with expansive soils, may occur during the life of the project.

8.10 Utility Trench and Excavation Backfill

Trenches from installation of utility lines and other excavations may be backfilled with on-site soils or approved imported soils compacted to a minimum of 90% relative compaction. All utility lines shall be properly bedded with clean sand having a sand equivalency rating of 30 (SE > 30) or more. This bedding material shall be thoroughly water jetted around the pipe structure prior to placement of compacted backfill soils.

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

8.11 Corrosion Design Criteria

Representative samples of the surficial soils, typical of the subgrade soils expected to be encountered within foundation excavations and underground utilities were tested for corrosion potential. The minimum resistivity value obtained for the samples tested is representative of an environment that may be corrosive to metals. The soil pH value was considered mildly acidic and may have a significant effect on soil corrosivity. Consideration should be given to corrosion protection systems for buried metal such as protective coatings, wrappings or the use of PVC where permitted by local building codes.

According to Table 4.3.1, ACI 318 Building Code and Commentary, these contents revealed negligible levels of sulfate exposure. Therefore, a Type II cement according to latest CBC specifications may be utilized for building foundations at this time. Additional sulfate tests shall be performed at the completion of site grading to assure that these soils are consistent with the recommendations stated in this design. Sulfate test results may be found on the attached Table IV.

8.12 Expansive Soil

Since expansive soils were encountered, special attention should be given to the project design and maintenance. The attached *Expansive Soil Guidelines* should be reviewed by the engineers, architects, owner, maintenance personnel and other interested parties and considered during the design of the project and future property maintenance.

9.0 Closure

The recommendations and conclusions contained in this report are based upon the soil conditions uncovered in our test excavations. No warranty of the soil condition between our excavations is implied. NorCal Engineering should be notified for possible further recommendations if unexpected to unfavorable conditions are encountered during construction phase.

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

It is the responsibility of the owner to ensure that all information within this report is submitted to the Architect and appropriate Engineers for the project. This firm should have the opportunity to review the final plans to verify that all our recommendations are incorporated. This report and all conclusions are subject to the review of the controlling authorities for the project.

A preconstruction conference should be held between the developer, general contractor, grading contractor, city inspector, architect, and soil engineer to clarify any questions relating to the grading operations and subsequent construction. Our representative should be present during the grading operations and construction phase to certify that such recommendations are complied within the field.

This geotechnical investigation has been conducted in a manner consistent with the level of care and skill exercised by members of our profession currently practicing under similar conditions in the Southern California area. No other warranty, expressed or implied is made.

We appreciate this opportunity to be of service to you. If you have any further questions, please do not hesitate to contact the undersigned.

Respectfully submitted,
NORCAL ENGINEERING

Keith D. Tucker
Project Engineer
R.G.E. 841

Scott D. Spensiero
Project Manager

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

SPECIFICATIONS FOR PLACEMENT OF COMPACTED FILL

Excavation

Any existing low density soils and/or saturated soils shall be removed to competent natural soil under the inspection of the Soils Engineering Firm. After the exposed surface has been cleansed of debris and/or vegetation, it shall be scarified until it is uniform in consistency, brought to the proper moisture content and compacted to a minimum of 90% relative compaction (in accordance with ASTM: D-1557).

In any area where a transition between fill and native soil or between bedrock and soil are encountered, additional excavation beneath foundations and slabs will be necessary in order to provide uniform support and avoid differential settlement of the structure.

Material For Fill

The on-site soils or approved import soils may be utilized for the compacted fill provided they are free of any deleterious materials and shall not contain any rocks, brick, asphaltic concrete, concrete or other hard materials greater than eight inches in maximum dimensions. Any import soil must be approved by the Soils Engineering firm a minimum of 24 hours prior to importation of site.

Placement of Compacted Fill Soils

The approved fill soils shall be placed in layers not excess of six inches in thickness. Each lift shall be uniform in thickness and thoroughly blended. The fill soils shall be brought to within 2% of the optimum moisture content, unless otherwise specified by the Soils Engineering firm. Each lift shall be compacted to a minimum of 90% relative compaction (in accordance with ASTM: D-1557) and approved prior to the placement of the next layer of soil. Compaction tests shall be obtained at the discretion of the Soils Engineering firm but to a minimum of one test for every 500 cubic yards placed and/or for every 2 feet of compacted fill placed.

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The minimum relative compaction shall be obtained in accordance with accepted methods in the construction industry. The final grade of the structural areas shall be in a dense and smooth condition prior to placement of slabs-on-grade or pavement areas. No fill soils shall be placed, spread or compacted during unfavorable weather conditions. When the grading is interrupted by heavy rains, compaction operations shall not be resumed until approved by the Soils Engineering firm.

Grading Observations

The controlling governmental agencies should be notified prior to commencement of any grading operations. This firm recommends that the grading operations be conducted under the observation of a Soils Engineering firm as deemed necessary. A 24 hour notice must be provided to this firm prior to the time of our initial inspection.

Observation shall include the clearing and grubbing operations to assure that all unsuitable materials have been properly removed; approve the exposed subgrade in areas to receive fill and in areas where excavation has resulted in the desired finished grade and designate areas of overexcavation; and perform field compaction tests to determine relative compaction achieved during fill placement. In addition, all foundation excavations shall be observed by the Soils Engineering firm to confirm that appropriate bearing materials are present at the design grades and recommend any modifications to construct footings.

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Expansive Soil Guidelines

The following expansive soil guidelines are provided for your project. The intent of these guidelines is to inform you, the client, of the importance of proper design and maintenance of projects supported on expansive soils. ***You, as the owner or other interested party, should be warned that you have a duty to provide the information contained in the soil report including these guidelines to your design engineers, architects, landscapers and other design parties in order to enable them to provide a design that takes into consideration expansive soils.***

In addition, you should provide the soil report with these guidelines to any property manager, lessee, property purchaser or other interested party that will have or assume the responsibility of maintaining the development in the future.

Expansive soils are fine-grained silts and clays which are subject to swelling and contracting. The amount of this swelling and contracting is subject to the amount of fine-grained clay materials present in the soils and the amount of moisture either introduced or extracted from the soils. Expansive soils are divided into five categories ranging from "very low" to "very high". Expansion indices are assigned to each classification and are included in the laboratory testing section of this report. *If the expansion index of the soils on your site, as stated in this report, is 21 or higher, you have expansive soils.* The classifications of expansive soils are as follows:

Classification of Expansive Soil*

Expansion Index	Potential Expansion
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
Above 130	Very High

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When expansive soils are compacted during site grading operations, care is taken to place the materials at or slightly above optimum moisture levels and perform proper compaction operations. Any subsequent excessive wetting and/or drying of expansive soils will cause the soil materials to expand and/or contract. These actions are likely to cause distress of foundations, structures, slabs-on-grade, sidewalks and pavement over the life of the structure. ***It is therefore imperative that even after construction of improvements, the moisture contents are maintained at relatively constant levels, allowing neither excessive wetting or drying of soils.***

Evidence of excessive wetting of expansive soils may be seen in concrete slabs, both interior and exterior. Slabs may lift at construction joints producing a trip hazard or may crack from the pressure of soil expansion. Wet clays in foundation areas may result in lifting of the structure causing difficulty in the opening and closing of doors and windows, as well as cracking in exterior and interior wall surfaces. In extreme wetting of soils to depth, settlement of the structure may eventually result. Excessive wetting of soils in landscape areas adjacent to concrete or asphaltic pavement areas may also result in expansion of soils beneath pavement and resultant distress to the pavement surface.

Excessive drying of expansive soils is initially evidenced by cracking in the surface of the soils due to contraction. Settlement of structures and on-grade slabs may also eventually result along with problems in the operation of doors and windows.

Projects located in areas of expansive clay soils will be subject to more movement and "hairline" cracking of walls and slabs than similar projects situated on non-expansive sandy soils. There are, however, measures that developers and property owners may take to reduce the amount of movement over the life the development. The following guidelines are provided to assist you in both design and maintenance of projects on expansive soils:

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- Drainage away from structures and pavement is essential to prevent excessive wetting of expansive soils. Grades to the latest building code should be designed and maintained to allow flow of irrigation and rain water to approved drainage devices or to the street. Any "ponding" of water adjacent to buildings, slabs and pavement after rains is evidence of poor drainage; the installation of drainage devices or regrading of the area may be required to assure proper drainage. Installation of rain gutters is also recommended to control the introduction of moisture next to buildings. Gutters should discharge into a drainage device or onto pavement which drains to roadways.

- Irrigation should be strictly controlled around building foundations, slabs and pavement and may need to be adjusted depending upon season. This control is essential to maintain a relatively uniform moisture content in the expansive soils and to prevent swelling and contracting. Over-watering adjacent to improvements may result in damage to those improvements. NorCal Engineering makes no specific recommendations regarding landscape irrigation schedules.

- Planting schemes for landscaping around structures and pavement should be analyzed carefully. Plants (including sod) requiring high amounts of water may result in excessive wetting of soils. Trees and large shrubs may actually extract moisture from the expansive soils, thus causing contraction of the fine-grained soils.

- Thickened edges on exterior slabs will assist in keeping excessive moisture from entering directly beneath the concrete. A six-inch thick or greater deepened edge on slabs may be considered. Underlying interior and exterior slabs with 6 to 12 inches or more of non-expansive soils and providing presaturation of the underlying clayey soils as recommended in the soil report will improve the overall performance of on-grade slabs.

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- Increase the amount of steel reinforcing in concrete slabs, foundations and other structures to resist the forces of expansive soils. The precise amount of reinforcing should be determined by the appropriate design engineers and/or architects.

- Recommendations of the soil report should always be followed in the development of the project. Any recommendations regarding presaturation of the upper subgrade soils in slab areas should be performed in the field and verified by the Soil Engineer.

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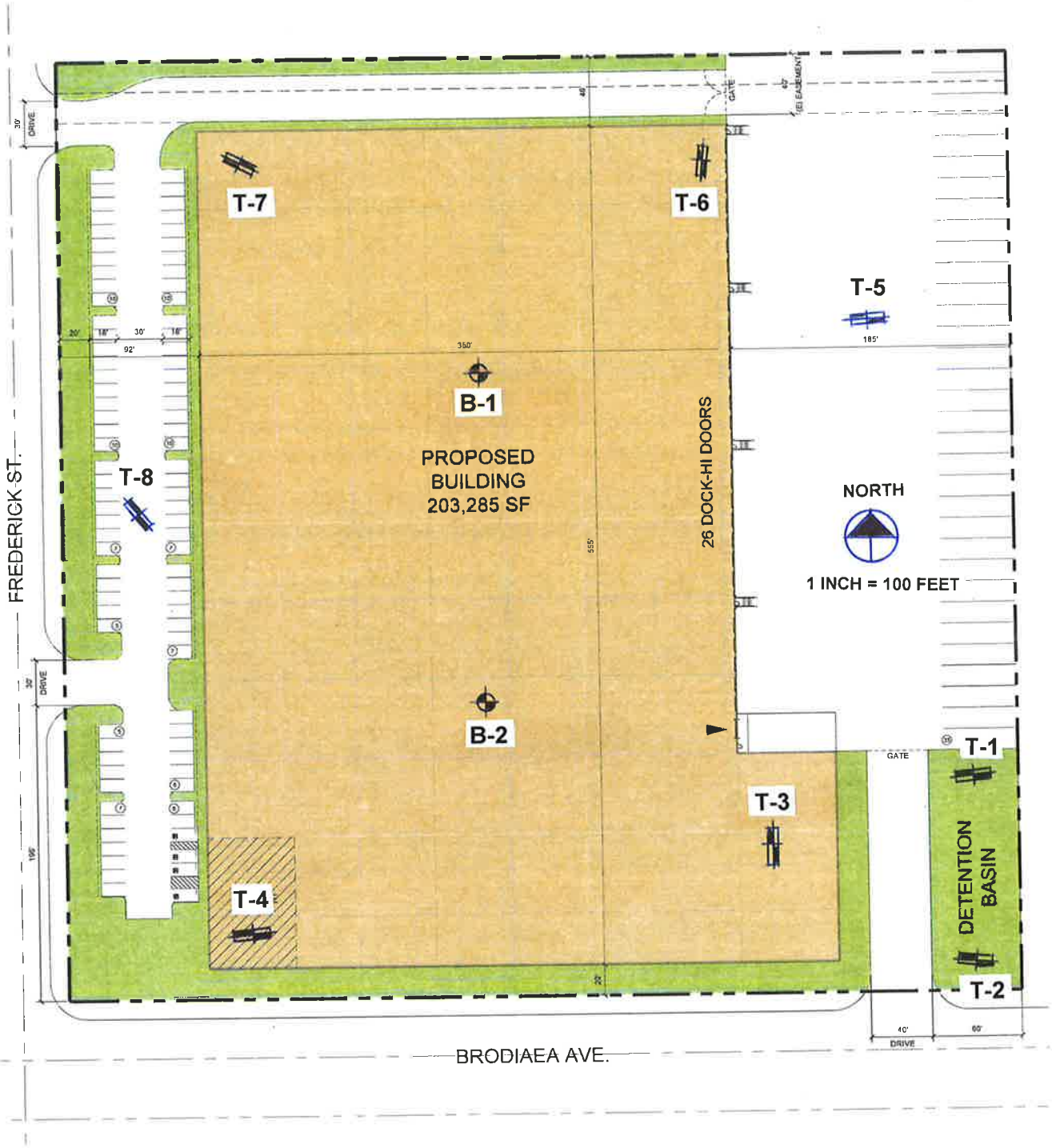

NorCal Engineering
SOILS AND GEOTECHNICAL CONSULTANTS

SITE PLAN

PROJECT 20081-17 | DATE DECEMBER 2017

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

List of Appendices
(in order of appearance)

Appendix A - Log of Excavations

- Log of Borings B-1 and B-2
- Log of Trenches T-1 to T-8

- **Appendix B - Laboratory Tests**
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- Table II – Expansion
- Table III – Atterberg Limits
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- Plates A and B - Direct Shear
- Plates C and D – Consolidation

Appendix C – Soil Infiltration Study

- Field Data

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Appendix A

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

MAJOR DIVISION			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL, SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINE (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

UNIFIED SOIL CLASSIFICATION SYSTEM

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KEY:

- Indicates 2.5-inch Inside Diameter. Ring Sample.
- Indicates 2-inch OD Split Spoon Sample (SPT).
- Indicates Shelby Tube Sample.
- Indicates No Recovery.
- Indicates SPT with 140# Hammer 30 in. Drop.
- Indicates Bulk Sample.
- Indicates Small Bag Sample.
- Indicates Non-Standard
- Indicates Core Run.

COMPONENT PROPORTIONS

DESCRIPTIVE TERMS	RANGE OF PROPORTION
Trace	1 - 5%
Few	5 - 10%
Little	10 - 20%
Some	20 - 35%
And	35 - 50%

COMPONENT DEFINITIONS

COMPONENT	SIZE RANGE
Boulders	Larger than 12 in
Cobbles	3 in to 12 in
Gravel	3 in to No 4 (4.5mm)
Coarse gravel	3 in to 3/4 in
Fine gravel	3/4 in to No 4 (4.5mm)
Sand	No. 4 (4.5mm) to No. 200 (0.074mm)
Coarse sand	No. 4 (4.5 mm) to No. 10 (2.0 mm)
Medium sand	No. 10 (2.0 mm) to No. 40 (0.42 mm)
Fine sand	No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt and Clay	Smaller than No. 200 (0.074 mm)

MOISTURE CONTENT

DRY	Absence of moisture, dusty, dry to the touch.
DAMP	Some perceptible moisture; below optimum
MOIST	No visible water; near optimum moisture content
WET	Visible free water, usually soil is below water table.

RELATIVE DENSITY OR CONSISTENCY VERSUS SPT N -VALUE

COHESIONLESS SOILS		COHESIVE SOILS		
Density	N (blows/ft)	Consistency	N (blows/ft)	Approximate Undrained Shear Strength (psf)
Very Loose	0 to 4	Very Soft	0 to 2	< 250
Loose	4 to 10	Soft	2 to 4	250 - 500
Medium Dense	10 to 30	Medium Stiff	4 to 8	500 - 1000
Dense	30 to 50	Stiff	8 to 15	1000 - 2000
Very Dense	over 50	Very Stiff	15 to 30	2000 - 4000
		Hard	over 30	> 4000

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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20083-17

Log of Boring B-1

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: 30'

Drilling Method: Simco 2800HS

Hammer Weight: 140 lbs | Drop: 30"

Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp					
		NATURAL Clayey SAND Brown, very dense, damp to moist	X	20/24/21	9.1		3(
5							
		Silty (fine to medium grained) SAND Brown, very dense, moist	X	17/25/29	8.5		2
10							
		Sandy SILT Grey-brown, stiff, moist	X	20/22/25	11.2		5
15							
		Silty (fine to coarse grained) SAND Brown, very dense, moist; with occasional gravel and slightly silty	X	18/20/22	8.6		1
20							
		Sandy SILT Grey-brown, stiff, moist to very moist	X	14/17/20	12.6		5
25							
		Silty (fine to coarse grained) SAND Brown, dense, wet; slightly silty to silty	X	12/15/17	17.4		1
30							
35							

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1

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Log of Boring B-1

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: 30'

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Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
35		Silty (fine to coarse grained) SAND Brown, dense, wet; slightly silty to silty		10/16/25	20.1		2
40		SAND (medium to coarse grained) Yellow-brown, dense, wet		13/17/21	19.3		5
45		Silty (fine to coarse grained) SAND Grey-brown, dense, wet; silty to slightly silty		15/29/32	17.2		3
50				14/25/32	17.5		1
		Boring completed at depth of 51.5'					
55							
60							
65							
70							

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2

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Log of Boring B-2

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: None Encountered

Drilling Method: Simco 2800HS

Hammer Weight: 140 lbs | Drop: 30"

Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp					
		NATURAL Clayey SAND Brown, very dense, damp to moist					
5				35/41	8.8	118.2	
		Silty (fine to medium grained) SAND Brown, very dense, damp					
10				30/42	7.7	121.7	
		Sandy SILT Grey-brown, very stiff, moist					
15				30/42	12.6	117.0	
		Silty (fine to coarse grained) SAND Brown, very dense, moist; with occasional gravel; slightly silty					
20		Boring completed at depth of 20'		22/38	10.3	120.3	
25							
30							
35							

GWT not encountered

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3

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Log of Trench T-1

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: None Encountered

Drilling Method: Backhoe

Hammer Weight: | Drop:

Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp					
		NATURAL Clayey SAND Brown, dense, damp					
5		GWT not encountered Trench completed at depth of 5'					
10							
15							
20							
25							
30							
35							

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Log of Trench T-2

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: None Encountered

Drilling Method: Backhoe

Hammer Weight: | Drop:

Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp					
		NATURAL Clayey SAND Brown, dense to very dense, damp					
5		GWT not encountered					
10		Trench completed at depth of 10'					
15							
20							
25							
30							
35							

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Log of Trench T-3

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: None Encountered

Drilling Method: Backhoe

Hammer Weight: | Drop:

Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp	■		7.0	114.2	
		NATURAL Clayey SAND Brown, dense, damp	■		9.8	121.1	
10		Silty (fine to medium grained) SAND Brown, very dense, damp	■		6.4	122.9	
		Sandy SILT Grey-brown, stiff, moist					
15		Trench completed at depth of 15'	■		12.1	115.5	
20							
25							
30							
35							

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Log of Trench T-4

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: None Encountered

Drilling Method: Backhoe

Hammer Weight: | Drop:

Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp	■		10.2	115.4	
		NATURAL Clayey SAND Brown, dense, moist					
5		GWT not encountered					
			■		12.5	120.7	
10		Trench completed at depth of 10'					
15							
20							
25							
30							
35							

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Log of Trench T-5

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: None Encountered

Drilling Method: Backhoe

Hammer Weight: | Drop:

Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp			5.5	120.3	
		NATURAL Clayey SAND Brown, dense, damp					
5		Trench completed at depth of 5'					
10							
15							
20							
25							
30							
35							

GWT not encountered

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Log of Trench T-6

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: None Encountered

Drilling Method: Backhoe

Hammer Weight: | Drop:

Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp					
		NATURAL Clayey SAND Brown, dense, damp to moist					
5			■		11.7	117.5	
10		Trench completed at depth of 10'	■		11.1	121.6	
15							
20							
25							
30							
35							

GWT not encountered

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Log of Trench T-7

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: None Encountered

Drilling Method: Backhoe

Hammer Weight: | Drop:

Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp	■		2.7	116.3	
		NATURAL Clayey SAND Brown, dense, damp	■		5.9	121.7	
10		Silty (fine to medium grained) SAND Brown, very dense, damp	■		8.1	119.5	
		Trench completed at depth of 12'					
15							
20							
25							
30							
35							

GWT not encountered

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Log of Trench T-8

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: None Encountered

Drilling Method: Backhoe

Hammer Weight: | Drop:

Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp					
		GWT not encountered					
		NATURAL Clayey SAND Brown, dense, damp					
5		Trench completed at depth of 5'					
10							
15							
20							
25							
30							
35							

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Appendix B

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

December 19, 2017 Project Number 20083-17

TABLE I
MAXIMUM DENSITY TESTS

Sample	Classification	Optimum Moisture	Maximum Dry Density (lbs./cu.ft.)
T-3 @ 2'	Clayey SAND	11.0	128.0

TABLE II
EXPANSION INDEX TESTS

Soil Type	Classification	Expansion Index
T-3 @ 2'	Clayey SAND	15

TABLE III
ATTERBERG LIMITS

Sample	Liquid Limit	Plastic Limit	Plasticity Index
B-1 @ 5'	24	19	5
B-1 @ 10'	20	17	3

TABLE IV
CORROSION TESTS

Sample	pH	Electrical Resistivity (ohm-cm)	Sulfate (%)	Chloride (ppm)
T-3 @ 2'	6.8	3,134	0.003	209

ND denotes not detected
% by weight
ppm – mg/kg

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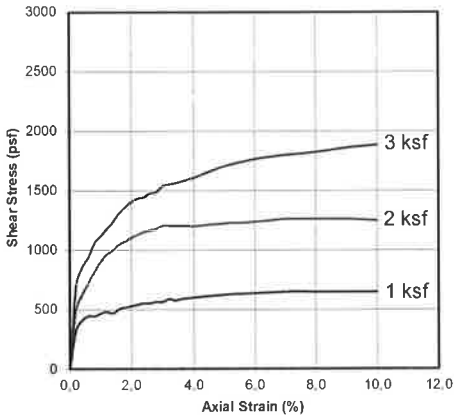
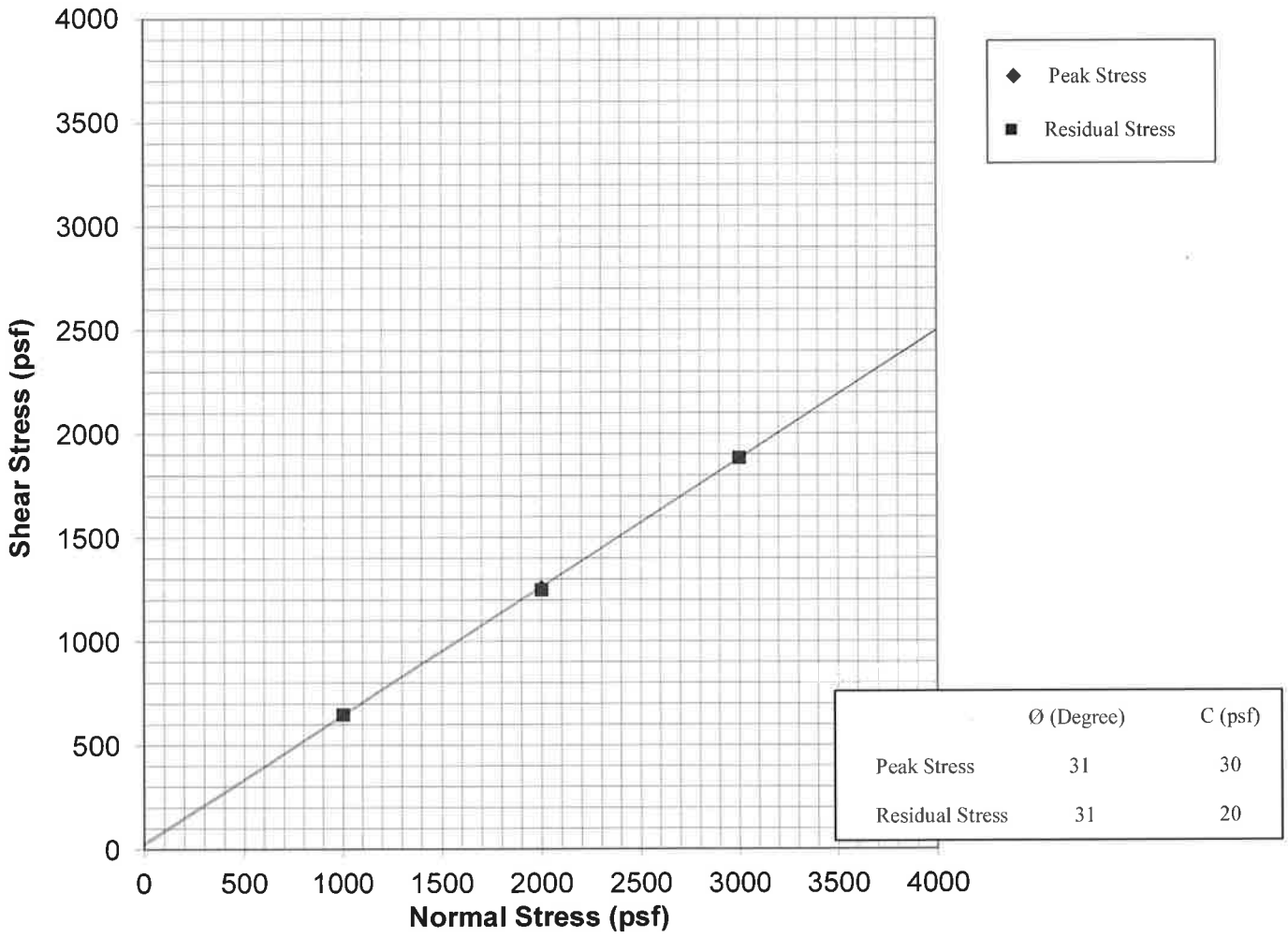
Sample No.		T3@2'		
Sample Type:		Undisturbed/Saturated		
Soil Description:		Clayey Sand		
		1	2	3
Normal Stress	(psf)	1000	2000	3000
Peak Stress	(psf)	648	1260	1884
Displacement	(in)	0.175	0.175	0.250
Residual Stress	(psf)	648	1248	1884
Displacement	(in.)	0.250	0.250	0.250
In Situ Dry Density	(pcf)	114.2	114.2	114.2
In Situ Water Content	(%)	7.0	7.0	7.0
Saturated Water Content	(%)	17.6	17.6	17.6
Strain Rate	(in/min)	0.020	0.020	0.020





	Ø (Degree)	C (psf)
Peak Stress	31	30
Residual Stress	31	20

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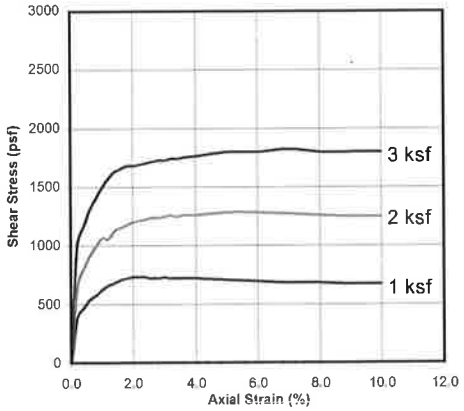
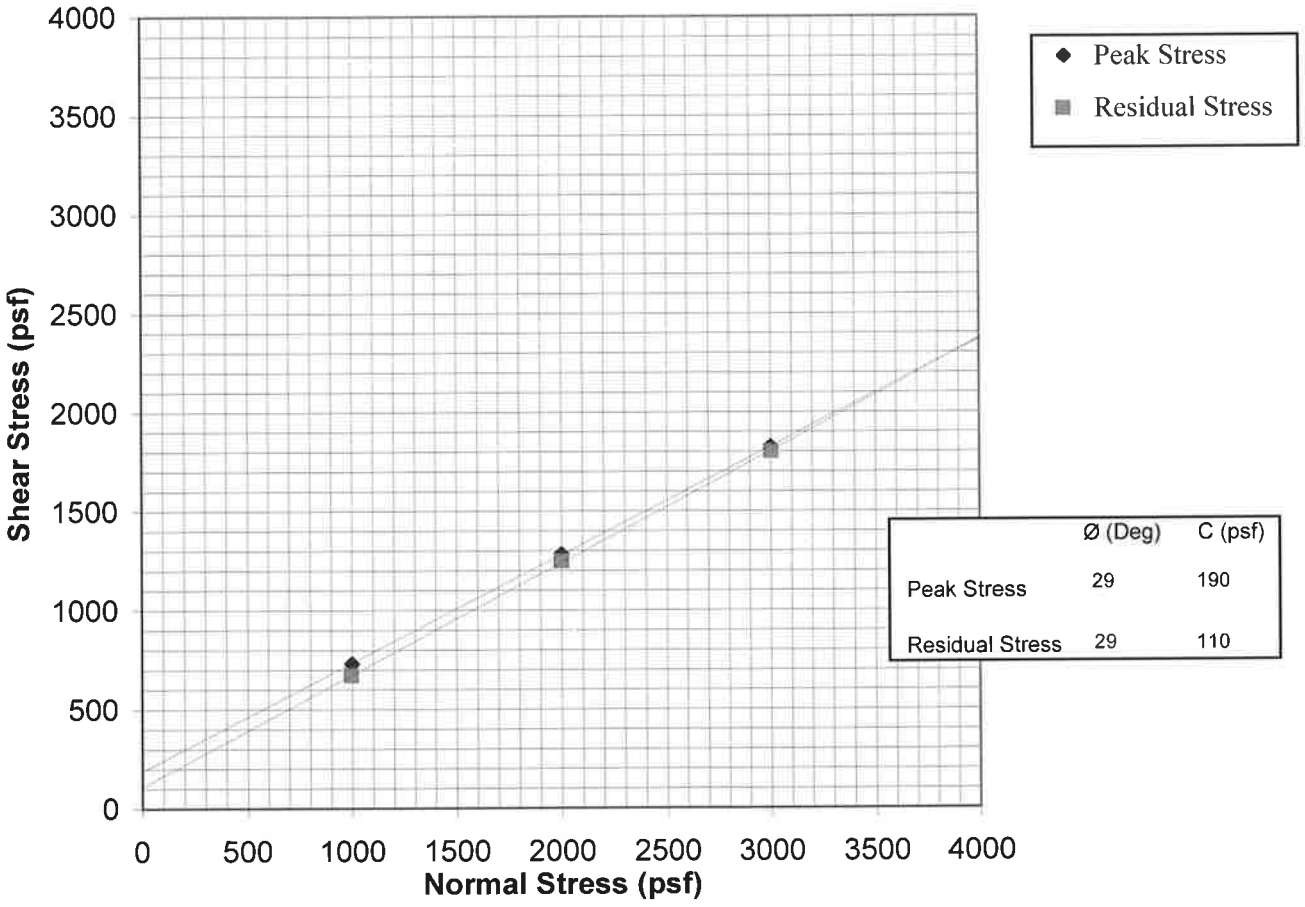
PROJECT NUMBER: 20083-17 DATE: 12/19/2017

DIRECT SHEAR TEST
ASTM D3080
Plate A

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Sample No.		T7@2'		
Sample Type:		Undisturbed-Saturated		
Soil Description:		Clayey Sand		
		1	2	3
Normal Stress	(psf)	1000	2000	3000
Peak Stress	(psf)	732	1284	1824
Displacement	(in.)	0.050	0.125	0.175
Residual Stress	(psf)	672	1248	1800
Displacement	(in.)	0.250	0.250	0.250
Initial Dry Density	(pcf)	116.3	116.3	116.3
Initial Water Content	(%)	2.7	2.7	2.7
Strain Rate	(in./min.)	0.020	0.020	0.020





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PROJECT NUMBER: 20083-17 DATE: 12/19/2017

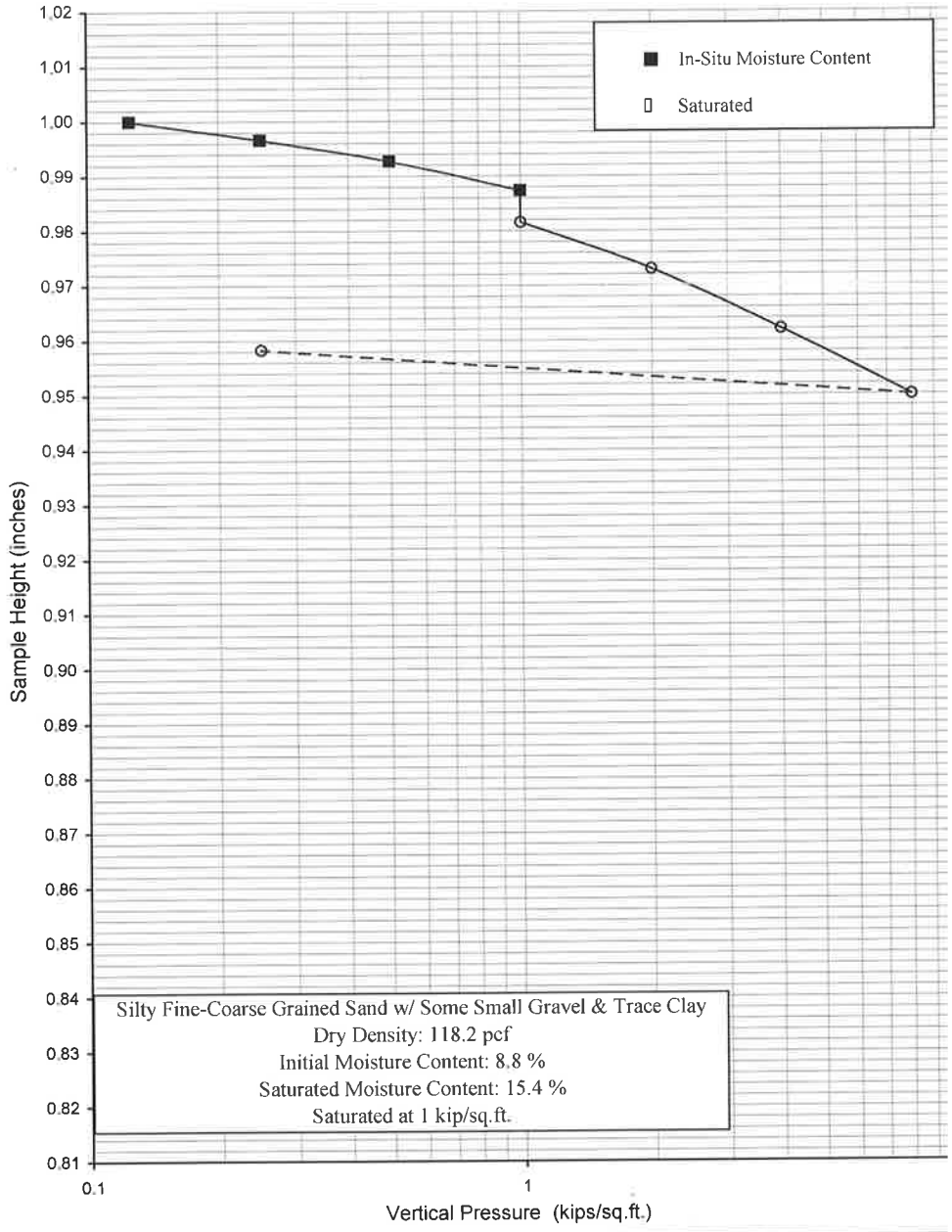
DIRECT SHEAR TEST
ASTM D3080
Plate B

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Vertical Pressure (kips/sq.ft.)	Sample Height (inches)	Consolidation (percent)	
0.125	1.0000	0.0	
0.25	0.9966	0.3	
0.5	0.9927	0.7	
1	0.9873	1.3	
1	0.9815	1.9	
2	0.9730	2.7	
4	0.9620	3.8	
8	0.9499	5.0	
0.25	0.9583	4.2	Saturated

Date Tested: 12/13/2017
Sample: B2
Depth: 5'

Sample No.	B2	Depth	5'	Date	12/19/2017



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PROJECT NUMBER: 20083-17 DATE: 12/19/2017

CONSOLIDATION TEST

ASTM D2435

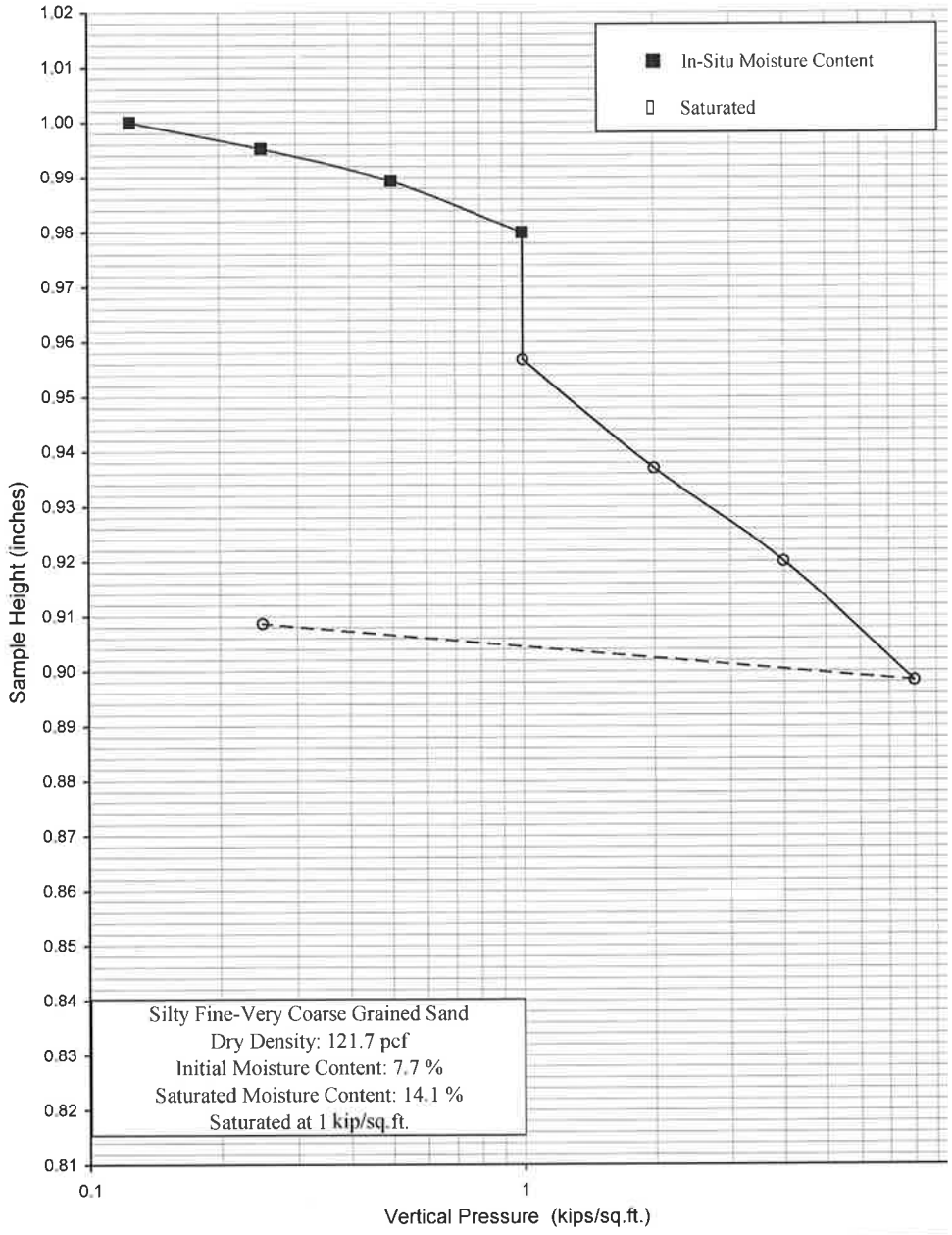
Plate C

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Vertical Pressure (kips/sq.ft.)	Sample Height (inches)	Consolidation (percent)	
0.125	1.0000	0.0	
0.25	0.9952	0.5	
0.5	0.9893	1.1	
1	0.9799	2.0	
1	0.9568	4.3	Saturated
2	0.9370	6.3	
4	0.9200	8.0	
8	0.8982	10.2	
0.25	0.9087	9.1	

Date Tested: 12/14/2017
Sample: B2
Depth: 10'

Sample No.	B2	Depth	10'	Date	12/19/2017



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PROJECT NUMBER: 20083-17 DATE: 12/19/2017

CONSOLIDATION TEST

ASTM D2435

Plate D

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendix C

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

NORCAL ENGINEERING
SOILS AND GEOTECHNICAL CONSULTANTS

Project:	**Newcastle Partners**
Project No:	20083-17
Date:	12/5/17
Test No.	1
Depth:	5'
Tested By:	J.S.

	TIME (hr/min)	CHANGE TIME (min)	CUMULATIVE TIME (min)	INNER RING READING (cm)	INNER RING CHANGE	INNER RING FLOW (cc)	OUTER RING READING (cm)	OUTER RING CHANGE (cm)	OUTER RING FLOW (cc)	INNER RING INF RATE (cm/hr)	OUTER RING INF RATE (cm/hr)	INNER RING INF RATE (ft/hr)
1	9:04			104.5			47.0					
	9:14	10	10	104.6	0.1		47.3	0.3		1.8	1.8	
2	9:14			104.6			47.3					
	9:24	10	20	105.0	0.4		47.6	0.3		1.8	1.8	
3	9:24			105.0			47.6					
	9:34	10	30	105.1	0.1		47.8	0.2		1.2	1.2	
4	9:34			105.1			47.8					
	9:44	10	40	105.2	0.1		47.9	0.1		0.6	0.5	
5	9:44			105.2			47.9					
	9:54	10	50	105.3	0.1		48.1	0.2		1.2	1.2	
6	9:54			105.3			48.1					
	10:04	10	60	105.3	0.0		48.1	0.0		0.0	0.0	
7	10:04			105.3			48.1					
	10:14	10	70	105.3	0.0		48.1	0.0		0.0	0.0	
8	10:14			105.3			48.1					
	10:24	10	80	105.3	0.0		48.1	0.0		0.0	0.0	
9	10:24			105.3			48.1					
	10:34	10	90	105.3	0.0		48.1	0.0		0.0	0.0	
10	10:34			105.3			48.1					
	10:44	10	100	105.3	0.0		48.1	0.0		0.0	0.0	
11	10:44			105.3			48.1					
	10:54	10	110	105.3	0.0		48.1	0.0		0.0	0.0	
12	10:54			105.3			48.1					
	11:04	10	120	105.3	0.0		48.1	0.0		0.0	0.0	
									Average =	0.55	/ 0.55	

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

NORCAL ENGINEERING
SOILS AND GEOTECHNICAL CONSULTANTS

Project:	**Newcastle Partners**
Project No:	20083-17
Date:	12/5/17
Test No.	2
Depth:	10'
Tested By:	J.S.

	TIME (hr/min)	CHANGE TIME (min)	CUMULATIVE TIME (min)	INNER RING READING (cm)	INNER RING CHANGE	INNER RING FLOW (cc)	OUTER RING READING (cm)	OUTER RING CHANGE (cm)	OUTER RING FLOW (cc)	INNER RING INF RATE (cm/hr)	OUTER RING INF RATE (cm/hr)	INNER RING INF RATI (ft/hr)
1	11:32			106.4			49.6					
	11:42	10	10	106.5	0.1		49.9	0.3		0.6	1.8	
2	11:42			106.5			49.9					
	11:52	10	20	106.5	0.0		50.0	0.1		0.0	0.6	
3	11:52			106.5			50.0					
	12:02	10	30	106.6	0.1		50.0	0.0		0.6	0.0	
4	12:02			106.6			50.0					
	12:12	10	40	106.7	0.1		50.1	0.1		0.6	0.6	
5	12:12			106.7			50.1					
	12:22	10	50	106.7	0.0		50.1	0.0		0.0	0.0	
6	12:22			106.7			50.1					
	12:32	10	60	106.7	0.0		50.1	0.0		0.0	0.0	
7	12:32			106.7			50.1					
	12:42	10	70	106.8	0.1		50.2	0.1		0.6	0.6	
8	12:42			106.8			50.2					
	12:52	10	80	106.8	0.0		50.3	0.1		0.0	0.6	
9	12:52			106.8			50.3					
	1:02	10	90	106.9	0.1		50.4	0.1		0.6	0.6	
10	1:02			106.9			50.4					
	1:12	10	100	106.9	0.0		50.4	0.0		0.0	0.0	
11	1:12			106.9			50.4					
	1:22	10	110	107.0	0.1		50.5	0.1		0.6	0.6	
12	1:22			107.0			50.5					
	1:32	10	120	107.0	0.0		50.5	0.0		0.0	0.0	

Average = 0.3 / 0.4

Attachment: Project 1_Geotechnical Investigation (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Centerpointe

GREENHOUSE GAS ANALYSIS

CITY OF MORENO VALLEY

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JUNE 4, 2018

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Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

LIST OF ABBREVIATED TERMS

(1)	Reference
ARB	California Air Resources Board
AQIA	Air Quality Impact Analysis
CAA	Federal Clean Air Act
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resource Board
CAT	Climate Action Team
CBSC	California Building Standards Commission
CEC	California Energy Commission
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFC	Chlorofluorocarbons
CFR	Code of Federal Regulations
CH4	Methane
CO	Carbon Monoxide
CO2	Carbon Dioxide
CO2e	Carbon Dioxide Equivalent
CPUC	California Public Utilities Commission
EPA	Environmental Protection Agency
EPS	Emission Performance Standard
GCC	Global Climate Change
GHGA	Greenhouse Gas Analysis
GWP	Global Warming Potential
HFC	Hydrofluorocarbons
LCA	Life-Cycle Analysis
MMs	Mitigation Measures
MMTCO2e	Million Metric Ton of Carbon Dioxide Equivalent
MTCO2e	Metric Ton of Carbon Dioxide Equivalent
N20	Nitrogen Dioxide
NIOSH	National Institute for Occupational Safety and Health
NOx	Oxides of Nitrogen
PFC	Perfluorocarbons
PM10	Particulate Matter 10 microns in diameter or less
PM2.5	Particulate Matter 2.5 microns in diameter or less

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

PPM	Parts Per Million
Project	Centerpointe
RTP	Regional Transportation Plan
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
UNFCCC	United Nations' Framework Convention on Climate Change
VOC	Volatile Organic Compounds

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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EXECUTIVE SUMMARY

GHG Impact #1: The Project would not generate direct or indirect greenhouse gas emission that would result in a significant impact on the environment.

The City of Moreno Valley does not have an adopted threshold of significance for GHG emissions. For CEQA purposes, the City has discretion to select an appropriate significance criterion, based on substantial evidence. The South Coast Air Quality Management District's (SCAQMD)'s adopted numerical threshold of 10,000 metric tons carbon dioxide equivalent ($MTCO_2e$) per year for industrial stationary source emissions is selected as the significance criterion. The SCAQMD-adopted industrial threshold was selected by the City because the proposed Project is analogous to an industrial use much more closely than any other land use such as commercial or residential in terms of its expected operating characteristics. The Project proposes a warehouse and industrial use that will serve mid- stream functions in the goods movement chain between manufacturers and consumers, characteristic of an industrial operation. Further, analysis of the Project's traffic generation in this report is based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, 2017 for warehouse and industrial land use categories. Also, 10,000 $MTCO_2e$ has been used as the significance threshold by many local government lead agencies for logistics projects throughout the SCAG region since the SCAQMD adopted this threshold for its own use. Further, to ensure that the threshold is conservative in its application, although the SCAQMD uses their adopted 10,000 $MTCO_2e$ threshold to determine the significance of stationary source emissions for industrial projects, the 10,000 $MTCO_2e$ threshold used in this CEQA document is applied to all sources of Project-related GHG emissions whether stationary source, mobile source, area source, or other.

Use of this threshold is also consistent with guidance provided in the CAPCOA *CEQA and Climate Change* handbook, as such the City has opted to use a non-zero threshold approach based on Approach 2 of the handbook. Threshold 2.5 (Unit-Based Thresholds Based on Market Capture) establishes a numerical threshold based on capture of approximately 90 percent of emissions from future development. The latest threshold developed by SCAQMD using this method is 10,000 $MTCO_2e$ based on the review of 711 CEQA projects.

The Project will result in approximately 732.18 $MTCO_2e$ per year from construction, area, energy, waste, and water usage. In addition, the Project has the potential to result in an additional 4,782.94 $MTCO_2e$ per year from mobile sources if the assumption is made that all of the vehicle trips to and from the Project are "new" trips resulting from the development of the Project. As shown on Table ES-1, the Project has the potential to generate a total of approximately 5,515.11 $MTCO_2e$ per year. As such, the Project would not exceed the SCAQMD's numeric threshold of 10,000 $MTCO_2e$ if it were applied. Thus, the Project would not have the potential to result in a cumulatively considerable impact with respect to GHG emissions.

TABLE ES-1: PROJECT GREENHOUSE GAS EMISSIONS (ANNUAL)

Emission Source	Emissions (metric tons per year)			
	CO_2	CH_4	N_2O	Total CO_2E
Annual construction-related emissions amortized over 30 years	16.96	0.00	0.00	17.01
Area	9.13E-03	2.00E-05	0.00	9.75E-03
Energy	350.433	0.01	3.86E-03	351.90
Mobile Sources (Passenger Cars)	1,895.67	0.04	0.00	1,896.64
Mobile Sources (Trucks)	2,883.01	0.13	0.00	2,886.30
Waste	41.41	2.45	0.00	102.60
Water Usage	210.71	1.55	0.04	260.66
Total CO_2E (All Sources)	**5,515.11**			
Screening Threshold (CO_2E)	**10,000**			
Threshold Exceeded?	**NO**			

GHG Impact #2: The Project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

The Project would be consistent with and would not conflict with implementation of the goals and objectives established by Assembly Bill 32 (AB 32) and Senate Bill 32 (SB 32) (or targets established by Executive Orders S-3-05 and B-30-15) as evaluated in Section 3.7 of this report. As such, the Project would result in a less than significant impact with respect to this threshold.

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

1 INTRODUCTION

This report presents the results of the greenhouse gas analysis (GHGA) prepared by Urban Crossroads, Inc., for the proposed Brodiaea Commerce Center ("Project"). The purpose of this GHGA is to evaluate Project-related construction and operational emissions and determine the level of greenhouse gas (GHG) impacts as a result of constructing and operating the proposed Project.

1.1 SITE LOCATION

The proposed Centerpointe site is located on the northeast corner of Frederick Street and Brodiaea Avenue in the City of Moreno Valley, as shown on Exhibit 1-A. Existing uses in the Project study area include a commercial-designated vacant lot north of the Project site, existing business park/warehouse use to the east, the Riverside County Department of Waste Resources facilities to the south, and existing City of Moreno Valley offices to the west. The closest existing residential homes to the Project site are located approximately 800 feet north of the Project site across Alessandro Boulevard. The March Air Reserve Base/Inland Port Airport (MARB/IPA) runway is located approximately 1.2 miles southwest of the Project site, and Interstate 215 (I-215) is located roughly 1.2 miles west of the Project site.

1.2 PROJECT DESCRIPTION

The Project is proposed to consist of up to 163,218 square feet (sf) of warehouse (without cold storage) use (80 percent of the total square footage) and 40,804 sf of general light industrial use (20 percent of the total square footage) for a total of 204,022 sf within a single building, as shown on Exhibit 1-B. The Project is anticipated to have an Opening Year of 2020[1]. At the time this air quality analysis was prepared the future tenants of the proposed Project were unknown. The Project business operations would primarily be conducted within the enclosed buildings, except for traffic movement, parking, as well as loading and unloading of trucks at designated loading bays. This air quality analysis is intended to describe air quality level impacts associated with the expected typical warehouse and distribution storage activities at the Project site. At the time of this analysis, no cold storage was planned at the Project site, and therefore is not analyzed in this report.

According to the *Centerpointe Traffic Impact Analysis* prepared by Urban Crossroads, Inc., the Project is expected to generate a net total of approximately 486 trip-ends per day (actual vehicles) (1). The Project trip generation includes 100 truck trip-ends per day from the proposed

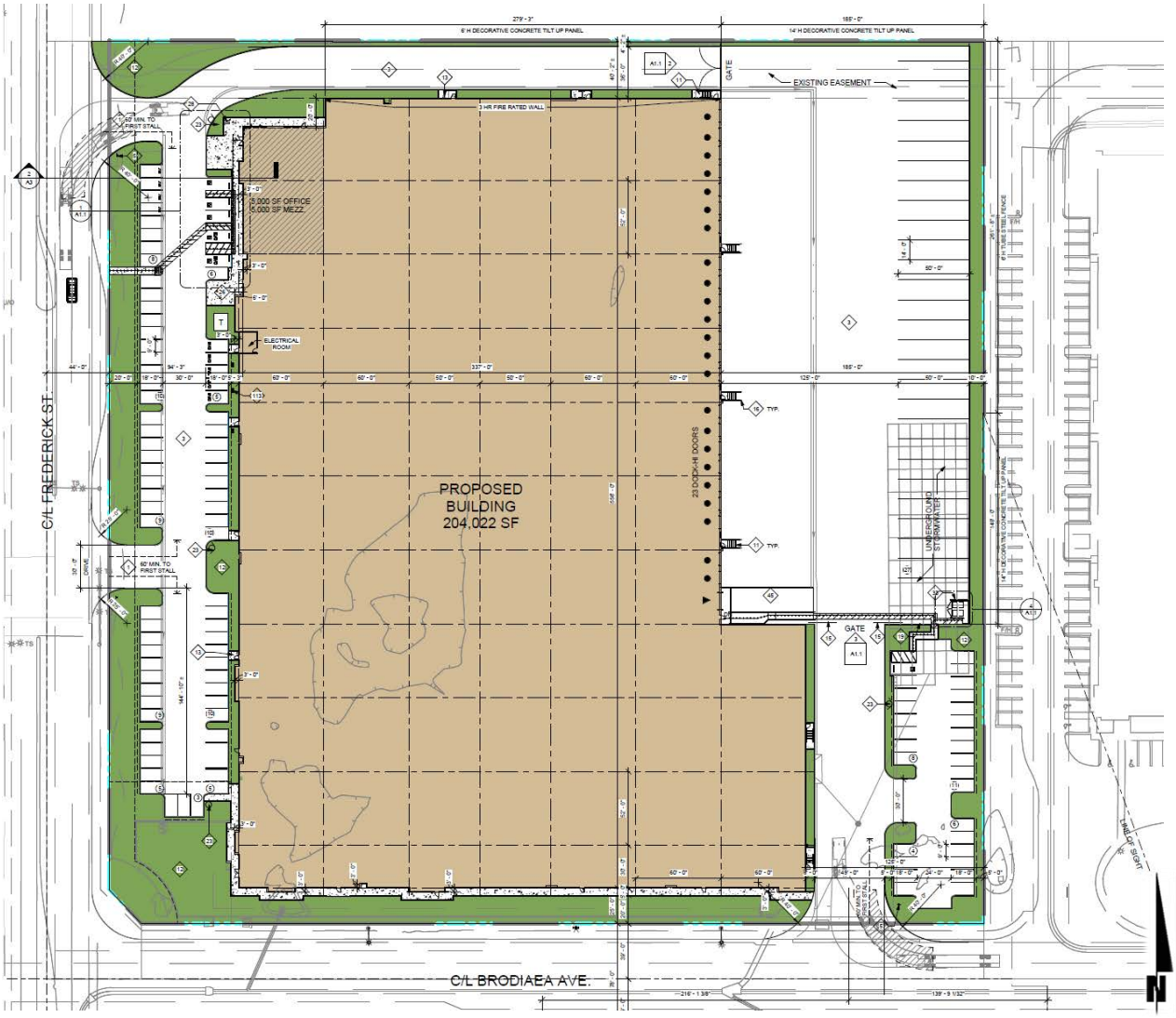
[1] The Traffic Impact Analysis (TIA) prepared for the Project evaluates an Opening Year of 2023 since the City of Moreno Valley traffic study guidelines require the Opening Year to be a minimum of 5 years from baseline (2018) conditions. Utilizing a 2020 Opening Year for purposes of this AQIA would generate more emissions than if the Project utilized a 2023 Opening Year consistent with the traffic study because as the analysis year increases, vehicle emission factors would decrease as a result of emissions regulations becoming more stringent. Utilizing a 2020 Opening Year for purposes of the GHG herein represents a conservative estimate of emissions compared to if a 2023 Opening Year, consistent with the traffic study, were utilized.

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

EXHIBIT 1-A: LOCATION MAP

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

EXHIBIT 1-B: SITE PLAN



Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

buildings within the Project site. This air quality study relies on the net Project trips to accurately account for the effect of individual truck trips on the study area roadway network.

1.3 Regulatory Requirements

The Project would be required to comply with all mandates imposed by the State of California and the South Coast Air Quality Management District aimed at the reduction of air quality emissions. Those that are applicable to the Project and that would assist in the reduction of greenhouse gas emissions are:

- Global Warming Solutions Act of 2006 (AB32) (2)
- Regional GHG Emissions Reduction Targets/Sustainable Communities Strategies (SB 375) (3)
- Pavely Fuel Efficiency Standards (AB1493). Establishes fuel efficiency ratings for new vehicles (4).
- Title 24 California Code of Regulations (California Building Code). Establishes energy efficiency requirements for new construction (5).
- Title 20 California Code of Regulations (Appliance Energy Efficiency Standards). Establishes energy efficiency requirements for appliances (6).
- Title 17 California Code of Regulations (Low Carbon Fuel Standard). Requires carbon content of fuel sold in California to be 10% less by 2020 (7).
- California Water Conservation in Landscaping Act of 2006 (AB1881). Requires local agencies to adopt the Department of Water Resources updated Water Efficient Landscape Ordinance or equivalent by January 1, 2010 to ensure efficient landscapes in new development and reduced water waste in existing landscapes (8).
- Statewide Retail Provider Emissions Performance Standards (SB 1368). Requires energy generators to achieve performance standards for GHG emissions (9).
- Renewable Portfolio Standards (SB 1078). Requires electric corporations to increase the amount of energy obtained from eligible renewable energy resources to 20 percent by 2010 and 33 percent by 2020 (10).

Promulgated regulations that will affect the Project's emissions are accounted for in the Project's GHG calculations provided in this report. In particular, the Pavley Standards, Low Carbon Fuel Standards, and Renewable Portfolio Standards (RPS) will be in effect for the AB 32 target year of 2020, and therefore are accounted for in the Project's emission calculations.

1.4 Construction and Operational-Source Air Pollutant Emissions Mitigation Measures

The Project would not result in any significant impacts during construction and operational activity. Therefore, no mitigation measures are required.

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

2 CLIMATE CHANGE SETTING

2.1 INTRODUCTION TO GLOBAL CLIMATE CHANGE

Global Climate Change (GCC) is defined as the change in average meteorological conditions on the earth with respect to temperature, precipitation, and storms. GCC is currently one of the most controversial environmental issues in the United States, and much debate exists within the scientific community about whether or not GCC is occurring naturally or as a result of human activity. Some data suggests that GCC has occurred in the past over the course of thousands or millions of years. These historical changes to the earth's climate have occurred naturally without human influence, as in the case of an ice age. However, many scientists believe that the climate shift taking place since the industrial revolution (1900) is occurring at a quicker rate and magnitude than in the past. Scientific evidence suggests that GCC is the result of increased concentrations of greenhouse gases in the earth's atmosphere, including carbon dioxide, methane, nitrous oxide, and fluorinated gases. Many scientists believe that this increased rate of climate change is the result of greenhouse gases resulting from human activity and industrialization over the past 200 years.

An individual project like the proposed Project evaluated in this GHGA cannot generate enough greenhouse gas emissions to affect a discernible change in global climate. However, the proposed Project may participate in the potential for GCC by its incremental contribution of greenhouse gases combined with the cumulative increase of all other sources of greenhouse gases, which when taken together constitute potential influences on GCC. Because these changes may have serious environmental consequences, Section 3.0 will evaluate the potential for the proposed Project to have a significant effect upon the environment as a result of its potential contribution to the greenhouse effect.

2.2 GREENHOUSE GAS EMISSIONS INVENTORIES

Global

Worldwide anthropogenic (human) GHG emissions are tracked by the Intergovernmental Panel on Climate Change for industrialized nations (referred to as Annex I) and developing nations (referred to as Non-Annex I). Human GHG emissions data for Annex I nations are available through 2015. For the Year 2015, the sum of these emissions totaled approximately 28,872,564 Gg $CO2e^2$ (11) (12). The GHG emissions in more recent years may differ from the inventories presented in Table 2-1; however, the data is representative of currently available inventory data.

United States

As noted in Table 2-1, the United States, as a single country, was the number two producer of GHG emissions in 2015. The primary greenhouse gas emitted by human activities in the United States was CO2, representing approximately 83 percent of total greenhouse gas emissions (13).

2 The global emissions are the sum of Annex I and non-Annex I countries, without counting Land-Use, Land-Use Change and Forestry (LULUCF). For countries without 2005 data, the UNFCCC data for the most recent year were used. United Nations Framework Convention on Climate Change, "Annex I Parties – GHG total without LULUCF,"

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Carbon dioxide from fossil fuel combustion, the largest source of US greenhouse gas emissions, accounted for approximately 78 percent of the GHG emissions.

TABLE 2-1: TOP GHG PRODUCER COUNTRIES AND THE EUROPEAN UNION [3]

Emitting Countries	GHG Emissions (Gg CO2e)
China	11,895,765
United States	6,586,655
European Union (28 member countries)	4,315,773
India	2,650,954
Russian Federation	2,100,849
Japan	1,322,568
Total	**28,872,564**

State of California

CARB compiles GHG inventories for the State of California. Based upon the 2017 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2015 greenhouse gas emissions inventory, California emitted 440.4 MMTCO2e including emissions resulting from imported electrical power in 2015 (14). Based on the CARB inventory data and GHG inventories compiled by the World Resources Institute, California's total statewide GHG emissions rank second in the United States (Texas is number one) with emissions of 417 MMTCO2e excluding emissions related to imported power (15).

2.3 GLOBAL CLIMATE CHANGE DEFINED

GCC refers to the change in average meteorological conditions on the earth with respect to temperature, wind patterns, precipitation and storms. Global temperatures are regulated by naturally occurring atmospheric gases such as water vapor, CO2 (carbon dioxide), N2O (nitrous oxide), CH4 (methane), hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. These particular gases are important due to their residence time (duration they stay) in the atmosphere, which ranges from 10 years to more than 100 years. These gases allow solar radiation into the earth's atmosphere, but prevent radioactive heat from escaping, thus warming the earth's atmosphere. GCC can occur naturally as it has in the past with the previous ice ages.

Gases that trap heat in the atmosphere are often referred to as greenhouse gases. Greenhouse gases are released into the atmosphere by both natural and anthropogenic (human) activity. Without the natural greenhouse gas effect, the earth's average temperature would be approximately 61° Fahrenheit (F) cooler than it is currently. The cumulative accumulation of these gases in the earth's atmosphere is considered to be the cause for the observed increase in the earth's temperature.

Although California's rate of growth of greenhouse gas emissions is slowing, the state is still a substantial contributor to the U.S. emissions inventory total. In 2004, California is estimated to

[3] Used http://unfccc.int data for Annex I countries. Consulted the CAIT Climate Data Explorer in http://www.wri.org site to reference Non-Annex I countries such as China and India.

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have produced 492 million gross metric tons of CO2e greenhouse gas emissions. Despite a population increase of 16 percent between 1990 and 2004, California has significantly slowed the rate of growth of greenhouse gas emissions due to the implementation of energy efficiency programs as well as adoption of strict emission controls (16).

2.4 GREENHOUSE GASES

For the purposes of this analysis, emissions of carbon dioxide, methane, and nitrous oxide were evaluated (see Table 3-4 later in this report) because these gasses are the primary contributors to GCC from development projects. Although there are other substances such as fluorinated gases that also contribute to GCC, these fluorinated gases were not evaluated as their sources are not well-defined and do not contain accepted emissions factors or methodology to accurately calculate these gases.

Water Vapor: Water vapor (H20) is the most abundant, important, and variable greenhouse gas in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Changes in its concentration are primarily considered to be a result of climate feedbacks related to the warming of the atmosphere rather than a direct result of industrialization. A climate feedback is an indirect, or secondary, change, either positive or negative, that occurs within the climate system in response to a forcing mechanism. The feedback loop in which water is involved is critically important to projecting future climate change.

As the temperature of the atmosphere rises, more water is evaporated from ground storage (rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to 'hold' more water when it is warmer), leading to more water vapor in the atmosphere. As a GHG, the higher concentration of water vapor is then able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. The warmer atmosphere can then hold more water vapor and so on and so on. This is referred to as a "positive feedback loop." The extent to which this positive feedback loop will continue is unknown as there are also dynamics that hold the positive feedback loop in check. As an example, when water vapor increases in the atmosphere, more of it will eventually also condense into clouds, which are more able to reflect incoming solar radiation (thus allowing less energy to reach the earth's surface and heat it up).

There are no human health effects from water vapor itself; however, when some pollutants come in contact with water vapor, they can dissolve and the water vapor can then act as a pollutant-carrying agent. The main source of water vapor is evaporation from the oceans (approximately 85 percent). Other sources include: evaporation from other water bodies, sublimation (change from solid to gas) from sea ice and snow, and transpiration from plant leaves.

Carbon Dioxide: Carbon dioxide (CO2) is an odorless and colorless GHG. Outdoor levels of carbon dioxide are not high enough to result in negative health effects. Carbon dioxide is emitted from natural and manmade sources. Natural sources include: the decomposition of dead organic matter; respiration of bacteria, plants, animals and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources include: the burning of coal, oil, natural gas, and

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wood. Carbon dioxide is naturally removed from the air by photosynthesis, dissolution into ocean water, transfer to soils and ice caps, and chemical weathering of carbonate rocks (17).

Since the industrial revolution began in the mid-1700s, the sort of human activity that increases GHG emissions has increased dramatically in scale and distribution. Data from the past 50 years suggests a corollary increase in levels and concentrations. As an example, prior to the industrial revolution, CO2 concentrations were fairly stable at 280 parts per million (ppm). Today, they are around 370 ppm, an increase of more than 30 percent. Left unchecked, the concentration of carbon dioxide in the atmosphere is projected to increase to a minimum of 540 ppm by 2100 as a direct result of anthropogenic sources (18).

Methane: Methane (CH4) is an extremely effective absorber of radiation, though its atmospheric concentration is less than carbon dioxide and its lifetime in the atmosphere is brief (10-12 years), compared to other GHGs. No health effects are known to occur from exposure to methane.

Methane has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of methane. Other anthropocentric sources include fossil-fuel combustion and biomass burning.

Nitrous Oxide: Nitrous oxide (N2O), also known as laughing gas, is a colorless greenhouse gas. Nitrous oxide can cause dizziness, euphoria, and sometimes slight hallucinations. In small doses, it is considered harmless. However, in some cases, heavy and extended use can cause Olney's Lesions (brain damage) (19).

Concentrations of nitrous oxide also began to rise at the beginning of the industrial revolution. In 1998, the global concentration was 314 parts per billion (ppb). Nitrous oxide is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is used as an aerosol spray propellant, i.e., in whipped cream bottles. It is also used in potato chip bags to keep chips fresh. It is used in rocket engines and in race cars. Nitrous oxide can be transported into the stratosphere, be deposited on the earth's surface, and be converted to other compounds by chemical reaction

Chlorofluorocarbons: Chlorofluorocarbons (CFCs) are gases formed synthetically by replacing all hydrogen atoms in methane or ethane (C2H6) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble and chemically unreactive in the troposphere (the level of air at the earth's surface). CFCs are no longer being used; therefore, it is not likely that health effects would be experienced. Nonetheless, in confined indoor locations, working with CFC-113 or other CFCs is thought to result in death by cardiac arrhythmia (heart frequency too high or too low) or asphyxiation.

CFCs have no natural source, but were first synthesized in 1928. They were used for refrigerants, aerosol propellants and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and was extremely

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successful, so much so that levels of the major CFCs are now remaining steady or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years.

Hydrofluorocarbons: Hydrofluorocarbons (HFCs) are synthetic, man-made chemicals that are used as a substitute for CFCs. Out of all the greenhouse gases, they are one of three groups with the highest global warming potential. The HFCs with the largest measured atmospheric abundances are (in order), HFC-23 (CHF3), HFC-134a (CF3CH2F), and HFC-152a (CH3CHF2). Prior to 1990, the only significant emissions were of HFC-23. HFC-134a emissions are increasing due to its use as a refrigerant. The U.S. EPA estimates that concentrations of HFC-23 and HFC-134a are now about 10 parts per trillion (ppt) each; and that concentrations of HFC-152a are about 1 ppt (20). No health effects are known to result from exposure to HFCs, which are manmade for applications such as automobile air conditioners and refrigerants.

Perfluorocarbons: Perfluorocarbons (PFCs) have stable molecular structures and do not break down through chemical processes in the lower atmosphere. High-energy ultraviolet rays, which occur about 60 kilometers above earth's surface, are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane (CF4) and hexafluoroethane (C2F6). The U.S. EPA estimates that concentrations of CF4 in the atmosphere are over 70 ppt.

No health effects are known to result from exposure to PFCs. The two main sources of PFCs are primary aluminum production and semiconductor manufacture.

Sulfur Hexafluoride: Sulfur hexafluoride (SF6) is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It also has the highest global warming potential (GWP) of any gas evaluated (23,900). The U.S. EPA indicates that concentrations in the 1990s were about 4 ppt. In high concentrations in confined areas, the gas presents the hazard of suffocation because it displaces the oxygen needed for breathing.

Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

Greenhouse gases have varying GWP values; GWP values represent the potential of a gas to trap heat in the atmosphere. Carbon dioxide is utilized as the reference gas for GWP, and thus has a GWP of 1.

The atmospheric lifetime and GWP of selected greenhouse gases are summarized at Table 2-2. As shown in the table below, GWP for the Second Assessment Report (SAR), the Intergovernmental Panel on Climate Change (IPCC)'s scientific and socio-economic assessment on climate change, range from 1 for carbon dioxide to 23,900 for sulfur hexafluoride and GWP for the IPCC's 4th Assessment Report (AR4) range from 1 for carbon dioxide to 22,800 for sulfur hexafluoride.

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TABLE 2-2: GLOBAL WARMING POTENTIAL AND ATMOSPHERIC LIFETIME OF SELECT GHGS

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)	
		Second Assessment Report (SAR)	4th Assessment Report (AR4)
Carbon Dioxide	50-200	1	1
Methane	12 ± 3	21	25
Nitrous Oxide	120	310	298
HFC-23	264	11,700	14,800
HFC-134a	14.6	1,300	1,430
HFC-152a	1.5	140	124
Sulfur Hexafluoride (SF6)	3,200	23,900	22,800

Source: Table 2.14 of the IPCC Fourth Assessment Report, 2007

2.5 EFFECTS OF CLIMATE CHANGE IN CALIFORNIA

Public Health

Higher temperatures may increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation could increase from 25 to 35 percent under the lower warming range (3-5.5°F) to 75 to 85 percent under the medium warming range (5.5-8°F). In addition, if global background ozone levels increase as predicted in some scenarios, it may become impossible to meet local air quality standards. Air quality could be further compromised by increases in wildfires, which emit fine particulate matter that can travel long distances, depending on wind conditions. The Climate Scenarios report indicates that large wildfires could become up to 55 percent more frequent if GHG emissions are not significantly reduced.

In addition, under the higher warming range scenario (8-10.5°F), there could be up to 100 more days per year with temperatures above 90oF in Los Angeles and 95oF in Sacramento by 2100. This is a large increase over historical patterns and approximately twice the increase projected if temperatures remain within or below the lower warming range. Rising temperatures could increase the risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

Water Resources

A vast network of man-made reservoirs and aqueducts captures and transports water throughout the state from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages.

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If temperatures continue to increase, more precipitation could fall as rain instead of snow, and the snow that does fall could melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. Under the lower warming range scenario, snowpack losses could be only half as large as those possible if temperatures were to rise to the higher warming range. How much snowpack could be lost depends in part on future precipitation patterns, the projections for which remain uncertain. However, even under the wetter climate projections, the loss of snowpack could pose challenges to water managers and hamper hydropower generation. It could also adversely affect winter tourism. Under the lower warming range, the ski season at lower elevations could be reduced by as much as a month. If temperatures reach the higher warming range and precipitation declines, there might be many years with insufficient snow for skiing and snowboarding.

The State's water supplies are also at risk from rising sea levels. An influx of saltwater could degrade California's estuaries, wetlands, and groundwater aquifers. Saltwater intrusion caused by rising sea levels is a major threat to the quality and reliability of water within the southern edge of the Sacramento/San Joaquin River Delta – a major fresh water supply.

Agriculture

Increased temperatures could cause widespread changes to the agriculture industry reducing the quantity and quality of agricultural products statewide. First, California farmers could possibly lose as much as 25 percent of the water supply they need. Although higher CO2 levels can stimulate plant production and increase plant water-use efficiency, California's farmers could face greater water demand for crops and a less reliable water supply as temperatures rise. Crop growth and development could change, as could the intensity and frequency of pest and disease outbreaks. Rising temperatures could aggravate O3 pollution, which makes plants more susceptible to disease and pests and interferes with plant growth.

Plant growth tends to be slow at low temperatures, increasing with rising temperatures up to a threshold. However, faster growth can result in less-than-optimal development for many crops, so rising temperatures could worsen the quantity and quality of yield for a number of California's agricultural products. Products likely to be most affected include wine grapes, fruits and nuts.

In addition, continued global climate change could shift the ranges of existing invasive plants and weeds and alter competition patterns with native plants. Range expansion could occur in many species while range contractions may be less likely in rapidly evolving species with significant populations already established. Should range contractions occur, new or different weed species could fill the emerging gaps. Continued global climate change could alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates.

Forests and Landscapes

Global climate change has the potential to intensify the current threat to forests and landscapes by increasing the risk of wildfire and altering the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55 percent, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of

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factors, including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the state. In contrast, wildfires in northern California could increase by up to 90 percent due to decreased precipitation.

Moreover, continued global climate change has the potential to alter natural ecosystems and biological diversity within the state. For example, alpine and subalpine ecosystems could decline by as much as 60 to 80 percent by the end of the century as a result of increasing temperatures. The productivity of the state's forests has the potential to decrease as a result of global climate change.

Rising Sea Levels

Rising sea levels, more intense coastal storms, and warmer water temperatures could increasingly threaten the state's coastal regions. Under the higher warming range scenario, sea level is anticipated to rise 22 to 35 inches by 2100. Elevations of this magnitude would inundate low-lying coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats. Under the lower warming range scenario, sea level could rise 12-14 inches.

2.6 HUMAN HEALTH EFFECTS

The potential health effects related directly to the emissions of carbon dioxide, methane, and nitrous oxide as they relate to development projects such as the proposed Project are still being debated in the scientific community. Their cumulative effects to global climate change have the potential to cause adverse effects to human health. Increases in Earth's ambient temperatures would result in more intense heat waves, causing more heat-related deaths. Scientists also purport that higher ambient temperatures would increase disease survival rates and result in more widespread disease. Climate change will likely cause shifts in weather patterns, potentially resulting in devastating droughts and food shortages in some areas (21). Exhibit 2-A presents the potential impacts of global warming.

Specific health effects associated with directly emitted GHG emissions are as follows:

Water Vapor: There are no known direct health effects related to water vapor at this time. It should be noted however that when some pollutants react with water vapor, the reaction forms a transport mechanism for some of these pollutants to enter the human body through water vapor.

Carbon Dioxide: According to the National Institute for Occupational Safety and Health (NIOSH) high concentrations of carbon dioxide can result in health effects such as: headaches, dizziness, restlessness, difficulty breathing, sweating, increased heart rate, increased cardiac output, increased blood pressure, coma, asphyxia, and/or convulsions. It should be noted that current concentrations of carbon dioxide in the earth's atmosphere are estimated to be approximately 370 parts per million (ppm), the actual reference exposure level (level at which adverse health effects typically occur) is at exposure levels of 5,000 ppm averaged over 10 hours in a 40-hour workweek and short-term reference exposure levels of 30,000 ppm averaged over a 15 minute period (22).

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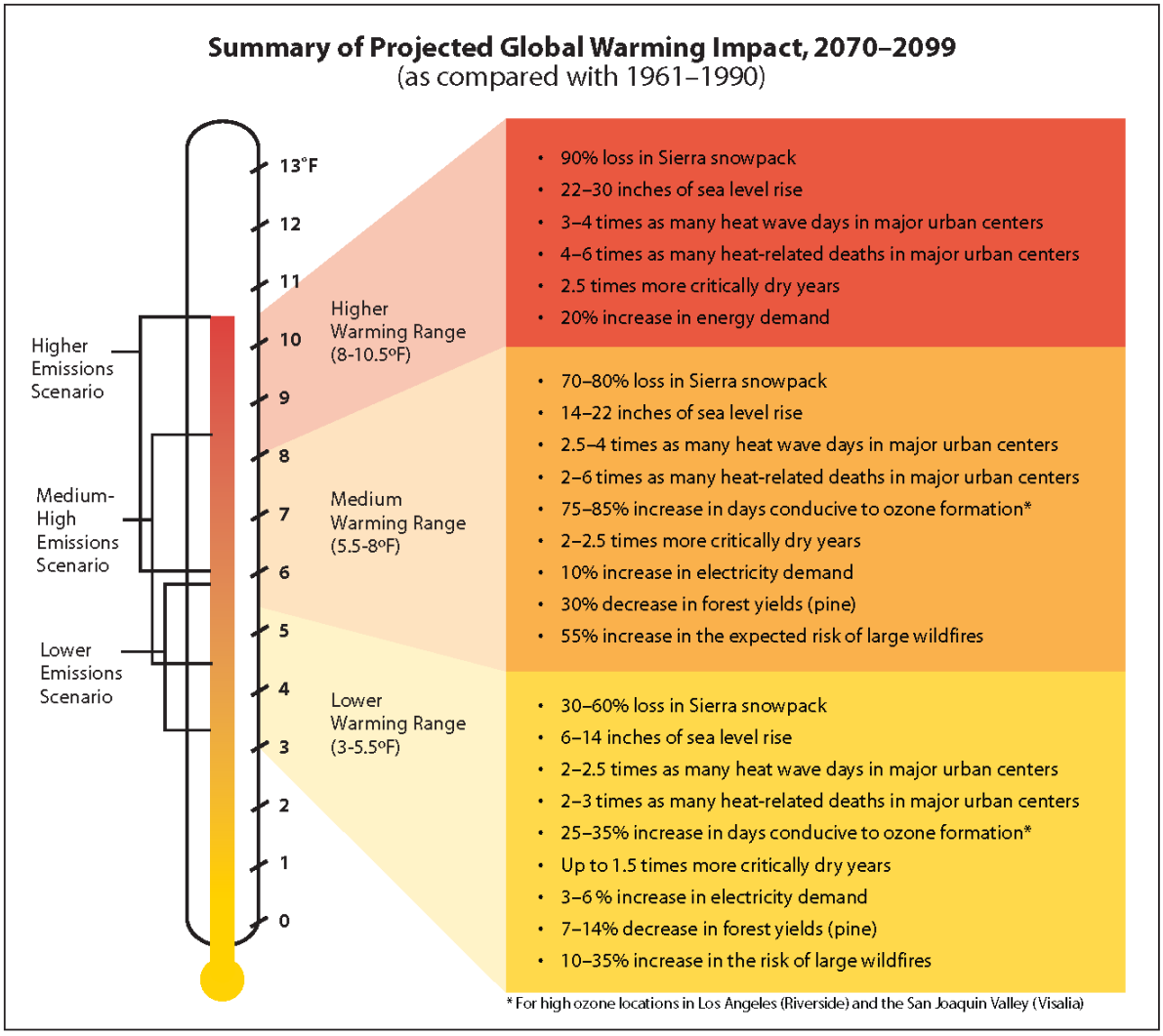
EXHIBIT 2-A: SUMMARY OF PROJECTED GLOBAL WARMING IMPACT



Methane: Methane is extremely reactive with oxidizers, halogens, and other halogen-containing compounds. Methane is also an asphyxiant and may displace oxygen in an enclosed space (23).

Nitrous Oxide: Nitrous Oxide is often referred to as laughing gas; it is a colorless greenhouse gas. The health effects associated with exposure to elevated concentrations of nitrous oxide include dizziness, euphoria, slight hallucinations, and in extreme cases of elevated concentrations nitrous oxide can also cause brain damage (23).

Fluorinated Gases: High concentrations of fluorinated gases can also result in adverse health effects such as asphyxiation, dizziness, headache, cardiovascular disease, cardiac disorders, and in extreme cases, increased mortality (22).

Aerosols: The health effects of aerosols are similar to that of other fine particulate matter. Thus aerosols can cause elevated respiratory and cardiovascular diseases as well as increased mortality (24).

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2.7 REGULATORY SETTING

INTERNATIONAL

Climate change is a global issue involving GHG emissions from all around the world; therefore, countries such as the ones discussed below have made an effort to reduce GHGs.

Intergovernmental Panel on Climate Change. In 1988, the United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change to assess the scientific, technical and socioeconomic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation.

United Nations Framework Convention on Climate Change (Convention). On March 21, 1994, the U.S. joined a number of countries around the world in signing the Convention. Under the Convention, governments gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

International Climate Change Treaties. The Kyoto Protocol is an international agreement linked to the Convention. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing GHG emissions at an average of five percent against 1990 levels over the five-year period 2008–2012. The Convention (as discussed above) encouraged industrialized countries to stabilize emissions; however, the Protocol commits them to do so. Developed countries have contributed more emissions over the last 150 years; therefore, the Protocol places a heavier burden on developed nations under the principle of "common but differentiated responsibilities."

In 2001, President George W. Bush indicated that he would not submit the treaty to the U.S. Senate for ratification, which effectively ended American involvement in the Kyoto Protocol. In December 2009, international leaders met in Copenhagen to address the future of international climate change commitments post-Kyoto. No binding agreement was reached in Copenhagen; however, the Committee identified the long-term goal of limiting the maximum global average temperature increase to no more than 2°C above pre-industrial levels, subject to a review in 2015. The UN Climate Change Committee held additional meetings in Durban, South Africa in November 2011; Doha, Qatar in November 2012; and Warsaw, Poland in November 2013. The meetings are gradually gaining consensus among participants on individual climate change issues.

On September 23, 2014 more than 100 Heads of State and Government and leaders from the private sector and civil society met at the Climate Summit in New York hosted by the United Nations. At the Summit, heads of government, business and civil society announced actions in areas that would have the greatest impact on reducing emissions, including climate finance, energy, transport, industry, agriculture, cities, forests, and building resilience.

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Parties to the U.N. Framework Convention on Climate Change (UNFCCC) reached a landmark agreement on December 12, 2015 in Paris, charting a fundamentally new course in the two-decade-old global climate effort. Culminating a four-year negotiating round, the new treaty ends the strict differentiation between developed and developing countries that characterized earlier efforts, replacing it with a common framework that commits all countries to put forward their best efforts and to strengthen them in the years ahead. This includes, for the first time, requirements that all parties report regularly on their emissions and implementation efforts, and undergo international review.

The agreement and a companion decision by parties were the key outcomes of the conference, known as the 21st session of the UNFCCC Conference of the Parties, or COP 21. Together, the Paris Agreement and the accompanying COP decision:

- Reaffirm the goal of limiting global temperature increase well below 2 degrees Celsius, while urging efforts to limit the increase to 1.5 degrees;
- Establish binding commitments by all parties to make "nationally determined contributions" (NDCs), and to pursue domestic measures aimed at achieving them;
- Commit all countries to report regularly on their emissions and "progress made in implementing and achieving" their NDCs, and to undergo international review;
- Commit all countries to submit new NDCs every five years, with the clear expectation that they will "represent a progression" beyond previous ones;
- Reaffirm the binding obligations of developed countries under the UNFCCC to support the efforts of developing countries, while for the first time encouraging voluntary contributions by developing countries too;
- Extend the current goal of mobilizing $100 billion a year in support by 2020 through 2025, with a new, higher goal to be set for the period after 2025;
- Extend a mechanism to address "loss and damage" resulting from climate change, which explicitly will not "involve or provide a basis for any liability or compensation;"
- Require parties engaging in international emissions trading to avoid "double counting;" and
- Call for a new mechanism, similar to the Clean Development Mechanism under the Kyoto Protocol, enabling emission reductions in one country to be counted toward another country's NDC (C2ES 2015a) (25).

NATIONAL

Prior to the last decade, there have been no concrete federal regulations of GHGs or major planning for climate change adaptation. The following are actions regarding the federal government, GHGs, and fuel efficiency.

GHG Endangerment. In *Massachusetts v. Environmental Protection Agency* 549 U.S. 497 (2007), decided on April 2, 2007, the Supreme Court found that four GHGs, including carbon dioxide, are air pollutants subject to regulation under Section 202(a)(1) of the Clean Air Act. The Court held that the EPA Administrator must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. On

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December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the Clean Air Act:

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed GHGs—carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution, which threatens public health and welfare.

These findings do not impose requirements on industry or other entities. However, this was a prerequisite for implementing GHG emissions standards for vehicles, as discussed in the section "Clean Vehicles" below. After a lengthy legal challenge, the U.S. Supreme Court declined to review an Appeals Court ruling that upheld the EPA Administrator's findings (26).

Clean Vehicles. Congress first passed the Corporate Average Fuel Economy law in 1975 to increase the fuel economy of cars and light duty trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the U.S. On April 1, 2010, the EPA and the Department of Transportation's National Highway Safety Administration announced a joint final rule establishing a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the U.S.

The first phase of the national program applies to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of carbon dioxide per mile, equivalent to 35.5 miles per gallon if the automobile industry were to meet this carbon dioxide level solely through fuel economy improvements. Together, these standards would cut carbon dioxide emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012–2016). The EPA and the National Highway Safety Administration issued final rules on a second-phase joint rulemaking establishing national standards for light-duty vehicles for model years 2017 through 2025 in August 2012 (EPA 2012c). The new standards for model years 2017 through 2025 apply to passenger cars, light-duty trucks, and medium duty passenger vehicles. The final standards are projected to result in an average industry fleetwide level of 163 grams/mile of carbon dioxide (CO_2) in model year 2025, which is equivalent to 54.5 miles per gallon (mpg) if achieved exclusively through fuel economy improvements.

The EPA and the U.S. Department of Transportation issued final rules for the first national standards to reduce GHG emissions and improve fuel efficiency of heavy-duty trucks and buses on September 15, 2011, effective November 14, 2011. For combination tractors, the agencies are proposing engine and vehicle standards that begin in the 2014 model year and achieve up to a 20 percent reduction in carbon dioxide emissions and fuel consumption by the 2018 model year. For heavy-duty pickup trucks and vans, the agencies are proposing separate gasoline and

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diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10-percent reduction for gasoline vehicles and a 15 percent reduction for diesel vehicles by the 2018 model year (12 and 17 percent respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the engine and vehicle standards would achieve up to a 10 percent reduction in fuel consumption and carbon dioxide emissions from the 2014 to 2018 model years.

Mandatory Reporting of GHGs. The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of GHGs Rule, which became effective January 1, 2010. The rule requires reporting of GHG emissions from large sources and suppliers in the U.S,, and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to the EPA.

New Source Review. The EPA issued a final rule on May 13, 2010, that establishes thresholds for GHGs that define when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule "tailors" the requirements of these Clean Air Act permitting programs to limit which facilities will be required to obtain Prevention of Significant Deterioration and Title V permits. In the preamble to the revisions to the Federal Code of Regulations, the EPA states:

> This rulemaking is necessary because without it the Prevention of Significant Deterioration and Title V requirements would apply, as of January 2, 2011, at the 100 or 250 tons per year levels provided under the Clean Air Act, greatly increasing the number of required permits, imposing undue costs on small sources, overwhelming the resources of permitting authorities, and severely impairing the functioning of the programs. EPA is relieving these resource burdens by phasing in the applicability of these programs to GHG sources, starting with the largest GHG emitters. This rule establishes two initial steps of the phase-in. The rule also commits the agency to take certain actions on future steps addressing smaller sources, but excludes certain smaller sources from Prevention of Significant Deterioration and Title V permitting for GHG emissions until at least April 30, 2016.

The EPA estimates that facilities responsible for nearly 70 percent of the national GHG emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation's largest GHG emitters—power plants, refineries, and cement production facilities.

Standards of Performance for GHG Emissions for New Stationary Sources: Electric Utility Generating Units. As required by a settlement agreement, the EPA proposed new performance standards for emissions of carbon dioxide for new, affected, fossil fuel-fired electric utility generating units on March 27, 2012. New sources greater than 25 megawatts would be required to meet an output based standard of 1,000 pounds of carbon dioxide per megawatt-hour, based on the performance of widely used natural gas combined cycle technology. It should be noted that on February 9, 2016 the U.S. Supreme Court issued a stay of this regulation pending litigation. Additionally, the current EPA Administrator has also signed a measure to repeal the Clean Power Plan, including the CO2 standards.

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Cap and Trade. Cap and trade refers to a policy tool where emissions are limited to a certain amount and can be traded, or provides flexibility on how the emitter can comply. Successful examples in the U.S. include the Acid Rain Program and the NO_x Budget Trading Program and Clean Air Interstate Rule in the northeast. There is no federal GHG cap and trade program currently; however, some states have joined to create initiatives to provide a mechanism for cap and trade.

The Regional GHG Initiative is an effort to reduce GHGs among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. Each state caps carbon dioxide emissions from power plants, auctions carbon dioxide emission allowances, and invests the proceeds in strategic energy programs that further reduce emissions, save consumers money, create jobs, and build a clean energy economy. The Initiative began in 2008.

The Western Climate Initiative partner jurisdictions have developed a comprehensive initiative to reduce regional GHG emissions to 15 percent below 2005 levels by 2020. The partners were originally California, British Columbia, Manitoba, Ontario, and Quebec. However, Manitoba and Ontario are not currently participating. California linked with Quebec's cap and trade system January 1, 2014, and joint offset auctions took place in 2015 (C2ES 2015).

SmartWay Program. The SmartWay Program is a public-private initiative between the EPA, large and small trucking companies, rail carriers, logistics companies, commercial manufacturers, retailers, and other federal and state agencies. Its purpose is to improve fuel efficiency and the environmental performance (reduction of both GHG emissions and air pollution) of the goods movement supply chains. SmartWay is comprised of four components (EPA 2014):

1. SmartWay Transport Partnership: A partnership in which freight carriers and shippers commit to benchmark operations, track fuel consumption, and improve performance annually.
2. SmartWay Technology Program: A testing, verification, and designation program to help freight companies identify equipment, technologies, and strategies that save fuel and lower emissions.
3. SmartWay Vehicles: A program that ranks light-duty cars and small trucks and identifies superior environmental performers with the SmartWay logo.
4. SmartWay International Interests: Guidance and resources for countries seeking to develop freight sustainability programs modeled after SmartWay.

SmartWay effectively refers to requirements geared towards reducing fuel consumption. Most large trucking fleets driving newer vehicles are compliant with SmartWay design requirements. Moreover, over time, all heavy-duty trucks will have to comply with the ARB GHG Regulation that is designed with the SmartWay Program in mind, to reduce GHG emissions by making them more fuel-efficient. For instance, in 2015, 53 foot or longer dry vans or refrigerated trailers equipped with a combination of SmartWay-verified low-rolling resistance tires and SmartWay-verified aerodynamic devices would obtain a total of 10 percent or more fuel savings over traditional trailers.

Through the SmartWay Technology Program, the EPA has evaluated the fuel saving benefits of various devices through grants, cooperative agreements, emissions and fuel economy testing,

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demonstration projects and technical literature review. As a result, the EPA has determined the following types of technologies provide fuel saving and/or emission reducing benefits when used properly in their designed applications, and has verified certain products:

- Idle reduction technologies – less idling of the engine when it is not needed would reduce fuel consumption.
- Aerodynamic technologies minimize drag and improve airflow over the entire tractor-trailer vehicle. Aerodynamic technologies include gap fairings that reduce turbulence between the tractor and trailer, side skirts that minimize wind under the trailer, and rear fairings that reduce turbulence and pressure drop at the rear of the trailer.
- Low rolling resistance tires can roll longer without slowing down, thereby reducing the amount of fuel used. Rolling resistance (or rolling friction or rolling drag) is the force resisting the motion when a tire rolls on a surface. The wheel will eventually slow down because of this resistance.
- Retrofit technologies include things such as diesel particulate filters, emissions upgrades (to a higher tier), etc., which would reduce emissions.
- Federal excise tax exemptions.

CALIFORNIA

Legislative Actions to Reduce GHGs

The State of California legislature has enacted a series of bills that constitute the most aggressive program to reduce GHGs of any state in the nation. Some legislation such as the landmark Assembly Bill (AB 32) California Global Warming Solutions Act of 2006 was specifically enacted to address GHG emissions. Other legislation such as Title 24 and Title 20 energy standards were originally adopted for other purposes such as energy and water conservation, but also provide GHG reductions. This section describes the major provisions of the legislation.

AB 32. The California State Legislature enacted AB 32, which requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. "GHGs" as defined under AB 32 include carbon dioxide, methane, N_2O, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Since AB 32 was enacted, a seventh chemical, nitrogen trifluoride, has also been added to the list of GHGs. The California Air Resources Board (ARB) is the state agency charged with monitoring and regulating sources of GHGs. AB 32 states the following:

> Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.

ARB approved the 1990 GHG emissions level of 427 $MMTCO_2e$ on December 6, 2007 (ARB 2007). Therefore, emissions generated in California in 2020 are required to be equal to or less than 427 $MMTCO_2e$. Emissions in 2020 in a "business as usual" (BAU) scenario were estimated to be 596

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MMTCO$_2$e, which do not account for reductions from AB 32 regulations (ARB 2008). At that level, a 28.4 percent reduction was required to achieve the 427 million MTCO$_2$e 1990 inventory. In October 2010, ARB prepared an updated 2020 forecast to account for the recession and slower forecasted growth. The forecasted inventory without the benefits of adopted regulation is now estimated at 545 million MTCO$_2$e. Therefore, under the updated forecast, a 21.7 percent reduction from BAU is required to achieve 1990 levels (ARB 2010).

PROGRESS IN ACHIEVING AB 32 TARGETS AND REMAINING REDUCTIONS REQUIRED

The State has made steady progress in implementing AB 32 and achieving targets included in Executive Order S-3-05. The progress is shown in updated emission inventories prepared by ARB for 2000 through 2012 (ARB 2014a). The State has achieved the Executive Order S-3-05 target for 2010 of reducing GHG emissions to 2000 levels. As shown below, the 2010 emission inventory achieved this target.

- 1990: 427 million MTCO$_2$e (AB 32 2020 target)
- 2000: 463 million MTCO$_2$e (an average 8 percent reduction needed to achieve 1990 base)
- 2010: 450 million MTCO$_2$e (an average 5 percent reduction needed to achieve 1990 base)

ARB has also made substantial progress in achieving its goal of achieving 1990 emissions levels by 2020. As described earlier in this section, ARB revised the 2020 BAU inventory forecast to account for new lower growth projections, which resulted in a new lower reduction from BAU to achieve the 1990 base. The previous reduction from 2020 BAU needed to achieve 1990 levels was 28.4 percent and the latest reduction from 2020 BAU is 21.7 percent.

- 2020: 545 million MTCO$_2$e BAU (an average 21.7 percent reduction from BAU needed to achieve 1990 base)

ARB Scoping Plan. ARB's Climate Change Scoping Plan (Scoping Plan) contains measures designed to reduce the State's emissions to 1990 levels by the year 2020 to comply with AB 32 (ARB 2008). The Scoping Plan identifies recommended measures for multiple GHG emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector has a different emission reduction target. Most of the measures target the transportation and electricity sectors. As stated in the Scoping Plan, the key elements of the strategy for achieving the 2020 GHG target include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewables energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and

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- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

The ARB approved the First Update to the Scoping Plan (Update) on May 22, 2014. The Update identifies the next steps for California's climate change strategy. The Update shows how California continues on its path to meet the near-term 2020 GHG limit, but also sets a path toward long-term, deep GHG emission reductions. The report establishes a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050. The Update identifies progress made to meet the near-term objectives of AB 32 and defines California's climate change priorities and activities Climate for the next several years. The Update does not set new targets for the State, but describes a path that would achieve the long term 2050 goal of Executive Order S-05-03 for emissions to decline to 80 percent below 1990 levels by 2050 (ARB 2014).

Forecasting the amount of emissions that would occur in 2020 if no actions are taken was necessary to assess the amount of reductions California must achieve to return to the 1990 emissions level by 2020 as required by AB 32. The no-action scenario is known as "business-as-usual" or BAU. The ARB originally defined the BAU scenario as emissions in the absence of any GHG emission reduction measures discussed in the Scoping Plan.

As part of CEQA compliance for the Scoping Plan, ARB prepared a Supplemental Functional Equivalent Document (FED) in 2011. The FED included an updated 2020 BAU emissions inventory projection based on current economic forecasts (i.e., as influenced by the economic downturn) and emission reduction measures already in place, replacing its prior 2020 BAU emissions inventory. ARB staff derived the updated emissions estimates by projecting emissions growth, by sector, from the state's average emissions from 2006–2008. The new BAU estimate includes emission reductions for the million-solar-roofs program, the AB 1493 (Pavley I) motor vehicle GHG emission standards, and the Low Carbon Fuels Standard. In addition, ARB factored into the 2020 BAU inventory emissions reductions associated with 33 percent Renewable Energy Portfolio Standard (RPS) for electricity generation. The updated BAU estimate of 507 $MMTCO_2e$ by 2020 requires a reduction of 80 $MMTCO_2e$, or a 16 percent reduction below the estimated BAU levels to return to 1990 levels (i.e., 427 $MMTCO_2e$) by 2020.

In order to provide a BAU reduction that is consistent with the original definition in the Scoping Plan and with threshold definitions used in thresholds adopted by lead agencies for CEQA purposes and many climate action plans, the updated inventory without regulations was also included in the Supplemental FED. The ARB 2020 BAU projection for GHG emissions in California was originally estimated to be 596 $MMTCO_2e$. The updated ARB 2020 BAU projection in the Supplemental FED is 545 $MMTCO_2e$. Considering the updated BAU estimate of 545 $MMTCO_2e$ by 2020, ARB estimates a 21.7 percent reduction below the estimated statewide BAU levels is necessary to return to 1990 emission levels (i.e., 427 $MMTCO_2e$) by 2020, instead of the approximate 28.4 percent BAU reduction previously reported under the original Climate Change Scoping Plan (2008).

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2017 Climate Change Scoping Plan Update

In November 2017, ARB released the final 2017 Scoping Plan Update, which identifies the State's post-2020 reduction strategy. The 2017 Scoping Plan Update reflects the 2030 target of a 40 percent reduction below 1990 levels, set by Executive Order B-30-15 and codified by Senate Bill 32 (SB 32). Key programs that the proposed Second Update builds upon include the Cap-and-Trade Regulation, the Low Carbon Fuel Standard, and much cleaner cars, trucks and freight movement, utilizing cleaner, renewable energy, and strategies to reduce methane emissions from agricultural and other wastes.

The 2017 Scoping Plan establishes a new emissions limit of 260 MMTCO2e for the year 2030, which corresponds to a 40 percent decrease in 1990 levels by 2030.

California's climate strategy will require contributions from all sectors of the economy, including the land base, and will include enhanced focus on zero- and near-zero-emission (ZE/NZE) vehicle technologies; continued investment in renewables, including solar roofs, wind, and other distributed generation; greater use of low carbon fuels; integrated land conservation and development strategies; coordinated efforts to reduce emissions of short-lived climate pollutants (methane, black carbon, and fluorinated gases); and an increased focus on integrated land use planning to support livable, transit-connected communities and conservation of agricultural and other lands. Requirements for direct GHG reductions at refineries will further support air quality co-benefits in neighborhoods, including in disadvantaged communities historically located adjacent to these large stationary sources, as well as efforts with California's local air pollution control and air quality management districts (air districts) to tighten emission limits on a broad spectrum of industrial sources. Major elements of the 2017 Scoping Plan framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing ZEV buses and trucks.
- Low Carbon Fuel Standard (LCFS), with an increased stringency (18 percent by 2030).
- Implementing SB 350, which expands the Renewables Portfolio Standard (RPS) to 50 percent RPS and doubles energy efficiency savings by 2030.
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks.
- Implementing the proposed Short-Lived Climate Pollutant Strategy (SLPS), which focuses on reducing methane and hydroflurocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030.
- Continued implementation of SB 375.
- Post-2020 Cap-and-Trade Program that includes declining caps.
- 20 percent reduction in GHG emissions from refineries by 2030.
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

In addition to the statewide strategies listed above, the 2017 Scoping Plan also identifies local governments as essential partners in achieving the State's long-term GHG reduction goals and identifies local actions to reduce GHG emissions. As part of the recommended actions, CARB

recommends that local governments achieve a community-wide goal to achieve emissions of no more than 6 MTCO2e or less per capita by 2030 and 2 MTCO2e or less per capita by 2050. For CEQA projects, CARB states that lead agencies may develop evidenced-based bright-line numeric thresholds—consistent with the Scoping Plan and the State's long-term GHG goals—and projects with emissions over that amount may be required to incorporate on-site design features and mitigation measures that avoid or minimize project emissions to the degree feasible; or, a performance-based metric using a climate action plan or other plan to reduce GHG emissions is appropriate.

According to research conducted by the Lawrence Berkeley National Laboratory and supported by ARB, California, under its existing and proposed GHG reduction policies, is on track to meet the 2020 reduction targets under AB 32 and could achieve the 2030 goals under SB 32. The research utilized a new, validated model known as the California LBNL GHG Analysis of Policies Spreadsheet (CALGAPS), which simulates GHG and criteria pollutant emissions in California from 2010 to 2050 in accordance to existing and future GHG-reducing policies. The CALGAPS model showed that GHG emissions through 2020 could range from 317 to 415 MTCO2e per year, "indicating that existing state policies will likely allow California to meet its target [of 2020 levels under AB 32]." CALGAPS also showed that by 2030, emissions could range from 211 to 428 MTCO2e per year, indicating that "even if all modeled policies are not implemented, reductions could be sufficient to reduce emissions 40 percent below the 1990 level [of SB 32]." CALGAPS analyzed emissions through 2050 even though it did not generally account for policies that might be put in place after 2030. Though the research indicated that the emissions would not meet the State's 80 percent reduction goal by 2050, various combinations of policies could allow California's cumulative emissions to remain very low through 2050 (27) (28).

Senate Bill 32. On September 8, 2016, Governor Jerry Brown signed the Senate Bill (SB) 32 and its companion bill, Assembly Bill (AB) 197. SB 32 requires the state to reduce statewide GHG emissions to 40 percent below 1990 levels by 2030, a reduction target that was first introduced in Executive Order B-30-15. The new legislation builds upon the AB 32 goal of 1990 levels by 2020 and provides an intermediate goal to achieving S-3-05, which sets a statewide GHG reduction target of 80 percent below 1990 levels by 2050. AB 197 creates a legislative committee to oversee regulators to ensure that ARB is not only respond to the Governor, but also the Legislature (29) (30).

Cap and Trade Program. The Scoping Plan identifies a Cap-and-Trade Program as one of the key strategies for California to reduce GHG emissions. According to ARB, a cap-and-trade program will help put California on the path to meet its goal of reducing GHG emissions to 1990 levels by the year 2020 and ultimately achieving an 80 percent reduction from 1990 levels by 2050. Under cap-and-trade, an overall limit on GHG emissions from capped sectors is established, and facilities subject to the cap will be able to trade permits to emit GHGs within the overall limit.

ARB adopted a California Cap-and-Trade Program pursuant to its authority under AB 32. See 17 California Code of Regulations (CCR) §§ 95800 to 96023. The Cap-and-Trade Program is designed to reduce GHG emissions from major sources (deemed "covered entities") by setting a firm cap on statewide GHG emissions and employing market mechanisms to achieve AB 32's emission-reduction mandate of returning to 1990 levels of emissions by 2020. The statewide cap for GHG

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emissions from the capped sectors (e.g., electricity generation, petroleum refining, and cement production) commenced in 2013 and will decline over time, achieving GHG emission reductions throughout the program's duration.

Covered entities that emit more than 25.000 $MTCO_2e$ per year must comply with the Cap-and-Trade Program. Triggering of the 25.000 $MTCO_2e$ per year "inclusion threshold" is measured against a subset of emissions reported and verified under the California Regulation for the Mandatory Reporting of GHG Emissions (Mandatory Reporting Rule or "MRR").

Under the Cap-and-Trade Program, ARB issues allowances equal to the total amount of allowable emissions over a given compliance period and distributes these to regulated entities. Covered entities are allocated free allowances in whole or part (if eligible), and may buy allowances at auction, purchase allowances from others, or purchase offset credits. Each covered entity with a compliance obligation is required to surrender "compliance instruments" (30) for each $MTCO_2e$ of GHG they emit. There also are requirements to surrender compliance instruments covering 30 percent of the prior year's compliance obligation by November of each year. For example, in November 2014, a covered entity was required to submit compliance instruments to cover 30 percent of its 2013 GHG emissions.

The Cap-and-Trade Program provides a firm cap, ensuring that the 2020 statewide emission limit will not be exceeded. An inherent feature of the Cap-and-Trade program is that it does not guarantee GHG emissions reductions in any discrete location or by any particular source. Rather, GHG emissions reductions are only guaranteed on an accumulative basis. As summarized by ARB in the First Update:

> The Cap-and-Trade Regulation gives companies the flexibility to trade allowances with others or take steps to cost-effectively reduce emissions at their own facilities. Companies that emit more have to turn in more allowances or other compliance instruments. Companies that can cut their GHG emissions have to turn in fewer allowances. But as the cap declines, aggregate emissions must be reduced. In other words, a covered entity theoretically could increase its GHG emissions every year and still comply with the Cap-and-Trade Program if there is a reduction in GHG emissions from other covered entities. Such a focus on aggregate GHG emissions is considered appropriate because climate change is a global phenomenon, and the effects of GHG emissions are considered cumulative (ARB 2014).

The Cap-and-Trade Program works with other direct regulatory measures and provides an economic incentive to reduce emissions. If California's direct regulatory measures reduce GHG emissions more than expected, then the Cap-and-Trade Program will be responsible for relatively fewer emissions reductions. If California's direct regulatory measures reduce GHG emissions less than expected, then the Cap-and-Trade Program will be responsible for relatively more emissions reductions. Thus. the Cap-and-Trade Program assures that California will meet its 2020 GHG emissions reduction mandate:

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> The Cap-and-Trade Program establishes an overall limit on GHG emissions from most of the California economy—the "capped sectors." Within the capped sectors, some of the reductions are being accomplished through direct regulations, such as improved building and appliance efficiency standards, the [Low Carbon Fuel Standard] LCFS, and the 33 percent [Renewables Portfolio Standard] RPS. Whatever additional reductions are needed to bring emissions within the cap is accomplished through price incentives posed by emissions allowance prices. Together, direct regulation and price incentives assure that emissions are brought down cost-effectively to the level of the overall cap. The Cap-and-Trade Regulation provides assurance that California's 2020 limit will be met because the regulation sets a firm limit on 85 percent of California's GHG emissions. In sum, the Cap-and-Trade Program will achieve aggregate, rather than site specific or project-level, GHG emissions reductions. Also, due to the regulatory architecture adopted by ARB in AB 32, the reductions attributed to the Cap-and-Trade Program can change over time depending on the State's emissions forecasts and the effectiveness of direct regulatory measures (ARB 2014).

As of January 1, 2015, the Cap-and-Trade Program covered approximately 85 percent of California's GHG emissions. The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG emissions associated with CEQA projects' electricity usage are covered by the Cap-and-Trade Program.

The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and from combustion of other fossil fuels not directly covered at large sources in the Program's first compliance period. While the Cap-and-Trade Program technically covered fuel suppliers as early as 2012, they did not have a compliance obligation (i.e., they were not fully regulated) until 2015. The Cap-and-Trade Program covers the GHG emissions associated with the combustion of transportation fuels in California, whether refined in-state or imported. The point of regulation for transportation fuels is when they are "supplied" (i.e., delivered into commerce). Accordingly, as with stationary source GHG emissions and GHG emissions attributable to electricity use, virtually all, if not all, of GHG emissions from CEQA projects associated with vehicle-miles traveled (VMT) are covered by the Cap-and-Trade Program (ARB 2015) (31).

In addition, the Scoping Plan differentiates between "capped" and "uncapped" strategies. "Capped" strategies are subject to the proposed cap-and-trade program. The Scoping Plan states that the inclusion of these emissions within the Program will help ensure that the year 2020 emission targets are met despite some degree of uncertainty in the emission reduction estimates for any individual measure. Implementation of the capped strategies is calculated to achieve a sufficient amount of reductions by 2020 to achieve the emission target contained in AB 32. "Uncapped" strategies that will not be subject to the cap-and-trade emissions caps and

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requirements are provided as a margin of safety by accounting for additional GHG emission reductions.[4]

SB 375 - the Sustainable Communities and Climate Protection Act of 2008. Passing the Senate on August 30, 2008, Senate Bill (SB) 375 was signed by the Governor on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits over 40 percent of the total GHG emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: it (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

Concerning CEQA, SB 375, as codified in Public Resources Code Section 21159.28, states that CEQA findings for certain projects are not required to reference, describe, or discuss (1) growth inducing impacts, or (2) any project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network, if the project:

1. Is in an area with an approved sustainable communities strategy or an alternative planning strategy that the ARB accepts as achieving the GHG emission reduction targets.
2. Is consistent with that strategy (in designation, density, building intensity, and applicable policies).
3. Incorporates the mitigation measures required by an applicable prior environmental document.

AB 1493 Pavley Regulations and Fuel Efficiency Standards. California AB 1493, enacted on July 22, 2002, required ARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA's denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the U.S. District Court for the District of Columbia in 2011.

The standards phase in during the 2009 through 2016 model years. When fully phased in, the near-term (2009–2012) standards will result in about a 22 percent reduction compared with the 2002 fleet, and the mid-term (2013–2016) standards will result in about a 30 percent reduction. Several technologies stand out as providing significant reductions in emissions at favorable costs. These include discrete variable valve lift or camless valve actuation to optimize valve operation rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and

[4] On March 17, 2011, the San Francisco Superior Court issued a final decision in *Association of Irritated Residents v. California Air Resources Board* (Case No. CPF-09-509562). While the Court upheld the validity of the ARB Scoping Plan for the implementation of AB 32, the Court enjoined ARB from further rulemaking under AB 32 until ARB amends its CEQA environmental review of the Scoping Plan to address the flaws identified by the Court. On May 23, 2011, ARB filed an appeal. On June 24, 2011, the Court of Appeal granted ARB's petition staying the trail court's order pending consideration of the appeal. In the interest of informed decision-making, on June 13, 2011, ARB released the expanded alternatives analysis in a draft Supplement to the AB 32 Scoping Plan Functional Equivalent Document. The ARB Board approved the Scoping Plan and the CEQA document on August 24, 2011.

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improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant.

The second phase of the implementation for the Pavley bill was incorporated into Amendments to the Low-Emission Vehicle Program referred to as LEV III or the Advanced Clean Cars program. The Advanced Clean Car program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2017 through 2025. The regulation will reduce GHGs from new cars by 34 percent from 2016 levels by 2025. The new rules will clean up gasoline and diesel-powered cars, and deliver increasing numbers of zero-emission technologies, such as full battery electric cars, newly emerging plug-in hybrid electric vehicles and hydrogen fuel cell cars. The package will also ensure adequate fueling infrastructure is available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California.

SB 350— Clean Energy and Pollution Reduction Act of 2015. In October 2015, the legislature approved and the Governor signed SB 350, which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the renewables portfolio standard (RPS), higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations. Provisions for a 50 percent reduction in the use of petroleum statewide were removed from the Bill because of opposition and concern that it would prevent the Bill's passage. Specifically, SB 350 requires the following to reduce statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33 percent to 50 percent by 2030, with interim targets of 40 percent by 2024, and 25 percent by 2027.
- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the California Public Utility Commission (CPUC), the California Energy Commission (CEC), and local publicly-owned utilities.
- Reorganize the Independent System Operator (ISO) to develop more regional electrify transmission markets and to improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States (California Leginfo 2015).

EXECUTIVE ORDERS RELATED TO GHG EMISSIONS

California's Executive Branch has taken several actions to reduce GHGs through the use of Executive Orders. Although not regulatory, they set the tone for the state and guide the actions of state agencies.

Executive Order S-3-05. Former California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following reduction targets for GHG emissions:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be a mid-term target. Because this is

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an executive order, the goals are not legally enforceable for local governments or the private sector.

Executive Order S-01-07 – Low Carbon Fuel Standard. The Governor signed Executive Order S-01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. In particular, the Executive Order established a Low Carbon Fuel Standard and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, the ARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. This analysis supporting development of the protocols was included in the State Implementation Plan for alternative fuels (State Alternative Fuels Plan adopted by California Energy Commission on December 24, 2007) and was submitted to ARB for consideration as an "early action" item under AB 32. The ARB adopted the Low Carbon Fuel Standard on April 23, 2009.

The Low Carbon Fuel Standard was challenged in the U.S. District Court in Fresno in 2011. The court's ruling issued on December 29, 2011, included a preliminary injunction against ARB's implementation of the rule. The Ninth Circuit Court of Appeals stayed the injunction on April 23, 2012, pending final ruling on appeal, allowing ARB to continue to implement and enforce the regulation. The Ninth Circuit Court's decision, filed September 18, 2013, vacated the preliminary injunction. In essence, the court held that Low Carbon Fuel Standards adopted by ARB were not in conflict with federal law. On August 8, 2013, the Fifth District Court of Appeal (California) ruled ARB failed to comply with CEQA and the Administrative Procedure Act (APA) when adopting regulations for Low Carbon Fuel Standards. In a partially published opinion, the Court of Appeal reversed the trial court's judgment and directed issuance of a writ of mandate setting aside Resolution 09-31 and two executive orders of ARB approving Low Carbon Fuel Standards (LCFS) regulations promulgated to reduce GHG emissions. However, the court tailored its remedy to protect the public interest by allowing the LCFS regulations to remain operative while ARB complies with the procedural requirements it failed to satisfy.

To address the Court ruling, ARB was required to bring a new LCFS regulation to tits Board for consideration in February 2015. The proposed LCFS regulation was required to contain revisions to the 2010 LCFS as well as new provisions designed to foster investments in the production of the low-carbon intensity (low-CI) fuels, offer additional flexibility to regulated parties, update critical technical information, simplify and streamline program operations, and enhance enforcement. The second public hearing was held on September 24 and September 25, 2015, where the LCFS Regulation was adopted. The Final Rulemaking Package adopting the regulation was filed with Office of Administrative Law (OAL) on October 2, 2015. OAL had until November 16, 2015 to make a determination (ARB 2015d).

Executive Order S-13-08. Executive Order S-13-08 states that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources." Pursuant to the requirements in the Order, the 2009 California Climate Adaptation Strategy (California Natural Resources Agency 2009) was adopted, which is the ". . . first statewide, multi-sector, region-specific, and

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information-based climate change adaptation strategy in the United States." Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

Executive Order B-30-15. On April 29, 2015, Governor Edmund G. Brown Jr. issued an executive order to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor's executive order aligns California's GHG reduction targets with those of leading international governments ahead of the United Nations Climate Change Conference in Paris late 2015. The Order sets a new interim statewide GHG emission reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050 and directs ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of CO_2 equivalent ($MMCO_2e$). The Order also requires the state's climate adaptation plan to be updated every three years, and for the State to continue its climate change research program, among other provisions. As with Executive Order S-3-05, this Order is not legally enforceable for local governments and the private sector. Legislation that would update AB 32 to make post 2020 targets and requirements a mandate is in process in the State Legislature.

CALIFORNIA REGULATIONS AND BUILDING CODES

California has a long history of adopting regulations to improve energy efficiency in new and remodeled buildings. These regulations have kept California's energy consumption relatively flat even with rapid population growth.

Title 20 Appliance Efficiency Standards. California Code of Regulations, Title 20: Division 2, Chapter 4, Article 4, Sections 1601-1608: Appliance Efficiency Regulations regulates the sale of appliances in California. The Appliance Efficiency Regulations include standards for both federally regulated appliances and non-federally regulated appliances. 23 categories of appliances are included in the scope of these regulations. The standards within these regulations apply to appliances that are sold or offered for sale in California, except those sold wholesale in California for final retail sale outside the state and those designed and sold exclusively for use in recreational vehicles or other mobile equipment (CEC 2012).

Title 24 Energy Efficiency Standards and California Green Building Standards. California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The newest 2016 version of Title 24 was adopted by the California Energy Commission (CEC) and became effective on January 1, 2017.

The CEC indicates that the 2016 Title 24 standards will reduce energy consumption by 5 percent for nonresidential buildings above that achieved by the 2013 Title 24 (CEC 2015).

California Code of Regulations, Title 24, Part 11: California Green Building Standards Code (CALGreen) is a comprehensive and uniform regulatory code for all residential, commercial, and

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school buildings that went in effect on January 1, 2011, and is administered by the California Building Standards Commission. CALGreen is updated on a regular basis, with the most recent update consisting of the 2016 California Green Building Code Standards that became effective January 1, 2017. Local jurisdictions are permitted to adopt more stringent requirements, as state law provides methods for local enhancements. CALGreen recognizes that many jurisdictions have developed existing construction and demolition ordinances, and defers to them as the ruling guidance provided they establish a minimum 50 percent diversion requirement. The code also provides exemptions for areas not served by construction and demolition recycling infrastructure. The State Building Code provides the minimum standard that buildings must meet in order to be certified for occupancy, which is generally enforced by the local building official. CALGreen requires:

- Short-term bicycle parking. If a commercial project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5 percent of visitor motorized vehicle parking capacity, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- Long-term bicycle parking. For new buildings with 10 or more tenant-occupants, provide secure bicycle parking for 5 percent of tenant-occupied motorized vehicle parking capacity, with a minimum of one space (5.106.4.1.2).
- Designated parking. Provide designated parking in commercial projects for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).
- Recycling by Occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of nonhazardous materials for recycling (5.410.1).
- Construction waste. A minimum 65 percent diversion of construction and demolition waste from landfills, increasing voluntarily to 80 percent for new homes and commercial projects (5.408.1, A5.408.3.1 [nonresidential], A5.408.3.1 [residential]). All (100 percent) of trees, stumps, rocks and associated vegetation and soils resulting from land clearing shall be reused or recycled (5.408.3).
- Wastewater reduction. Each building shall reduce the generation of wastewater by one of the following methods:
    - The installation of water-conserving fixtures (5.303.3) or
    - Using nonpotable water systems (5.303.4).
- Water use savings. 20 percent mandatory reduction of indoor water use with voluntary goal standards for 30, 35 and 40 percent reductions (5.303.2, A5303.2.3 [nonresidential]).
- Water meters. Separate water meters for buildings in excess of 50,000 square feet or buildings projected to consume more than 1,000 gallons per day (5.303.1).
- Irrigation efficiency. Moisture-sensing irrigation systems for larger landscaped areas (5.304.3).
- Materials pollution control. Low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring, and particleboard (5.404).
- Building commissioning. Mandatory inspections of energy systems (i.e., heat furnace, air conditioner, mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity according to their design efficiencies (5.410.2)..

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Model Water Efficient Landscape Ordinance. The Model Water Efficient Landscape Ordinance (Ordinance) was required by AB 1881, the Water Conservation Act. The bill required local agencies to adopt a local landscape ordinance at least as effective in conserving water as the Model Ordinance by January 1, 2010. Reductions in water use of 20 percent consistent with (SBX-7-7) 2020 mandate are expected upon compliance with the ordinance. Governor Brown's Drought Executive Order of April 1, 2015 (EO B-29-15) directed Department of Water Resources (DWR) to update the Ordinance through expedited regulation. The California Water Commission approved the revised Ordinance on July 15, 2015 effective December 15, 2015. New development projects that include landscape areas of 500 square feet or more are subject to the Ordinance. The update requires:

- More efficient irrigation systems;
- Incentives for graywater usage;
- Improvements in on-site stormwater capture;
- Limiting the portion of landscapes that can be planted with high water use plants; and
- Reporting requirements for local agencies.

ARB Refrigerant Management Program. ARB adopted a regulation in 2009 to reduce refrigerant GHG emissions from stationary sources through refrigerant leak detection and monitoring, leak repair, system retirement and retrofitting, reporting and recordkeeping, and proper refrigerant cylinder use, sale, and disposal. The regulation is set forth in sections 95380 to 95398 of Title 17, California Code of Regulations. The rules implementing the regulation establish a limit on statewide GHG emissions from stationary facilities with refrigeration systems with more than 50 pounds of a high GWP refrigerant. The refrigerant management program is designed to (1) reduce emissions of high-GWP GHG refrigerants from leaky stationary, non-residential refrigeration equipment; (2) reduce emissions from the installation and servicing of refrigeration and air-conditioning appliances using high-GWP refrigerants; and (3) verify GHG emission reductions.

Tractor-Trailer GHG Regulation. The tractors and trailers subject to this regulation must either use EPA SmartWay certified tractors and trailers, or retrofit their existing fleet with SmartWay verified technologies. The regulation applies primarily to owners of 53-foot or longer box-type trailers, including both dry-van and refrigerated-van trailers, and owners of the heavy-duty tractors that pull them on California highways. These owners are responsible for replacing or retrofitting their affected vehicles with compliant aerodynamic technologies and low rolling resistance tires. Sleeper cab tractors model year 2011 and later must be SmartWay certified. All other tractors must use SmartWay verified low rolling resistance tires. There are also requirements for trailers to have low rolling resistance tires and aerodynamic devices.

Phase I and 2 Heavy-Duty Vehicle GHG Standards. ARB has adopted a new regulation for greenhouse gas (GHG) emissions from heavy-duty trucks and engines sold in California. It establishes GHG emission limits on truck and engine manufacturers and harmonizes with the U.S. EPA rule for new trucks and engines nationally. Existing heavy-duty vehicle regulations in California include engine criteria emission standards, tractor-trailer GHG requirements to implement SmartWay strategies (i.e., the Heavy-Duty Tractor-Trailer Greenhouse Gas

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Regulation), and in-use fleet retrofit requirements such as the Truck and Bus Regulation. In September 2011, the U.S. EPA adopted their new rule for heavy-duty trucks and engines. The U.S. EPA rule has compliance requirements for new compression and spark ignition engines, as well as trucks from Class 2b through Class 8. Compliance requirements begin with model year (MY) 2014 with stringency levels increasing through MY 2018. The rule organizes truck compliance into three groupings, which include a) heavy-duty pickups and vans; b) vocational vehicles; and c) combination tractors. The U.S. EPA rule does not regulate trailers.

ARB staff has worked jointly with the U.S. Environmental Protection Agency (U.S. EPA) and the National Highway Traffic Safety Administration (NHTSA) on the next phase of federal greenhouse gas (GHG) emission standards for medium- and heavy-duty vehicles, called federal Phase 2. The federal Phase 2 standards were built on the improvements in engine and vehicle efficiency required by the Phase 1 emission standards and represent a significant opportunity to achieve further GHG reductions for 2018 and later model year heavy-duty vehicles, including trailers.

U.S. EPA and NHTSA issued a Notice of Proposed Rulemaking for Phase 2 in June 2015, and published the final rule in October 2016. ARB staff plans to bring a proposed California Phase 2 program before the Board in early 2018. ARB staff remains committed to a strong national program which will support California's GHG reduction commitments.

SB 97 and the CEQA Guidelines Update. Passed in August 2007, SB 97 added Section 21083.05 to the Public Resources Code. The code states "(a) On or before July 1, 2009, the Office of Planning and Research shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of GHG emissions or the effects of GHG emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the Office of Planning and Research pursuant to subdivision (a)." Section 21097 was also added to the Public Resources Code. It provided CEQA protection until January 1, 2010 for transportation projects funded by the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006 or projects funded by the Disaster Preparedness and Flood Prevention Bond Act of 2006, in stating that the failure to analyze adequately the effects of GHGs would not violate CEQA.

On April 13, 2009, the Office of Planning and Research submitted to the Secretary for Natural Resources its recommended amendments to the CEQA Guidelines for addressing GHG emissions. On July 3, 2009, the Natural Resources Agency commenced the Administrative Procedure Act rulemaking process for certifying and adopting these amendments pursuant to Public Resources Code section 21083.05. Following a 55-day public comment period and two public hearings, the Natural Resources Agency proposed revisions to the text of the proposed Guidelines amendments. The Natural Resources Agency transmitted the adopted amendments and the entire rulemaking file to the Office of Administrative Law on December 31, 2009. On February 16, 2010, the Office of Administrative Law approved the Amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. The Amendments became effective on March 18, 2010.

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The CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing CEQA Guidelines to reference climate change.

A new section, CEQA Guidelines Section 15064.4, was added to assist agencies in determining the significance of GHG emissions. The new section allows agencies the discretion to determine whether a quantitative or qualitative analysis is best for a particular project. However, little guidance is offered on the crucial next step in this assessment process—how to determine whether the project's estimated GHG emissions are significant or cumulatively considerable.

Also amended were CEQA Guidelines Sections 15126.4 and 15130, which address mitigation measures and cumulative impacts, respectively. GHG mitigation measures are referenced in general terms, but no specific measures are championed. The revision to the cumulative impact discussion requirement (Section 15130) simply directs agencies to analyze GHG emissions in an EIR when a project's incremental contribution of emissions may be cumulatively considerable, however it does not answer the question of when emissions are cumulatively considerable.

Section 15183.5 permits programmatic GHG analysis and later project-specific tiering, as well as the preparation of GHG Reduction Plans. Compliance with such plans can support a determination that a project's cumulative effect is not cumulatively considerable, according to Section 15183.5(b).

In addition, the amendments revised Appendix F of the CEQA Guidelines, which focuses on Energy Conservation. The sample environmental checklist in Appendix G was amended to include GHG questions.

REGIONAL

The project is within the Southern California Air Basin (SoCAB), which is under the jurisdiction of the SCAQMD.

South Coast Air Quality Management District

SCAQMD is the agency responsible for air quality planning and regulation in the SoCAB. The SCAQMD addresses the impacts to climate change of projects subject to SCAQMD permit as a lead agency if they are the only agency having discretionary approval for the project and acts as a responsible agency when a land use agency must also approve discretionary permits for the project. The SCAQMD acts as an expert commenting agency for impacts to air quality. This expertise carries over to GHG emissions, so the agency helps local land use agencies through the development of models and emission thresholds that can be used to address GHG emissions.

In 2008, SCAQMD formed a Working Group to identify GHG emissions thresholds for land use projects that could be used by local lead agencies in the SoCAB. The Working Group developed several different options that are contained in the SCAQMD Draft Guidance Document – Interim CEQA GHG Significance Threshold, that could be applied by lead agencies. The working group has not provided additional guidance since release of the interim guidance in 2008. The SCAQMD Board has not approved the thresholds; however, the Guidance Document provides substantial evidence supporting the approaches to significance of GHG emissions that can be considered by

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the lead agency in adopting its own threshold. The current interim thresholds consist of the following tiered approach:

- Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA.
- Tier 2 consists of determining whether the project is consistent with a GHG reduction plan. If a project is consistent with a qualifying local GHG reduction plan, it does not have significant GHG emissions.
- Tier 3 consists of screening values, which the lead agency can choose, but must be consistent with all projects within its jurisdiction. A project's construction emissions are averaged over 30 years and are added to the project's operational emissions. If a project's emissions are below one of the following screening thresholds, then the project is less than significant:
    - Residential and Commercial land use: 3,000 $MTCO_2e$ per year
    - Based on land use type: residential: 3,500 $MTCO_2e$ per year; commercial: 1,400 $MTCO_2e$ per year; or mixed use: 3,000 $MTCO_2e$ per year
- Tier 4 has the following options:
    - Option 1: Reduce BAU emissions by a certain percentage; this percentage is currently undefined.
    - Option 2: Early implementation of applicable AB 32 Scoping Plan measures
    - Option 3, 2020 target for service populations (SP), which includes residents and employees: 4.8 $MTCO_2e$/SP/year for projects and 6.6 $MTCO_2e$/SP/year for plans;
    - Option 3, 2035 target: 3.0 $MTCO_2e$/SP/year for projects and 4.1 $MTCO_2e$/SP/year for plans
- Tier 5 involves mitigation offsets to achieve target significance threshold.

The SCAQMD's interim thresholds used the Executive Order S-3-05 year 2050 goal as the basis for the Tier 3 screening level. Achieving the Executive Order's objective would contribute to worldwide efforts to cap carbon dioxide concentrations at 450 ppm, thus stabilizing global climate.

SCAQMD only has authority over GHG emissions from development projects that include air quality permits. At this time, it is unknown if the project would include stationary sources of emissions subject to SCAQMD permits. Notwithstanding, if the Project requires a stationary permit, it would be subject to the applicable SCAQMD regulations.

SCAQMD Regulation XXVII, adopted in 2009 includes the following rules:

- Rule 2700 defines terms and post global warming potentials.
- Rule 2701, SoCal Climate Solutions Exchange, establishes a voluntary program to encourage, quantify, and certify voluntary, high quality certified GHG emission reductions in the SCAQMD.
- Rule 2702, GHG Reduction Program created a program to produce GHG emission reductions within the SCAQMD. The SCAQMD will fund projects through contracts in response to requests for proposals or purchase reductions from other parties.

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2.8 CITY OF MORENO VALLEY GENERAL PLAN MEASURES

Although the City of Moreno Valley General Plan does not identify specific GHG or climate change policies or goal, a number of the measures identified in the General Plan's Air Quality Element act to reduce or control criteria pollutant emissions and peripherally reduce GHG emissions. The proposed Project has been evaluated for consistency with the City's General Plan Air Quality Element, as shown on Table 2-3.

TABLE 2-3: CITY OF MORENO VALLEY GENERAL PLAN CONSISTENCY

Objective 6.6: Promote land use patterns that reduce daily automotive trips and reduce trip distance for work, shopping, school, and recreation.	**Consistent.** *The Project site is providing employment opportunities to Moreno Valley and the surrounding area.*
Objective 6.7: Reduce mobile and stationary source air pollutant emissions.	**Consistent.** *The Project site is located proximate to existing and proposed major roadways, acting to generally reduce vehicle trip lengths, thereby reducing mobile source emissions. The Project will further reduce mobile source emissions by creating local employment opportunities, reducing commuter vehicle miles traveled (VMT) within the region. Additionally, the Project will implement energy efficient designs and operational programs meeting or surpassing California Code of Regulations (CCR) Title 24 Building Standards, including but not limited to compliance with or betterment of, energy conservation requirements identified at CCR Title 24, Part 6, Energy Code. Energy efficient designs and programs implemented by the Project reduce resources consumption with correlating reductions in stationary-source emissions.*
Policy 6.7.5: Require grading activities to comply with South Coast Air Quality Management District's Rule 403 regarding the control of fugitive dust.	**Consistent.** *The Project will be required to implement fugitive dust control measures consistent with SCAQMD Rule 403.*
Policy 6.7.6: Require building construction to comply with the energy conservation requirements of Title 24 of the California Administrative Code [California Code of Regulations].	**Consistent.** *Pursuant to City and State Building Code requirements, the Project will meet or surpass applicable CCR Title 24 energy conservation requirements.*

Source: City of Moreno Valley General Plan, Safety Element

2.9 CITY OF MORENO VALLEY ENERGY EFFICIENCY AND CLIMATE ACTION STRATEGY

The City of Moreno Valley released an Energy Efficiency and Climate Action Strategy (CAS) as well as a Greenhouse Gas Analysis for public review on May 8, 2012. The documents were approved on October 9, 2012. The CAS identifies ways that the City can reduce energy and water consumption and greenhouse gas emissions as an organization (its employees and the operation of its facilities) and outlines the actions that the City can encourage and community members can employ to reduce their own energy and water consumption and greenhouse gas emissions. The policies in the document are to reduce greenhouse gas emissions in 2010 by 15 percent by 2020. The following consists of an analysis of project consistency with the policies in the CAS.

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- R2-T1: Land Use Based Trips and VMT Reduction Policies. Encourage the development of Transit Priority Projects along High-Quality Transit Corridors identified in the SCAG Sustainable Communities Plan, to allow a reduction in vehicle miles traveled.

  Project consistency: Not applicable.

- R2-T3: Employment-Based Trip Reductions. Require a Transportation Demand Management (TDM) program for new development to reduce automobile travel by encouraging ride-sharing, carpooling, and alternative modes of transportation.

  Project consistency: The Project will encourage carpooling and provide information to employees on the use of public transit.

- R2-E1: New Construction Residential Energy Efficiency Requirements. Require energy efficient design for all new residential buildings to be 10 percent beyond the current Title 24 standards. (Reach Code)

  Project consistency: Not applicable; this measure applies to residential projects.

- R2-E2: New Construction Residential Renewable Energy. Facilitate the use of renewable energy (such as solar (photovoltaic) panels or small wind turbines) for new residential developments. Alternative approach would be the purchase of renewable energy resources offsite.

  Project consistency: Not applicable; this measure applies to residential projects.

- R2-E5: New Construction Commercial Energy Efficiency Requirements. Require energy efficient design for all new commercial buildings to be 10% beyond the 2008 Title 24 standards (which were in effect at the time the CAP was adopted). (Reach Code)

  Project consistency: Consistent; Current 2016 Title 24 requirements would achieve greater reduction than envisioned by the City's Climate Action Strategy. Further, the Project would be required to comply with any adopted municipal code requirements set forth by the City of Moreno Valley. As such the Project would be consistent with R2-E5.

- R3-E1: Energy Efficient Development, and Renewable Energy Deployment Facilitation and Streamlining. Updating of codes and zoning requirements and guidelines to further implement green building practices. This could include incentives for energy efficient projects.

- Project consistency: Not applicable on a project-level.

- R3-L2: Heat Island Plan. Develop measures that address "heat islands." Potential measures include using strategically placed shade trees, using paving materials with a Solar Reflective Index of at least 29, an open grid pavement system, or covered parking.

  Project consistency: Consistent; the Project will comply with the City of Moreno Valley's landscaping requirements.

- R2-W1: Water Use Reduction Initiative. Consider adopting a per capita water use reduction goal, which mandates the reduction of water use of 20 percent per capita with requirements applicable to new development and with cooperative support of the water agencies.

  Project consistency: Consistent. California Green Building Standards Code, Chapter 5, Division 5.3, Section 5.303.2 requires that indoor water use be reduced by 20 percent. Section 5.304.3 requires irrigation controllers and sensors.

- R3-W1: Water Efficiency Training and Education. Work with EMWD and local water companies to implement a public information and education program that promotes water conservation.

  Project consistency: Not applicable at a project-level.

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- R2-S1: City Diversion Program. For Solid Waste, consider a target of increasing the waste diverted from the landfill to a total of 75 percent by 2020.

  Project consistency: Consistent; the Project will comply with the City of Moreno Valley's citywide goal of solid waste reduction. Additionally, the Project will be compliant with the City of Moreno Valley's Municipal Code 8.80.030 by implementing a Waste Management Plan.

2.10 DISCUSSION ON ESTABLISHMENT OF SIGNIFICANCE THRESHOLDS

The criteria used to determine the significance of potential Project-related greenhouse gas impacts are taken from the Initial Study Checklist in Appendix G of the State CEQA Guidelines (14 California Code of Regulations §§15000, et seq.). Based on these thresholds, a project would result in a significant impact related to air quality if it would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The City of Moreno Valley does not have an adopted threshold of significance for GHG emissions. For CEQA purposes, the City has discretion to select an appropriate significance criterion, based on substantial evidence. The SCAQMD's adopted numerical threshold of 10,000 $MTCO_2e$ per year for industrial stationary source emissions is selected as the significance criterion. The SCAQMD-adopted industrial threshold was selected by the City because the proposed Project is analogous to an industrial use much more closely than any other land use such as commercial or residential in terms of its expected operating characteristics. The Project proposes the development of warehouse and general light industrial uses within a single building that will serve mid- stream functions in the goods movement chain between manufacturers and consumers, characteristic of an industrial operation. Further, analysis of the Project's traffic generation in this EIR is based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, 2017 for industrial and warehouse uses. Also, 10,000 $MTCO_2e$ has been used as the significance threshold by many local government lead agencies for logistics projects throughout the SCAG region since the SCAQMD adopted this threshold for its own use. Further, to ensure that the threshold is conservative in its application, although the SCAQMD uses their adopted 10,000 $MTCO_2e$ threshold to determine the significance of stationary source emissions for industrial projects, the 10,000 $MTCO_2e$ threshold used in this EIR is applied to all sources of Project-related GHG emissions whether stationary source, mobile source, area source, or other.

Use of this threshold is also consistent with guidance provided in the CAPCOA *CEQA and Climate Change* handbook, as such the City has opted to use a non-zero threshold approach based on Approach 2 of the handbook. Threshold 2.5 (Unit-Based Thresholds Based on Market Capture) establishes a numerical threshold based on capture of approximately 90 percent of emissions from future development. The latest threshold developed by SCAQMD using this method is 10,000 metric tons carbon dioxide equivalent ($MTCO_2E$) per year for industrial projects. This threshold is based on the review of 711 CEQA projects.

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3 PROJECT GREENHOUSE GAS IMPACT

3.1 INTRODUCTION

The Project has been evaluated to determine if it will result in a significant greenhouse gas

3.2 CALIFORNIA EMISSIONS ESTIMATOR MODEL™ EMPLOYED TO ESTIMATE GHG EMISSIONS

CEQA Guidelines 15064.4 (b) (1) states that a lead agency may use a model or methodology to quantify greenhouse gas emissions associated with a project (32).

On October 17, 2017, the SCAQMD in conjunction with the California Air Pollution Control Officers Association (CAPCOA) and other California air districts, released the latest version of the California Emissions Estimator Model™ (CalEEMod™) v2016.3.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (NO_x, VOC, PM_{10}, $PM_{2.5}$, SO_x, and CO) and greenhouse gas (GHG) emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (33). Accordingly, the latest version of CalEEMod™ has been used for this Project to determine construction and operational air quality emissions. Output from the model runs for both construction and operational activity are provided in Appendix 3.1 and Appendix 3.2.

3.3 CONSTRUCTION AND OPERATIONAL LIFE-CYCLE ANALYSIS

A full life-cycle analysis (LCA) for construction and operational activity is not included in this analysis due to the lack of consensus guidance on LCA methodology at this time. Life-cycle analysis (i.e., assessing economy-wide GHG emissions from the processes in manufacturing and transporting all raw materials used in the project development, infrastructure and on-going operations) depends on emission factors or econometric factors that are not well established for all processes. At this time a LCA would be extremely speculative and thus has not been prepared.

Additionally, the SCAQMD recommends analyzing direct and indirect project GHG emissions generated within California and not life-cycle emissions because the life-cycle effects from a project could occur outside of California, might not be very well understood or documented, and would be challenging to mitigate (34). Additionally, the science to calculate life cycle emissions is not yet established or well defined, therefore SCAQMD has not recommended, and is not requiring, life-cycle emissions analysis.

3.4 PROJECT RELATED GREENHOUSE GAS EMISSIONS

Construction activities associated with the Project would result in emissions of CO_2 and CH_4 from construction activities. The report Centerpointe Air Quality Impact Analysis Report, Urban Crossroads, Inc. (2018) contains detailed information regarding construction activity (35).

For construction phase Project emissions, GHGs are quantified and amortized over the life of the Project. To amortize the emissions over the life of the Project, the SCAQMD recommends calculating the total greenhouse gas emissions for the construction activities, dividing it by a 30-

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year project life then adding that number to the annual operational phase GHG emissions (36). As such, construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions.

3.5 OPERATIONAL EMISSIONS

Operational activities associated with the proposed Project will result in emissions of CO_2, CH_4, and N_2O from the following primary sources:

- Area Source Emissions
- Energy Source Emissions
- Mobile Source Emissions
- Solid Waste
- Water Supply, Treatment and Distribution
- On-Site Equipment Emissions

3.5.1 AREA SOURCE EMISSIONS

Landscape Maintenance Equipment

Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shedders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. The emissions associated with landscape maintenance equipment were calculated based on assumptions provided in the CalEEMod model.

3.5.2 ENERGY SOURCE EMISSIONS

Combustion Emissions Associated with Natural Gas and Electricity

GHGs are emitted from buildings as a result of activities for which electricity and natural gas are typically used as energy sources. Combustion of any type of fuel emits CO_2 and other GHGs directly into the atmosphere; these emissions are considered direct emissions associated with a building. GHGs are also emitted during the generation of electricity from fossil fuels; these emissions are considered to be indirect emissions. Unless otherwise noted, CalEEMod™ default parameters were used.

3.5.3 MOBILE SOURCE EMISSIONS

Vehicles

Project-related operational greenhouse gas impacts derive predominantly from mobile sources. In this regard, over 85 percent (by weight) of all Project operational-source emissions would be generated by mobile sources (vehicles). Neither the Project Applicant nor the City has any regulatory control over these tail pipe emissions. Rather, vehicle tail pipe source emissions are regulated by CARB and USEPA. As summarized previously herein, as the result of CARB and USEPA

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actions, Basin-wide vehicular-source emissions have been reduced dramatically over the past years and are expected to further decline as clean vehicle and fuel technologies improve.

The Project related operational air quality impacts derive primarily from vehicle trips generated by the Project. Trip characteristics available from the report, *Centerpointe Traffic Impact Analysis* (Urban Crossroads 2018) were utilized in this analysis (1).

Per the *Centerpointe Traffic Impact Analysis*, the Project is expected to generate a net total of approximately 486 trip-ends per day (actual vehicles) (1). The Project trip generation includes 100 truck trip-ends per day from the proposed Project site including 37.4% 2-axle trucks, 18.2% 3-axle trucks, and 44.4% 4+-axle trucks for General Light Industrial use, 16.7% 2-axle trucks, 20.7% 3-axle trucks, and 62.6% 4+-axle trucks for Warehousing use.

3.5.3.1 Trip Length

Background

A technical deficiency inherent in calculating the projected vehicle emissions associated with any project is related to the estimation of trip length and vehicle miles traveled (VMT). VMT for a given project is calculated by the total number of vehicle trips to/from the Project x average trip length. This method of estimating VMT for use in calculating vehicle emissions likely results in the over-estimation and double-counting of emissions because, for a distribution warehouse center such as the Project, the land use is likely to attract (divert) existing vehicle trips that are already on the circulation system as opposed to generating new trips. In this regard, the Project would, to a large extent, redistribute existing mobile-source emissions rather than generate additional emissions within the Basin. As such, the estimation of the Centerpointe Project's vehicular-source emissions are likely overstated in that no credit for, or reduction in, emissions is assumed based on diversion of existing trips.

Provided below is a summary of the VMT recommendations of the SCAQMD and SCAG, followed by a description of the methodology used to calculate the VMT rates used in this GHGA.

SCAQMD Recommendation

In the last five years, the SCAQMD has provided numerous comments on the trip length for warehouse/distribution and industrial land use projects (37). The SCAQMD asserts that the model-default trip length in CalEEMod™ and the URBan EMISsions (URBEMIS) 2007 model (version 9.2.4) would underestimate emissions. The SCAQMD asserts that for warehouse, distribution center, and industrial land use projects, most of the heavy-duty trucks would be hauling consumer goods, often from the Ports of Long Beach and Los Angeles (POLA and POLB) and/or to destinations outside of California. The SCAQMD states that for this reason, the CalEEMod™ and the URBan EMISsions model default trip length (approximately 12.6 miles) would not be representative of activities at like facilities. The SCAQMD generally recommends the use of a 40-mile one-way trip length.

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Southern California Association of Government (SCAG) Heavy Duty Truck Model

SCAG is comprised of six counties (Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura) and 190 cities in Southern California, and is the organization charged with addressing and resolving short- and long-term regional policy issues. The SCAG region also consists of 14 sub-regional entities recognized by the Regional Council as partners in the regional policy planning process. The SCAG region has more than 19 million residents and encompasses more than 38,000 square miles, representing the largest and most diverse region in the country.

SCAG maintains a regional transportation model. In its most recent (2008) transportation validation for the 2003 Regional Model, SCAG indicates the average internal truck trip length for the SCAG region is 5.92 miles for Light Duty Trucks, 13.06 miles for Medium Duty Trucks, and 24.11 miles for Heavy Duty Trucks.

Approach for Analysis of the Project

Trip lengths and VMT estimates employed in this AQIA report generate vehicular-source emissions that would represent a maximum impact scenario. Other CEQA compliance documents for similar land use projects within the region have utilized these same or similar estimates. Though the VMT analyzed in this analysis may differ from the Project's traffic impact analysis, to maintain analytic consistency and establish the maximum impact scenario noted above, the following approach has been utilized in calculating emissions associated with vehicles accessing the Project. This approach is consistent with professional industry practice (38) (39) (40).

For passenger car trips, the CalEEMod default for a one-way trip length of 16.6 miles was assumed. For heavy duty trucks, an average trip length was derived from distances from the Project site to the far edges of the South Coast Air Basin (SCAB) as follows.

- Project site to the Port of Los Angeles/Long Beach: 78 miles;
- Project site to East on State Route 60: 30 miles;
- Project site to San Diego County line: 60 miles;
- Project site to Inland Empire: 50 miles;
- Project site to Perris destinations: 10 miles;
- Project site to Moreno Valley destinations: 10 miles;

Assuming that 50% of all delivery trips will travel to and from the Project and the Port of Los Angeles/Long Beach, 10% go East on the State Route 60, 20% go to San Diego, 10% go to the Inland Empire, 5% go to Perris destinations and the remainder as Moreno Valley destinations. The average truck trip length is calculated as 60 miles.

Two separate model runs were utilized in order to more accurately model emissions resulting from vehicle operations. The first run analyzed passenger car emissions, which incorporated a default trip length of 16.6 miles for passenger cars and a fleet mix of 100% Light-Duty-Auto vehicles (LDA). The second run analyzed truck emissions, which incorporated an average truck trip length of 60 miles.

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The vehicle fleet mix, in terms of actual trucks, as derived from the traffic study for the Project is comprised of the following based on land use:

- General Light Industrial: 37.42% LHD, 18.19% MHD, and 44.39% HHD
- Warehouse (without cold storage): 16.67% LHD, 20.69% MHD, and 62.64% HHD

The detailed emission calculations are provided in Appendix 3.1 and 3.2.

3.5.4 Solid Waste

Industrial land uses will result in the generation and disposal of solid waste. A large percentage of this waste will be diverted from landfills by a variety of means, such as reducing the amount of waste generated, recycling, and/or composting. The remainder of the waste not diverted will be disposed of at a landfill. GHG emissions from landfills are associated with the anaerobic breakdown of material. GHG emissions associated with the disposal of solid waste associated with the proposed Project were calculated by the CalEEMod™ model using default parameters.

3.5.5 Water Supply, Treatment and Distribution

Indirect GHG emissions result from the production of electricity used to convey, treat and distribute water and wastewater. The amount of electricity required to convey, treat and distribute water depends on the volume of water as well as the sources of the water. Unless otherwise noted, CalEEMod™ default parameters were used.

3.5.6 On-Site Equipment Emissions

As part of the Project's design, all on-site indoor and outdoor cargo handling equipment (CHE) (including yard trucks, hostlers, yard goats, pallet jacks, forklifts, and other on-site equipment) will be powered by non-combustion engines (e.g. electric). Since there are no exhaust emissions associated with the equipment, for purposes of the Project, emissions associated with yard trucks and forklifts are not included in the emissions totals.

3.6 Emissions Summary

The annual GHG emissions associated with the operation of the proposed Project are estimated to be 5,515.11 $MTCO_2e$ per year as summarized in Table 3-1.

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TABLE 3-1: PROJECT GREENHOUSE GAS EMISSIONS (ANNUAL)

Emission Source	Emissions (metric tons per year)			
	CO_2	CH_4	N_2O	Total CO_2E
Annual construction-related emissions amortized over 30 years	16.96	0.00	0.00	17.01
Area	9.13E-03	2.00E-05	0.00	9.75E-03
Energy	350.433	0.01	3.86E-03	351.90
Mobile Sources (Passenger Cars)	1,895.67	0.04	0.00	1,896.64
Mobile Sources (Trucks)	2,883.01	0.13	0.00	2,886.30
Waste	41.41	2.45	0.00	102.60
Water Usage	210.71	1.55	0.04	260.66
Total CO_2E (All Sources)	**5,515.11**			
Screening Threshold (CO_2E)	**10,000**			
Threshold Exceeded?	**NO**			

3.7 GREENHOUSE GAS EMISSIONS FINDINGS AND RECOMMENDATIONS

GHG Impact #1: The Project would not generate direct or indirect greenhouse gas emission that would result in a significant impact on the environment.

The City of Moreno Valley does not have an adopted threshold of significance for GHG emissions. For CEQA purposes, the City has discretion to select an appropriate significance criterion, based on substantial evidence. The South Coast Air Quality Management District's (SCAQMD)'s adopted numerical threshold of 10,000 metric tons carbon dioxide equivalent ($MTCO_2e$) per year for industrial stationary source emissions is selected as the significance criterion. The SCAQMD-adopted industrial threshold was selected by the City because the proposed Project is analogous to an industrial use much more closely than any other land use such as commercial or residential in terms of its expected operating characteristics. The Project proposes a warehouse and industrial use that will serve mid- stream functions in the goods movement chain between manufacturers and consumers, characteristic of an industrial operation. Further, analysis of the Project's traffic generation in this report is based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, 2017 for warehouse and industrial land use categories. Also, 10,000 $MTCO_2e$ has been used as the significance threshold by many local government lead agencies for logistics projects throughout the SCAG region since the SCAQMD adopted this threshold for its own use. Further, to ensure that the threshold is conservative in its application, although the SCAQMD uses their adopted 10,000 $MTCO_2e$ threshold to determine the significance of stationary source emissions for industrial projects, the 10,000 $MTCO_2e$ threshold used in this CEQA document is applied to all sources of Project-related GHG emissions whether stationary source, mobile source, area source, or other.

Use of this threshold is also consistent with guidance provided in the CAPCOA *CEQA and Climate Change* handbook, as such the City has opted to use a non-zero threshold approach based on

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Approach 2 of the handbook. Threshold 2.5 (Unit-Based Thresholds Based on Market Capture) establishes a numerical threshold based on capture of approximately 90 percent of emissions from future development. The latest threshold developed by SCAQMD using this method is 10,000 $MTCO_2e$ based on the review of 711 CEQA projects.

The Project will result in approximately 732.18 $MTCO_2e$ per year from construction, area, energy, waste, and water usage. In addition, the Project has the potential to result in an additional 4,782.94 $MTCO_2e$ per year from mobile sources if the assumption is made that all of the vehicle trips to and from the Project are "new" trips resulting from the development of the Project. As shown on Table 3-1 (previously presented), the Project has the potential to generate a total of approximately 5,515.11 $MTCO_2e$ per year. As such, the Project would not exceed the SCAQMD's numeric threshold of 10,000 $MTCO_2e$ if it were applied. Thus, the Project would not have the potential to result in a cumulatively considerable impact with respect to GHG emissions.

GHG Impact #2: The Project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

The Project's consistency with AB 32 and SB 32 are discussed below.

Scoping Plan

ARB's *Scoping Plan* identifies strategies to reduce California's greenhouse gas emissions in support of AB32 which requires the State to reduce its GHG emissions to 1990 levels by 2020. Many of the strategies identified in the Scoping Plan are not applicable at the project level, such as long-term technological improvements to reduce emissions from vehicles. Some measures are applicable and supported by the project, such as energy efficiency. Finally, while some measures are not directly applicable, the project would not conflict with their implementation. Reduction measures are grouped into 18 action categories, as follows:

1. **California Cap-and-Trade Program Linked to Western Climate Initiative Partner Jurisdictions.** Implement a broad-based California cap-and-trade program to provide a firm limit on emissions. Link the California cap–and-trade program with other Western Climate Initiative Partner programs to create a regional market system to achieve greater environmental and economic benefits for California.[5] Ensure California's program meets all applicable AB 32 requirements for market-based mechanisms.
2. **California Light-Duty Vehicle Greenhouse Gas Standards.** Implement adopted Pavley standards and planned second phase of the program. Align zero-emission vehicle, alternative and renewable fuel and vehicle technology programs with long-term climate change goals.
3. **Energy Efficiency.** Maximize energy efficiency building and appliance standards, and pursue additional efficiency efforts including new technologies, and new policy and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California (including both investor-owned and publicly owned utilities).
4. **Renewables Portfolio Standards.** Achieve 33 percent renewable energy mix statewide.
5. **Low Carbon Fuel Standard.** Develop and adopt the Low Carbon Fuel Standard.

[5] California Air Resources Board. California GHG Emissions – Forecast (2002-2020). October 2010

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6. **Regional Transportation-Related Greenhouse Gas Targets.** Develop regional greenhouse gas emissions reduction targets for passenger vehicles.
7. **Vehicle Efficiency Measures.** Implement light-duty vehicle efficiency measures.
8. **Goods Movement.** Implement adopted regulations for the use of shore power for ships at berth. Improve efficiency in goods movement activities.
9. **Million Solar Roofs Program.** Install 3,000 megawatts of solar-electric capacity under California's existing solar programs.
10. **Medium- and Heavy-Duty Vehicles.** Adopt medium- (MD) and heavy-duty (HD) vehicle efficiencies. Aerodynamic efficiency measures for HD trucks pulling trailers 53-feet or longer that include improvements in trailer aerodynamics and use of rolling resistance tires were adopted in 2008 and went into effect in 2010.[6] Future, yet to be determined improvements, includes hybridization of MD and HD trucks.
11. **Industrial Emissions.** Require assessment of large industrial sources to determine whether individual sources within a facility can cost-effectively reduce greenhouse gas emissions and provide other pollution reduction co-benefits. Reduce greenhouse gas emissions from fugitive emissions from oil and gas extraction and gas transmission. Adopt and implement regulations to control fugitive methane emissions and reduce flaring at refineries.
12. **High Speed Rail.** Support implementation of a high speed rail system.
13. **Green Building Strategy.** Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.
14. **High Global Warming Potential Gases.** Adopt measures to reduce high warming global potential gases.
15. **Recycling and Waste.** Reduce methane emissions at landfills. Increase waste diversion, composting and other beneficial uses of organic materials, and mandate commercial recycling. Move toward zero-waste.
16. **Sustainable Forests.** Preserve forest sequestration and encourage the use of forest biomass for sustainable energy generation. The 2020 target for carbon sequestration is 5 million MTCO2E/YR.
17. **Water.** Continue efficiency programs and use cleaner energy sources to move and treat water.
18. **Agriculture.** In the near-term, encourage investment in manure digesters and at the five-year Scoping Plan update determine if the program should be made mandatory by 2020.

Table 3-2 summarizes the project's consistency with the State Scoping Plan. As summarized, the project will not conflict with any of the provisions of the Scoping Plan and in fact supports seven of the action categories through energy efficiency, water conservation, recycling, and landscaping.

TABLE 3-2: SCOPING PLAN CONSISTENCY SUMMARY

[6] California Air Resources Board. Scoping Plan Measures Implementation Timeline. October 2010

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Action	Supporting Measures[7]	Consistency
Cap-and-Trade Program	--	Not Applicable. These programs involve capping emissions from electricity generation, industrial facilities, and broad scoped fuels. Caps do not directly affect manufacturing projects.
Light-Duty Vehicle Standards	T-1	Not Applicable. This is a statewide measure establishing vehicle emissions standards.
Energy Efficiency	E-1	Consistent. The project will include a variety of building, water, and solid waste efficiencies consistent with 2016 CALGREEN requirements.
	E-2	
	CR-1	
	CR-2	
Renewables Portfolio Standard	E-3	Not Applicable. Establishes the minimum statewide renewable energy mix.
Low Carbon Fuel Standard	T-2	Not Applicable. Establishes reduced carbon intensity of transportation fuels.
Regional Transportation-Related Greenhouse Gas Targets	T-3	Not Applicable. This is a statewide measure and is not within the purview of this Project.
Vehicle Efficiency Measures	T-4	Not Applicable. Identifies measures such as minimum tire-fuel efficiency, lower friction oil, and reduction in air conditioning use.
Goods Movement	T-5	Not applicable. Identifies measures to improve goods movement efficiencies such as advanced combustion strategies, friction reduction, waste heat recovery, and electrification of accessories. While these measures are yet to be implemented and will be voluntary, the proposed Project would not interfere with their implementation.
	T-6	
Million Solar Roofs (MSR) Program	E-4	Not applicable. The MSR program sets a goal for use of solar systems throughout the state as a whole. The project currently does not include solar energy generation, and it is unknown if the building roof structure will be designed to support solar panels in the future.
Medium- & Heavy-Duty Vehicles	T-7	Not applicable. MD and HD trucks and trailers working from the proposed parcel delivery facility will be subject to aerodynamic and hybridization requirements as

[7] Supporting measures can be found at the following link: http://www.arb.ca.gov/cc/scopingplan/2013_update/appendix_b.pdf

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Action	Supporting Measures[7]	Consistency
	T-8	established by ARB; no feature of the project would interfere with implementation of these requirements and programs.
Industrial Emissions	I-1	Not Applicable. These measures are applicable to large industrial facilities (> 500,000 MTCOE2/YR) and other intensive uses such as refineries.
	I-2	
	I-3	
	I-4	
	I-5	
High Speed Rail	T-9	Not Applicable. Supports increased mobility choice.
Green Building Strategy	GB-1	Consistent. The project will include a variety of building, water, and solid waste efficiencies consistent with 2016 CALGREEN requirements.
High Global Warming Potential Gases	H-1	Not Applicable. The proposed parcel delivery facility is not substantial sources of high GWP emissions and will comply with any future changes in air conditioning, fire protection suppressant, and other requirements.
	H-2	
	H-3	
	H-4	
	H-5	
	H-6	
	H-7	
Recycling and Waste	RW-1	Consistent. The project will be required recycle a minimum of 50 percent from construction activities and parcel delivery operations per State and County requirements.
	RW-2	
	RW-3	
Sustainable Forests	F-1	Consistent. The project will increase carbon sequestration by increasing on-site trees per the project landscaping plan.
Water	W-1	Consistent. The project will include use of low-flow fixtures and efficient landscaping per State requirements.
	W-2	
	W-3	
	W-4	
	W-5	
	W-6	
Agriculture	A-1	Not Applicable. The project is not an agricultural use.

SB 32

At the state level, Executive Orders S-3-05 and B-30-15 are orders from the State's Executive Branch for the purpose of reducing GHG emissions. The goal of Executive Order S-3-05 is to reduce GHG emissions to 1990 levels by 2020 was codified by the Legislature as the 2006 Global Warming Solutions Act (AB 32). The Project, as analyzed above, is consistent with AB 32. Therefore, the Project does not conflict with this component of Executive Order S-3-05. The Executive Orders also establish goals to reduce GHG emissions to 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. However, studies have shown that, in order to meet the 2030 and 2050 targets, aggressive technologies in the transportation and energy

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sectors, including electrification and the decarbonization of fuel, will be required. In its Climate Change Scoping Plan, ARB acknowledged that the "measures needed to meet the 2050 are too far in the future to define in detail." In the First Scoping Plan Update, however, ARB generally described the type of activities required to achieve the 2050 target: "energy demand reduction through efficiency and activity changes; largescale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and rapid market penetration of efficiency and clean energy technologies that requires significant efforts to deploy and scale markets for the cleanest technologies immediately."

Unlike the 2020 and 2030 reduction targets of AB 32 and SB 32, respectively the 2050 target of Executive Order S-3-05 has not been codified. Accordingly, the 2050 reduction target has not been the subject of any analysis by CARB. For example, CARB has not prepared an update to the aforementioned Scoping Plan that provides guidance to local agencies as to how they may seek to contribute to the achievement of the 2050 reduction target.

In 2017, the California Supreme Court examined the need to use the Executive Order S-3-05 2050 reduction target in Cleveland National Forest Foundation v. San Diego Association of Governments (2017) 3 Cal.5th 497 (Cleveland National). The case arose from SANDAG's adoption of its 2050 Regional Transportation Plan, which included its Sustainable Communities Strategy, as required by SB 375 (discussed above). On review, the Supreme Court held that SANDAG did not violate CEQA by not considering the Executive Order S-3-05 2050 reduction target.

As explained above, the 2050 reduction target of Executive Order S-3-05 has not been codified, unlike the 2020 and 2030 reduction targets of AB 32 and SB 32, respectively. Accordingly, the 2050 reduction target has not been the subject of any analysis by CARB. For example, CARB has not prepared an update to the aforementioned Scoping Plan that provides guidance to local agencies as to how they may seek to contribute to the achievement of the 2050 reduction target.

Further, the Project is much smaller in size and scope in comparison to the Regional Transportation Plan examined in *Cleveland National*. In that case, the California Supreme Court held that SANDAG did not violate CEQA by not considering the Executive Order S-3-05 2050 reduction target. Accordingly, there is no information presently available to assess the Project's consistency with regard to the 2050 target of Executive Order S-3-05.

The 2017 Scoping Plan builds on the 2008 Scoping Plan in order to achieve the 40 percent reduction from 1990 levels by 2030. Major elements of the 2017 Scoping Plan framework that will achieve the GHG reductions include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing ZEV buses and trucks. When adopted, this measure would apply to all trucks accessing the Project site, this may include existing trucks or new trucks purchased by the project proponent could be eligible for incentives that expedite the Project's implementation of ZEVs.
- Low Carbon Fuel Standard (LCFS), with an increased stringency (18 percent by 2030). When adopted, this measure would apply to all fuel purchased and used by the Project in the state.
- Implementing SB 350, which expands the Renewables Portfolio Standard (RPS) to 50 percent RPS and doubles energy efficiency savings by 2030. When adopted, this measure would apply when electricity is provided to the Project by a utility company.

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- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks. When adopted, this measure would apply to all trucks accessing the Project site, this may include existing trucks or new trucks that are part of the statewide goods movement sector.
- Implementing the proposed Short-Lived Climate Pollutant Strategy (SLPS), which focuses on reducing methane and hydroflurocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030. When adopted, the Project would be required to comply with this measure and reduce SLPS accordingly.
- Continued implementation of SB 375. The Project is not within the purview of SB 375 and would therefore not conflict with this measure.
- Post-2020 Cap-and-Trade Program that includes declining caps. When adopted, the Project would be required to comply with the Cap-and-Trade Program if it generates emissions from sectors covered by Cap-and-Trade.
- 20 percent reduction in GHG emissions from refineries by 2030. When adopted, the Project would be required to comply with this measure if it were to utilize any fuel from refineries.
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink. This is a statewide measure that would not apply to the Project.

As shown above, the Project would not conflict with any of the 2017 Scoping Plan elements as any regulations adopted would apply directly or indirectly to the Project.

Further, recent studies show that the State's existing and proposed regulatory framework will allow the State to reduce its GHG emissions level to 40 percent below 1990 levels by 2030 (27).

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Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

6 CERTIFICATION

The contents of this GHGA represent an accurate depiction of the greenhouse gas impacts associated with the proposed Centerpointe Project. The information contained in this greenhouse gas report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 336-5987.

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EDUCATION

Master of Science in Environmental Studies
California State University, Fullerton • May, 2010

Bachelor of Arts in Environmental Analysis and Design
University of California, Irvine • June, 2006

PROFESSIONAL AFFILIATIONS

AEP – Association of Environmental Planners
AWMA – Air and Waste Management Association
ASTM – American Society for Testing and Materials

PROFESSIONAL CERTIFICATIONS

Environmental Site Assessment – American Society for Testing and Materials • June, 2013
Planned Communities and Urban Infill – Urban Land Institute • June, 2011
Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April, 2008
Principles of Ambient Air Monitoring – California Air Resources Board • August, 2007
AB2588 Regulatory Standards – Trinity Consultants • November, 2006
Air Dispersion Modeling – Lakes Environmental • June, 2006

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

APPENDIX 3.1:

CALEEMOD OPERATIONAL EMISSIONS MODEL OUTPUTS (TRUCKS)

Centerpointe (Operations - Trucks)

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	163.22	1000sqft	3.75	163,218.00	0
General Light Industry	40.80	1000sqft	0.94	40,804.00	0
Parking Lot	164.00	Space	3.11	65,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Lot Acreage based on information provided in the Site Plan. Total Lot Acreage is 8.78.

Construction Phase - Operations Run Only.

Off-road Equipment - Operations Run Only.

Trips and VMT - Operations Run Only.

Vehicle Trips - Operations Run Only.

Fleet Mix - Operations Run Only.

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

Centerpointe (Operations - Trucks) - South Coast AQMD Air District, Annual

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	PhaseEndDate	1/18/2019	12/10/2018
tblConstructionPhase	PhaseStartDate	1/5/2019	12/10/2018
tblFleetMix	HHD	0.03	0.44
tblFleetMix	HHD	0.03	0.63
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LHD1	0.02	0.37
tblFleetMix	LHD1	0.02	0.17
tblFleetMix	LHD2	5.8620e-003	0.00
tblFleetMix	LHD2	5.8620e-003	0.00
tblFleetMix	MCY	4.7770e-003	0.00
tblFleetMix	MCY	4.7770e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	9.5600e-004	0.00
tblFleetMix	MH	9.5600e-004	0.00
tblFleetMix	MHD	0.02	0.18
tblFleetMix	MHD	0.02	0.21
tblFleetMix	OBUS	2.0370e-003	0.00
tblFleetMix	OBUS	2.0370e-003	0.00
tblFleetMix	SBUS	7.0500e-004	0.00

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

tblFleetMix	SBUS	7.0500e-004	0.00
tblFleetMix	UBUS	1.9440e-003	0.00
tblFleetMix	UBUS	1.9440e-003	0.00
tblLandUse	LandUseSquareFeet	163,220.00	163,218.00
tblLandUse	LandUseSquareFeet	40,800.00	40,804.00
tblLandUse	LotAcreage	1.48	3.11
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CNW_TTP	41.00	0.00
tblVehicleTrips	CW_TL	16.60	60.00
tblVehicleTrips	CW_TL	16.60	60.00
tblVehicleTrips	CW_TL	16.60	60.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.32	1.06
tblVehicleTrips	ST_TR	1.68	0.35
tblVehicleTrips	SU_TR	0.68	1.06
tblVehicleTrips	SU_TR	1.68	0.35
tblVehicleTrips	WD_TR	6.97	1.06

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

tblVehicleTrips	WD_TR	1.68	0.35

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8374	4.0000e-005	4.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.1300e-003	9.1300e-003	2.0000e-005	0.0000	9.7500e-003
Energy	8.9400e-003	0.0812	0.0682	4.9000e-004		6.1700e-003	6.1700e-003		6.1700e-003	6.1700e-003	0.0000	350.4339	350.4339	0.0125	3.8600e-003	351.8968
Mobile	0.2938	8.3037	2.3868	0.0298	0.9544	0.0536	1.0080	0.2691	0.0513	0.3204	0.0000	2,883.0111	2,883.0111	0.1314	0.0000	2,886.2951
Waste						0.0000	0.0000		0.0000	0.0000	41.4142	0.0000	41.4142	2.4475	0.0000	102.6020
Water						0.0000	0.0000		0.0000	0.0000	14.9679	195.7374	210.7053	1.5454	0.0380	260.6567
Total	**1.1401**	**8.3850**	**2.4597**	**0.0303**	**0.9544**	**0.0598**	**1.0142**	**0.2691**	**0.0575**	**0.3266**	**56.3821**	**3,429.1916**	**3,485.5737**	**4.1368**	**0.0418**	**3,601.4603**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	12/10/2018	12/10/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

Acres of Grading (Grading Phase): 0

Acres of Paving: 3.11

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8374	4.0000e-005	4.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.1300e-003	9.1300e-003	2.0000e-005	0.0000	9.7500e-003
Energy	8.9400e-003	0.0812	0.0682	4.9000e-004		6.1700e-003	6.1700e-003		6.1700e-003	6.1700e-003	0.0000	350.4339	350.4339	0.0125	3.8600e-003	351.8968
Mobile	0.2938	8.3037	2.3868	0.0298	0.9544	0.0536	1.0080	0.2691	0.0513	0.3204	0.0000	2,883.0111	2,883.0111	0.1314	0.0000	2,886.2951
Waste						0.0000	0.0000		0.0000	0.0000	41.4142	0.0000	41.4142	2.4475	0.0000	102.6020
Water						0.0000	0.0000		0.0000	0.0000	14.9679	195.7374	210.7053	1.5454	0.0380	260.6567
Total	**1.1401**	**8.3850**	**2.4597**	**0.0303**	**0.9544**	**0.0598**	**1.0142**	**0.2691**	**0.0575**	**0.3266**	**56.3821**	**3,429.1916**	**3,485.5737**	**4.1368**	**0.0418**	**3,601.4603**

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

3.2 Site Preparation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2938	8.3037	2.3868	0.0298	0.9544	0.0536	1.0080	0.2691	0.0513	0.3204	0.0000	2,883.0111	2,883.0111	0.1314	0.0000	2,886.2951
Unmitigated	0.2938	8.3037	2.3868	0.0298	0.9544	0.0536	1.0080	0.2691	0.0513	0.3204	0.0000	2,883.0111	2,883.0111	0.1314	0.0000	2,886.2951

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	43.29	43.29	43.29	945,427	945,427
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	56.80	56.80	56.80	1,240,524	1,240,524
Total	100.09	100.09	100.09	2,185,952	2,185,952

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	60.00	8.40	6.90	100.00	0.00	0.00	100	0	0
Parking Lot	60.00	8.40	6.90	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	60.00	8.40	6.90	100.00	0.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.000000	0.000000	0.000000	0.000000	0.374200	0.000000	0.181900	0.443900	0.000000	0.000000	0.000000	0.000000	0.000000
Parking Lot	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956
Unrefrigerated Warehouse-No Rail	0.000000	0.000000	0.000000	0.000000	0.166700	0.000000	0.206900	0.626400	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	262.0072	262.0072	0.0108	2.2400e-003	262.9445
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	262.0072	262.0072	0.0108	2.2400e-003	262.9445
NaturalGas Mitigated	8.9400e-003	0.0812	0.0682	4.9000e-004		6.1700e-003	6.1700e-003		6.1700e-003	6.1700e-003	0.0000	88.4267	88.4267	1.6900e-003	1.6200e-003	88.9522
NaturalGas Unmitigated	8.9400e-003	0.0812	0.0682	4.9000e-004		6.1700e-003	6.1700e-003		6.1700e-003	6.1700e-003	0.0000	88.4267	88.4267	1.6900e-003	1.6200e-003	88.9522

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	1.32572e+006	7.1500e-003	0.0650	0.0546	3.9000e-004		4.9400e-003	4.9400e-003		4.9400e-003	4.9400e-003	0.0000	70.7456	70.7456	1.3600e-003	1.3000e-003	71.1660
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	331333	1.7900e-003	0.0162	0.0136	1.0000e-004		1.2300e-003	1.2300e-003		1.2300e-003	1.2300e-003	0.0000	17.6812	17.6812	3.4000e-004	3.2000e-004	17.7862
Total		**8.9400e-003**	**0.0812**	**0.0682**	**4.9000e-004**		**6.1700e-003**	**6.1700e-003**		**6.1700e-003**	**6.1700e-003**	**0.0000**	**88.4267**	**88.4267**	**1.7000e-003**	**1.6200e-003**	**88.9522**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	1.32572e+006	7.1500e-003	0.0650	0.0546	3.9000e-004		4.9400e-003	4.9400e-003		4.9400e-003	4.9400e-003	0.0000	70.7456	70.7456	1.3600e-003	1.3000e-003	71.1660
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	331333	1.7900e-003	0.0162	0.0136	1.0000e-004		1.2300e-003	1.2300e-003		1.2300e-003	1.2300e-003	0.0000	17.6812	17.6812	3.4000e-004	3.2000e-004	17.7862
Total		**8.9400e-003**	**0.0812**	**0.0682**	**4.9000e-004**		**6.1700e-003**	**6.1700e-003**		**6.1700e-003**	**6.1700e-003**	**0.0000**	**88.4267**	**88.4267**	**1.7000e-003**	**1.6200e-003**	**88.9522**

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	414161	131.9604	5.4500e-003	1.1300e-003	132.4325
Parking Lot	22960	7.3156	3.0000e-004	6.0000e-005	7.3417
Unrefrigerated Warehouse-No Rail	385194	122.7312	5.0700e-003	1.0500e-003	123.1703
Total		**262.0072**	**0.0108**	**2.2400e-003**	**262.9445**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	414161	131.9604	5.4500e-003	1.1300e-003	132.4325
Parking Lot	22960	7.3156	3.0000e-004	6.0000e-005	7.3417
Unrefrigerated Warehouse-No Rail	385194	122.7312	5.0700e-003	1.0500e-003	123.1703
Total		**262.0072**	**0.0108**	**2.2400e-003**	**262.9445**

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8374	4.0000e-005	4.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.1300e-003	9.1300e-003	2.0000e-005	0.0000	9.7500e-003
Unmitigated	0.8374	4.0000e-005	4.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.1300e-003	9.1300e-003	2.0000e-005	0.0000	9.7500e-003

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0955					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7415					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.4000e-004	4.0000e-005	4.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.1300e-003	9.1300e-003	2.0000e-005	0.0000	9.7500e-003
Total	**0.8374**	**4.0000e-005**	**4.7300e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**9.1300e-003**	**9.1300e-003**	**2.0000e-005**	**0.0000**	**9.7500e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0955					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7415					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.4000e-004	4.0000e-005	4.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.1300e-003	9.1300e-003	2.0000e-005	0.0000	9.7500e-003
Total	**0.8374**	**4.0000e-005**	**4.7300e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**9.1300e-003**	**9.1300e-003**	**2.0000e-005**	**0.0000**	**9.7500e-003**

7.0 Water Detail

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	210.7053	1.5454	0.0380	260.6567
Unmitigated	210.7053	1.5454	0.0380	260.6567

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	9.435 / 0	42.1369	0.3091	7.5900e-003	52.1262
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	37.7446 / 0	168.5684	1.2364	0.0304	208.5305
Total		**210.7053**	**1.5454**	**0.0380**	**260.6567**

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	9.435 / 0	42.1369	0.3091	7.5900e-003	52.1262
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	37.7446 / 0	168.5684	1.2364	0.0304	208.5305
Total		**210.7053**	**1.5454**	**0.0380**	**260.6567**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	41.4142	2.4475	0.0000	102.6020
Unmitigated	41.4142	2.4475	0.0000	102.6020

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	50.59	10.2693	0.6069	0.0000	25.4418
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	153.43	31.1449	1.8406	0.0000	77.1602
Total		**41.4142**	**2.4475**	**0.0000**	**102.6020**

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	50.59	10.2693	0.6069	0.0000	25.4418
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	153.43	31.1449	1.8406	0.0000	77.1602
Total		**41.4142**	**2.4475**	**0.0000**	**102.6020**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

11.0 Vegetation

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

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Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

APPENDIX 3.2:

CALEEMOD OPERATIONAL EMISSIONS MODEL OUTPUTS (PASSENGER CARS)

Centerpointe (Operations - Passenger Cars)

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	163.22	1000sqft	3.75	163,218.00	0
General Light Industry	40.80	1000sqft	0.94	40,804.00	0
Parking Lot	164.00	Space	3.11	65,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

Project Characteristics -

Land Use - Lot acreaged based on information from Site Plan. Total Lot acreage is 8.78 acres.

Construction Phase - Operations Run Only.

Off-road Equipment - Operations Run Only.

Trips and VMT - Operations Run Only.

On-road Fugitive Dust - Operations Run Only.

Vehicle Trips - Trip Rates based on information provided in the TIA (2018)

Fleet Mix - Based on information provided in the TIA (2018)

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	PhaseEndDate	1/18/2019	12/10/2018
tblConstructionPhase	PhaseStartDate	1/5/2019	12/10/2018
tblFleetMix	HHD	0.03	0.00
tblFleetMix	HHD	0.03	0.00
tblFleetMix	LDA	0.55	1.00
tblFleetMix	LDA	0.55	1.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.8620e-003	0.00
tblFleetMix	LHD2	5.8620e-003	0.00
tblFleetMix	MCY	4.7770e-003	0.00
tblFleetMix	MCY	4.7770e-003	0.00

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

tblFleetMix	MDV	0.12	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	9.5600e-004	0.00
tblFleetMix	MH	9.5600e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	2.0370e-003	0.00
tblFleetMix	OBUS	2.0370e-003	0.00
tblFleetMix	SBUS	7.0500e-004	0.00
tblFleetMix	SBUS	7.0500e-004	0.00
tblFleetMix	UBUS	1.9440e-003	0.00
tblFleetMix	UBUS	1.9440e-003	0.00
tblLandUse	LandUseSquareFeet	163,220.00	163,218.00
tblLandUse	LandUseSquareFeet	40,800.00	40,804.00
tblLandUse	LotAcreage	1.48	3.11
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOnRoadDust	HaulingPercentPave	100.00	0.00
tblOnRoadDust	VendorPercentPave	100.00	0.00
tblOnRoadDust	WorkerPercentPave	100.00	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CNW_TTP	41.00	0.00
tblVehicleTrips	CW_TL	16.60	60.00
tblVehicleTrips	CW_TL	16.60	60.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	CW_TTP	59.00	100.00

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.32	2.54
tblVehicleTrips	ST_TR	1.68	0.15
tblVehicleTrips	SU_TR	0.68	1.24
tblVehicleTrips	SU_TR	1.68	0.06
tblVehicleTrips	WD_TR	6.97	3.90
tblVehicleTrips	WD_TR	1.68	1.39

2.0 Emissions Summary

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8374	4.0000e-005	4.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.1300e-003	9.1300e-003	2.0000e-005	0.0000	9.7500e-003
Energy	8.9400e-003	0.0812	0.0682	4.9000e-004		6.1700e-003	6.1700e-003		6.1700e-003	6.1700e-003	0.0000	350.4339	350.4339	0.0125	3.8600e-003	351.8968
Mobile	0.1470	0.4448	5.2811	0.0209	2.4660	0.0156	2.4816	0.6546	0.0144	0.6690	0.0000	1,895.6706	1,895.6706	0.0388	0.0000	1,896.6415
Waste						0.0000	0.0000		0.0000	0.0000	41.4142	0.0000	41.4142	2.4475	0.0000	102.6020
Water						0.0000	0.0000		0.0000	0.0000	14.9679	195.7374	210.7053	1.5454	0.0380	260.6567
Total	**0.9934**	**0.5260**	**5.3541**	**0.0214**	**2.4660**	**0.0218**	**2.4877**	**0.6546**	**0.0205**	**0.6752**	**56.3821**	**2,441.8510**	**2,498.2332**	**4.0443**	**0.0418**	**2,611.8068**

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8374	4.0000e-005	4.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.1300e-003	9.1300e-003	2.0000e-005	0.0000	9.7500e-003
Energy	8.9400e-003	0.0812	0.0682	4.9000e-004		6.1700e-003	6.1700e-003		6.1700e-003	6.1700e-003	0.0000	350.4339	350.4339	0.0125	3.8600e-003	351.8968
Mobile	0.1470	0.4448	5.2811	0.0209	2.4660	0.0156	2.4816	0.6546	0.0144	0.6690	0.0000	1,895.6706	1,895.6706	0.0388	0.0000	1,896.6415
Waste						0.0000	0.0000		0.0000	0.0000	41.4142	0.0000	41.4142	2.4475	0.0000	102.6020
Water						0.0000	0.0000		0.0000	0.0000	14.9679	195.7374	210.7053	1.5454	0.0380	260.6567
Total	**0.9934**	**0.5260**	**5.3541**	**0.0214**	**2.4660**	**0.0218**	**2.4877**	**0.6546**	**0.0205**	**0.6752**	**56.3821**	**2,441.8510**	**2,498.2332**	**4.0443**	**0.0418**	**2,611.8068**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	12/10/2018	12/10/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

Acres of Grading (Grading Phase): 0

Acres of Paving: 3.11

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

3.2 Site Preparation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1470	0.4448	5.2811	0.0209	2.4660	0.0156	2.4816	0.6546	0.0144	0.6690	0.0000	1,895.6706	1,895.6706	0.0388	0.0000	1,896.6415
Unmitigated	0.1470	0.4448	5.2811	0.0209	2.4660	0.0156	2.4816	0.6546	0.0144	0.6690	0.0000	1,895.6706	1,895.6706	0.0388	0.0000	1,896.6415

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	159.08	103.63	50.59	2,962,814	2,962,814
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	227.20	24.48	9.79	3,651,297	3,651,297
Total	386.28	128.12	60.39	6,614,111	6,614,111

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	60.00	8.40	6.90	100.00	0.00	0.00	100	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	60.00	8.40	6.90	100.00	0.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Parking Lot	0.547828	0.043645	0.199892	0.122290	0.016774	0.005862	0.020637	0.032653	0.002037	0.001944	0.004777	0.000705	0.000956
Unrefrigerated Warehouse-No Rail	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	262.0072	262.0072	0.0108	2.2400e-003	262.9445
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	262.0072	262.0072	0.0108	2.2400e-003	262.9445
NaturalGas Mitigated	8.9400e-003	0.0812	0.0682	4.9000e-004		6.1700e-003	6.1700e-003		6.1700e-003	6.1700e-003	0.0000	88.4267	88.4267	1.6900e-003	1.6200e-003	88.9522
NaturalGas Unmitigated	8.9400e-003	0.0812	0.0682	4.9000e-004		6.1700e-003	6.1700e-003		6.1700e-003	6.1700e-003	0.0000	88.4267	88.4267	1.6900e-003	1.6200e-003	88.9522

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	1.32572e+006	7.1500e-003	0.0650	0.0546	3.9000e-004		4.9400e-003	4.9400e-003		4.9400e-003	4.9400e-003	0.0000	70.7456	70.7456	1.3600e-003	1.3000e-003	71.1660
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	331333	1.7900e-003	0.0162	0.0136	1.0000e-004		1.2300e-003	1.2300e-003		1.2300e-003	1.2300e-003	0.0000	17.6812	17.6812	3.4000e-004	3.2000e-004	17.7862
Total		**8.9400e-003**	**0.0812**	**0.0682**	**4.9000e-004**		**6.1700e-003**	**6.1700e-003**		**6.1700e-003**	**6.1700e-003**	**0.0000**	**88.4267**	**88.4267**	**1.7000e-003**	**1.6200e-003**	**88.9522**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	1.32572e+006	7.1500e-003	0.0650	0.0546	3.9000e-004		4.9400e-003	4.9400e-003		4.9400e-003	4.9400e-003	0.0000	70.7456	70.7456	1.3600e-003	1.3000e-003	71.1660
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	331333	1.7900e-003	0.0162	0.0136	1.0000e-004		1.2300e-003	1.2300e-003		1.2300e-003	1.2300e-003	0.0000	17.6812	17.6812	3.4000e-004	3.2000e-004	17.7862
Total		**8.9400e-003**	**0.0812**	**0.0682**	**4.9000e-004**		**6.1700e-003**	**6.1700e-003**		**6.1700e-003**	**6.1700e-003**	**0.0000**	**88.4267**	**88.4267**	**1.7000e-003**	**1.6200e-003**	**88.9522**

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	414161	131.9604	5.4500e-003	1.1300e-003	132.4325
Parking Lot	22960	7.3156	3.0000e-004	6.0000e-005	7.3417
Unrefrigerated Warehouse-No Rail	385194	122.7312	5.0700e-003	1.0500e-003	123.1703
Total		**262.0072**	**0.0108**	**2.2400e-003**	**262.9445**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	414161	131.9604	5.4500e-003	1.1300e-003	132.4325
Parking Lot	22960	7.3156	3.0000e-004	6.0000e-005	7.3417
Unrefrigerated Warehouse-No Rail	385194	122.7312	5.0700e-003	1.0500e-003	123.1703
Total		**262.0072**	**0.0108**	**2.2400e-003**	**262.9445**

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8374	4.0000e-005	4.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.1300e-003	9.1300e-003	2.0000e-005	0.0000	9.7500e-003
Unmitigated	0.8374	4.0000e-005	4.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.1300e-003	9.1300e-003	2.0000e-005	0.0000	9.7500e-003

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0955					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7415					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.4000e-004	4.0000e-005	4.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.1300e-003	9.1300e-003	2.0000e-005	0.0000	9.7500e-003
Total	**0.8374**	**4.0000e-005**	**4.7300e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**9.1300e-003**	**9.1300e-003**	**2.0000e-005**	**0.0000**	**9.7500e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0955					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7415					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.4000e-004	4.0000e-005	4.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.1300e-003	9.1300e-003	2.0000e-005	0.0000	9.7500e-003
Total	**0.8374**	**4.0000e-005**	**4.7300e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**9.1300e-003**	**9.1300e-003**	**2.0000e-005**	**0.0000**	**9.7500e-003**

7.0 Water Detail

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	210.7053	1.5454	0.0380	260.6567
Unmitigated	210.7053	1.5454	0.0380	260.6567

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	9.435 / 0	42.1369	0.3091	7.5900e-003	52.1262
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	37.7446 / 0	168.5684	1.2364	0.0304	208.5305
Total		**210.7053**	**1.5454**	**0.0380**	**260.6567**

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	9.435 / 0	42.1369	0.3091	7.5900e-003	52.1262
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	37.7446 / 0	168.5684	1.2364	0.0304	208.5305
Total		**210.7053**	**1.5454**	**0.0380**	**260.6567**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	41.4142	2.4475	0.0000	102.6020
Unmitigated	41.4142	2.4475	0.0000	102.6020

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	50.59	10.2693	0.6069	0.0000	25.4418
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	153.43	31.1449	1.8406	0.0000	77.1602
Total		**41.4142**	**2.4475**	**0.0000**	**102.6020**

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	50.59	10.2693	0.6069	0.0000	25.4418
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	153.43	31.1449	1.8406	0.0000	77.1602
Total		**41.4142**	**2.4475**	**0.0000**	**102.6020**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

11.0 Vegetation

Attachment: Project 1_Greenhouse Gas Emissions Report (3321 : Centerpointe Commerce Center, and

ARCADIS Design & Consultancy for natural and built assets

Draft

PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

Centerpointe
NEC Brodiaea Avenue & Frederick Street
Moreno Valley, California 92553

January 15, 2018

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

DRAFT PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

Centerpointe
NEC Brodiaea Avenue & Frederick Street
Moreno Valley, California 92553

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Date:

January 15, 2018

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Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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ACRONYMS AND ABBREVIATIONS

AOC	area of concern
Arcadis	Arcadis U.S., Inc.
AST	aboveground storage tank
ASTM	ASTM International
bgs	below ground surface
CFR	Code of Federal Regulations
CREC	controlled recognized environmental condition
DTSC	Department of Toxic Substances Control
EDR	Environmental Data Resources, Inc.
ESA	Environmental Site Assessment
HREC	historical recognized environmental condition
LUST	Leaking Underground Storage Tank
MAFB	March Air Force Base
MARB	March Air Reserve Base
NWC	northwest corner
PAHs	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PCE	perchloroethylene
REC	recognized environmental condition
RWQCB	Regional Water Quality Control Board
TCE	trichloroethene
U.S. EPA	United States Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound

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EXECUTIVE SUMMARY

Arcadis U.S., Inc. (Arcadis) was retained by Newcastle Partners (Newcastle) to conduct a Phase I Environmental Site Assessment (ESA) for 8.78-acres of land located at the northeast corner of Brodiaea Avenue and Frederick Street in Moreno Valley, Riverside County, California (the Site). The Site is currently undeveloped land proposed to be developed with a commercial use.

As directed by Newcastle, the Phase I ESA was performed in accordance with the ASTM International (ASTM) Standard E1527-13, Standard Practice for Environmental Site Assessments: *Phase I Environmental Site Assessment Process*. The goal of the Phase I ESA was to identify recognized environmental conditions (RECs), controlled recognized environmental conditions (CRECs), and historical recognized environmental conditions (HRECs) associated with the property in conformance with ASTM E1527-13.

The Phase I ESA included a visual inspection of the property completed on December 29, 2017; observation of adjacent properties; reviews of environmental regulatory agency records, historical documents, and facility records that were available on site; and interviews with personnel represented to be familiar with the Site as indicated elsewhere in the report.

The findings identified by Arcadis are summarized below and discussed in greater detail in the body of the report.

Historical Findings

Based on review of historical sources, the Site has been undeveloped land from 1901 to the present day. No evidence of agriculture, structures or other uses was identified on historic topographic maps or aerial photographs.

On-Site Findings

The approximate 8.78-acre, rectangular-shaped site consists of undeveloped land. The Site's surface has been disked and consists of exposed surface soil and some low-lying dry vegetation. Trees are present along the western boundary of the Site. Small piles of gravel and soil disturbance were observed along the eastern property boundary, likely the result of new construction east of the Site. Minor amounts of windblown trash were observed along the perimeter of the Site. The Site's surface is relatively level and no evidence of surface staining or the disposal of hazardous materials or wastes was observed onsite.

According to the National Pipeline Mapping System, a gas transmission line runs in an east/west direction beneath Brodiaea Avenue adjacent to the south of the Site.

Regulatory Findings

An environmental database report prepared by Environmental Data Resources, Inc. (EDR) was reviewed for local, state, and federal listings for the Site and properties within the site vicinity. Regulatory database lists were reviewed for cases pertaining to leaking underground storage tanks (USTs) and aboveground

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storage tanks (ASTs), hazardous waste sites, and abandoned sites within the specified radii of standards established by ASTM guidelines. According to EDR's report, the Site is located within the boundaries of March Field, an historic area of March Air Force Base (MAFB) used for small arms training. The current status of March Field according to the Department of Toxic Substances Control (DTSC) is "inactive – action required." The most current documents available on the DTSC's ENVIROSTOR website are dated 2009. According to a *Site Inspection Report* (Parsons, 2009), March Field was established in 1918 to conduct primary flight training for aviators for World War I. The site consisted of three overlapping skeet ranges used for small arms training. Small arms training was conducted from 1943 to 1947. Contaminants of concern are the residual presence of munitions and explosives of concern (MEC) and munitions constituents (MC). The focus of the *Site Inspection Report* was Range Complex No. 1 (skeet) which includes the Site. Most of the investigation and soil sampling appears to have been conducted between Brodiaea Avenue and Cactus Avenue south of the Site, and east of Frederick Street. Arsenic, lead and various polycyclic aromatic hydrocarbons (PAHs) were detected in exceedance of their respective human health screening values for surface soil. The report stated "additional sampling is warranted." No more recent reports were available online. Therefore, Arcadis contacted the DTSC for a current update on the status of March Field and its potential impact on the Site. A response from the DTSC is pending at this time. The Site's location within March Field is a REC for the Site as metals and PAHs may be present in near-surface soil above regulatory screening criteria.

According to EDR's report, several properties, including MAFB, were identified within the ASTM search radius. However, based on their listing for tracking purposes only, distance from the Site, hydraulic location with respect to groundwater flow, regulatory oversight, identification of principal responsible parties, and/or case closure, these off-site properties are unlikely to represent a concern of environmental impairment or a vapor encroachment condition to the Site.

Conclusions

Arcadis has performed a Phase I ESA of the Site in conformance with the scope and limitations of ASTM Practice E1527-13 for Phase I ESAs. No RECs were identified in connection with the Site except for the following:

- The Site's location within March Field is a REC for the Site as metals and PAHs may be present in near-surface soil above regulatory screening criteria. Arcadis recommends baseline soil sampling for metals and PAHs.

The following *de minimis* condition was identified in connection with the Site:

- According to the National Pipeline Mapping System, a gas transmission line runs in an east/west direction beneath Brodiaea Avenue. Building setback requirements may be imposed based on the specific location of the pipeline in relation to the Site.

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1 INTRODUCTION

Arcadis U.S., Inc. (Arcadis) was retained by Newcastle Partners (Newcastle) to conduct a Phase I Environmental Site Assessment (ESA) for 8.78-acres of land located at the northeast corner of Brodiaea Avenue and Frederick Street in Moreno Valley, Riverside County, California (the Site). The Site is currently undeveloped land proposed to be developed with a commercial use.

1.1 Purpose

Arcadis understands that the purpose for conducting this Phase I ESA is to assess and document the current status of environmental conditions at the Site.

1.2 Detailed Scope of Services

As directed by Newcastle, the Phase I ESA was conducted in accordance with the ASTM International (ASTM) E1527-13 Standard Practice for Site Assessments: Phase I Environmental Site Assessment Process. The goal of the Phase I ESA was to identify recognized environmental conditions (RECs), controlled recognized environmental conditions (CRECs), and historical recognized environmental conditions (HRECs) associated with the property in conformance with ASTM E1527-13.

A REC is defined as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: 1) due to release to the environment; 2) under conditions indicative of a release to the environment; or 3) under conditions that pose a material threat of a future release to the environment. *De minimis* conditions are not RECs.

A CREC is defined as a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority and that subjects the property to activity and/or use limitations.

A HREC is defined as a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed in a manner accepted by the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent), without subjecting the property to any activity and use limitations.

The ASTM practice requires environmental professionals to identify data gaps following reasonable inquiry of site and Newcastle personnel and Arcadis' search for "reasonably ascertainable" resources. ASTM E1527-13 defines a data gap as "a lack of or inability to obtain information required by this practice despite good faith efforts by the environmental professional to gather such information."

Arcadis' scope of work included:

- On-site inspection of the Site to identify environmental conditions issues as defined above;
- Review of available environmental documents for the Site, including previous site assessments and investigations;
- Interviews with persons represented to be familiar with the operation and history of the Site;

- Review of property history through interviews, aerial photographs, on-line planning portals, and historical mapping (as available);
- Observation of adjacent properties and the local area to evaluate the potential for adverse environmental impact to the Site; and
- Contracting of Environmental Data Resources, Inc. (EDR) to identify sites of concern as required in the regulatory records review section of the ASTM practice for a Phase I ESA.

The Phase I ESA did not include the collection or analysis of soil, air, water, groundwater, transformer/ electrical fluids, hazardous building materials, or other samples, nor did it include a title search or search for environmental liens. This ESA did not include an assessment of the environmental (or health and safety) compliance status of the site operations.

1.3 Significant Assumptions

Arcadis has assumed that the information sources used for this assessment provided accurate information. Evaluations presented in this report are based exclusively on information provided by Newcastle and site personnel and observations made during the site visit. No invasive field activities were conducted and no laboratory analyses were performed.

The boundaries of the Site were described in documents provided by Newcastle and by interviews with Newcastle personnel. Arcadis assumed this information was accurate.

1.4 Limitations and Exceptions

The services performed and any opinions expressed by Arcadis in this report are based upon the limits of the assessment described herein. Arcadis has relied upon the accuracy of documents, information, data, and other materials provided or made available by Newcastle and others. Arcadis has not independently verified such information and assumes no liability for the accuracy or completeness of such information. Arcadis makes no guarantee that site conditions do not exist, or will not exist in the future, that were undetected or that could lead to liability in connection with the Site. Similarly, past and present activities on the Site indicating the potential for the existence of environmental concerns may not have been discovered by Arcadis. Such activities may include those that would indicate the potential for regulated hazardous substances at the Site. Likewise, site conditions or site activities that were outside the scope of the services described above, or changes to site conditions or regulatory requirements may lead to liabilities in connection with the Site that are not identified in this report. Arcadis has reviewed the information obtained in connection with the performance of the services described above, in keeping with existing applicable environmental consulting standards and enforcement practices, but cannot predict what actions any given agency may take or what standards and practices may apply in the future.

Where access to portions of the Site or to structures on the Site was unavailable or limited, Arcadis renders no opinion and accepts no responsibility for assessment of the condition of these portions of the Site, including specifically, but not limited to, the presence of hazardous substances or petroleum products at these locations. In addition, Arcadis renders no opinion concerning the presence or absence of hazardous substances or petroleum products where direct observation of any part of the Site, or structure on the Site, is limited by physical obstructions.

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The conclusions and observations are based upon limited data and professional opinions, and the assessment is performed on a particular date. Site conditions and activities may change after that date. Therefore, the risk of undiscovered environmental impairment of the Site cannot be ruled out. Arcadis does not make any representations or warranties regarding the condition or value of the Site, regardless of the results of the assessment presented in this report.

Arcadis makes no guarantees, certifications, warranties, or representations of any kind whatsoever, whether expressed or implied, regarding this Phase I ESA, the condition of the Site, or the liabilities associated with the Site.

1.5 Special Terms and Conditions

No special terms and conditions were imposed on this Phase I ESA.

1.6 Reliance

It is understood that this report will be prepared for the sole use of Newcastle, and the contents thereof may not be used or relied upon by any other person without the express written consent and authorization of Arcadis. Use of this report by any other party shall be at such party's sole risk and liability.

1.7 Deviations

No deviations from the referenced ASTM Standard occurred.

1.8 Additional Services

No additional services beyond those outlined in ASTM E1527-13 were conducted as part of the assessment.

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2 SITE LOCATION / LAND USE

2.1 Site Location

The rectangular-shaped, approximate 8.78-acre site is located at the northeast corner of the intersection of Brodiaea Avenue and Frederick Street in Moreno Valley, California. The Site is located approximately 1.5-miles east of the Escondido (215) Freeway. The Site Location Map and Site Plan are presented as **Figures 1 and 2**.

2.2 Site and Vicinity Characteristics

At the time of Arcadis' site reconnaissance, the Site was undeveloped land that has been disked for vegetation control. The site vicinity is comprised of undeveloped land, warehouse distribution buildings, government buildings, and retail/restaurant uses.

Photographs of the Site and surrounding areas were taken to document current conditions and are included in **Appendix A**.

2.3 Current Use of the Property

There are no current uses of the Site.

2.4 Description of Structures, Roads, and Other Improvements on the Site

There are no structures, paved or unpaved roads or other improvements onsite. However, it appears the Site is connected to local utilities, and two pad-mounted transformers are located on the southwest corner of the Site.

2.5 Current Uses of the Adjoining Properties

Land uses surrounding the Site predominately consist of commercial and municipal properties. The adjoining properties and land uses include:

- North: Undeveloped land followed by Alessandro Boulevard.
- East: Undeveloped land and a recently constructed warehouse distribution building.
- South: Brodiaea Avenue followed by County of Riverside Waste Management Headquarters buildings (14290 and 14310 Frederick Street).
- West: Frederick Street followed by multi-tenant commercial buildings and Moreno Valley City Hall.

Based on visual observations, current activities at the adjacent properties do not appear to be of environmental concern to the Site.

3 USER-PROVIDED INFORMATION

Arcadis was not provided with an ASTM User Questionnaire.

3.1 Environmental Liens

Arcadis' review of regulatory records did not identify environmental liens recorded for the Site.

3.2 Activity and Use Limitations

Arcadis' review of regulatory records did not identify activity and use limitations, such as engineering controls, land use restrictions or institutional controls, that are in place at the Site and/or have been filed or recorded in a registry.

3.3 Specialized Knowledge

Newcastle does not have specialized knowledge of the Site.

3.4 Valuation Reduction for Environmental Issues

Newcastle did not comment on whether the purchase price reasonably reflects the fair market value of the property.

3.5 Commonly Known or Reasonably Ascertainable Information

Newcastle is not aware of:

- The past use of the property;
- Specific chemicals that once were present at the property;
- Spills or other chemical releases that may have taken place at the property; or
- Environmental cleanups that may have taken place at the property.

3.6 Obvious Contamination Presence or Likely Presence

According to Newcastle, there are no obvious indicators that point to the presence or likely presence of contamination at the property.

3.7 Owner, Property Manager, and Occupant Information

The Site is owned and managed by Dr. Prabhu Dhalla and other individuals. According to Mr. Finn Comer, Senior Vice President with Lee & Associates and broker for the Site, Dr. Dhalla has owned the Site for approximately 20 years. He acquired the Site from the Resolution Trust Corporation. There are no site occupants.

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3.8 Reason for Performing Phase I ESA

The reason for performing the Phase I ESA was to evaluate current environmental conditions at the Site.

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4 SITE HISTORY

Historical information obtained by Arcadis from EDR during this Phase I ESA is summarized in **Table 1**.

Table 1 Historical Information Reviewed

Source	Date	Information Obtained
Sanborn® Fire Insurance Maps	Not Applicable	According to EDR, Sanborn Fire Insurance Maps are not available for the Site or site vicinity ("No Coverage" letter is presented in **Appendix B.**)
Topographic Maps (copies provided in **Appendix B**)	1901, 1942, 1947, 1953, 1967, 1980, and 2012	The 1901 map depicts the Site as undeveloped land south of an unnamed road in the current location of Alessandro Boulevard. Other than several roads, scattered residences and railroad tracks, the surrounding area is also depicted as undeveloped land. The 1942 and 1947 maps depict the Site as undeveloped land south of Alessandro Boulevard. The surrounding area is depicted as mostly undeveloped land although a concentration of residential development is shown west/northwest of the Site. The 1953 map depicts the Site as undeveloped land as is the immediate surrounding area. However, pockets of residential development are shown in the greater surrounding area, and March Field, a military installation, is now shown south of the Site. No significant onsite or offsite changes are shown on the 1967 map. However, a pipeline is now shown to run east/west near the southern boundary of the Site in the location of the present-day Brodiaea Avenue. The type of pipeline is not identified. No significant changes are shown onsite or offsite on the 1980 map. The Site is depicted as undeveloped land on the 2012 map. The pipeline at the southern end of the Site is not shown; however, the map indicates that Brodiaea Avenue has been constructed in the same location. March Field, March Air Force Base and March Air Reserve Base are all shown approximately 0.5-mile south of the Site at their closest point. No features were depicted on or off the Site on the maps reviewed that would indicate an obvious environmental concern for the Site. According to the National Pipeline Mapping System, a gas transmission line runs in an east/west direction beneath Brodiaea Avenue. Building setback requirements may be imposed based on the specific location of the pipeline in relation to the Site.

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Source	Date	Information Obtained
Aerial Photographs (copies provided in **Appendix B**)	1938, 1949, 1953, 1959, 1967, 1978, 1985, 1989, 1994, 2005, 2006, 2009, 2010, and 2012. And Google Earth 2016 aerial image.	In the 1938 photograph, the Site and surrounding land are shown as undeveloped. However, a road is visible in the present-day location of Alessandro Boulevard north of the Site. The Site remains undeveloped land on the 1949, 1953 and 1959 photographs. The surrounding area is also shown as mostly undeveloped land although a limited amount of development is now visible over 1/3 mile south of the Site. In the 1967 photograph, two circular areas are visible on the Site. Similar features are observed offsite to the east and north. The features appear to be low-lying areas that have accumulated water. Small structures are now visible farther northwest of the Site. In the 1978 photograph, the circular features are no longer visible and the Site is undeveloped land. A trail appears to cross the Site in a northwest to southeast direction. The surrounding area is mostly undeveloped land except for land northwest of the Site, which appears to be developed residentially. No features are shown onsite in the 1985 photograph. More development is shown north of the Site across Alessandro Boulevard. In the 1989 photograph, an unpaved trail along the western boundary of the Site is visible. Land north of the Site is undeveloped followed by commercial/residential development; land west of the Site has been graded; land southwest of the Site has been developed with the present-day multi-tenant buildings; and land south and east of the Site is undeveloped. In the 1994 photograph, there appears to be a more defined unpaved road that meanders along the western boundary of the Site. The surrounding area appears similar to the 1989 photograph except City Hall has now been developed west of the Site. In the 2005 photograph, the Site has been graded and disked. The County of Riverside municipal offices have now been constructed south of the Site and more development is visible west of the Site. The Site remains undeveloped land with no obvious features on the 2006 through 2012 photographs. However, at times the southern boundary appears disturbed and may have been used as a laydown area for adjacent construction activities. No significant changes are observed on the 2016 Google Earth aerial image. The adjacent building east of the Site has not yet been constructed. No features were depicted on or off the Site on the photographs reviewed that would indicate an obvious environmental concern for the Site.

4.1 Previous Environmental Investigations

Arcadis was not provided with prior environmental reports for the Site.

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5 RECORDS REVIEW

As part of this assessment, Arcadis reviewed regulatory databases and available agency files and records for the Site. Information from these sources is discussed in the following sections.

5.1 Regulatory Database Research

An environmental database report prepared by EDR was reviewed for local, state, and federal listings for properties within the site area. Included in EDR's report are regulatory databases reviewed by EDR for cases pertaining to leaking underground storage tanks (USTs) and aboveground storage tanks (ASTs), hazardous waste sites, and abandoned sites within the ASTM-specified radii **(Table 2)**. EDR also reviewed selected databases generated by the United States Environmental Protection Agency (U.S. EPA). Explanations of the regulatory agency databases reviewed are presented in EDR's report, which is included as **Appendix C**.

It should be noted that the computerized geocoding technology used in the database search is based on available census data and is only accurate to approximately ±300 feet. Also, elevations were determined from the U.S. Geological Survey Digital Elevation Model and are relative (not absolute). Sites with an elevation equal to or higher than the target property have been differentiated from sites with an elevation lower than the target property.

Sites identified within the study radii were evaluated to determine if they are likely to have adversely impacted the Site. The criteria used to evaluate the potential for adverse impact to the Site include:

- Distance from the Site;
- Expected depth and direction of groundwater and surface water flow;
- Expected storm water flow direction; and
- Presence/absence of documented contaminant releases at the identified sites not identified as remediated.

Table 2 **Regulatory Agency Databases / Lists Reviewed**

Search Radius	Agency	Database	Type of Records in Database
1 mile	U.S. EPA	NPL	Sites designated for Superfund cleanup by the U.S. EPA
	U.S. EPA	CORRACTS	RCRA facilities undergoing "corrective actions"
0.5 mile	U.S. EPA	CERCLIS	Sites under review by the U.S. EPA
	U.S. EPA	TSD	Facilities that treat, store, and/or dispose of hazardous waste
	RWQCB	LUST	Sites with LUSTs

Search Radius	Agency	Database	Type of Records in Database
	SWRCB	SWLF/SWAT	Sites permitted as solid waste landfills, incinerators, or transfer stations
	IWMB	WMUDS/SWAT	Tracking and inventory of waste management units
	U.S. EPA	CERCLIS-NFRAP	CERCLIS sites with no further remedial actions planned.
Site or Adjacent Properties	U.S. EPA	RCRA Generator	Sites that generate large or small quantities of hazardous waste
	U.S. EPA	ERNS	Sites with reported accidental releases of oil and hazardous substances
	RWQCB	UST	Sites with registered USTs

Notes:

BEP = Bond Expenditure Plan

CERCLIS = Comprehensive Environmental Response Compensation and Liability Information System

CORRACTS = Corrective Action Report

ERNS = Emergency Response Notification System

DHS = Department of Public Health

IWMB = Integrated Waste Management Board

LUST = Leaking Underground Storage Tank

NFRAP = No Further Remedial Action Planned

NPL= National Priorities List

OES = Office of Emergency Services

SWAT = Solid Waste Assessment Test

SWLF = Solid Waste Landfills

TSD = Transfer, Storage and Disposal

WMUDS = Waste Management Unit Database

5.1.1 Site

According to EDR's report, the Site is located within the boundaries of a Department of Defense (DOD) property identified as the closed March Air Force Base (MAFB). No further information is provided in the DOD database listing.

The Department of Toxic Substances Control (DTSC) database ENVIROSTOR identifies March Field at 14310 Frederick Street. This address is currently one of the buildings occupied by the south adjacent County of Riverside Waste Management Headquarters. The database listing indicates a current status of "inactive – action required." The database indicates that the property was previously used as a small arms firing range; the contaminant of concern is "explosives"; and the media impacted is soil. A review of this property on the ENVIROSTOR website indicates the area of concern (AOC) is bounded on the north by Alessandro Boulevard, on the east by Heacock Street, on the south by Cactus Avenue, and on the west by Old 215 Frontage Road. The Site lies within the boundaries of this AOC which encompasses 53.3 acres. The most current documents available on ENVIROSTOR are dated 2009. According to a *Site Inspection Report* (Parsons, 2009), March Field was established in 1918 to conduct primary flight training for aviators for World War I. The site consisted of three overlapping skeet ranges used for small arms training. Small arms training was conducted from 1943 to 1947. Contaminants of concern are the residual presence of munitions and explosives of concern (MEC) and munitions constituents (MC). The focus of

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the *Site Inspection Report* was Range Complex No. 1 (skeet) which includes the Site. Most of the investigation and soil sampling appears to have been conducted between Brodiaea Avenue and Cactus Avenue south of the Site, and east of Frederick Street. Arsenic, lead and various polycyclic aromatic hydrocarbons (PAHs) were detected in exceedance of their respective human health screening values for surface soil. The report stated "additional sampling is warranted." No more recent reports were available online. Therefore, Arcadis contacted the DTSC for a current update on the status of this AOC and its potential impact on the Site. A response from the DTSC is pending at this time. The Site's location within March Field is a REC for the Site as metals and PAHs may be present in near-surface soil above regulatory screening criteria. See **Appendix D** for a copy of the Parsons report and maps.

The location of the Site is not listed in any other databases. The Site does not have a street address.

5.1.2 Off-Site Properties

According to EDR's report, several properties are listed in the surrounding area. Properties of note are as follows:

Riverside County Department of Waste Management at 14290 Frederick Street, located adjacent to the south of the Site, is listed in the UST database. No site-specific information is provided. As this property is not listed as a LUST site, the presence of a UST does not indicate an environmental concern for the Site. In addition, this facility was built sometime between the late 1990s to early 2000s, and therefore, the UST would be expected to be double-walled and provided with leak detection monitoring equipment.

Thrifty Oil at 22990 Alessandro Boulevard, located adjacent to the northwest of the Site, is listed in several UST databases and in the LUST database. Regarding the LUST listing, the contaminant was gasoline and the media impacted was soil only. The case was closed in 2004. Therefore, based on media impacted and case closure, this property is not expected to present an environmental concern for the Site. This address is also listed as Tesoro gas station in the UST database and as Arco gas station in several other tracking databases. This address is currently occupied by a USA Gasoline gas station. Based on a review of current records on the Regional Water Quality Control Board's (RWQCB) Geotracker website, this address is not an open release site. Therefore, current and past gas station uses at this location do not represent a current concern to the Site.

Plaza Hand Car Wash at 23100 Alessandro Boulevard, located adjacent to the north of the Site, is listed in the UST and LUST databases. The contaminant was gasoline and the media impacted was soil only. The case was closed in 2008. Therefore, based on media impacted and case closure, this property is not expected to present an environmental concern for the Site.

M&M Dry Cleaners at 23080 Alessandro Boulevard, Unit #220, located approximately 0.25-mile north of the Site, is listed in the SLIC and Brownfields databases. The facility has a status of "open – remediation as of 5/8/2017." According to the RWQCB, "In 2012 and 2013, preliminary investigations identified the presence of the dry cleaning solvent perchloroethylene (PCE) in soil and groundwater under the M&M Cleaners, the alley located north of the property, and under the parking lot located to the south. However, these initial investigations have not been able to determine how far the PCE may have migrated since it was released." The RWQCB further stated that "Mitigation of the soil vapor intrusion risk…is the current focus of work at the property."

Arcadis reviewed the most recent groundwater monitoring report for the property (Stantec 2017) posted on Geotracker. Groundwater samples were collected in September 2017 from five wells and analyzed for volatile organic compounds (VOCs) by EPA Test Method 8260B. PCE was detected in all five wells, and above the federal and state Maximum Contaminant Level (MCL) for PCE in drinking water of 5.0 micrograms per liter (µg/L) in four of the wells. The most elevated concentration detected was at the source area (former dry cleaning machine) and the second highest concentration was in the parking lot southwest of the cleaners, which is the interpreted direction of groundwater flow. Stantec states that the extent of groundwater impact has not yet been delineated and recommended continued monitoring of the onsite wells. The report states that a soil vapor extraction (SVE) system operated at the cleaners from May 2016 to February 2017, and helped to reduce the initial higher concentrations of PCE detected in groundwater. The highest concentration detected during the most recent sampling event was 73 µg/L and the historical high, prior to operation of the SVE system, was 310 µg/L. The well south of the cleaners and closest to the Site, was the only well with a concentration of PCE less than the MCL at 3.1 µg/L. According to a *PCE Iso-Concentration Map* in the report, the PCE plume appears to be confined to the general area of the dry cleaners. It is noted that the dry cleaner operated from at least 1991 to 2013, when the dry cleaning machine was removed and the use of PCE discontinued. The dry cleaner has operated as a drop-off only facility since that time.

It appears, based on the findings of the most recent groundwater sampling, previous remediation via the SVE system, regulatory oversight, distance from the Site, and the cross-gradient groundwater flow direction with respect to the Site, that it is unlikely that M&M Cleaners has impacted the Site. See **Appendix D** for a copy of the Stantec report and associated maps.

March Air Force Base (MAFB), located approximately 0.25-mile south of the Site at its closest point, is listed on numerous databases including NPL, CERCLIS, US ENG and INST CONTROLS, ENVIROSTOR, and DOD amongst other databases. A map in the EDR report indicates the northern edge of the Area of Concern (AOC) is Cactus Avenue, which is 0.25-mile south of the Site. The EPA provides the following information on the former MAFB:

> *The 7,123-acre March Air Force Base has been used for aircraft maintenance and repair, refueling operations, and training activities since 1918. In 1980, the Installation Restoration Program (IRP) was developed by the Department of Defense to locate and clean-up hazardous waste sites. The Air Force conducted a preliminary investigation of 39 potentially contaminated IRP sites on base which included three fire training areas, seven inactive landfills, underground solvent storage tanks, an engine test cell, and spills. There are now a total of 44 IRP sites on the March Air Force Base. Three zones of groundwater contamination beneath the base were identified and wells on base were shut down in the late 1980's. Groundwater contamination has migrated to wells located off base; however, a groundwater containment system has been installed to prevent off-site groundwater migration. These wells are no longer in use. Groundwater is contaminated with volatile organic compounds (VOCs) and jet fuel. Soils contain VOCs and heavy metals. The Air Force and Air Reserve Board (ARB) are the lead agencies and PRPs [principal responsible parties] for the site, with EPA and the State performing oversight. EPA, DTSC and RWQCB are working with March ARB to further characterize the groundwater contamination plume in the southeastern portion of the site.*

Based on maps in the most recent *5-Year Review* report (AECOM 2014), plumes of contaminated groundwater that migrated outside the boundaries of MAFB have flowed to the southeast, or away from

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

the Site. There is no indication that groundwater contamination generated by MAFB has migrated offsite to the north, in the direction of the Site. Therefore, based on the Site's location outside the AOC, the identification of PRPs and regulatory oversight, the former MAFB and current March ARB do not appear to represent an environmental concern for the Site.

Two other sites are listed within the ASTM search radius; however, based on their current status and location in relation to the Site, neither property appears to represent an environmental concern for the Site. In summary, it does not appear that offsite properties represent a concern of environmental impairment or a vapor encroachment condition to the Site at this time. However, prior to development, additional review of the status of M&M Dry Cleaners is recommended.

No properties are listed in EDR's Orphan Summary section other than one additional entry for MAFB.

5.2 Agency Research

Files and records available at the agencies listed in **Table 3** were reviewed for information on the Site.

Table 3 Local Agency Files

Source	Date	Information Obtained
California Regional Water Quality Control Board (RWQCB)	January 2018	Available information maintained by the RWQCB at http://geotracker.waterboards.ca.gov was reviewed for records concerning hazardous spills, USTs, and LUSTs at the Site. There were no records for the Site location. Relevant records for offsite properties are discussed in Section 5.1.2 above.
Department of Toxic Substances Control (DTSC)	January 2018	A review of the DTSC website (http://www.envirostor.dtsc.ca.gov/public/) did not identify any records for the Site location other than those for March Field, as discussed in Section 5.1.1 above.
Riverside County Department of Environmental Health, Hazardous Materials Management Branch (HMMB)	January 2018	No HMMB records were identified in the EDR report for the Site location.

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6 ENVIRONMENTAL SETTING

6.1 Topography

According to information obtained from the U.S. Geological Survey 7.5-Minute Series Topographic Map of the Riverside East quadrangle, dated 2012, topography at the Site is approximately 1,562 feet above mean sea level. The general topographic gradient of the surrounding area is level with a slight downward slope to the south.

6.2 Geology

The general geology summary provided by EDR specifies that the sediments beneath the Site have been identified as part of the Cretaceous Granitic Rocks Series of the Cretaceous System of the Mesozoic Era. According to the United States Department of Agriculture Soil Conservation Service, the Site is underlain by the Monserate soil component, which has a soil surface texture of sandy loam and exhibits slow infiltration rates.

6.3 Surface Water

Arcadis did not observe surface water features onsite.

6.4 Hydrogeology

According to a report for a property located approximately 650 feet north of the Site, depth to groundwater in the vicinity of the Site is approximately 35 feet below ground surface with a flow direction to the west/southwest (Stantec 2017). Regional groundwater flow in the location of the former MAFB has been shown to flow to the southeast.

6.5 Flood Zones

According to the EDR report, the Site is not located within a flood zone.

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7 SITE RECONNAISSANCE

On December 29, 2017, Ms. Janet Holtz, a representative of Arcadis, performed a reconnaissance-level assessment of the Site to observe general site conditions and indications of the possible release(s) of chemicals to the subsurface. A walk-over site reconnaissance was conducted to identify visible evidence of RECs. Ms. Holtz was unaccompanied during the site reconnaissance. Photographs taken during the site reconnaissance are included in **Appendix A**.

7.1 Methodology and Limiting Conditions

Arcadis' representative was granted full access to the Site. The methodology for the site visit included walking and driving and observing the entire site. There were no limiting conditions.

7.2 General Site Conditions

7.2.1 Site Observations

The approximate 8.78-acre, rectangular-shaped site consists of undeveloped land. The Site's surface has been disked and consists of exposed surface soil and some low-lying dry vegetation. Trees are present along the western boundary of the Site. Small piles of gravel and soil disturbance were observed along the eastern property boundary, likely the result of new construction east of the Site. Minor amounts of windblown trash were observed along the perimeter of the Site. The Site's surface is relatively level and no evidence of staining or the disposal of hazardous materials or wastes was observed onsite.

7.2.2 Hazardous Substances and Petroleum Products in Connection with Identified Uses

No hazardous substances or petroleum products were observed onsite.

7.2.3 Storage Tanks

Arcadis did not observe ASTs at the Site. No evidence of USTs, such as dispensers, pipes, or vent lines, was observed on the Site.

7.2.4 Odors

No odors that would indicate an environmental concern were noted on the Site.

7.2.5 Pools of Liquid

No readily visible standing surface water, pools, or sumps containing liquids likely to be hazardous substances or petroleum products were identified during this assessment.

7.2.6 Drums

No drums were observed onsite.

7.2.7 Hazardous Substances and Petroleum Product Containers (Not Necessarily in Connection with Identified Uses)

No hazardous substances or petroleum products were observed onsite.

7.2.8 Unidentified Substance Containers

No unidentified substance containers were observed during the site reconnaissance.

7.2.9 PCBs

Two pad-mounted transformers are located in the southwest corner of the Site. The transformers are owned and maintained by Southern California Edison (SCE) and are the responsibility of SCE. The transformers appeared to be in good condition and no evidence of seepage or releases was observed. No other electrical or hydraulic equipment known to contain polychlorinated biphenyls (PCBs) or likely to contain PCBs was identified onsite during this assessment.

7.2.10 Pits, Ponds, or Lagoons

During the site visit, Arcadis' representative looked for pits, ponds, or lagoons on the Site. Arcadis' representative also looked for pits, ponds, and lagoons on adjoining properties to the extent that such features could be visually and/ or physically observed from the Site or identified in the interviews or records review. No such features were identified onsite or offsite.

7.2.11 Stained Soil or Pavement

During the site visit, Arcadis' representative did not observe areas of stained soil or pavement.

7.2.12 Stressed Vegetation

During the site visit, Arcadis' representative looked for areas of stressed vegetation (from other than insufficient water). No areas of stressed vegetation were observed during this assessment.

7.2.13 Solid Waste

During the site visit, Arcadis looked for areas that were apparently filled or graded by non-natural causes (or filled with material of unknown origin) that suggest the presence of trash construction debris, demolition debris, or other solid waste disposal, or mounds or depressions suggesting trash or other solid waste disposal. No such areas were observed.

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7.2.14 Wastewater

During the site visit, Arcadis looked for wastewater or other liquids (including storm water) or discharges into a drain, ditch, underground injection system, or stream on or adjacent to the Site. There is no process wastewater discharged on site.

7.2.15 Wells

During the site visit, Arcadis looked for wells, including dry wells, water wells, irrigation wells, injection wells, monitoring wells, abandoned wells, oil wells, or other wells. No wells were identified onsite or reported to be onsite.

7.2.16 Septic Systems

During the site visit, Arcadis looked for indications of on-site septic systems or cesspools. No septic systems or cesspools were observed.

7.2.17 Heating / Cooling

There are no structures onsite; therefore, heating and cooling systems were not evaluated for this assessment.

7.2.18 Stains or Corrosion

Arcadis did not observe areas of staining or corrosion during this site assessment.

7.2.19 Drains or Sumps

A storm water drainage feature is located on or adjacent to the southeast corner of the Site. No concerns were noted. Arcadis did not observe any sumps during this site assessment.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

8 INTERVIEWS

8.1 Interview with Site Contacts

Mr. Finn Comer with Lee & Associates asked Dr. Dhalla, site owner, if he had any information regarding the Site's location within the historic March Field AOC. Mr. Dhalla replied "This issue has never come up."

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Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

9 FINDINGS AND CONCLUSIONS

Arcadis has performed a Phase I ESA in accordance with the ASTM International E1527-13 Standard Practice for Site Assessments: Phase I Environmental Site Assessment Process. Limitations or deviations from this practice are described in Section 1.4 of this report. The findings identified by Arcadis are summarized below and discussed in greater detail in the body of the report.

9.1 Recognized Environmental Conditions

No RECs were identified in connection with the Site, with the following exception:

- The Site's location within March Field is a REC for the Site as metals and PAHs may be present in near-surface soil above regulatory screening criteria.

9.2 Controlled Recognized Environmental Conditions

No CRECs were identified in connection with the Site.

9.3 Historical Recognized Environmental Conditions

No HRECs were identified in connection with the Site.

9.4 *De Minimis* Conditions

The following *de minimis* condition was identified in connection with the Site:

- According to the National Pipeline Mapping System, a gas transmission line runs in an east/west direction beneath Brodiaea Avenue. Building setback requirements may be imposed based on the specific location of the pipeline in relation to the Site.

9.5 Conclusions

Arcadis has performed a Phase I ESA of the Site in conformance with the scope and limitations of ASTM Practice E1527-13 for Phase I ESAs. This assessment has revealed no evidence of RECs in connection with the Site, other than as identified in Section 9.1 above. Arcadis recommends baseline soil sampling for metals and PAHs.

No Phase I ESA can wholly eliminate uncertainty regarding the potential for RECs in connection with a property. This evaluation was intended to reduce, but not eliminate uncertainty in RECs.

10 DATA GAPS

The interval between aerial photographs and topographic maps exceeds 5 years. These limiting factors represent data gaps. Based on information obtained by Arcadis during our review of historical sources and observation of site conditions during our visit, additional photographs and maps would not appear to be significant and we do not anticipate that the information that could be obtained from these sources would change the conclusions of this report. Pertinent data, if any, obtained by Newcastle following the issuance of this report should be reviewed by an environmental professional and an addendum should be prepared to present an evaluation of the data and any changes to the conclusions of this report, as warranted by the data.

A response from the DTSC to questions on the current status of March Field is pending at this time.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

11 ENVIRONMENTAL PROFESSIONALS STATEMENT

The environmental assessment described herein was conducted by the undersigned employee of Arcadis. Arcadis' assessment consisted solely of the activities described in the Introduction of this Report, and in accordance with the ASTM E1527-13 guidelines for Phase I Environmental Site Assessments signed prior to initiation of the assessment, as applicable.

I declare that, to the best of my professional knowledge and belief, I meet the definition of environmental professional as defined in §312.10 of 40 Code of Federal Regulations (CFR) 312, and I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the Subject Property. I have developed and performed all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312. *

Report Prepared By:

January 15, 2018

Janet Holtz — Date
Principal Environmental Scientist

*A professional engineer's, geologist's or environmental professional's certification of conditions comprises a declaration of his or her professional judgment. It does not constitute a warranty or guarantee, expressed or implied, nor does it relieve any other party of its responsibility to abide by contract documents, applicable codes, standards, regulations, and ordinances.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

12 REFERENCES

AECOM Technical Services, Inc. (AECOM). 2014. Final Third Five-Year Review Report, March Air Reserve Base and Former March Air Force Base, California. September 29.

ASTM International. 2013. Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, Designation E1527-13.

Environmental Data Resources, Inc. (EDR). 2017. Radius Map Report with GeoCheck. Inquiry #5146282.2s. December 28.

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https://pvnpms.phmsa.dot.gov/PublicViewer/

https://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/vwsoalphabetic/March+Air+Force+Base?OpenDocument

Parsons. 2009. Site Inspection Report, March Field, Riverside County, CA. June.

Stantec Consulting Services, Inc. 2017. Third Quarter 2017 Groundwater Monitoring Report, M&M Cleaners, 23080 Alessandro Boulevard, Moreno Valley, CA. October 27.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

FIGURES

MAP SOURCE: Google Earth Pro 2017, 33°54'55.71"N, 117°15'35.63"W

0 2,500' 5,000'

GRAPHIC SCALE

CENTREPOINTE - UNDEVELOPED LAND
NEC BRODIAEA AVENUE AND FREDERICK STREET
MORENO VALLEY, CALIFORNIA

SITE LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

CITY: IRVINE, CA DIV/GROUP:ENVCAD DB: E. MURESAN PIC:
C:\Users\emuresa\OneDrive - ARCADIS\BIM 360 Docs\Newcastle Partners INC\CM0011971.0000 – Nwcstle PHI ESA\Prpsed Centerpointe Prj\00001 - Phase I ESA\01-DWG\Centrepointe Site plan.dwg LAYOUT: 1 SAVED: 1/15/2018 1:43 PM PAGESETUP: --- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED:
1/15/2018 1:43 PM BY: MURESAN, ELENA

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

CITY: IRVINE, CA DIV/GROUP:ENVCAD DB: E. MURESAN PIC: J. HOLTZ
C:\Users\emuresa\OneDrive - ARCADIS\BIM 360 Docs\Newcastle Partners INC\CM0011971.0000 – Nwcstle PHI ESA\Prpsed Centerpointe Prj\00001 - Phase I ESA\01-DWG\Centrepointe Site plan.dwg LAYOUT: 2 SAVED: 1/15/2018 1:57 PM PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 1/15/2018 1:57 PM
BY: MURESAN, ELENA

MAP SOURCE: Google Earth Pro 2017, 33°54'55.71"N, 117°15'35.63"W

LEGEND:

PROPERTY BOUNDARY

W/D WAREHOUSE DISTRIBUTION

0 400' 800'

GRAPHIC SCALE

CENTREPOINTE - UNDEVELOPED LAND
NEC BRODIAEA AVENUE AND FREDERICK STREET
MORENO VALLEY, CALIFORNIA

SITE PLAN

ARCADIS Design & Consultancy for natural and built assets

FIGURE 2

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center,

APPENDIX A

Site Photographs

ARCADIS

Photograph #1

Description of Photograph:
View of Site looking north from Brodiaea Avenue.

Site Location:
Centerpointe
NEC Brodiaea Ave. & Frederick St.
Moreno Valley, California

Photograph Taken By:
Janet Holtz

Date of Photograph:
December 29, 2017

Photograph #2

Description of Photograph:
Pad-mounted transformers in southwest corner of site.

Site Location:
Centerpointe
NEC Brodiaea Ave. & Frederick St.
Moreno Valley, California

Photograph Taken By:
Janet Holtz

Date of Photograph:
December 29, 2017

ARCADIS

Photograph #3

Description of Photograph:
West boundary of Site looking north.

Site Location:
Centerpointe
NEC Brodiaea Ave. & Frederick St.
Moreno Valley, California

Photograph Taken By:
Janet Holtz

Date of Photograph:
December 29, 2017

Photograph #4

Description of Photograph:
View of Site looking east. The building in the background is offsite.

Site Location:
Centerpointe
NEC Brodiaea Ave. & Frederick St.
Moreno Valley, California

Photograph Taken By:
Janet Holtz

Date of Photograph:
December 29, 2017

ARCADIS

Photograph #5

Description of Photograph:
View of Site from the east side looking west.

Site Location:
Centerpointe
NEC Brodiaea Ave. & Frederick St.
Moreno Valley, California

Photograph Taken By:
Janet Holtz

Date of Photograph:
December 29, 2017

Photograph #6

Description of Photograph:
View of eastern Site boundary adjacent to offsite newly constructed warehouse building.

Site Location:
Centerpointe
NEC Brodiaea Ave. & Frederick St.
Moreno Valley, California

Photograph Taken By:
Janet Holtz

Date of Photograph:
December 29, 2017

ARCADIS

Photograph #7

Description of Photograph:
Gravel piles from adjacent construction activities.

Site Location:
Centerpointe
NEC Brodiaea Ave. & Frederick St.
Moreno Valley, California

Photograph Taken By:
Janet Holtz

Date of Photograph:
December 29, 2017

Photograph #8

Description of Photograph:
Disturbed area in southeast corner of Site from adjacent construction activities.

Site Location:
Centerpointe
NEC Brodiaea Ave. & Frederick St.
Moreno Valley, California

Photograph Taken By:
Janet Holtz

Date of Photograph:
December 29, 2017

ARCADIS

Photograph #9

Description of Photograph:
Storm water feature either adjacent to the southeast corner of the Site or potentially onsite.

Site Location:
Centerpointe
NEC Brodiaea Ave. & Frederick St.
Moreno Valley, California

Photograph Taken By:
Janet Holtz

Date of Photograph:
December 29, 2017

Photograph #10

Description of Photograph:
Brodiaea Avenue followed by County municipal offices south of the Site.

Site Location:
Centerpointe
NEC Brodiaea Ave. & Frederick St.
Moreno Valley, California

Photograph Taken By:
Janet Holtz

Date of Photograph:
December 29, 2017

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

APPENDIX B

Historical Research Documentation

Centerpointe

Centerpointe

Moreno Valley, CA 92553

Inquiry Number: 5146282.4

December 28, 2017

EDR Historical Topo Map Repo

with QuadMatch

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

12/28/17

Site Name:	Client Name:
Centerpointe	ARCADIS U.S., Inc.
Centerpointe	320 Commerce Suite 200
Moreno Valley, CA 92553	Irvine, CA 92602-0000
EDR Inquiry # 5146282.4	Contact: Janet Holtz

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by ARCADIS U.S., Inc. were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:		*Coordinates:*	
P.O.#	NA	**Latitude:**	33.91398 33° 54' 50" North
Project:	Newcastle - Moreno Valley	**Longitude:**	-117.260624 -117° 15' 38" West
		UTM Zone:	Zone 11 North
		UTM X Meters:	475907.67
		UTM Y Meters:	3752648.89
		Elevation:	1562.00' above sea level

Maps Provided:

2012
1980
1967
1953
1947
1942
1901

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

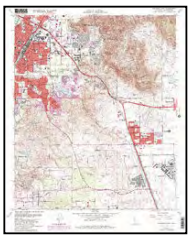
2012 Source Sheets

Riverside East
2012
7.5-minute, 24000

Sunnymead
2012
7.5-minute, 24000

1980 Source Sheets

Sunnymead
1980
7.5-minute, 24000
Aerial Photo Revised 1978



Riverside East
1980
7.5-minute, 24000
Aerial Photo Revised 1978

1967 Source Sheets

Riverside East
1967
7.5-minute, 24000
Aerial Photo Revised 1966

Sunnymead
1967
7.5-minute, 24000
Aerial Photo Revised 1966

1953 Source Sheets

Sunnymead
1953
7.5-minute, 24000
Aerial Photo Revised 1951

Riverside East
1953
7.5-minute, 24000
Aerial Photo Revised 1951

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1947 Source Sheets

RIVERSIDE
1947
15-minute, 50000

1942 Source Sheets

Perris
1942
15-minute, 62500
Aerial Photo Revised 1939

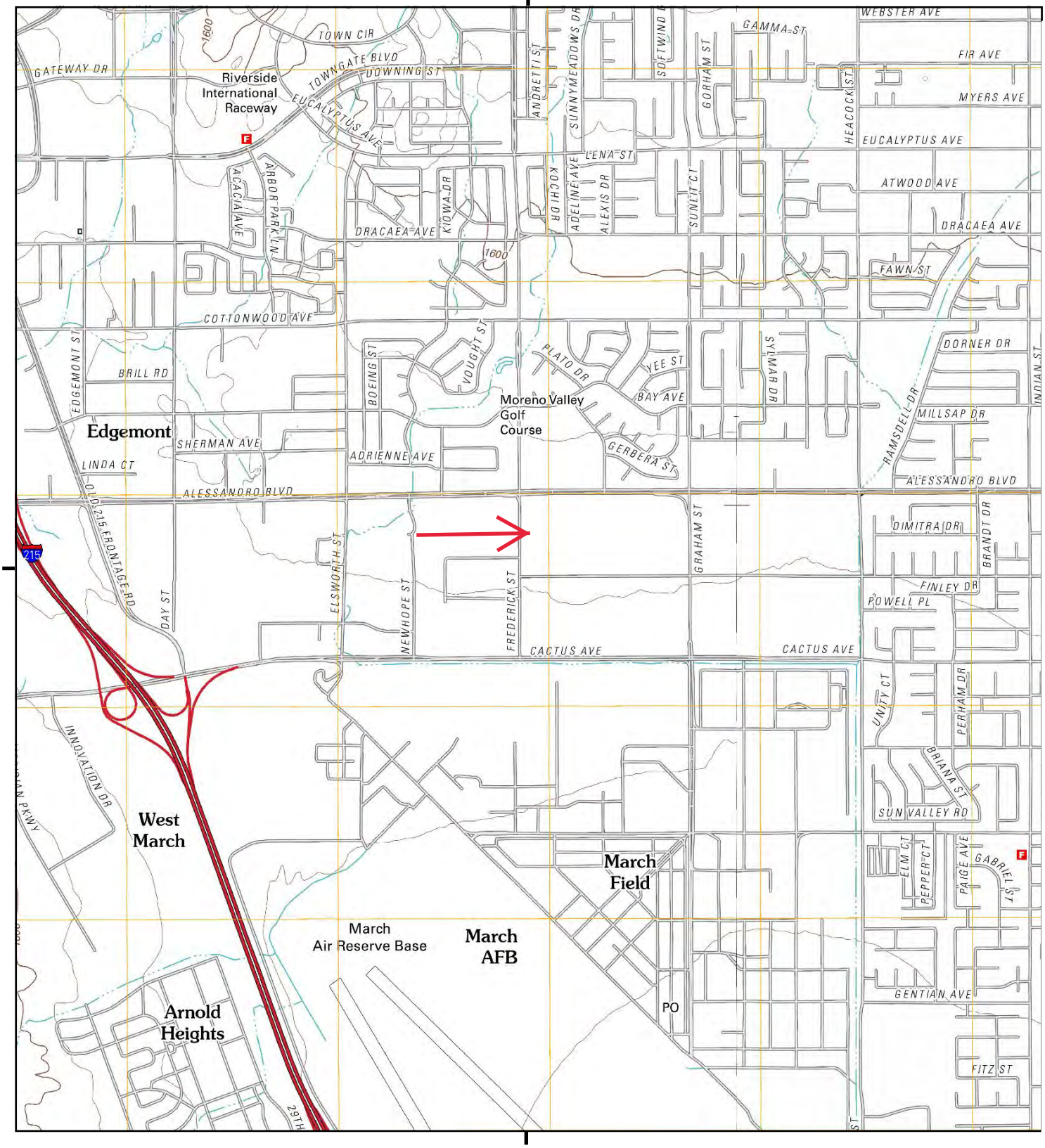
Riverside
1942
15-minute, 62500
Aerial Photo Revised 1939

1901 Source Sheets

Riverside
1901
15-minute, 62500

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Historical Topo Map



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

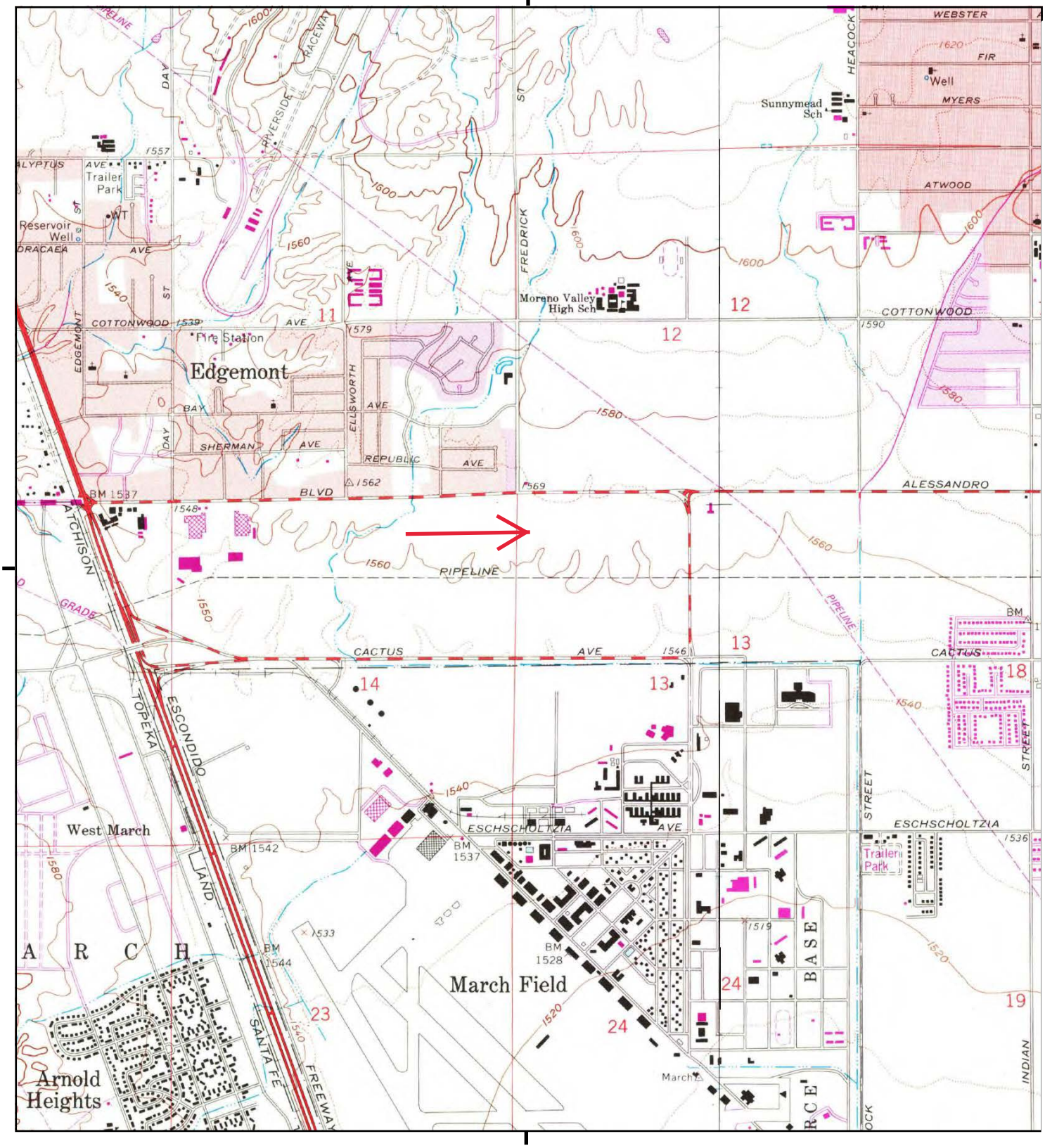
TP, Riverside East, 2012, 7.5-minute
E, Sunnymead, 2012, 7.5-minute

SITE NAME: Centerpointe
ADDRESS: Centerpointe
Moreno Valley, CA 92553
CLIENT: ARCADIS U.S., Inc.

N

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Historical Topo Map



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

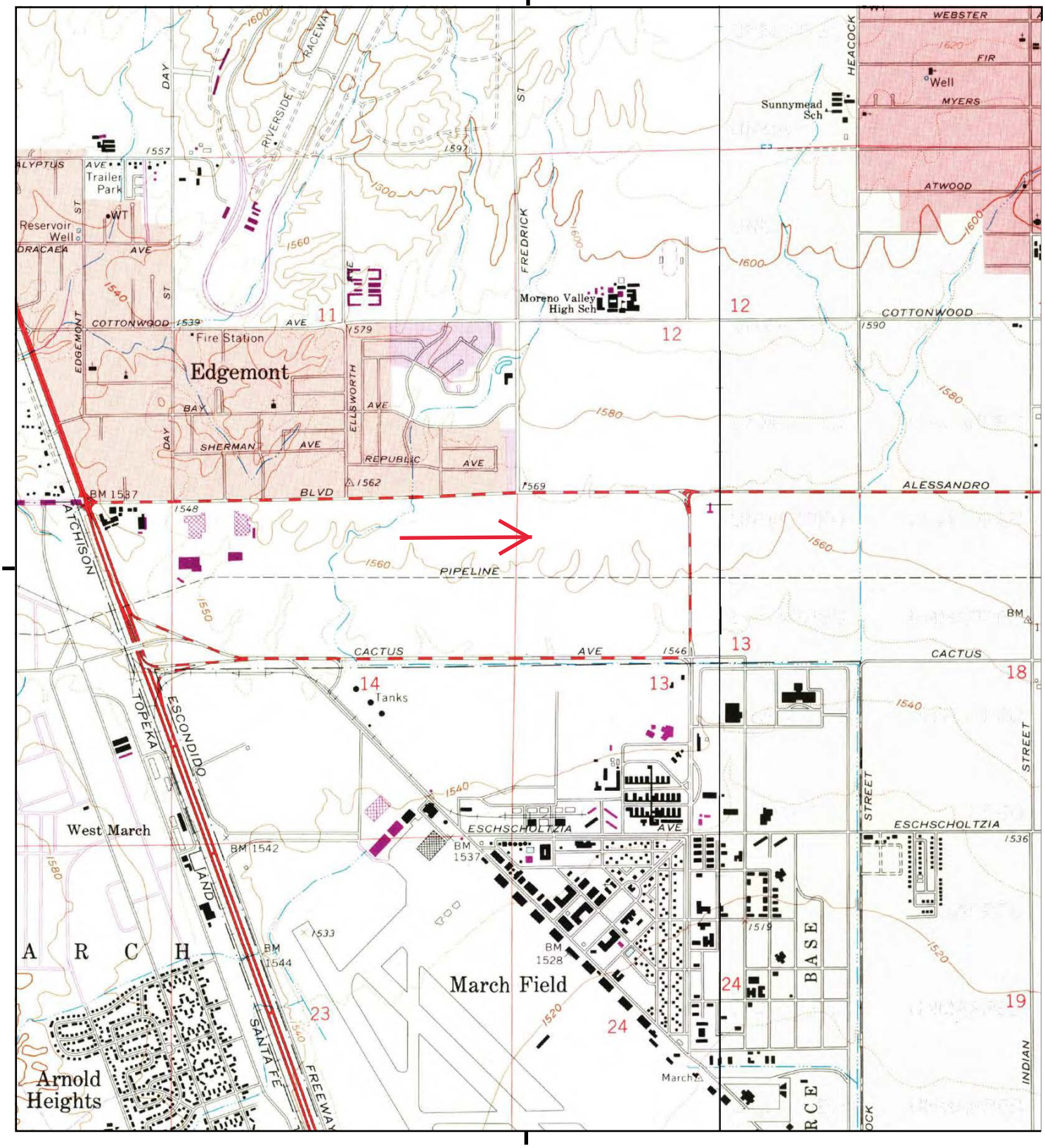
TP, Riverside East, 1980, 7.5-minute
E, Sunnymead, 1980, 7.5-minute

SITE NAME: Centerpointe
ADDRESS: Centerpointe
Moreno Valley, CA 92553
CLIENT: ARCADIS U.S., Inc.

N

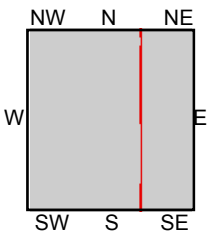
Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Historical Topo Map



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5



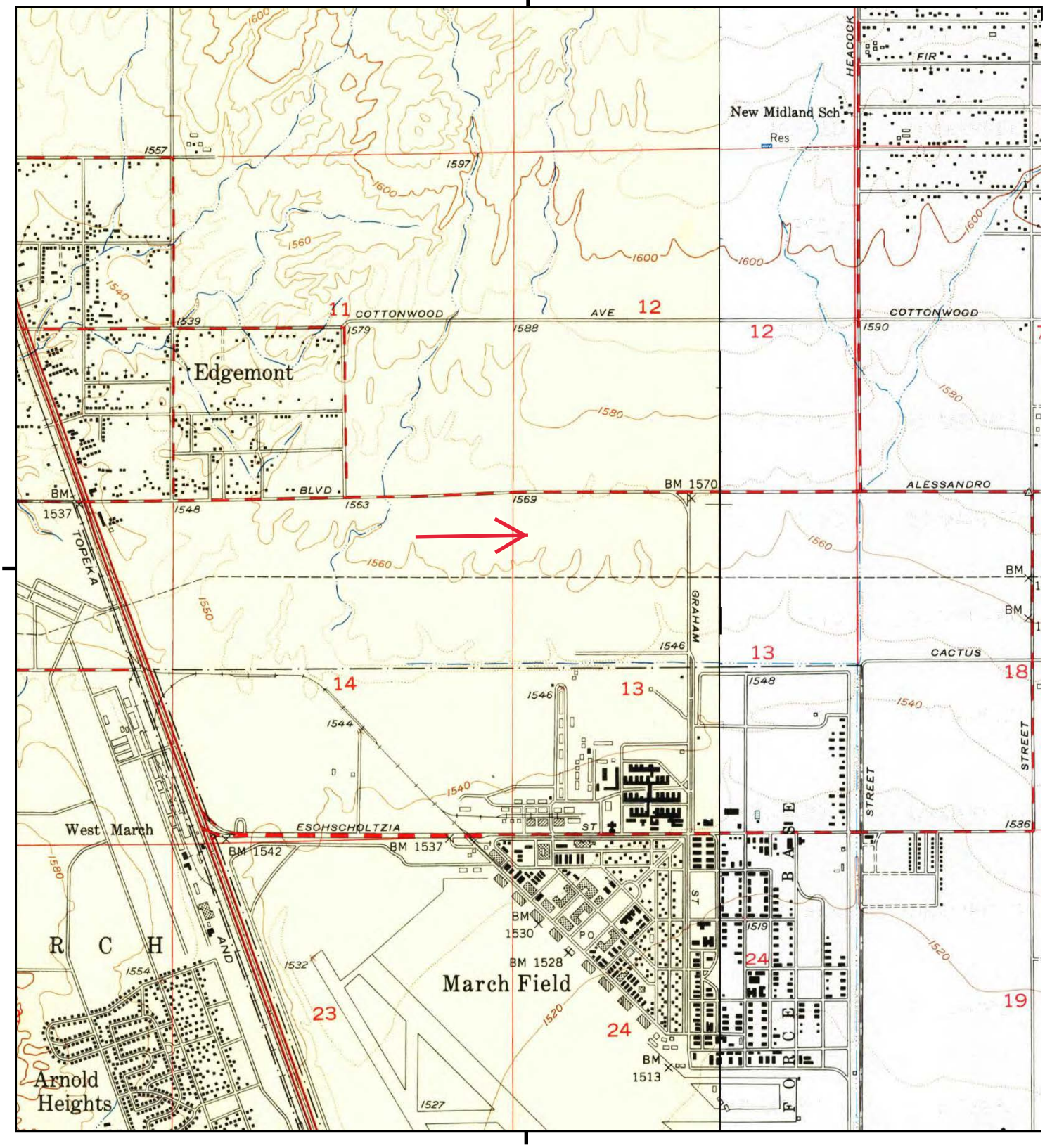
TP, Riverside East, 1967, 7.5-minute
E, Sunnymead, 1967, 7.5-minute

SITE NAME: Centerpointe
ADDRESS: Centerpointe
Moreno Valley, CA 92553
CLIENT: ARCADIS U.S., Inc.

N

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Historical Topo Map



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

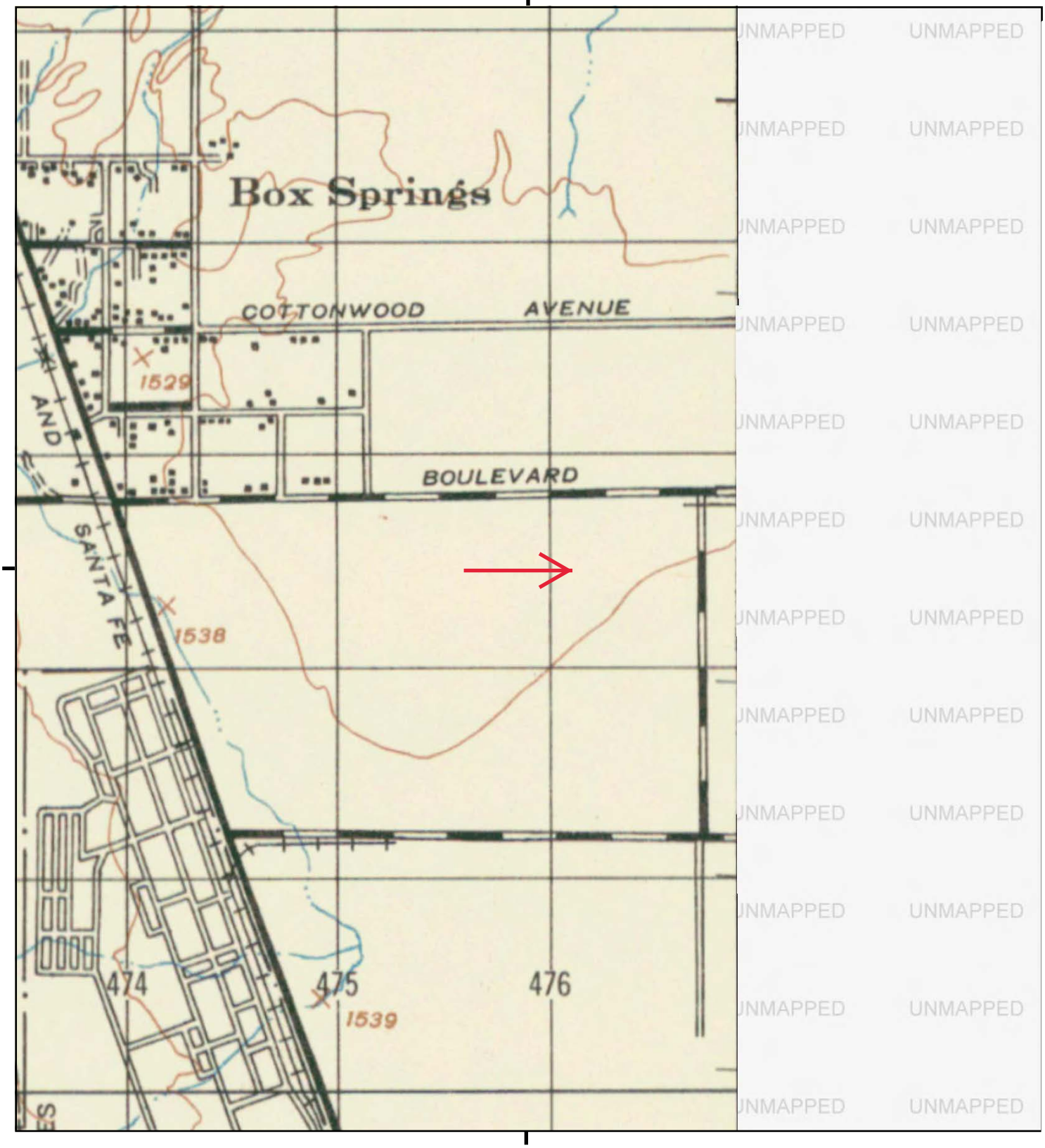
TP, Riverside East, 1953, 7.5-minute
E, Sunnymead, 1953, 7.5-minute

SITE NAME: Centerpointe
ADDRESS: Centerpointe
Moreno Valley, CA 92553
CLIENT: ARCADIS U.S., Inc.

N

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Historical Topo Map



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

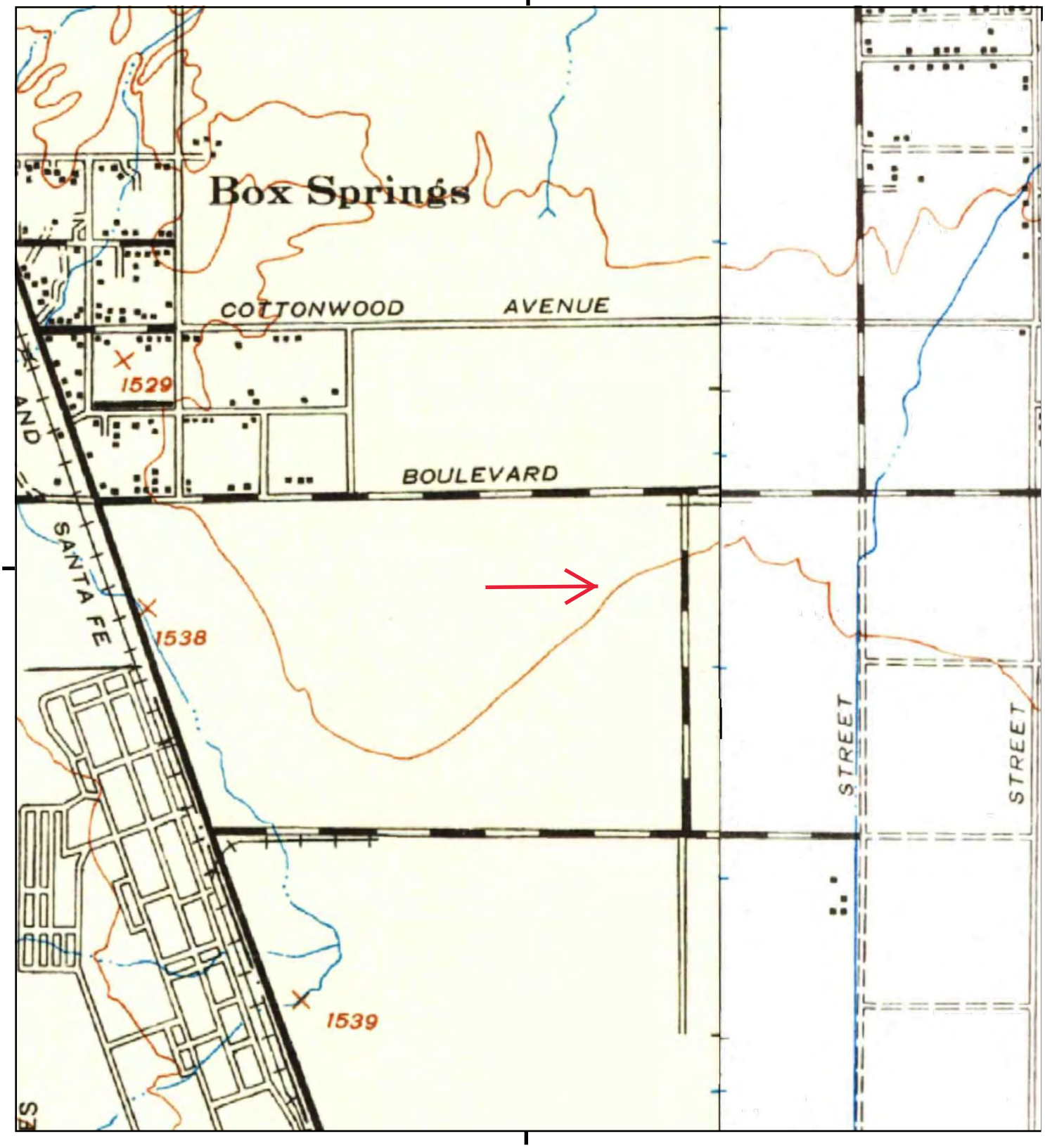
TP, RIVERSIDE, 1947, 15-minute

SITE NAME: Centerpointe
ADDRESS: Centerpointe
Moreno Valley, CA 92553
CLIENT: ARCADIS U.S., Inc.

N

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Historical Topo Map



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0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

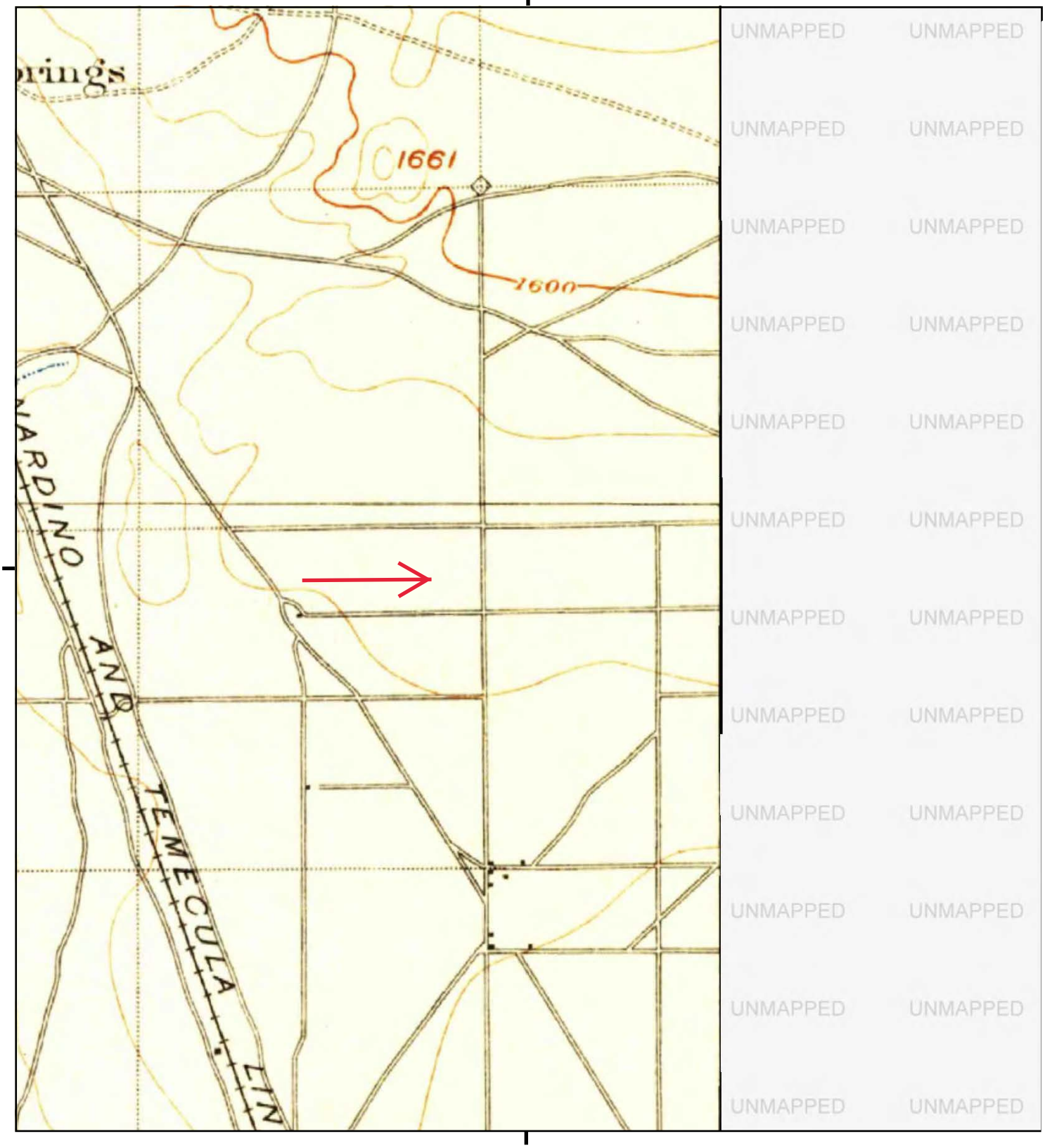
TP, Riverside, 1942, 15-minute
E, Perris, 1942, 15-minute

SITE NAME: Centerpointe
ADDRESS: Centerpointe
Moreno Valley, CA 92553
CLIENT: ARCADIS U.S., Inc.

N

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Historical Topo Map



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Riverside, 1901, 15-minute

SITE NAME: Centerpointe
ADDRESS: Centerpointe
Moreno Valley, CA 92553
CLIENT: ARCADIS U.S., Inc.

N

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Centerpointe

Centerpointe

Moreno Valley, CA 92553

Inquiry Number: 5146282.9

December 28, 2017

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

EDR Aerial Photo Decade Package

12/28/17

Site Name:

Centerpointe
Centerpointe
Moreno Valley, CA 92553
EDR Inquiry # 5146282.9

Client Name:

ARCADIS U.S., Inc.
320 Commerce Suite 200
Irvine, CA 92602-0000
Contact: Janet Holtz

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	Scale	Details	Source
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2010	1"=500'	Flight Year: 2010	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
2005	1"=500'	Flight Year: 2005	USDA/NAIP
1994	1"=500'	Acquisition Date: June 01, 1994	USGS/DOQQ
1989	1"=500'	Flight Date: August 15, 1989	USDA
1985	1"=500'	Flight Date: July 28, 1985	USDA
1978	1"=500'	Flight Date: September 20, 1978	USDA
1967	1"=500'	Flight Date: May 15, 1967	USDA
1959	1"=500'	Flight Date: October 15, 1959	USGS
1953	1"=500'	Flight Date: September 22, 1953	USDA
1949	1"=500'	Flight Date: May 06, 1949	USDA
1938	1"=500'	Flight Date: June 14, 1938	USDA

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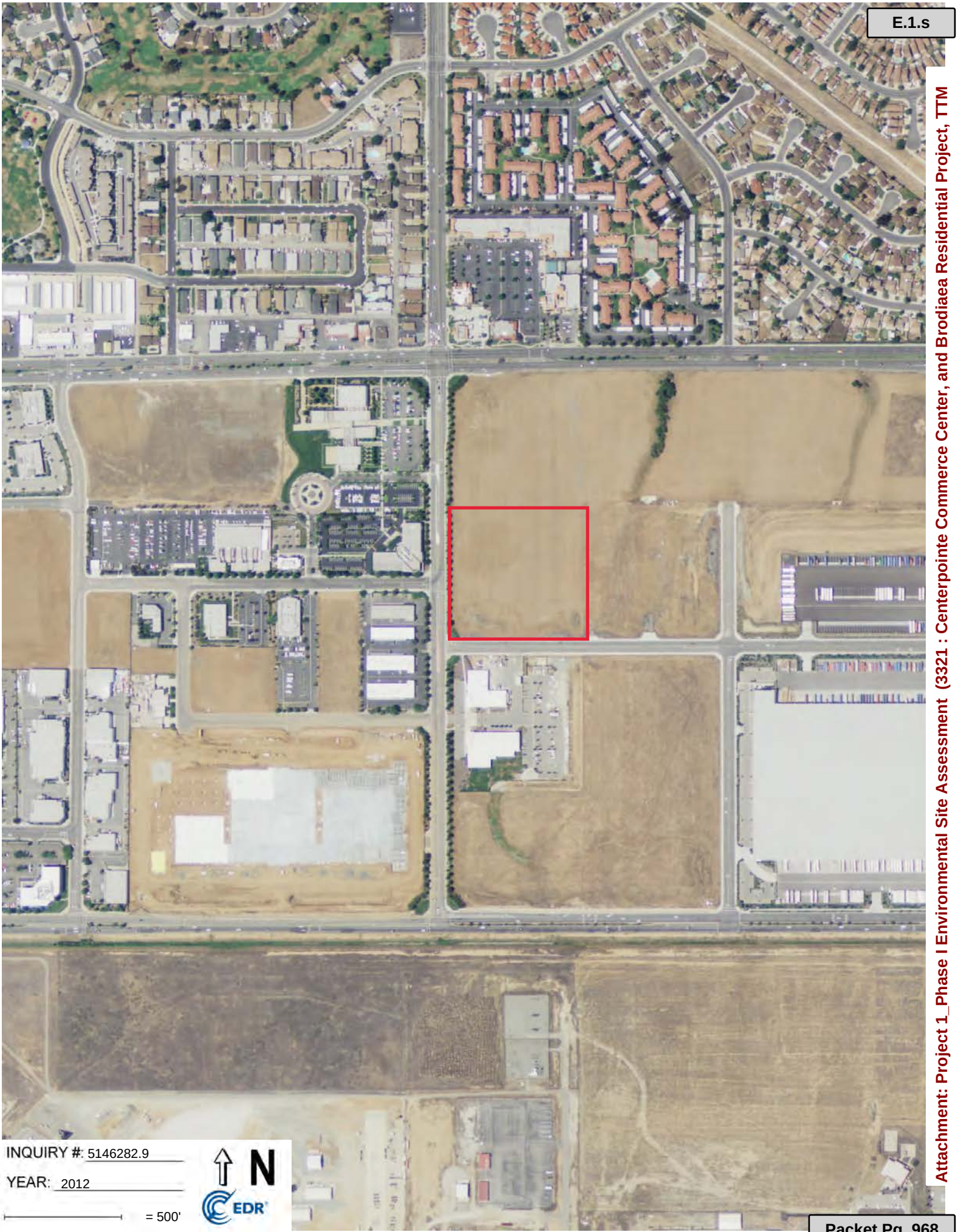
Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM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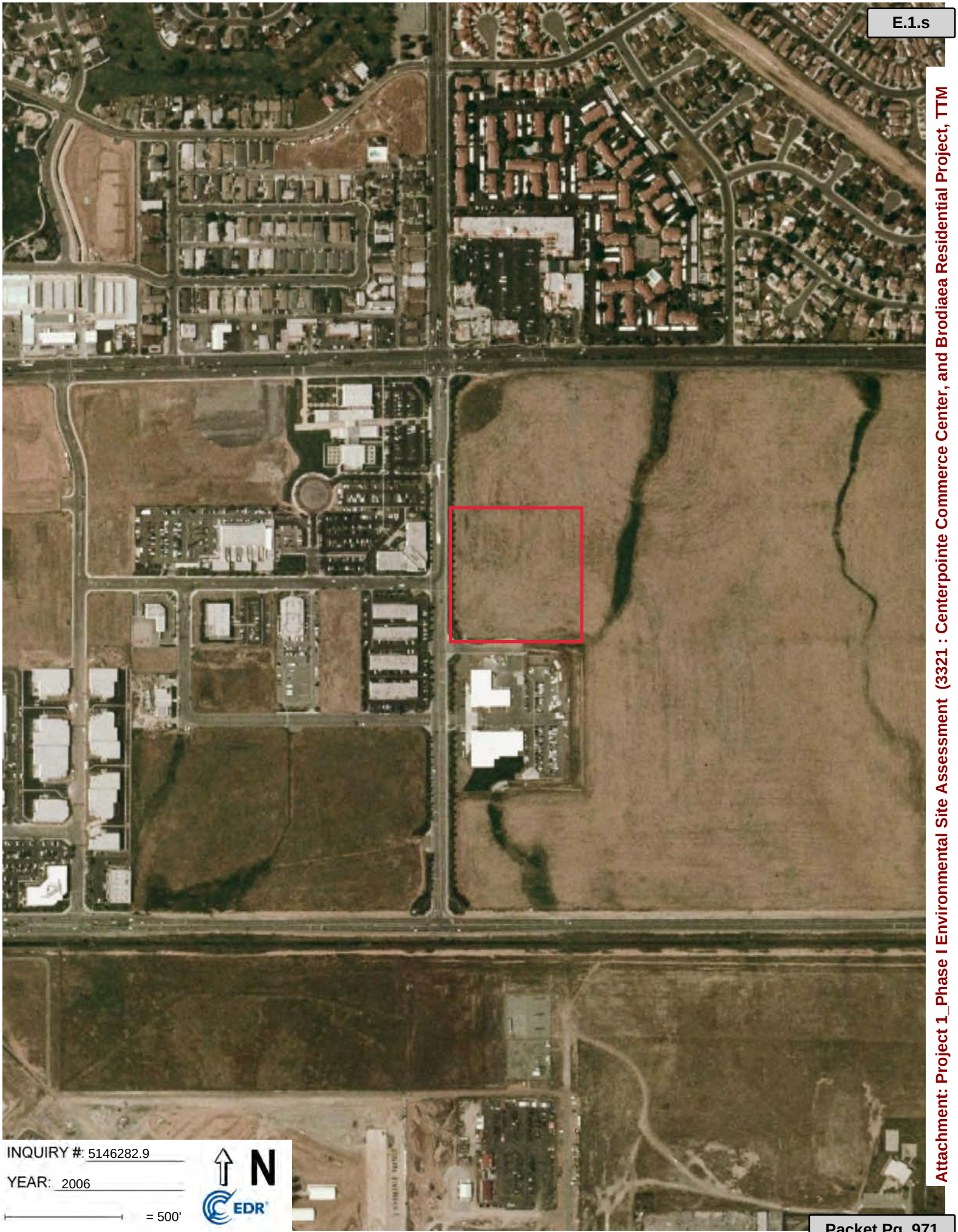
YEAR: 2012
= 500'
N
EDR

INQUIRY #: 5146282.9
YEAR: 2010
= 500'
N
EDR

INQUIRY #: 5146282.9
YEAR: 2009
= 500'
N
EDR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EDR

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YEAR: 2005
= 500'
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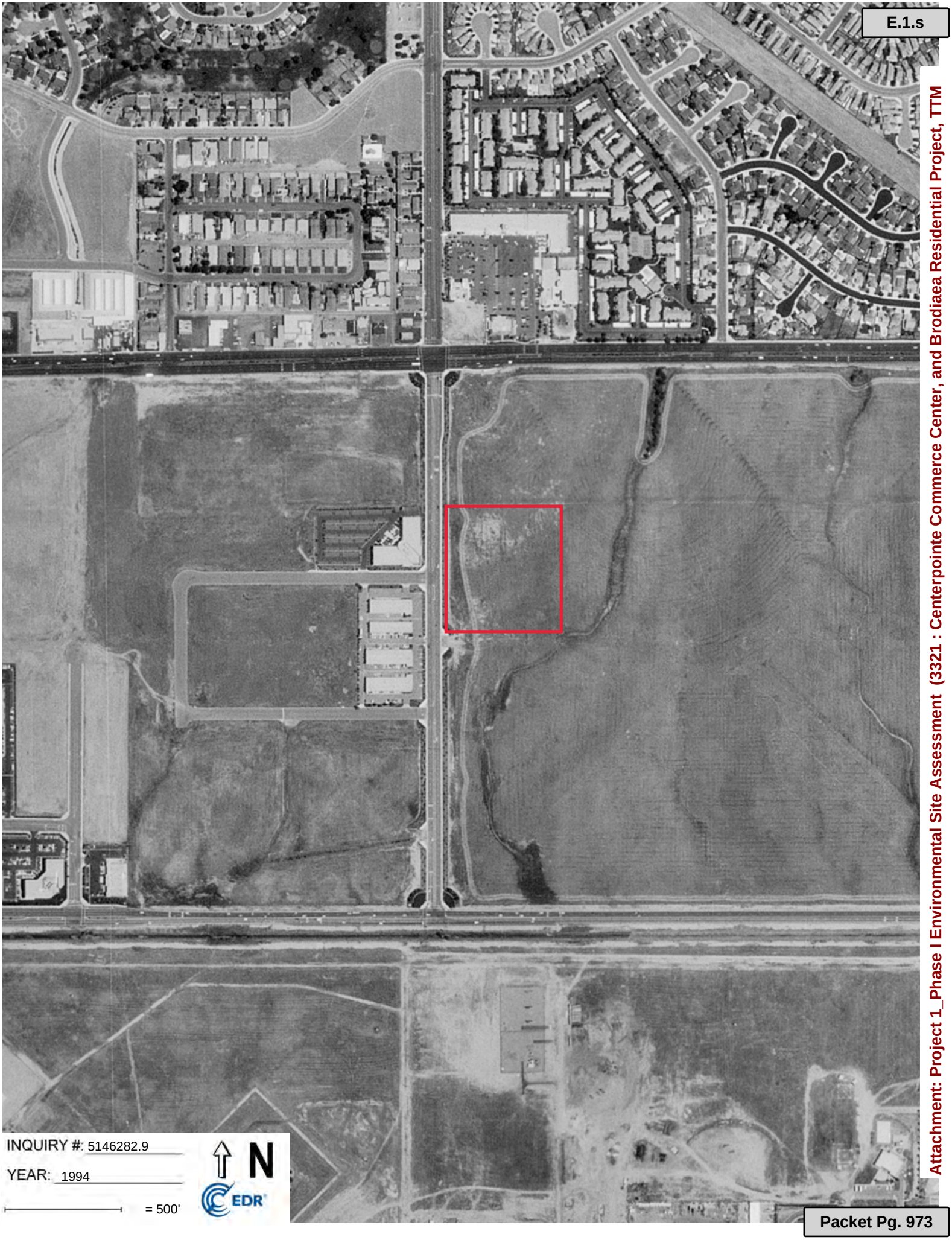
EDR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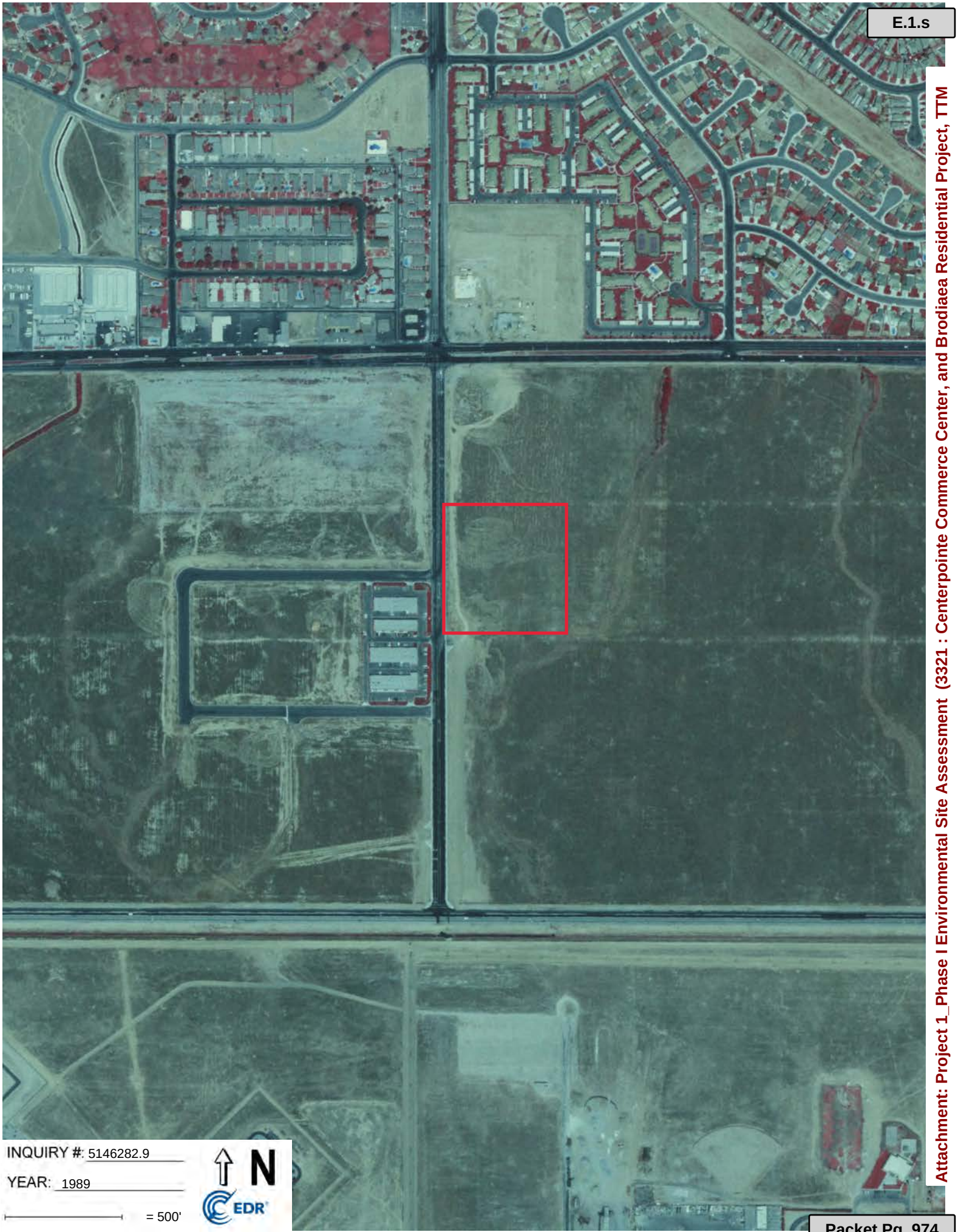
= 500'
N
EDR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= 500'
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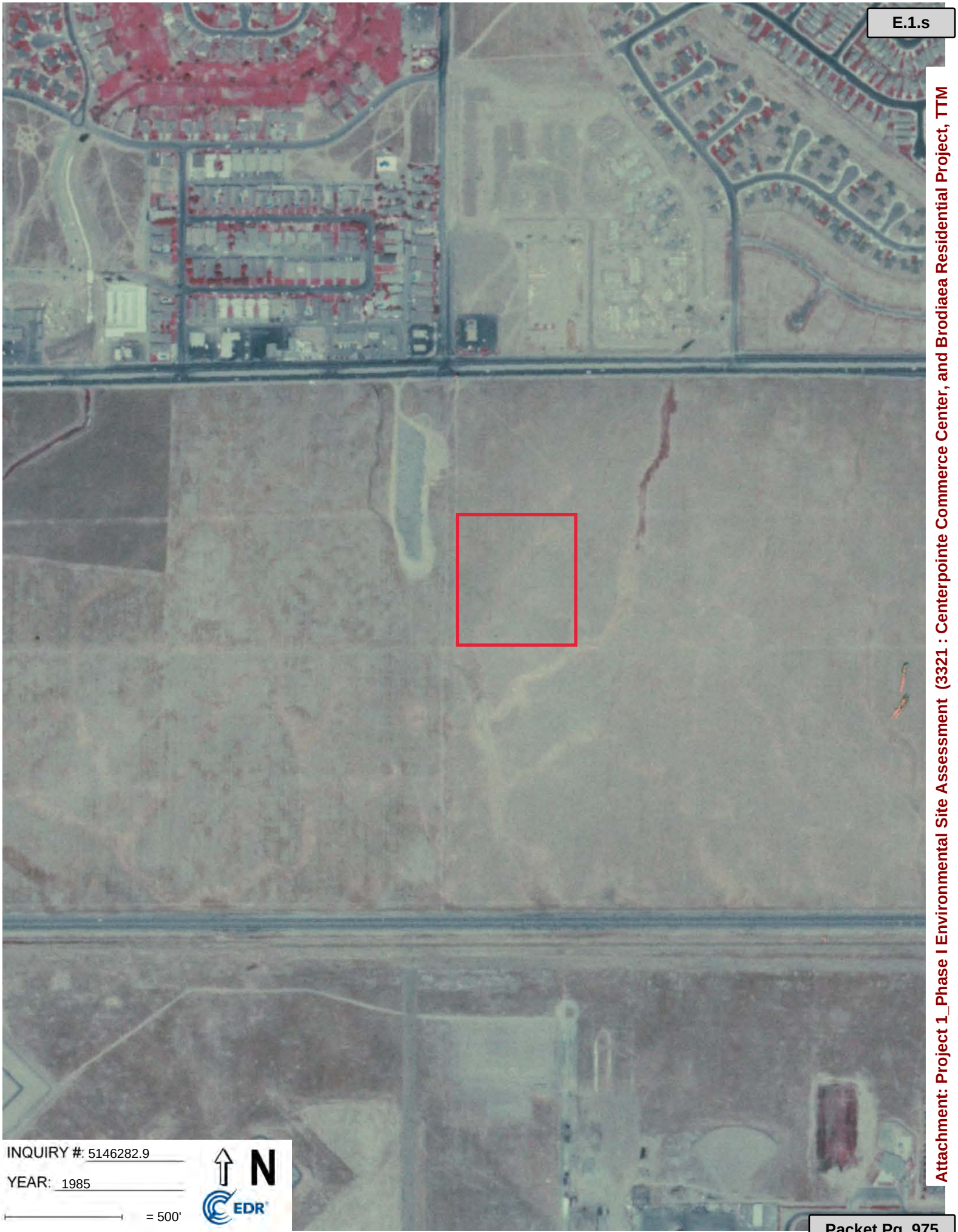
EDR



INQUIRY #: 5146282.9

YEAR: 1985

= 500'

N

EDR

INQUIRY #: 5146282.9

YEAR: 1978

= 500'

N

EDR

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

INQUIRY #: 5146282.9

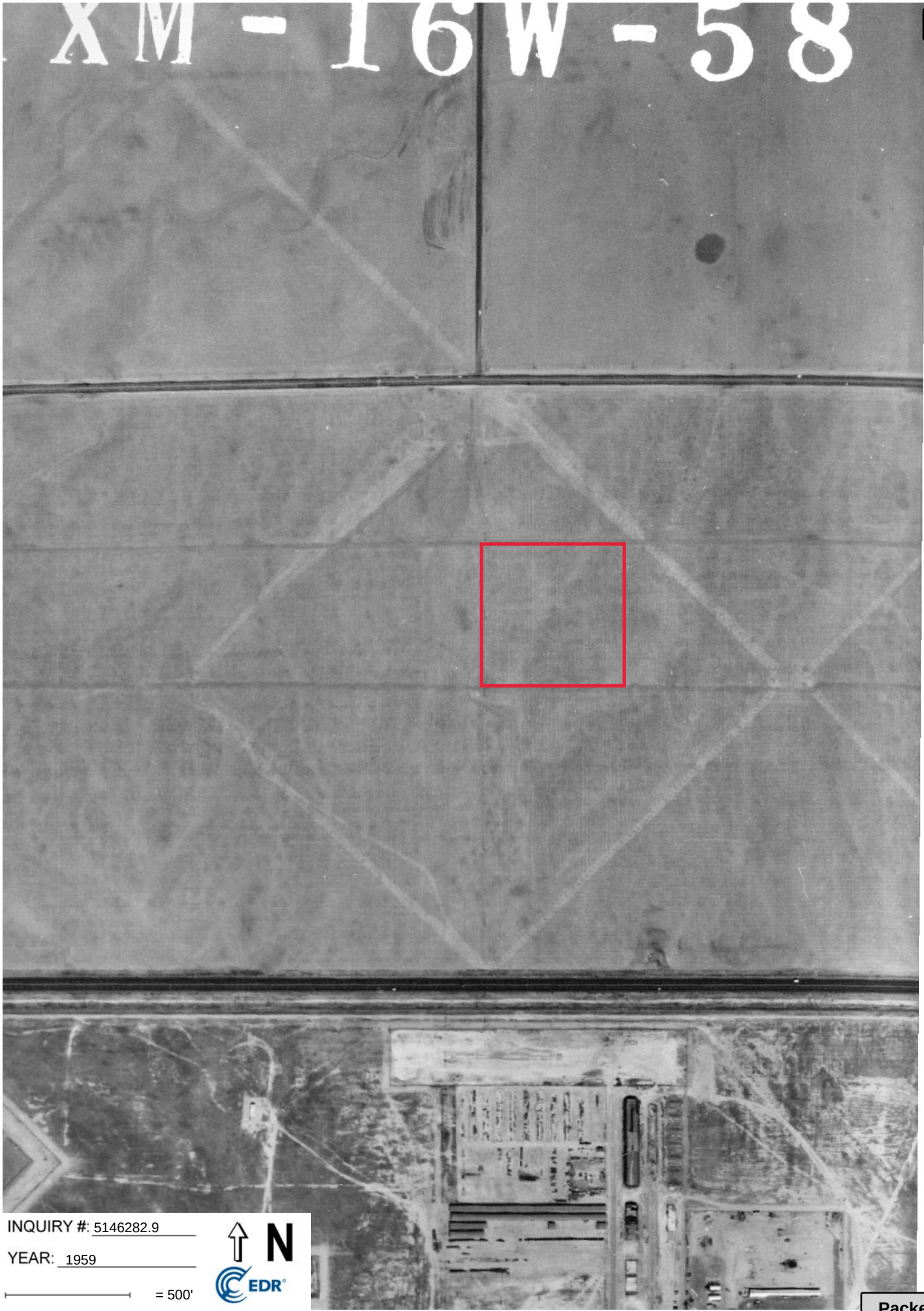
YEAR: 1967

= 500'

N

EDR

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM



INQUIRY #: 5146282.9

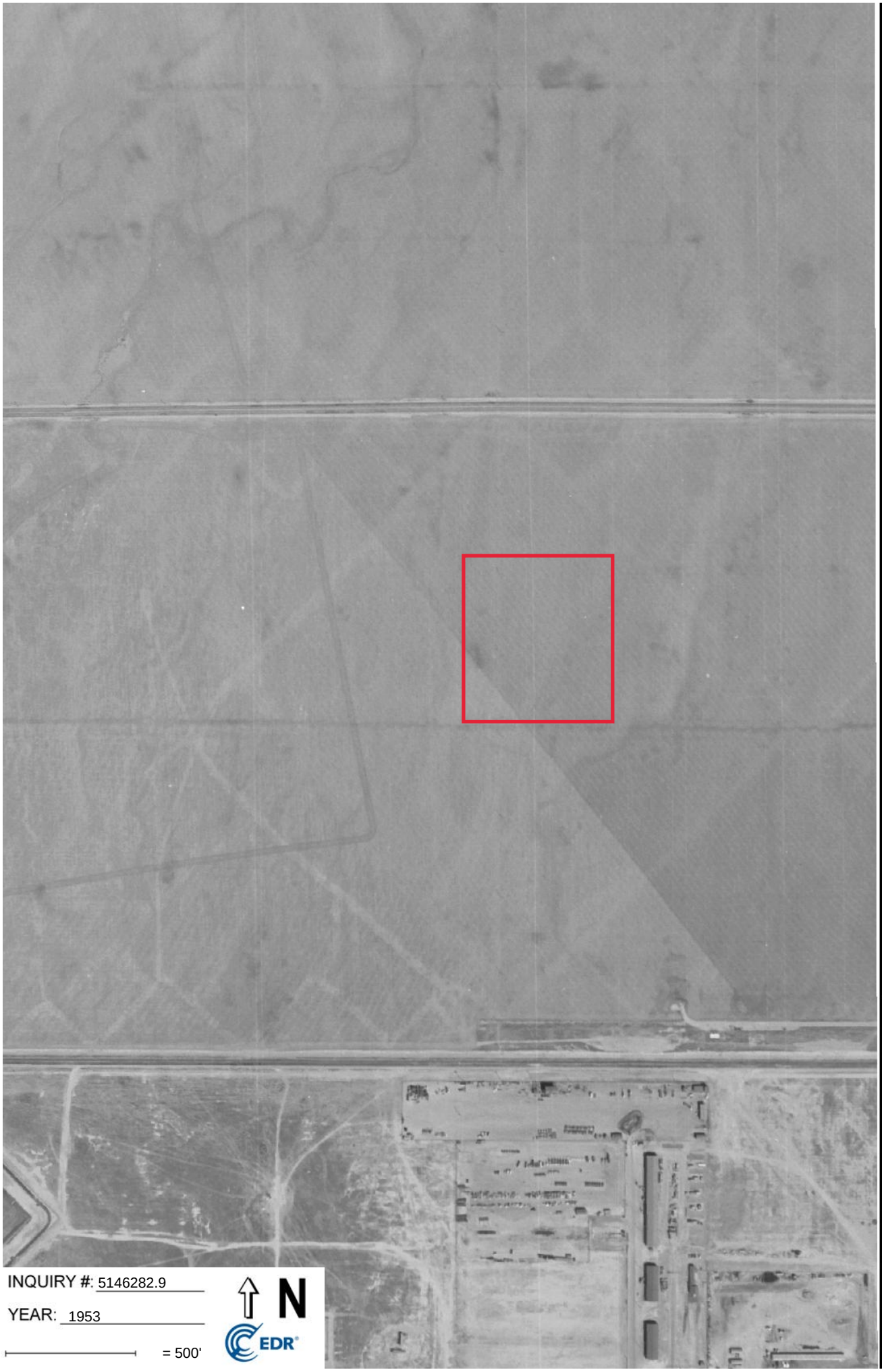
YEAR: 1959

= 500'

N

EDR

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM



INQUIRY #: 5146282.9

YEAR: 1953

= 500'

N

EDR

INQUIRY #: 5146282.9

YEAR: 1949

= 500'

N

EDR

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

INQUIRY #: 5146282.9

YEAR: 1938

= 500'

N

EDR

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Centerpointe

Centerpointe

Moreno Valley, CA 92553

Inquiry Number: 5146282.3

December 28, 2017

Certified Sanborn® Map Report

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

12/28/17

Site Name:

Centerpointe
Centerpointe
Moreno Valley, CA 92553
EDR Inquiry # 5146282.3

Client Name:

ARCADIS U.S., Inc.
320 Commerce Suite 200
Irvine, CA 92602-0000
Contact: Janet Holtz

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The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 0737-485E-9A62

PO # NA

Project Newcastle - Moreno Valley

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 0737-485E-9A62

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

APPENDIX C

EDR Radius Map Report

Centerpointe
Centerpointe
Moreno Valley, CA 92553

Inquiry Number: 5146282.2s
December 28, 2017

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	8
Orphan Summary	69
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-7
Physical Setting Source Map Findings	A-9
Physical Setting Source Records Searched	PSGR-1

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with any questions or comments.

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Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

CENTERPOINTE
MORENO VALLEY, CA 92553

COORDINATES

Latitude (North):	33.9139800 - 33° 54' 50.32''
Longitude (West):	117.2606240 - 117° 15' 38.24''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	475907.1
UTM Y (Meters):	3752454.8
Elevation:	1562 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5641312 RIVERSIDE EAST, CA
Version Date:	2012
East Map:	5641326 SUNNYMEAD, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140527, 20140603
Source:	USDA

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MAPPED SITES SUMMARY

Target Property Address:
CENTERPOINTE
MORENO VALLEY, CA 92553

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & DIRECTIC
Reg	MARCH AIR FORCE BASE		DOD	Same	1 ft.
Reg	MARCH AIR FORCE BASE	22 CSG/CC	NPL, SEMS, RCRA-LQG, US ENG CONTROLS, US INST...	Same	1401, 0.265
A1	MARCH FIELD	14310 FREDERICK STRE	ENVIROSTOR, HWT	Higher	229, 0.043,
A2	RIVERSIDE COUNTY DEP	14290 FREDERICK ST	UST	Higher	252, 0.048,
3	MARCH FIELD SKEET RA		UXO	Higher	423, 0.080,
B4	TESORO USA #63348	22990 ALESSANDRO BLV	UST	Higher	1289, 0.244
B5	ARCO FACILITY NO 097	22990 ALLESANDRO BLV	RCRA-SQG, FINDS, ECHO	Higher	1289, 0.244
B6	THRIFTY OIL #348	22990 ALESSANDRO BLV	LUST, HIST UST	Higher	1289, 0.244
B7	THRIFTY OIL #348	22990 ALESSANDRO BLV	LUST, SWEEPS UST, CA FID UST, HIST CORTESE	Higher	1289, 0.244
8	PLAZA HAND CAR WASH	23100 ALESSANDRO BLV	LUST, UST	Higher	1345, 0.255
9	MORENO VALLEY RECYCL	22862 ALESSANDRO BLV	SWRCY	Higher	1580, 0.299
10	M&M DRY CLEANERS	23080 ALESSANDRO BOU	SLIC, BROWNFIELDS	Higher	1616, 0.306
11	CIRCLE K #300	22790 ALESSANDRO BLV	LUST, SWEEPS UST, CA FID UST, HIST CORTESE	Higher	1787, 0.338
12	ALPER CLEANERS	14420 ELSWORTH ST.,	ENVIROSTOR	Lower	3012, 0.570

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System

Federal ERNS list

ERNS ---------- Emergency Response Notification System

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

EXECUTIVE SUMMARY

State- and tribal - equivalent NPL

RESPONSE ..... State Response Sites

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ..... Solid Waste Information System

State and tribal leaking storage tank lists

INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

FEMA UST ..... Underground Storage Tank Listing
AST ..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST ..... Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP ..... Voluntary Cleanup Priority Listing
VCP ..... Voluntary Cleanup Program Properties

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT ..... Waste Management Unit Database
HAULERS ..... Registered Waste Tire Haulers Listing
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
ODI ..... Open Dump Inventory
IHS OPEN DUMPS ..... Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ..... Delisted National Clandestine Laboratory Register
HIST Cal-Sites ..... Historical Calsites Database
SCH ..... School Property Evaluation Program
CDL ..... Clandestine Drug Labs
Toxic Pits ..... Toxic Pits Cleanup Act Sites
US CDL ..... National Clandestine Laboratory Register

Local Land Records

LIENS ..... Environmental Liens Listing
LIENS 2 ..... CERCLA Lien Information
DEED ..... Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ..... Hazardous Materials Information Reporting System

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

EXECUTIVE SUMMARY

CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
FUDS	Formerly Used Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
ECHO	Enforcement & Compliance History Information
DOCKET HWC	Hazardous Waste Compliance Docket Listing
FUELS PROGRAM	EPA Fuels Program Registered Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
ICE	ICE
HWP	EnviroStor Permitted Facilities Listing
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing

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PEST LIC ---------- Pesticide Regulation Licenses Listing
PROC ---------- Certified Processors Database
Notify 65 ---------- Proposition 65 Records
UIC ---------- UIC Listing
WASTEWATER PITS ---------- Oil Wastewater Pits Listing
WDS ---------- Waste Discharge System
WIP ---------- Well Investigation Program Case List

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP ---------- EDR Proprietary Manufactured Gas Plants
EDR Hist Auto ---------- EDR Exclusive Historical Auto Stations
EDR Hist Cleaner ---------- EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF ---------- Recovered Government Archive Solid Waste Facilities List
RGA LUST ---------- Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: Also known as Superfund, the National Priority List database is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund program. The source of this database is the U.S. EPA.

A review of the NPL list, as provided by EDR, and dated 10/10/2017 has revealed that there is 1 NPL site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MARCH AIR FORCE BASE	***22 CSG/CC***	***S 1/4 - 1/2 (0.265 mi.)***	***0***	***8***

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Federal CERCLIS list

SEMS: SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

A review of the SEMS list, as provided by EDR, and dated 07/11/2017 has revealed that there is 1 SEMS site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MARCH AIR FORCE BASE	*22 CSG/CC*	*S 1/4 - 1/2 (0.265 mi.)*	*0*	*8*

Federal RCRA generators list

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 09/13/2017 has revealed that there is 1 RCRA-SQG site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ARCO FACILITY NO 097	*22990 ALLESANDRO BLV*	*NNW 1/8 - 1/4 (0.244 mi.)*	*B5*	*51*

Federal institutional controls / engineering controls registries

US ENG CONTROLS: A listing of sites with engineering controls in place.

A review of the US ENG CONTROLS list, as provided by EDR, and dated 08/10/2017 has revealed that there is 1 US ENG CONTROLS site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MARCH AIR FORCE BASE	*22 CSG/CC*	*S 1/4 - 1/2 (0.265 mi.)*	*0*	*8*

US INST CONTROL: A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

A review of the US INST CONTROL list, as provided by EDR, and dated 08/10/2017 has revealed that

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there is 1 US INST CONTROL site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MARCH AIR FORCE BASE	***22 CSG/CC***	***S 1/4 - 1/2 (0.265 mi.)***	***0***	***8***

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 10/30/2017 has revealed that there are 2 ENVIROSTOR sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MARCH FIELD	***14310 FREDERICK STRE***	***NW 0 - 1/8 (0.043 mi.)***	***A1***	***49***
Facility Id: 80000870				
Status: Inactive - Action Required				

Lower Elevation	Address	Direction / Distance	Map ID	Page
ALPER CLEANERS	14420 ELSWORTH ST.,	WSW 1/2 - 1 (0.570 mi.)	12	67
Facility Id: 33720002				
Status: Refer: 1248 Local Agency				

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there are 4 LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
THRIFTY OIL #348	***22990 ALESSANDRO BLV***	***NNW 1/8 - 1/4 (0.244 mi.)***	***B6***	***53***
Database: LUST, Date of Government Version: 09/11/2017				
Status: Completed - Case Closed				
Global Id: T0606500421				
THRIFTY OIL #348	***22990 ALESSANDRO BLV***	***NNW 1/8 - 1/4 (0.244 mi.)***	***B7***	***55***
Database: LUST REG 8, Date of Government Version: 02/14/2005				
Database: RIVERSIDE CO. LUST, Date of Government Version: 10/11/2017				

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Facility Status: Preliminary site assessment underway
Facility Id: 95137
Facility Status: 9
Global ID: T0606500421

PLAZA HAND CAR WASH ***23100 ALESSANDRO BLV*** ***NNE 1/4 - 1/2 (0.255 mi.)*** ***8*** ***58***
Database: LUST, Date of Government Version: 09/11/2017
Database: RIVERSIDE CO. LUST, Date of Government Version: 10/11/2017
Status: Completed - Case Closed
Facility Id: 200521458
Global Id: T0606563337
Facility Status: 9

CIRCLE K #300 ***22790 ALESSANDRO BLV*** ***NW 1/4 - 1/2 (0.338 mi.)*** ***11*** ***63***
Database: LUST REG 8, Date of Government Version: 02/14/2005
Database: LUST, Date of Government Version: 09/11/2017
Database: RIVERSIDE CO. LUST, Date of Government Version: 10/11/2017
Status: Completed - Case Closed
Facility Status: Case Closed
Facility Id: 921020
Global Id: T0606500109
Facility Status: 9
Global ID: T0606500109

SLIC: Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the SLIC list, as provided by EDR, has revealed that there is 1 SLIC site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
M&M DRY CLEANERS	***23080 ALESSANDRO BOU***	***N 1/4 - 1/2 (0.306 mi.)***	***10***	***61***

Database: SLIC, Date of Government Version: 09/11/2017
Facility Status: Open - Remediation
Global Id: T10000004432

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, has revealed that there are 2 UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
RIVERSIDE COUNTY DEP	14290 FREDERICK ST	NNW 0 - 1/8 (0.048 mi.)	A2	50

Database: RIVERSIDE CO. UST, Date of Government Version: 10/12/2017
Database: UST, Date of Government Version: 09/11/2017

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Facility Id: FA0023076

TESORO USA #63348 | 22990 ALESSANDRO BLV | NNW 1/8 - 1/4 (0.244 mi.) | B4 | 51
Database: RIVERSIDE CO. UST, Date of Government Version: 10/12/2017
Database: UST, Date of Government Version: 09/11/2017
Facility Id: 68
Facility Id: FA0014719

State and tribal Brownfields sites

BROWNFIELDS: A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

A review of the BROWNFIELDS list, as provided by EDR, and dated 09/21/2017 has revealed that there is 1 BROWNFIELDS site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
M&M DRY CLEANERS	***23080 ALESSANDRO BOU***	***N 1/4 - 1/2 (0.306 mi.)***	***10***	***61***

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY: A listing of recycling facilities in California.

A review of the SWRCY list, as provided by EDR, and dated 09/11/2017 has revealed that there is 1 SWRCY site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MORENO VALLEY RECYCL Cert Id: RC11825	22862 ALESSANDRO BLV	NW 1/4 - 1/2 (0.299 mi.)	9	61

Local Lists of Registered Storage Tanks

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there is 1 SWEEPS UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
THRIFTY OIL #348 Status: A Tank Status: A	***22990 ALESSANDRO BLV***	***NNW 1/8 - 1/4 (0.244 mi.)***	***B7***	***55***

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Comp Number: 4735

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there is 1 HIST UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
THRIFTY OIL #348 Facility Id: 00000004735	***22990 ALESSANDRO BLV***	***NNW 1/8 - 1/4 (0.244 mi.)***	***B6***	***53***

CA FID UST: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, and dated 10/31/1994 has revealed that there is 1 CA FID UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
THRIFTY OIL #348 Facility Id: 33001092 Status: A	***22990 ALESSANDRO BLV***	***NNW 1/8 - 1/4 (0.244 mi.)***	***B7***	***55***

Other Ascertainable Records

DOD: Consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

A review of the DOD list, as provided by EDR, and dated 12/31/2005 has revealed that there is 1 DOD site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MARCH AIR FORCE BASE		0 - 1/8 (0.000 mi.)	0	8

ROD: Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid the cleanup.

A review of the ROD list, as provided by EDR, and dated 09/27/2017 has revealed that there is 1 ROD site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MARCH AIR FORCE BASE	***22 CSG/CC***	***S 1/4 - 1/2 (0.265 mi.)***	***0***	***8***

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UXO: A listing of unexploded ordnance site locations

A review of the UXO list, as provided by EDR, and dated 10/25/2016 has revealed that there is 1 UXO site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MARCH FIELD SKEET RA		W 0 - 1/8 (0.080 mi.)	3	50

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there are 2 HIST CORTESE sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
THRIFTY OIL #348 Reg Id: 083302648T	***22990 ALESSANDRO BLV***	***NNW 1/8 - 1/4 (0.244 mi.)***	***B7***	***55***
CIRCLE K #300 Reg Id: 083301110T	***22790 ALESSANDRO BLV***	***NW 1/4 - 1/2 (0.338 mi.)***	***11***	***63***

HWT: A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

A review of the HWT list, as provided by EDR, and dated 10/10/2017 has revealed that there is 1 HWT site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MARCH FIELD Reg Num: 3450	***14310 FREDERICK STRE***	***NW 0 - 1/8 (0.043 mi.)***	***A1***	***49***

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Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
U.S. AIR FORCE - MARCH AFB (FORMER	SLIC

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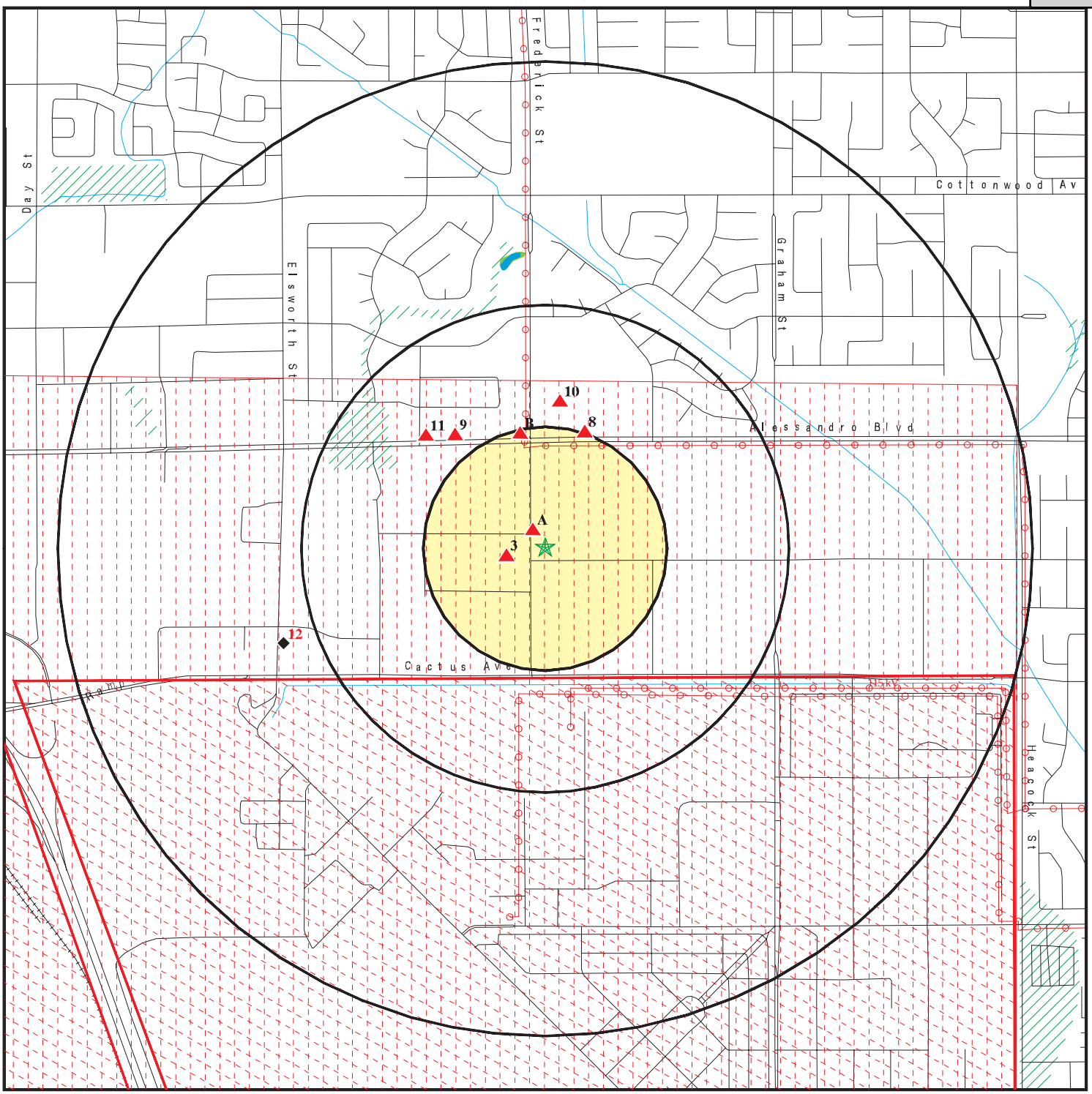
OVERVIEW MAP - 5146282.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Upgradient Area
- Areas of Concern

This report includes Interactive Map Layers display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Centerpointe	CLIENT: ARCADIS U.S., Inc.
ADDRESS: Centerpointe Moreno Valley CA 92553	CONTACT: Janet Holtz
LAT/LONG: 33.91398 / 117.260624	INQUIRY #: 5146282.2s DATE: December 28, 2017 9:58 am

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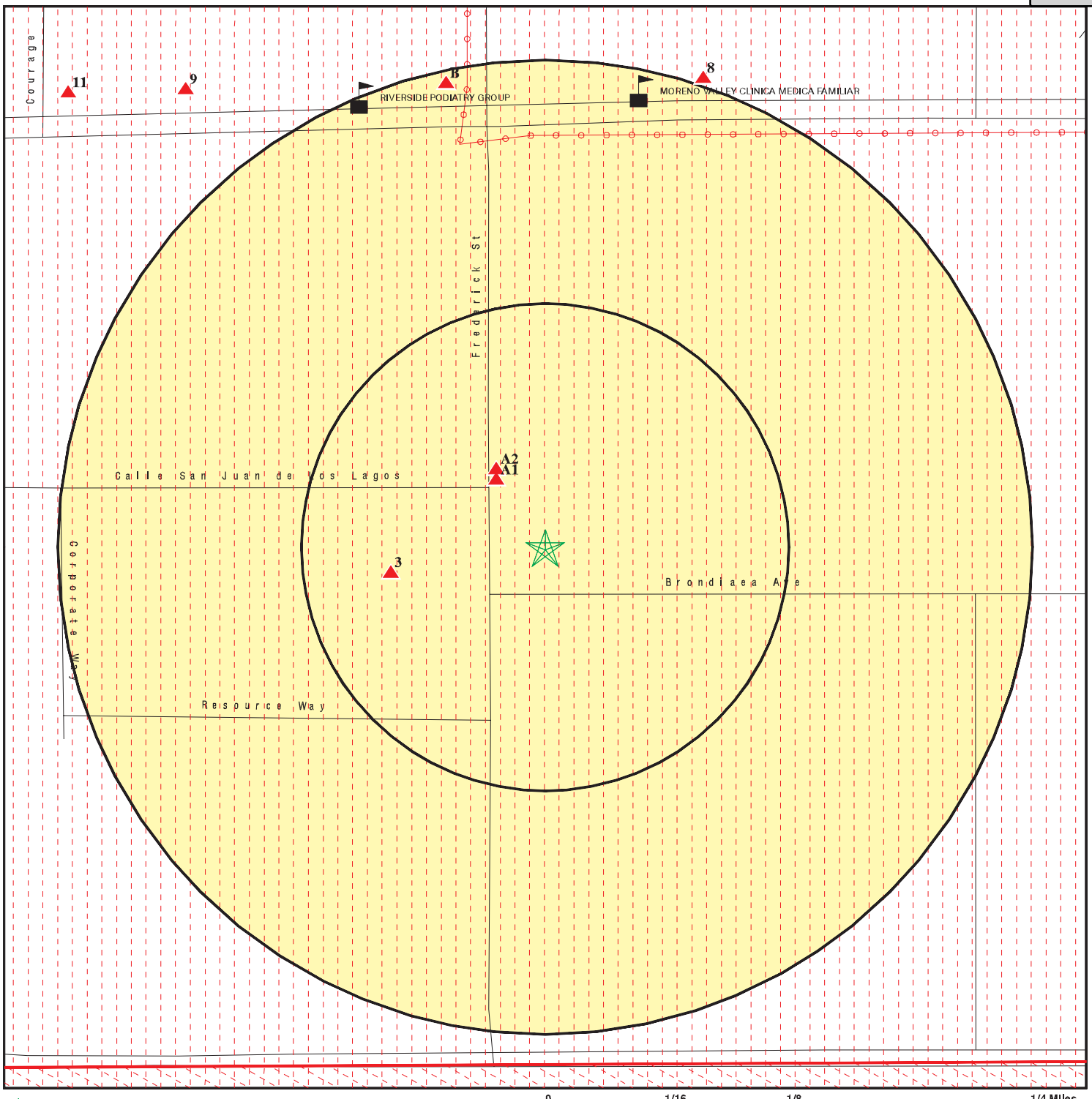
Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

DETAIL MAP - 5146282.2S



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

This report includes Interactive Map Layers display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Centerpointe	CLIENT: ARCADIS U.S., Inc.
ADDRESS: Centerpointe Moreno Valley CA 92553	CONTACT: Janet Holtz
LAT/LONG: 33.91398 / 117.260624	INQUIRY #: 5146282.2s DATE: December 28, 2017 10:01 am

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	1	0	NR	1
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	1	NR	NR	1
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	1	NR	NR	NR	1
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	1	NR	NR	1
US INST CONTROL	0.500		0	0	1	NR	NR	1
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		1	0	0	1	NR	2
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	2	2	NR	NR	4

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
SLIC	0.500		0	0	1	NR	NR	1
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		1	1	NR	NR	NR	2
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	1	NR	NR	1
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	1	NR	NR	1
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	1	NR	NR	NR	1
HIST UST	0.250		0	1	NR	NR	NR	1
CA FID UST	0.250		0	1	NR	NR	NR	1
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0
LIENS 2	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		1	0	0	0	NR	1
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	1	0	NR	1
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
UXO	1.000		1	0	0	0	NR	1
ECHO	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
ICE	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	1	1	NR	NR	2
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		1	0	NR	NR	NR	1
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
PEST LIC	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	5	8	11	1	0	25

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

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MAP FINDINGS

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
DOD **Region** **< 1/8** **1 ft.**	**MARCH AIR FORCE BASE (CLOSED)** **MARCH AIR FORCE BASE (CLO (County), CA**	**DOD**	**CUSA143538** **N/A**

DOD:

Feature 1:	Air Force DOD
Feature 2:	Not reported
Feature 3:	Not reported
URL:	Not reported
Name 1:	March Air Force Base (Closed)
Name 2:	Not reported
Name 3:	Not reported
State:	CA
DOD Site:	Yes
Tile name:	CARIVERSIDE

NPL **Region** **South** **1/4-1/2** **1401 ft.**	**MARCH AIR FORCE BASE** **22 CSG/CC** **RIVERSIDE, CA 92518**	**NPL** **SEMS** **RCRA-LQG** **US ENG CONTROLS** **US INST CONTROL** **ROD** **PRP**	**1000169261** **CA4570024527**

NPL:

EPA ID:	CA4570024527
Cerclis ID:	902761
EPA Region:	9
Federal:	Y
Final Date:	1989-11-21 00:00:00
Site Score:	31.940000000000001
Latitude:	33.906379999999999
Longitude:	-117.2557

Category Details:

NPL Status:	Currently on the Final NPL
Category Description:	Depth To Aquifer-> 50 And <= 100 Feet
Category Value:	65

NPL Status:	Currently on the Final NPL
Category Description:	Distance To Nearest Population-> 0 And <= 1/4 Mile
Category Value:	10

Site Details:

Site Name:	MARCH AIR FORCE BASE
Site Status:	Final
Site Zip:	92518
Site City:	RIVERSIDE
Site State:	CA
Federal Site:	Yes
Site County:	RIVERSIDE
EPA Region:	09
Date Proposed:	07/14/89
Date Deleted:	Not reported
Date Finalized:	11/21/89

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MARCH AIR FORCE BASE (Continued) **1000169261**

Substance Details:

NPL Status:	Currently on the Final NPL
Substance ID:	Not reported
Substance:	Not reported
CAS #:	Not reported
Pathway:	Not reported
Scoring:	Not reported

NPL Status:	Currently on the Final NPL
Substance ID:	A046
Substance:	POLYCHLORINATED BIPHENYLS
CAS #:	1336-36-3
Pathway:	GROUND WATER PATHWAY
Scoring:	3

NPL Status:	Currently on the Final NPL
Substance ID:	U210
Substance:	TETRACHLOROETHENE
CAS #:	127-18-4
Pathway:	GROUND WATER PATHWAY
Scoring:	2

NPL Status:	Currently on the Final NPL
Substance ID:	U228
Substance:	TRICHLOROETHYLENE (TCE)
CAS #:	79-01-6
Pathway:	GROUND WATER PATHWAY
Scoring:	2

Summary Details:

Conditions at proposal July 14, 1989): March Air Force Base MAFB) covers approximately 7,000 acres near Riverside in the Moreno Valley in Riverside County, California. MAFB is adjacent to light industrial, agricultural, and residential areas. Established in 1918 as the Alessandro Aviation Field, MAFB has served as a training base and refueling operations base. Industrial operations including aircraft maintenance and repair) involved use of solvents and disposal of solvent wastes. MAFB is participating in the Installation Restoration Program IRP), established in 1978. Under this program, the Department of Defense seeks to identify, investigate, and clean up contamination from ha ardous materials. As part ofIRP, the Air Force investigated 28 potentially contaminated disposal areas. MAFB Well No. 1 on-base was found to be contaminated with trichloroethylene, tetrachloroethylene, and cis-1,2-dichloroethylene at levels that exceed State drinking water standards. It was taken out of service. Soils on the base are contaminated with toluene and ben ene. An estimated 11,600 people obtain drinking water from municipal wells within 3 miles of ha ardous substances on MAFB. The Air Forceis conducting a remedial investigation/ feasibility study RI/FS) to determine the type and extent of contamination at the base and identify alternatives for remedial action. Status November 21, 1989): Field work continues on the RI/FS.

Site Status Details:

NPL Status:	Final
Proposed Date:	07/14/1989
Final Date:	11/21/1989
Deleted Date:	Not reported

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MARCH AIR FORCE BASE (Continued) **1000169261**

Narratives Details:

NPL Name:	MARCH AIR FORCE BASE
City:	RIVERSIDE
State:	CA

SEMS:

Site ID:	902761
EPA ID:	CA4570024527
Federal Facility:	Y
NPL:	Currently on the Final NPL
Non NPL Status:	Not reported

Following information was gathered from the prior CERCLIS update completed in 10/2013:

Site ID:	0902761
EPA ID:	CA4570024527
Facility County:	RIVERSIDE
Short Name:	MARCH AIR FORCE BASE
Congressional District:	41
IFMS ID:	09N6
SMSA Number:	6780
USGC Hydro Unit:	18070202
Federal Facility:	Federal Facility
DMNSN Number:	7000.00000
Site Orphan Flag:	N
RCRA ID:	Not reported
USGS Quadrangle:	Not reported
Site Init By Prog:	Not reported
NFRAP Flag:	Not reported
Parent ID:	Not reported
RST Code:	Not reported
EPA Region:	09
Classification:	Federal Facility
Site Settings Code:	SU
NPL Status:	Currently on the Final NPL
DMNSN Unit Code:	ACRE
RBRAC Code:	Not reported
RResp Fed Agency Code:	USAF
Non NPL Status:	Not reported
Non NPL Status Date:	/ /
Site Fips Code:	06065
CC Concurrence Date:	/ /
CC Concurrence FY:	Not reported
Alias EPA ID:	Not reported
Site FUDS Flag:	Not reported

CERCLIS Site Contact Name(s):

Contact ID:	9000102.00000
Contact Name:	John Lucey
Contact Tel:	(415) 972-3145
Contact Title:	Remedial Project Manager (RPM)
Contact Email:	Not reported

Contact ID:	13003854.00000
Contact Name:	Leslie Ramirez
Contact Tel:	(415) 972-3978

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MARCH AIR FORCE BASE (Continued) **1000169261**

Contact Title: Site Assessment Manager (SAM)
Contact Email: Not reported

Contact ID: 13003858.00000
Contact Name: Sharon Murray
Contact Tel: (415) 972-4250
Contact Title: Site Assessment Manager (SAM)
Contact Email: Not reported

Contact ID: 13004003.00000
Contact Name: Carl Brickner
Contact Tel: Not reported
Contact Title: Site Assessment Manager (SAM)
Contact Email: Not reported

CERCLIS Site Alias Name(s):
Alias ID: 101
Alias Name: MARCH AFB
Alias Address: Not reported
CA
Alias ID: 102
Alias Name: MARCH AIR FORCE BASE
Alias Address: 22 CSG/CC
MARCH AFB, CA 92518
Alias ID: 103
Alias Name: MARCH AIR FORCE BASE
Alias Address: 22 CSG/CC
RIVERSIDE, CA 92518
Alias ID: 9270150
Alias Name: MARCH USAF BASE
Alias Address: OLDB MARCH 3430 BUNDY AVENUE
MARCH AFB, CA 92311
Alias ID: 101
Alias Comments: PREVIOUS EPA ID# AZD 981 416 977

Site Description: March Air Force Base originally a 640 acres site called Alessandro Aviation Field, was officially opened March 1, 1918. The base was initially used to train "Jenny" pilots during World War I. The base was closed for about four years after the war and was then reopened in 1927. By 1938, the base was considered to be the central location for west coast bombing and gunnery training. In 1949, the Strategic Air Command took control of the base. Since that time, the base has hosted bombers, refuelers, and cargo aircraft. In June 1992, the base became an Air Mobility Command installation. Its primary mission is refueling, but reserve and guard units have cargo and fighter missions as well. In September 1993, March AFB was designated by Congress to realign its forces. The Base will be redesignated "March Air Reserve Base" and is xpected to decrease to about 1/3 of its present size. After realignment, property that is not retained by the base will be available for transfer.
The U.S. Air Force, due to its primary mission in national defense, has long been engaged in a wide variety of operations that involve the use, storage, and disposal of hazardous waste. In 1980, the Installation Restoration Program (IRP) was developed by the Department of Defense (DOD) to locate and cleanup hazardous waste sites. At March AFB, aircraft maintenance, fuel storage operations, fire-training exercises, and base operations have generated a variety of hazardous wastes. Consequently, several areas of soil and groundwater on-base have been contaminated. In September 1983 the IRP process began. The results were records indicating 30 potentially contaminated sites which required further investigation. A second study,

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MARCH AIR FORCE BASE (Continued) **1000169261**

completed in March 1987, indicated that 5 of the 30 sites required even further investigation to determine the type and extent of contamination in the soil and groundwater. In June 1987, further investigation was done, indicating that additional work was required to better define the extent of contamination and to research possible off-base migration of TCE in groundwater. In November 1989, March AFB was add to the National Priorities List (NPL) primarily due to the contamination of groundwater on-base. In September 1990, a Federal Facilities Agreement (FFA) was signed by the Air Force, U.S. Environmental Protection Agency (EPA), and the State of California. Three separate OUs were created based on geographic location of sites, similarity of contaminants, and location of groundwater contaminant plumes. The subject of this ROD (6/20/96) is OU-1, OU-1 includes Sites 4,5,7,9,10,13,14,15,16,18,29,31,34, and 38. Groundwater at Sites 4, 18,31,and the OU-1 Groundwater Plume, and soil at Sites 4,10,15,18,31, and 34 require remedial action. Sites 5,7,9,13,14,6,29, and 38 are considered no further action. Sites 21 and 23 are covered in OU-2 ROD. Site 33, the Panero Aircraft Fueling System is detailed in OU-3. The following are Sites that require Groundwater remediation: OU 1-Groundwater Plume - The OU-1 Groundwater Plume is the most widespread plume at the base, extending from Site 31 south and east through the area of Sites 34, 9, and 5, and extending to a maximum of approximately 1300 feet beyond the eastern boundary and 1500 feet south of Site 5 off-base. Numerous contaminants, including TCE, were detected. Site 4 Groundwater Plume - This plume is localized in the vicinity of Site 4 with the apparent source area near the southern end of Site 4. The contaminants with the highest concentration are TCE and PCE. Site 18 - Groundwater Plume - This plume is localized in the vicinity of Site 18 with the apparent source area west of the engine test cell in the center of Site 18. Fuel has been detected in four of the ten monitoring wells to date. Site 31 - Groundwater Plume - Concentrations of contaminants at Site 31, primarily TCE, are much higher than those in the rest of the OU-1 Plume, and these high concentrations are confined to a relatively small area. These conditions coupled with the history of Site 31 (reported solvent disposal) indicate that Site 31 is a likely source for much of the TCE found in OU-1 groundwater. Therefore, even though the Site 31 plume has the same contaminants and is continuous with the OU-1 plume, it is appropriate to treat Site 31 separately from the remainder of the OU-1 plume, in order to eliminate the source of contamination. Sites That Require Soil Remediation Include: Site 4 - Landfill No.6 - a landfill operating from 1955 to 1969, covering 8.5 acres, and located along the eastern boundary of the base, south of the East Gate. The landfill is up to 25 feet deep, containing primarily sanitary waste, construction rubble, and debris. Small amounts of medical wastes and empty fuel containers are also present. There are low levels of chlorinated solvents in the soil and soil gas, as well as elevated concentrations of trichloroethylene (TCE) and tetrachloroethylene (PCE) in the groundwater. Both TCE and PCE are found in solvents used to clean and degrease military equipment. Vinyl chloride, a breakdown product of TCE and PCE, has also been detected in Site 4 groundwater. The landfill is considered the source of contaminants detected in groundwater downgradient of the Site. Site 10 - Flightline Drainage Channel - This site, installed prior to 1940, is located southeast of the flightline aircraft maintenance areas. The channel is concrete lined (since the 1960s) up to the eastern boundary of the base where it discharges to the Perris Valley Storm Drain (PVSD). The PVSD flows east approximately 2 miles, where it joins another drainage and flows south approximately 6 miles to the San Jacinto River. The channel has reportedly received various waste oils, hydraulic fluids, diesel fuel, jet fuel, waste paints, paint strippers, paint thinners, battery acids and solvents, including TCE. Prior to 1974, wastes may have been discharged directly to the PVSD. Since 1974, the main oil/water separator has pretreated

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the runoff before its discharge off-base. Site 15 - Fire Protection Training Area No.3- This site is located southeast of the end of runway 12-30 and between Sites 5 and 7. The area was developed in 1978 and was reportedly constructed by placing an underdrain system and gravel over a clay liner. Firefighting water, solutions of Aqueous Film Forming Foam (AFFF), and residual fuel used during training exercises were drained to a formerly unlined water holding pond located adjacent to Site 15. Approximately 6,000 gallons per year of contaminated JP-4 have been burned in training exercises since the facility was constructed in 1978. This Site is no longer being used as a fire training area. Site 18 - Engine Test Cell - This site is located on the flightline, south of Taxiway No.2, and has been inactive for several years. The test cell was constructed in 1957 for the purpose of testing aircraft engines. An oil/water separator was installed in 1976, water from the seperator was discharged to the base wastewater treatment plant. The oil was collected by a contractor for off-base disposal. Prior to 1976, spills of oil, fuel, and solvents were drained to a nearby ditch. Potential sources of fuel include overflow of tanker trucks and fuel tanks on aircraft that have been parked nearby. Site 31 - Unconfirmed Solvent Disposal - Site 31 is located off Graeber Street on the east side of Building 1211. The practice of discharging solvents on the ground reportedly occurred from about the mid-1950s to the mid-1970s. In addition, floor drains from maintenance shops may have leaked solvents to the subsurface. Groundwater sampling at the site has indicated TCE concentrations which exceed State and Federal drinking water standards. Site 34 - Pritchard Aircraft Fueling System - Site 34 is located next to Building 1245, at the southeast end of Taxiway No, 1. In 1962, six 50,000 gallon tanks were moved to this site from the Pabero Fueling System. In 1990, this system was discontinued, and in 1991, the tanks and system were removed. During a geological investigation stained soils and fuel odors were observed. Sites With No Further Action Planned: Site 5 - Landfill No.3 - This Site covers approximately 5 acres and is located southeast of the present flightline. The landfill was reportedly operated from the late 1940s to approximately 1960. Landfill wastes consist primarily of sanitary waste and construction rubble. Site 7 - Fire Training Area No.2 - This Site is located on the eastern part of the base, north of the Alert Facility. Between 1954 and 1978, fire training exercises were conducted in unlined training pits. Three distinct burn pits were identified in historic aerial photographs of the base. A portion of this Site may have been used for crash rescue training. Wastes used in those exercises reportedly included contaminated fuel, waste solids, and spent solvents. Site 9 - Main Oil/Water Separator - Site 9 is located north of the Site 5 at the southeast end of the flightline apron. The facility was constructed in 1974 and serves the main storm, drainage system for the flightline apron and the flightline shops. The storm drains have reportedly received waste oils, hydraulic fluids, diesel fuel, waste paints, spent solvents, paint strippers, paint thinners, and battery acids. The oil/water separator is of earthen construction with a large baffle that divides the separator into two compartments. The separated oil is picked up by a skimmer and pumped to a holding tank for Off-base disposal. This facility drains into the flightline Drainage Channel (Site 10) and then to the Perris Valley Storm Drain Lateral A. Site 13 - Tank Truck Spill Site - Site 13 is located along the eastern perimeter road of the base, within the northern portion of Site 5. In 1973, approximately 5,000 gallons of JP-4 jet fuel spilled from a tank truck to the ground at this location. The accidental discharge resulted from a mechanical malfunction. There was no reported containment or cleanup activities. Site 14 - Liquid Fuel Pump Station Overflow - Site 14 is located southeast of the flightline apron and about 50 to100 feet west of the East March Sludge Drying Beds (Site 16). In 1973, approximately 1,000 gallons of JP-4 jet fuel spilled onto the ground. The spill occurred due to an overflow

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of the liquid fuel pump station at Building 1245. The spill was contained in the unpaved area south of the pump station and allowed to percolate into the ground. Site 16 - East March Sludge Drying Beds - Site 16 is located on the eastern part of the base, at the south end of the flight line parking apron, and near the former East March Wastewater Treatment Plant. The treatment plant was constructed in 1938 and provided secondary treatment for sanitary and industrial wasterwater. Primary and secondary sludges were digested anaerobically, dewatered on unlined sludge drying beds, and disposed of in an on-base landfill. The sludge may have contained heavy metals and organics resulting from discharges of industrial wastes to the sanitary sewer system. These drying beds ope3rated from 1938 to 1977, when the plant was destroyed in place. Site 29 - Fire Training Area No.1 - Site 29 is located at the eastern part of the base, north of Site 9. The area was used as a fire training pit prior to 1951. Suspected contaminants at the site include contaminated fuel, waste oil, and spent solvents Site 38 (PCB Contamination, Building 1311), Building 1311 is located at the southeast end of the taxiway, northwest of IRP Site 23. In 1984, soils from four areas contaminated with transformer oils were sampled. Soils from two of the areas (Buildings 317 and 1305) were determined to be PCB-contaminated. The soils were excavated and removed from the Base. Records to verify the cleanup have not been located. The RI/FS report and Proposed Plan for OU-1 were released to the public on April 28, 1994. These two documents were made available via the Administrative Record, the information repositories at the Moreno Valley and March AFB libraries, and at the Moreno Valley Chamber of Commerce. A fact sheet, condensed from the Proposed Plan, was sent to everyone on the March AFB mailing list, which includes Restoration Advisory Board (RAB) members. An OU-1 RI/FS subcommittee, formed by the RAB, provided oral comments to the RAB at its April 26, 1994 meeting. The Final RI/FS Report was published in July 1994. A public comment period was held from April 28 to May 28, 1994. In addition, a public meeting was held on May 12, 1994 at 7 p.m. at Best Western Image Suites in Moreno Valley. Representatives of the U.S. Air Force, EPA, Department of Toxic Substances Control, and California Regional Water Quality Control Board, Santa Ana, attended the public meeting to address any questions about the RI/FS and Proposed Plan. March Air Force Base (AFB) is located on 7,123 Acres in the northern end of the Perris Valley, east of the city of Riverside, in Riverside County, California, approximately 60 miles east of Los Angeles and 90 miles north of San Diego. The base lies in sections of Township 3 South, Range 4 West. The population of Riverside County is 1,700,413 and consists primarily of English and Spanish speaking citizens. The climate of the March AFB area is characterized as Mediterranean to semi-arid, varying according to elevation and distance from the Pacific Ocean. The weather generally consists of warm to hot, dry summers and mild winters. Current land use on March AFB is classified as residential and light industrial. Maintenance facilities, warehouses, and administrative centers support the mission. The land surrounding March AFB area includes areas of residences in all directions around the Site, light industry to the north, and agriculture to the east and south. With the exception of small surface water ponds that are used for agricultural purposes, there are two permanent surface water bodies within 3.5 miles of March AFB. Lake Perris, located 4 miles southeast of the base, provides approximately 130,000 acre feet of storage for State Project Water brought in by the California Aqueduct which runs north and east of the base. An east-west portion of the Colorado River Aqueduct is located approximately 3.5 miles south of the base. This aqueduct flows in to Lake Matthews, which is located about 10 miles west of March AFB. A very small recreation lake is located approximately 2 miles east of the base. It is maintained by the Moreno Valley Ranch homeowners association and is located just south of Iris Street and west of Lasselle Street in the City of Moreno Valley. A number of

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wetlands and riparian areas have been identified on and in the immediate area of the base, most are located on West March, outside OU-1. The U.S. Army Corps of Engineers determined that approximately 2.17 acres of jurisdictional wetlands exist in the Heacock Drain Channel, with .8 acres of wetlands adjacent to the Site 4 landfill. The wetlands are not continuous but are localized patches of wetland vegetation that change position each year due to high volume, high velocity storm water flow from the spring rains through these channels which causes scouring of the earthen bottom and sides. Manyindustrial, agricultural and domestic wells exist in the Perris Valley. Four on-base wells and two off-site wells southeast of the base were formerly used for the base water supply. One of these wells was shut down in February 1984 due to trichloroethylene (TCE) contamination, the other 3 on-base wells were shut down due to low yields. The two off-site wells are located southeast of the base in the center of Perris Valley. Although both of these wells are operable only one is occasionally used for emergency service, while the other is dormant. All base water is currently supplied by the Eastern Municipal Water District. OU-1 is made up of Sites 4,5,7,9,10,13,14,15,16,18,29,31,34, and 38. Sites 21 and 23 are included in the OU-2 ROD. Site 10 (Flightline Drainage Channel). This site is located southeast of the flightline aircraft maintenance areas. The drainage channel, which was installed prior to 1940, has reportedly received various waste oils, hydraulic fluids, diesel fuel, jet fuel, waste paints, paint strippers, paint thinners, battery acids and solvents (including TCE). The drainage channel is concrete lined (since the 1960s) up to the eastern boundary of the base where it discharges to the Penis Valley Storm Drain. The Penis Valley Storm Drain flows east approximately 2 miles, where joins another drainage and flows south approximately 6 miles to the San Jacinto River. Prior to 1974, waste disposed of in the drainage channel may have been discharged directly to the Penis Valley Storm Drain. Since 1974, the main oil/water separator (Site 9) has pretreated the runoff before its discharge off base. Primary contaminants of concern are polycyclic aromatic hydrocarbons (PAHs), which were detected in drainage ditch sediments. PAHs are a series of petroleum derivatives found in many fuel and asphalt compounds. Site 15 (Fire Protection Training Area Number 3). This site is located southeast of runway 12-30 and between Sites 5 and 7. The area was developed in 1978 and was reportedly constructed by placing an underdrain system and gravel over a clay liner. Firefighting water, solutions of Aqueous Film Forming Foam (AFFF), and residual fuel used during training exercises were drained to a formerly unlined water holding pond located adjacent to Site 15. Approximately 6,000 gallons per year of contaminated JP-4 have been burned in framing exercises since the facility was constructed in 1978. The site is no longer being used as a fire training area. The primary contaminant of concern is phenanthrene, a PAH. Selected Remedy (as described in the OU 1 ROD): For both Sites 10 and 15, the preferred method of cleanup of these soils is excavation and low-temperature thermal desorption. Need for Explanation of Significant Differences (ESD): The Record of Decision (ROD) selected remedy for soils at Sites 10 and 15 was excavation and low temperature thermal desorption. The soils were excavated and treated by bio-remediation and properly recycled to approved regulatory standards. This ESD will be entered in the Administrative Record maintained at March AFB. An Explanation of Significant Differences for Operable Unit 01 for the March Air Force Base Site was completed in August 2000. Sites that require soil remediation include Sites 4, 10, 15, 18, 31, 34. Sites that require groundwater remediation include OU1 and Sites 4,18, and 31 groundwater plumes. Sites with No Further Action Planned: Site 5,7,9,13,14,16,29,38.
OU 2: In 1980, the Installation Restoration Program (IRP) was developed by the Department of Defense as the mechanism for the CERCLA process, incorporating applicable Resource Conservation Recovery Act (RCRA) regulations

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as well as meeting requirements of the National Oil and Hazardous Substance Pollution Contingency Plan (NCP) (40 CFR. Part 300). The Air Force conducted a Phase I records search of 30 potentially contaminated IRP sites on the Base. There are now a total of 44 IRP sites at the former March AFB and current March ARB. The primary contaminants identified in the IRP include chlorinated solvents, fuels, polychlorinated biphenyls (PCBs), and polynuclear aromatic hydrocarbons (PAHs). Contamination by PAHs and PCBs appears to be restricted to surface and near-surface soils whereas fuel hydrocarbons and solvents tend to be predominant contaminants in subsurface soils and groundwater. The lead agency for cleanup of the closed portions of March AFB is the Air Force. The EPA, the California Department of Toxic Substances Control (DTSC), and the Santa Ana Regional Water Quality Control Board (RWQCB) are all support agencies for cleanup activities at the Base. The current land use and adjacent land use for most of the OU 2 Air Force Real Property Agency (AFRPA) sites is vacant land/open space with limited commercial and residential land use adjacent to some of the sites. Site 3 and the adjacent areas are undeveloped land. Site 6 contains an engineered waste cell. There is a residential area to the south and a golf course is to the east of Site 6. Site 12 was the former civil engineering yard with numerous structures. Site 12 is not currently utilized. Residential land use occurs to the east of Site 17. Air Force commercial facilities such as offices are located to the north and west of the Site 17. Site 19 is currently a part of the operating wastewater treatment plant. Structures relating to plant operations are located on-site and to the west and north. Site 20 and 26 and the adjacent areas are undeveloped land. A former water treatment plant is south of Site 26 and west of Site 20. This facility is no longer used. Site 23 is an active agricultural area, surrounded by currently vacant land to the north, south and east. Air Force land consisting of open space is west of Site 23. Site 25 and the adjacent areas is undeveloped land, with nearby residential development to the south. The three Site 35 subareas and Site 42 are former UST locations within landscaped areas adjacent to structures. The areas near Site 35a, 35b and Site 42 are still actively used as office and dormitory areas, but the Site 35c area is no longer used. Sites 30 and 40 are open space with some riparian vegetation. A residential area is located to the north and west of Site 40. The OU 2 sites are located on that portion of March AFB that may be converted to non-Air Force use. Site 23 is on private land. The anticipated land use for most of the OU 2 Air Force Real Property Agency (AFRPA) sites is commercial or industrial use. Alternative land uses have also been assessed and areas of West March could remain open space such as the Stephens' Kangaroo Rat (SKR) Conservation Area. March AFB is located in the North Perris Groundwater Basin. Currently, there are no potable groundwater resources extracted at the OU 2 AFRPA sites. The relatively thin water-bearing zone on West March is not anticipated to yield substantial quantities of water. Therefore, the potential for extraction and use of groundwater from the West March AFRPA sites is limited, both now and in the foreseeable future. Water-bearing zones producing sufficient groundwater for use may be present at AFRPA sites on the Main Base and Site 23, and should be considered a potential potable water source. Surface water is not currently used at the OU 2 AFRPA sites. Surface water areas such as at Site 6, 30 and 40 may remain as wetlands depending on future site development. OU2 consists of a number of sites. Each site is described below. Site 3 is a former 23-acre landfill located south of Cactus Avenue and west of Plummer Road. Riparian vegetation is found in the drainage areas. Site 3 is located in the 1,300-acre Stephens' Kangaroo Rat (SKR) reserve. The Site 3 landfill was used from 1954 through 1974. The landfill received household and dumpster waste, construction debris, and military waste from the Base. The military wastes included empty tanks, spent munitions, and miscellaneous wastes such as parachutes, medical waste, and fire hoses. Some of the contaminants found in the wastes included

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volatile organic compounds, pesticides, PCBs, PAHs, and munitions residues. The Air Force was concerned that the waste in the landfill might contaminate the soil and groundwater. After discussions with the regulatory agencies and the public, a decision was made to clean up the site by removing the landfilled waste. An interim removal action was completed in late 1995 and early 1996. Approximately 223,200 cubic yards of landfilled materials and soil were removed. Excavated materials from Site 3 to be transported to and disposed of in the engineered waste cells at Site 6 were tested for organic and inorganic constituents during the remedial investigation and monitored during the removal action according to approved work plans. Site 6 is located on West March, north of the Air Force Village West residential development, south of Van Buren Boulevard, east of Plummer Road, and west of Air Force Village West Drive. The landfill comprised three discrete areas: Site 6a (approximately 15 acres) the location of the main former landfill area; Site 6b Quarry (approximately 0.6 acre) the location of a former quarry; and Site 6b Pond (approximately 2.6 acres) the location of a pond. Site 6 was used by March AFB from the early 1950s to the early 1 980s for disposal of household waste and construction debris. Polynuclear aromatic hydrocarbons (PAHs), PCBs, pesticides, herbicides, and dioxins were found in samples of soil and water collected during the OU2 RI. An interim, removal action was conducted in 1995; approximately 63,000 cubic yards of waste were removed from Site 6a and temporarily stockpiled. Waste at Site 6a was removed from the vadose zone and beneath groundwater including soil contaminated with petroleum hydrocarbons. Waste was also removed from the pond, including debris and tar. Two engineered waste cells, over 12 acres in size, were constructed in the Site 6a area. No confirmation samples were taken of soils and bedrock under Site 6a because the bottom of the excavation was below the water table and sample results would not be meaningful. This site was treated as a closure in place rather than a clean closure. Stockpiled waste from Site 6a was landfilled back into the engineered waste cells over Site 6a. Excavated materials from Site 6a to be disposed of in the engineered waste cells at Site 6 were tested for organic and inorganic constituents during the remedial investigation and monitored during the removal action according to approved work plans. Site 12, the 20-acre Base Civil Engineering Yard, is located north of MacDill Street, between Lackland Avenue and Travis Avenue. The area is developed with numerous structures and is partially paved with asphalt. From the l950's to 1996, Site 12 was the civil engineering yard for general maintenance operations for March AFB. It included a carpentry shop, electrical shop, paint shop, pesticide shop, and storage areas for heavy equipment. These shops used and stored a variety of hazardous materials including paints and paint-related products, pesticides, solvents, acids, and drums labeled hazardous waste. During the OU2 RI, PAHs and hexavalent chromium were found in soil samples. The contaminant 1,1-dichloroethene (1, 1-DCE) was found in soil vapor samples in a small area in deeper soils near Building 2507. Groundwater beneath Site 12 has become impacted by trichloroethene (TCE) and tetrachloroethene (PCE). The groundwater contamination is in a small area and is only slightly above maximum contaminant levels (MCLs). Periodic monitoring of the groundwater to observe changes in contaminant concentrations is being conducted. After discussions with the regulatory agencies and the public, a limited interim removal action was taken in 1996 to ensure that the site could be used for industrial purposes by removing soils contaminated with PAHs and hexavalent chromium at the northwest portion of Site 12. Approximately 2,000 cubic yards of non-hazardous contaminated soil was excavated from a small area in the northwest portion of the site and placed in the engineered waste cells at Site 6. Excavated materials from Site 12 to be transported to and disposed of in the engineered waste cells at Site 6 were tested for organic and inorganic constituents during the remedial investigation and prior to excavation activities for the removal

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action according to approved work plans. Site 17 is a former Base swimming pool located on the Main Base on U Street between DeKay and K Streets. The area is vacant land, adjoining Base housing to the east and south. The former swimming pool at Site 17 was closed in the 1 970s. After it was closed, the pool was used as a disposal site and the wastes were covered with soil. After discussions with the regulatory agencies and the public, a decision was made to clean the site by removing the waste. The pool and its contents were removed during a 1994 interim removal action. The wastes were taken off the Base for disposal. After the interim removal action, low levels of PCBs were still detected in soils at least 8 feet beneath the ground surface. The pool excavation was filled with clean soil, leaving the PCBs in place. No PCB contamination has been found in the groundwater and the PCBs are not expected to migrate to groundwater. Confirmation sampling conducted after the interim removal action demonstrated that PCBs remain at the site at levels of concern to human health Site 19 is about 7 acres in size, located at the southern end of West March, east of the active wastewater treatment plant. The site is generally vacant land with four concrete lined drying beds in the western portion of the site. Site 19 contains the four active lined sludge-drying beds and three inactive, unlined sludge-drying beds associated with the wastewater treatment plant. The plant was constructed in 1941 and used to process the wastewater from Camp Haan and March AFB. A total of 10 sludge-drying beds have historically been used at the site. Three of these beds have been backfilled. In 1990 when the plant was upgraded, four lined drying beds were constructed at the location of previously unlined beds. In the past, wastewater treatment sludge was spread out in the unlined drying beds to dry. When dry, the sludge was removed from the drying beds. Recently, the dried sludge has been removed from the Base for disposal. Past disposal practices are unknown. PAHs, PCBs, hexavalent chromium, and thallium were found in soil samples in the area of the unlined sludge beds at levels above residential PRGs. Site 20 is located adjacent to the southwest portion of March AFB, on the property acquired by the Department of Veterans Affairs from the Air Force in the 1970s. Site 20 is a former landfill about 7 acres in size used between 1958 and 1965 as a disposal site for household waste and construction debris. Some of the chemicals found in the soils at Site 20 included PAHs, dieldrin, PCBs, and 1 ,4-dichlorobenzene. The Air Force was concerned the waste in the landfill could contaminate soil and groundwater. After discussions with the regulatory agencies and the public, a decision was made to clean up the site by removing the landfilled waste. The interim removal action at Site 20 was conducted in conjunction with the removal of dried sludge at Site 26a and 26b Dried sludge of Site 26b covered a portion of Site 20. Approximately 116,000 cubic yards of non-hazardous soil, debris, and dried sludge were removed from Sites 20 and 26 in 1996 and placed in the engineered waste cells at Site. Excavated materials from Site 20 to be transported to and disposed of in he engineered waste cells at Site 6 were tested for organic and inorganic constituents during the remedial investigation and monitored during the removal action according to approved work plans According to the As-Built Construction Report OU2, Site 6a, all materials from Site 20 placed in the Site 6 engineered waste cells met the requirements of CCR Title 23, Section 2523 (currently CCR Title 27, Section 20220) for a non-hazardous solid waste landfill. After the waste was removed from Site 20, confirmation samples from beneath the former landfill were tested. The results confirmed that the site had been cleaned to levels protective of human health and the environment. No restriction on future use of the land is required. Site 22 is a suspected former landfill east of and adjacent to Interstate 215. The original 7-acre area of Site 22 was expanded to 15 acres by extending the northern site boundary to ensure all potential areas of concern were investigated. The location of the landfill was based on limited evidence. Investigations could not locate any landfllled materials or debris.

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Geophysical surveys were used to fmd buried metal or disturbed soils. Soil gas sampling was also conducted at this site. Finally, soil and groundwater were sampled. No contaminants were found in any of the samples and the geophysical surveys found no buried waste. This evidence showed that a landfill did not exist in this area. This site was investigated during the OU2 remedial investigation and levels of contamination requiring remedial action were not identified. There was no risk assessment completed on Site 22 because no contaminants were found and the site poses no risk to human health or the environment. No restriction on future use of the land is required. Site 23 is located off-Base to the east, near the intersection of Nandina Avenue andHeacock Street in the City of Moreno Valley. Between 1938 and 1977, Site 23 was a 1-acre holding pond for wastewater that had been treated and used for irrigation of agricultural crops. In 1991, the pond was filled in, and it and the surrounding areas were leveled. The land is now used as a commercial sod farm and irrigated with reclaimed water from the Moreno Valley wastewater treatment plant. This site was investigated during the OU1 remedial investigation and no contamination requiring remedial action was identified. There was no risk assessment completed on Site 23 because no contaminants were found and the site poses no risk to human health or the environment. No restriction on future use of the land is required. Site 24 is a former 3-acre landfill, west of Site 19. Site 24 was reportedly used between 1941 and 1965 to dispose of household waste and military waste. A small amount of soil from bullet backstop berms may have been placed in the landfill as well as some ash from an incinerator. Some of the contaminants found in the waste included PAHs, PCBs, antimony, barium, and cadmium. The Air Force was concerned that the waste in the landfill could contaminate groundwater. After discussions with the regulatory agencies and the public, a decision was made to clean up the site by removing the landfilled waste. In December 1996, approximately 19,300 cubic yards of non-hazardous, landfilled waste was removed and placed in the engineered waste cells at Site 6. Excavated materials from Site 24 to be transported to and disposed of in the engineered waste cells at Site 6 were tested for organic and inorganic constituents during the remedial investigation and monitored during the removal action according to approved work plans. Site 25 covers approximately 33 acres and is located south of Cactus Avenue. Site 25 was used in the past for open air detonation and burning of munitions. Three areas with shallow trenches were used to bury munitions residue after destruction. Some of the contaminants found in the soils at this site included nickel, l,3,5-trinitrobenzene, nitroglycerin, benzo(a)pyrene, and RDX, all of which are munition residues. Additionally, 1,1 -dichloroethene was also found. The Air Force was concerned that the contaminants in soil would cause groundwater contamination. After discussions with the regulatory agencies and the public, a decision was made to clean up the site by removing the debris and contaminated soils. Approximately 3,000 cubic yards of non-hazardous waste from the trenches and contaminated soils were removed and disposed of in the engineered waste cells at Site 6. Excavated materials from Site 25 to be transported to and disposed of in the engineered waste cells at Site 6 were tested for organic and inorganic constituents at a rate of about 1 sample for every 200 cubic yards of excavated materials during the removal action. Testing was also performed as part of the remedial investigation. Site 26 covers approximately 3 acres and is located in the southwest portion of March AFB. Site 26 is subdivided into two areas, Site 26a and 26b. Site 26b is located over a portion of the Site 20 landfill. Site 26a is located on property controlled by the AFRPA and Site 26b is on the property of the Department of Veterans Affairs. Site 26 was used for disposal of lime sludge that was a waste from the treatment of drinking water for March AFB. From 1941 to 1984, the water treatment plant treated Colorado River water used to supplement the drinking water supply for the Base. Arsenic from the treated Colorado River

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water was found in the lime sludge at low levels. After discussions with the regulatory agencies and the public, a decision was made to clean up the site by removing the sludge. As mentioned in the description of the landfill at Site 20, approximately 116,000 cubic yards of non-hazardous soil and dried sludge were removed from Sites 20 and 26 in 1996 and disposed of in the engineered waste cells at Site 6. Excavated materials from Site 26 to be transported to and disposed of in the engineered waste cells at Site 6 were tested for organic and inorganic constituents during the remedial investigation and monitored during the removal action according to approved work plans. Site 30 covered approximately 40 acres, south of Alessandro Boulevard and west of Interstate 215. Site 30 is located in the 1,300 acre SKR reserve. There is no evidence that Site 30 ever operated as a March AFB-controlled landfill, but illegal dumping of domestic waste from the surrounding community has occurred and some minor amounts of construction debris were found. Soil and groundwater samples taken at the site did not detect contaminants at levels not protective of human health. After discussions with the regulators and the public, a decision was made to clean up the site by removing the domestic and construction debris. Domestic and construction debris was, removed from the site in April 1997 and disposed of off the Base. The Air Force has installed gates on access roads to prevent vehicular traffic to the site. Warning signs were placed in several areas, and gates remain padlocked to help prevent access by unauthorized persons. Site 35 consisted of three subareas (Sites 35a, 35b, and 35c) located in the former 15th Air Force Headquarter complex on West March. The subareas were locations of former underground storage tanks (USTs) associated with. Buildings 3409 (Site 35a), 3417/34 18 (Site 35b), and 3406 (Site 35c). Site 35a, a former 8,000-gallon fuel oil tank, was located west of Allen Avenue and south of 11th street, east of Building 3409. Site 35b, two former diesel tanks of 6,650-gallon and 3,500-gallon, was located between Building 3417 and 3418, west of Allen Avenue and Bundy Avenue. Site 35c, a former 1,000-gallon diesel tank, was located north of 5th Street and west of Dalla Avenue, east of Building 3406. All tanks have been removed and the locations closed without restrictions in accordance with state and county regulations. Fuel leaks have been associated with the tanks at Site 35. Sites 35a and 35b were investigated during the OU2 remedial investigation and other studies and levels of contamination requiring remedial action were not identified. After discussions with the regulatory agencies, the Air Force decided to clean up the soil by bioventing at Site 35c where fuel had leaked. Bioventing has reduced diesel fuel contamination to levels protective of human health and the environment at Site 35c. No restriction on future use of the land is required.
Site 40 covers approximately 49 acres on West March, north of Van Buren Boulevard and west of Plummer Road. The most prominent feature at the site is the abandoned quarry, containing a pond with riparian vegetation. The pond is replenished by groundwater and by surface flow from an intermittent stream channel entering the pond from the west. Site 40 is located in the 1,300 acre SKR reserve. Site 40 was used as a disposal location for drums, construction debris, battery casings, and motor vehicle parts. After discussions with the regulatory agencies, a decision was made to complete an expedited cleanup of the area exposed by the erosion and other debris at the site. The time-critical removal action completed in 1994 included removal of the drums, miscellaneous waste, and contaminated soil. Hazardous waste from the site was taken off the Base for proper disposal. Approximately 6,800 cubic, yards of non-hazardous materials were disposed of at the Site 6 engineered waste cells. Excavated materials from Site 40 to be transported to and disposed of in the engineered waste cells at Site 6 were tested for organic and inorganic constituents at a rate of about one sample for every 100 cubic yards of excavated materials during the removal action. Testing was also performed as part of the remedial investigation. Building 3404 is located on less than one acre near the

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intersections of 1 1th Street and Davis Avenue on West March. Transformers located in Building 3404 reportedly leaked oils containing PCBs onto the floor of the transformer room. These oils were also spilled onto the soil surrounding the building. After discussions with the regulatory agencies and the public, a decision was made to clean up the area outside of Building 3404 by removing the contaminated soil. In the interim removal action, the contaminated soils were excavated and taken offsite for proper disposal. A total of 330 tons of contaminated soils were removed from the site. The PCB concentrations were low enough to allow disposal of 292 tons of contaminated soils as non-hazardous waste. An additional 38 tons was disposed of off the Base as hazardous waste. Clean fill was placed in the excavation to grade and a gravel cover was placed on top of the previously excavated area. Confirmation sampling conducted after the interim removal action confirmed that the site had been cleaned to levels protective of human health and the environment. No restriction on future use of the land is required. Transformer oils may be present in the concrete floor of Building 3404. The Air Force attempted to remove the PCBs from the concrete. Minimal levels of PCBs were left and have been encapsulated. The concrete is not addressed in this AFRPA OU2 ROD because building interiors are not regulated under CERCLA. The current landowner, the County of Riverside, has entered into a land use covenant with the State that restricts use of the building to industrial activities and contains other measures to prevent exposure to residual contamination. The current land use and adjacent land use for most of the OU2 AFRPA sites is vacant land/open space with limited commercial and residential land use adjacent to some of the sites as discussed below. Site 3 and the adjacent areas are undeveloped land. Site 6 contains an engineered waste cell. There is a residential area to the south and a golf course is to the east of Site 6. Site 12 was the former civil engineering yard with numerous structures. Site 12 is not currently utilized. Residential land use occurs to the east of Site 17. Air Force commercial facilities such as offices are located to the north and west of the Site 17. Site 19 is currently a part of the operating wastewater treatment plant. Structures relating to plant operations are located on-site and to the west and north. Site 20 and 26 and the adjacent areas are undeveloped land. A former water treatment plant is south of Site 26 and west of Site 20. This facility is no longer used. Site 23 is an active agricultural area, surrounded by currently vacant land to the north, south and east. Air Force land consisting of open space is west of Site 23. Site 25 and the adjacent areas is undeveloped land, with nearby residential development to the south. The three Site 35 subareas and Site 42 are former UST locations within landscaped areas adjacent to structures. The areas near Site 35a, 35b and Site 42 are still actively used as office and dormitory areas, but the Site 35c area is no longer used. Sites 30 and 40 are open space with some riparian vegetation. A residential area is located to the north and west of Site 40. The OU2 sites other than site 23 discussed in this AFRPA OU2 ROD are located on that portion of March AFB that may be converted to non-Air Force use. Site 23 is on private land. The anticipated land use for most of the OU2 AFRPA sites is commercial or industrial use. Alternative land uses have also been assessed and areas of West March could remain open space such as the SKR Conservation Area. March AFB is located in the North Perris Groundwater Basin. Currently, there are no potable groundwater resources extracted at the OU2 AFRPA sites. The relatively thin water-bearing zone on West March is not anticipated to yield substantial quantities of water. Therefore, the potential for extraction and use of groundwater from the West March AFRPA sites is limited, both now and in the foreseeable future. Water-bearing zones producing sufficient groundwater for use may be present at AFRPA sites on the Main Base and Site 23, and should be considered a potential potable water source. Surface water is not currently used at the OU2 AFRPA sites. Surface water areas such as at Site 6, 30 and 40 may remain as wetlands depending on future site

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development. A Record of Decision (ROD) for OU2 was completed May 11, 2004. A ROD addressing OU2 was completed in September 2005. Operable Unit (OU) 4: A total of three IRP sites (IRP Sites 21, 41, and 44), three AOCs (Water Tower 3410, Water Tank 6601, and the former Base Hospital and Dental Clinic), and one RFA site (Site L) are addressed in this OU4. Site 21 is off base approximately 1.5 miles south of the southern extension of the active March ARB runway. Although never physically part of March AFB, the site is considered to be part of the former base for purposes of the IRP because treated wastewater produced on base was held in this off-base pond. John Cordures, property owner until his death, used the water for irrigation of surrounding agricultural land from 1941 to 1946 and again from 1955 to 1984. The estate was sold to Ross Department Stores in 2001. The site is near the intersection of Morgan Street and Webster Avenue, in the City of Perris. Site 21 encompasses 1.5 acres and is part of a landscaped berm and below-grade parking area for warehouse trucks associated with a Ross warehouse distribution facility. The general surface-water drainage in the area is to the east following the gently sloping terrain (surface gradient at the site is approximately 20 to 40 feet per mile). Bedrock was not encountered during the investigation phases at Site 21. Groundwater at Site 21 is at a depth of more than 150 feet below ground surface (bgs) and the general groundwater flow direction is to the south and southeast. Site 21 was used from 1941 to 1946, and again from 1955 to 1984, to hold treated wastewater from the base. Sanitary and industrial wastewater received primary and secondary treatment on the base prior to discharge into this holding pond. The treated effluent was held in the pond and used for irrigation of the surrounding agricultural land. The boundaries of the effluent pond were physically well defined by the pond's berm during the 1993 OU1 Remedial Investigation/Feasibility Study (RI/FS). At that time the site covered an area of approximately 2.2 acres and was being used by private parties as an illegal dump. In approximately 1998, the berm was removed, and the site was incorporated into the surrounding sod farm. In 2001, the land was sold and the former pond area now consists of a landscaped berm on the west side of the site and a truck parking area that lies approximately 8 feet below grade on the east side. Based on historic use, the primary contaminants of concern at Site 21 include metals, volatile organic compounds (VOCs), and pesticides. Site 21 is part of a Ross warehouse distribution facility in the city of Perris. Adjacent and surrounding land uses consist of commercial/industrial development, and some land is in agricultural production. Although much of the surrounding property is currently agriculture, other properties are zoned for light industrial/commercial. As development occurs, agriculture zoning will likely change to general industrial. Site 41 is approximately 1 mile south of State Highway 58 and 11 miles east of Kramer Junction (the intersection of U.S. Highway 395 and State Highway 58) in San Bernardino County, California. Structures currently remaining at the site include a concrete bunker no longer in use. The general surface water drainage is to the northeast following the very gently sloping terrain (surface gradient at the site is approximately 20 to 40 feet per mile). Depth to beneficial groundwater is approximately 300 feet bgs. However, perched zone water is found between 100 and 150 feet bgs at nearby sites. A regional hardpan soil, approximately 3 to 4 feet thick at a depth of approximately 34 feet bgs, is reported in the area. The Air Force obtained right of entry for an approximate 315-acre parcel from the Bureau of Land Management (BLM) in the late 1950s for construction and operation of a radio relay station for use by George AFB. The parcel was transferred to Edwards AFB in 1963 and to March AFB in February 1968. The Radio Relay Annex was declared excess and was scheduled for deactivation in October 1968. The station facilities included a septic system, storage tanks for water and petroleum products, 4 miles of runway, a radio tower, a water well, an aboveground bunker, and several support

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buildings. The Air Force closed the station in the mid-1980s. Investigations and cleanup actions were conducted between February 1995 and May 1996 and included identification and removal of asbestos-containing material and lead-based paint, destruction of the water-supply well, removal of underground storage tanks (USTs) (oil, water, and septic) and contaminated soil, and confirmation sampling. Small amounts of diesel fuel leaked from the USTs. Based on historic use, the primary contaminant of concern at the site is total petroleum hydrocarbons (TPH) diesel fuel. Site 41 is in a remote area of the Mojave Desert. The Hawes site extends across 315 acres of desert land. The site is in the process of being transferred from the DOD back to the BLM, and the site will likely remain vacant due to its remote location and reversion to BLM control. Site 44 is in the central portion of the March ARB, east of the intersection of Graeber Street and Meyer Drive. Site 44 includes a 110-foot-tall, 200,000-gallon water tower, two large water storage tanks, and several buildings used by March ARB water system maintenance personnel. The area is characterized by relatively flat topography. A concrete-lined drainage ditch, just north of the site, flows eastward to the Heacock Storm Drain that drains south along the eastern perimeter of the former base. Groundwater at Site 44 is estimated to be approximately 30 feet bgs. Groundwater flow direction in this area is generally to the south and southeast. The water tower at Site 44 utilized a valve controller with a 6-inch mercury pot for water flow control. Past spills from the mercury pot caused mercury contamination of soils beneath and surrounding the valve controller. The flow controller at the water tower was in a subsurface valve box, 12 feet below grade. During a construction project to place a concrete floor in the below-grade box, approximately 80 cubic feet of soil were removed and stockpiled south and east of the valve box. In November 1995, the Air Force contracted to characterize the valve box and surrounding area for elemental mercury contamination. Based on the results of initial investigations at Site 44, the Air Force initiated a removal action. Soil was excavated in several discrete areas around the water tower. The primary soil removal areas were the valve box and surface soils in areas adjacent to the borings that identified "hot spots" of contamination. The excavated soil was segregated and packaged for off-site disposal. Once excavation of the valve pit was completed, the site was restored by filling the excavated area with sand to approximately 3 feet below the valve. A 6-inch-thick concrete floor was installed in the bottom of the valve pit. Land uses on adjacent and surrounding properties are exclusively industrial and commercial. As Site 44 will remain Air Force property, Site 44 is expected to stay industrial/commercial in the foreseeable future. Water Tower 3410 is an aboveground water storage tank on Former March AFB at the intersection of Plummer Road and 11th Street. Water Tower 3410 is in an area characterized by relatively flat topography, with a gentle slope to the east/northeast. No surface water bodies or major surface water drainages are associated with the site. Groundwater levels underlying Water Tower 3410 are between approximately 33 and 48 feet bgs. The groundwater flow direction is to the east. Although Water Tower 3410 was not specifically included in the Basewide RI/FS Work Plan, due to the presence of mercury pot water flow controllers at other March water storage facilities and the similarity of Water Tower 3410 with Water Tower 407 (Site 44), it was suspected that Water Tower 3410 might also have mercury-contaminated soils. March ARB Department of Public Works was contacted to determine if a mercury vault ever existed at the site. Interviews with Department personnel indicated that the building never contained a mercury vault. The only mercury controls at Water Tower 3410 are those that control associated pumps. Four aboveground controls are attached to the water tower rather than in a vault and contain only small amounts of elemental mercury. Water Tower 3410 is in an area characterized by industrial/commercial land use intermixed with vacant parcels. Adjacent and

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surrounding land use is also a mix of industrial/commercial use and vacant parcels. March Joint Powers Authority (MJPA) plans for the area, including Water Tower 3410, are for an industrial/business park. Water Tank 6601 is an aboveground storage tank north of Van Buren Boulevard and west of Plummer Road, west of 1-215. Water Tank 6601 is at an elevation of approximately 1,660 feet above mean sea level. The site is characterized by highly dissected upland topography and consists of highly eroded gullies and exposures of weathered bedrock. The primary flow of surface water in the vicinity of Water Tank 6601 is to the east. One primary intermittent stream channel drains to the east near the facility. The site is underlain by shallow surface soils, with a maximum thickness of soil only tens of feet thick. Based on information presented by Tetra Tech in the OU2 RI/FS, just south of the water tank, groundwater is encountered in weathered bedrock at depths ranging from 10 to 40 feet bgs. Groundwater flow is generally to the east. Water Tank 6601 is an active, 200,000-gallon water tank constructed in approximately 1942, with valves, piping, and electronic controls inside a fenced area with a concrete floor and a metal roof. The enclosure was constructed in the mid 1980s, in response to repeated vandalism at the site. Each incidence of vandalism resulted in releases of elemental mercury at the site due to breakage of a reservoir or "mercury pot." Some of the elemental mercury was recovered after each incident; however, no formal cleanup actions were performed. A cage was constructed to protect the controls from additional vandalism. The mercury control was removed and replaced with controls without mercury prior to the OU4 RI/FS investigation. Water Tank 6601 is in an undeveloped area, which is fenced. Adjacent and surrounding land use is mixed industrial/ vacant. Water Tank 6601 is expected to remain industrial. MJPA plans for the adjacent and surrounding land are for industrial/commercial development. The former base Hospital and Dental Clinics are in the northeast corner of the former base, near the intersection of Cactus Avenue and Heacock Street. The main Hospital building is five stories and the Dental Clinic is a one-story structure. The surface topography in and around the site is relatively flat with a gentle slope (surface gradient at the site is approximately 20 to 30 feet per mile). Major drainage features lie north and east of the site and consist of intermittent drainage channels (Cactus Channel Storm Drain and Heacock Storm Drain). There are no major drainages across the site, and there are no perennial water bodies near the site. While groundwater was not part of the investigation, groundwater is reported to be 25 to 30 feet bgs in the area of the former hospital and dental clinic. Groundwater flow direction is to the south and east. Construction of the Hospital was completed in 1966 and modified in subsequent years. The latest addition was completed in 1974. The original construction of the Dental Clinic was completed in 1985. A sewer main extends from the Hospital/Dental Clinic complex, south along the eastern base boundary to the last manhole before the connection of the hospital lines with the "old trunk line" from western portions of the March ARB. The sewer line, which services both the Hospital and Dental Clinic, was first brought on line with completion of the original hospital building. Two primary lines collect effluent from the complex. The two lines ultimately empty into the old sewer main that flows directly south to the current lifting station, from which sewage is transferred around the south end of the active runway to the current wastewater treatment plant. The former base Hospital and Dental Clinic are in an area characterized by institutional (i.e., medical) land use. Adjacent and surrounding land use is a mix of residential, commercial, a small amount of vacant property and land in agricultural use, and a small corridor of public facilities to the east of the Hospital for an electrical transmission line easement. MJPA plans for the Hospital/Dental Clinic site are for similar reuse. Site L, formerly a swimming pool at the Non-Commissioned Officer (NCO) Club, is east of Riverside Drive and north of Meyer Drive. The site is

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MARCH AIR FORCE BASE (Continued) **1000169261**

outside the boundary of March ARB that was established as a result of the realignment of March AFB in May 1996. It is part of the land identified as available for transfer by the AFRPA. Site L is in an area characterized by relatively flat topography. No major drainages are associated with the site. Groundwater levels at the site are approximately 26 feet bgs. The groundwater flow direction is to the southeast. The swimming pool at Site L was reportedly constructed in 1953 along with the NCO Club. After decommissioning at an unspecified time, it was used as a repository for a variety of wastes, some potentially hazardous. The pool and wastes were covered with soil, and the area was allowed to become overgrown with grass and weeds. The facility was abandoned and a chain-link fence restricted access to the former pool. In 1993, the pool was identified as an AOC during a comprehensive RFA/Expanded Source Investigation (ESI), which concluded that the pool was filled with a variety of wastes, including waste soils, solvents, and PCBs. In 1994, as part of the RFA investigation, a soil gas survey was conducted to screen for the presence of VOCs. No VOCs were detected above the laboratory reporting limits. Site L is currently open space (parking lot) with no structures, and is bordered on the north by vacant land and on the south by a parking area adjacent to Meyer Drive. The NCO Club is to the east of Site L, and the U.S. Army Reserve Center, with associated landscaping and parking is to the west. Surrounding land uses include institutional/medical, commercial, public facilities/recreation, and vacant land. The MJPA plans for Site L and the surrounding land are commercial in nature. A portion of the parcel in which Site L is located is currently leased to a catering business. A Record of Decision addressing OU4 was completed in September of 2005.

CERCLIS Assessment History:

Action Code:	001
Action:	DISCOVERY
Date Started:	/ /
Date Completed:	02/01/85
Priority Level:	Not reported
Operable Unit:	SITEWIDE
Primary Responsibility:	Federal Facilities
Planning Status:	Not reported
Urgency Indicator:	Not reported
Action Anomaly:	Not reported

Action Code:	001
Action:	PRELIMINARY ASSESSMENT
Date Started:	/ /
Date Completed:	02/01/87
Priority Level:	Low priority for further assessment
Operable Unit:	SITEWIDE
Primary Responsibility:	Federal Facilities
Planning Status:	Not reported
Urgency Indicator:	Not reported
Action Anomaly:	Not reported

Action Code:	001
Action:	SITE INSPECTION
Date Started:	/ /
Date Completed:	06/01/87
Priority Level:	Low priority for further assessment
Operable Unit:	SITEWIDE

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MARCH AIR FORCE BASE (Continued) **1000169261**

Primary Responsibility: Federal Facilities
Planning Status: Not reported
Urgency Indicator: Not reported
Action Anomaly: Not reported

Action Code: 001
Action: HAZARD RANKING SYSTEM PACKAGE
Date Started: / /
Date Completed: 06/01/87
Priority Level: Not reported
Operable Unit: SITEWIDE
Primary Responsibility: EPA Fund-Financed
Planning Status: Not reported
Urgency Indicator: Not reported
Action Anomaly: Not reported

Action Code: 001
Action: PROPOSAL TO NATIONAL PRIORITIES LIST
Date Started: / /
Date Completed: 07/14/89
Priority Level: Not reported
Operable Unit: SITEWIDE
Primary Responsibility: EPA Fund-Financed
Planning Status: Not reported
Urgency Indicator: Not reported
Action Anomaly: Not reported

Action Code: 001
Action: FINAL LISTING ON NATIONAL PRIORITIES LIST
Date Started: / /
Date Completed: 11/21/89
Priority Level: Not reported
Operable Unit: SITEWIDE
Primary Responsibility: EPA Fund-Financed
Planning Status: Not reported
Urgency Indicator: Not reported
Action Anomaly: Not reported

Action Code: 001
Action: Notice Letters Issued
Date Started: / /
Date Completed: 02/07/90
Priority Level: Not reported
Operable Unit: SITEWIDE
Primary Responsibility: EPA Fund-Financed
Planning Status: Not reported
Urgency Indicator: Not reported
Action Anomaly: Not reported

Action Code: 001
Action: INTERAGENCY AGREEMENT NEGOTIATIONS
Date Started: 02/07/90

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MARCH AIR FORCE BASE (Continued) **1000169261**

Date Completed: 09/27/90
Priority Level: Not reported
Operable Unit: SITEWIDE
Primary Responsibility: Federal Enforcement
Planning Status: Alternate
Urgency Indicator: Not reported
Action Anomaly: Not reported

Action Code: 001
Action: FEDERAL INTERAGENCY AGREEMENT
Date Started: 09/27/90
Date Completed: 09/27/90
Priority Level: Not reported
Operable Unit: SITEWIDE
Primary Responsibility: Federal Enforcement
Planning Status: Primary
Urgency Indicator: Not reported
Action Anomaly: Not reported

Action Code: 004
Action: FEDERAL FACILITY REMEDIAL INVESTIGATION/FEASIBILITY STUDY
Date Started: 01/24/92
Date Completed: 04/30/95
Priority Level: Not reported
Operable Unit: WEST MARCH - SOILS/GW
Primary Responsibility: Federal Facilities
Planning Status: Primary
Urgency Indicator: Not reported
Action Anomaly: Not reported

Action Code: 001
Action: FEDERAL FACILITY REMEDIAL DESIGN
Date Started: 04/07/96
Date Completed: 04/18/96
Priority Level: Not reported
Operable Unit: EAST MARCH - SOILS/GW
Primary Responsibility: Federal Facilities
Planning Status: Primary
Urgency Indicator: Not reported
Action Anomaly: Not reported

Action Code: 001
Action: FEDERAL FACILITY REMEDIAL INVESTIGATION/FEASIBILITY STUDY
Date Started: 09/27/90
Date Completed: 06/20/96
Priority Level: Not reported
Operable Unit: EAST MARCH - SOILS/GW
Primary Responsibility: Federal Facilities
Planning Status: Primary
Urgency Indicator: Not reported
Action Anomaly: Not reported

Action Code: 001
Action: RECORD OF DECISION

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MARCH AIR FORCE BASE (Continued) **1000169261**

Date Started: / /
Date Completed: 06/20/96
Priority Level: Not reported
Operable Unit: EAST MARCH - SOILS/GW
Primary Responsibility: Federal Facilities
Planning Status: Primary
Urgency Indicator: Not reported
Action Anomaly: Not reported

Action Code: 001
Action: Explanation Of Significant Differences
Date Started: / /
Date Completed: 08/24/00
Priority Level: Not reported
Operable Unit: EAST MARCH - SOILS/GW
Primary Responsibility: Federal Facilities
Planning Status: Not reported
Urgency Indicator: Not reported
Action Anomaly: Not reported

Action Code: 001
Action: FEDERAL FACILITY FIVE YEAR REVIEW
Date Started: 09/30/03
Date Completed: 11/19/03
Priority Level: Not reported
Operable Unit: EAST MARCH - SOILS/GW
Primary Responsibility: Federal Facilities
Planning Status: Not reported
Urgency Indicator: Not reported
Action Anomaly: Not reported

Action Code: 004
Action: RECORD OF DECISION
Date Started: / /
Date Completed: 05/11/04
Priority Level: Not reported
Operable Unit: WEST MARCH - SOILS/GW
Primary Responsibility: Federal Facilities
Planning Status: Primary
Urgency Indicator: Not reported
Action Anomaly: Not reported

Action Code: 002
Action: FEDERAL FACILITY REMEDIAL INVESTIGATION/FEASIBILITY STUDY
Date Started: 09/27/90
Date Completed: 09/29/05
Priority Level: Not reported
Operable Unit: BASEWIDE
Primary Responsibility: Federal Facilities
Planning Status: Primary
Urgency Indicator: Not reported
Action Anomaly: Not reported

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Map ID
Direction
Distance
Elevation | Site | MAP FINDINGS | Database(s) | EDR ID Number EPA ID Number

MARCH AIR FORCE BASE (Continued) **1000169261**

Action Code: 003
Action: RECORD OF DECISION
Date Started: / /
Date Completed: 09/29/05
Priority Level: Not reported
Operable Unit: BASEWIDE
Primary Responsibility: Federal Facilities
Planning Status: Primary
Urgency Indicator: Not reported
Action Anomaly: Not reported

Action Code: 005
Action: RECORD OF DECISION
Date Started: / /
Date Completed: 09/30/05
Priority Level: Not reported
Operable Unit: WEST MARCH - SOILS/GW
Primary Responsibility: Federal Facilities
Planning Status: Not reported
Urgency Indicator: Not reported
Action Anomaly: Not reported

Action Code: 003
Action: FEDERAL FACILITY FIVE YEAR REVIEW
Date Started: / /
Date Completed: 09/30/09
Priority Level: Not reported
Operable Unit: SITEWIDE
Primary Responsibility: Federal Facilities
Planning Status: Not reported
Urgency Indicator: Not reported
Action Anomaly: Not reported

Action Code: 001
Action: Restoration Advisory Board
Date Started: 01/01/93
Date Completed: / /
Priority Level: Not reported
Operable Unit: SITEWIDE
Primary Responsibility: Federal Facilities
Planning Status: Not reported
Urgency Indicator: Not reported
Action Anomaly: Not reported

Action Code: 001
Action: FEDERAL FACILITY REMEDIAL ACTION
Date Started: 03/05/96
Date Completed: / /
Priority Level: Not reported
Operable Unit: EAST MARCH - SOILS/GW
Primary Responsibility: Federal Facilities
Planning Status: Primary
Urgency Indicator: Not reported

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MARCH AIR FORCE BASE (Continued) **1000169261**

Action Anomaly: Not reported

Action Code: 005
Action: FEDERAL FACILITY REMEDIAL INVESTIGATION/FEASIBILITY STUDY
Date Started: 10/30/05
Date Completed: / /
Priority Level: Not reported
Operable Unit: SITE 8 & 36
Primary Responsibility: Federal Facilities
Planning Status: Not reported
Urgency Indicator: Not reported
Action Anomaly: Not reported

Federal Register Details:
Fed Register Date: 11/21/89
Fed Register Volume: 54
Page Number: 48184

Fed Register Date: 07/14/89
Fed Register Volume: 54
Page Number: 29820

RCRA-LQG:
Date form received by agency: 02/29/2016
Facility name: MARCH AIR RESERVE BASE
Facility address: 610 MEYER DR
BLDG 2403
MARCH ARB, CA 92518
EPA ID: CA4570024527
Mailing address: MEYER DR
BLDG 2403
MARCH ARB, CA 92518
Contact: CRAIG HUNTER
Contact address: MEYER DR BLDG 2403
MARCH ARB, CA 92518
Contact country: US
Contact telephone: 951-655-5082
Contact email: CRAIG.HUNTER.1@US.AF.MIL
EPA Region: 09
Land type: Federal
Classification: Large Quantity Generator
Description: Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MARCH AIR FORCE BASE (Continued) **1000169261**

Owner/Operator Summary:

Owner/operator name:	US AIR FORCE
Owner/operator address:	GRAEBER BLDG 470
	MARCH ARB, CA 92518
Owner/operator country:	US
Owner/operator telephone:	951-655-4665
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Federal
Owner/Operator Type:	Owner
Owner/Op start date:	01/01/1945
Owner/Op end date:	Not reported

Owner/operator name:	GEN. RUSSELL A. MUNCY
Owner/operator address:	Not reported
	Not reported
Owner/operator country:	Not reported
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Federal
Owner/Operator Type:	Operator
Owner/Op start date:	11/01/2013
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Universal Waste Summary:

Waste type:	Batteries
Accumulated waste on-site:	Yes
Generated waste on-site:	No

Waste type:	Lamps
Accumulated waste on-site:	Yes
Generated waste on-site:	No

Waste type:	Thermostats
Accumulated waste on-site:	Yes
Generated waste on-site:	No

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Map ID
Direction
Distance
Elevation | Site | MAP FINDINGS | Database(s) | EDR ID Number EPA ID Number

MARCH AIR FORCE BASE (Continued) **1000169261**

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 151
. Waste name: Asbestos-containing waste

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 223
. Waste name: Unspecified oil-containing waste

. Waste code: 241
. Waste name: Tank bottom waste

. Waste code: 281
. Waste name: Adhesives

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 343
. Waste name: Unspecified organic liquid mixture

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 723
. Waste name: Liquids with chromium (VI) > 500 mg/l

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

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MARCH AIR FORCE BASE (Continued) **1000169261**

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

Historical Generators:
Date form received by agency: 10/22/2014
Site name: MARCH AIR RESERVE BASE
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MARCH AIR FORCE BASE (Continued) **1000169261**

ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Date form received by agency: 03/20/2013
Site name: MARCH AIR RESERVE BASE
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MARCH AIR FORCE BASE (Continued) **1000169261**

ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Date form received by agency: 07/15/2010
Site name: MARCH AIR RESERVE BASE
Classification: Large Quantity Generator

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 223
. Waste name: Unspecified oil-containing waste

. Waste code: 281
. Waste name: Adhesives

. Waste code: 342
. Waste name: Organic liquids with metals (see 121)

. Waste code: 343
. Waste name: Unspecified organic liquid mixture

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 461
. Waste name: Degreasing sludge

. Waste code: 541
. Waste name: Photochemicals / photo processing waste

. Waste code: 792
. Waste name: Liquids with pH < 2 with metals

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D011
. Waste name: SILVER

. Waste code: D018

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MARCH AIR FORCE BASE (Continued) **1000169261**

. Waste name: BENZENE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Date form received by agency: 03/26/2008
Site name: MARCH AIR RESERVE BASE
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MARCH AIR FORCE BASE (Continued) **1000169261**

. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

. Waste code: D021
. Waste name: CHLOROBENZENE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: U188
. Waste name: PHENOL

. Waste code: U227
. Waste name: 1,1,2-TRICHLOROETHANE (OR) ETHANE, 1,1,2-TRICHLORO-

Date form received by agency: 02/08/2006
Site name: MARCH AIR RESERVE BASE
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MARCH AIR FORCE BASE (Continued) **1000169261**

. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

Date form received by agency: 02/25/2004
Site name: MARCH AIR RESERVE BASE
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D018
. Waste name: BENZENE

Date form received by agency: 04/10/2002
Site name: MARCH AIR RESERVE BASE
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MARCH AIR FORCE BASE (Continued) **1000169261**

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: P098
. Waste name: POTASSIUM CYANIDE (OR) POTASSIUM CYANIDE K(CN)

Date form received by agency: 10/12/2000
Site name: MARCH ARB CA
Classification: Large Quantity Generator

Date form received by agency: 07/14/2000
Site name: MARCH AIR RESERVE BASE
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: F001
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS USED IN DEGREASING: TETRACHLOROETHYLENE, TRICHLORETHYLENE, METHYLENE CHLORIDE, 1,1,1-TRICHLOROETHANE, CARBON TETRACHLORIDE AND CHLORINATED FLUOROCARBONS; ALL SPENT SOLVENT MIXTURES/BLENDS USED IN DEGREASING CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MARCH AIR FORCE BASE (Continued) **1000169261**

SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Date form received by agency: 03/04/1999
Site name: MARCH ARB, CA
Classification: Large Quantity Generator

Date form received by agency: 09/01/1996
Site name: MARCH AIR RESERVE BASE
Classification: Large Quantity Generator

Date form received by agency: 03/26/1996
Site name: MARCH AFB, CA
Classification: Large Quantity Generator

Date form received by agency: 03/31/1994
Site name: MARCH AIR FORCE BASE, CA
Classification: Large Quantity Generator

Date form received by agency: 03/30/1992
Site name: MARCH AIR FORCE BASE
Classification: Large Quantity Generator

Biennial Reports:

Last Biennial Reporting Year: 2017

Annual Waste Handled:

Waste code: D001
Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.
Amount (Lbs): 15899.4

Waste code: D002
Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.
Amount (Lbs): 186

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MARCH AIR FORCE BASE (Continued) **1000169261**

Waste code: D003
Waste name: A MATERIAL IS CONSIDERED TO BE A REACTIVE HAZARDOUS WASTE IF IT IS NORMALLY UNSTABLE, REACTS VIOLENTLY WITH WATER, GENERATES TOXIC GASES WHEN EXPOSED TO WATER OR CORROSIVE MATERIALS, OR IF IT IS CAPABLE OF DETONATION OR EXPLOSION WHEN EXPOSED TO HEAT OR A FLAME. ONE EXAMPLE OF SUCH WASTE WOULD BY WASTE GUNPOWDER.
Amount (Lbs): 1

Waste code: D005
Waste name: BARIUM
Amount (Lbs): 8

Waste code: D006
Waste name: CADMIUM
Amount (Lbs): 843

Waste code: D007
Waste name: CHROMIUM
Amount (Lbs): 1026

Waste code: D008
Waste name: LEAD
Amount (Lbs): 843

Waste code: D009
Waste name: MERCURY
Amount (Lbs): 2

Waste code: D011
Waste name: SILVER
Amount (Lbs): 1

Waste code: D018
Waste name: BENZENE
Amount (Lbs): 3436

Waste code: D035
Waste name: METHYL ETHYL KETONE
Amount (Lbs): 11381

Facility Has Received Notices of Violations:
Regulation violated: FR - 262.30-34.C
Area of violation: Generators - General
Date violation determined: 04/27/1995
Date achieved compliance: 04/27/2000
Violation lead agency: EPA
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 04/28/1995
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 262.10-12.A

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MARCH AIR FORCE BASE (Continued) **1000169261**

Area of violation: Generators - General
Date violation determined: 03/05/1984
Date achieved compliance: 04/04/1995
Violation lead agency: EPA
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 05/18/1984
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 11/02/2006
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 05/06/1996
Evaluation: FOLLOW-UP INSPECTION
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 04/04/1995
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 04/27/2000
Evaluation lead agency: EPA

Evaluation date: 03/05/1984
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 04/04/1995
Evaluation lead agency: EPA

US ENG CONTROLS:
EPA ID: CA4570024527
Site ID: 0902761
Name: MARCH AIR FORCE BASE
Address: 22 CSG/CC
RIVERSIDE, CA 92518
EPA Region: 09
County: RIVERSIDE
Event Code: Not reported
Actual Date: 09/30/2005
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: Explanation Of Significant Differences
Action Completion date: 08/24/2000
Operable Unit: 01
Contaminated Media : Soil

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MARCH AIR FORCE BASE (Continued) **1000169261**

Engineering Control: Bioremediation (Ex-Situ)
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 06/20/1996
Operable Unit: 01
Contaminated Media : Groundwater
Engineering Control: Discharge
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 06/20/1996
Operable Unit: 01
Contaminated Media : Groundwater
Engineering Control: Extraction
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 06/20/1996
Operable Unit: 01
Contaminated Media : Groundwater
Engineering Control: Liquid Phase Carbon Adsorption
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 06/20/1996
Operable Unit: 01
Contaminated Media : Groundwater
Engineering Control: Monitoring
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 06/20/1996
Operable Unit: 01
Contaminated Media : Groundwater
Engineering Control: Other, (N.O.S.)
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MARCH AIR FORCE BASE (Continued) **1000169261**

Action Completion date: 06/20/1996
Operable Unit: 01
Contaminated Media : Soil
Engineering Control: Cap
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 06/20/1996
Operable Unit: 01
Contaminated Media : Soil
Engineering Control: Disposal
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 06/20/1996
Operable Unit: 01
Contaminated Media : Soil
Engineering Control: Excavation
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 06/20/1996
Operable Unit: 01
Contaminated Media : Soil
Engineering Control: Impermeable Barrier
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 06/20/1996
Operable Unit: 01
Contaminated Media : Soil
Engineering Control: Low Temperature Thermal Desorption
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 06/20/1996
Operable Unit: 01
Contaminated Media : Soil
Engineering Control: Monitoring
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MARCH AIR FORCE BASE (Continued) **1000169261**

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 06/20/1996
Operable Unit: 01
Contaminated Media : Soil
Engineering Control: Operations & Maintenance (O&M)
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 06/20/1996
Operable Unit: 01
Contaminated Media : Soil
Engineering Control: Recycling
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 06/20/1996
Operable Unit: 01
Contaminated Media : Soil
Engineering Control: Soil Vapor Extraction (in-situ)
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 003
Action Name: RECORD OF DECISION
Action Completion date: 09/29/2005
Operable Unit: 04
Contaminated Media : Groundwater
Engineering Control: No Action
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 003
Action Name: RECORD OF DECISION
Action Completion date: 09/29/2005
Operable Unit: 04
Contaminated Media : Soil
Engineering Control: Monitoring
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 003
Action Name: RECORD OF DECISION
Action Completion date: 09/29/2005
Operable Unit: 04
Contaminated Media : Soil
Engineering Control: No Action
Contact Name: Not reported

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MARCH AIR FORCE BASE (Continued) **1000169261**

Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 005
Action Name: RECORD OF DECISION
Action Completion date: 09/30/2005
Operable Unit: 02
Contaminated Media : Groundwater
Engineering Control: No Action
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 005
Action Name: RECORD OF DECISION
Action Completion date: 09/30/2005
Operable Unit: 02
Contaminated Media : Soil
Engineering Control: No Action
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

US INST CONTROL:
EPA ID: CA4570024527
Site ID: 0902761
Name: MARCH AIR FORCE BASE
Action Name: RECORD OF DECISION
Address: 22 CSG/CC
RIVERSIDE, CA 92518
EPA Region: 09
County: RIVERSIDE
Event Code: Not reported
Inst. Control: Covenant
Actual Date: 09/30/2005
Complet. Date: 09/29/2005
Operable Unit: 04
Contaminated Media : Soil
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: CA4570024527
Site ID: 0902761
Name: MARCH AIR FORCE BASE
Action Name: RECORD OF DECISION
Address: 22 CSG/CC
RIVERSIDE, CA 92518
EPA Region: 09
County: RIVERSIDE
Event Code: Not reported
Inst. Control: Deed Notices
Actual Date: 09/30/2005
Complet. Date: 09/29/2005
Operable Unit: 04
Contaminated Media : Soil

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Map ID
Direction
Distance
Elevation | Site | MAP FINDINGS | Database(s) | EDR ID Number EPA ID Number

MARCH AIR FORCE BASE (Continued) **1000169261**

Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: CA4570024527
Site ID: 0902761
Name: MARCH AIR FORCE BASE
Action Name: RECORD OF DECISION
Address: 22 CSG/CC
RIVERSIDE, CA 92518
EPA Region: 09
County: RIVERSIDE
Event Code: Not reported
Inst. Control: Subdivision regulation
Actual Date: 09/30/2005
Complet. Date: 09/29/2005
Operable Unit: 04
Contaminated Media : Soil
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: CA4570024527
Site ID: 0902761
Name: MARCH AIR FORCE BASE
Action Name: RECORD OF DECISION
Address: 22 CSG/CC
RIVERSIDE, CA 92518
EPA Region: 09
County: RIVERSIDE
Event Code: Not reported
Inst. Control: Zoning regulation
Actual Date: 09/30/2005
Complet. Date: 09/29/2005
Operable Unit: 04
Contaminated Media : Soil
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: CA4570024527
Site ID: 0902761
Name: MARCH AIR FORCE BASE
Action Name: RECORD OF DECISION
Address: 22 CSG/CC
RIVERSIDE, CA 92518
EPA Region: 09
County: RIVERSIDE
Event Code: Not reported
Inst. Control: Covenant
Actual Date: 06/15/2004
Complet. Date: 05/11/2004
Operable Unit: 02
Contaminated Media : Groundwater
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Map ID
Direction
Distance
Elevation | Site | MAP FINDINGS | Database(s) | EDR ID Number EPA ID Number

MARCH AIR FORCE BASE (Continued) **1000169261**

EPA ID: CA4570024527
Site ID: 0902761
Name: MARCH AIR FORCE BASE
Action Name: RECORD OF DECISION
Address: 22 CSG/CC
RIVERSIDE, CA 92518
EPA Region: 09
County: RIVERSIDE
Event Code: Not reported
Inst. Control: Covenant
Actual Date: 06/15/2004
Complet. Date: 05/11/2004
Operable Unit: 02
Contaminated Media : Soil
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: CA4570024527
Site ID: 0902761
Name: MARCH AIR FORCE BASE
Action Name: RECORD OF DECISION
Address: 22 CSG/CC
RIVERSIDE, CA 92518
EPA Region: 09
County: RIVERSIDE
Event Code: Not reported
Inst. Control: Base use plan change
Actual Date: 09/30/2005
Complet. Date: 09/30/2005
Operable Unit: 02
Contaminated Media : Soil
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: CA4570024527
Site ID: 0902761
Name: MARCH AIR FORCE BASE
Action Name: RECORD OF DECISION
Address: 22 CSG/CC
RIVERSIDE, CA 92518
EPA Region: 09
County: RIVERSIDE
Event Code: Not reported
Inst. Control: Building, demolition, or excavation regulation
Actual Date: 09/30/2005
Complet. Date: 09/30/2005
Operable Unit: 02
Contaminated Media : Soil
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

ROD:
Full-text of USEPA Record of Decision(s) is available from EDR.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Map ID
Direction
Distance
Elevation | Site | MAP FINDINGS | Database(s) | EDR ID Number EPA ID Number

MARCH AIR FORCE BASE (Continued) **1000169261**

PRP:
PRP name: STATE OF CALIFORNIA/DEPT. OF HEALTH SERVICES
STATE OF CALIFORNIA/DEPT. OF WATER QUALITY
U.S. AIR FORCE
U.S. AIR FORCE

A1 **MARCH FIELD** **ENVIROSTOR** **S109348567**
NW **14310 FREDERICK STREET** **HWT** **N/A**
< 1/8 **MORENO VALLEY, CA 92533**
0.043 mi.
229 ft. **Site 1 of 2 in cluster A**

Relative:
Higher

Actual:
1564 ft.

ENVIROSTOR:
Facility ID: 80000870
Status: Inactive - Action Required
Status Date: 11/30/2010
Site Code: 401438
Site Type: Military Evaluation
Site Type Detailed: FUDS
Acres: 53.3
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: Daniel Cordero
Supervisor: Manny Alonzo
Division Branch: Cleanup Cypress
Assembly: 61
Senate: 31
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: DERA
Latitude: 33.89166
Longitude: -117.2597
APN: NONE SPECIFIED
Past Use: FIRING RANGE - SMALL ARMS ETC...
Potential COC: Explosives (UXO, MEC Munitions Debris (MD
Confirmed COC: 30011-NO 32000-NO
Potential Description: SOIL
Alias Name: CA99799F999100
Alias Type: Federal Facility ID
Alias Name: J09CA7168
Alias Type: INPR
Alias Name: 401438
Alias Type: Project Code (Site Code)
Alias Name: 80000870
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 09/14/1998
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Tech Memo

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MAP FINDINGS

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number

MARCH FIELD (Continued) **S109348567**

Completed Date: 03/02/2009
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 07/02/2009
Comments: Final site specific work plan received.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Assessment/Site Inspection Report (PA/SI)
Completed Date: 07/22/2009
Comments: Comments included the SI phase of this project is done.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

HWT:
Reg Num: 3450
Expiration Date: 06/30/2018

A2 **RIVERSIDE COUNTY DEPARTMENT OF WASTE RESOURCES (HE** **UST** **U003839113**
NNW **14290 FREDERICK ST** **N/A**
< 1/8 **MORENO VALLEY, CA 92553**
0.048 mi.
252 ft. **Site 2 of 2 in cluster A**

Relative:
Higher

Actual:
1564 ft.

UST:
Facility ID: FA0023076
Permitting Agency: Riverside County Department of Environmental Health
Latitude: 33.93304
Longitude: -117.26141

RIVERSIDE CO. UST:
Region: RIVERSIDE
Total Tanks: 2

---

3 **MARCH FIELD SKEET RANGE** **UXO** **1018150389**
West **N/A**
< 1/8 **MARCH AIR FORCE BASE, CA**
0.080 mi.
423 ft.

Relative:
Higher

Actual:
1563 ft.

UXO:
DoD Component: FUDS
Sort Order: 5
Installation Name: MARCH FIELD

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MAP FINDINGS

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
	MARCH FIELD SKEET RANGE (Continued)		**1018150389**

Facility Address 2: Not reported
Site ID: 01OEW
Site Type: Trap and Skeet Range
Latitude: 33.913799
Longitude: -117.262001

B4
NNW
1/8-1/4
0.244 mi.
1289 ft.

TESORO USA #63348 — **UST** — **U003839089**
22990 ALESSANDRO BLVD — **N/A**
MORENO VALLEY, CA 92553

Site 1 of 4 in cluster B

Relative: Higher

Actual: 1571 ft.

UST:
Facility ID: 68
Permitting Agency: RIVERSIDE COUNTY
Latitude: 33.918903
Longitude: -117.260162

Facility ID: FA0014719
Permitting Agency: Riverside County Department of Environmental Health
Latitude: 33.91755
Longitude: -117.26151

RIVERSIDE CO. UST:
Region: RIVERSIDE
Total Tanks: 3

B5
NNW
1/8-1/4
0.244 mi.
1289 ft.

ARCO FACILITY NO 09718 — **RCRA-SQG** — **1004677900**
22990 ALLESANDRO BLVD — **FINDS** — **CAR000102798**
MORENO VALLEY, CA 92553 — **ECHO**

Site 2 of 4 in cluster B

Relative: Higher

Actual: 1571 ft.

RCRA-SQG:
Date form received by agency: 07/15/2002
Facility name: ARCO FACILITY NO 09718
Facility address: 22990 ALLESANDRO BLVD
MORENO VALLEY, CA 92553
EPA ID: CAR000102798
Mailing address: P O BOX 6038
ARTESIA, CA 90702-6038
Contact: JACK OMAN
Contact address: P O BOX 6038
ARTESIA, CA 90702-6038
Contact country: US
Contact telephone: 714-690-2425
Contact email: Not reported
EPA Region: 09
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

ARCO FACILITY NO 09718 (Continued) **1004677900**

Owner/Operator Summary:
- Owner/operator name: B P W COAST PRODUCTS LLC
- Owner/operator address: P O BOX 6038
  ARTESIA, CA 90702
- Owner/operator country: Not reported
- Owner/operator telephone: 714-690-2425
- Owner/operator email: Not reported
- Owner/operator fax: Not reported
- Owner/operator extension: Not reported
- Legal status: Private
- Owner/Operator Type: Owner
- Owner/Op start date: Not reported
- Owner/Op end date: Not reported

Handler Activities Summary:
- U.S. importer of hazardous waste: No
- Mixed waste (haz. and radioactive): No
- Recycler of hazardous waste: No
- Transporter of hazardous waste: No
- Treater, storer or disposer of HW: No
- Underground injection activity: No
- On-site burner exemption: No
- Furnace exemption: No
- Used oil fuel burner: No
- Used oil processor: No
- User oil refiner: No
- Used oil fuel marketer to burner: No
- Used oil Specification marketer: No
- Used oil transfer facility: No
- Used oil transporter: No

. Waste code: D000
. Waste name: Not Defined

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D018
. Waste name: BENZENE

Violation Status: No violations found

FINDS:

Registry ID: 110012215753

Environmental Interest/Information System

California Hazardous Waste Tracking System - Datamart (HWTS-DATAMART) provides California with information on hazardous waste shipments for generators, transporters, and treatment, storage, and disposal facilities.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and

ARCO FACILITY NO 09718 (Continued) **1004677900**

corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1004677900
Registry ID:	110012215753
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110012215753

B6 **THRIFTY OIL #348** **LUST** **U001576570**
NNW **22990 ALESSANDRO BLVD** **HIST UST** **N/A**
1/8-1/4 **MORENO VALLEY, CA 92508**
0.244 mi.
1289 ft. **Site 3 of 4 in cluster B**

Relative:
Higher

Actual:
1571 ft.

LUST:

Lead Agency:	RIVERSIDE COUNTY LOP
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0606500421
Global Id:	T0606500421
Latitude:	33.9176348419259
Longitude:	-117.261419145998
Status:	Completed - Case Closed
Status Date:	12/06/2004
Case Worker:	SCB
RB Case Number:	083302648T
Local Agency:	RIVERSIDE COUNTY LOP
File Location:	Not reported
Local Case Number:	95137
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

LUST:

Global Id:	T0606500421
Contact Type:	Local Agency Caseworker
Contact Name:	SHARON BOLTINGHOUSE
Organization Name:	RIVERSIDE COUNTY LOP
Address:	3880 LEMON ST SUITE 200
City:	RIVERSIDE
Email:	sbolting@rivco.org
Phone Number:	9519558980

Global Id:	T0606500421
Contact Type:	Regional Board Caseworker
Contact Name:	VALERIE JAHN-BULL
Organization Name:	SANTA ANA RWQCB (REGION 8)
Address:	3737 MAIN STREET, SUITE 500
City:	RIVERSIDE
Email:	vjahn-bull@waterboards.ca.gov
Phone Number:	9517824903

LUST:

Global Id:	T0606500421
Action Type:	Other

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Map ID
Direction
Distance
Elevation | Site | MAP FINDINGS | Database(s) | EDR ID Number EPA ID Number

THRIFTY OIL #348 (Continued) **U001576570**

Date: 02/15/1995
Action: Leak Reported

Global Id: T0606500421
Action Type: Other
Date: 01/30/1995
Action: Leak Discovery

Global Id: T0606500421
Action Type: ENFORCEMENT
Date: 12/05/2004
Action: File review - #RCDEH Upload Site File 10/27/2015

Global Id: T0606500421
Action Type: Other
Date: 01/30/1995
Action: Leak Stopped

Global Id: T0606500421
Action Type: ENFORCEMENT
Date: 12/06/2004
Action: Closure/No Further Action Letter - #Riv Co Closure

LUST:
Global Id: T0606500421
Status: Completed - Case Closed
Status Date: 12/06/2004

Global Id: T0606500421
Status: Open - Case Begin Date
Status Date: 01/30/1995

Global Id: T0606500421
Status: Open - Site Assessment
Status Date: 02/15/1995

Global Id: T0606500421
Status: Open - Site Assessment
Status Date: 05/09/1996

Global Id: T0606500421
Status: Open - Site Assessment
Status Date: 06/03/1996

HIST UST:
File Number: 0002A7FD
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002A7FD.pdf
Region: STATE
Facility ID: 00000004735
Facility Type: Gas Station
Other Type: Not reported
Contact Name: Not reported
Telephone: 2139239876
Owner Name: THRIFTY OIL CO.
Owner Address: 10000 LAKEWOOD BLVD.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

THRIFTY OIL #348 (Continued) **U001576570**

Owner City,St,Zip:	DOWNEY, CA 90240
Total Tanks:	0004
Tank Num:	001
Container Num:	348-1
Year Installed:	Not reported
Tank Capacity:	00010164
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	1/4
Leak Detection:	Stock Inventor
Tank Num:	002
Container Num:	348-2
Year Installed:	Not reported
Tank Capacity:	00010164
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	1/4
Leak Detection:	Stock Inventor
Tank Num:	003
Container Num:	348-3
Year Installed:	Not reported
Tank Capacity:	00010164
Tank Used for:	PRODUCT
Type of Fuel:	PREMIUM
Container Construction Thickness:	1/4
Leak Detection:	Stock Inventor
Tank Num:	004
Container Num:	348-10
Year Installed:	Not reported
Tank Capacity:	00000280
Tank Used for:	WASTE
Type of Fuel:	WASTE OIL
Container Construction Thickness:	12
Leak Detection:	Stock Inventor

Click here for Geo Tracker PDF:

B7
NNW
1/8-1/4
0.244 mi.
1289 ft.

THRIFTY OIL #348 **LUST** **S101589927**
22990 ALESSANDRO BLVD **SWEEPS UST** **N/A**
MORENO VALLEY, CA 92388 **CA FID UST**
HIST CORTESE

Site 4 of 4 in cluster B

Relative:
Higher

Actual:
1571 ft.

LUST REG 8:

Region:	8
County:	Riverside
Regional Board:	Santa Ana Region
Facility Status:	Preliminary site assessment underway
Case Number:	083302648T
Local Case Num:	95137
Case Type:	Soil only
Substance:	Gasoline
Qty Leaked:	Not reported
Abate Method:	Not reported

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

THRIFTY OIL #348 (Continued) **S101589927**

Cross Street:	FREDERICK
Enf Type:	Not reported
Funding:	Not reported
How Discovered:	Tank Closure
How Stopped:	Not reported
Leak Cause:	UNK
Leak Source:	UNK
Global ID:	T0606500421
How Stopped Date:	1/30/1995
Enter Date:	4/20/1995
Date Confirmation of Leak Began:	2/15/1995
Date Preliminary Assessment Began:	6/3/1996
Discover Date:	1/30/1995
Enforcement Date:	Not reported
Close Date:	Not reported
Date Prelim Assessment Workplan Submitted:	5/9/1996
Date Pollution Characterization Began:	Not reported
Date Remediation Plan Submitted:	Not reported
Date Remedial Action Underway:	Not reported
Date Post Remedial Action Monitoring:	Not reported
Enter Date:	4/20/1995
GW Qualifies:	=
Soil Qualifies:	ND
Operator:	Not reported
Facility Contact:	Not reported
Interim:	Not reported
Oversite Program:	LUST
Latitude:	33.9173103
Longitude:	-117.2614274
MTBE Date:	9/12/2001
Max MTBE GW:	45
MTBE Concentration:	0
Max MTBE Soil:	0
MTBE Fuel:	1
MTBE Tested:	MTBE Detected. Site tested for MTBE & MTBE detected
MTBE Class:	*
Staff:	VJJ
Staff Initials:	SCB
Lead Agency:	Local Agency
Local Agency:	33000L
Hydr Basin #:	SAN JACINTO (8-5)
Beneficial:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Work Suspended:	Not reported

Summary: Not reported

RIVERSIDE CO. LUST:

Region:	RIVERSIDE
Facility ID:	95137
Employee:	Boltinghous-LOP
Site Closed:	Yes
Case Type:	Drinking Water Aquifer affected
Facility Status:	closed/action completed
Casetype Decode:	An Aquifer used for Drinking Water supply has been contaminated.
Fstatus Decode:	Closed/Action completed

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

THRIFTY OIL #348 (Continued) **S101589927**

SWEEPS UST:

Status:	Active
Comp Number:	4735
Number:	1
Board Of Equalization:	44-010930
Referral Date:	11-19-92
Action Date:	11-19-92
Created Date:	08-25-89
Owner Tank Id:	348-1
SWRCB Tank Id:	33-000-004735-000001
Tank Status:	A
Capacity:	10000
Active Date:	11-19-92
Tank Use:	M.V. FUEL
STG:	P
Content:	LEADED
Number Of Tanks:	3

Status:	Active
Comp Number:	4735
Number:	1
Board Of Equalization:	44-010930
Referral Date:	11-19-92
Action Date:	11-19-92
Created Date:	08-25-89
Owner Tank Id:	348-2
SWRCB Tank Id:	33-000-004735-000002
Tank Status:	A
Capacity:	10000
Active Date:	11-19-92
Tank Use:	M.V. FUEL
STG:	P
Content:	REG UNLEADED
Number Of Tanks:	Not reported

Status:	Active
Comp Number:	4735
Number:	1
Board Of Equalization:	44-010930
Referral Date:	11-19-92
Action Date:	11-19-92
Created Date:	08-25-89
Owner Tank Id:	348-3
SWRCB Tank Id:	33-000-004735-000003
Tank Status:	A
Capacity:	10000
Active Date:	11-19-92
Tank Use:	M.V. FUEL
STG:	P
Content:	REG UNLEADED
Number Of Tanks:	Not reported

CA FID UST:

Facility ID:	33001092
Regulated By:	UTNKA
Regulated ID:	Not reported

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

THRIFTY OIL #348 (Continued) **S101589927**

Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 7146539919
Mail To: Not reported
Mailing Address: 10000 LAKEWOOD BLVD
Mailing Address 2: Not reported
Mailing City,St,Zip: MORENO VALLEY 92388
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

HIST CORTESE:
Region: CORTESE
Facility County Code: 33
Reg By: LTNKA
Reg Id: 083302648T

8
NNE
1/4-1/2
0.255 mi.
1345 ft.

Relative: Higher

Actual: 1575 ft.

PLAZA HAND CAR WASH **LUST U003949023**
23100 ALESSANDRO BLVD **UST N/A**
MORENO VALLEY, CA 92553

LUST:
Lead Agency: RIVERSIDE COUNTY LOP
Case Type: LUST Cleanup Site
Geo Track: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0606563337
Global Id: T0606563337
Latitude: 33.917960094
Longitude: -117.259563628
Status: Completed - Case Closed
Status Date: 12/31/2008
Case Worker: SCB
RB Case Number: Not reported
Local Agency: RIVERSIDE COUNTY LOP
File Location: Local Agency
Local Case Number: 200521458
Potential Media Affect: Soil
Potential Contaminants of Concern: Gasoline
Site History: Not reported

LUST:
Global Id: T0606563337
Contact Type: Regional Board Caseworker
Contact Name: Ken Williams
Organization Name: SANTA ANA RWQCB (REGION 8)
Address: 3737 MAIN STREET, SUITE 500
City: RIVERSIDE
Email: kwilliams@waterboards.ca.gov
Phone Number: Not reported

Global Id: T0606563337
Contact Type: Local Agency Caseworker
Contact Name: SHARON BOLTINGHOUSE

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Map ID
Direction
Distance
Elevation | Site | MAP FINDINGS | Database(s) | EDR ID Number EPA ID Number

PLAZA HAND CAR WASH (Continued) **U003949023**

Organization Name: RIVERSIDE COUNTY LOP
Address: 3880 LEMON ST SUITE 200
City: RIVERSIDE
Email: sbolting@rivco.org
Phone Number: 9519558980

LUST:

Global Id: T0606563337
Action Type: ENFORCEMENT
Date: 11/27/2007
Action: LOP Case Closure Summary to RB

Global Id: T0606563337
Action Type: Other
Date: 04/28/2005
Action: Leak Reported

Global Id: T0606563337
Action Type: ENFORCEMENT
Date: 04/27/2005
Action: Other Report - #UST Sample Analytical Report

Global Id: T0606563337
Action Type: ENFORCEMENT
Date: 11/13/2008
Action: Staff Letter - #RCDEH111308

Global Id: T0606563337
Action Type: RESPONSE
Date: 04/25/2008
Action: Other Report / Document

Global Id: T0606563337
Action Type: RESPONSE
Date: 10/15/2007
Action: Monitoring Report - Quarterly

Global Id: T0606563337
Action Type: ENFORCEMENT
Date: 02/22/2008
Action: Staff Letter - #RCDEH022208

Global Id: T0606563337
Action Type: Other
Date: 04/28/2005
Action: Leak Discovery

Global Id: T0606563337
Action Type: ENFORCEMENT
Date: 03/25/2007
Action: Technical Correspondence / Assistance / Other - #RCDEH 032507

Global Id: T0606563337
Action Type: RESPONSE
Date: 07/15/2007
Action: Monitoring Report - Quarterly

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

PLAZA HAND CAR WASH (Continued) **U003949023**

Global Id: T0606563337
Action Type: ENFORCEMENT
Date: 12/31/2008
Action: Closure/No Further Action Letter - #RCDEH Closure Docs

Global Id: T0606563337
Action Type: Other
Date: 03/29/2005
Action: Leak Stopped

Global Id: T0606563337
Action Type: RESPONSE
Date: 12/15/2008
Action: Well Destruction Report

Global Id: T0606563337
Action Type: RESPONSE
Date: 12/27/2007
Action: Other Report / Document

LUST:
Global Id: T0606563337
Status: Completed - Case Closed
Status Date: 12/31/2008

Global Id: T0606563337
Status: Open - Case Begin Date
Status Date: 03/29/2005

Global Id: T0606563337
Status: Open - Site Assessment
Status Date: 04/28/2005

Global Id: T0606563337
Status: Open - Site Assessment
Status Date: 06/22/2006

Global Id: T0606563337
Status: Open - Verification Monitoring
Status Date: 03/24/2007

RIVERSIDE CO. LUST:
Region: RIVERSIDE
Facility ID: 200521458
Employee: Boltinghous-LOP
Site Closed: Yes
Case Type: Soil only
Facility Status: closed/action completed
Casetype Decode: Soil only is impacted
Fstatus Decode: Closed/Action completed

UST:
Facility ID: 593
Permitting Agency: RIVERSIDE COUNTY
Latitude: 33.9194115

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MAP FINDINGS

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
	PLAZA HAND CAR WASH (Continued)		**U003949023**
	Longitude: -117.2579269		

9
NW
1/4-1/2
0.299 mi.
1580 ft.

Relative: Higher

Actual: 1570 ft.

MORENO VALLEY RECYCLING
22862 ALESSANDRO BLVD
MORENO VALLEY, CA 92553

SWRCY **S107137332**
N/A

SWRCY:

Reg Id:	25282
Cert Id:	RC11825
Mailing Address:	3249 W El Segundo Blvd
Mailing City:	Hawthorne
Mailing State:	CA
Mailing Zip Code:	90250
Website:	Not reported
Email:	Not reported
Phone Number:	(951) 616-6978
Grand Father:	N
Rural:	N
Operation Begin Date:	08/14/2003
Aluminium:	Y
Glass:	Y
Plastic:	Y
Bimetal:	Y
Agency:	N/A
Monday Hours Of Operation:	CLOSED
Tuesday Hours Of Operation:	9:30 am - 5:45 pm; Closed 1:00 pm - 1:30 pm
Wednesday Hours Of Operation:	9:30 am - 5:45 pm; Closed 1:00 pm - 1:30 pm
Thursday Hours Of Operation:	9:30 am - 5:45 pm; Closed 1:00 pm - 1:30 pm
Friday Hours Of Operation:	9:30 am - 5:45 pm; Closed 1:00 pm - 1:30 pm
Saturday Hours Of Operation:	9:30 am - 5:45 pm; Closed 1:00 pm - 1:30 pm
Sunday Hours Of Operation:	9:30 am - 5:45 pm; Closed 1:00 pm - 1:30 pm
Organization ID:	31689
Organization Name:	E & M Recycling Company

10
North
1/4-1/2
0.306 mi.
1616 ft.

Relative: Higher

Actual: 1576 ft.

M&M DRY CLEANERS
23080 ALESSANDRO BOULEVARD, UNIT 220
MORENO VALLEY, CA 92553

SLIC **S112274195**
BROWNFIELDS **N/A**

SLIC:

Region:	STATE
Facility Status:	**Open - Remediation**
Status Date:	05/08/2017
Global Id:	T10000004432
Lead Agency:	SANTA ANA RWQCB (REGION 8)
Lead Agency Case Number:	Not reported
Latitude:	33.9187890255534
Longitude:	-117.259790647816
Case Type:	Cleanup Program Site
Case Worker:	JML
Local Agency:	Not reported
RB Case Number:	2080099
File Location:	All Files are on GeoTracker or in the Local Agency Database

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

M&M DRY CLEANERS (Continued) **S112274195**

Potential Media Affected: Indoor Air, Other Groundwater (uses other than drinking water), Soil, Soil Vapor
Potential Contaminants of Concern: Tetrachloroethylene (PCE)
Site History: The M&M Cleaners is located at 23080 Alessandro Boulevard, Moreno Valley, California, and occupies Unit No. 220 of the shopping center. In 2012 and 2013, preliminary investigations identified the presence of the dry cleaning solvent, tetrachloroethene (also known as perchloroethylene or PCE), in soil and groundwater under the M&M Cleaners, the alley located north of the Property, and under the parking lot located to the south. However, these initial investigations have not been able to determine how far the PCE may have migrated since it was released. Soil gas investigations that were conducted in 2013 and early 2014 detected the presence of elevated concentrations of PCE in the soil vapor beneath the dry cleaners, adjacent units of the shopping center, the alley behind the shopping center, and the parking area of the Sienna Pointe apartments. Mitigation of the soil vapor intrusion risk is a driving factor in the selection of remediation technologies and is the current focus of work at the Site.

Click here to access the California GeoTracker records for this facility:

BROWNFIELDS:

Global ID:	T10000004432
Latitude:	33.918789026
Longitude:	-117.25979065
Project Type:	Cleanup Program Site
Status:	Open - Remediation
Status Date:	05/08/2017
Lead Agency:	SANTA ANA RWQCB (REGION 8)
Last Correspondence Date:	07/26/2017
Release Type:	Clarifier / Dry Cleaning Unit / Vapor Degreaser, Unknown
Contaminant(s) of Concern:	Tetrachloroethylene (PCE)
Media of Concern:	Indoor Air, Other Groundwater (uses other than drinking water), Soil, Soil Vapor
Past Use(s) that Caused Contamination:	DRY CLEANING
Human Health Exposure Controlled:	INSUFFICIENT DATA
Human Health Exposure Controlled Date:	Not reported
Groundwater Migration Controlled:	UNDETERMINED
Groundwater Migration Controlled Date:	Not reported
Primary Caseworker Name:	JESSICA LAW
Primary Caseworker Organization Name:	SANTA ANA RWQCB (REGION 8)
Primary Caseworker Phone Number:	951-782-4381
Primary Caseworker Address:	3737 MAIN STREET, SUITE 500
Primary Caseworker Address:	RIVERSIDE
Primary Caseworker Address:	CA
Primary Caseworker Email:	jessica.law@waterboards.ca.gov

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MAP FINDINGS

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
11	**CIRCLE K #300**	**LUST**	**S101619611**
NW	**22790 ALESSANDRO BLVD**	**SWEEPS UST**	**N/A**
1/4-1/2	**MORENO VALLEY, CA 92388**	**CA FID UST**	
0.338 mi.		**HIST CORTESE**	
1787 ft.			

Relative:
Higher

Actual:
1570 ft.

LUST:

Lead Agency:	RIVERSIDE COUNTY LOP
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0606500109
Global Id:	T0606500109
Latitude:	33.9174245000084
Longitude:	-117.264727617722
Status:	Completed - Case Closed
Status Date:	09/10/1998
Case Worker:	RIV
RB Case Number:	083301110T
Local Agency:	RIVERSIDE COUNTY LOP
File Location:	Local Agency Warehouse
Local Case Number:	921020
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

LUST:

Global Id:	T0606500109
Contact Type:	Regional Board Caseworker
Contact Name:	CARL BERNHARDT
Organization Name:	SANTA ANA RWQCB (REGION 8)
Address:	3737 MAIN STREET, SUITE 500
City:	RIVERSIDE
Email:	cbernhardt@waterboards.ca.gov
Phone Number:	9517824495

Global Id:	T0606500109
Contact Type:	Local Agency Caseworker
Contact Name:	Riverside County LOP
Organization Name:	RIVERSIDE COUNTY LOP
Address:	3880 LEMON ST SUITE 200
City:	RIVERSIDE
Email:	Not reported
Phone Number:	9519558980

LUST:

Global Id:	T0606500109
Action Type:	Other
Date:	10/26/1992
Action:	Leak Discovery

Global Id:	T0606500109
Action Type:	Other
Date:	11/04/1992
Action:	Leak Reported

Global Id:	T0606500109
Action Type:	Other
Date:	10/26/1992
Action:	Leak Stopped

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Map ID
Direction
Distance
Elevation | Site | MAP FINDINGS | Database(s) | EDR ID Number EPA ID Number

CIRCLE K #300 (Continued) **S101619611**

Global Id: T0606500109
Action Type: ENFORCEMENT
Date: 03/25/2009
Action: Closure/No Further Action Letter - #Site Closure

Global Id: T0606500109
Action Type: ENFORCEMENT
Date: 09/10/1998
Action: Closure/No Further Action Letter

Global Id: T0606500109
Action Type: ENFORCEMENT
Date: 03/24/2009
Action: File review - #RCDEH Upload Site File 5/15/2015

LUST:
Global Id: T0606500109
Status: Completed - Case Closed
Status Date: 09/10/1998

Global Id: T0606500109
Status: Open - Case Begin Date
Status Date: 10/26/1992

Global Id: T0606500109
Status: Open - Remediation
Status Date: 03/07/1995

Global Id: T0606500109
Status: Open - Remediation
Status Date: 02/09/1996

Global Id: T0606500109
Status: Open - Site Assessment
Status Date: 11/04/1992

Global Id: T0606500109
Status: Open - Site Assessment
Status Date: 07/13/1993

Global Id: T0606500109
Status: Open - Site Assessment
Status Date: 10/31/1994

LUST REG 8:
Region: 8
County: Riverside
Regional Board: Santa Ana Region
Facility Status: Case Closed
Case Number: 083301110T
Local Case Num: 911020
Case Type: Soil only
Substance: Gasoline
Qty Leaked: Not reported
Abate Method: Not reported

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

CIRCLE K #300 (Continued) **S101619611**

Cross Street:	VULTEE
Enf Type:	CLOS
Funding:	Not reported
How Discovered:	Tank Closure
How Stopped:	Not reported
Leak Cause:	UNK
Leak Source:	UNK
Global ID:	T0606500109
How Stopped Date:	10/26/1992
Enter Date:	1/6/1993
Date Confirmation of Leak Began:	11/4/1992
Date Preliminary Assessment Began:	7/13/1993
Discover Date:	10/26/1992
Enforcement Date:	Not reported
Close Date:	9/10/1998
Date Prelim Assessment Workplan Submitted:	11/4/1992
Date Pollution Characterization Began:	10/31/1994
Date Remediation Plan Submitted:	3/7/1995
Date Remedial Action Underway:	2/9/1996
Date Post Remedial Action Monitoring:	Not reported
Enter Date:	1/6/1993
GW Qualifies:	Not reported
Soil Qualifies:	Not reported
Operator:	Not reported
Facility Contact:	Not reported
Interim:	Not reported
Oversite Program:	LUST
Latitude:	33.9171412
Longitude:	-117.2651675
MTBE Date:	Not reported
Max MTBE GW:	Not reported
MTBE Concentration:	0
Max MTBE Soil:	Not reported
MTBE Fuel:	1
MTBE Tested:	Site NOT Tested for MTBE.Includes Unknown and Not Analyzed.
MTBE Class:	*
Staff:	CAB
Staff Initials:	UNK
Lead Agency:	Local Agency
Local Agency:	33000L
Hydr Basin #:	SAN JACINTO (8-5)
Beneficial:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Work Suspended:	Not reported

Summary: Not reported

RIVERSIDE CO. LUST:

Region:	RIVERSIDE
Facility ID:	921020
Employee:	Boltinghous-LOP
Site Closed:	Yes
Case Type:	Soil only
Facility Status:	closed/action completed
Casetype Decode:	Soil only is impacted
Fstatus Decode:	Closed/Action completed

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

CIRCLE K #300 (Continued) **S101619611**

SWEEPS UST:

Status:	Active
Comp Number:	13650
Number:	1
Board Of Equalization:	44-017983
Referral Date:	10-28-92
Action Date:	10-28-92
Created Date:	02-29-88
Owner Tank Id:	000035
SWRCB Tank Id:	33-000-013650-000001
Tank Status:	A
Capacity:	9940
Active Date:	10-28-92
Tank Use:	M.V. FUEL
STG:	P
Content:	LEADED
Number Of Tanks:	2

Status:	Active
Comp Number:	13650
Number:	1
Board Of Equalization:	44-017983
Referral Date:	10-28-92
Action Date:	10-28-92
Created Date:	02-29-88
Owner Tank Id:	000035
SWRCB Tank Id:	33-000-013650-000002
Tank Status:	A
Capacity:	9940
Active Date:	10-28-92
Tank Use:	M.V. FUEL
STG:	P
Content:	REG UNLEADED
Number Of Tanks:	Not reported

CA FID UST:

Facility ID:	33000356
Regulated By:	UTNKA
Regulated ID:	00013650
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	7146534289
Mail To:	Not reported
Mailing Address:	P O BOX 52084
Mailing Address 2:	Not reported
Mailing City,St,Zip:	MORENO VALLEY 92388
Contact:	Not reported
Contact Phone:	Not reported
DUNs Number:	Not reported
NPDES Number:	Not reported
EPA ID:	Not reported
Comments:	Not reported
Status:	Active

HIST CORTESE:

Region:	CORTESE

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

MAP FINDINGS

Map ID / Direction / Distance / Elevation | Site | Database(s) | EDR ID Number / EPA ID Number

CIRCLE K #300 (Continued) **S101619611**

Facility County Code: 33
Reg By: LTNKA
Reg Id: 083301110T

12
WSW
1/2-1
0.570 mi.
3012 ft.

ALPER CLEANERS **ENVIROSTOR** **S106797644**
14420 ELSWORTH ST., SUITE 114 **N/A**
MORENO VALLEY, CA 92553

Relative:
Lower

Actual:
1553 ft.

ENVIROSTOR:

Facility ID:	33720002
Status:	Refer: 1248 Local Agency
Status Date:	06/07/2004
Site Code:	Not reported
Site Type:	Evaluation
Site Type Detailed:	Evaluation
Acres:	0
NPL:	NO
Regulatory Agencies:	RIVERSIDE COUNTY
Lead Agency:	RIVERSIDE COUNTY
Program Manager:	Not reported
Supervisor:	Referred - Not Assigned
Division Branch:	Cleanup Cypress
Assembly:	61
Senate:	31
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not Applicable
Latitude:	33.91112
Longitude:	-117.2692
APN:	297140026, 297150012
Past Use:	NONE SPECIFIED
Potential COC:	NONE SPECIFIED
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED
Alias Name:	297140026
Alias Type:	APN
Alias Name:	297150012
Alias Type:	APN
Alias Name:	33720002
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	Not reported
Completed Sub Area Name:	Not reported
Completed Document Type:	Not reported
Completed Date:	Not reported
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

ALPER CLEANERS (Continued) **S106797644**

Schedule Due Date: Not reported
Schedule Revised Date: Not reported

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Count: 1 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
MORENO VALLEY	S108985918	U.S. AIR FORCE - MARCH AFB (FORMER	N/A GRAHAM		SLIC

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center,

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 10/10/2017
Date Data Arrived at EDR: 11/03/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 42

Source: EPA
Telephone: N/A
Last EDR Contact: 12/22/2017
Next Scheduled EDR Contact: 04/16/2018
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 10/10/2017
Date Data Arrived at EDR: 11/03/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 42

Source: EPA
Telephone: N/A
Last EDR Contact: 12/22/2017
Next Scheduled EDR Contact: 04/16/2018
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 10/10/2017
Date Data Arrived at EDR: 11/03/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 42

Source: EPA
Telephone: N/A
Last EDR Contact: 12/22/2017
Next Scheduled EDR Contact: 04/16/2018
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 92

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 10/06/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 07/11/2017
Date Data Arrived at EDR: 07/21/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 77

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/22/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 07/11/2017
Date Data Arrived at EDR: 07/28/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 70

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/22/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 09/13/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 10

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/26/2017
Next Scheduled EDR Contact: 04/09/2018
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 09/13/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 10

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/26/2017
Next Scheduled EDR Contact: 04/09/2018
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 09/13/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 10

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/26/2017
Next Scheduled EDR Contact: 04/09/2018
Data Release Frequency: Quarterly

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 09/13/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 10

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/26/2017
Next Scheduled EDR Contact: 04/09/2018
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 09/13/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 10

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/26/2017
Next Scheduled EDR Contact: 04/09/2018
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/22/2017
Date Data Arrived at EDR: 06/13/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 94

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 11/08/2017
Next Scheduled EDR Contact: 02/26/2018
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 08/10/2017
Date Data Arrived at EDR: 08/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/27/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 08/10/2017
Date Data Arrived at EDR: 08/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/27/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: Varies

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/18/2017
Date Data Arrived at EDR: 09/21/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 22

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 09/21/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 10/30/2017
Date Data Arrived at EDR: 10/31/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 45

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/31/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 10/30/2017
Date Data Arrived at EDR: 10/31/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 45

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/31/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 11/13/2017
Date Data Arrived at EDR: 11/14/2017
Date Made Active in Reports: 12/07/2017
Number of Days to Update: 23

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 11/14/2017
Next Scheduled EDR Contact: 02/26/2018
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)
Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/11/2017
Date Data Arrived at EDR: 09/12/2017
Date Made Active in Reports: 11/09/2017
Number of Days to Update: 58

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/26/2018
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/25/2017
Date Data Arrived at EDR: 11/07/2017
Date Made Active in Reports: 12/08/2017
Number of Days to Update: 31

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 11/07/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/13/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 78

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 05/01/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 78

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/24/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 71

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Semi-Annually

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/14/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 71

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/26/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 78

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/14/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 71

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/11/2017
Date Data Arrived at EDR: 09/12/2017
Date Made Active in Reports: 11/09/2017
Number of Days to Update: 58

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/26/2018
Data Release Frequency: Varies

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 05/15/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 136

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 10/13/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 09/11/2017
Date Data Arrived at EDR: 09/12/2017
Date Made Active in Reports: 11/08/2017
Number of Days to Update: 57

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 12/12/2017
Next Scheduled EDR Contact: 03/26/2018
Data Release Frequency: Semi-Annually

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 12/26/2017
Next Scheduled EDR Contact: 04/09/2018
Data Release Frequency: Quarterly

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/26/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 71

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/24/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 12/08/2017
Number of Days to Update: 134

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 05/02/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 71

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 05/01/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 78

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/13/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 78

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

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Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/14/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 71

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/25/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 78

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 10/30/2017
Date Data Arrived at EDR: 10/31/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 45

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/31/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Quarterly

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 12/20/2017
Next Scheduled EDR Contact: 04/09/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 09/21/2017
Date Data Arrived at EDR: 09/21/2017
Date Made Active in Reports: 11/09/2017
Number of Days to Update: 49

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 12/26/2017
Next Scheduled EDR Contact: 04/09/2018
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 08/21/2017
Date Data Arrived at EDR: 09/20/2017
Date Made Active in Reports: 12/08/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 12/19/2017
Next Scheduled EDR Contact: 04/02/2018
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 11/06/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 09/11/2017
Date Data Arrived at EDR: 09/12/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 9

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 12/12/2017
Next Scheduled EDR Contact: 03/26/2018
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

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Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 05/31/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 76

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 11/09/2017
Next Scheduled EDR Contact: 02/26/2018
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 10/30/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 10/20/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land

A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 11/03/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 07/13/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 30

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/28/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 10/30/2017
Date Data Arrived at EDR: 10/31/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 45

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/31/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 06/30/2017
Date Data Arrived at EDR: 08/18/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 10/10/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 07/13/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 30

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/28/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 11/27/2017
Date Data Arrived at EDR: 11/29/2017
Date Made Active in Reports: 12/18/2017
Number of Days to Update: 19

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 11/28/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 08/31/2017
Date Data Arrived at EDR: 09/05/2017
Date Made Active in Reports: 11/08/2017
Number of Days to Update: 64

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/30/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 07/11/2017
Date Data Arrived at EDR: 07/26/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 12/22/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 09/05/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 11/08/2017
Number of Days to Update: 63

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 12/05/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 09/21/2017
Date Data Arrived at EDR: 09/21/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 22

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 09/21/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 05/09/2017
Date Data Arrived at EDR: 07/26/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 57

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/11/2017
Date Data Arrived at EDR: 09/12/2017
Date Made Active in Reports: 11/09/2017
Number of Days to Update: 58

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/26/2018
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/11/2017
Date Data Arrived at EDR: 09/12/2017
Date Made Active in Reports: 11/09/2017
Number of Days to Update: 58

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/26/2018
Data Release Frequency: Quarterly

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 09/13/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 10

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/26/2017
Next Scheduled EDR Contact: 04/09/2018
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 11/22/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 10/13/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/11/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

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Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 11/17/2017
Next Scheduled EDR Contact: 02/26/2018
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 10/17/2017
Date Data Arrived at EDR: 11/01/2017
Date Made Active in Reports: 12/08/2017
Number of Days to Update: 37

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 12/26/2017
Next Scheduled EDR Contact: 04/09/2018
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 11/06/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 11/09/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/15/2015
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 14

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 12/22/2017
Next Scheduled EDR Contact: 04/02/2018
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 11/24/2015
Date Made Active in Reports: 04/05/2016
Number of Days to Update: 133

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 11/20/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/27/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 09/27/2017
Date Data Arrived at EDR: 10/12/2017
Date Made Active in Reports: 10/20/2017
Number of Days to Update: 8

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 12/22/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 11/02/2017
Date Data Arrived at EDR: 11/17/2017
Date Made Active in Reports: 12/08/2017
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 12/22/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 06/01/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 126

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/13/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 10/11/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 10/16/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 12/05/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 12/08/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017
Date Data Arrived at EDR: 11/30/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 15
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 10/26/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 10/02/2017
Date Data Arrived at EDR: 10/05/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 8
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 10/05/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 10/31/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 06/30/2017
Date Data Arrived at EDR: 08/03/2017
Date Made Active in Reports: 10/20/2017
Number of Days to Update: 78

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 12/18/2017
Next Scheduled EDR Contact: 04/02/2018
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 11/20/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 10/11/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 12/23/2016
Date Data Arrived at EDR: 12/27/2016
Date Made Active in Reports: 02/17/2017
Number of Days to Update: 52

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 11/02/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

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Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 10/11/2017
Date Made Active in Reports: 11/03/2017
Number of Days to Update: 23

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 11/22/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 10/10/2017
Date Data Arrived at EDR: 11/03/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 42

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 12/22/2017
Next Scheduled EDR Contact: 04/16/2018
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 44

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 11/28/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

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Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 12/01/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 12/01/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/25/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/20/2017
Number of Days to Update: 24

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 12/19/2017
Next Scheduled EDR Contact: 03/26/2018
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 07/23/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 9

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 12/05/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 10/25/2016
Date Data Arrived at EDR: 06/02/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 133

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 10/16/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Varies

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 02/13/2017
Date Data Arrived at EDR: 02/15/2017
Date Made Active in Reports: 11/03/2017
Number of Days to Update: 261

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 11/21/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: Varies

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 09/02/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 10/20/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 12/05/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Quarterly

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 08/17/2017
Date Data Arrived at EDR: 08/17/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 29

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 11/20/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 09/21/2017
Date Data Arrived at EDR: 09/21/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 22

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 12/26/2017
Next Scheduled EDR Contact: 04/09/2018
Data Release Frequency: Quarterly

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 08/02/2017
Date Data Arrived at EDR: 08/08/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 69

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 11/30/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 03/21/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 147

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 12/22/2017
Next Scheduled EDR Contact: 04/02/2018
Data Release Frequency: Varies

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 11/01/2017
Date Data Arrived at EDR: 11/03/2017
Date Made Active in Reports: 12/07/2017
Number of Days to Update: 34

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 11/01/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 10/23/2017
Date Data Arrived at EDR: 10/24/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 52

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 11/14/2017
Date Data Arrived at EDR: 11/17/2017
Date Made Active in Reports: 12/18/2017
Number of Days to Update: 31

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 11/09/2017
Next Scheduled EDR Contact: 02/26/2018
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 07/12/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 97

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 10/10/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 11/20/2017
Date Data Arrived at EDR: 11/20/2017
Date Made Active in Reports: 12/27/2017
Number of Days to Update: 37

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 11/20/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 11/20/2017
Date Data Arrived at EDR: 11/20/2017
Date Made Active in Reports: 12/27/2017
Number of Days to Update: 37
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/20/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 10/10/2017
Date Data Arrived at EDR: 10/10/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 7
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 10/10/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 09/11/2017
Date Data Arrived at EDR: 09/12/2017
Date Made Active in Reports: 11/01/2017
Number of Days to Update: 50
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 12/12/2017
Next Scheduled EDR Contact: 03/26/2018
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 09/01/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 11/08/2017
Number of Days to Update: 63
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 12/05/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 11/13/2017
Date Data Arrived at EDR: 11/14/2017
Date Made Active in Reports: 12/07/2017
Number of Days to Update: 23
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 11/14/2017
Next Scheduled EDR Contact: 02/26/2018
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 09/05/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 11/08/2017
Number of Days to Update: 63
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 12/05/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Quarterly

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 09/11/2017
Date Data Arrived at EDR: 09/12/2017
Date Made Active in Reports: 10/18/2017
Number of Days to Update: 36

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 12/12/2017
Next Scheduled EDR Contact: 03/26/2018
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 06/16/2017
Date Data Arrived at EDR: 06/20/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 119

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 12/13/2017
Next Scheduled EDR Contact: 04/02/2018
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 09/11/2017
Date Data Arrived at EDR: 09/12/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 94

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 12/12/2017
Next Scheduled EDR Contact: 03/26/2018
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water board?s review found that more than one-third of the region?s active disposal pits are operating without permission.

Date of Government Version: 04/15/2015
Date Data Arrived at EDR: 04/17/2015
Date Made Active in Reports: 06/23/2015
Number of Days to Update: 67

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 10/13/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 11/14/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Quarterly

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 12/19/2017
Next Scheduled EDR Contact: 04/09/2018
Data Release Frequency: Varies

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A	Source: EDR, Inc.
Date Data Arrived at EDR: N/A	Telephone: N/A
Date Made Active in Reports: N/A	Last EDR Contact: N/A
Number of Days to Update: N/A	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A	Source: EDR, Inc.
Date Data Arrived at EDR: N/A	Telephone: N/A
Date Made Active in Reports: N/A	Last EDR Contact: N/A
Number of Days to Update: N/A	Next Scheduled EDR Contact: N/A
	Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A	Source: EDR, Inc.
Date Data Arrived at EDR: N/A	Telephone: N/A
Date Made Active in Reports: N/A	Last EDR Contact: N/A
Number of Days to Update: N/A	Next Scheduled EDR Contact: N/A
	Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 09/22/2017
Date Data Arrived at EDR: 09/22/2017
Date Made Active in Reports: 10/10/2017
Number of Days to Update: 18

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 09/21/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 10/11/2017
Date Data Arrived at EDR: 10/12/2017
Date Made Active in Reports: 11/08/2017
Number of Days to Update: 27

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 10/10/2017
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA Facility List

Cupa Facility List

Date of Government Version: 12/08/2017
Date Data Arrived at EDR: 12/12/2017
Date Made Active in Reports: 12/27/2017
Number of Days to Update: 15

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 11/30/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 09/18/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 08/31/2017
Date Data Arrived at EDR: 09/05/2017
Date Made Active in Reports: 11/08/2017
Number of Days to Update: 64

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 12/20/2017
Next Scheduled EDR Contact: 10/09/2017
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 08/07/2017
Date Data Arrived at EDR: 08/08/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 69

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 11/01/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 08/17/2017
Date Data Arrived at EDR: 08/22/2017
Date Made Active in Reports: 10/25/2017
Number of Days to Update: 64

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 10/30/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA Facility List
Cupa Facility list

Date of Government Version: 10/31/2017
Date Data Arrived at EDR: 11/01/2017
Date Made Active in Reports: 11/14/2017
Number of Days to Update: 13

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 10/25/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA Facility List
CUPA facility list.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 12/04/2017
Date Data Arrived at EDR: 12/06/2017
Date Made Active in Reports: 12/27/2017
Number of Days to Update: 21

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 10/30/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 10/03/2017
Date Data Arrived at EDR: 10/06/2017
Date Made Active in Reports: 11/15/2017
Number of Days to Update: 40

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 09/27/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 10/25/2017
Date Data Arrived at EDR: 10/27/2017
Date Made Active in Reports: 11/15/2017
Number of Days to Update: 19

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 08/03/2017
Date Data Arrived at EDR: 08/08/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 69

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 11/14/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 10/23/2017
Date Data Arrived at EDR: 10/24/2017
Date Made Active in Reports: 11/15/2017
Number of Days to Update: 22

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INYO COUNTY:

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA Facility List
Cupa facility list.

Date of Government Version: 06/08/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 56

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 11/14/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 11/02/2017
Date Data Arrived at EDR: 11/07/2017
Date Made Active in Reports: 12/20/2017
Number of Days to Update: 43

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 11/01/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 11/14/2017
Date Data Arrived at EDR: 11/17/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 28

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 11/14/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Varies

LAKE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 11/09/2017
Date Data Arrived at EDR: 11/10/2017
Date Made Active in Reports: 11/15/2017
Number of Days to Update: 5

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 10/16/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 07/24/2017
Date Data Arrived at EDR: 07/26/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 82

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

LOS ANGELES COUNTY:

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206
Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 12/13/2017
Next Scheduled EDR Contact: 04/02/2018
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 10/11/2017
Date Data Arrived at EDR: 10/12/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 5
Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 10/10/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 10/16/2017
Date Data Arrived at EDR: 10/17/2017
Date Made Active in Reports: 12/07/2017
Number of Days to Update: 51
Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 10/17/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 04/21/2017
Date Made Active in Reports: 10/09/2017
Number of Days to Update: 171
Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 10/16/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 11/01/2017
Date Data Arrived at EDR: 11/14/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 31
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 11/14/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 10/16/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/10/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 54
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Annually

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 07/11/2017
Date Data Arrived at EDR: 07/14/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 69

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 10/10/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 10/26/2017
Date Data Arrived at EDR: 10/27/2017
Date Made Active in Reports: 11/06/2017
Number of Days to Update: 10

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 11/14/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/28/2017
Date Data Arrived at EDR: 10/05/2017
Date Made Active in Reports: 11/08/2017
Number of Days to Update: 34

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 09/27/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 10/02/2017
Date Data Arrived at EDR: 10/03/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 14

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 11/30/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Varies

MONO COUNTY:

CUPA Facility List
CUPA Facility List

Date of Government Version: 11/21/2017
Date Data Arrived at EDR: 11/27/2017
Date Made Active in Reports: 12/27/2017
Number of Days to Update: 30

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 11/21/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: Varies

MONTEREY COUNTY:

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 09/11/2017
Date Data Arrived at EDR: 09/15/2017
Date Made Active in Reports: 11/28/2017
Number of Days to Update: 74

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 11/20/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 11/21/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 11/22/2017
Date Data Arrived at EDR: 11/27/2017
Date Made Active in Reports: 12/19/2017
Number of Days to Update: 22

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 11/21/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 11/02/2017
Date Data Arrived at EDR: 11/07/2017
Date Made Active in Reports: 11/15/2017
Number of Days to Update: 8

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 10/25/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Varies

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 11/02/2017
Date Data Arrived at EDR: 11/09/2017
Date Made Active in Reports: 12/07/2017
Number of Days to Update: 28

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/06/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 11/02/2017
Date Data Arrived at EDR: 11/09/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 36

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/06/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Quarterly

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 11/02/2017
Date Data Arrived at EDR: 11/07/2017
Date Made Active in Reports: 12/19/2017
Number of Days to Update: 42

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/07/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 09/05/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 11/08/2017
Number of Days to Update: 63

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 11/30/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 10/23/2017
Date Data Arrived at EDR: 11/03/2017
Date Made Active in Reports: 11/15/2017
Number of Days to Update: 12

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 11/01/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 10/11/2017
Date Data Arrived at EDR: 10/12/2017
Date Made Active in Reports: 11/09/2017
Number of Days to Update: 28

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 12/15/2017
Next Scheduled EDR Contact: 04/02/2018
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 10/12/2017
Date Data Arrived at EDR: 10/12/2017
Date Made Active in Reports: 11/08/2017
Number of Days to Update: 27

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 12/15/2017
Next Scheduled EDR Contact: 04/02/2018
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 08/02/2017
Date Data Arrived at EDR: 10/03/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 3

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/03/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 08/02/2017
Date Data Arrived at EDR: 10/03/2017
Date Made Active in Reports: 11/16/2017
Number of Days to Update: 44

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/03/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 11/01/2017
Date Data Arrived at EDR: 11/03/2017
Date Made Active in Reports: 11/17/2017
Number of Days to Update: 14

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 11/01/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 08/31/2017
Date Data Arrived at EDR: 09/19/2017
Date Made Active in Reports: 11/16/2017
Number of Days to Update: 58

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 11/06/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/05/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 11/08/2017
Number of Days to Update: 63

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 12/05/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Quarterly

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 10/31/2015
Date Data Arrived at EDR: 11/07/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 58

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 11/29/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 11/01/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/02/2017
Date Data Arrived at EDR: 11/07/2017
Date Made Active in Reports: 12/19/2017
Number of Days to Update: 42

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 11/01/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 10/03/2017
Date Data Arrived at EDR: 10/06/2017
Date Made Active in Reports: 10/10/2017
Number of Days to Update: 4

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 12/13/2017
Next Scheduled EDR Contact: 04/02/2018
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/16/2017
Date Data Arrived at EDR: 11/17/2017
Date Made Active in Reports: 12/18/2017
Number of Days to Update: 31

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 11/14/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Varies

SAN MATEO COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 09/15/2017
Date Data Arrived at EDR: 09/19/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 28
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 12/06/2017
Next Scheduled EDR Contact: 03/26/2018
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 09/15/2017
Date Data Arrived at EDR: 09/19/2017
Date Made Active in Reports: 11/09/2017
Number of Days to Update: 51
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 12/06/2017
Next Scheduled EDR Contact: 03/26/2018
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28
Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 12/13/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Varies

SANTA CLARA COUNTY:

Cupa Facility List
Cupa facility list

Date of Government Version: 08/07/2017
Date Data Arrived at EDR: 08/10/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 67
Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 11/14/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Varies

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22
Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13
Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 11/21/2017
Next Scheduled EDR Contact: 03/12/2018
Data Release Frequency: Annually

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 11/01/2017
Date Data Arrived at EDR: 11/03/2017
Date Made Active in Reports: 12/07/2017
Number of Days to Update: 34

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 11/01/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 11/14/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 11/14/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 09/26/2017
Date Data Arrived at EDR: 09/27/2017
Date Made Active in Reports: 11/10/2017
Number of Days to Update: 44

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 12/08/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 09/26/2017
Date Data Arrived at EDR: 09/27/2017
Date Made Active in Reports: 11/08/2017
Number of Days to Update: 42

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 12/08/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Quarterly

SONOMA COUNTY:

Cupa Facility List
Cupa Facility list

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 09/25/2017
Date Data Arrived at EDR: 09/27/2017
Date Made Active in Reports: 11/16/2017
Number of Days to Update: 50

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 12/19/2017
Next Scheduled EDR Contact: 04/09/2018
Data Release Frequency: Varies

Leaking Underground Storage Tank Sites

A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 10/03/2017
Date Data Arrived at EDR: 10/06/2017
Date Made Active in Reports: 11/10/2017
Number of Days to Update: 35

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 12/19/2017
Next Scheduled EDR Contact: 04/09/2018
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 11/01/2017
Date Data Arrived at EDR: 11/10/2017
Date Made Active in Reports: 11/16/2017
Number of Days to Update: 6

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 10/16/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Varies

SUTTER COUNTY:

Underground Storage Tanks

Underground storage tank sites located in Sutter county.

Date of Government Version: 12/01/2017
Date Data Arrived at EDR: 12/04/2017
Date Made Active in Reports: 12/19/2017
Number of Days to Update: 15

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 12/01/2017
Next Scheduled EDR Contact: 03/19/2018
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA Facility List

Cupa facilities

Date of Government Version: 11/16/2017
Date Data Arrived at EDR: 11/17/2017
Date Made Active in Reports: 12/18/2017
Number of Days to Update: 31

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 11/14/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 10/23/2017
Date Data Arrived at EDR: 10/24/2017
Date Made Active in Reports: 11/16/2017
Number of Days to Update: 23

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

TULARE COUNTY:

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA Facility List
Cupa program facilities

Date of Government Version: 09/27/2017
Date Data Arrived at EDR: 09/28/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 18

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 12/18/2017
Next Scheduled EDR Contact: 02/19/2018
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 10/24/2017
Date Data Arrived at EDR: 10/25/2017
Date Made Active in Reports: 11/16/2017
Number of Days to Update: 22

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 09/26/2017
Date Data Arrived at EDR: 10/25/2017
Date Made Active in Reports: 12/07/2017
Number of Days to Update: 43

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/26/2017
Next Scheduled EDR Contact: 04/16/2018
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 11/08/2017
Next Scheduled EDR Contact: 02/26/2018
Data Release Frequency: Quarterly

Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 09/26/2017
Date Data Arrived at EDR: 10/25/2017
Date Made Active in Reports: 12/07/2017
Number of Days to Update: 43

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Quarterly

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 08/28/2017
Date Data Arrived at EDR: 09/12/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 9

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/11/2017
Next Scheduled EDR Contact: 03/26/2018
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 09/27/2017
Date Data Arrived at EDR: 10/02/2017
Date Made Active in Reports: 11/14/2017
Number of Days to Update: 43

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 09/27/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Annually

YUBA COUNTY:

CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 11/08/2017
Date Data Arrived at EDR: 11/10/2017
Date Made Active in Reports: 11/16/2017
Number of Days to Update: 6

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 10/25/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 11/11/2017
Date Data Arrived at EDR: 11/14/2017
Date Made Active in Reports: 12/18/2017
Number of Days to Update: 34

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 11/14/2017
Next Scheduled EDR Contact: 02/26/2018
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 07/27/2017
Number of Days to Update: 107

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 10/05/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Annually

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 10/01/2017
Date Data Arrived at EDR: 11/01/2017
Date Made Active in Reports: 11/13/2017
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 11/01/2017
Next Scheduled EDR Contact: 02/12/2018
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 07/25/2017
Date Made Active in Reports: 09/25/2017
Number of Days to Update: 62

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 10/16/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 06/19/2015
Date Made Active in Reports: 07/15/2015
Number of Days to Update: 26

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 11/16/2017
Next Scheduled EDR Contact: 03/05/2018
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 04/13/2017
Date Made Active in Reports: 07/14/2017
Number of Days to Update: 92

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 12/11/2017
Next Scheduled EDR Contact: 03/26/2018
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.
Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.
Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.
Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.
Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

CENTERPOINTE
CENTERPOINTE
MORENO VALLEY, CA 92553

TARGET PROPERTY COORDINATES

Latitude (North):	33.91398 - 33° 54' 50.33''
Longitude (West):	117.260624 - 117° 15' 38.25''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	475907.1
UTM Y (Meters):	3752454.8
Elevation:	1562 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5641312 RIVERSIDE EAST, CA
Version Date:	2012
East Map:	5641326 SUNNYMEAD, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

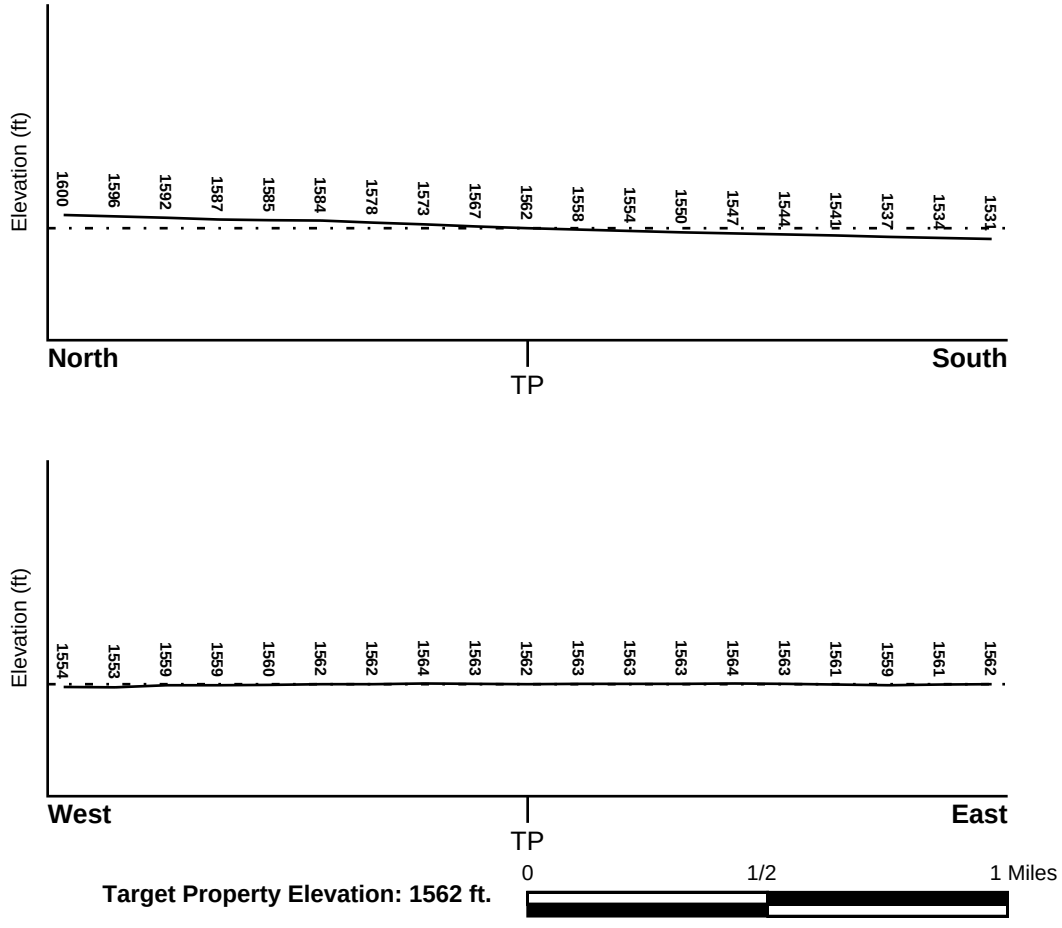
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General South

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06065C0745G	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06065C0761G	FEMA FIRM Flood data
06065C0765G	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NOT AVAILABLE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
1	1/8 - 1/4 Mile NNW	Not Reported
1G	1/8 - 1/4 Mile NNW	Not Reported

For additional site information, refer to Physical Setting Source Map Findings.

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

Era:	Mesozoic
System:	Cretaceous
Series:	Cretaceous granitic rocks
Code:	Kg *(decoded above as Era, System & Series)*

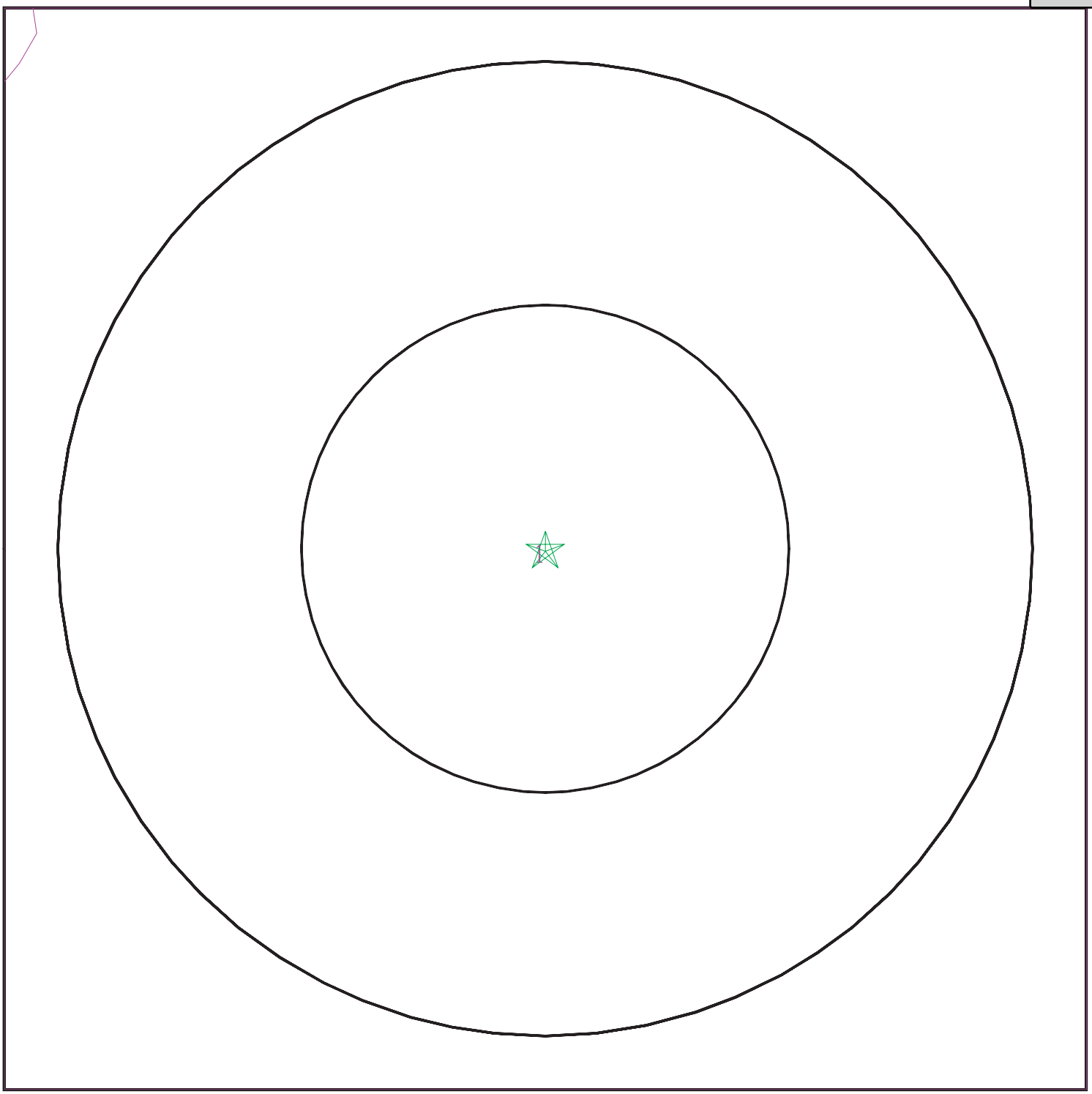
GEOLOGIC AGE IDENTIFICATION

Category: Plutonic and Intrusive Rocks

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

SSURGO SOIL MAP - 5146282.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Centerpointe	CLIENT:	ARCADIS U.S., Inc.
ADDRESS:	Centerpointe Moreno Valley CA 92553	CONTACT:	Janet Holtz
		INQUIRY #:	5146282.2s
LAT/LONG:	33.91398 / 117.260624	DATE:	December 28, 2017 10:01 am

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Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: MONSERATE

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 7.3 Min: 6.1
2	9 inches	27 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
3	27 inches	44 inches	indurated	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
4	44 inches	57 inches	cemented	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
5	57 inches	70 inches	loamy coarse sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A3	USGS40000138876	1/2 - 1 Mile SSE
A4	USGS40000138875	1/2 - 1 Mile SSE
5	USGS40000138874	1/2 - 1 Mile SSE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
2	3523	1/2 - 1 Mile South

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PHYSICAL SETTING SOURCE MAP - 5146282.2s

E.1.s

County Boundary
Major Roads
Contour Lines
Earthquake Fault Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location
HD Closest Hydrogeological Data
Oil, gas or related wells

SITE NAME: Centerpointe	CLIENT: ARCADIS U.S., Inc.
ADDRESS: Centerpointe Moreno Valley CA 92553	CONTACT: Janet Holtz
LAT/LONG: 33.91398 / 117.260624	INQUIRY #: 5146282.2s DATE: December 28, 2017 10:01 am

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

			Database	EDR ID Number
1 **NNW** **1/8 - 1/4 Mile** **Higher**	Site ID:	083302648T	**AQUIFLOW**	**50177**
	Groundwater Flow:	Not Reported		
	Shallow Water Depth:	100		
	Deep Water Depth:	Not Reported		
	Average Water Depth:	Not Reported		
	Date:	08/21/1996		

2
South
1/2 - 1 Mile
Lower

CA WELLS **3523**

Water System Information:

Prime Station Code:	03S/04W-24D01 S	User ID:	WAT
FRDS Number:	3310700001	County:	Riverside
District Number:	14	Station Type:	WELL/AMBNT
Water Type:	Well/Groundwater	Well Status:	Abandoned
Source Lat/Long:	335409.0 1171537.0	Precision:	100 Feet (one Second)
Source Name:	WELL 01 - ABANDONED		
System Number:	3310700		
System Name:	MARCH AFB		
Organization That Operates System:			
	722 CES/CC 840 MACDILL,BLD2506 MARCH AFB, CA 92518		
Pop Served:	8186	Connections:	2348
Area Served:	MARCH AFB		

A3
SSE
1/2 - 1 Mile
Lower

FED USGS **USGS40000138876**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-335405117152402		
Monloc name:	003S004W24D002S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.9014064
Longitude:	-117.2575397	Sourcemap scale:	Not Reported
Horiz Acc measure:	Unknown	Horiz Acc measure units:	Unknown
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

A4
SSE **FED USGS** **USGS40000138875**
1/2 - 1 Mile
Lower

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-335405117152401		
Monloc name:	003S004W24D001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.9014064
Longitude:	-117.2575397	Sourcemap scale:	Not Reported
Horiz Acc measure:	Unknown	Horiz Acc measure units:	Unknown
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

5
SSE **FED USGS** **USGS40000138874**
1/2 - 1 Mile
Lower

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-335405117151201		
Monloc name:	003S004W24C001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.9014065
Longitude:	-117.2542062	Sourcemap scale:	Not Reported
Horiz Acc measure:	Unknown	Horiz Acc measure units:	Unknown
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

1G
NNW
1/8 - 1/4 Mile
Lower

Site ID:	083302648T
Groundwater Flow:	Not Reported
Shallow Water Depth:	100
Deep Water Depth:	Not Reported
Average Water Depth:	Not Reported
Date:	08/21/1996

AQUIFLOW **50177**

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
92553	13	0

Federal EPA Radon Zone for RIVERSIDE County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for RIVERSIDE COUNTY, CA

Number of sites tested: 12

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.117 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.450 pCi/L	100%	0%	0%
Basement	1.700 pCi/L	100%	0%	0%

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PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

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PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

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PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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APPENDIX D

Agency Information

FINAL

Site Inspection Report
March Field
Riverside County, California

U.S. Army Corps of Engineers
Southwest IMA Region

FUDS Project No. J09CA716801
Contract: W912DY-04-D-0005
Task Order: 0009

Prepared For
U.S. Army Corps of Engineers, Los Angeles District
915 Wilshire Blvd
Los Angeles, California 90017-3401
and
U.S. Army Corps of Engineers
South Pacific Division Range Support Center

Prepared By

PARSONS
5390 Triangle Parkway, Suite 100
Norcross, Georgia 30092

The views, opinions, and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other documentation.

June 2009

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LIST OF ACRONYMS

af	Acre Feet
APP	Accident Prevention Plan
ARC	Annual Report to Congress
ASR	Archives Search Report
Banks	Banks Environmental
bgs	Below Ground Surface
BTAG	Biological Technical Assistance Group
CDF&G	California Department of Fish and Game
CEMVS	U.S. Army Corps of Engineers, St. Louis District
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESPL	U.S. Army Corps of Engineers, Los Angeles District
CFR	Code of Federal Regulations
CHE	Chemical Hazard Evaluation
CHHSL	California Human Health Screening Level
CNDDB	California Natural Diversity Database
CRREL	Cold Regions Research and Engineering Laboratory
CRWQCB	California Regional Water Quality Control Board
CSEM	Conceptual Site Exposure Model
CSM	Conceptual Site Model
CWM	Chemical Warfare Materiel
CWP	Center for Watershed Protection
CZMA	Coastal Zone Management Area
CZMP	Coastal Zone Management Program
DERP	Defense Environmental Response Program
DMM	Discarded Military Munitions
DoD	Department of Defense
DOI	Department of the Interior
DQO	Data Quality Objective
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
EHE	Explosive Hazard Evaluation
EPP	Environmental Protection Plan
ER	Engineer Regulation
ESA	Eastside Service Area
°F	Degrees Fahrenheit

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LIST OF ACRONYMS (CONTINUED)

FTL	Field Team Leader
FUDS	Formerly Used Defense Site
FUDSMIS	Formerly Used Defense Site Management Information System
GIS	Geographic Information System
gpm	Gallons Per Minute
GPS	Global Positioning System
HHE	Health Hazard Evaluation
HRS	Hazard Ranking System
HTW	Hazardous and Toxic Waste
I&E	Installations and Environment
IGD	Interim Guidance Document
INPR	Inventory Project Report
lb	Pound
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
MC	Munitions Constituents
MD	Munitions Debris
MEC	Munitions and Explosives of Concern
MMRP	Military Munitions Response Program
MPA	Marine Protected Area
MRS	Munitions Response Site
MRSPP	Munitions Response Site Prioritization Protocol
MWD	Metropolitan Water District
NAD	North American Datum
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NDAI	No DoD Action Indicated
NERRS	National Estuarine Research Reserve System
NFS	National Forest Service
NHA	National Heritage Areas
NHL	National Historic Landmarks
NMS	National Marine Sanctuaries
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRIS	National Register Information System

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LIST OF ACRONYMS (CONTINUED)

NRHD	National Register of Historic District
NRHP	National Register of Historic Places
NRIS	National Register Information System
NWI	National Wetlands Inventory
NWRS	National Wildlife Refuge System
OHP	Office of Historic Preservation
PA	Preliminary Assessment
PAH	Polycyclic Aromatic Hydrocarbon
Parsons	Parsons Corporation
PCL	Protective Concentration Level
PM	Project Manager
PQL	Practical Quantitation Limit
PRG	Preliminary Remediation Goal
PSAP	Programmatic Sampling and Analysis Plan
PWP	Programmatic Work Plan
PWS	Performance Work Statement
QA	Quality Assurance
QC	Quality Control
QR	Qualitative Reconnaissance
RA	Removal Action
RAC	Risk Assessment Code
RCWMD	Riverside County Waste Management Department
RI/FS	Remedial Investigation/Feasibility Study
ROE	Right of Entry
RSL	Regional Screening Level
SAP	Sampling and Analysis Plan
SAWPA	Santa Ana Watershed Project Authority
SCHR	South Coast Hydrologic Region
SI	Site Inspection
SL	Screening Level
SLERA	Screening Level Ecological Risk Assessment
SLRA	Screening Level Risk Assessment
SPD RSC	South Pacific Division Range Support Center
SSL	Soil Screening Level
SS-WP	Site-Specific Work Plan
SVT	Site Visit Team

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LIST OF ACRONYMS (CONTINUED)

SWP	State Water Project
TBD	To Be Determined
TDS	Total Dissolved Solids
T&E	Threatened and Endangered
TESS	Threatened and Endangered Species System
TPP	Technical Project Planning
USACE	U.S. Army Corps of Engineers
USAESCH	Engineering and Support Center, Huntsville
USC	U.S. Code
USDA FS	U.S. Department of Agriculture – Forest Service
USEPA	United States Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UTM	Universal Transverse Mercator
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Linda S Adams
Secretary for
Environmental Protection

Department of Toxic Substances Control

Maziar Movassaghi, Acting Director
5796 Corporate Avenue
Cypress, California 90630

Arnold Schwarzenegger
Governor

June 11, 2009

Mr. Lloyd Godard
United States Army Corps of Engineers
Los Angeles District
915 Wilshire Boulevard, Suite 15018
Los Angeles, California 90017

DRAFT FINAL SITE INVESTIGATION REPORT FOR MARCH FIELD, RIVERSIDE COUNTY, CALIFORNIA

Dear Mr. Godard:

The Department of Toxic Substances Control (DTSC) has completed its review of the draft final Site Inspection (SI) Report detailing the site investigation results for munitions and explosives of concern (MEC) and munitions constituents (MC) in soil, surface water, and groundwater.

March Field was established in 1918 to conduct primary flight training for aviators for World War 1. The site consisted of three overlapping skeet ranges used for small arms training. Small arms training was conducted from 1943 to 1947.

Based on the Site Investigation sampling results that indicate MC was detected above human health risk screening levels, DTSC concur with the draft final SI report recommendation for Remedial Investigation and Feasibility Study (RI/FS) with additional MC sampling.

If you have any questions or comments regarding this transmittal or other project matters, please do not hesitate to contact me at (714) 484-5452.

Sincerely,

Daniel Cordero Jr.
Project Manager
Brownfields and Environmental Restoration Program

Printed on Recycled Paper

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GLOSSARY OF TERMS

Anomaly	Any item that deviates from the expected subsurface ferrous and non-ferrous material at a site (i.e., pipes, power lines, etc.).
Inhabited Structure	Permanent or temporary structure, other than military munitions-related structures, routinely occupied by one or more persons for any portion of a day.
Magnetometer	An instrument for measuring the strength of a magnetic field; used to detect buried iron and other metal objects.
Military Munitions	All ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of the Department of Defense, the Coast Guard, the Department of Energy, and the National Guard. The term includes confined gaseous, liquid, and solid propellants; explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries, including bulk explosives and chemical warfare agents; chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges; and devices and components thereof.
Munitions and Explosives of Concern (MEC)	Military munitions that may pose unique explosives safety risks, including UXO, discarded military munitions, or munitions constituents present in high enough concentrations to pose an explosive or other health hazard.
Munitions Constituents (MC)	Any materials originating from unexploded ordnance, discarded military munitions, or other military munitions, including explosive and nonexplosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions.
Munitions Debris (MD)	Remnants of munitions (e.g., penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization, or disposal.

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GLOSSARY OF TERMS (CONTINUED)

Munitions Response	Response actions, including investigation, removal actions, and remedial actions, to address the explosive safety, human health, or environmental risks presented by unexploded ordnance, discarded military munitions, or munitions constituents, or to support a determination that no removal or remedial action is required.
Munitions Response Area (MRA)	Any area on a defense site that is known or suspected to contain UXO, discarded military munitions, or MC. Examples include former ranges and munitions burial areas. A munitions response area is comprised of one or more munitions response sites.
Munitions Response Site (MRS)	A discrete location within an MRA that is known to require a munitions response.
Projectile	Object projected by an applied force and continuing in motion by its own inertia. This includes bullets, bombs, shells, grenades, guided missiles, and rockets.
Unexploded Ordnance (UXO)	Military munitions that have been primed, fuzed, armed, or otherwise prepared for action; that have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installation, personnel, or material; and that remain unexploded whether by malfunction, design, or any other cause.

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EXECUTIVE SUMMARY

ES.1 The Army Air Corps established March Field in early 1918 to conduct primary flight training for aviators for World War I; the first cadet officially landed at March Field on March 1, 1918. The site consisted of three overlapping skeet sub ranges that included a Triple Skeet Range (36.1 acres), a High Tower Shot Gun Range East (29.4 acres), and a High Tower Shot Gun Range West (29.4 acres). All three sub ranges were used for small arms training beginning sometime after September 1943 and continuing until Spring 1947. A site inspection (SI), documented in this report, was conducted to determine whether the munitions response site (MRS) identified within the March Field site (refer to Table ES.1) warrants subsequent characterization as part of a remedial investigation/feasibility study (RI/FS) or no Department of Defense (DoD) action indicated (NDAI). The SI was performed to gather and evaluate evidence of the potential residual presence of munitions and explosives of concern (MEC) and munitions constituents (MC) within MRS01 – Range Complex No. 1 (skeet) associated with March Field. To accomplish the objective, qualitative reconnaissance (QR) and MC sampling were performed.

ES.2 The technical project planning (TPP) Team identified that, in addition to 1.0 mile of QR, the collection of up to ten surface soil samples (plus associated quality assurance [QA]/quality control [QC] samples), would be sufficient to meet the project objectives.

ES.3 The SI evaluation included the conduct of approximately 1.4 miles of pedestrian QR as well as the collection of ten surface soil samples.

ES.4 All surface soil samples were analyzed by TestAmerica for metals and polycyclic aromatic hydrocarbons (PAHs). Surface soil samples collected in the area of the former firing points and ambient surface soil samples included additional explosives analysis. One explosive compound, nitroglycerine, was detected in one surface soil sample (and its field duplicate). All four MC metals analyzed and all PAHs were detected above background concentrations.

ES.5 Ecological receptors are not considered to be a target of migration pathways because March Field is not considered to be an important ecological place; threatened and endangered (T&E) species are not present.

ES.6 No MEC or munitions debris (MD) were observed during the SI field effort at MRS01 – Range Complex No. 1 (skeet).

Table ES.1
Summary of Site Inspection Results
March Field, Riverside County, California

MRS	Acreage	Munitions and Explosives of Concern and/or Munitions Debris Assessment(1)	Munitions Constituent Assessment(2)	Recommendation
01 – Range Complex No. 1 (skeet)	53.3	No	Yes	Factors such as current land use and the potential unacceptable risk for human receptors exposed to MC metals arsenic and lead, and PAHs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene at MRS01 warrant **RI/FS and additional MC sampling.** ***Immediate Removal Action is not required at this time.***

Notes:
1 - "Yes" in the "MEC/MD Assessment" column of the table indicates confirmed MEC or MD presence indicative of potential MEC presence and RI/FS recommendation for the MRS. "No" in this column of the table indicates no confirmed MEC or MD indicative of potential MEC presence and NDAI recommendation for this MRS.
2 - "Yes" in the "MC Assessment" column of the table indicates confirmed MC presence at levels indicating a potential elevated risk to human health or ecological receptors and RI/FS recommendation for the MRS. "No" in this column of the table indicates absence of MC at levels indicating a potential risk to human health or ecological receptors and NDAI recommendation for this MRS.

ES.7 Munitions reportedly used at the March Field site during World War II included small arms (shotgun, 12-gage) only. ***No MEC or MD was observed during the SI field visit at the MRS; however, clay pigeon debris was observed throughout the site. The ground surface was saturated with clay pigeon debris in some areas. There have been no reports of MEC since site closure. The site visit associated with the 1999 Inventory Project Report (INPR) did not observe MEC or MD; however, debris from clay pigeons was observed. The site visit conducted in support of the 2004 Preliminary Assessment (PA) observed clay pigeon debris as well as a couple of pieces of individual shot.***

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ES.8 Based on the SI environmental sampling results, the maximum detected concentrations of nitroglycerin, antimony, copper, 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(g,h,i)perylene, fluoranthene, fluorine, naphthalene, phenanthrene, and pyrene did not exceed their respective human health screening values for surface soil; there is no unacceptable risk to human health due to exposure to these MC metals, single explosive, or PAHs in surface soil at the site. However, arsenic, lead, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene exceeded their respective human health screening values for surface soil. Therefore, based on the analytical results presented in this report, an unacceptable risk is possible for human receptors exposed to MC metals arsenic and lead, and PAHs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene. Due to the presence of MC metals arsenic and lead at levels that may pose an unacceptable risk to human receptors at MRS01-Range Complex No. 1 (skeet), and the presence of PAHs (which are not considered MC) at levels that may pose an unacceptable risk to human receptors and may represent potential MC contamination, this site is recommended to proceed to RI/FS status***. Additional sampling is warranted in the RI/FS phase.***

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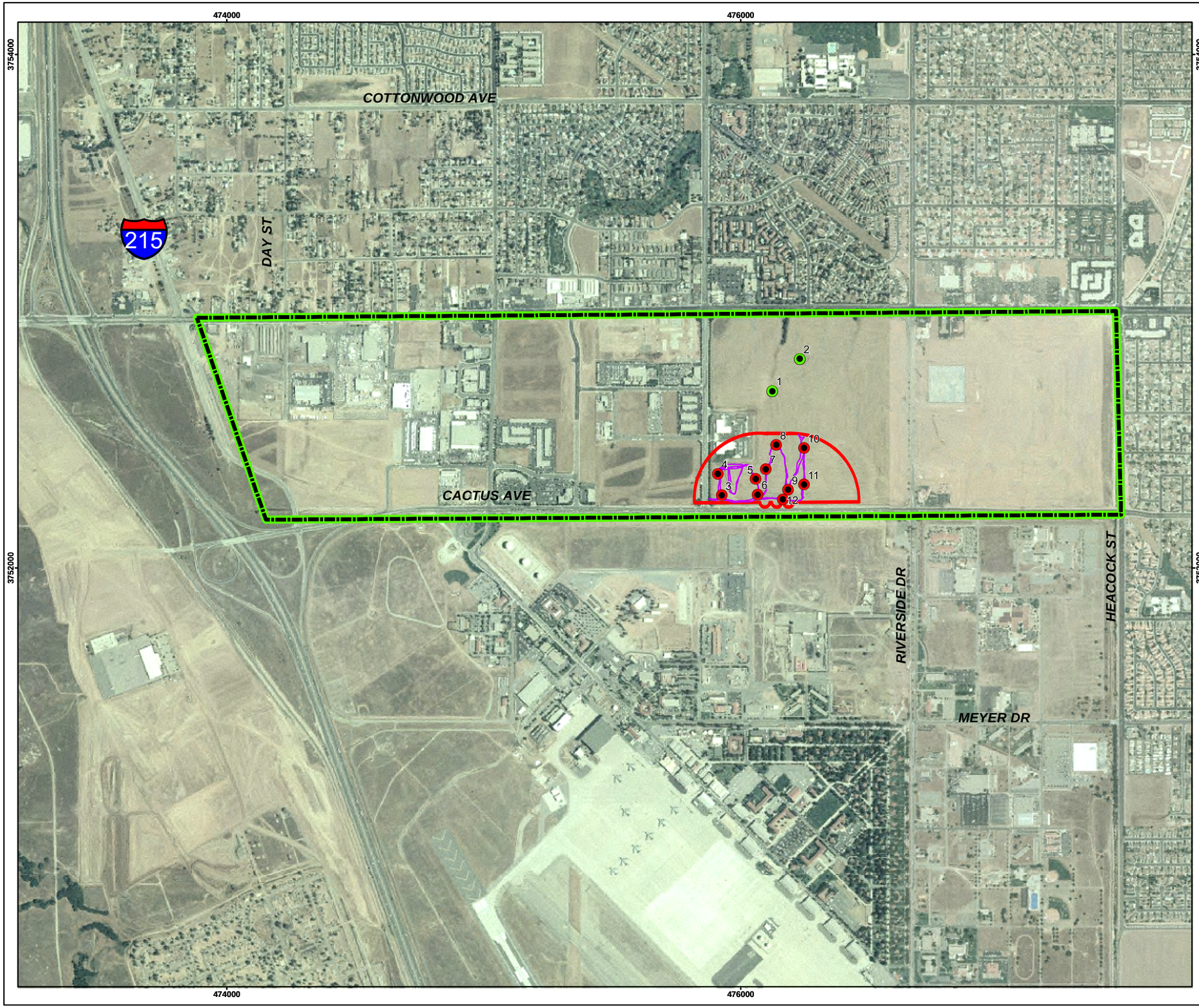
Figure ES.1

General Site Overview
March Field
FUDS Project No. J09CA716801

Riverside County, California



Legend

- Field Observation Location
- Ambient Soil Sample Location
- Biased Soil Sample Location
- MRS01-Range Complex No. 1 (skeet)
- FUDS Property Boundary
- FUDS Eligible Boundary
- Qualitative Reconnaissance Track

Site Location in California

N

Image: 2004 Orthophoto
Projection: UTM Zone 11 NAD83, Map Units in Meters

300 150 0 300 Meters

PARSONS	U.S. ARMY SOUTH PACIFIC DIVISION RANGE SUPPORT CENTER

DESIGNED BY: BT	General Site Overview		
DRAWN BY: BT			
CHECKED BY: JR	SCALE: As Shown	PROJECT NUMBER: 744653.8613(	
SUBMITTED BY: DS	DATE: June 2009	PAGE NUMBER: ES-4	
	FILE: X:\GIS\Site_inspections_sw\Maps\marchfield_calFigES_1.mxd		

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

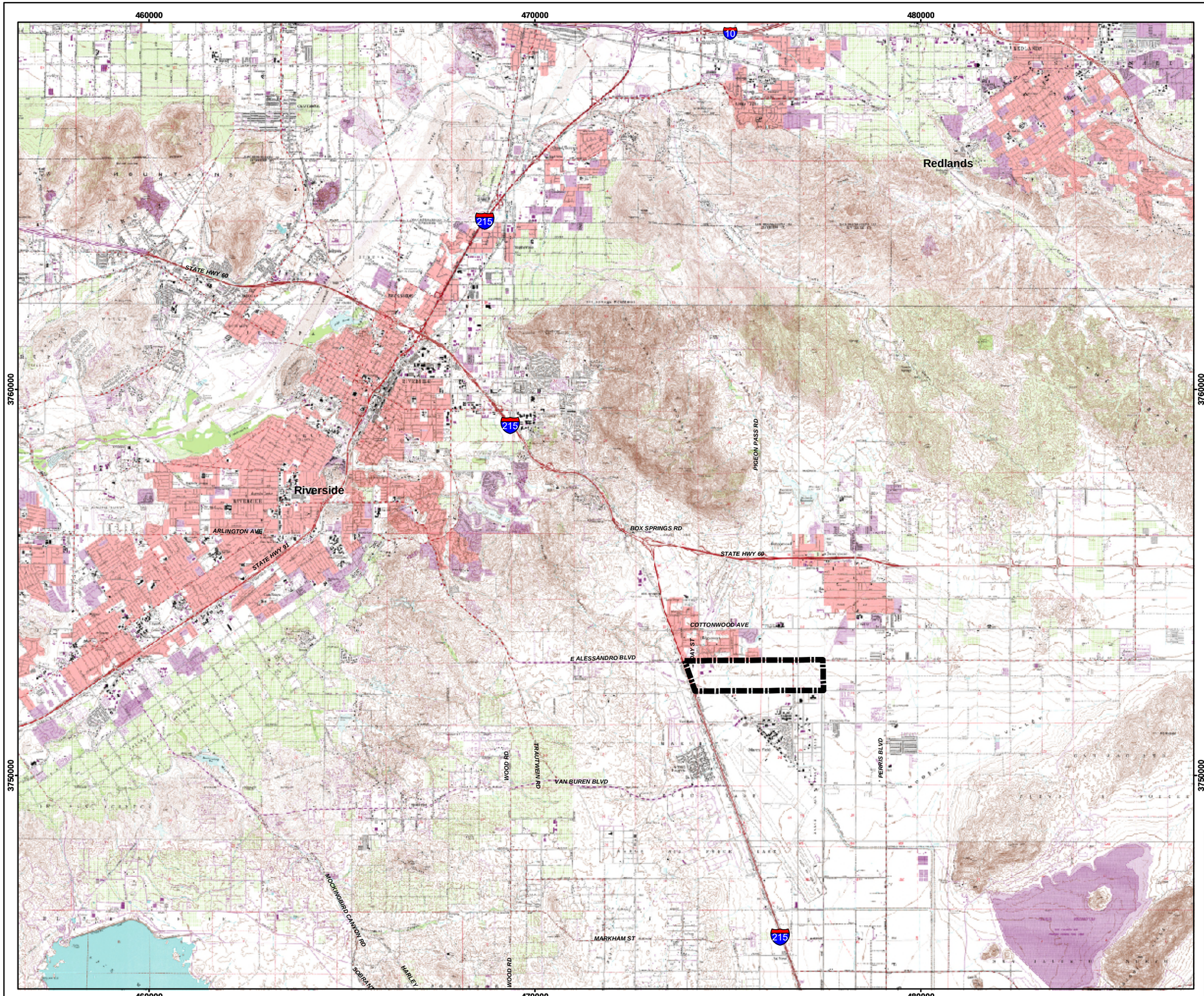


Figure 1.1

Site Location
March Field
FUDS Project No. J09CA716801

Riverside County, California

Legend

FUDS Property Boundary

Site Location in California

N

Image Source: USGS 7.5' Topo Quadrangles, 1978
Projection: UTM Zone 11 NAD83, Map Units in Meters

2 1 0 2 Kilometers

PARSONS	U.S. ARMY SOUTH PACIFIC DIVISION RANGE SUPPORT CENTER	
DESIGNED BY: BT	Site Location	
DRAWN BY: BT	SCALE: As Shown	PROJECT NUMBER: 744653.8613(
CHECKED BY: JR	DATE: June 2009	PAGE NUMBER: 1-4
SUBMITTED BY: DS	FILE: X:\GIS\Site_inspections_sw\Maps\marchfield_ca\Fig1_1.mxd	

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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CHAPTER 1
INTRODUCTION

1.1 BACKGROUND

1.1.1 Parsons Corporation (Parsons) received Contract No. W912DY-04-D-0005, Task Order No. 0009, from the United States Army Corps of Engineers (USACE), Engineering and Support Center, Huntsville (USAESCH) to perform a Site Inspection (SI) at the March Field Formerly Used Defense Site (FUDS). The Army Air Corps established March Field in early 1918 to conduct primary flight training for aviators for World War I; the first cadet officially landed at March Field on March 1, 1918. March Field transitioned from primary flight training to bombardment in 1931. Prior to World War II, March Field was expanded and more than quadrupled in size by 1942. Property acquisitions in support of the mission in the 1940s resulted in a comprehensive FUDS-eligible acreage totaling 53.3 acres, as depicted in Figure 1.1. March Field consists of one munitions response site (MRS), Range Complex No. 1 (skeet), as identified in Table 1.1. March Field has been assigned FUDS Project No. J09CA716801.

Table 1.1
March Field

MRS	MRS Acreage[1]	X-Coordinate[2] (meters)	Y-Coordinate[2] (meters)
01 – Range Complex No. 1 (skeet)	53.3	475987.47E	3752384.60 N

1 - Acreage based on review of Annual Report to Congress (ARC), Archives Search Report (ASR) Supplement, and the FUDS Management Information System (FUDSMIS).
2 - Universal Transverse Mercator (UTM) Zone 11 North American Datum (NAD) 83.

1.1.2 The Department of Defense (DoD) established the Military Munitions Response Program (MMRP) to address DoD sites suspected of containing munitions and explosives of concern (MEC) or munitions constituents (MC). Under the MMRP, the USACE is conducting environmental response activities at FUDS for the Army, the DoD's executive agent for the FUDS program.

1.1.3 Pursuant to the USACE's Engineer Regulation (ER) 200-3-1 (USACE, 2004) and the Management Guidance for the Defense Environmental Restoration Program (DERP) (Office of the Deputy Under Secretary of Defense [Installations and Environment], 2001), USACE is conducting FUDS response activities. All work is performed in accordance with the following:

- The DERP statute (10 U.S. Code [USC] 2701 *et seq*.);
- The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) (42 USC §9601 *et seq*);
- Executive Orders 12580 and 13016; and
- The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] Part 300).

1.1.4 USACE is conducting remedial SIs, as set forth in the NCP, to evaluate hazardous substance releases or threatened releases from eligible FUDS.

1.1.5 While not all MEC/MC constitute CERCLA hazardous substances, pollutants, or contaminants, the DERP statute provides DoD the authority to respond to releases of MEC/MC, and DoD policy states that such responses shall be conducted in accordance with CERCLA and the NCP.

1.1.6 This report summarizes the work performed during the SI and presents an accounting of any MEC and MC contamination identified on the site. The SI was limited exclusively to MEC and MC contamination issues requiring collection of a sufficient and appropriate amount of information, but does not consider other unrelated hazardous and toxic waste (HTW) concerns the site may pose. Per ER 200-3-1, guidance for conducting an SI, Section 4-4.1.2:

> *The SI is not intended as a full-scale study of the nature and extent of contamination or explosive hazards. The objectives of the remedial SI are to: (i) Eliminate from further consideration those releases that pose no significant threat to public health or the environment; (ii) Determine the potential need for removal action; (iii) Collect or develop additional data, appropriate for Hazard Ranking System (HRS) scoring by [US]EPA; and (iv) Collect data, as appropriate, to characterize the release for effective and rapid initiation of the Remedial Investigation/Feasibility Study (RI/FS).*

1.2 PROJECT OBJECTIVES

1.2.1 The primary objective of the MMRP SI is to determine whether or not a FUDS project warrants further response action under CERCLA. The SI collects sufficient and appropriate information necessary to make this determination, as well as:

- determines the potential need for a removal action;
- collects or develops additional data, as appropriate, for Hazard Ranking System (HRS) scoring by the U.S. Environmental Protection Agency (USEPA); and
- collects data, as appropriate, to characterize the release for effective and rapid initiation of the RI/FS.

1.2.2 Another objective of the MMRP SI is to collect the additional data necessary to complete the Munitions Response Site Prioritization Protocol (MRSPP).

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1.3 PROJECT SCOPE

1.3.1 The site visit associated with the 1999 Inventory Project Report (INPR) did not observe MEC or munitions debris (MD); however, debris from clay pigeons was observed. The site visit conducted on July 27, 2004, in support of the Preliminary Assessment (PA) observed clay pigeon debris as well as a couple of pieces of individual shot. No MEC has been reported to date at March Field. The findings of the INPR, PA, and Archives Search Report (ASR) Supplement are recorded in Section 2.5 of this SI Report.

1.3.2 The primary project planning documents used to perform the SI included the USACE South Pacific Division Range Support Center (SPD RSC) Programmatic Work Plan (PWP) (Parsons, 2005), the Programmatic Sampling and Analysis Plan (PSAP) (USACE, 2005), and the PSAP Addendum (Parsons, 2006), and the Final Site Specific Work Plan (SS-WP) Addendum to the PWP for March Field (Parsons, 2008b). The Performance Work Statement for this project is included in Appendix A.

1.3.3 The USACE, Los Angeles District (CESPL) facilitated a technical project planning (TPP) meeting on June 6, 2008, that included representatives from the CESPL, Riverside County Waste Management Department (RCWMD), the California Department of Toxic Substances Control (DTSC), and Parsons. The TPP Team unanimously concurred with the technical approach presented in the Final TPP Memorandum (Parsons, 2008a), including the locations of ten surface soil samples, sampling methods, and laboratory analyses for explosives, select metals, and polycyclic aromatic hydrocarbons (PAHs)

1.3.4 As detailed in the Final SS-WP Addendum, the TPP Team concurred that comparison criteria for the soil sampling results would be the most conservative from USEPA Region 9 Residential Preliminary Remediation Goals (PRGs) and CAL-Modified Residential Soil PRGs. *Subsequent to the TPP meeting and the issuance of the Final SS-WP Addendum, it was identified that California now has its own set of screening values known as California Human Health Screening Levels (CHHSLs). It was confirmed with Daniel Cordero, DTSC, on November 6, 2008, that the screening process will include the new CHHSLs supplemented with the USEPA Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites. Analytes for which there are no published CHHSLs or RSLs, the Texas Risk Reduction Program Rule Tier 1 30-acre total soil combined Protective Concentration Levels (PCLs) dated April 23, 2008 were used.* The TPP Team agreed that a soil sampling depth of 2 to 6 inches below ground surface (bgs) at locations where MD and/or clay pigeon debris was observed and at ambient sample locations. The sampling depth would be from 6 to 12 inches bgs at sample locations where debris was not observed. *Sample MF-MRS01-SS-612-05 was the only sample collected from 6 to 12 inches due to the lack of debris in the area of the sample location.*

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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Riverside County
Waste Management Department
Hans W. Kernkamp, General Manager-Chief Engineer

June 15, 2009

Lloyd Godard, FUDS Project Manager
U.S. Army Corps of Engineers, Los Angeles District
915 Wilshire Boulevard, Suite 15018
Los Angeles, CA 90017-3401

RE: Draft-Final Site Inspection Report, March Field, Riverside County, California, FUDS Project No. J09CA716801

Dear Mr. Godard:

The Riverside County Waste Management Department (Department) received the subject report on May 29, 2009. Department staff reviewed the subject report and attended the stakeholder meeting on June 9, 2009. This letter documents the Department's comments regarding the subject report, based upon Department staff's review of the subject report and attendance at the stakeholder meeting.

Background

We understand that the Site Inspection Report for March Field was initiated by your agency to determine whether a former skeet range warrants subsequent characterization as part of a remedial investigation/feasibility study. The report indicates that while no Munitions and Explosives of Concern (MEC) where found, certain constituents of concern were detected above background concentrations and/or human health risk screening concentrations on neighboring property to our headquarters facility and at sample depths of 2-12 inches below ground surface (bgs). The report indicates that these constituents are most likely from shotgun, handgun or clay pigeons used during Air Force training on land formerly controlled by the Department of Defense. A downrange portion of the former skeet range (southeastern approximately 4.3 acres of our 9 acre property) may have overlapped our current facility and the firing range(s) occupied the area off our property, just north of Cactus Avenue.

Comments

1. The subject report concluded that "an unacceptable risk is possible for human receptors" exposed to select Munitions Constituent (MC) metals and Polycyclic Aromatic Hydrocarbons (PAHs). Thus far, soil sampling upon which the report is based has only been performed on property adjacent to the Department's headquarters facility (14310 Frederick Street, Moreno Valley, CA 92553). Human receptors identified in the subject report, page J-2, include construction workers, commercial or industrial workers, and visitors or recreational users working on or adjacent to the sample sites. Each of these receptors has existed, currently exist and will exist in the future at the Department's facility. Further, complete exposure pathways for incidental ingestion, dermal contact and inhalation (dust) were identified for each of these receptors.

   The Department is concerned that a potential unacceptable human health risk exists to workers, employees and visitors at the Department's facility. The Department's objective is to provide adequate, responsible and timely notification and protection to Department employees and visitors regarding this potential unacceptable human health

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CHAPTER 2
PROPERTY DESCRIPTION AND HISTORY

2.1 SITE DESCRIPTION

The March Field site consists of 53.3 acres located in Riverside County, California. The site is located north of the active March Air Reserve Base in Moreno Valley, California, directly east of Interstate 215 and north of Cactus Avenue. Roughly 40 percent of the site has been redeveloped for a mixture of uses including industrial and production facilities, and commercial and office buildings. The rest of the site has remained undeveloped or in agricultural use without housing (Figure 2.1 and Appendix E). Future development will include light industrial.

2.2 SITE LOCATION AND SETTING

2.2.1 Topography and Vegetation

2.2.1.1 The natural vegetation is primarily barren or low grass; however, irrigation allows for agricultural production of portions of the site throughout the year (CEMVS, 2004a).

2.2.1.2 The site is on the northwestern-western edge of the Perris Valley, characterized by flat topography. The topography of March Field can generally be described as flat varying in elevation from about 1,550 feet on the west to 1,590 feet on the east (CEMVS, 2004a). Within the MRS elevation ranges from 1,553 feet along Cactus Ave to 1,560 feet at the northern portion of the MRS.

2.2.2 Climate

2.2.2.1 The climate for Moreno Valley is generally mild. Moreno Valley is located in a semiarid region of western Riverside County just east of the San Bernardino Mountains and south of the San Gabriel Mountains. A meager average of close to ten inches of rain falls in any given year. Moreno Valley average annual rainfall is 9.93 inches (CEMVS, 2004a).

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2.2.2.2 Winters in Moreno Valley are mild with highs generally in the middle 60s with nights dipping into the upper 30s to lower 40s. On occasion there can be warm spells with highs jumping into the 70s and even lower 80s, as a warming wind descends from the mountains to the north and east. There are a few cold spells each winter when high temperatures barely make it to the 50s and nighttime temperatures drop close to the freezing point. Much of the yearly rainfall in the City of Moreno Valley occurs in the four months from December to March; nearly 70 percent of the average annual precipitation occurs in these months. On occasion, from late October through March, "Santa Ana Winds" visit Moreno Valley and other parts of the Inland Empire. Santa Ana Winds are gusty, sometimes strong winds that blow from the north and northeast and generally last 12 to 36 hours. This wind event generally occurs between five and ten times a season (CEMVS, 2004a).

2.2.2.3 The summers in the Moreno Valley generally feature sunny, very warm to hot days and clear, mild nights with an afternoon and evening southwest breeze each day. The hottest months of July and August have average daily temperatures in the middle 90s with nights in the lower and middle 60s. The naturally occurring low humidity makes these months easier to tolerate than other parts of the nation with similar temperatures. On occasion, from the middle of May through September an unusual hot spell can send afternoon temperatures well over the century mark. These hot spells typically last only a few days before cooling takes place. Rainfall in the months from May through September is quite unusual. On a rare occasion a "Monsoon" pattern develops; moisture moves up from the tropical regions of the Pacific and Gulf of Mexico bringing higher humidity that causes afternoon and evening thunderstorms over the mountains. Then one or two thunderstorms move out into the valley from the desert. The spring and fall months bring the most temperate time of year to the region. Many days are still sunny and rain events are uncommon with high temperatures in the 70s and 80s and lows in the 50s (CEMVS, 2004a).

2.2.3 Significant and Inhabited Structures

2.2.3.1 The March Field site is located in Moreno Valley in Riverside County, California, north of the active March Air Reserve Base directly east of State Highway 215 and north of Cactus Avenue. The site visit team (SVT) observed commercial and/or industrial buildings and undeveloped land in the immediate vicinity of the MRS during the SI field effort. The SVT also noted that dense residential development had taken place within three-quarters of a mile of the MRS (Appendix D).

2.2.3.2 Based on a review of recent satellite imagery (Google Earth, 2008), there are 1 to 5 inhabited structures located within MRS01 – Range Complex No. 1 (skeet), and thousands of inhabited structures within two miles of MRS01 – Range Complex No. 1 (skeet). Inhabited structures are permanent or temporary structures, other than military munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

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2.2.4 Demographics

The March Field site is located approximately 9 miles east of the City of Riverside, California and within the City of Moreno Valley, California. Based on census data for the year 2000, there are no residents living on site. The total population residing within a four-mile radius of the site is estimated at 147,126. The population density for Riverside County is 215 persons per square mile. The population density for Moreno Valley, California is 2,759.3 persons per square mile (U.S. Census, 2000). Table 2.1 and Figure 2.2 provide additional population proximity information for the site.

Table 2.1
Population Information in the Vicinity of
the March Field Site
Riverside County, California

Range	On-site	¼ mile	½ mile	1 mile	2 miles	3 miles	4 miles	Total
Entire Site	0	0	1,685	11,801	37,552	56,390	39,698	147,126

Source: U.S. Census 2000 data

2.2.5 Current and Future Land Use

2.2.5.1 The site is located in Moreno Valley, Riverside County, California. According to the ASR, the site is currently owned by Riverside County and private landowners/developers. Roughly 50 percent has been redeveloped for a mixture of uses including: industrial/production facilities; commercial and office buildings. Portions of the site remain undeveloped, used for agricultural purposes. RCWMD developed their industrial facility on a portion of the site in 2001. The site is accessible from public paved roads as well as by foot. Projected land use within the MRS will continue as light industrial.

2.2.5.2 The land use under present ownership would not have contributed MC or MEC-related contamination.

2.2.5.3 Access to the site is unrestricted and accessible by established roadways Cactus Avenue and Alessandro Boulevard directly east of State Highway 215, and by foot. No warning signs regarding the potential presence of ordnance are posted.

2.3 SITE OWNERSHIP AND HISTORY

2.3.1 The Army Air Corps established March Field in early 1918 to conduct primary flight training for aviators for World War I; the first cadet officially landed at March Field on March 1, 1918. March Field transitioned from primary flight training to bombardment in 1931. Prior to World War II, March Field was expanded and more than quadrupled in size by 1942. The FUDS was part of that expansion and the probable acquisition date of the 654.61-acre parcel that includes the MRS was February 26, 1942, under a lease agreement with Mary Hendrick Trautwein, et al. The two remaining parcels of the 663.93-acre FUDS: 0.14 acres and 9.18 acres were acquired by separate

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Declarations of Taking in 1942 and 1952, respectively. However, these two parcels are not included in the MMRP site designation and are not part of this investigation. The site consisted of three overlapping skeet sub ranges that included a Triple Skeet Range (36.1 acres), a High Tower Shot Gun Range East (29.4 acres), and a High Tower Shot Gun Range West (29.4 acres). The high towers measured 16 feet 6 inches by 16 feet 6 inches and were used to release the clay pigeons over the gunners to better simulate fighter attacks. The gun areas were set up to simulate a gun station with the exception of the weapon being a shotgun, rather than a .50 caliber or 20mm gun. All three sub ranges were used for small arms training beginning sometime after September 1943 and continuing until Spring 1947. The parcels were released over time by the War Department with no restrictive covenants or land use restrictions starting October 31, 1943, and ending June 15, 1964.

2.3.2 Military improvements at the 654.61-acre March Field included three skeet platforms, two shotgun high towers, a small control house, a turret, and two small storage buildings; however, none remain today.

2.3.3 For the purpose of this SI, the range identification (included in Table 2.2) lists the eligible range for the FUDS program that has demonstrated former military use. Additional data for the range is shown in the Conceptual Site Model (CSM) located in Appendix J and discussed further in Chapter 3.

Table 2.2
Range and Suspect Past Department of Defense Activities
March Field, Riverside County, CA

Range Name/Suspect Past DoD Activities	Acreage*
MRS01 – Range Complex No. 1 (skeet)	53.3
Triple Skeet Range, two High Tower Shot Gun Ranges, and Buffer Area	
TOTAL	**53.3**

*Number represents actual acreage for the MRS and may include area outside the project boundaries. Total acreage reported in FUDSMIS and ARC.

2.4 SITE OPERATIONS AND WASTE CHARACTERISTICS

2.4.1 Munitions Response Site-Specific Descriptions/Operations

The March Field site consists of one MRS, totaling 53.3 acres (CEMVS, 2004b), which corresponds to the area depicted in Figure 2.1. The MRS (listed below) is currently owned by Riverside County and private landowners/developers. The risk assessment code (RAC) score for MRS01 – Range Complex No. 1 is a 5 (Small Arms Range RAC Override) indicating minimal or no hazard potential.

- **MRS01 – Range Complex No. 1 (skeet)** – The MRS consists of three overlapping skeet sub ranges that include a Triple Skeet Range (36.1 acres), a High Tower Shot Gun Range East (29.4 acres), and a High Tower Shot Gun Range West (29.4 acres). It is presumed that the range was active from late-1943

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to early-1947. There have been no reports of MEC or MD in this MRS since site closure. The site visit associated with the 1999 INPR did not observe MEC or MD; however, debris from clay pigeons was observed. The site visit conducted in support of the 2004 PA observed clay pigeon debris as well as a couple of pieces of individual shot. The ASR Supplement reported a RAC score of 5 for this MRS with a Hazard Severity Value of "none" based on the usage of small arms ammunition, specifically shotgun, and evidence of MD in the form of lead shot and clay pigeon debris. A Hazard Probability of "frequent" based on the potential of unexpended small arms ammunition buried in the ground being unearthed, greater than 26 buildings located within a two-mile radius of the hazard area, and the lack of a barrier denying access (CEMVS, 2004b). The ARC incorrectly reports a RAC score of "4."

Note: Information related to RAC scoring is provided for historical purposes and this MRS has been re-evaluated using the MRSPP scoring system using information obtained from this SI (Appendix K).

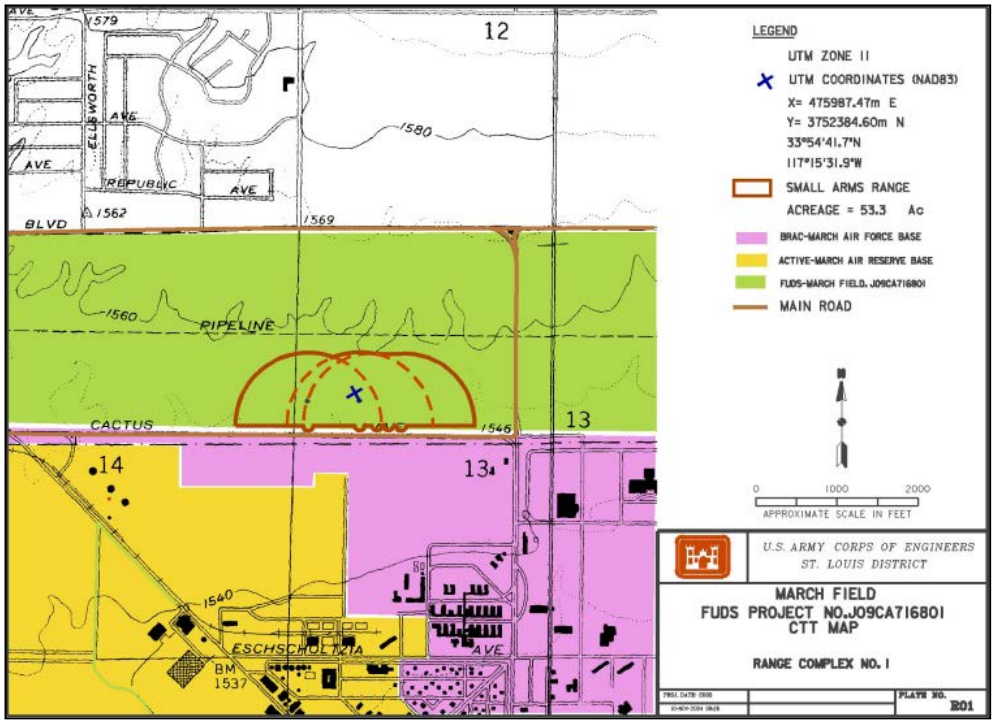

Figure A. Map from 2008 FUDS Management Information System (FUDSMIS) (MRS01)

2.4.2 REGULATORY COMPLIANCE

The USACE is conducting the SI at the March Field site as part of FUDS response activities pursuant to and in accordance with the guidance, regulations, and legislation listed in Chapter 1.

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2.5 PREVIOUS INVESTIGATIONS/CLEARANCE ACTIONS

Parsons performed a historical document review for the March Field site. Documents reviewed included the 1999 INPR (CESPL, 1999), the 2004 PA (CEMVS, 2004a), and the 2004 ASR Supplement (CEMVS, 2004b). Previous investigations have determined that March Field was used by the military as a small arms practice range.

2.5.1 Historical Dedudding Operations

According to the archives search performed as part of the 2004 PA the search did not reveal any certificates of ordnance clearance, decontamination, or dedudding associated with the March Field.

2.5.2 1999 Inventory Project Report

An INPR was completed by CESPL and signed on September 29, 1999, establishing the March Field site as a FUDS, establishing the preliminary site boundary, and assigned the FUDS Property Number J09CA716800. The INPR determined that the site was eligible for the FUDS Program. The site visit performed in support of the INPR did not observe MEC or MD; however, debris from clay pigeons was observed.

2.5.3 2004 Preliminary Assessment

The PA was completed by CEMVS in September 2004. The PA presents the findings of a historical records search and site inspection for the presence of ordnance and explosives located at the March Field site. The investigation focused on the 663.93 acres identified as the former March Field (this included the 0.14-acre and 9.18-acre parcels not included in the MMRP site designation and not part of this investigation). The site visit conducted on July 27, 2004, in support of the PA observed clay pigeon debris as well as a couple of pieces of individual shot.

2.5.4 2004 Archives Search Report Supplement

The ASR Supplement was completed by CEMVS as an addition to the 2004 PA. This document applied standard range configurations to the site; yielding specific range boundaries for the target area (refer to Figure B that follows). The ASR Supplement identified range land and access restrictions, range owners, and other pertinent information as well a list of MEC that may be found within the range area. No site visit was conducted in support of the ASR Supplement. The MRS identified in the ASR Supplement for March Field, its suspected acreage, and types of munitions include:

- **MRS01 – Range Complex No. 1 (skeet);** 53.3 acres. Small arms, General

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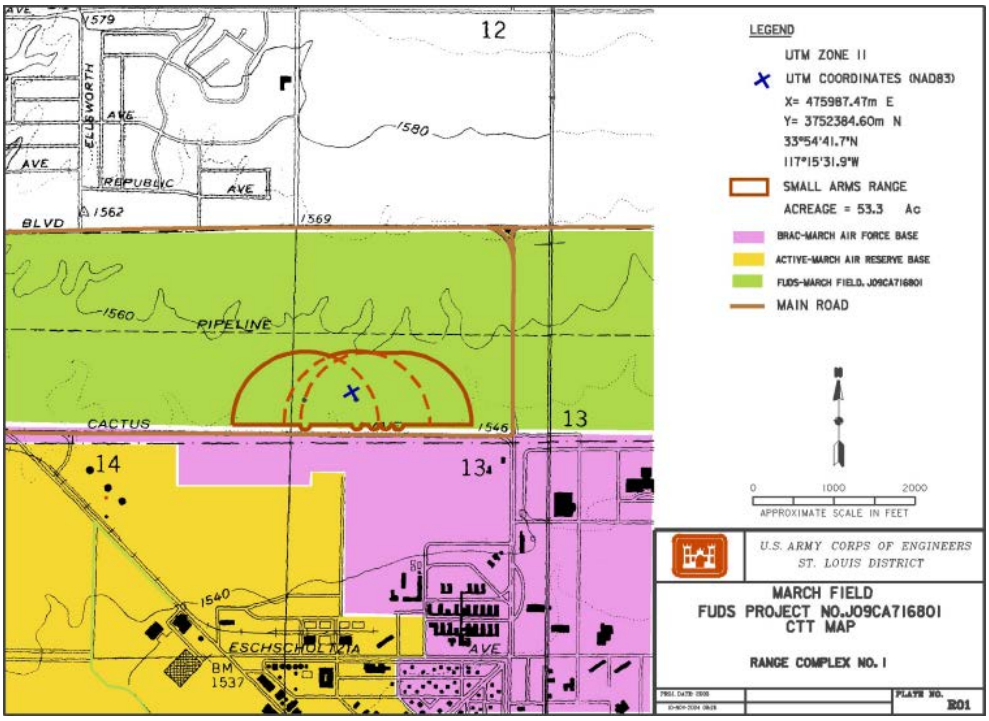

Figure B. Installation Map from 2004 Archives Search Report (ASR) Supplement (MRS01)

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

risk. The Department requests that the U.S. Army Corps of Engineers (USACE) provide additional information to assist in fulfilling our objective. The Department specifically requests the following information:

A. Written recommendations to protect Department construction workers from exposure to surface and subsurface soils.

B. Written recommendations to protect Department employees and visitors from exposure to surface soils.

C. A quantitative human health risk assessment to assess potential exposure scenarios for Department construction workers, employees and visitors. The Department requests that a preliminary risk assessment be performed using the existing MC metals and PAH data from the subject report and a final risk assessment be performed in conjunction with the remedial investigation/feasibility study (RI/FS) phase.

2. The subject report does not provide a timeframe for implementation of the recommended RI/FS phase. Table 29, of Appendix K, of the subject report identifies the Munitions Response Site (MRS) priority rating as 5, with a value of 1 being the highest and 8 being the lowest. During the stakeholder meeting, the Department queried the USACE regarding the RI/FS timeframe implementation. Considering the MRS priority rating of 5, the USACE indicated that RI/FS phase may commence in approximately two years.

   Given the possible unacceptable human health risk to Department construction workers, employees and visitors, the Department requests that RI/FS phase be implemented expeditiously. The Department also requests that the USACE develop a timeline that specifies the expected start and end of the RI/FS phase.

Closure

The Department appreciates the opportunity to review and comment on the subject report, and participate in stakeholder meetings regarding March Field. As indicated in our comments above, the Department is concerned and committed to the safety and welfare or our employees and visitors. Your timely response to our comments and requests will be appreciated.

If you have any questions regarding this letter, please contact Todd Shibata of my staff at (951) 486-3261.

Sincerely,

Hans W. Kernkamp
General Manager – Chief Engineer

HWK:jrm/acmd/tds
PD#78607

cc: Don Silkebakken, Parsons Corporation
Jim Sessions – Riverside County Risk Management Division
Tim Miller, Riverside County Facilities Management Department

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

US Army Corps of Engineers	**Response to Stakeholder Comments**	Los Angeles District

Project:	FUDS **March Field**, J09CA716801, MMRP SI Phase				
Stakeholder:	Riverside County Waste Management Department, signed by Hans W. Kernkamp, General Manager-Chief Engineer, dated June 15, 2009.				
Document Reviewed:	Draft-Final Site Inspection Report, 5/8/2009, Prepared by Parsons for USACE on FUDS MMRP Site Inspections at Multiple Sites, W912DY-04-D-0005; T.O. 0009				
Response to Comments By:	Lloyd E. Godard, 213-452-4014	**E Mail:**	lloyd.e.godard@usace.army.mil	**Date:**	06/21/2009
Responder's Title:	FUDS Project Manager	**Section:**	CESPL-PM-M		

Item	Reference	Stakeholder's Comments	USACE Response to Comments
1	Comment 1, Sub-Par A	The subject report concluded that "an unacceptable risk is possible for human receptors" exposed to select Munitions Constituent (MC) metals and Polycyclic Aromatic Hydrocarbons (PAHs). Thus far, soil sampling upon which the report is based has only been performed on property adjacent to the Department's headquarters facility (14310 Frederick Street, Moreno Valley, CA 92553). Human receptors identified in the subject report, page J-2, include construction workers, commercial or industrial workers, and visitors or recreational users working on or adjacent to the sample sites. Each of these receptors has existed, currently exist and will exist in the future at the Department's facility. Further, complete exposure pathways for incidental ingestion, dermal contact and inhalation (dust) were identified for each of these receptors. The Department is concerned that a potential unacceptable human health risk exists to workers, employees and visitors at the Department's facility. The Department's objective is to provide adequate, responsible and timely notification and protection to Department employees and visitors regarding this potential unacceptable human health risk. The Department requests that the U.S. Army Corps of Engineers (USAGE) provide additional information to assist in fulfilling our objective. The Department specifically requests the following information: A. Written recommendations to protect Department construction workers from exposure to surface and subsurface soils.	After discussions with my FUDS Program Manager, Jeff Armentrout (213-452-3990), we recommend that you contact your Occupational Safety and Health Specialist to determine necessary protective measures due to this hazard.
2	Comment 1, Sub-Par B	B. Written recommendations to protect Department employees and visitors from exposure to surface soils.	See response to A. above.
3	Comment 1, Sub-Par C	C. A quantitative human health risk assessment to assess potential exposure scenarios for Department construction workers, employees and visitors. The Department requests that a preliminary risk assessment be performed using the existing MC metals and PAH data from the subject report and a final risk assessment be performed in conjunction with the remedial investigation/feasibility study (RI/FS) phase.	A quantitative human heath risk assessment will be conducted under the RI/FS phase, as appropriate.
4	Comment 2	The subject report does not provide a timeframe for implementation of the recommended RI/FS phase. Table 29, of Appendix K, of the subject report identifies the Munitions Response Site (MRS) priority rating as 5, with a value of 1 being the highest and 8 being the lowest. During the stakeholder meeting, the Department queried the USAGE regarding the RI/FS timeframe implementation.	All our military munitions projects are scheduled in our database according to their MRSPP score or RAC Score (old system) and how much funding we expect to get in

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center,

US Army Corps of Engineers	**Response to Stakeholder Comments**	Los Angeles District

Project:	FUDS **March Field**, J09CA716801, MMRP SI Phase				
Stakeholder:	Riverside County Waste Management Department, signed by Hans W. Kernkamp, General Manager-Chief Engineer, dated June 15, 2009.				
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Response to Comments By:	Lloyd E. Godard, 213-452-4014	**E Mail:**	lloyd.e.godard@usace.army.mil	**Date:**	06/21/2009
Responder's Title:	FUDS Project Manager	**Section:**	CESPL-PM-M		
	Considering the MRS priority rating of 5, the USAGE indicated that RI/FS phase may commence in approximately two years. Given the possible unacceptable human health risk to Department construction workers, employees and visitors, the Department requests that RI/FS phase be implemented expeditiously. The Department also requests that the USAGE develop a timeline that specifies the expected start and end of the RI/FS phase.		the future. This project is currently scheduled over 10 years in the future. With a MRSPP score of 5, the date may move in a little. However, my FUDS Program Manager has some say as to when each project will be done. He has indicated that he will attempt to start the RI/FS sooner.		

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center,

CONTRACTOR STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Parsons has completed the Final Site Inspection report for March Field, Riverside County, California. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project, as defined in the Quality Control Plan. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions was verified. This included review of assumptions; methods, procedures, and material used in analyses; alternatives evaluated; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing Corps policy.

Joni Jorgensen-Risk

June 23, 2009

Study/Design Team Leader and Team Members

June 23, 2009

Independent Technical Review Team Leader

Significant concerns and the explanation of the resolution are as follows:

None

As noted above, all concerns resulting from independent technical review of the project have been considered.

June 23, 2009

Parsons Program Manager(s)

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

PARSONS
Parsons Infrastructure & Technology Group, Inc.
5390 Triangle Parkway • Suite 100 • Norcross, Georgia 30092 • (770) 446-4900 • Fax: (770) 446-4910 • www.parsons.com

June 23, 2009

U.S. Army Corps of Engineers, Los Angeles District
ATTN: CESPL-PM-M (Mr. Lloyd Godard)
915 Wilshire Blvd.
Los Angeles, CA 90017-3401
(213) 452-4014

Subject: Contract W912DY-04-D-0005, Delivery Order 0009
MMRP SI for SW IMA Region –Final SI Report
March Field, Riverside County, California

Dear Mr. Godard:

Parsons has prepared this Final Site Inspection (SI) Report in accordance with the Performance Work Statement (PWS) to include the completed Munitions Response Site Prioritization Protocol (MRSPP). All USACE and stakeholder comments received on the Draft and Draft Final SI Report have been addressed. One copy has been provided for your records. Five additional copies have been provided for your distribution to the regulators (DTSC) and other key project stakeholders.

The SI Report determined that an unacceptable risk is possible to human receptors exposed to arsenic and lead, as well as PAHs, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene in surface soils within the munitions response site (MRS).

As discussed during the Closure Meeting for March Field, conducted on June 9, 2009, the U.S. Army Corps of Engineers, Los Angeles District, will be certain to provide a copy of this Final SI Report to the landowner within the MRS; Ridge Moreno Valley, C/O Flanagan and Bilton, doing business in California as Ridge Moreno Valley Property, LLC.

We have forwarded a DVD to Brian Jordan (SW Region Program Manager) and single copies to EM CX. Electronic copies have also been provided. If you have any questions or comments, please contact me at (678) 969-2384 or (404) 606-0346 (cell), or the Co-Program Manager (Ms. Laura Kelley) at (678) 969-2437.

Sincerely,

PARSONS

Don Silkebakken, P.E.
MMRP SI Project/Program Manager

cc: SPD Brian Jordan – 1 DVD
Brad McCowan/Deborah Walker (EM CX) – 1 copy/DVD
Heidi Novotny (EM CX) – 1 DVD
Rochelle Hance (EM CX) – 1 DVD
Joni Jorgensen-Risk, Parsons-1 copy/DVD
Laura Kelley/Project File (744653.86130)

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

U.S. Army Corps of Engineers
Southwest IMA Region

FINAL
Site Inspection Report

March Field
Riverside County, California

FUDS Project No. J09CA716801
June 2009

In Support of
FUDS MMRP Site Inspections Project

Prepared by:
PARSONS
5390 Triangle Parkway, Suite 100
Norcross, Georgia 30092

Prepared for:

U.S. Army Corps of Engineers, Los Angeles District
915 Wilshire Blvd., Suite 15018
Los Angeles, California 90017-3401

&

U.S. Army Corps of Engineers
South Pacific Division Range Support Center

Contract: W912DY-04-D-0005
Task Order: 0009

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

THIRD QUARTER 2017 GROUNDWATER MONITORING REPORT

M&M Cleaners
23080 Alessandro Boulevard
Moreno Valley, California
Global ID: T10000004432

Stantec Project No.: 185802753

Submitted to:
Ms. Jessica Law
California Regional Water Quality Control Board, Santa Ana Region
3737 Main Street, Suite 500
Riverside, California 92501-3348

Submitted by:
Stantec Consulting Services Inc.
25864-F Business Center Drive
Redlands, California

October 27, 2017

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

THIRD QUARTER 2017 GROUNDWATER MONITORING REPORT

Site Address:	23080 Alessandro Boulevard, Moreno Valley, CA (the "Site"; Figure 1)
Consulting Co./Contact Person(s):	Stantec Brian Viggiano and Kevin Miskin
Project No.:	185802753
Geotracker Global ID No.:	T10000004432

BACKGROUND:

The Site is located within the Plaza Del Sol Shopping Center located at the northeast corner of Alessandro Blvd and Frederick Street in the City of Moreno Valley, CA. M & M Cleaners is located in unit 220 of Building D at 23080 Alessandro Blvd. M & M Cleaners occupies a small unit, measuring approximately 20 feet east-to-west by approximately 75 feet north-to-south. The dry-cleaning machine was removed from the premises in early January 2013, and the Site currently operates as a drop-off only facility. Stantec's review of historical reports (Encon, 2012) indicates that the Site has operated as a dry-cleaning facility using tetrachloroethene (PCE) since at least 1991.

On February 15, 2012, Encon completed an initial Site investigation that consisted of four soil borings using a limited access direct-push drilling rig at various locations surrounding the dry-cleaning machine. Soil gas samples were collected from temporary soil gas implants at five feet bgs and analyzed for the presence of volatile organic compounds (VOCs) in an on-Site mobile laboratory following EPA test method 8260B. The results of the investigation identified the presence of tetrachloroethylene (PCE) in all four soil gas samples at concentrations ranging from 462 µg/L to 1,068 µg/L. These concentrations exceeded the published California Office of Environmental Health Hazard Assessment (OEHHA) California Human Health Screening Levels (CHHSLs) for soil vapors for commercial uses at 1.6 µg/L. Based on these PCE concentrations, Encon concluded that there was a potential for vapor intrusion into the overlying structure. In addition, the vertical and lateral limits of soil and soil vapor were not defined at the site, nor was a determination made as to whether groundwater was affected by the detected impacts.

Based on the results of the preliminary investigation completed by Encon (2012), Stantec was retained to conduct an expanded Site assessment to evaluate the distribution of PCE in soil, soil gas and groundwater matrices.

In July 2012 Stantec performed a field investigation that consisted of drilling and sampling soil, soil gas and groundwater matrices. Based on the results of the investigation, impact to soil and groundwater was identified at the Site. Soil gas concentrations of several of the identified chemicals of potential concern (COPCs) exceeded published health-based screening levels (e.g., CHHSLs and California Regional Water Quality Control Board [RWQCB] Region 2 Environmental Screening Levels [ESLs]). In addition, VOC impact to groundwater was identified at concentrations exceeding State of California Maximum Contaminant Levels (MCLs). The results of these findings are summarized in Stantec's Site Assessment Report, dated August 24, 2012.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

On November 20, 2012, Dr. Nick Amini of the RWQCB visited the Site for inspection and, via email communication, requested that additional investigation be conducted to better delineate the vertical and lateral limits of VOC impact in soil and groundwater.

On January 10, 2013, Stantec submitted a *Work Plan for Subsurface Investigation* to the RWQCB providing a scope of work to install three groundwater monitoring wells, two soil vapor extraction (SVE) wells, and 12 shallow soil gas sampling points. The work plan was approved by the RWQCB in correspondence dated February 8, 2013.

As a result of these initial investigations, the RWQCB requested that additional Site assessment activities be conducted, including, but not limited to, the Installation of one groundwater monitoring well down gradient of the known and suspected source areas. On September 9, 2013, Stantec prepared and submitted a *Work Plan for Continued Site Assessment Activities* (Work Plan) that included a scope of work to conduct additional Site assessment activities requested by the RWQCB. The Work Plan was approved by the RWQCB on September 19, 2013.

Historical Site assessment activities completed by Stantec and others have identified the presence of a diffuse PCE soil vapor plume beneath the M&M Cleaners and adjacent vacant units. Concentrations of PCE were also reported in groundwater above State of California MCLs. As a result, Stantec recommended the implementation of a quarterly groundwater monitoring program of monitoring wells MW-1 through MW-4, to evaluate groundwater plume stability and seasonal variations in groundwater concentrations.

On May 30 and 31, 2015, Stantec installed one dual-nested groundwater monitoring well (MW-5) to better evaluate the lateral and vertical down gradient location of the source area. In addition to the monitoring well, Stantec also installed three additional SVE wells (SVE-06 through SVE-08) between April 1 and 2, 2015.

Soil vapor extraction (SVE) was initiated at the Site on May 16, 2016 and has consisted of the operation of a 300 standard cubic feet per minute (SCFM) blower connected to extraction wells SVE-01, SVE-02 and SVE-04S/D through SV-08S/D and two, 2,000-pound granular activated carbon (GAC) vessels to treat extracted vapor in accordance with a South Coast Air Quality Management District (SCAQMD) various locations permit.

SVE operation was suspended on February 10, 2017 after achieving asymptotic inlet concentrations. Two rounds of post SVE rebound testing have been completed and, based on the results indicating limited rebound and no unacceptable health risk, a request was submitted to the Regional Board to remove the SVE system on April 12, 2017.

The following narrative provides the results of the analysis of groundwater samples collected from six Site wells (MW-1 through MW-5 S/D) during the third quarter of 2017. This report also includes a table of results for previous sampling events since the installation of the monitoring wells.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

WORK PERFORMED THIS QUARTER [Third – 2017]:

1. Gauged depth-to-water (DTW) and depth to bottom of well for the following on-site wells: MW-1 through MW-5 S/D (Figure 2).
2. Performed third quarter 2017 groundwater sampling as required by the RWQCB.

WORK PROPOSED FOR NEXT QUARTER [Fourth – 2017]:

1. Gauge existing monitoring wells and perform fourth quarter 2017 groundwater monitoring.
2. Submit third quarter 2017 Groundwater Monitoring Report.

Current Phase of Project:	**Monitoring (Third Quarter 2017)**
Frequency of Sampling:	Quarterly
Frequency of Monitoring:	Quarterly
Approximate Depth to First Groundwater:	35.41 (MW-4) to 37.30 (MW-5S)
Average Groundwater Flow Direction:	265 degrees from north
Average Groundwater Gradient:	0.003 ft/ft wsw

DISCUSSION:

Groundwater Elevation Data

On September 29, 2017, Stantec personnel gauged groundwater in six (6) groundwater monitoring wells (Figure 2; Table 1). Groundwater elevations ranged from 1,541.11 feet AMSL in well MW-3 to 1,541.44 feet AMSL in well MW-4. Groundwater elevation data are tabulated on Table 2. The average ground water flow direction was calculated to be approximately 265 degrees from North at an average hydraulic gradient of approximately 0.003 feet/foot (Figure 3). Average groundwater levels have increased approximately 0.45 feet since the first quarter monitoring event, and have risen approximately 3.37 feet since June 2013 when groundwater monitoring activities began.

Groundwater monitoring field parameters including depth to water measurements, pH, oxidation reduction potential (ORP), temperature, and turbidity are provided on attached field data sheets (Appendix A).

Groundwater Analytical Results

Groundwater samples were collected from wells MW-1 through MW-5 S/D in accordance with the attached purging and sampling procedures (Appendix A). Groundwater samples were analyzed for volatile organic compounds (VOCs) by EPA Test Method 8260B. Analytical results are reported in Table 3. Analytical laboratory reports including associated QC data are included in Appendix B. PCE results and isoconcentrations are presented on Figure 4. Hydrographs presenting groundwater elevations and concentrations of PCE versus time are presented in Appendix D.

The following summarizes the third quarter 2017 sampling results:

- With the exception of well MW-5D, PCE was reported in all Site monitoring wells above laboratory reporting limits at concentrations ranging from 3.1 µg/L (MW-4) to 73 µg/L (MW-2). The MCL was exceeded at four well locations: MW-1 (54 µg/L), MW-2 (73 µg/L), MW-3 (71 µg/L) and MW-5S (7.4 µg/L). PCE concentrations in source area well MW-02 increased slightly from 62 µg/L to 73 ug/L, however, the reported concentration is significantly lower than the historical high of 310 µg/L. The decrease in reported PCE concentration is believed to be the result of the SVE remediation.
- Chloroform was reported in Site monitoring wells MW-1, MW-2, MW-3, and MW-4 at concentrations ranging from 0.25j µg/L in well MW-5S, to 2.0 µg/L in well MW-3.
- No other VOCs were reported above laboratory method detection limits.

In comparison to the previous sampling event, the laboratory results indicate that PCE concentrations have generally increased slightly. Increases in PCE concentrations were observed in wells MW-1 (33 µg/l to 54 µg/l), MW-2 (62 µg/l to 73 µg/l), MW-3 (45 µg/L to 71 µg/L), MW-4 (3.0 µg/L to 3.1 µg/L) and MW-5S (6.4 µg/L to 7.4 µg/L). Based on these results, Stantec recommends continued groundwater monitoring of all Site wells to evaluate post remediation variations and trends, and plume stability.

Should there be any questions regarding the information provided within the accompanying report, please do not hesitate to contact the undersigned at (909) 335-6116.

Respectfully submitted,

STANTEC CONSULTING SERVICES INC.

Prepared by:

Brian Viggiano, PG
Senior Geologist

Approved by:

Kevin Miskin, PE
Principal Engineer

ATTACHMENTS:

TABLES:

Table 1 – Well Construction Details
Table 2 – Summary of Groundwater Elevation Data
Table 3 – Summary of Groundwater Analytical Results – VOCs

FIGURES:

Figure 1 – Site Location Map

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Figure 2 – Site Plan
Figure 3 – Groundwater Elevation Map
Figure 4 – PCE Iso-Concentration Map

APPENDICES:

Appendix A - Hydrographs
Appendix B - Standard Procedures for Groundwater Sampling
Appendix C - Water Sample Field Data Sheets
Appendix D - Lab Data Sheets, QA/QC Result, and Chain of Custody Records

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

TABLES

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Table 1
Well Construction Details
M & M Cleaners
23080 Allessandro Blvd
Moreno Valley, CA

Well ID	Installation Date	Top of Casing Elevation (feet msl)	Top of Well Box Elevation (feet msl)	Latitude (DD)	Longitude (DD)	Boring Depth (feet bgs)	Casing Type	Screen Interval (feet bgs)	Screen Slot Size (inches)
Groundwater Monitoring Wells									
MW-1	6/20/2013	1578.01	1578.34	33.9190427	-117.2598074	51.5	PVC	35-50	0.01
MW-2	6/19/2013	1578.38	1578.73	33.9189277	-117.2597795	51.5	PVC	35-50	0.01
MW-3	6/21/2013	1577.46	1577.81	33.9187170	-117.2598629	52.5	PVC	37-52	0.01
MW-4	10/7/2013	1576.49	1576.49	33.9186002	-117.2596721	51.5	PVC	35-50	0.01
MW-5D	4/8/2015	1578.44	1578.73	33.9188649	-117.2600509	60	PVC	55-60	0.01
MW-5S	4/8/2015	1578.45	1578.73	33.9188649	-117.2600509	60	PVC	35-45	0.01

Notes:

DD: Decimal Degrees
Elevation Datum: NAVD 88
Coordinates: based on California State Plane Coordinate System (NAD 83), California Zone 6

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center,

Table 2
Summary of Groundwater Elevation Data
M & M Cleaners
23080 Allessandro Blvd
Moreno Valley, CA

Well ID	Well Head Elevation (feet AMSL)	Date	Depth to groundwater (feet bgs)	Groundwater Elevation (feet AMSL)
MW-1	1578.01	6/28/2013	40.16	1537.85
		2/21/2014	39.33	1538.68
		6/24/2014	38.91	1539.10
		9/9/2014	38.67	1539.34
		12/23/2014	38.58	1539.43
		3/27/2015	38.43	1539.58
		5/14/2015	38.16	1539.85
		7/14/2015	38.02	1539.99
		12/8/2015	37.84	1540.17
		3/30/2016	37.71	1540.30
		6/29/2016	37.56	1540.45
		9/21/2016	37.53	1540.48
		12/21/2016	37.62	1540.39
		3/17/2017	37.11	1540.90
		6/6/2017	36.84	1541.17
		9/29/2017	36.67	1541.34
MW-2	1578.38	6/28/2013	40.62	1537.76
		2/21/2014	39.78	1538.60
		6/24/2014	39.35	1539.03
		9/9/2014	39.13	1539.25
		12/23/2014	39.02	1539.36
		3/27/2015	38.68	1539.70
		5/14/2015	38.61	1539.77
		7/14/2015	38.5	1539.88
		12/8/2015	38.34	1540.04
		3/30/2016	38.18	1540.20
		6/29/2016	38.03	1540.35
		9/21/2016	37.95	1540.43
		12/21/2016	38.05	1540.33
		3/17/2017	37.60	1540.78
		6/6/2017	37.31	1541.07
		9/29/2017	37.14	1541.24
MW-3	1577.46	6/28/2013	39.85	1537.61
		2/21/2014	38.99	1538.47
		6/24/2014	38.60	1538.86
		9/9/2014	38.43	1539.03
		12/23/2014	38.29	1539.17
		3/27/2015	37.92	1539.54
		5/14/2015	37.83	1539.63
		7/14/2015	37.72	1539.74
		12/8/2015	37.52	1539.94
		3/30/2016	37.37	1540.09
		6/29/2016	37.25	1540.21
		9/21/2016	37.23	1540.23
		12/21/2016	37.27	1540.19
		3/17/2017	36.81	1540.65
		6/6/2017	36.51	1540.95
		9/29/2017	36.35	1541.11
MW-4	1576.85	10/14/2013	38.59	1538.26
		2/21/2014	38.05	1538.80
		6/24/2014	37.66	1539.19
		9/9/2014	37.49	1539.36
		12/23/2014	37.34	1539.51
		3/27/2015	37.00	1539.85
		5/14/2015	36.88	1539.97
		7/14/2015	36.75	1540.10
		12/8/2015	36.54	1540.31
		3/30/2016	36.42	1540.43
		6/29/2016	36.29	1540.56
		9/21/2016	36.28	1540.57
		12/21/2016	36.33	1540.52
		3/17/2017	35.83	1541.02
		6/6/2017	35.57	1541.28
		9/29/2017	35.41	1541.44

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Table 2
Summary of Groundwater Elevation Data
M & M Cleaners
23080 Allessandro Blvd
Moreno Valley, CA

Well ID	Well Head Elevation (feet AMSL)	Date	Depth to groundwater (feet bgs)	Groundwater Elevation (feet AMSL)
MW-5S	1578.45	4/10/2015	38.90	1537.95
		5/14/2015	38.80	1539.65
		7/14/2015	38.67	1539.78
		12/8/2015	38.48	1539.97
		3/30/2016	38.34	1540.11
		6/29/2016	38.24	1540.21
		9/21/2016	38.20	1540.25
		12/21/2016	No Access	
		3/17/2017	37.75	1540.70
		6/6/2017	37.49	1540.96
		9/29/2017	37.30	1541.15
MW-5D	1578.44	4/10/2015	38.91	1539.54
		5/14/2015	38.78	1539.66
		7/14/2015	38.66	1539.78
		12/8/2015	38.50	1539.94
		3/30/2016	38.35	1540.09
		6/29/2016	38.22	1540.22
		9/21/2016	38.21	1540.23
		12/21/2016	No Access	
		3/17/2017	37.75	1540.69
		6/6/2017	37.48	1540.96
		9/29/2017	37.31	1541.13

bgs: below ground surface
AMSL: above mean sea level

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Table 3
Summary of Groundwater Analytical Results - VOCs
M & M Cleaners
23080 Allessandro Blvd
Moreno Valley, CA

Sample Name	Collection Date	VOCs (ug/L)[1]					
		PCE	TCE	c-1,2-DCE	t-1,2-DCE	VC	Other VOCs
MW-1	6/28/2013	**16**	<2.0	<2.0	<2.0	<5.0	<varies
	2/21/2014	**80**	<2.0	<2.0	<2.0	<5.0	chloroform: 0.45j
	6/24/2014	**58**	<2.0	<2.0	<2.0	<5.0	chloroform: 0.51j
	9/10/2014	**70**	<2.0	<2.0	<2.0	<5.0	chloroform: 0.40j
	12/23/2014	**83**	<2.0	<2.0	<2.0	<5.0	chloroform: 0.43j
	3/27/2015	**69**	<2.0	<2.0	<2.0	<5.0	<varies
	5/14/2015	**110**	<2.0	<2.0	<2.0	<5.0	<varies
	7/14/2015	**72**	<2.0	<2.0	<2.0	<5.0	<varies
	12/8/2015	**87**	0.81j	<2.0	<2.0	<5.0	chloroform: 0.43j
	3/30/2016	**120**	<2.0	<2.0	<2.0	<5.0	chloroform: 0.49j
	6/29/2016	**77**	<2.0	<2.0	<2.0	<5.0	chloroform: 0.40j
	9/21/2016	**36**	<2.0	<2.0	<2.0	<5.0	chloroform:0.34j methylene chloride: 1.1j
	12/21/2016	**30**	<2.0	<2.0	<2.0	<5.0	chlroform: 0.41j
	3/17/2017	**32**	<2.0	<2.0	<2.0	<5.0	chlroform: 0.41j
	6/6/2017	**33**	<2.0	<2.0	<2.0	<5.0	chlroform: 0.37j
	9/29/2017	**54**	<2.0	<2.0	<2.0	<5.0	chlroform: 0.41j
MW-2	6/28/2013	**67**	<2.0	<2.0	<2.0	<5.0	<varies
	2/21/2014	**270**	<5.0	<5.0	<5.0	<13	chloroform: 0.97j
	6/24/2014	**310**	<5.0	<5.0	<5.0	<13	chloroform: 0.94
	9/10/2014	**150**	<5.0	<5.0	<5.0	<13	chloroform: 0.67j
	12/23/2014	**220**	<5.0	<5.0	<5.0	<13	chloroform: 0.70j
	3/27/2015	**100**	<2.0	<2.0	<2.0	<5.0	<varies
	5/14/2015	**110**	<2.0	<2.0	<2.0	<5.0	<varies
	7/14/2015	**220**	<2.0	<2.0	<2.0	<5.0	<VARIES
	12/8/2015	**220**	<10	<10	<10	<25	<varies
	3/30/2016	**220**	<10	<10	<20	<25	<varies
	6/29/2016	**200**	<8	<8	<8	<20	<varies
	9/21/2016	**82**	<5.0	<5.0	<5.0	<13	methylene chloride: 3.3j
	12/21/2016	**65**	<2.0	<2.0	<2.0	<5.0	chlroform: 0.60j
	3/17/2017	**56**	<2.0	<2.0	<2.0	<5.0	chlroform: 0.57j
	6/6/2017	**62**	<2.0	<2.0	<2.0	<5.0	chlroform: 0.60j
	9/29/2017	**73**	<2.0	<2.0	<2.0	<5.0	chlroform: 0.52j
MW-3	6/28/2013	**2.2**	<2.0	<2.0	<2.0	<5.0	chloroform: 2.0
	2/21/2014	**5.7**	<2.0	<2.0	<2.0	<5.0	chloroform: 2.2
	6/24/2014	**5.6**	<2.0	<2.0	<2.0	<5.0	chloroform: 2.1
	9/10/2014	**6.1**	<2.0	<2.0	<2.0	<5.0	chloroform: 2.0
	12/23/2014	**8.5**	<2.0	<2.0	<2.0	<5.0	chloroform: 2.2
	3/27/2015	**7.6**	<2.0	<2.0	<2.0	<5.0	<varies
	5/14/2015	**8.4**	<2.0	<2.0	<2.0	<5.0	chloroform 2.1
	7/14/2015	**8**	<2.0	<2.0	<2.0	<5.0	
	12/8/2015	**16**	0.80j	<2.0	<2.0	<5.0	chloroform: 1.9j
	3/30/2016	**23**	<2.0	<2.0	<2.0	<5.0	chloroform: 2.2
	6/29/2016	**26**	<2.0	<2.0	<2.0	<5.0	chloroform: 1.7j
	9/21/2016	**31**	<2.0	<2.0	<2.0	<5.0	chloroform: 1.7j methylene chloride: 1.2j
	12/21/2016	**43**	<2.0	<2.0	<2.0	<5.0	chloroform: 1.9j
	3/17/2017	**49**	<2.0	<2.0	<2.0	<5.0	chloroform: 2.5
	6/6/2017	**45**	<2.0	<2.0	<2.0	<5.0	chloroform: 2.2
	9/29/2017	**71**	<2.0	<2.0	<2.0	<5.0	chloroform: 2.0
MW-4	10/14/2013	<2.0	<2.0	<2.0	<2.0	<5.0	chloroform: 0.73j
	2/21/2014	0.65j	<2.0	<2.0	<2.0	<5.0	chloroform: 0.68j
	6/24/2014	0.91j	<2.0	<2.0	<2.0	<5.0	chloroform: 0.78j chloromethane: 0.73j
	9/10/2014	1.0j	<2.0	<2.0	<2.0	<5.0	chloroform: 0.66j
	12/23/2014	1.4j	<2.0	<2.0	<2.0	<5.0	chloroform: 0.65j
	3/27/2015	<2.0	<2.0	<2.0	<2.0	<5.0	<varies
	5/14/2015	<2.0	<2.0	<2.0	<2.0	<5.0	<varies
	7/14/2015	<2.0	<2.0	<2.0	<2.0	<2.0	<varies
	12/8/2015	**2.5**	0.36j	<2.0	<2.0	<5.0	chloroform: 0.56j
	3/30/2016	**2.8**	<2.0	<2.0	<2.0	<5.0	chloroform: 0.64j
	6/29/2016	**3.1**	<2.0	<2.0	<2.0	<5.0	chloroform: 0.55j
	9/21/2016	**3.2**	<2.0	<2.0	<2.0	<5.0	chloroform: 0.44j methylene chloride: 1.2j
	12/21/2016	**3.3**	<2.0	<2.0	<2.0	<5.0	chloroform: 0.53j
	3/17/2017	**3.4**	<2.0	<2.0	<2.0	<5.0	chloroform: 0.56j
	6/6/2017	**3.0**	<2.0	<2.0	<2.0	<5.0	chloroform: 0.62j
	9/29/2017	**3.1**	<2.0	<2.0	<2.0	<5.0	chloroform: 0.45j

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Table 3
Summary of Groundwater Analytical Results - VOCs
M & M Cleaners
23080 Allessandro Blvd
Moreno Valley, CA

Sample Name	Collection Date	VOCs (ug/L)[1]					
		PCE	TCE	c-1,2-DCE	t-1,2-DCE	VC	Other VOCs
MW-5S	4/10/2015	**27**	<2.0	<2.0	<2.0	<5.0	<varies
	5/14/2015	**16**	<2.0	<2.0	<2.0	<5.0	<varies
	7/14/2015	**4.1**	<2.0	<2.0	<2.0	<5.0	<varies
	12/8/2015	**7.4**	0.79j	<2.0	<2.0	<5.1	chloroform: 0.63j
	3/30/2016	**5.9**	<2.0	<2.0	<2.0	<5.0	chloroform: 0.79j
	6/29/2016	**8.2**	0.42j	<2.0	<2.0	<5.0	chloroform: 0.50j
	9/21/2016	**8.7**	0.69j	<2.0	<2.0	<5.0	chloroform: 0.53j
	12/21/2016	No Access					
	3/17/2017	**7.1**	0.71j	<2.0	<2.0	<5.0	chloroform: 0.54j
	6/6/2017	**6.4**	0.76j	<2.0	<2.0	<5.0	chloroform: 0.43j
	9/29/2017	**7.4**	0.58j	<2.0	<2.0	<5.0	chloroform: 0.25j
MW-5D	4/10/2015	<2.0	<2.0	<2.0	<2.0	<5.0	<varies
	5/14/2015	<2.0	<2.0	<2.0	<2.0	<5.0	<varies
	7/14/2015	0.42j	<2.0	<2.0	<2.0	<5.0	<varies
	12/8/2015	0.83j	0.28j	<2.0	<2.0	<5.1	chloroform: 0.50j
	3/30/2016	0.35j	<2.0	<2.0	<2.0	<5.0	chloroform: 0.52j
	6/29/2016	0.35j	<2.0	<2.0	<2.0	<5.0	chloroform: 0.47j
	9/21/2016	0.41j	<2.0	<2.0	<2.0	<5.0	chloroform: 0.49j methylene chlroide: 1.1j
	12/21/2016	No Access					
	3/17/2017	<2.0	<2.0	<2.0	<2.0	<5.0	chloroform: 0.60j
	6/6/2017	<2.0	<2.0	<2.0	<2.0	<5.0	chloroform: 0.52j
	9/29/2017	<2.0	<2.0	<2.0	<2.0	<5.0	chloroform: 0.59j
California Maximum Contaminant Levels		5	5	6	10	1	varies

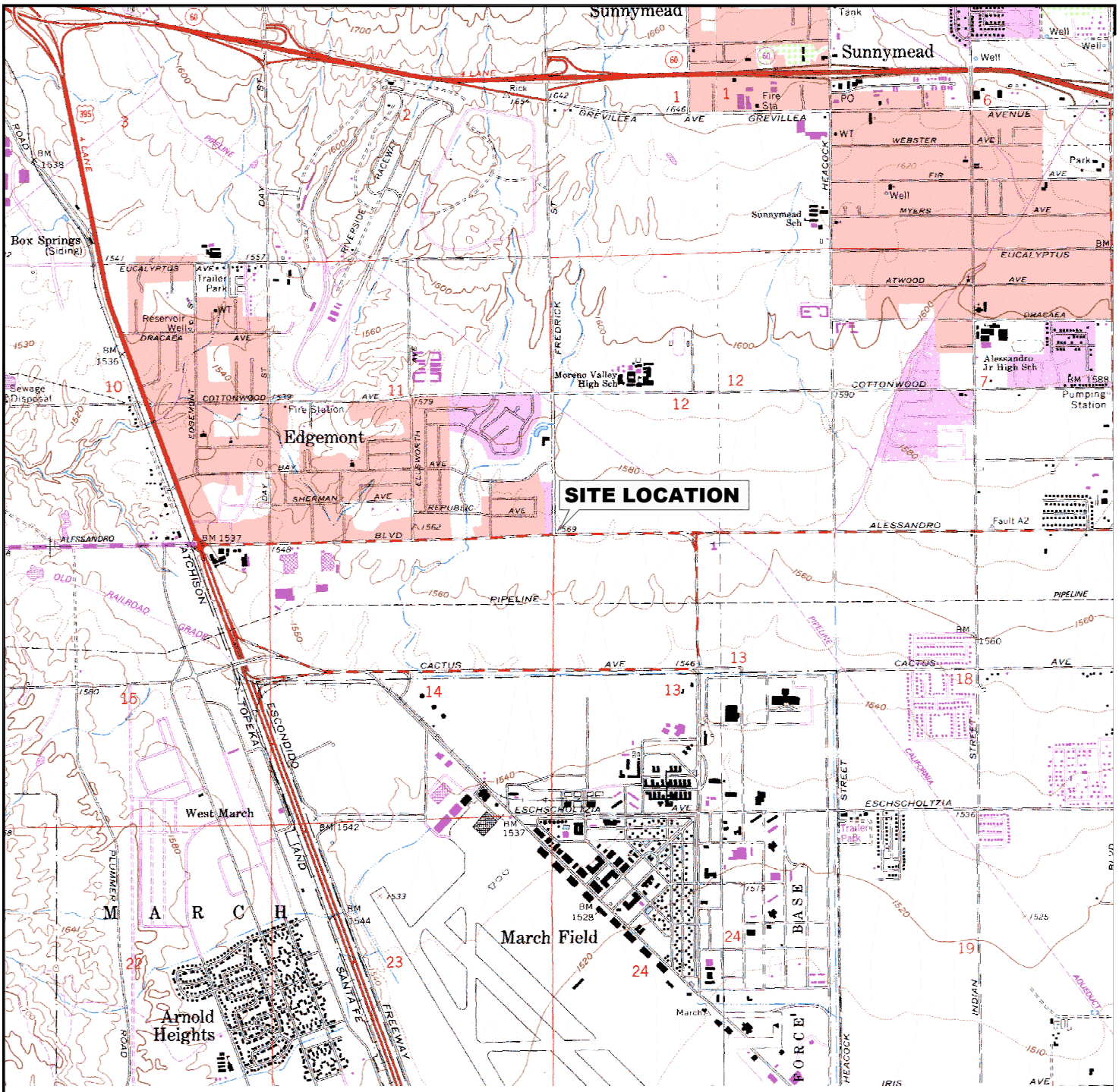
Notes:
(1) EPA Test Method 8260B - Volatile Organics by GC/MS + Oxygenates
< - Indicates the concentration was not detected above the laboratory method detection limit.
Indicates the concentration was detected above the laboratory method dectection limit
Indicates the concentration exceeds respective MCL
MCL - California Maximum Contaminant Level, Updated January 30, 2013
j - estimated concentration between the method detection limit and reporting limi

Abbreviations:
VOCs - Volatile Organic Compounds
PCE - Tetrachloroethene
TCE - Trichloroethene
c-1,2-DCE - cis-1,2-dichloroethene
t-1,2-DCE - trans-1,2-dichloroethene
VC - Vinyl chloride

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

FIGURES

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM



1 1/2 0 1

SCALE IN MILE

1000 0 1000 2000 3000 4000 5000 6000 7000

SCALE IN FEET

REFERENCE: CA Digital Raster Graphics(http://gis.ca.gov/casil/usgs.gov/)
7.5 Minute Series, Albers NAD83, Trimmed
Block o33119c2 & o33119c3, Downloaded 5/14/10

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REDLANDS, CALIFORNIA 92374
PHONE: (909) 335-6116 FAX:(909) 556-6516

FOR:		SITE LOCATION MAP	FIGURE:
M&M CLEANERS 23080 ALESSANDRO BLVD MORENO VALLEY, CALIFORNIA			1
JOB NUMBER: 185802753	DRAWN BY: J. RESENDIZ	CHECKED BY: B. VIGGIANO	APPROVED BY:	DATE: AUG. 2012

FILEPATH:P:\CADD\PROJECTS\OTHER\M&M Cleaners\M&M Cleaners_2012.dwg|jresendiz|Aug 13, 2012 at 12:33|Layout: F1-SLM

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

PLANTER
(LANDSCAPING)

MW-1

ALLEY

BOILER

FORMER DRY
CLEANING
MACHINE

BATHROOM

MW-2

UNIT 214
(VACANT)

MW-05-S
MW-05-D

UNIT 220
(M&M
CLEANERS)

UNIT 222
(VACANT)

UNIT 224
ZUMBA
FITNESS

WALKWAY

MW-3

PARKING LOT

MW-4

LEGEND

PROPERTY LINE

MW-1 GROUNDWATER MONITORING WELL

DUAL NESTED MONITORING WELL

N

0 25 50

APPROXIMATE SCALE IN FEET

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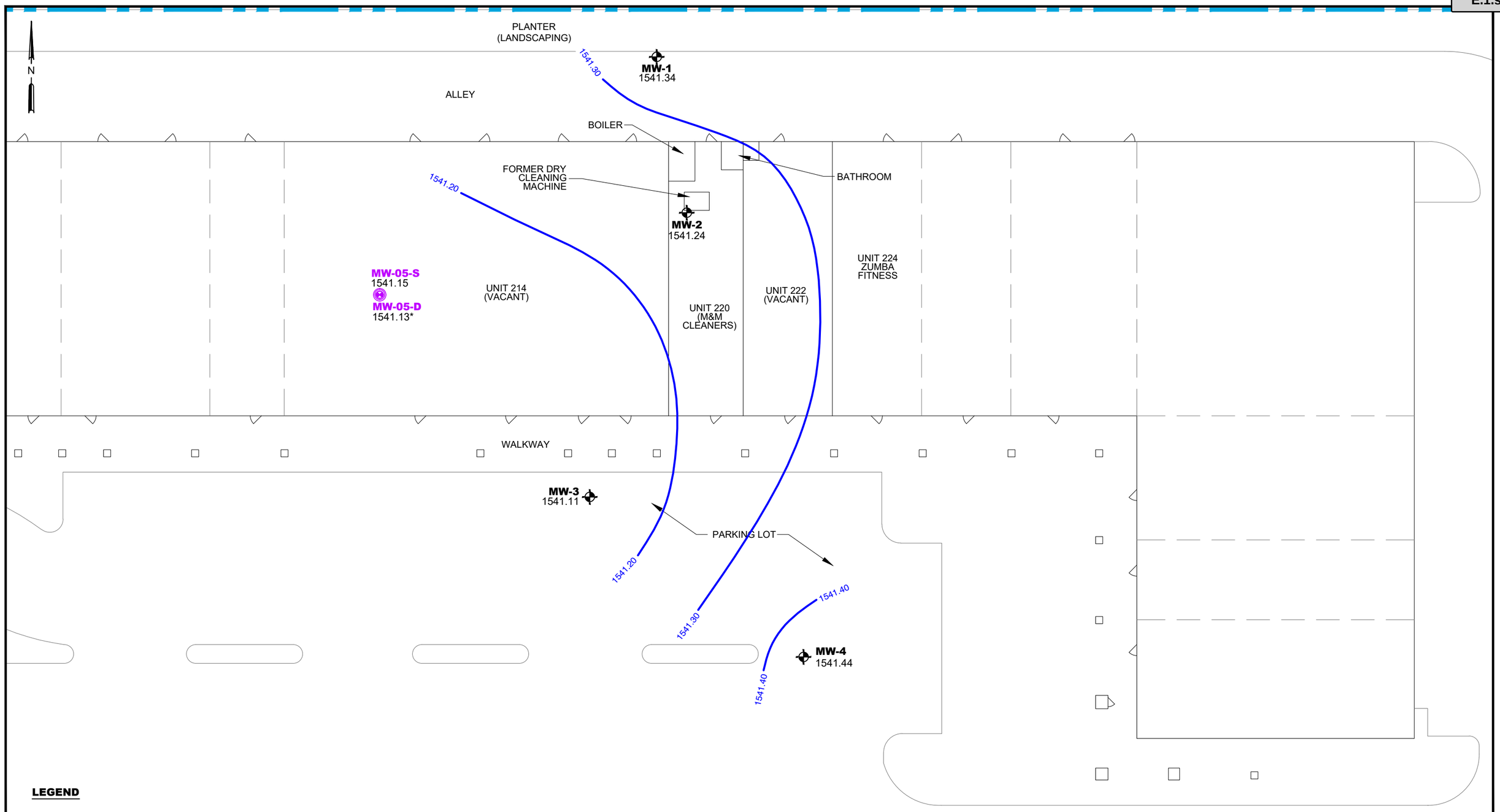
FOR:
M&M CLEANERS
23080 ALESSANDRO BLVD
MORENO VALLEY, CALIFORNIA

SITE MAP WELL LOCATIONS

FIGURE: 2

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185802753	J. RESENDIZ/STA	B. VIGGIANO		07/13/15

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM



LEGEND

- PROPERTY LINE
- MW-1 GROUNDWATER MONITORING WELL
- DUAL NESTED MONITORING WELL
- 1541.11 GROUNDWATER ELEVATION (FEET)
- (1541.20) GROUNDWATER ELEVATION CONTOUR (FEET)
- * NOT USED IN CONTOURING-SCREENED IN DEEPER ZONE

0 25 50

APPROXIMATE SCALE IN FEET

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FOR:
M&M CLEANERS
23080 ALESSANDRO BLVD
MORENO VALLEY, CALIFORNIA

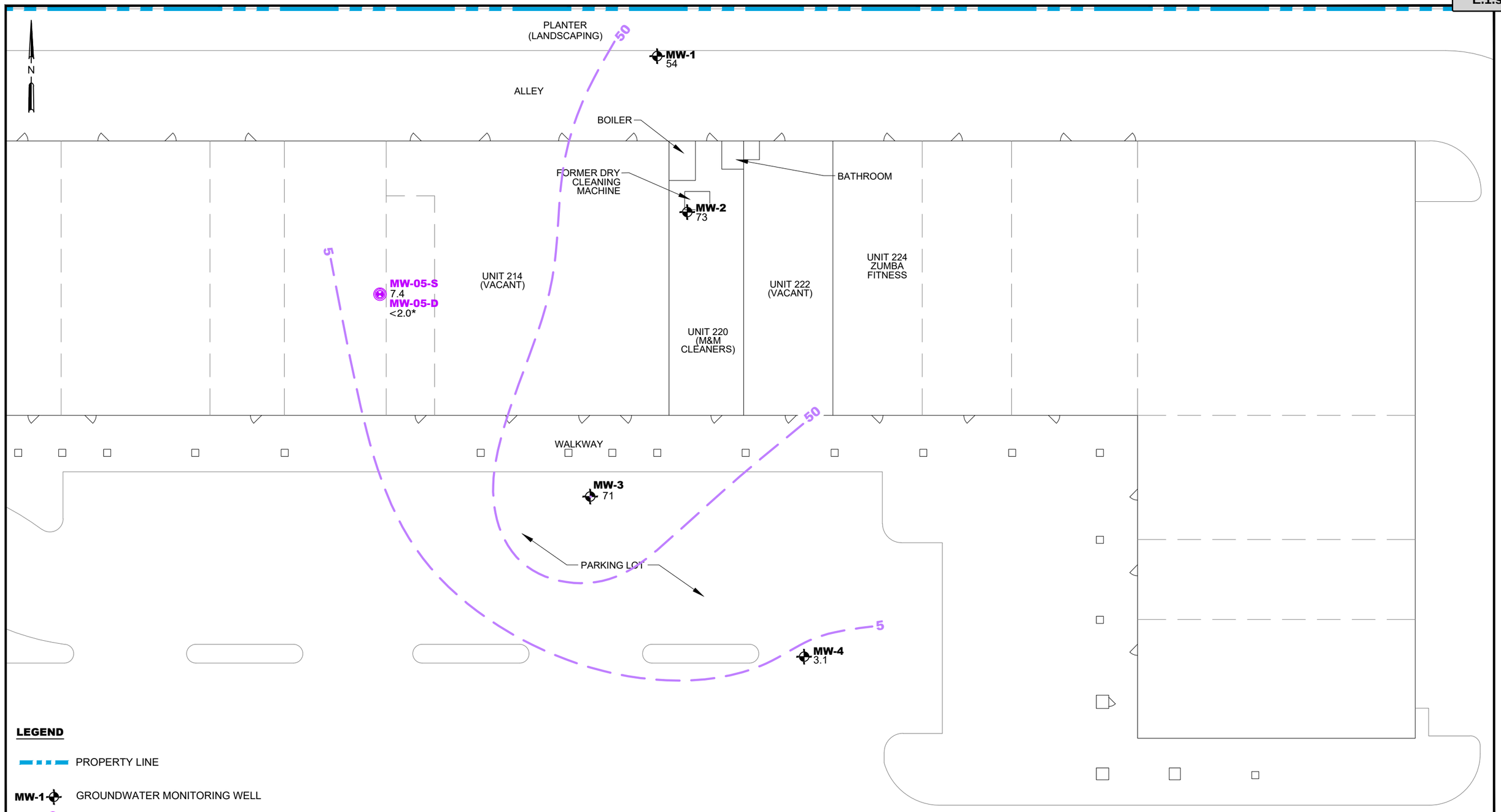
GROUNDWATER ELEVATION MAP
SEPTEMBER 29, 2017

FIGURE: 3

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185802753	STA/MDR	MB	BV	10/30/17

FILEPATH:V:\1857\active\Secor\CADD_00 OTHER OFFICES\X04-REDLANDS\MorenoValley\2017\3Qtr\FIG 3_MorenoValley_GW ELEVATION MAP_07-2015.dwg|miramirez|Oct 30, 2017 at 13:30|Layout: 11X17 L

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM



LEGEND

- PROPERTY LINE
- MW-1 GROUNDWATER MONITORING WELL
- DUAL NESTED MONITORING WELL
- PCE TETRACHLOROETHENE CONCENTRATIONS IN GROUNDWATER, MEASURED IN MICROGRAMS PER LITER (µg/L)
- INFERRED PCE ISOCONCENTRATION CONTOUR MEASURED IN MICROGRAMS PER LITER (µg/L)
- * NOT USED IN CONTOURING

0 25 50

APPROXIMATE SCALE IN FEET

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PHONE: (909) 335-6116 FAX: (909) 556-6516

FOR: M&M CLEANERS
23080 ALESSANDRO BLVD
MORENO VALLEY, CALIFORNIA

PCE ISO-CONCENTRATION MAP
SEPTEMBER 29, 2017

FIGURE: 4

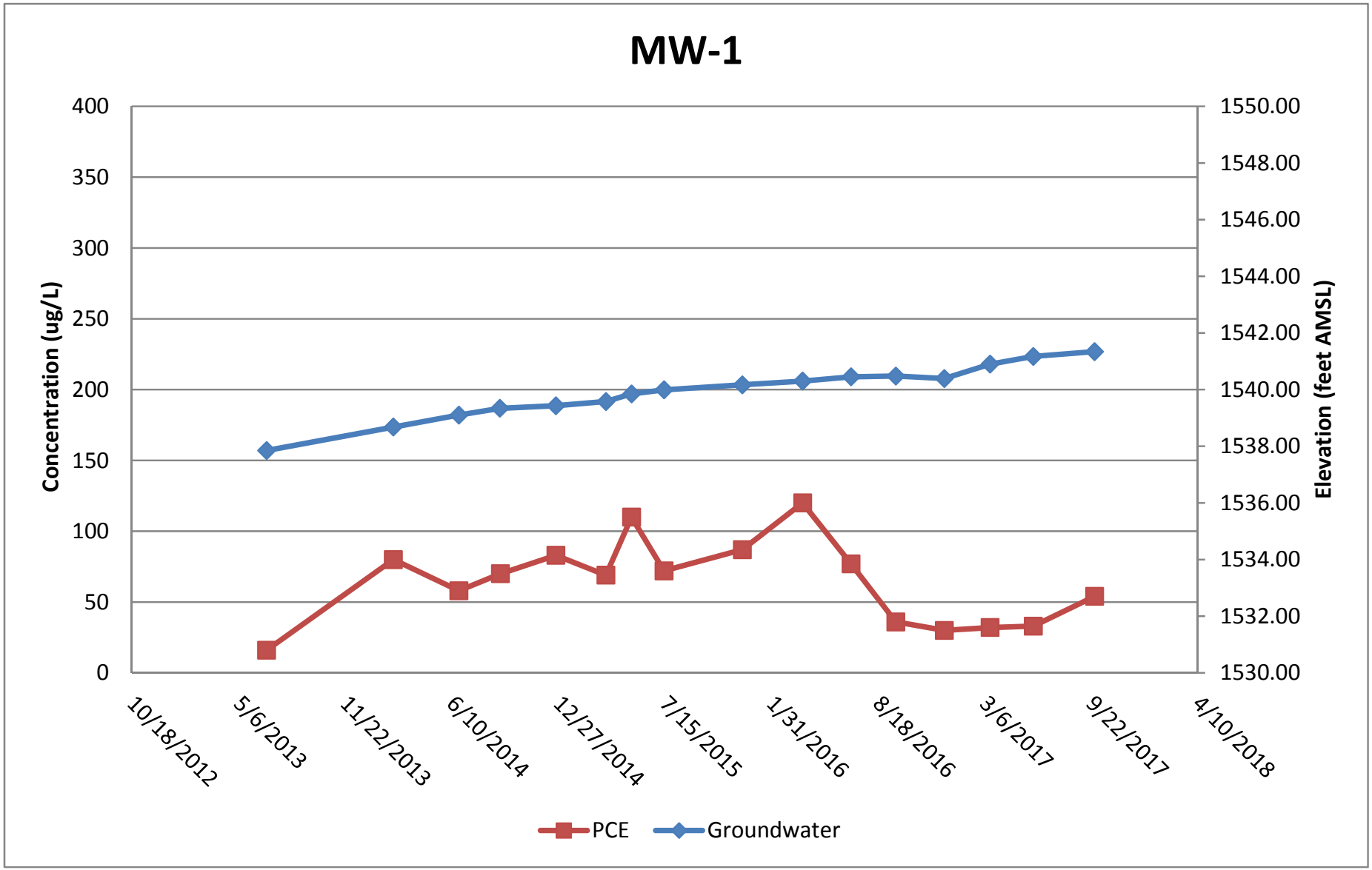
JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
185802753	MDR/STA	MB	BV	10/30/17

FILEPATH:V:\1857\active\Secor\CADD_00 OTHER OFFICES\X04-REDLANDS\MorenoValley\2017\3Qtr\FIG 4_MorenoValley_PCE ISOCONCENTRATION MAP.dwg|miramirez|Oct 30, 2017 at 13:29|Layout: 11X17 L

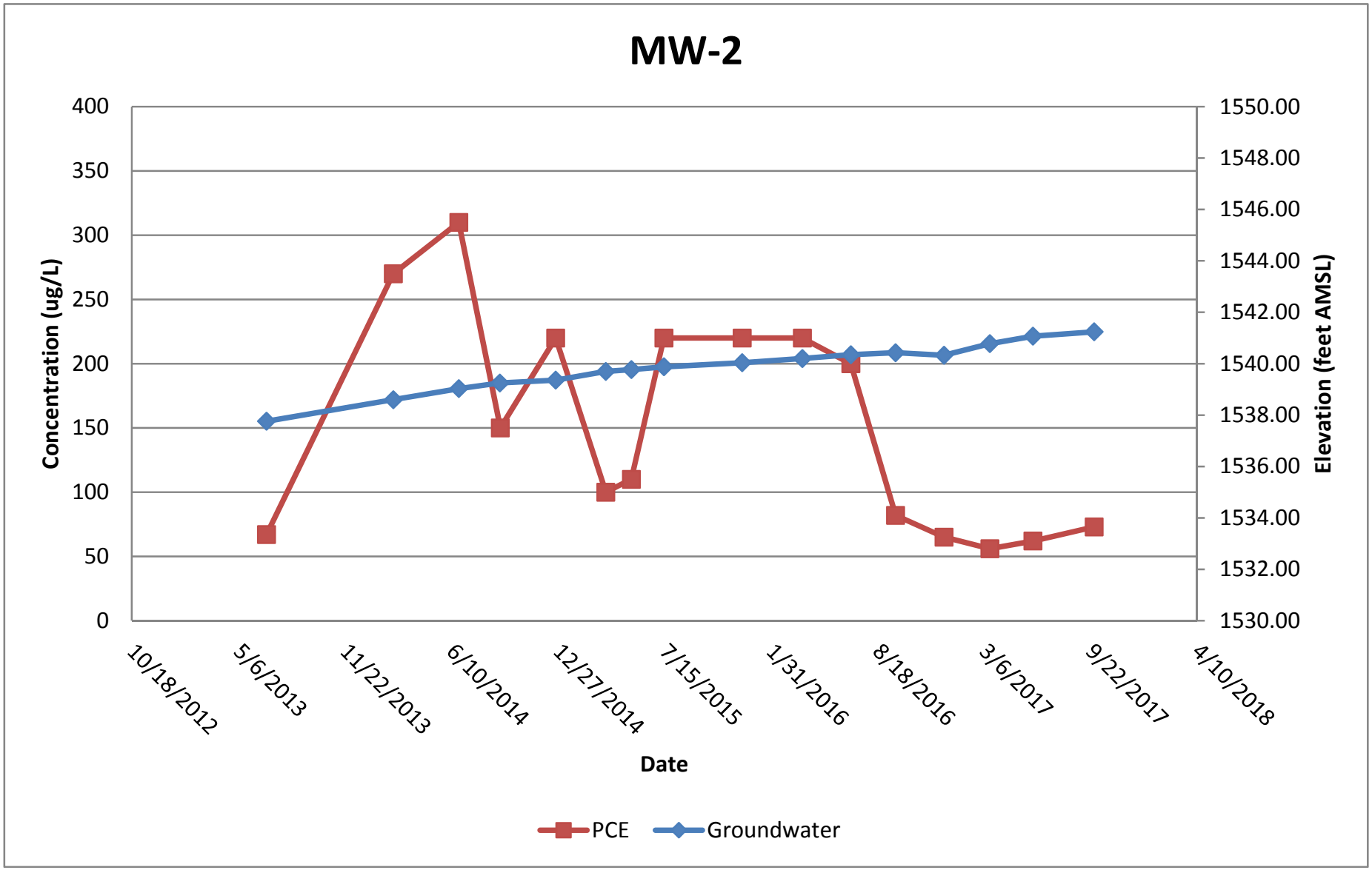
Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

APPENDIX A
HYDROGRAPHS

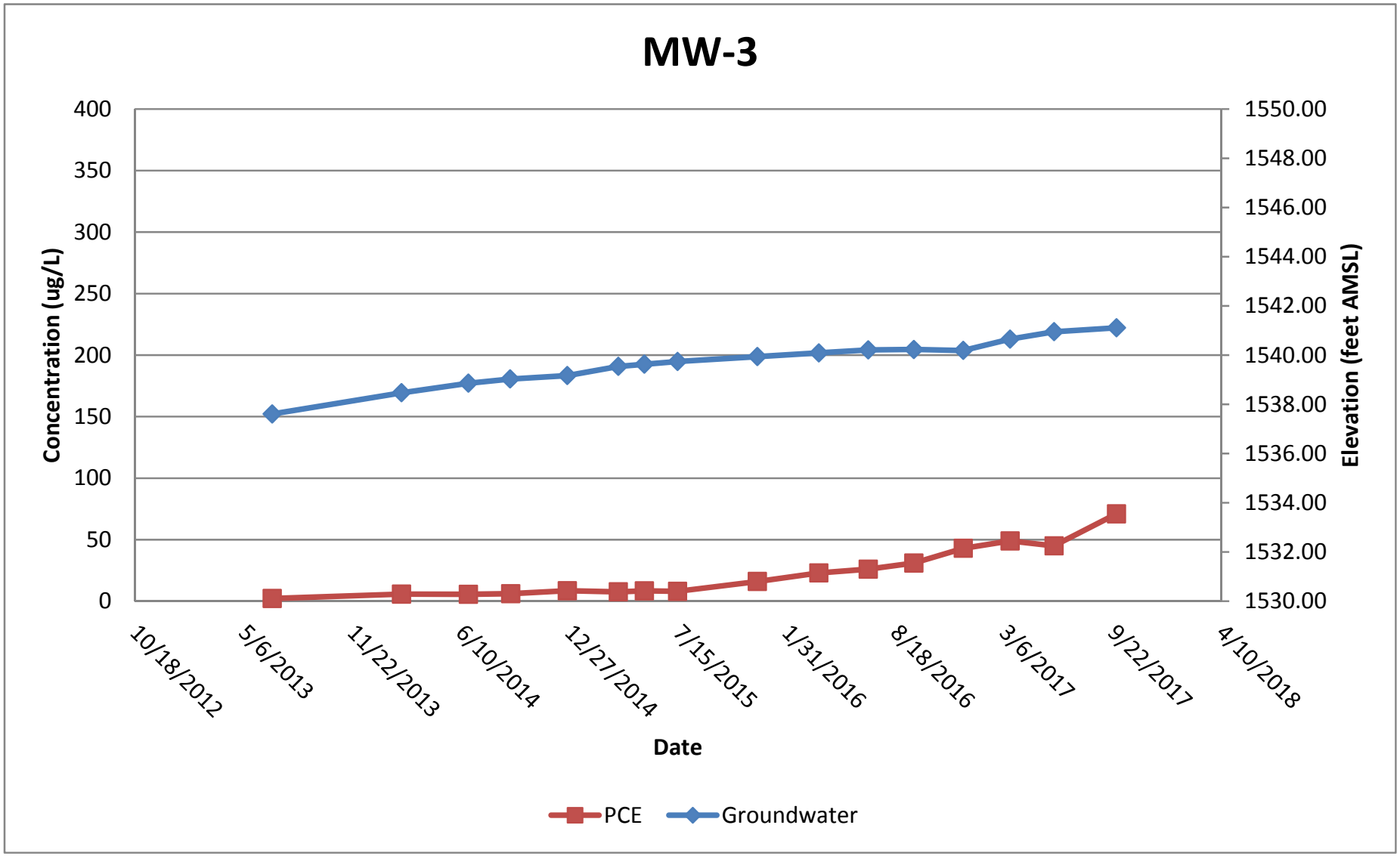
Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM



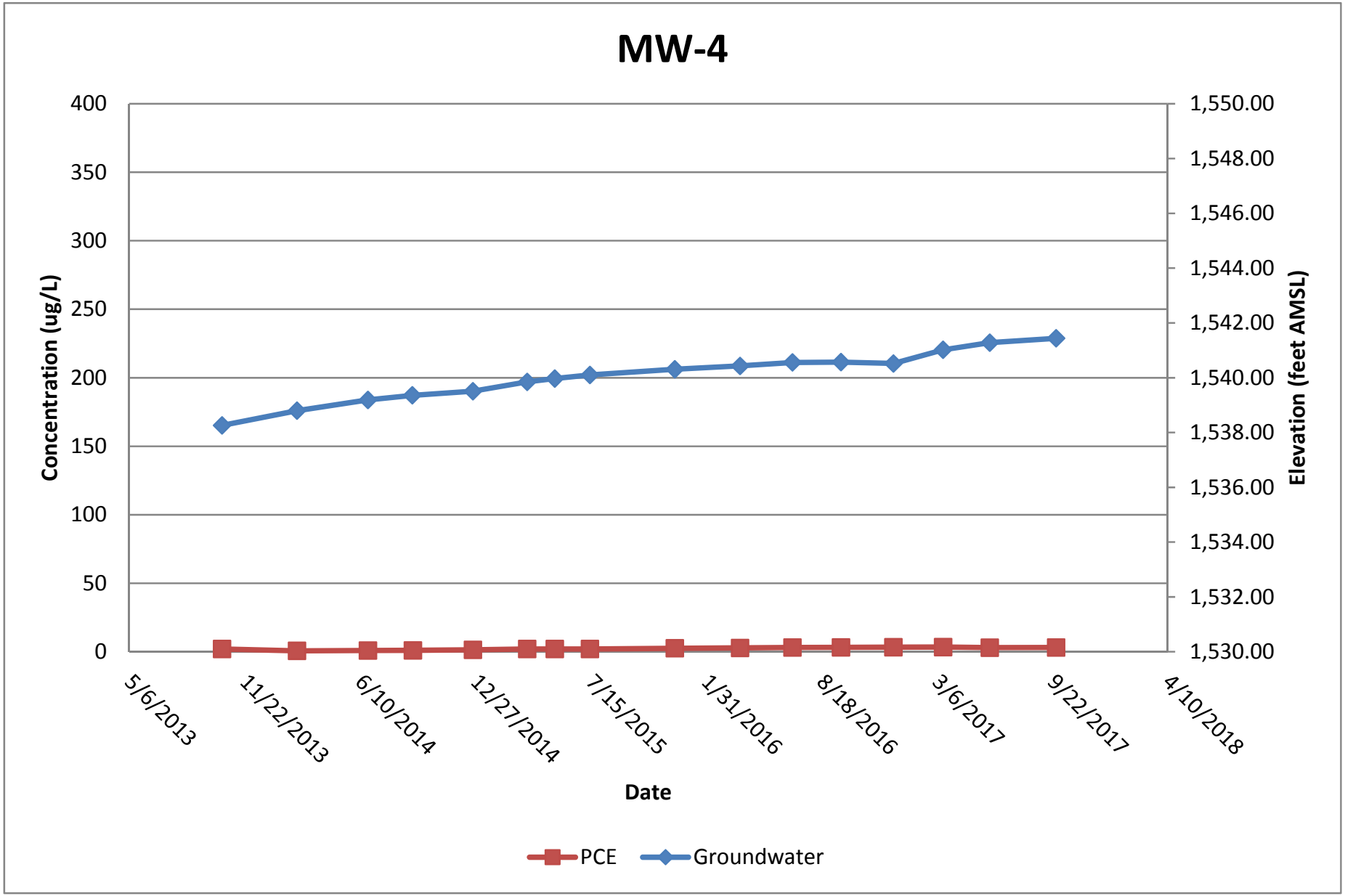
Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center,



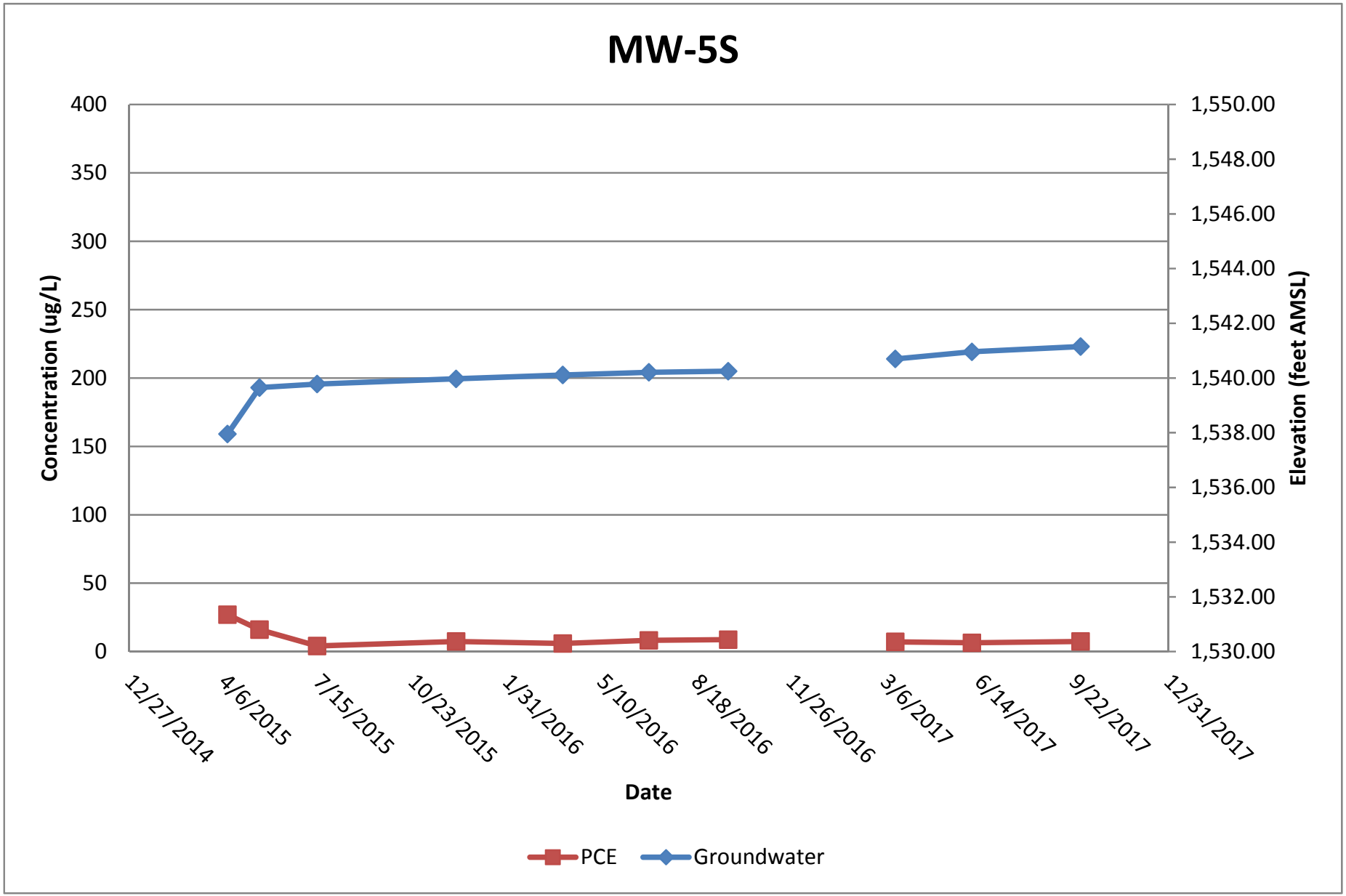
Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center,



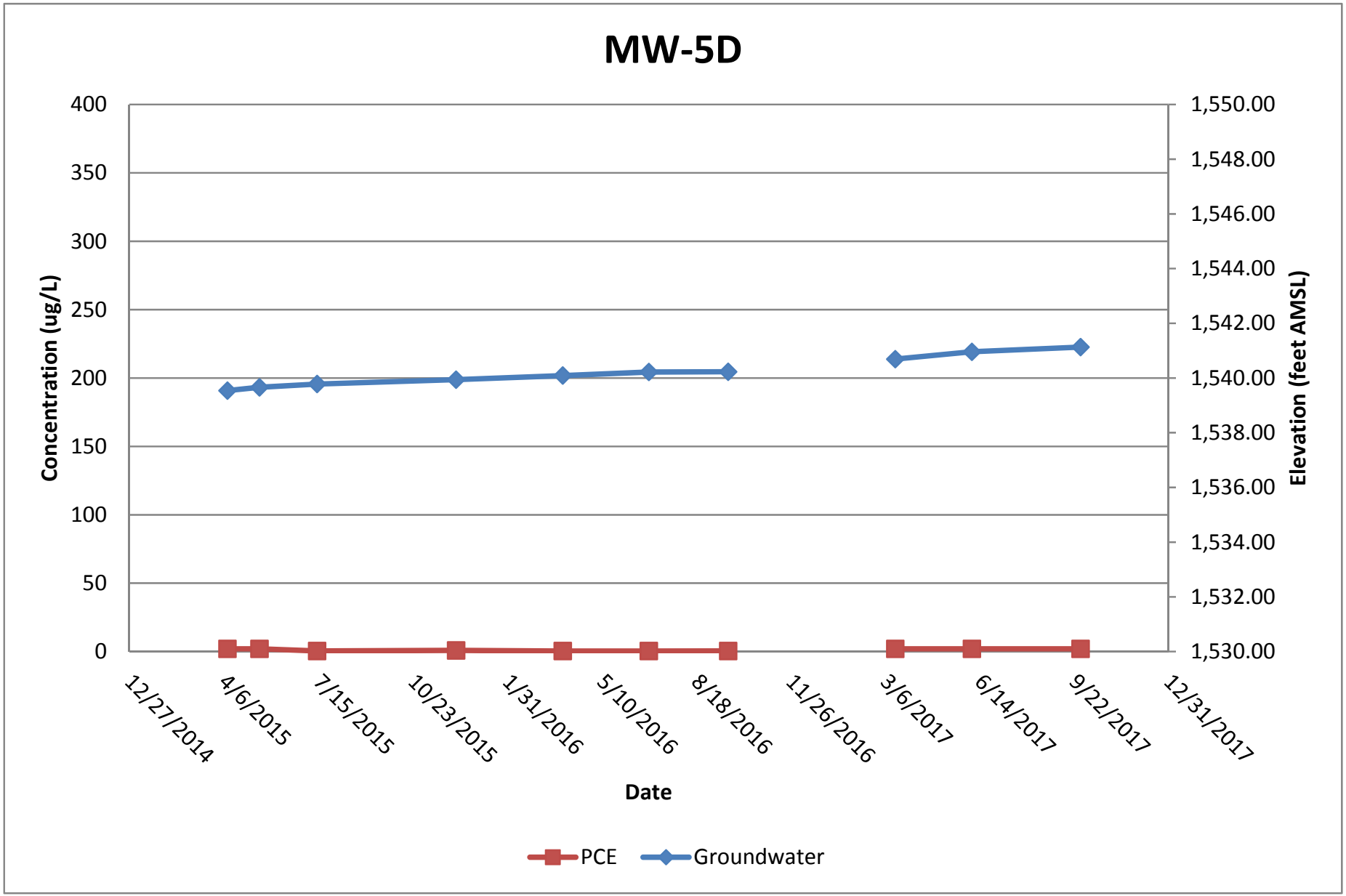
Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center,



Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center,



Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center,



Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center,

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

APPENDIX B
STANDARD PROCEDURES FOR GROUNDWATER SAMPLING

MONITORING WELL LOW-FLOW (MINIMAL DRAWDOWN) SAMPLING PROCEDURES

Groundwater sampling activities involve several activities including groundwater and free product depth measurements, well purging, sample collection, waste water disposal, etc. The procedures for conducting these activities are described below.

DEPTH TO GROUNDWATER

Prior to purging each of the wells, the depth to groundwater within each well casing is measured to the nearest 0.01 foot using either an electronic Solinst water level indicator or an electronic oil-water interface probe. Wells with known elevation were measured from the top of each well casing as determined in accordance with previous surveys.

LOW-FLOW (MINIMAL DRAWDOWN) GROUDNWATER SAMPLING

Following depth to groundwater measurement, a low-flow pump is installed at 3 feet below the groundwater table and 3 feet off the bottom of the monitoring well. Tubing connects the pneumatic pump, submerged in the well, to a water flow cell equipped with a calibrated water quality probe. The probe continuously measures water quality parameters including pH, specific conductivity, dissolved oxygen (DO), oxidation-reduction (redox) potential, temperature, and turbidity.

Flow rates of 0.1-0.5 L/min are suggested for purging and sampling, but exact flow rates depend on Site-specific hydrology. Flow rate is adjusted to prevent drawdown from exceeding 0.3 feet. After installing the pneumatic pump, the depth to water meter is reinstalled to monitor drawdown.

Once flow is continuous, water quality parameter measurements are obtained. Measurements for temperature, pH, redox potential, conductivity, DO and turbidity are taken every three to five minutes. Purging continues until all water quality parameters have stabilized for three consecutive readings. Once parameters stabilize, a final reading is recorded and samples are taken.

GROUNDWATER SAMPLE ACQUISITION AND HANDLING

Following purging operations, groundwater samples are collected from the discharge tube of the pneumatic pump. The discharge tube is disconnected from the flow cell prior to sampling. Samples are never taken from the outlet of the flow cell.

Collected water samples are discharged directly into laboratory provided, precleaned, 40 milliliter (ml) glass vials or one liter amber bottles and sealed with Teflon-lined septum, screw-on lids. Labels documenting sample number, well identification, collection date and time, type of sample and type of preservative (if applicable) are affixed to each sample. The samples are then placed into an ice-filled cooler for delivery under chain-of-custody to a laboratory certified to perform the specified tests by the State of California Department of Health Services Environmental Laboratory Accreditation Program.

TRIP BLANKS

To assure the quality of the collected samples and to evaluate the potential for cross contamination during transport to the laboratory, a distilled-water trip blank accompanies the samples in the cooler. The trip blank is analyzed for the presence of volatile organic compounds of concern. For petroleum hydrocarbons and solvent sites, the trip blank is typically analyzed for aromatic volatile organics compounds EPA Test Method 8260B.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

CONTAINMENT AND DISPOSAL OF GENERATED WATER

All wastewater and purge water generated during the field activities were retained on-site in appropriate containers (i.e. DOT approved drums) for future disposal. All wastewater will be delivered under appropriate manifest to a facility certified and licensed to receive such waste streams.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

APPENDIX C
WATER SAMPLE FIELD DATA SHEETS

Stantec

STANTEC
Field Depth to Water Measurements

SITE: Moreno Center/M&M Cleaners
PROJECT No.: 185802753
Field Personnel: MPB

Date: 9/24/17
Checked By: MEB
Instrument: WLM-100

WELL ID	Depth of Well	Screen Interval	Depth to Water	Casing Diameter	Comments
MW-01	49.70	35-50	36.67	2"	
MW-02	49.50	35-50	37.14	2"	
MW-03	52.50	37-52	36.35	2"	~2' slough
MW-04	50.10	35-50	35.41	2"	~1.5' slough
MW-05S	45.00	35-45	37.30	2"	
MW-05D	60.00	55-60	37.31	2"	

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Stantec
Well Sampling Data Sheet

Project No. 185802753 | Well ID MW-01
Purged By MFB | Sample ID MW-01
Sampled By MFB | Client Moreno Center/M&M Cleaners
Location 2380 Allesandro Blvd. Moreno Valley

Type: Groundwater X Other

Casing Diameter (inches)	2	3	4	4.5	6	Other
	X					
Gallons per Linerar Foot	0.163	0.367	0.653	0.826	1.469	

Casing Elevation
Depth to Water 36.67
Elevation of Water
Depth of Well 49.70

Volume in Casing 2.12
Calculated Purge
Actual Purge
Screened Interval 35-50
Depth of Pump (based on middle of saturated screen) 43

Date Purged 9/29/17 Start 0637 End 0653
Date Sampled 9/29/17 Start 0655 End

Field QC Sample(s) Collected at this Well (i.e. FB-1, X-DUP-1, MW-X etc.)

Time	DTW (<0.3')	Volume (gal)	pH (± 0.2)	E.C. (ms/cm³) (± 5%)	Temp (F) (± 0.2)	D.O.(mg/L) (± 0.2)	ORP (± 20)	Color	NTU (± 10%)
0641	36.69	0.2	7.50	1.55	70.8	3.86	143	Tan	451
0645	36.69	0.4	7.50	1.56	71.2	3.16	145	"	374
0649	36.69	0.6	7.51	1.56	71.6	3.13	138	"	337
0653	36.69	0.8	7.57	1.57	71.9	3.59	139	"	307

Length of Water column= (13.03) (0.20)= _____ + Depth to Water = _____ (80% Recharge)

Purging Equipment		Sampling Equipment	
	Dedicated Pump		Dedicated Pump
X	Grundfos/Rediflow	X	Grundfos/Rediflow
	Vac-Truck		Vac-Truck
	Development Rig		Development Rig
	Bailer/Type:		Bailer/Type:
	Other:		Other:

Well Integrity:

Remarks: Collect ____ VOAs for VOC analysis (EPA Method 8260B)

Signature

Page 1 of 1

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Stantec
Well Sampling Data Sheet

Project No. 185802753 | Well ID MW-02
Purged By MFH | Sample ID MW-02
Sampled By MFH | Client Moreno Center/M&M Cleaners
Location 2380 Allesandro Blvd. Moreno Valley

Type: Groundwater X Other

Casing Diameter (inches)	2	3	4	4.5	6	Other
Gallons per Linerar Foot	X 0.163	0.367	0.653	0.826	1.469	

Casing Elevation
Depth to Water 37.14
Elevation of Water
Depth of Well 49.50

Volume in Casing 2.01
Calculated Purge
Actual Purge
Screened Interval 35-50
Depth of Pump (based on middle of saturated screen) 43

Date Purged 9/29/17 Start 0922 End 0938
Date Sampled 9/29/17 Start 0940 End

Field QC Sample(s) Collected at this Well (i.e. FB-1, X-DUP-1, MW-X etc.)

Time	DTW (<0.3')	Volume (gal)	pH (± 0.2)	E.C. (ms/cm³) (± 5%)	Temp (F) (± 0.2)	D.O.(mg/L) (± 0.2)	ORP (± 20)	Color	NTU (± 10%)
0926	37.24	0.2	7.98	0.988	75.9	3.03	119	TAN	405
0930	37.22	0.4	7.94	0.993	76.0	2.89	117	"	369
0934	37.21	0.6	7.94	0.989	76.3	2.79	114	"	341
0938	37.20	0.8	7.93	0.989	76.5	2.87	113	"	313

Length of Water column= (12.36) (0.20)= _____ + Depth to Water = _____ (80% Recharge)

Purging Equipment		Sampling Equipment	
	Dedicated Pump		Dedicated Pump
X	Grundfos/Rediflow	X	Grundfos/Rediflow
	Vac-Truck		Vac-Truck
	Development Rig		Development Rig
	Bailer/Type:		Bailer/Type:
	Other:		Other:

Well Integrity:

Remarks: Collect ____ VOAs for VOC analysis (EPA Method 8260B)

Signature

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Stantec
Well Sampling Data Sheet

Project No. 185802753 | Well ID MW-03
Purged By MEB | Sample ID MW-03
Sampled By MEB | Client Moreno Center/M&M Cleaners
Location 2380 Allesandro Blvd. Moreno Valley

Type: Groundwater X Other

Casing Diameter (inches)	2	3	4	4.5	6	Other
	X					
Gallons per Linerar Foot	0.163	0.367	0.653	0.826	1.469	

Casing Elevation
Depth to Water 36.35
Elevation of Water
Depth of Well 52.50

Volume in Casing 2.63
Calculated Purge
Actual Purge
Screened Interval 37.52
Depth of Pump (based on middle of saturated screen) 44

Date Purged 9/29/17 | Start 0558 | End 0614
Date Sampled 9/29/17 | Start 0616 | End

Field QC Sample(s) Collected at this Well (i.e. FB-1, X-DUP-1, MW-X etc.)

Time	DTW (<0.3')	Volume (gal)	pH (± 0.2)	E.C. (ms/cm³) (± 5%)	Temp (F) (± 0.2)	D.O.(mg/L) (± 0.2)	ORP (± 20)	Color	NTU (± 10%)
0602	36.38	0.2	7.41	1.42	72.4	3.68	175	TAN	598
0606	36.38	0.4	7.47	1.46	72.2	3.43	173	"	537
0610	36.38	0.6	7.43	1.48	73.2	3.44	171	"	499
0614	36.38	0.8	7.40	1.47	75.0	3.57	166	"	471

Length of Water column= (16.15) (0.20)=_____ + Depth to Water = _____(80% Recharge)

Purging Equipment		Sampling Equipment	
	Dedicated Pump		Dedicated Pump
X	Grundfos/Rediflow	X	Grundfos/Rediflow
	Vac-Truck		Vac-Truck
	Development Rig		Development Rig
	Bailer/Type:		Bailer/Type:
	Other:		Other:

Well Integrity:

Remarks: Collect ____ VOAs for VOC analysis (EPA Method 8260B)

Signature

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Stantec
Well Sampling Data Sheet

Project No. 185802753 | Well ID MW-04
Purged By MFB | Sample ID MW-04 + MW-04 DUP
Sampled By MFB | Client Moreno Center/M&M Cleaners
Location 2380 Allesandro Blvd. Moreno Valley

Type: Groundwater X Other

Casing Diameter (inches)	2	3	4	4.5	6	Other
	X					
Gallons per Linerar Foot	0.163	0.367	0.653	0.826	1.469	

Casing Elevation
Depth to Water 35.41
Elevation of Water
Depth of Well 50.10

Volume in Casing 2.39
Calculated Purge
Actual Purge
Screened Interval 42 35-50
Depth of Pump (based on middle of salurated screen) 42

Date Purged 9/29/17 | Start 0521 | End 0537
Date Sampled 9/29/17 | Start 0539 | End

Field QC Sample(s) Collected at this Well (i.e. FB-1, X-DUP-1, MW-X etc.) MW-04 DUP 0545

Time	DTW (<0.3')	Volume (gal)	pH (± 0.2)	E.C. (ms/cm³) (± 5%)	Temp (F) (± 0.2)	D.O.(mg/L) (± 0.2)	ORP (± 20)	Color	NTU (± 10%)
0525	35.50	0.2	7.39	0.915	73.0	1.38	195	Tan	535
0529	35.49	0.4	7.56	0.914	73.4	1.23	189	"	458
0533	35.48	0.6	7.64	0.922	73.8	1.30	181	"	413
0537	35.46	0.8	7.64	0.927	74.1	1.41	175	"	379

Length of Water column= (14.69) (0.20)= _____ + Depth to Water = _____ (80% Recharge)

Purging Equipment		Sampling Equipment	
	Dedicated Pump		Dedicated Pump
X	Grundfos/Rediflow	X	Grundfos/Rediflow
	Vac-Truck		Vac-Truck
	Development Rig		Development Rig
	Bailer/Type:		Bailer/Type:
	Other:		Other:

Well Integrity:

Remarks: Collect 6 VOAs for VOC analysis (EPA Method 8260B)

Signature _____ Page 1 of 1

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Stantec
Well Sampling Data Sheet

Project No. 185802753 | Well ID MW-05S
Purged By MFB | Sample ID MW-05S
Sampled By MFB | Client Moreno Center/M&M Cleaners
Location 2380 Allesandro Blvd. Moreno Valley

Type: Groundwater X Other

Casing Diameter (inches)	2	3	4	4.5	6	Other
Gallons per Linerar Foot	X 0.163	0.367	0.653	0.826	1.469	

Casing Elevation
Depth to Water 37.30
Elevation of Water
Depth of Well 45.00

Volume in Casing 1.26
Calculated Purge
Actual Purge
Screened Interval 35 - 45
Depth of Pump (based on middle of saturated screen) 41

Date Purged 4/26/17 | Start 0831 | End 0847
Date Sampled 4/29/17 | Start 0849 | End

Field QC Sample(s) Collected at this Well (i.e. FB-1, X-DUP-1, MW-X etc.)

Time	DTW (<0.3')	Volume (gal)	pH (± 0.2)	E.C. (ms/cm³) (± 5%)	Temp (F) (± 0.2)	D.O.(mg/L) (± 0.2)	ORP (± 20)	Color	NTU (± 10%)
0835	37.35	0.1	8.17	1.412	74.6	1.09	101	Tan	282
0839	37.40	0.2	8.19	1.42	74.7	0.80	101	"	235
0843	37.41	0.3	8.19	1.42	75.2	0.82	103	"	215
0847	37.43	0.4	8.19	1.43	76.1	0.84	105	"	196

Length of Water column= (7.7) (0.20)= + Depth to Water = (80% Recharge)

Purging Equipment		Sampling Equipment	
	Dedicated Pump		Dedicated Pump
X	Grundfos/Rediflow	X	Grundfos/Rediflow
	Vac-Truck		Vac-Truck
	Development Rig		Development Rig
	Bailer/Type:		Bailer/Type:
	Other:		Other:

Well Integrity:

Remarks: Collect VOAs for VOC analysis (EPA Method 8260B) ~ 150 ml/min & 100 ml/min

Signature

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Stantec
Well Sampling Data Sheet

Project No. 185802753 | Well ID MW-05D
Purged By MEB | Sample ID MW-05D
Sampled By MEB | Client Moreno Center/M&M Cleaners
Location 2380 Allesandro Blvd. Moreno Valley

Type: Groundwater X Other

Casing Diameter (inches)	2	3	4	4.5	6	Other
	X					
Gallons per Linerar Foot	0.163	0.367	0.653	0.826	1.469	

Casing Elevation
Depth to Water 37.31
Elevation of Water
Depth of Well 60.00

Volume in Casing 3.70
Calculated Purge
Actual Purge
Screened Interval 55-60
Depth of Pump (based on middle of saturated screen) 52

Date Purged 9/29/17 Start 0756 End 0812
Date Sampled 9/29/17 Start 0814 End

Field QC Sample(s) Collected at this Well (i.e. FB-1, X-DUP-1, MW-X etc.)

Time	DTW (<0.3')	Volume (gal)	pH (± 0.2)	E.C. (ms/cm³) (± 5%)	Temp (F) (± 0.2)	D.O.(mg/L) (± 0.2)	ORP (± 20)	Color	NTU (± 10%)
0800	37.32	0.2	7.90	1.01	73.0	2.17	102	Tan	340
0804	37.32	0.4	7.80	1.01	73.3	2.24	105	"	341
0808	37.32	0.6	7.77	1.01	73.6	2.21	107	"	354
0812	37.32	0.8	7.74	1.01	73.8	2.27	111	"	356

Length of Water column= (22.69) (0.20)= + Depth to Water = (80% Recharge)

Purging Equipment		Sampling Equipment	
	Dedicated Pump		Dedicated Pump
X	Grundfos/Rediflow	X	Grundfos/Rediflow
	Vac-Truck		Vac-Truck
	Development Rig		Development Rig
	Bailer/Type:		Bailer/Type:
	Other:		Other:

Well Integrity:

Remarks: Collect VOAs for VOC analysis (EPA Method 8260B)

Signature

Page 1 of 1

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

APPENDIX D
LAB DATA SHEETS,
QA/QC RESULTS, AND CHAIN OF CUSTODY RECORDS

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Irvine
17461 Derian Ave
Suite 100
Irvine, CA 92614-5817
Tel: (949)261-1022

TestAmerica Job ID: 440-193461-1
Client Project/Site: Moreno Center

For:
Stantec Consulting Corp.
25864-F Business Center Dr.
Redlands, California 92374

Attn: Brian Viggiano

Authorized for release by:
10/10/2017 1:10:41 PM

Lena Davidkova, Project Manager II
(949)261-1022
lena.davidkova@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Client Sample Results 5
Method Summary 17
Lab Chronicle 18
QC Sample Results 20
QC Association Summary 26
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Chain of Custody 29
Receipt Checklists 30

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Sample Summary

Client: Stantec Consulting Corp.
Project/Site: Moreno Center

TestAmerica Job ID: 440-193461-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-193461-1	MW-01	Water	09/29/17 06:55	10/04/17 13:0(
440-193461-2	MW-02	Water	09/29/17 09:40	10/04/17 13:0(
440-193461-3	MW-03	Water	09/29/17 06:16	10/04/17 13:0(
440-193461-4	MW-04	Water	09/29/17 05:39	10/04/17 13:0(
440-193461-5	MW-04 DUP	Water	09/29/17 05:45	10/04/17 13:0(
440-193461-6	MW-05S	Water	09/29/17 08:49	10/04/17 13:0(
440-193461-7	MW-05D	Water	09/29/17 08:14	10/04/17 13:0(
440-193461-8	Trip Blank	Water	09/29/17 00:01	10/04/17 13:0(

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Case Narrative

Client: Stantec Consulting Corp.
Project/Site: Moreno Center

TestAmerica Job ID: 440-193461-1

Job ID: 440-193461-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-193461-1

Comments
No additional comments.

Receipt
The samples were received on 10/4/2017 1:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.0º C.

Receipt Exceptions

The following sample was received at the laboratory without a sample collection date and time documented on the chain of custody: Trip Blank (440-193461-8). The field was crossed out by the sampler so the default time of 9/29/17, 00:01 were used for login.

GC/MS VOA
Method(s) 8260B: The method blank for analytical batch 440-433948 contained Methylene Chloride above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Client Sample Results

Client: Stantec Consulting Corp.
Project/Site: Moreno Center

TestAmerica Job ID: 440-193461-1

Client Sample ID: MW-01
Date Collected: 09/29/17 06:55
Date Received: 10/04/17 13:00

Lab Sample ID: 440-193461-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		2.0	0.25	ug/L			10/09/17 19:55	
Styrene	ND		2.0	0.25	ug/L			10/09/17 19:55	
cis-1,3-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 19:55	
trans-1,3-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 19:55	
N-Propylbenzene	ND		2.0	0.25	ug/L			10/09/17 19:55	
n-Butylbenzene	ND		5.0	0.40	ug/L			10/09/17 19:55	
4-Chlorotoluene	ND		5.0	0.25	ug/L			10/09/17 19:55	
1,4-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 19:55	
1,2-Dibromoethane (EDB)	ND		2.0	0.25	ug/L			10/09/17 19:55	
1,2-Dichloroethane	ND		2.0	0.25	ug/L			10/09/17 19:55	
1,3,5-Trimethylbenzene	ND		2.0	0.25	ug/L			10/09/17 19:55	
Bromobenzene	ND		5.0	0.25	ug/L			10/09/17 19:55	
Toluene	ND		2.0	0.25	ug/L			10/09/17 19:55	
Chlorobenzene	ND		2.0	0.25	ug/L			10/09/17 19:55	
1,2,4-Trichlorobenzene	ND		5.0	0.40	ug/L			10/09/17 19:55	
Dibromochloromethane	ND		2.0	0.25	ug/L			10/09/17 19:55	
Tetrachloroethene	**54**		2.0	0.25	ug/L			10/09/17 19:55	
sec-Butylbenzene	ND		5.0	0.25	ug/L			10/09/17 19:55	
m,p-Xylene	ND		2.0	0.50	ug/L			10/09/17 19:55	
1,3-Dichloropropane	ND		2.0	0.25	ug/L			10/09/17 19:55	
cis-1,2-Dichloroethene	ND		2.0	0.25	ug/L			10/09/17 19:55	
trans-1,2-Dichloroethene	ND		2.0	0.25	ug/L			10/09/17 19:55	
1,3-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 19:55	
Carbon tetrachloride	ND		5.0	0.25	ug/L			10/09/17 19:55	
1,1-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 19:55	
2,2-Dichloropropane	ND		2.0	0.40	ug/L			10/09/17 19:55	
1,1,1,2-Tetrachloroethane	ND		5.0	0.25	ug/L			10/09/17 19:55	
Chloroform	**0.41**	**J**	2.0	0.25	ug/L			10/09/17 19:55	
Benzene	ND		2.0	0.25	ug/L			10/09/17 19:55	
1,1,1-Trichloroethane	ND		2.0	0.25	ug/L			10/09/17 19:55	
Bromomethane	ND		5.0	0.25	ug/L			10/09/17 19:55	
Chloromethane	ND		5.0	0.25	ug/L			10/09/17 19:55	
Dibromomethane	ND		2.0	0.25	ug/L			10/09/17 19:55	
Bromochloromethane	ND		5.0	0.25	ug/L			10/09/17 19:55	
Chloroethane	ND		5.0	0.40	ug/L			10/09/17 19:55	
Vinyl chloride	ND		5.0	0.25	ug/L			10/09/17 19:55	
Methylene Chloride	ND		5.0	1.1	ug/L			10/09/17 19:55	
Bromoform	ND		5.0	0.40	ug/L			10/09/17 19:55	
Bromodichloromethane	ND		2.0	0.25	ug/L			10/09/17 19:55	
1,1-Dichloroethane	ND		2.0	0.25	ug/L			10/09/17 19:55	
1,1-Dichloroethene	ND		5.0	0.25	ug/L			10/09/17 19:55	
Trichlorofluoromethane	ND		5.0	0.25	ug/L			10/09/17 19:55	
Dichlorodifluoromethane	ND		5.0	0.25	ug/L			10/09/17 19:55	
1,2-Dichloropropane	ND		2.0	0.25	ug/L			10/09/17 19:55	
1,1,2-Trichloroethane	ND		2.0	0.25	ug/L			10/09/17 19:55	
Trichloroethene	ND		2.0	0.25	ug/L			10/09/17 19:55	
1,1,2,2-Tetrachloroethane	ND		2.0	0.25	ug/L			10/09/17 19:55	
1,2,3-Trichlorobenzene	ND		5.0	0.40	ug/L			10/09/17 19:55	
Hexachlorobutadiene	ND		5.0	0.25	ug/L			10/09/17 19:55	

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Client Sample ID: MW-01

Date Collected: 09/29/17 06:55
Date Received: 10/04/17 13:00

Lab Sample ID: 440-193461-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		5.0	0.40	ug/L			10/09/17 19:55	
o-Xylene	ND		2.0	0.25	ug/L			10/09/17 19:55	
2-Chlorotoluene	ND		5.0	0.25	ug/L			10/09/17 19:55	
1,2-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 19:55	
1,2,4-Trimethylbenzene	ND		2.0	0.25	ug/L			10/09/17 19:55	
1,2-Dibromo-3-Chloropropane	ND		5.0	0.50	ug/L			10/09/17 19:55	
1,2,3-Trichloropropane	ND		10	0.25	ug/L			10/09/17 19:55	
tert-Butylbenzene	ND		5.0	0.25	ug/L			10/09/17 19:55	
Isopropylbenzene	ND		2.0	0.25	ug/L			10/09/17 19:55	
p-Isopropyltoluene	ND		2.0	0.25	ug/L			10/09/17 19:55	

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*107*		*80 - 128*		*10/09/17 19:55*	
4-Bromofluorobenzene (Surr)	*92*		*80 - 120*		*10/09/17 19:55*	
Dibromofluoromethane (Surr)	*99*		*76 - 132*		*10/09/17 19:55*	

Client Sample ID: MW-02

Date Collected: 09/29/17 09:40
Date Received: 10/04/17 13:00

Lab Sample ID: 440-193461-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		2.0	0.25	ug/L			10/09/17 21:25	
Styrene	ND		2.0	0.25	ug/L			10/09/17 21:25	
cis-1,3-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 21:25	
trans-1,3-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 21:25	
N-Propylbenzene	ND		2.0	0.25	ug/L			10/09/17 21:25	
n-Butylbenzene	ND		5.0	0.40	ug/L			10/09/17 21:25	
4-Chlorotoluene	ND		5.0	0.25	ug/L			10/09/17 21:25	
1,4-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 21:25	
1,2-Dibromoethane (EDB)	ND		2.0	0.25	ug/L			10/09/17 21:25	
1,2-Dichloroethane	ND		2.0	0.25	ug/L			10/09/17 21:25	
1,3,5-Trimethylbenzene	ND		2.0	0.25	ug/L			10/09/17 21:25	
Bromobenzene	ND		5.0	0.25	ug/L			10/09/17 21:25	
Toluene	ND		2.0	0.25	ug/L			10/09/17 21:25	
Chlorobenzene	ND		2.0	0.25	ug/L			10/09/17 21:25	
1,2,4-Trichlorobenzene	ND		5.0	0.40	ug/L			10/09/17 21:25	
Dibromochloromethane	ND		2.0	0.25	ug/L			10/09/17 21:25	
Tetrachloroethene	**73**		2.0	0.25	ug/L			10/09/17 21:25	
sec-Butylbenzene	ND		5.0	0.25	ug/L			10/09/17 21:25	
m,p-Xylene	ND		2.0	0.50	ug/L			10/09/17 21:25	
1,3-Dichloropropane	ND		2.0	0.25	ug/L			10/09/17 21:25	
cis-1,2-Dichloroethene	ND		2.0	0.25	ug/L			10/09/17 21:25	
trans-1,2-Dichloroethene	ND		2.0	0.25	ug/L			10/09/17 21:25	
1,3-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 21:25	
Carbon tetrachloride	ND		5.0	0.25	ug/L			10/09/17 21:25	
1,1-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 21:25	
2,2-Dichloropropane	ND		2.0	0.40	ug/L			10/09/17 21:25	
1,1,1,2-Tetrachloroethane	ND		5.0	0.25	ug/L			10/09/17 21:25	
Chloroform	**0.52**	**J**	2.0	0.25	ug/L			10/09/17 21:25	

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Client Sample Results

Client: Stantec Consulting Corp.
Project/Site: Moreno Center

TestAmerica Job ID: 440-193461-1

Client Sample ID: MW-02

Lab Sample ID: 440-193461-2
Date Collected: 09/29/17 09:40
Matrix: Wate
Date Received: 10/04/17 13:00

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		2.0	0.25	ug/L			10/09/17 21:25	
1,1,1-Trichloroethane	ND		2.0	0.25	ug/L			10/09/17 21:25	
Bromomethane	ND		5.0	0.25	ug/L			10/09/17 21:25	
Chloromethane	ND		5.0	0.25	ug/L			10/09/17 21:25	
Dibromomethane	ND		2.0	0.25	ug/L			10/09/17 21:25	
Bromochloromethane	ND		5.0	0.25	ug/L			10/09/17 21:25	
Chloroethane	ND		5.0	0.40	ug/L			10/09/17 21:25	
Vinyl chloride	ND		5.0	0.25	ug/L			10/09/17 21:25	
Methylene Chloride	ND		5.0	1.1	ug/L			10/09/17 21:25	
Bromoform	ND		5.0	0.40	ug/L			10/09/17 21:25	
Bromodichloromethane	ND		2.0	0.25	ug/L			10/09/17 21:25	
1,1-Dichloroethane	ND		2.0	0.25	ug/L			10/09/17 21:25	
1,1-Dichloroethene	ND		5.0	0.25	ug/L			10/09/17 21:25	
Trichlorofluoromethane	ND		5.0	0.25	ug/L			10/09/17 21:25	
Dichlorodifluoromethane	ND		5.0	0.25	ug/L			10/09/17 21:25	
1,2-Dichloropropane	ND		2.0	0.25	ug/L			10/09/17 21:25	
1,1,2-Trichloroethane	ND		2.0	0.25	ug/L			10/09/17 21:25	
Trichloroethene	ND		2.0	0.25	ug/L			10/09/17 21:25	
1,1,2,2-Tetrachloroethane	ND		2.0	0.25	ug/L			10/09/17 21:25	
1,2,3-Trichlorobenzene	ND		5.0	0.40	ug/L			10/09/17 21:25	
Hexachlorobutadiene	ND		5.0	0.25	ug/L			10/09/17 21:25	
Naphthalene	ND		5.0	0.40	ug/L			10/09/17 21:25	
o-Xylene	ND		2.0	0.25	ug/L			10/09/17 21:25	
2-Chlorotoluene	ND		5.0	0.25	ug/L			10/09/17 21:25	
1,2-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 21:25	
1,2,4-Trimethylbenzene	ND		2.0	0.25	ug/L			10/09/17 21:25	
1,2-Dibromo-3-Chloropropane	ND		5.0	0.50	ug/L			10/09/17 21:25	
1,2,3-Trichloropropane	ND		10	0.25	ug/L			10/09/17 21:25	
tert-Butylbenzene	ND		5.0	0.25	ug/L			10/09/17 21:25	
Isopropylbenzene	ND		2.0	0.25	ug/L			10/09/17 21:25	
p-Isopropyltoluene	ND		2.0	0.25	ug/L			10/09/17 21:25	

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*106*		*80 - 128*		*10/09/17 21:25*	
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*10/09/17 21:25*	
Dibromofluoromethane (Surr)	*101*		*76 - 132*		*10/09/17 21:25*	

Client Sample ID: MW-03

Lab Sample ID: 440-193461-3
Date Collected: 09/29/17 06:16
Matrix: Wate
Date Received: 10/04/17 13:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		2.0	0.25	ug/L			10/09/17 21:55	
Styrene	ND		2.0	0.25	ug/L			10/09/17 21:55	
cis-1,3-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 21:55	
trans-1,3-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 21:55	
N-Propylbenzene	ND		2.0	0.25	ug/L			10/09/17 21:55	
n-Butylbenzene	ND		5.0	0.40	ug/L			10/09/17 21:55	
4-Chlorotoluene	ND		5.0	0.25	ug/L			10/09/17 21:55	

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Client Sample Results

Client: Stantec Consulting Corp.
Project/Site: Moreno Center

TestAmerica Job ID: 440-193461-1

Client Sample ID: MW-03
Date Collected: 09/29/17 06:16
Date Received: 10/04/17 13:00

Lab Sample ID: 440-193461-3
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 21:55	
1,2-Dibromoethane (EDB)	ND		2.0	0.25	ug/L			10/09/17 21:55	
1,2-Dichloroethane	ND		2.0	0.25	ug/L			10/09/17 21:55	
1,3,5-Trimethylbenzene	ND		2.0	0.25	ug/L			10/09/17 21:55	
Bromobenzene	ND		5.0	0.25	ug/L			10/09/17 21:55	
Toluene	ND		2.0	0.25	ug/L			10/09/17 21:55	
Chlorobenzene	ND		2.0	0.25	ug/L			10/09/17 21:55	
1,2,4-Trichlorobenzene	ND		5.0	0.40	ug/L			10/09/17 21:55	
Dibromochloromethane	ND		2.0	0.25	ug/L			10/09/17 21:55	
Tetrachloroethene	**71**		2.0	0.25	ug/L			10/09/17 21:55	
sec-Butylbenzene	ND		5.0	0.25	ug/L			10/09/17 21:55	
m,p-Xylene	ND		2.0	0.50	ug/L			10/09/17 21:55	
1,3-Dichloropropane	ND		2.0	0.25	ug/L			10/09/17 21:55	
cis-1,2-Dichloroethene	ND		2.0	0.25	ug/L			10/09/17 21:55	
trans-1,2-Dichloroethene	ND		2.0	0.25	ug/L			10/09/17 21:55	
1,3-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 21:55	
Carbon tetrachloride	ND		5.0	0.25	ug/L			10/09/17 21:55	
1,1-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 21:55	
2,2-Dichloropropane	ND		2.0	0.40	ug/L			10/09/17 21:55	
1,1,1,2-Tetrachloroethane	ND		5.0	0.25	ug/L			10/09/17 21:55	
Chloroform	**2.0**		2.0	0.25	ug/L			10/09/17 21:55	
Benzene	ND		2.0	0.25	ug/L			10/09/17 21:55	
1,1,1-Trichloroethane	ND		2.0	0.25	ug/L			10/09/17 21:55	
Bromomethane	ND		5.0	0.25	ug/L			10/09/17 21:55	
Chloromethane	ND		5.0	0.25	ug/L			10/09/17 21:55	
Dibromomethane	ND		2.0	0.25	ug/L			10/09/17 21:55	
Bromochloromethane	ND		5.0	0.25	ug/L			10/09/17 21:55	
Chloroethane	ND		5.0	0.40	ug/L			10/09/17 21:55	
Vinyl chloride	ND		5.0	0.25	ug/L			10/09/17 21:55	
Methylene Chloride	ND		5.0	1.1	ug/L			10/09/17 21:55	
Bromoform	ND		5.0	0.40	ug/L			10/09/17 21:55	
Bromodichloromethane	ND		2.0	0.25	ug/L			10/09/17 21:55	
1,1-Dichloroethane	ND		2.0	0.25	ug/L			10/09/17 21:55	
1,1-Dichloroethene	ND		5.0	0.25	ug/L			10/09/17 21:55	
Trichlorofluoromethane	ND		5.0	0.25	ug/L			10/09/17 21:55	
Dichlorodifluoromethane	ND		5.0	0.25	ug/L			10/09/17 21:55	
1,2-Dichloropropane	ND		2.0	0.25	ug/L			10/09/17 21:55	
1,1,2-Trichloroethane	ND		2.0	0.25	ug/L			10/09/17 21:55	
Trichloroethene	ND		2.0	0.25	ug/L			10/09/17 21:55	
1,1,2,2-Tetrachloroethane	ND		2.0	0.25	ug/L			10/09/17 21:55	
1,2,3-Trichlorobenzene	ND		5.0	0.40	ug/L			10/09/17 21:55	
Hexachlorobutadiene	ND		5.0	0.25	ug/L			10/09/17 21:55	
Naphthalene	ND		5.0	0.40	ug/L			10/09/17 21:55	
o-Xylene	ND		2.0	0.25	ug/L			10/09/17 21:55	
2-Chlorotoluene	ND		5.0	0.25	ug/L			10/09/17 21:55	
1,2-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 21:55	
1,2,4-Trimethylbenzene	ND		2.0	0.25	ug/L			10/09/17 21:55	
1,2-Dibromo-3-Chloropropane	ND		5.0	0.50	ug/L			10/09/17 21:55	
1,2,3-Trichloropropane	ND		10	0.25	ug/L			10/09/17 21:55	

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Client Sample Results

Client: Stantec Consulting Corp.
Project/Site: Moreno Center

TestAmerica Job ID: 440-193461-1

Client Sample ID: MW-03

Lab Sample ID: 440-193461-3
Date Collected: 09/29/17 06:16
Matrix: Wate
Date Received: 10/04/17 13:00

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
tert-Butylbenzene	ND		5.0	0.25	ug/L			10/09/17 21:55	
Isopropylbenzene	ND		2.0	0.25	ug/L			10/09/17 21:55	
p-Isopropyltoluene	ND		2.0	0.25	ug/L			10/09/17 21:55	

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*109*		*80 - 128*		*10/09/17 21:55*	
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*		*10/09/17 21:55*	
Dibromofluoromethane (Surr)	*104*		*76 - 132*		*10/09/17 21:55*	

Client Sample ID: MW-04

Lab Sample ID: 440-193461-4
Date Collected: 09/29/17 05:39
Matrix: Wate
Date Received: 10/04/17 13:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		2.0	0.25	ug/L			10/09/17 22:24	
Styrene	ND		2.0	0.25	ug/L			10/09/17 22:24	
cis-1,3-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 22:24	
trans-1,3-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 22:24	
N-Propylbenzene	ND		2.0	0.25	ug/L			10/09/17 22:24	
n-Butylbenzene	ND		5.0	0.40	ug/L			10/09/17 22:24	
4-Chlorotoluene	ND		5.0	0.25	ug/L			10/09/17 22:24	
1,4-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 22:24	
1,2-Dibromoethane (EDB)	ND		2.0	0.25	ug/L			10/09/17 22:24	
1,2-Dichloroethane	ND		2.0	0.25	ug/L			10/09/17 22:24	
1,3,5-Trimethylbenzene	ND		2.0	0.25	ug/L			10/09/17 22:24	
Bromobenzene	ND		5.0	0.25	ug/L			10/09/17 22:24	
Toluene	ND		2.0	0.25	ug/L			10/09/17 22:24	
Chlorobenzene	ND		2.0	0.25	ug/L			10/09/17 22:24	
1,2,4-Trichlorobenzene	ND		5.0	0.40	ug/L			10/09/17 22:24	
Dibromochloromethane	ND		2.0	0.25	ug/L			10/09/17 22:24	
Tetrachloroethene	**3.1**		2.0	0.25	ug/L			10/09/17 22:24	
sec-Butylbenzene	ND		5.0	0.25	ug/L			10/09/17 22:24	
m,p-Xylene	ND		2.0	0.50	ug/L			10/09/17 22:24	
1,3-Dichloropropane	ND		2.0	0.25	ug/L			10/09/17 22:24	
cis-1,2-Dichloroethene	ND		2.0	0.25	ug/L			10/09/17 22:24	
trans-1,2-Dichloroethene	ND		2.0	0.25	ug/L			10/09/17 22:24	
1,3-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 22:24	
Carbon tetrachloride	ND		5.0	0.25	ug/L			10/09/17 22:24	
1,1-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 22:24	
2,2-Dichloropropane	ND		2.0	0.40	ug/L			10/09/17 22:24	
1,1,1,2-Tetrachloroethane	ND		5.0	0.25	ug/L			10/09/17 22:24	
Chloroform	**0.45**	**J**	2.0	0.25	ug/L			10/09/17 22:24	
Benzene	ND		2.0	0.25	ug/L			10/09/17 22:24	
1,1,1-Trichloroethane	ND		2.0	0.25	ug/L			10/09/17 22:24	
Bromomethane	ND		5.0	0.25	ug/L			10/09/17 22:24	
Chloromethane	ND		5.0	0.25	ug/L			10/09/17 22:24	
Dibromomethane	ND		2.0	0.25	ug/L			10/09/17 22:24	
Bromochloromethane	ND		5.0	0.25	ug/L			10/09/17 22:24	
Chloroethane	ND		5.0	0.40	ug/L			10/09/17 22:24	

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Client Sample ID: MW-04

Date Collected: 09/29/17 05:39
Date Received: 10/04/17 13:00

Lab Sample ID: 440-193461-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		5.0	0.25	ug/L			10/09/17 22:24	
Methylene Chloride	ND		5.0	1.1	ug/L			10/09/17 22:24	
Bromoform	ND		5.0	0.40	ug/L			10/09/17 22:24	
Bromodichloromethane	ND		2.0	0.25	ug/L			10/09/17 22:24	
1,1-Dichloroethane	ND		2.0	0.25	ug/L			10/09/17 22:24	
1,1-Dichloroethene	ND		5.0	0.25	ug/L			10/09/17 22:24	
Trichlorofluoromethane	ND		5.0	0.25	ug/L			10/09/17 22:24	
Dichlorodifluoromethane	ND		5.0	0.25	ug/L			10/09/17 22:24	
1,2-Dichloropropane	ND		2.0	0.25	ug/L			10/09/17 22:24	
1,1,2-Trichloroethane	ND		2.0	0.25	ug/L			10/09/17 22:24	
Trichloroethene	ND		2.0	0.25	ug/L			10/09/17 22:24	
1,1,2,2-Tetrachloroethane	ND		2.0	0.25	ug/L			10/09/17 22:24	
1,2,3-Trichlorobenzene	ND		5.0	0.40	ug/L			10/09/17 22:24	
Hexachlorobutadiene	ND		5.0	0.25	ug/L			10/09/17 22:24	
Naphthalene	ND		5.0	0.40	ug/L			10/09/17 22:24	
o-Xylene	ND		2.0	0.25	ug/L			10/09/17 22:24	
2-Chlorotoluene	ND		5.0	0.25	ug/L			10/09/17 22:24	
1,2-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 22:24	
1,2,4-Trimethylbenzene	ND		2.0	0.25	ug/L			10/09/17 22:24	
1,2-Dibromo-3-Chloropropane	ND		5.0	0.50	ug/L			10/09/17 22:24	
1,2,3-Trichloropropane	ND		10	0.25	ug/L			10/09/17 22:24	
tert-Butylbenzene	ND		5.0	0.25	ug/L			10/09/17 22:24	
Isopropylbenzene	ND		2.0	0.25	ug/L			10/09/17 22:24	
p-Isopropyltoluene	ND		2.0	0.25	ug/L			10/09/17 22:24	

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 128*		*10/09/17 22:24*	
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*		*10/09/17 22:24*	
Dibromofluoromethane (Surr)	*105*		*76 - 132*		*10/09/17 22:24*	

Client Sample ID: MW-04 DUP

Date Collected: 09/29/17 05:45
Date Received: 10/04/17 13:00

Lab Sample ID: 440-193461-5
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		2.0	0.25	ug/L			10/09/17 22:54	
Styrene	ND		2.0	0.25	ug/L			10/09/17 22:54	
cis-1,3-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 22:54	
trans-1,3-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 22:54	
N-Propylbenzene	ND		2.0	0.25	ug/L			10/09/17 22:54	
n-Butylbenzene	ND		5.0	0.40	ug/L			10/09/17 22:54	
4-Chlorotoluene	ND		5.0	0.25	ug/L			10/09/17 22:54	
1,4-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 22:54	
1,2-Dibromoethane (EDB)	ND		2.0	0.25	ug/L			10/09/17 22:54	
1,2-Dichloroethane	ND		2.0	0.25	ug/L			10/09/17 22:54	
1,3,5-Trimethylbenzene	ND		2.0	0.25	ug/L			10/09/17 22:54	
Bromobenzene	ND		5.0	0.25	ug/L			10/09/17 22:54	
Toluene	ND		2.0	0.25	ug/L			10/09/17 22:54	
Chlorobenzene	ND		2.0	0.25	ug/L			10/09/17 22:54	

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Client Sample ID: MW-04 DUP
Date Collected: 09/29/17 05:45
Date Received: 10/04/17 13:00

Lab Sample ID: 440-193461-5
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		5.0	0.40	ug/L			10/09/17 22:54	
Dibromochloromethane	ND		2.0	0.25	ug/L			10/09/17 22:54	
Tetrachloroethene	**3.5**		2.0	0.25	ug/L			10/09/17 22:54	
sec-Butylbenzene	ND		5.0	0.25	ug/L			10/09/17 22:54	
m,p-Xylene	ND		2.0	0.50	ug/L			10/09/17 22:54	
1,3-Dichloropropane	ND		2.0	0.25	ug/L			10/09/17 22:54	
cis-1,2-Dichloroethene	ND		2.0	0.25	ug/L			10/09/17 22:54	
trans-1,2-Dichloroethene	ND		2.0	0.25	ug/L			10/09/17 22:54	
1,3-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 22:54	
Carbon tetrachloride	ND		5.0	0.25	ug/L			10/09/17 22:54	
1,1-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 22:54	
2,2-Dichloropropane	ND		2.0	0.40	ug/L			10/09/17 22:54	
1,1,1,2-Tetrachloroethane	ND		5.0	0.25	ug/L			10/09/17 22:54	
Chloroform	**0.46**	**J**	2.0	0.25	ug/L			10/09/17 22:54	
Benzene	ND		2.0	0.25	ug/L			10/09/17 22:54	
1,1,1-Trichloroethane	ND		2.0	0.25	ug/L			10/09/17 22:54	
Bromomethane	ND		5.0	0.25	ug/L			10/09/17 22:54	
Chloromethane	ND		5.0	0.25	ug/L			10/09/17 22:54	
Dibromomethane	ND		2.0	0.25	ug/L			10/09/17 22:54	
Bromochloromethane	ND		5.0	0.25	ug/L			10/09/17 22:54	
Chloroethane	ND		5.0	0.40	ug/L			10/09/17 22:54	
Vinyl chloride	ND		5.0	0.25	ug/L			10/09/17 22:54	
Methylene Chloride	ND		5.0	1.1	ug/L			10/09/17 22:54	
Bromoform	ND		5.0	0.40	ug/L			10/09/17 22:54	
Bromodichloromethane	ND		2.0	0.25	ug/L			10/09/17 22:54	
1,1-Dichloroethane	ND		2.0	0.25	ug/L			10/09/17 22:54	
1,1-Dichloroethene	ND		5.0	0.25	ug/L			10/09/17 22:54	
Trichlorofluoromethane	ND		5.0	0.25	ug/L			10/09/17 22:54	
Dichlorodifluoromethane	ND		5.0	0.25	ug/L			10/09/17 22:54	
1,2-Dichloropropane	ND		2.0	0.25	ug/L			10/09/17 22:54	
1,1,2-Trichloroethane	ND		2.0	0.25	ug/L			10/09/17 22:54	
Trichloroethene	ND		2.0	0.25	ug/L			10/09/17 22:54	
1,1,2,2-Tetrachloroethane	ND		2.0	0.25	ug/L			10/09/17 22:54	
1,2,3-Trichlorobenzene	ND		5.0	0.40	ug/L			10/09/17 22:54	
Hexachlorobutadiene	ND		5.0	0.25	ug/L			10/09/17 22:54	
Naphthalene	ND		5.0	0.40	ug/L			10/09/17 22:54	
o-Xylene	ND		2.0	0.25	ug/L			10/09/17 22:54	
2-Chlorotoluene	ND		5.0	0.25	ug/L			10/09/17 22:54	
1,2-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 22:54	
1,2,4-Trimethylbenzene	ND		2.0	0.25	ug/L			10/09/17 22:54	
1,2-Dibromo-3-Chloropropane	ND		5.0	0.50	ug/L			10/09/17 22:54	
1,2,3-Trichloropropane	ND		10	0.25	ug/L			10/09/17 22:54	
tert-Butylbenzene	ND		5.0	0.25	ug/L			10/09/17 22:54	
Isopropylbenzene	ND		2.0	0.25	ug/L			10/09/17 22:54	
p-Isopropyltoluene	ND		2.0	0.25	ug/L			10/09/17 22:54	

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*111*		*80 - 128*		*10/09/17 22:54*	
4-Bromofluorobenzene (Surr)	*92*		*80 - 120*		*10/09/17 22:54*	
Dibromofluoromethane (Surr)	*99*		*76 - 132*		*10/09/17 22:54*	

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Client Sample Results

Client: Stantec Consulting Corp.
Project/Site: Moreno Center

TestAmerica Job ID: 440-193461-1

Client Sample ID: MW-05S
Date Collected: 09/29/17 08:49
Date Received: 10/04/17 13:00

Lab Sample ID: 440-193461-6
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		2.0	0.25	ug/L			10/09/17 23:24	
Styrene	ND		2.0	0.25	ug/L			10/09/17 23:24	
cis-1,3-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 23:24	
trans-1,3-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 23:24	
N-Propylbenzene	ND		2.0	0.25	ug/L			10/09/17 23:24	
n-Butylbenzene	ND		5.0	0.40	ug/L			10/09/17 23:24	
4-Chlorotoluene	ND		5.0	0.25	ug/L			10/09/17 23:24	
1,4-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 23:24	
1,2-Dibromoethane (EDB)	ND		2.0	0.25	ug/L			10/09/17 23:24	
1,2-Dichloroethane	ND		2.0	0.25	ug/L			10/09/17 23:24	
1,3,5-Trimethylbenzene	ND		2.0	0.25	ug/L			10/09/17 23:24	
Bromobenzene	ND		5.0	0.25	ug/L			10/09/17 23:24	
Toluene	ND		2.0	0.25	ug/L			10/09/17 23:24	
Chlorobenzene	ND		2.0	0.25	ug/L			10/09/17 23:24	
1,2,4-Trichlorobenzene	ND		5.0	0.40	ug/L			10/09/17 23:24	
Dibromochloromethane	ND		2.0	0.25	ug/L			10/09/17 23:24	
Tetrachloroethene	**7.4**		2.0	0.25	ug/L			10/09/17 23:24	
sec-Butylbenzene	ND		5.0	0.25	ug/L			10/09/17 23:24	
m,p-Xylene	ND		2.0	0.50	ug/L			10/09/17 23:24	
1,3-Dichloropropane	ND		2.0	0.25	ug/L			10/09/17 23:24	
cis-1,2-Dichloroethene	ND		2.0	0.25	ug/L			10/09/17 23:24	
trans-1,2-Dichloroethene	ND		2.0	0.25	ug/L			10/09/17 23:24	
1,3-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 23:24	
Carbon tetrachloride	ND		5.0	0.25	ug/L			10/09/17 23:24	
1,1-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 23:24	
2,2-Dichloropropane	ND		2.0	0.40	ug/L			10/09/17 23:24	
1,1,1,2-Tetrachloroethane	ND		5.0	0.25	ug/L			10/09/17 23:24	
Chloroform	**0.25**	**J**	2.0	0.25	ug/L			10/09/17 23:24	
Benzene	ND		2.0	0.25	ug/L			10/09/17 23:24	
1,1,1-Trichloroethane	ND		2.0	0.25	ug/L			10/09/17 23:24	
Bromomethane	ND		5.0	0.25	ug/L			10/09/17 23:24	
Chloromethane	ND		5.0	0.25	ug/L			10/09/17 23:24	
Dibromomethane	ND		2.0	0.25	ug/L			10/09/17 23:24	
Bromochloromethane	ND		5.0	0.25	ug/L			10/09/17 23:24	
Chloroethane	ND		5.0	0.40	ug/L			10/09/17 23:24	
Vinyl chloride	ND		5.0	0.25	ug/L			10/09/17 23:24	
Methylene Chloride	ND		5.0	1.1	ug/L			10/09/17 23:24	
Bromoform	ND		5.0	0.40	ug/L			10/09/17 23:24	
Bromodichloromethane	ND		2.0	0.25	ug/L			10/09/17 23:24	
1,1-Dichloroethane	ND		2.0	0.25	ug/L			10/09/17 23:24	
1,1-Dichloroethene	ND		5.0	0.25	ug/L			10/09/17 23:24	
Trichlorofluoromethane	ND		5.0	0.25	ug/L			10/09/17 23:24	
Dichlorodifluoromethane	ND		5.0	0.25	ug/L			10/09/17 23:24	
1,2-Dichloropropane	ND		2.0	0.25	ug/L			10/09/17 23:24	
1,1,2-Trichloroethane	ND		2.0	0.25	ug/L			10/09/17 23:24	
Trichloroethene	**0.58**	**J**	2.0	0.25	ug/L			10/09/17 23:24	
1,1,2,2-Tetrachloroethane	ND		2.0	0.25	ug/L			10/09/17 23:24	
1,2,3-Trichlorobenzene	ND		5.0	0.40	ug/L			10/09/17 23:24	
Hexachlorobutadiene	ND		5.0	0.25	ug/L			10/09/17 23:24	

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Client Sample ID: MW-05S

Date Collected: 09/29/17 08:49
Date Received: 10/04/17 13:00

Lab Sample ID: 440-193461-6
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		5.0	0.40	ug/L			10/09/17 23:24	
o-Xylene	ND		2.0	0.25	ug/L			10/09/17 23:24	
2-Chlorotoluene	ND		5.0	0.25	ug/L			10/09/17 23:24	
1,2-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 23:24	
1,2,4-Trimethylbenzene	ND		2.0	0.25	ug/L			10/09/17 23:24	
1,2-Dibromo-3-Chloropropane	ND		5.0	0.50	ug/L			10/09/17 23:24	
1,2,3-Trichloropropane	ND		10	0.25	ug/L			10/09/17 23:24	
tert-Butylbenzene	ND		5.0	0.25	ug/L			10/09/17 23:24	
Isopropylbenzene	ND		2.0	0.25	ug/L			10/09/17 23:24	
p-Isopropyltoluene	ND		2.0	0.25	ug/L			10/09/17 23:24	

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*80 - 128*		*10/09/17 23:24*	
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*		*10/09/17 23:24*	
Dibromofluoromethane (Surr)	*100*		*76 - 132*		*10/09/17 23:24*	

Client Sample ID: MW-05D

Date Collected: 09/29/17 08:14
Date Received: 10/04/17 13:00

Lab Sample ID: 440-193461-7
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		2.0	0.25	ug/L			10/09/17 23:53	
Styrene	ND		2.0	0.25	ug/L			10/09/17 23:53	
cis-1,3-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 23:53	
trans-1,3-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 23:53	
N-Propylbenzene	ND		2.0	0.25	ug/L			10/09/17 23:53	
n-Butylbenzene	ND		5.0	0.40	ug/L			10/09/17 23:53	
4-Chlorotoluene	ND		5.0	0.25	ug/L			10/09/17 23:53	
1,4-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 23:53	
1,2-Dibromoethane (EDB)	ND		2.0	0.25	ug/L			10/09/17 23:53	
1,2-Dichloroethane	ND		2.0	0.25	ug/L			10/09/17 23:53	
1,3,5-Trimethylbenzene	ND		2.0	0.25	ug/L			10/09/17 23:53	
Bromobenzene	ND		5.0	0.25	ug/L			10/09/17 23:53	
Toluene	ND		2.0	0.25	ug/L			10/09/17 23:53	
Chlorobenzene	ND		2.0	0.25	ug/L			10/09/17 23:53	
1,2,4-Trichlorobenzene	ND		5.0	0.40	ug/L			10/09/17 23:53	
Dibromochloromethane	ND		2.0	0.25	ug/L			10/09/17 23:53	
Tetrachloroethene	ND		2.0	0.25	ug/L			10/09/17 23:53	
sec-Butylbenzene	ND		5.0	0.25	ug/L			10/09/17 23:53	
m,p-Xylene	ND		2.0	0.50	ug/L			10/09/17 23:53	
1,3-Dichloropropane	ND		2.0	0.25	ug/L			10/09/17 23:53	
cis-1,2-Dichloroethene	ND		2.0	0.25	ug/L			10/09/17 23:53	
trans-1,2-Dichloroethene	ND		2.0	0.25	ug/L			10/09/17 23:53	
1,3-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 23:53	
Carbon tetrachloride	ND		5.0	0.25	ug/L			10/09/17 23:53	
1,1-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 23:53	
2,2-Dichloropropane	ND		2.0	0.40	ug/L			10/09/17 23:53	
1,1,1,2-Tetrachloroethane	ND		5.0	0.25	ug/L			10/09/17 23:53	
Chloroform	**0.59**	**J**	2.0	0.25	ug/L			10/09/17 23:53	

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Client Sample ID: MW-05D

Lab Sample ID: 440-193461-7

Date Collected: 09/29/17 08:14

Matrix: Wate

Date Received: 10/04/17 13:00

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		2.0	0.25	ug/L			10/09/17 23:53	
1,1,1-Trichloroethane	ND		2.0	0.25	ug/L			10/09/17 23:53	
Bromomethane	ND		5.0	0.25	ug/L			10/09/17 23:53	
Chloromethane	ND		5.0	0.25	ug/L			10/09/17 23:53	
Dibromomethane	ND		2.0	0.25	ug/L			10/09/17 23:53	
Bromochloromethane	ND		5.0	0.25	ug/L			10/09/17 23:53	
Chloroethane	ND		5.0	0.40	ug/L			10/09/17 23:53	
Vinyl chloride	ND		5.0	0.25	ug/L			10/09/17 23:53	
Methylene Chloride	ND		5.0	1.1	ug/L			10/09/17 23:53	
Bromoform	ND		5.0	0.40	ug/L			10/09/17 23:53	
Bromodichloromethane	ND		2.0	0.25	ug/L			10/09/17 23:53	
1,1-Dichloroethane	ND		2.0	0.25	ug/L			10/09/17 23:53	
1,1-Dichloroethene	ND		5.0	0.25	ug/L			10/09/17 23:53	
Trichlorofluoromethane	ND		5.0	0.25	ug/L			10/09/17 23:53	
Dichlorodifluoromethane	ND		5.0	0.25	ug/L			10/09/17 23:53	
1,2-Dichloropropane	ND		2.0	0.25	ug/L			10/09/17 23:53	
1,1,2-Trichloroethane	ND		2.0	0.25	ug/L			10/09/17 23:53	
Trichloroethene	ND		2.0	0.25	ug/L			10/09/17 23:53	
1,1,2,2-Tetrachloroethane	ND		2.0	0.25	ug/L			10/09/17 23:53	
1,2,3-Trichlorobenzene	ND		5.0	0.40	ug/L			10/09/17 23:53	
Hexachlorobutadiene	ND		5.0	0.25	ug/L			10/09/17 23:53	
Naphthalene	ND		5.0	0.40	ug/L			10/09/17 23:53	
o-Xylene	ND		2.0	0.25	ug/L			10/09/17 23:53	
2-Chlorotoluene	ND		5.0	0.25	ug/L			10/09/17 23:53	
1,2-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 23:53	
1,2,4-Trimethylbenzene	ND		2.0	0.25	ug/L			10/09/17 23:53	
1,2-Dibromo-3-Chloropropane	ND		5.0	0.50	ug/L			10/09/17 23:53	
1,2,3-Trichloropropane	ND		10	0.25	ug/L			10/09/17 23:53	
tert-Butylbenzene	ND		5.0	0.25	ug/L			10/09/17 23:53	
Isopropylbenzene	ND		2.0	0.25	ug/L			10/09/17 23:53	
p-Isopropyltoluene	ND		2.0	0.25	ug/L			10/09/17 23:53	

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*106*		*80 - 128*		*10/09/17 23:53*	
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*		*10/09/17 23:53*	
Dibromofluoromethane (Surr)	*102*		*76 - 132*		*10/09/17 23:53*	

Client Sample ID: Trip Blank

Lab Sample ID: 440-193461-8

Date Collected: 09/29/17 00:01

Matrix: Wate

Date Received: 10/04/17 13:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		2.0	0.25	ug/L			10/10/17 00:23	
Styrene	ND		2.0	0.25	ug/L			10/10/17 00:23	
cis-1,3-Dichloropropene	ND		2.0	0.25	ug/L			10/10/17 00:23	
trans-1,3-Dichloropropene	ND		2.0	0.25	ug/L			10/10/17 00:23	
N-Propylbenzene	ND		2.0	0.25	ug/L			10/10/17 00:23	
n-Butylbenzene	ND		5.0	0.40	ug/L			10/10/17 00:23	
4-Chlorotoluene	ND		5.0	0.25	ug/L			10/10/17 00:23	

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Client Sample Results

Client: Stantec Consulting Corp.
Project/Site: Moreno Center

TestAmerica Job ID: 440-193461-1

Client Sample ID: Trip Blank
Date Collected: 09/29/17 00:01
Date Received: 10/04/17 13:00

Lab Sample ID: 440-193461-8
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		2.0	0.25	ug/L			10/10/17 00:23	
1,2-Dibromoethane (EDB)	ND		2.0	0.25	ug/L			10/10/17 00:23	
1,2-Dichloroethane	ND		2.0	0.25	ug/L			10/10/17 00:23	
1,3,5-Trimethylbenzene	ND		2.0	0.25	ug/L			10/10/17 00:23	
Bromobenzene	ND		5.0	0.25	ug/L			10/10/17 00:23	
Toluene	ND		2.0	0.25	ug/L			10/10/17 00:23	
Chlorobenzene	ND		2.0	0.25	ug/L			10/10/17 00:23	
1,2,4-Trichlorobenzene	ND		5.0	0.40	ug/L			10/10/17 00:23	
Dibromochloromethane	ND		2.0	0.25	ug/L			10/10/17 00:23	
Tetrachloroethene	ND		2.0	0.25	ug/L			10/10/17 00:23	
sec-Butylbenzene	ND		5.0	0.25	ug/L			10/10/17 00:23	
m,p-Xylene	ND		2.0	0.50	ug/L			10/10/17 00:23	
1,3-Dichloropropane	ND		2.0	0.25	ug/L			10/10/17 00:23	
cis-1,2-Dichloroethene	ND		2.0	0.25	ug/L			10/10/17 00:23	
trans-1,2-Dichloroethene	ND		2.0	0.25	ug/L			10/10/17 00:23	
1,3-Dichlorobenzene	ND		2.0	0.25	ug/L			10/10/17 00:23	
Carbon tetrachloride	ND		5.0	0.25	ug/L			10/10/17 00:23	
1,1-Dichloropropene	ND		2.0	0.25	ug/L			10/10/17 00:23	
2,2-Dichloropropane	ND		2.0	0.40	ug/L			10/10/17 00:23	
1,1,1,2-Tetrachloroethane	ND		5.0	0.25	ug/L			10/10/17 00:23	
Chloroform	ND		2.0	0.25	ug/L			10/10/17 00:23	
Benzene	ND		2.0	0.25	ug/L			10/10/17 00:23	
1,1,1-Trichloroethane	ND		2.0	0.25	ug/L			10/10/17 00:23	
Bromomethane	ND		5.0	0.25	ug/L			10/10/17 00:23	
Chloromethane	ND		5.0	0.25	ug/L			10/10/17 00:23	
Dibromomethane	ND		2.0	0.25	ug/L			10/10/17 00:23	
Bromochloromethane	ND		5.0	0.25	ug/L			10/10/17 00:23	
Chloroethane	ND		5.0	0.40	ug/L			10/10/17 00:23	
Vinyl chloride	ND		5.0	0.25	ug/L			10/10/17 00:23	
Methylene Chloride	ND		5.0	1.1	ug/L			10/10/17 00:23	
Bromoform	ND		5.0	0.40	ug/L			10/10/17 00:23	
Bromodichloromethane	ND		2.0	0.25	ug/L			10/10/17 00:23	
1,1-Dichloroethane	ND		2.0	0.25	ug/L			10/10/17 00:23	
1,1-Dichloroethene	ND		5.0	0.25	ug/L			10/10/17 00:23	
Trichlorofluoromethane	ND		5.0	0.25	ug/L			10/10/17 00:23	
Dichlorodifluoromethane	ND		5.0	0.25	ug/L			10/10/17 00:23	
1,2-Dichloropropane	ND		2.0	0.25	ug/L			10/10/17 00:23	
1,1,2-Trichloroethane	ND		2.0	0.25	ug/L			10/10/17 00:23	
Trichloroethene	ND		2.0	0.25	ug/L			10/10/17 00:23	
1,1,2,2-Tetrachloroethane	ND		2.0	0.25	ug/L			10/10/17 00:23	
1,2,3-Trichlorobenzene	ND		5.0	0.40	ug/L			10/10/17 00:23	
Hexachlorobutadiene	ND		5.0	0.25	ug/L			10/10/17 00:23	
Naphthalene	ND		5.0	0.40	ug/L			10/10/17 00:23	
o-Xylene	ND		2.0	0.25	ug/L			10/10/17 00:23	
2-Chlorotoluene	ND		5.0	0.25	ug/L			10/10/17 00:23	
1,2-Dichlorobenzene	ND		2.0	0.25	ug/L			10/10/17 00:23	
1,2,4-Trimethylbenzene	ND		2.0	0.25	ug/L			10/10/17 00:23	
1,2-Dibromo-3-Chloropropane	ND		5.0	0.50	ug/L			10/10/17 00:23	
1,2,3-Trichloropropane	ND		10	0.25	ug/L			10/10/17 00:23	

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Client Sample Results

Client: Stantec Consulting Corp.
Project/Site: Moreno Center

TestAmerica Job ID: 440-193461-1

Client Sample ID: Trip Blank
Date Collected: 09/29/17 00:01
Date Received: 10/04/17 13:00

Lab Sample ID: 440-193461-8
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
tert-Butylbenzene	ND		5.0	0.25	ug/L			10/10/17 00:23	1
Isopropylbenzene	ND		2.0	0.25	ug/L			10/10/17 00:23	1
p-Isopropyltoluene	ND		2.0	0.25	ug/L			10/10/17 00:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*107*		*80 - 128*		*10/10/17 00:23*	*1*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*		*10/10/17 00:23*	*1*
Dibromofluoromethane (Surr)	*106*		*76 - 132*		*10/10/17 00:23*	*1*

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Method Summary

Client: Stantec Consulting Corp.
Project/Site: Moreno Center

TestAmerica Job ID: 440-193461-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL IRV

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Lab Chronicle

Client: Stantec Consulting Corp.
Project/Site: Moreno Center

TestAmerica Job ID: 440-193461-1

Client Sample ID: MW-01
Date Collected: 09/29/17 06:55
Date Received: 10/04/17 13:00

Lab Sample ID: 440-193461-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	10 mL	10 mL	433948	10/09/17 19:55	OH1	TAL IRV

Client Sample ID: MW-02
Date Collected: 09/29/17 09:40
Date Received: 10/04/17 13:00

Lab Sample ID: 440-193461-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	10 mL	10 mL	433948	10/09/17 21:25	OH1	TAL IRV

Client Sample ID: MW-03
Date Collected: 09/29/17 06:16
Date Received: 10/04/17 13:00

Lab Sample ID: 440-193461-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	10 mL	10 mL	433948	10/09/17 21:55	OH1	TAL IRV

Client Sample ID: MW-04
Date Collected: 09/29/17 05:39
Date Received: 10/04/17 13:00

Lab Sample ID: 440-193461-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	10 mL	10 mL	433948	10/09/17 22:24	OH1	TAL IRV

Client Sample ID: MW-04 DUP
Date Collected: 09/29/17 05:45
Date Received: 10/04/17 13:00

Lab Sample ID: 440-193461-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	10 mL	10 mL	433948	10/09/17 22:54	OH1	TAL IRV

Client Sample ID: MW-05S
Date Collected: 09/29/17 08:49
Date Received: 10/04/17 13:00

Lab Sample ID: 440-193461-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	10 mL	10 mL	433948	10/09/17 23:24	OH1	TAL IRV

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Lab Chronicle

Client: Stantec Consulting Corp.
Project/Site: Moreno Center

TestAmerica Job ID: 440-193461-1

Client Sample ID: MW-05D

Lab Sample ID: 440-193461-7

Date Collected: 09/29/17 08:14
Matrix: Water
Date Received: 10/04/17 13:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	10 mL	10 mL	433948	10/09/17 23:53	OH1	TAL IRV

Client Sample ID: Trip Blank

Lab Sample ID: 440-193461-8

Date Collected: 09/29/17 00:01
Matrix: Water
Date Received: 10/04/17 13:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	10 mL	10 mL	433948	10/10/17 00:23	OH1	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

QC Sample Results

Client: Stantec Consulting Corp.
Project/Site: Moreno Center

TestAmerica Job ID: 440-193461-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-433948/3
Matrix: Water
Analysis Batch: 433948

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		2.0	0.25	ug/L			10/09/17 18:55	
Styrene	ND		2.0	0.25	ug/L			10/09/17 18:55	
cis-1,3-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 18:55	
trans-1,3-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 18:55	
N-Propylbenzene	ND		2.0	0.25	ug/L			10/09/17 18:55	
n-Butylbenzene	ND		5.0	0.40	ug/L			10/09/17 18:55	
4-Chlorotoluene	ND		5.0	0.25	ug/L			10/09/17 18:55	
1,4-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 18:55	
1,2-Dibromoethane (EDB)	ND		2.0	0.25	ug/L			10/09/17 18:55	
1,2-Dichloroethane	ND		2.0	0.25	ug/L			10/09/17 18:55	
1,3,5-Trimethylbenzene	ND		2.0	0.25	ug/L			10/09/17 18:55	
Bromobenzene	ND		5.0	0.25	ug/L			10/09/17 18:55	
Toluene	ND		2.0	0.25	ug/L			10/09/17 18:55	
Chlorobenzene	ND		2.0	0.25	ug/L			10/09/17 18:55	
1,2,4-Trichlorobenzene	ND		5.0	0.40	ug/L			10/09/17 18:55	
Dibromochloromethane	ND		2.0	0.25	ug/L			10/09/17 18:55	
Tetrachloroethene	ND		2.0	0.25	ug/L			10/09/17 18:55	
sec-Butylbenzene	ND		5.0	0.25	ug/L			10/09/17 18:55	
m,p-Xylene	ND		2.0	0.50	ug/L			10/09/17 18:55	
1,3-Dichloropropane	ND		2.0	0.25	ug/L			10/09/17 18:55	
cis-1,2-Dichloroethene	ND		2.0	0.25	ug/L			10/09/17 18:55	
trans-1,2-Dichloroethene	ND		2.0	0.25	ug/L			10/09/17 18:55	
1,3-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 18:55	
Carbon tetrachloride	ND		5.0	0.25	ug/L			10/09/17 18:55	
1,1-Dichloropropene	ND		2.0	0.25	ug/L			10/09/17 18:55	
2,2-Dichloropropane	ND		2.0	0.40	ug/L			10/09/17 18:55	
1,1,1,2-Tetrachloroethane	ND		5.0	0.25	ug/L			10/09/17 18:55	
Chloroform	ND		2.0	0.25	ug/L			10/09/17 18:55	
Benzene	ND		2.0	0.25	ug/L			10/09/17 18:55	
1,1,1-Trichloroethane	ND		2.0	0.25	ug/L			10/09/17 18:55	
Bromomethane	ND		5.0	0.25	ug/L			10/09/17 18:55	
Chloromethane	ND		5.0	0.25	ug/L			10/09/17 18:55	
Dibromomethane	ND		2.0	0.25	ug/L			10/09/17 18:55	
Bromochloromethane	ND		5.0	0.25	ug/L			10/09/17 18:55	
Chloroethane	ND		5.0	0.40	ug/L			10/09/17 18:55	
Vinyl chloride	ND		5.0	0.25	ug/L			10/09/17 18:55	
Methylene Chloride	2.48	J	5.0	1.1	ug/L			10/09/17 18:55	
Bromoform	ND		5.0	0.40	ug/L			10/09/17 18:55	
Bromodichloromethane	ND		2.0	0.25	ug/L			10/09/17 18:55	
1,1-Dichloroethane	ND		2.0	0.25	ug/L			10/09/17 18:55	
1,1-Dichloroethene	ND		5.0	0.25	ug/L			10/09/17 18:55	
Trichlorofluoromethane	ND		5.0	0.25	ug/L			10/09/17 18:55	
Dichlorodifluoromethane	ND		5.0	0.25	ug/L			10/09/17 18:55	
1,2-Dichloropropane	ND		2.0	0.25	ug/L			10/09/17 18:55	
1,1,2-Trichloroethane	ND		2.0	0.25	ug/L			10/09/17 18:55	
Trichloroethene	ND		2.0	0.25	ug/L			10/09/17 18:55	
1,1,2,2-Tetrachloroethane	ND		2.0	0.25	ug/L			10/09/17 18:55	
1,2,3-Trichlorobenzene	ND		5.0	0.40	ug/L			10/09/17 18:55	

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

QC Sample Results

Client: Stantec Consulting Corp.
Project/Site: Moreno Center

TestAmerica Job ID: 440-193461-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-433948/3
Matrix: Water
Analysis Batch: 433948

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobutadiene	ND		5.0	0.25	ug/L			10/09/17 18:55	
Naphthalene	ND		5.0	0.40	ug/L			10/09/17 18:55	
o-Xylene	ND		2.0	0.25	ug/L			10/09/17 18:55	
2-Chlorotoluene	ND		5.0	0.25	ug/L			10/09/17 18:55	
1,2-Dichlorobenzene	ND		2.0	0.25	ug/L			10/09/17 18:55	
1,2,4-Trimethylbenzene	ND		2.0	0.25	ug/L			10/09/17 18:55	
1,2-Dibromo-3-Chloropropane	ND		5.0	0.50	ug/L			10/09/17 18:55	
1,2,3-Trichloropropane	ND		10	0.25	ug/L			10/09/17 18:55	
tert-Butylbenzene	ND		5.0	0.25	ug/L			10/09/17 18:55	
Isopropylbenzene	ND		2.0	0.25	ug/L			10/09/17 18:55	
p-Isopropyltoluene	ND		2.0	0.25	ug/L			10/09/17 18:55	

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*110*		*80 - 128*		*10/09/17 18:55*	
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*		*10/09/17 18:55*	
Dibromofluoromethane (Surr)	*101*		*76 - 132*		*10/09/17 18:55*	

Lab Sample ID: LCS 440-433948/4
Matrix: Water
Analysis Batch: 433948

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethylbenzene	25.0	28.0		ug/L		112	70 - 130
Styrene	25.0	25.9		ug/L		104	70 - 134
cis-1,3-Dichloropropene	25.0	27.2		ug/L		109	70 - 133
trans-1,3-Dichloropropene	25.0	27.0		ug/L		108	70 - 132
N-Propylbenzene	25.0	28.1		ug/L		113	67 - 139
n-Butylbenzene	25.0	28.8		ug/L		115	65 - 150
4-Chlorotoluene	25.0	26.9		ug/L		108	70 - 130
1,4-Dichlorobenzene	25.0	24.4		ug/L		98	70 - 130
1,2-Dibromoethane (EDB)	25.0	26.0		ug/L		104	70 - 130
1,2-Dichloroethane	25.0	25.8		ug/L		103	57 - 138
1,3,5-Trimethylbenzene	25.0	25.6		ug/L		102	70 - 136
Bromobenzene	25.0	26.5		ug/L		106	70 - 130
Toluene	25.0	28.3		ug/L		113	70 - 130
Chlorobenzene	25.0	25.8		ug/L		103	70 - 130
1,2,4-Trichlorobenzene	25.0	27.9		ug/L		112	60 - 140
Dibromochloromethane	25.0	25.8		ug/L		103	69 - 145
Tetrachloroethene	25.0	25.5		ug/L		102	70 - 130
sec-Butylbenzene	25.0	28.2		ug/L		113	70 - 138
m,p-Xylene	25.0	28.7		ug/L		115	70 - 130
1,3-Dichloropropane	25.0	26.0		ug/L		104	70 - 130
cis-1,2-Dichloroethene	25.0	26.9		ug/L		107	70 - 133
trans-1,2-Dichloroethene	25.0	25.8		ug/L		103	70 - 130
1,3-Dichlorobenzene	25.0	25.1		ug/L		100	70 - 130
Carbon tetrachloride	25.0	26.6		ug/L		106	60 - 150
1,1-Dichloropropene	25.0	29.3		ug/L		117	70 - 130
2,2-Dichloropropane	25.0	27.0		ug/L		108	68 - 141

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-433948/4
Matrix: Water
Analysis Batch: 433948

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	25.0	26.0		ug/L		104	60 - 141
Chloroform	25.0	25.6		ug/L		102	70 - 130
Benzene	25.0	26.2		ug/L		105	68 - 130
1,1,1-Trichloroethane	25.0	26.1		ug/L		105	70 - 130
Bromomethane	25.0	23.5		ug/L		94	64 - 139
Chloromethane	25.0	22.3		ug/L		89	47 - 140
Dibromomethane	25.0	26.7		ug/L		107	70 - 130
Bromochloromethane	25.0	25.8		ug/L		103	70 - 130
Chloroethane	25.0	25.4		ug/L		102	64 - 135
Vinyl chloride	25.0	27.4		ug/L		110	59 - 133
Methylene Chloride	25.0	28.2		ug/L		113	52 - 130
Bromoform	25.0	26.2		ug/L		105	60 - 148
Bromodichloromethane	25.0	26.9		ug/L		108	70 - 132
1,1-Dichloroethane	25.0	24.8		ug/L		99	64 - 130
1,1-Dichloroethene	25.0	25.5		ug/L		102	70 - 130
Trichlorofluoromethane	25.0	25.9		ug/L		103	60 - 150
Dichlorodifluoromethane	25.0	20.9		ug/L		83	29 - 150
1,2-Dichloropropane	25.0	26.7		ug/L		107	67 - 130
1,1,2-Trichloroethane	25.0	25.8		ug/L		103	70 - 130
Trichloroethene	25.0	28.5		ug/L		114	70 - 130
1,1,2,2-Tetrachloroethane	25.0	23.6		ug/L		94	63 - 130
1,2,3-Trichlorobenzene	25.0	26.6		ug/L		106	60 - 140
Hexachlorobutadiene	25.0	27.1		ug/L		109	10 - 150
Naphthalene	25.0	26.7		ug/L		107	60 - 140
o-Xylene	25.0	26.6		ug/L		106	70 - 130
2-Chlorotoluene	25.0	25.0		ug/L		100	70 - 130
1,2-Dichlorobenzene	25.0	25.4		ug/L		101	70 - 130
1,2,4-Trimethylbenzene	25.0	25.6		ug/L		103	70 - 135
1,2-Dibromo-3-Chloropropane	25.0	25.6		ug/L		103	52 - 140
1,2,3-Trichloropropane	25.0	24.1		ug/L		96	63 - 130
tert-Butylbenzene	25.0	27.4		ug/L		109	70 - 130
Isopropylbenzene	25.0	30.2		ug/L		121	70 - 136
p-Isopropyltoluene	25.0	26.7		ug/L		107	70 - 132

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*80 - 128*
4-Bromofluorobenzene (Surr)	*92*		*80 - 120*
Dibromofluoromethane (Surr)	*98*		*76 - 132*

Lab Sample ID: 440-193461-1 MS
Matrix: Water
Analysis Batch: 433948

Client Sample ID: MW-01
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethylbenzene	ND		25.0	29.7		ug/L		119	70 - 130
Styrene	ND		25.0	25.4		ug/L		101	29 - 150
cis-1,3-Dichloropropene	ND		25.0	29.0		ug/L		116	70 - 133
trans-1,3-Dichloropropene	ND		25.0	27.1		ug/L		108	70 - 138

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-193461-1 MS
Matrix: Water
Analysis Batch: 433948

Client Sample ID: MW-01
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
N-Propylbenzene	ND		25.0	28.8		ug/L		115	66 - 135
n-Butylbenzene	ND		25.0	29.6		ug/L		118	61 - 149
4-Chlorotoluene	ND		25.0	27.5		ug/L		110	70 - 130
1,4-Dichlorobenzene	ND		25.0	24.8		ug/L		99	70 - 130
1,2-Dibromoethane (EDB)	ND		25.0	26.7		ug/L		107	70 - 131
1,2-Dichloroethane	ND		25.0	25.1		ug/L		100	56 - 146
1,3,5-Trimethylbenzene	ND		25.0	26.3		ug/L		105	70 - 130
Bromobenzene	ND		25.0	25.9		ug/L		104	70 - 130
Toluene	ND		25.0	29.2		ug/L		117	70 - 130
Chlorobenzene	ND		25.0	26.1		ug/L		104	70 - 130
1,2,4-Trichlorobenzene	ND		25.0	28.1		ug/L		113	60 - 140
Dibromochloromethane	ND		25.0	26.4		ug/L		105	70 - 148
Tetrachloroethene	54		25.0	76.9		ug/L		90	70 - 137
sec-Butylbenzene	ND		25.0	29.3		ug/L		117	67 - 134
m,p-Xylene	ND		25.0	29.9		ug/L		120	70 - 133
1,3-Dichloropropane	ND		25.0	25.9		ug/L		104	70 - 130
cis-1,2-Dichloroethene	ND		25.0	26.6		ug/L		107	70 - 130
trans-1,2-Dichloroethene	ND		25.0	25.4		ug/L		101	70 - 130
1,3-Dichlorobenzene	ND		25.0	25.6		ug/L		103	70 - 130
Carbon tetrachloride	ND		25.0	27.4		ug/L		110	60 - 150
1,1-Dichloropropene	ND		25.0	29.4		ug/L		117	64 - 130
2,2-Dichloropropane	ND		25.0	28.7		ug/L		115	69 - 138
1,1,1,2-Tetrachloroethane	ND		25.0	27.5		ug/L		110	60 - 149
Chloroform	0.41	J	25.0	25.9		ug/L		102	70 - 130
Benzene	ND		25.0	26.2		ug/L		105	66 - 130
1,1,1-Trichloroethane	ND		25.0	26.5		ug/L		106	70 - 130
Bromomethane	ND		25.0	22.9		ug/L		92	62 - 131
Chloromethane	ND		25.0	24.3		ug/L		97	39 - 144
Dibromomethane	ND		25.0	25.1		ug/L		100	70 - 130
Bromochloromethane	ND		25.0	24.5		ug/L		98	70 - 130
Chloroethane	ND		25.0	23.0		ug/L		92	68 - 130
Vinyl chloride	ND		25.0	28.6		ug/L		114	50 - 137
Methylene Chloride	ND		25.0	24.3		ug/L		97	52 - 130
Bromoform	ND		25.0	27.3		ug/L		109	59 - 150
Bromodichloromethane	ND		25.0	26.6		ug/L		106	70 - 138
1,1-Dichloroethane	ND		25.0	24.8		ug/L		99	65 - 130
1,1-Dichloroethene	ND		25.0	27.3		ug/L		109	70 - 130
Trichlorofluoromethane	ND		25.0	27.2		ug/L		109	60 - 150
Dichlorodifluoromethane	ND		25.0	22.3		ug/L		89	25 - 142
1,2-Dichloropropane	ND		25.0	24.7		ug/L		99	69 - 130
1,1,2-Trichloroethane	ND		25.0	26.4		ug/L		106	70 - 130
Trichloroethene	ND		25.0	26.7		ug/L		107	70 - 130
1,1,2,2-Tetrachloroethane	ND		25.0	24.6		ug/L		98	63 - 130
1,2,3-Trichlorobenzene	ND		25.0	27.6		ug/L		110	60 - 140
Hexachlorobutadiene	ND		25.0	29.1		ug/L		116	10 - 150
Naphthalene	ND		25.0	27.3		ug/L		109	60 - 140
o-Xylene	ND		25.0	28.0		ug/L		112	70 - 133
2-Chlorotoluene	ND		25.0	26.0		ug/L		104	70 - 130

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-193461-1 MS
Matrix: Water
Analysis Batch: 433948

Client Sample ID: MW-01
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dichlorobenzene	ND		25.0	25.4		ug/L		102	70 - 130
1,2,4-Trimethylbenzene	ND		25.0	25.7		ug/L		103	70 - 130
1,2-Dibromo-3-Chloropropane	ND		25.0	27.3		ug/L		109	48 - 140
1,2,3-Trichloropropane	ND		25.0	24.1		ug/L		97	60 - 130
tert-Butylbenzene	ND		25.0	28.3		ug/L		113	70 - 130
Isopropylbenzene	ND		25.0	32.2		ug/L		129	70 - 132
p-Isopropyltoluene	ND		25.0	28.3		ug/L		113	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*106*		*80 - 128*
4-Bromofluorobenzene (Surr)	*92*		*80 - 120*
Dibromofluoromethane (Surr)	*94*		*76 - 132*

Lab Sample ID: 440-193461-1 MSD
Matrix: Water
Analysis Batch: 433948

Client Sample ID: MW-01
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limi
Ethylbenzene	ND		25.0	29.6		ug/L		118	70 - 130	0	20
Styrene	ND		25.0	24.9		ug/L		100	29 - 150	2	35
cis-1,3-Dichloropropene	ND		25.0	27.6		ug/L		110	70 - 133	5	20
trans-1,3-Dichloropropene	ND		25.0	27.3		ug/L		109	70 - 138	1	25
N-Propylbenzene	ND		25.0	30.1		ug/L		120	66 - 135	4	20
n-Butylbenzene	ND		25.0	29.7		ug/L		119	61 - 149	0	20
4-Chlorotoluene	ND		25.0	28.2		ug/L		113	70 - 130	3	20
1,4-Dichlorobenzene	ND		25.0	24.4		ug/L		98	70 - 130	2	20
1,2-Dibromoethane (EDB)	ND		25.0	27.0		ug/L		108	70 - 131	1	25
1,2-Dichloroethane	ND		25.0	26.4		ug/L		106	56 - 146	5	20
1,3,5-Trimethylbenzene	ND		25.0	27.3		ug/L		109	70 - 130	4	20
Bromobenzene	ND		25.0	27.5		ug/L		110	70 - 130	6	20
Toluene	ND		25.0	29.4		ug/L		118	70 - 130	1	20
Chlorobenzene	ND		25.0	26.7		ug/L		107	70 - 130	2	20
1,2,4-Trichlorobenzene	ND		25.0	28.1		ug/L		112	60 - 140	0	20
Dibromochloromethane	ND		25.0	26.2		ug/L		105	70 - 148	0	25
Tetrachloroethene	54		25.0	74.3		ug/L		80	70 - 137	4	20
sec-Butylbenzene	ND		25.0	29.3		ug/L		117	67 - 134	0	20
m,p-Xylene	ND		25.0	30.8		ug/L		123	70 - 133	3	25
1,3-Dichloropropane	ND		25.0	26.8		ug/L		107	70 - 130	3	25
cis-1,2-Dichloroethene	ND		25.0	27.5		ug/L		110	70 - 130	3	20
trans-1,2-Dichloroethene	ND		25.0	26.7		ug/L		107	70 - 130	5	20
1,3-Dichlorobenzene	ND		25.0	26.2		ug/L		105	70 - 130	2	20
Carbon tetrachloride	ND		25.0	28.5		ug/L		114	60 - 150	4	25
1,1-Dichloropropene	ND		25.0	30.5		ug/L		122	64 - 130	4	20
2,2-Dichloropropane	ND		25.0	29.2		ug/L		117	69 - 138	2	25
1,1,1,2-Tetrachloroethane	ND		25.0	27.0		ug/L		108	60 - 149	2	20
Chloroform	0.41	J	25.0	27.0		ug/L		106	70 - 130	4	20
Benzene	ND		25.0	27.2		ug/L		109	66 - 130	4	20
1,1,1-Trichloroethane	ND		25.0	27.6		ug/L		111	70 - 130	4	20

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

QC Sample Results

Client: Stantec Consulting Corp.
Project/Site: Moreno Center

TestAmerica Job ID: 440-193461-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-193461-1 MSD
Matrix: Water
Analysis Batch: 433948

Client Sample ID: MW-01
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limi
Bromomethane	ND		25.0	23.4		ug/L		94	62 - 131	2	25
Chloromethane	ND		25.0	25.2		ug/L		101	39 - 144	3	25
Dibromomethane	ND		25.0	26.3		ug/L		105	70 - 130	5	25
Bromochloromethane	ND		25.0	26.0		ug/L		104	70 - 130	6	25
Chloroethane	ND		25.0	23.0		ug/L		92	68 - 130	0	25
Vinyl chloride	ND		25.0	28.6		ug/L		115	50 - 137	0	30
Methylene Chloride	ND		25.0	24.6		ug/L		98	52 - 130	1	20
Bromoform	ND		25.0	27.9		ug/L		112	59 - 150	3	25
Bromodichloromethane	ND		25.0	27.8		ug/L		111	70 - 138	4	20
1,1-Dichloroethane	ND		25.0	25.6		ug/L		102	65 - 130	3	20
1,1-Dichloroethene	ND		25.0	26.0		ug/L		104	70 - 130	5	20
Trichlorofluoromethane	ND		25.0	27.7		ug/L		111	60 - 150	1	25
Dichlorodifluoromethane	ND		25.0	23.7		ug/L		95	25 - 142	6	30
1,2-Dichloropropane	ND		25.0	26.1		ug/L		104	69 - 130	5	20
1,1,2-Trichloroethane	ND		25.0	26.1		ug/L		105	70 - 130	1	25
Trichloroethene	ND		25.0	29.0		ug/L		116	70 - 130	8	20
1,1,2,2-Tetrachloroethane	ND		25.0	24.6		ug/L		98	63 - 130	0	30
1,2,3-Trichlorobenzene	ND		25.0	28.7		ug/L		115	60 - 140	4	20
Hexachlorobutadiene	ND		25.0	29.2		ug/L		117	10 - 150	0	20
Naphthalene	ND		25.0	27.2		ug/L		109	60 - 140	0	30
o-Xylene	ND		25.0	28.2		ug/L		113	70 - 133	1	20
2-Chlorotoluene	ND		25.0	27.1		ug/L		108	70 - 130	4	20
1,2-Dichlorobenzene	ND		25.0	25.7		ug/L		103	70 - 130	1	20
1,2,4-Trimethylbenzene	ND		25.0	26.0		ug/L		104	70 - 130	1	25
1,2-Dibromo-3-Chloropropane	ND		25.0	27.9		ug/L		112	48 - 140	2	30
1,2,3-Trichloropropane	ND		25.0	24.4		ug/L		97	60 - 130	1	30
tert-Butylbenzene	ND		25.0	28.5		ug/L		114	70 - 130	1	20
Isopropylbenzene	ND		25.0	32.0		ug/L		128	70 - 132	1	20
p-Isopropyltoluene	ND		25.0	28.8		ug/L		115	70 - 130	2	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*107*		*80 - 128*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*
Dibromofluoromethane (Surr)	*99*		*76 - 132*

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

QC Association Summary

Client: Stantec Consulting Corp.
Project/Site: Moreno Center

TestAmerica Job ID: 440-193461-1

GC/MS VOA

Analysis Batch: 433948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-193461-1	MW-01	Total/NA	Water	8260B	
440-193461-2	MW-02	Total/NA	Water	8260B	
440-193461-3	MW-03	Total/NA	Water	8260B	
440-193461-4	MW-04	Total/NA	Water	8260B	
440-193461-5	MW-04 DUP	Total/NA	Water	8260B	
440-193461-6	MW-05S	Total/NA	Water	8260B	
440-193461-7	MW-05D	Total/NA	Water	8260B	
440-193461-8	Trip Blank	Total/NA	Water	8260B	
MB 440-433948/3	Method Blank	Total/NA	Water	8260B	
LCS 440-433948/4	Lab Control Sample	Total/NA	Water	8260B	
440-193461-1 MS	MW-01	Total/NA	Water	8260B	
440-193461-1 MSD	MW-01	Total/NA	Water	8260B	

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Definitions/Glossary

Client: Stantec Consulting Corp.
Project/Site: Moreno Center

TestAmerica Job ID: 440-193461-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Accreditation/Certification Summary

Client: Stantec Consulting Corp.
Project/Site: Moreno Center

TestAmerica Job ID: 440-193461-1

Laboratory: TestAmerica Irvine

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	CA01531	06-30-18
Arizona	State Program	9	AZ0671	10-14-17 *
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 17-003R	01-23-18
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-18
Nevada	State Program	9	CA015312018-1	07-31-18
New Mexico	State Program	6	N/A	01-29-18 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Stantec

CHAIN OF CUSTODY

Laboratory Project Number: _____

Page 1 of 1

Client Name/Address:	Project Manager:	Analysis Required	Turn Around Time:
Stantec Consulting Services 25864-F Business Center Drive Redlands, CA 92374	**Brian Viggiano** E-Mail Address: **brian.viggiano@stantec.com** Sampler Name: Stantec Project Number: **185802753** Project: **Moreno Center**	Filtered Sample / 8260B - VOC	Normal TAT: X 72 Hour: 48 Hour 24 Hour Same Day: Other: Sample Temp °C: _____
Laboratory (circle): ~~Cal Science - 714-895-5494~~ ~~ATL - 800-499-4388~~ TAL - 949-261-1022 ~~Jones Environmental - 714-449-9937~~			Special Instructions

Sample Description/Identification	Sample Matrix	Preservative (see below)	# of Cont.	Sample Date	Sample Time	Filtered Sample	8260B - VOC	Special Instructions
MW-01	water	1,2	3	9/29/17	0655		X	
MW-02	water	1,2	3		0940		X	
MW-03	water	1,2	3		0616		X	
MW-04	water	1,2	3		0539		X	
MW-04 DUP	water	1,2	3		0545		X	
MW-05S	water	1,2	3		0849		X	
MW-05D	water	1,2	3	9/29/17	0814		X	
TRIP BLANK	water	1,2	3				X	

440-193461 Chain of Custody

Sample Preservative: 1=ICE - 2=HCl - 3=H_2SO_4 - 4=HNO_3 - 5=NaOH - 6=Other: _____

Special Instructions:

Relinquished By:	Date	Time	Received By + Company Name:	Date	Time
	9/29/17	11:00AM.	Corey Pace / Stantec	9/29/17	11:00
Relinquished By + Company Name: Corey Pace / Stantec	10/4/17	11:30AM.	Received By + Company Name: Wilda Rivera TAI	10/4/17	1130
Relinquished By + Company Name: Wilda Rivera TAI	10/4/17	1300	Received By + Company Name:	10/4/17	13:00

Login Sample Receipt Checklist

Client: Stantec Consulting Corp.

Job Number: 440-193461-1

Login Number: 193461
List Number: 1
Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	False	Default login info for TB
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Attachment: Project 1_Phase I Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

ARCADIS Design & Consultancy for natural and built assets

Arcadis U.S., Inc.

320 Commerce

Suite 200

Irvine, California 92602

Tel 714 730 9052

Fax 714 730 9345

www.arcadis.com

ARCADIS Design & Consultancy for natural and built assets

320 Commerce, Suite 200
Irvine
California 92602
Tel 714.730.9052
Fax 714.730.9345
www.ARCADIS.com

Jackson B. Smith
Newcastle Partners
4740 Green River Road, Suite 118
Corona, CA 92880

ENVIRONMENT

Subject: Limited Phase II Investigation Report for Undeveloped Land located at the NEC of the Intersection of Brodiaea Avenue and Frederick Street, Moreno Valley, California

Date:
February 12, 2018

Contact:
Janet Holtz

Phone:
714.508.2618

Email:
Janet.Holtz@arcadis.com

Our ref:
CM011971.0001

Dear Mr. Smith:

Arcadis U.S., Inc. (Arcadis) was retained by Newcastle Partners to conduct a Limited Phase II Investigation for the above-referenced site (the Site, Figures 1 and 2). The Site consists of 8.78 acres of undeveloped land and does not have an assigned street address. There are no features onsite and the ground surface has been disked. In December 2017, Arcadis performed a Phase I Environmental Site Assessment (ESA) of the Site in conformance with the scope and limitations of ASTM International (ASTM) Practice E1527-13 for Phase I ESAs. No onsite concerns were identified during the Phase I ESA site inspection. However, regulatory records reviewed for the Phase I ESA identified the site to be located within March Field, an open but inactive case with the Department of Toxic Substances Control (DTSC). March Field encompasses an area of 53.3-acres and was historically used by March Air Force Base as a small arms firing range. Contaminants of concern above regulatory screening criteria identified in March Field are arsenic, lead, and select polycyclic aromatic hydrocarbons (PAHs). As a result, the Phase I ESA identified the Site's location within March Field as a Recognized Environmental Condition (REC) in connection with the Site as select metals and PAHs may be present in near-surface soil above regulatory screening criteria. Arcadis recommended baseline soil sampling for metals and PAHs. To address the REC identified above, Arcadis conducted a limited Phase II investigation at the Site. This report discusses our Phase II findings for the Site.

Pre-Field Activities

Arcadis field personnel performing the sampling coordinated with the project manager for Site access. In addition, Underground Service Alert was notified a minimum of 48 hours prior to commencement of the field activities, per State law. Dig

Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Alert ticket No. A180171022 was in place for all intrusive activities at the Site. Available drawings and plans for the Site were reviewed prior to initiating field work.

Additionally, Pacific Coast Locators, Inc., a subcontracted private utility locating firm, was used to perform clearance at the proposed boring locations at the Site on January 19, 2018, prior to initiating any intrusive activities. Soil boring and soil sampling locations were marked in white paint or with stakes prior to conducting utility clearance. All sample locations were cleared and borings were advanced in the originally selected locations.

Field Sampling Activities

Sample locations were selected based on the REC identified for the Site and are shown on Figure 2. Three soil borings, SB-1 through SB-3, were advanced throughout the Site in order to collect representative soil samples to assess for impact from historical small arms firing range use. The boring locations were identified with Global Positioning System (GPS) coordinates so that the borings could later be located should there be a need for remediation. On January 22, 2018, Arcadis and BC2 Environmental (BC2), a State-licensed drilling subcontractor located in Orange, California, collected three soil samples from each boring using direct-push technology (DPT) at depths of 1-foot, 2-feet, and 5-feet below ground surface (bgs) for a total of nine samples. All soil samples were collected in acetate sleeves. The shallow soil samples collected at 1-foot bgs were analyzed for arsenic, lead, and PAHs as follows:

Sample Number	Analysis
SB-1-1’	Arsenic and lead (U.S. Environmental Protection Agency [EPA] 6010B), PAHs (EPA 8270C)
SB-2-1’	Arsenic and lead (U.S. EPA 6010B), PAHs (EPA 8270C)
SB-3-1’	Arsenic and lead (U.S. EPA 6010B), PAHs (EPA 8270C)

Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

The soil samples that were collected at depths of 2-feet and 5-feet bgs were held by the laboratory pending the results of the samples initially analyzed. Based on the laboratory results, held samples were not analyzed and are not included in the above table.

Soil samples were collected in new acetate sleeves and capped with Teflon® squares and polyethylene end caps. As soil samples were collected, the sample containers were uniquely labeled with the project name, name of sampler, sample location, sample depth, sample identification, sampling date, and sampling time. Soil samples were stored in an ice-chilled cooler pending transport and then transported under chain-of-custody (COC) documentation to SunStar Laboratories, Inc. (SunStar), a California Environmental Laboratory Accreditation Program (ELAP) certified laboratory located in Lake Forest, California for chemical analysis. COC procedures were utilized to maintain control and validity of sample data ensuring effective interpretation of the data. As documented on the COC, the samples were received by the laboratory in chilled conditions.

Quality Assurance/Quality Control (QA/QC) performed for the data includes standard laboratory QC, such as matrix spike/matrix spike duplicate (MS/MSD), surrogate recovery, and method blank samples, was performed. Arcadis reviewed the laboratory analytical data and verified that the laboratory's internal QC were within specified limits and that the data sets were valid. Batch samples including Method Blanks, Laboratory Control Samples (LCS), LCS duplicates, Matrix Spikes, and Matrix Spike duplicate analytical results were examined for qualifiers that could potentially bias the analytical results. No qualifiers were reported.

Decontamination of the DPT sampler, any hand tools, core bits, drill bits, chisels, and other reusable sampling equipment were performed prior to sampling and between sample locations to prevent the introduction of extraneous chemicals into samples and to prevent cross-contamination between samples. Hand tools, such as pipe cutters, hacksaws, and knives that contact soil, were cleaned after each sample. All sampling equipment was decontaminated on site prior to use by dry brushing and washing with a non-phosphate detergent (e.g., Alconox™), rinsing in potable water, and then rinsing in distilled water. The following steps were followed for decontamination of the non-disposable sampling equipment: remove solids, wash with non-phosphate detergent and water solution, rinse with potable water, and rinse with distilled water.

Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

All sampling and related activities were conducted in accordance with USEPA publication SW-846, entitled Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods, including QA and QC protocols (USEPA, 2013).

Soil Sampling Analytical Results

Arcadis compared detected analyte concentrations with the USEPA Region IX Regional Screening Levels (RSLs) for commercial/industrial use (November 2017) as modified by the Department of Toxic Substances Control (DTSC, August 2017) or the California Human Health Screening Levels for Commercial/Industrial Use (CHHSL-I) (California EPA, 2010), whichever is more conservative. However, due to the elevated background concentrations of arsenic in soil, the DTSC uses 12 milligrams per kilogram (mg/kg) as the arsenic screening level for school sites.

Lead was detected in the soil sample collected at 1-foot bgs from SB-3 at a concentration of 13 milligrams per kilogram (mg/kg). Lead was not detected above its CHHSL and DTSC-Screening Level Non-Cancer soil screening level of 320 mg/kg. Lead was not detected above the laboratory method detection limits in the other samples collected at the Site. Arsenic and PAHs were not detected above the laboratory method detection limit in the samples collected from the Site. As no compounds were detected above the applicable soil screening criteria in the shallow samples collected from the Site, the deeper soil samples were not analyzed. Any impact from historical small arms fire training activities would be expected to be found in near surface soil, as occurred on nearby properties.

The SunStar laboratory analytical report has been included as Attachment A.

Conclusions

Soil analytical results were compared to the applicable soil screening criteria. No compounds were detected above the applicable soil screening criteria in the samples collected from the areas investigated at the Site. No further investigation is recommended at this time. Based on the findings of this limited Phase II investigation, the REC has been addressed and no longer represents a REC for the Site.

However, Arcadis recommends future site development contractors be made aware of the Site's location within a former military firing range.

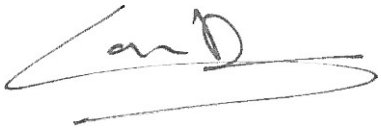
Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Mr. Jackson Smith
February 12, 2018

Arcadis appreciates the opportunity to present you with these findings. Please call us if you have questions or would like to discuss the report.

Sincerely,

Arcadis U.S., Inc.



Maryline Laugier-Diamond, P.E.
Project Engineer

Janet Holtz
Principal Scientist

Att. Figure 1 – Site Location Map

Figure 2 – Site Plan with Sample Locations

Attachment A – Laboratory Report

Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

FIGURES

MAP SOURCE: Google Earth Pro 2017, 33°54'55.71"N, 117°15'35.63"W

0 2,500' 5,000'

GRAPHIC SCALE

CENTREPOINTE - UNDEVELOPED LAND
NEC BRODIAEA AVENUE AND FREDERICK STREET
MORENO VALLEY, CALIFORNIA

SITE LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

CITY: IRVINE, CA DIV/GROUP:ENVCAD DB: E. MURESAN PIC:
C:\Users\emuresa\OneDrive - ARCADIS\BIM 360 Docs\Newcastle Partners INC\CM0011971.0000 – Nwcstle PHI ESA\Prpsed Centerpointe Prj\00001 - Phase I ESA\01-DWG\Centrepointe Site plan.dwg LAYOUT: 1 SAVED: 1/15/2018 1:43 PM PAGESETUP: --- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED:
1/15/2018 1:43 PM BY: MURESAN, ELENA

CITY: IRVINE, CA DIV/GROUP:ENVCAD DB: E. MURESAN PIC: J. HOLTZ
C:\Users\emuresa\OneDrive - ARCADIS\BIM 360 Docs\Newcastle Partners INC\CM0011971.0000 – Nwcstle PHI ESA\Prpsed Centerpointe Prj\00001 - Phase I ESA\01-DWG\Centrepointe Site plan.dwg LAYOUT: 2 (2) SAVED: 1/23/2018 8:22 AM PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 1/23/2018 8:22 AM BY: MURESAN, ELENA

MAP SOURCE: Google Earth Pro 2017, 33°54'55.71"N, 117°15'35.63"W

LEGEND:

PROPERTY BOUNDARY

W/D WAREHOUSE DISTRIBUTION

SOIL BORING

0 400' 800'

GRAPHIC SCALE

CENTREPOINTE - UNDEVELOPED LAND
NEC BRODIAEA AVENUE AND FREDERICK STREET
MORENO VALLEY, CALIFORNIA

SITE PLAN WITH SAMPLE LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 2

Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center,

ATTACHMENT A

Laboratory Report

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

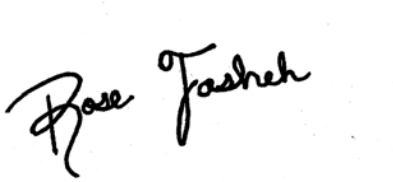
30 January 2018

Janet Holtz
ARCADIS -- Irvine
320 Commerce, Suite 200
Irvine, CA 92602

RE: Centerpointe

Enclosed are the results of analyses for samples received by the laboratory on 01/22/18 18:56. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Rose Fasheh
Project Manager

Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Driv
Lake Forest, California 9263
949.297.5020 Phon
949.297.5027 Fa

ARCADIS -- Irvine	Project: Centerpointe	
320 Commerce, Suite 200	Project Number: CM011971.0001	**Reported:**
Irvine CA, 92602	Project Manager: Janet Holtz	01/30/18 15:33

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB-1-1.0'	T180257-01	Soil	01/22/18 09:24	01/22/18 18:56
SB-2-1.0'	T180257-04	Soil	01/22/18 09:41	01/22/18 18:56
SB-3-1.0'	T180257-07	Soil	01/22/18 09:59	01/22/18 18:56

SunStar Laboratories, Inc.

Rose Fasheh

Rose Fasheh, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

SunStar Laboratories, Inc.
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949.297.5027 Fa

ARCADIS -- Irvine	Project: Centerpointe	
320 Commerce, Suite 200	Project Number: CM011971.0001	**Reported:**
Irvine CA, 92602	Project Manager: Janet Holtz	01/30/18 15:33

DETECTIONS SUMMARY

Sample ID: SB-1-1.0' **Laboratory ID:** T180257-01

No Results Detected

Sample ID: SB-2-1.0' **Laboratory ID:** T180257-04

No Results Detected

Sample ID: SB-3-1.0' **Laboratory ID:** T180257-07

Analyte	Result	Reporting Limit	Units	Method	Notes
Lead	**13**	3.0	mg/kg	EPA 6010b	

SunStar Laboratories, Inc.

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Rose Fasheh, Project Manager

Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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949.297.5027 Fa

ARCADIS -- Irvine	Project: Centerpointe	
320 Commerce, Suite 200	Project Number: CM011971.0001	**Reported:**
Irvine CA, 92602	Project Manager: Janet Holtz	01/30/18 15:33

SB-1-1.0'

T180257-01 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	8012419	01/24/18	01/26/18	EPA 6010b	
Lead	ND	3.0	"	"	"	"	"	"	
PAH compounds by Semivolatile GCMS									
Acenaphthene	ND	300	ug/kg	1	8012911	01/29/18	01/29/18	EPA 8270C	
Acenaphthylene	ND	300	"	"	"	"	"	"	
Anthracene	ND	300	"	"	"	"	"	"	
Benzo (a) anthracene	ND	300	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	300	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	300	"	"	"	"	"	"	
Benzo (g,h,i) perylene	ND	1000	"	"	"	"	"	"	
Benzo (a) pyrene	ND	300	"	"	"	"	"	"	
Chrysene	ND	300	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	300	"	"	"	"	"	"	
Fluoranthene	ND	300	"	"	"	"	"	"	
Fluorene	ND	300	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	300	"	"	"	"	"	"	
Naphthalene	ND	300	"	"	"	"	"	"	
Phenanthrene	ND	300	"	"	"	"	"	"	
Pyrene	ND	300	"	"	"	"	"	"	
Surrogate: Terphenyl-dl4		*106 %*	*29.1-130*		"	"	"	"	

SunStar Laboratories, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Rose Fasheh, Project Manager

Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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949.297.5027 Fa

ARCADIS -- Irvine	Project: Centerpointe	
320 Commerce, Suite 200	Project Number: CM011971.0001	**Reported:**
Irvine CA, 92602	Project Manager: Janet Holtz	01/30/18 15:33

SB-2-1.0'

T180257-04 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	8012419	01/24/18	01/26/18	EPA 6010b	
Lead	ND	3.0	"	"	"	"	"	"	
PAH compounds by Semivolatile GCMS									
Acenaphthene	ND	300	ug/kg	1	8012911	01/29/18	01/29/18	EPA 8270C	
Acenaphthylene	ND	300	"	"	"	"	"	"	
Anthracene	ND	300	"	"	"	"	"	"	
Benzo (a) anthracene	ND	300	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	300	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	300	"	"	"	"	"	"	
Benzo (g,h,i) perylene	ND	1000	"	"	"	"	"	"	
Benzo (a) pyrene	ND	300	"	"	"	"	"	"	
Chrysene	ND	300	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	300	"	"	"	"	"	"	
Fluoranthene	ND	300	"	"	"	"	"	"	
Fluorene	ND	300	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	300	"	"	"	"	"	"	
Naphthalene	ND	300	"	"	"	"	"	"	
Phenanthrene	ND	300	"	"	"	"	"	"	
Pyrene	ND	300	"	"	"	"	"	"	
Surrogate: Terphenyl-dl4		*99.1 %*		*29.1-130*	"	"	"	"	

SunStar Laboratories, Inc.

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Rose Fasheh, Project Manager

Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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949.297.5020 Phon
949.297.5027 Fa

ARCADIS -- Irvine	Project: Centerpointe	
320 Commerce, Suite 200	Project Number: CM011971.0001	**Reported:**
Irvine CA, 92602	Project Manager: Janet Holtz	01/30/18 15:33

SB-3-1.0'

T180257-07 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Metals by EPA 6010B									
Arsenic	ND	5.0	mg/kg	1	8012419	01/24/18	01/26/18	EPA 6010b	
Lead	**13**	3.0	"	"	"	"	"	"	
PAH compounds by Semivolatile GCMS									
Acenaphthene	ND	300	ug/kg	1	8012911	01/29/18	01/29/18	EPA 8270C	
Acenaphthylene	ND	300	"	"	"	"	"	"	
Anthracene	ND	300	"	"	"	"	"	"	
Benzo (a) anthracene	ND	300	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	300	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	300	"	"	"	"	"	"	
Benzo (g,h,i) perylene	ND	1000	"	"	"	"	"	"	
Benzo (a) pyrene	ND	300	"	"	"	"	"	"	
Chrysene	ND	300	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	300	"	"	"	"	"	"	
Fluoranthene	ND	300	"	"	"	"	"	"	
Fluorene	ND	300	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	300	"	"	"	"	"	"	
Naphthalene	ND	300	"	"	"	"	"	"	
Phenanthrene	ND	300	"	"	"	"	"	"	
Pyrene	ND	300	"	"	"	"	"	"	
Surrogate: Terphenyl-dl4		*102 %*	*29.1-130*		"	"	"	"	

SunStar Laboratories, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Rose Fasheh, Project Manager

Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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Providing Quality Analytical Services Nationwide

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Lake Forest, California 9263
949.297.5020 Phon
949.297.5027 Fa

ARCADIS -- Irvine	Project: Centerpointe	
320 Commerce, Suite 200	Project Number: CM011971.0001	**Reported:**
Irvine CA, 92602	Project Manager: Janet Holtz	01/30/18 15:33

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8012419 - EPA 3050B										
Blank (8012419-BLK1)				Prepared: 01/24/18 Analyzed: 01/26/18						
Arsenic	ND	5.0	mg/kg							
Copper	ND	1.0	"							
Lead	ND	3.0	"							
Molybdenum	ND	5.0	"							
Nickel	ND	2.0	"							
Selenium	ND	5.0	"							
Silver	ND	2.0	"							
Thallium	ND	2.0	"							
Vanadium	ND	5.0	"							
Zinc	ND	1.0	"							
LCS (8012419-BS1)				Prepared: 01/24/18 Analyzed: 01/26/18						
Arsenic	115	5.0	mg/kg	100		115	75-125			
Copper	111	1.0	"	100		111	75-125			
Lead	113	3.0	"	100		113	75-125			
Matrix Spike (8012419-MS1)	**Source: T180210-01**			Prepared: 01/24/18 Analyzed: 01/26/18						
Arsenic	88.4	5.0	mg/kg	92.6	1.92	93.4	75-125			
Copper	96.2	1.0	"	92.6	10.5	92.5	0-200			
Lead	92.0	3.0	"	92.6	7.18	91.6	75-125			
Matrix Spike Dup (8012419-MSD1)	**Source: T180210-01**			Prepared: 01/24/18 Analyzed: 01/26/18						
Arsenic	96.4	5.0	mg/kg	96.2	1.92	98.2	75-125	8.65	20	
Copper	109	1.0	"	96.2	10.5	103	0-200	12.8	200	
Lead	105	3.0	"	96.2	7.18	102	75-125	13.4	20	

SunStar Laboratories, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Rose Fasheh, Project Manager

Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

25712 Commercentre Driv
Lake Forest, California 9263
949.297.5020 Phon
949.297.5027 Fa

ARCADIS -- Irvine	Project: Centerpointe	
320 Commerce, Suite 200	Project Number: CM011971.0001	**Reported:**
Irvine CA, 92602	Project Manager: Janet Holtz	01/30/18 15:33

PAH compounds by Semivolatile GCMS - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8012911 - EPA 3550 ECD/GCMS										
Blank (8012911-BLK1)				Prepared & Analyzed: 01/29/18						
Acenaphthene	ND	300	ug/kg							
Acenaphthylene	ND	300	"							
Anthracene	ND	300	"							
Benzo (a) anthracene	ND	300	"							
Benzo (b) fluoranthene	ND	300	"							
Benzo (k) fluoranthene	ND	300	"							
Benzo (g,h,i) perylene	ND	1000	"							
Benzo (a) pyrene	ND	300	"							
Chrysene	ND	300	"							
Dibenz (a,h) anthracene	ND	300	"							
Fluoranthene	ND	300	"							
Fluorene	ND	300	"							
Indeno (1,2,3-cd) pyrene	ND	300	"							
Naphthalene	ND	300	"							
Phenanthrene	ND	300	"							
Pyrene	ND	300	"							
Surrogate: Terphenyl-dl4	*3520*		*"*	*3340*		*105*	*29.1-130*			
LCS (8012911-BS1)				Prepared & Analyzed: 01/29/18						
Acenaphthene	2570	300	ug/kg	3390		75.8	50-130			
Pyrene	2180	300	"	3390		64.4	50-130			
Surrogate: Terphenyl-dl4	*3430*		*"*	*3390*		*101*	*29.1-130*			
LCS Dup (8012911-BSD1)				Prepared & Analyzed: 01/29/18						
Acenaphthene	2590	300	ug/kg	3330		77.8	50-130	0.897	31	
Pyrene	2240	300	"	3330		67.2	50-130	2.54	31	
Surrogate: Terphenyl-dl4	*3490*		*"*	*3330*		*105*	*29.1-130*			

SunStar Laboratories, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Rose Fasheh, Project Manager

Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

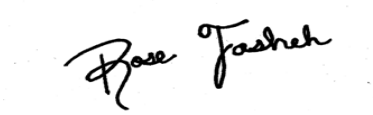
25712 Commercentre Driv
Lake Forest, California 9263
949.297.5020 Phon
949.297.5027 Fa

ARCADIS -- Irvine	Project: Centerpointe	
320 Commerce, Suite 200	Project Number: CM011971.0001	**Reported:**
Irvine CA, 92602	Project Manager: Janet Holtz	01/30/18 15:33

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

SunStar Laboratories, Inc.



Rose Fasheh, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

SunStar Laboratories, Inc.
25712 Commercentre Dr
Lake Forest, CA 92630
949-297-5020

Chain of Custody Record

Client: Arcadis US Inc.
Address: 320 Commerce #200, Irvine, CA 92602
Phone: 714-730-9052 Fax:
Project Manager: Janet Holtz

Date: 1/22/18 Page: 1 Of 1
Project Name: Centerpointe
Collector: A. Scavo Client Project #: CM011971.0001
Batch #: T180257 EDF #:

Sample ID	Date Sampled	Time	Sample Type	Container Type	~~8260~~	~~8260 + OXY~~	~~8260 BTEX, OXY only~~	(8270) PAHs	~~8021 BTEX~~	~~8015M (gasoline)~~	~~8015M (diesel)~~	~~8015M Ext./Carbon Chain~~	~~6010/7000 Title 22 Metals~~	Arsenic & Lead (6010B)		Hold	Laboratory ID #	Comments/Preservative	Total # of containers
SB-1 - 1.0'	1/22/18	0924	Soil	Sleeve				X						X			01		1
SB-1 - 2.0'		0925						X						X			02		1
SB-1 - 5.0'		0926						X						X			03		1
SB-2 - 1.0'		0941														X	04		1
SB-2 - 2.0'		0942														X	05		1
SB-2 - 5.0'		0947														X	06		1
SB-3 - 1.0'		0959														X	07		1
SB-3 - 20.'		1000														X	08		1
SB-3 - 5.0'		1004														X	09		1

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
A. Scavo	1/22/18/1617		1-22-18 1631
	1-22-18 1856	Jeanny Hunh	01/22/18 18:56

Total # of containers: 9
Chain of Custody seals Y/N/NA
Seals intact? Y/N/NA
Received good condition/cold: 2.6°

Turn around time: Standard

Notes
Please send email confirmation & lab report to:
Maryline.Laugier@arcadis.com
Janet.Holtz@arcadis.com

Sample disposal Instructions: Disposal @ $2.00 each ____ Return to client ____ Pickup ____

COC 131510

Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

SunStar Laboratories — Celebrating 20 Years!

SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #: T180257

Client Name: Arcadis Project: Centerpointe

Delivered by: ☐ Client ☒ SunStar Courier ☐ GSO ☐ FedEx ☐ Other

If Courier, Received by: Dan Date/Time Courier Received: 1/22/18 16:31

Lab Received by: Jeanny Date/Time Lab Received: 1/22/18 18:36

Total number of coolers received: 0

Temperature:	Cooler #1 2.8	°C +/- the CF (- 0.2°C) = 2.6	°C corrected temperature
Temperature:	Cooler #2	°C +/- the CF (- 0.2°C) =	°C corrected temperature
Temperature:	Cooler #3	°C +/- the CF (- 0.2°C) =	°C corrected temperature

Temperature criteria = ≤ 6°C (no frozen containers)	Within criteria?	☒ **Yes** ☐ **No**
If NO:		
Samples received on ice?	☐ Yes	☐ **No → Complete Non-Conformance Sheet**
If on ice, samples received same day collected?	☐ Yes → Acceptable	☐ **No → Complete Non-Conformance Sheet**

Custody seals intact on cooler/sample	☐ Yes	☐ No*	☒ N/A
Sample containers intact	☒ Yes	☐ No*	
Sample labels match Chain of Custody IDs	☒ Yes	☐ No*	
Total number of containers received match COC	☒ Yes	☐ No*	
Proper containers received for analyses requested on COC	☒ Yes	☐ No*	
Proper preservative indicated on COC/containers for analyses requested	☐ Yes	☐ No*	☒ N/A
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times	☒ **Yes**	☐ **No***	

* Complete Non-Conformance Receiving Sheet if checked

Cooler/Sample Review - Initials and date: BC 1/23/18

Comments:

(949) 297-5020 ■ www.sunstarlabs.com ■ 25712 Commercentre Drive ■ Lake Forest, CA 92630

Rose Fasheh

From: Laugier-Diamond, Maryline [Maryline.Laugier@arcadis.com]
Sent: Tuesday, January 23, 2018 1:53 PM
To: Rose Fasheh; Holtz, Janet
Subject: RE: Work Order Confirmation for Centerpointe (T180257)
Attachments: SCA09P1218012314560.pdf

Hi Rose,
Please see corrections to COC for this job.
Thank you,

Maryline Laugier-Diamond | maryline.laugier@arcadis.com
Arcadis | M. +1 510 388 9035
www.arcadis.com

From: Rose Fasheh [mailto:Rose@sunstarlabs.com]
Sent: Tuesday, January 23, 2018 1:16 PM
To: Holtz, Janet <Janet.Holtz@arcadis.com>; Laugier-Diamond, Maryline <Maryline.Laugier@arcadis.com>
Subject: Work Order Confirmation for Centerpointe (T180257)

Hello Janet and Maryline,

Please see the attached chain-of-custody and work order for samples we received yesterday:

Project: Centerpointe
Project Number: CM011971.0001

Please carefully review and if you have any questions or concerns, please feel free to contact me. Thank you for choosing SunStar Labs.

Rose Fasheh
Project Manager

SunStar 20 Laboratories

25712 Commercentre Dr., Lake Forest, CA 92630
Office: (949) 297-5020 | Fax: (949) 297-5027
CA ELAP Certification: 2250 | CA Small Business Certification: 31511

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Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

SunStar Laboratories, Inc.
25712 Commercentre Dr
Lake Forest, CA 92630
949-297-5020

Chain of Custody Record

Client: Arcadis US Inc.
Address: 320 Commerce #200, Irvine, CA 92602
Phone: 714-730-9052 Fax:
Project Manager: Janet Holtz

Date: 1/22/18 Page: 1 Of 1
Project Name: Centerpointe
Collector: A. Scavo Client Project #: CM011971.0001
Batch #: T180257 EDF #:

Sample ID	Date Sampled	Time	Sample Type	Container Type	~~8260~~	~~8260 + OXY~~	~~8260 BTEX, OXY only~~	(8270) PAHs	~~8021 BTEX~~	~~8015M (gasoline)~~	~~8015M (diesel)~~	~~8015M Ext./Carbon Chain~~	~~6010/7000 Title 22 Metals~~	Arsenic & Lead (6010B)		Hold	Laboratory ID #	Comments/Preservative	Total # of containers
SB-1 - 1.0'	1/22/18	0924	Soil	Sleeve				X						X			01		1
SB-1 - 2.0' Hold		0925						X						X		X	02		1
SB-1 - 5.0' Hold		0986						X						X		X	03		1
SB-2 - 1.0'		0941						X						X		X	04	analyze	1
SB-2 - 2.0' Hold		0942														X	05		1
SB-2 - 5.0' Hold		0947														X	06		1
SB-3 - 1.0'		09.59						X						X		X	07	analyze	1
SB-3 - 20.' Hold		1000														X	08		1
SB-3 - 5.0' Hold		1004														X	09		1

No

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
	1/22/18/1617		1-22-18 1631
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
	1-22-18 1856		01/22/18 18:56
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers: 9
Chain of Custody seals Y/N/NA:
Seals intact? Y/N/NA:
Received good condition/cold: 2.6°

Turn around time: Standard

Notes
Please send email confirmation & lab report to:
Maryline.Laugier@arcadis.com
Janet.Holtz@arcadis.com

Sample disposal Instructions: Disposal @ $2.00 each ___ Return to client ___ Pickup ___

COC 131510

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T180257

Client: **ARCADIS -- Irvine** **Project Manager:** **Rose Fasheh**

Project: **Centerpointe** **Project Number:** **CM011971.0001**

Report To:

ARCADIS -- Irvine
Janet Holtz
320 Commerce, Suite 200
Irvine, CA 92602

Date Due: 01/30/18 17:00 (5 day TAT)

Received By: Jeanny Huynh Date Received: 01/22/18 18:56

Logged In By: Brian Charon Date Logged In: 01/23/18 07:40

Samples Received at: **2.6°C**

Custody Seals No Received On Ice Yes

Containers Intact Yes

COC/Labels Agree Yes

Preservation Confir No

Analysis	Due	TAT	Expires	Comments
T180257-01 SB-1-1.0' [Soil] Sampled 01/22/18 09:24 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	01/30/18 15:00	5	07/21/18 09:24	As and Pb only
8270C PAH	01/30/18 15:00	5	02/05/18 09:24	
T180257-02 SB-1-2.0' [Soil] Sampled 01/22/18 09:25 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	01/30/18 15:00	5	07/21/18 09:25	As and Pb only
8270C PAH	01/30/18 15:00	5	02/05/18 09:25	
T180257-03 SB-1-5.0' [Soil] Sampled 01/22/18 09:26 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	01/30/18 15:00	5	07/21/18 09:26	As and Pb only
8270C PAH	01/30/18 15:00	5	02/05/18 09:26	
T180257-04 SB-2-1.0' [Soil] Sampled 01/22/18 09:41 (GMT-08:00) Pacific Time (US &				**HOLD**
[NO ANALYSES]				
T180257-05 SB-2-2.0' [Soil] Sampled 01/22/18 09:42 (GMT-08:00) Pacific Time (US &				**HOLD**
[NO ANALYSES]				
T180257-06 SB-2-5.0' [Soil] Sampled 01/22/18 09:47 (GMT-08:00) Pacific Time (US &				**HOLD**
[NO ANALYSES]				

Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T180257

Client: ARCADIS -- Irvine
Project: Centerpointe
Project Manager: Rose Fasheh
Project Number: CM011971.0001

Analysis	Due	TAT	Expires	Comments
T180257-07 SB-3-1.0' [Soil] Sampled 01/22/18 09:59 (GMT-08:00) Pacific Time (US &				**HOLD**
[NO ANALYSES]				
T180257-08 SB-3-2.0' [Soil] Sampled 01/22/18 10:00 (GMT-08:00) Pacific Time (US &				**HOLD**
[NO ANALYSES]				
T180257-09 SB-3-5.0' [Soil] Sampled 01/22/18 10:04 (GMT-08:00) Pacific Time (US &				**HOLD**
[NO ANALYSES]				

Reviewed By

Date

Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T180257

Client: **ARCADIS -- Irvine** **Project Manager:** **Rose Fasheh**

Project: **Centerpointe** **Project Number:** **CM011971.0001**

Report To:

ARCADIS -- Irvine
Janet Holtz
320 Commerce, Suite 200
Irvine, CA 92602

Date Due: 01/30/18 17:00 (5 day TAT)

Received By: Jeanny Huynh Date Received: 01/22/18 18:56

Logged In By: Brian Charon Date Logged In: 01/23/18 07:30

Samples Received at: **2.6°C**

Custody Seals No Received On Ice Yes

Containers Intact Yes

COC/Labels Agree Yes

Preservation Confir No

Analysis	Due	TAT	Expires	Comments
T180257-01 SB-1-1.0' [Soil] Sampled 01/22/18 09:24 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	01/30/18 15:00	5	07/21/18 09:24	As & Pb only
8270C PAH	01/30/18 15:00	5	02/05/18 09:24	
T180257-02 SB-1-2.0' [Soil] Sampled 01/22/18 09:25 (GMT-08:00) Pacific Time (US &				**HOLD**
[NO ANALYSES]				
T180257-03 SB-1-5.0' [Soil] Sampled 01/22/18 09:26 (GMT-08:00) Pacific Time (US &				**HOLD**
[NO ANALYSES]				
T180257-04 SB-2-1.0' [Soil] Sampled 01/22/18 09:41 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	01/30/18 15:00	5	07/21/18 09:41	As & Pb only
8270C PAH	01/30/18 15:00	5	02/05/18 09:41	
T180257-05 SB-2-2.0' [Soil] Sampled 01/22/18 09:42 (GMT-08:00) Pacific Time (US &				**HOLD**
[NO ANALYSES]				
T180257-06 SB-2-5.0' [Soil] Sampled 01/22/18 09:47 (GMT-08:00) Pacific Time (US &				**HOLD**
[NO ANALYSES]				

Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T180257

Client: ARCADIS -- Irvine
Project: Centerpointe
Project Manager: Rose Fasheh
Project Number: CM011971.0001

Analysis	Due	TAT	Expires	Comments
T180257-07 SB-3-1.0' [Soil] Sampled 01/22/18 09:59 (GMT-08:00) Pacific Time (US &				
6010 Individual Metals	01/30/18 15:00	5	07/21/18 09:59	As & Pb only
8270C PAH	01/30/18 15:00	5	02/05/18 09:59	
T180257-08 SB-3-2.0' [Soil] Sampled 01/22/18 10:00 (GMT-08:00) Pacific Time (US &				**HOLD**
[NO ANALYSES]				
T180257-09 SB-3-5.0' [Soil] Sampled 01/22/18 10:04 (GMT-08:00) Pacific Time (US &				**HOLD**
[NO ANALYSES]				

Reviewed By

Date

Attachment: Project 1_Phase II Environmental Site Assessment (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

ARCADIS Design & Consultancy for natural and built assets

Arcadis U.S., Inc.

320 Commerce

Suite 200

Irvine, California 92602

Tel 714 730 9052

Fax 714 730 9345

www.arcadis.com

DRAINAGE STUDY

For

CENTERPOINTE INDUSTRIAL

NWC OF FREDERICK STREET AND BRODIAEA AVENUE
MORENO VALLEY, CA 92557

Prepared for:

Newcastle Partners
4740 Green River Road, Suite 118
Corona, Ca 92880

Prepared by:

R·E·C
Consultants, Inc.

Luis A. Magallon Bejarano, PE
REC Consultants, Inc
2442 Second Avenue
San Diego, CA 92101
Telephone: 619-232-9200

Report Prepared:

January 30, 2018
Revised April 5, 2018
Updated May 30, 2018

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXECUTIVE SUMMARY

Introduction

The purpose of this report is to demonstrate the results of a rational method analysis for both the existing and post development project conditions. The project is tying into two (2) existing storm drains, West and East, along Brodiaea Aveune. The existing storm drains have a capacity per City of Moreno Valley As-Built Drawing 4-888. As such, the report will also demonstrate that the project runoff will not exceed the capacity of the eastern receiving system. Developed conditions' runoff from the northern-adjacent parcel is to be conveyed thru the western portion of the Centerpointe project site. Thus this report will also demonstrate that the offsite runoff will not exceed the capacity of the western receiving system.

Detailed hydraulic design calculations are provided in Appendix 4 of this report.

Project Description

The Centerpointe project is an industrial development project that will be constructed at the intersection Frederick Street and Brodiaea Avenue. The project includes the construction of a new building, parking lot and other amenities.

Existing and Proposed Conditions

The existing project site is an undeveloped vacant lot. The site currently sheet flows in a southwesterly direction to one (1) of two (2) inlets which then confluence in the existing stormdrain beneath Brodiaea Avenue. As mentioned previously, both inlets have a receiving capacity per City of Moreno Valley As-Built Drawing 4-888.

In the proposed condition the site will add one new building, parking lot, and associated landscaping. The site will also preserve the southern sheet flow drainage pattern. Low flows (i.e. water quality and HMP) will be conveyed into a bioretention area or underground system with pumps to be detained and treated onsite. Please refer to the project WQMP and HMP study for analysis and results as these are outside the scope of this report.

High flows (i.e. Q100) are to be conveyed directly to the receiving inlets via combination of overland flow and stormdrain. Note that no detention/routing is necessary as the receiving laterals have sufficient capacity to convey the unmitigated runoff.

For the purpose of this study, the total area will be analyzed as two areas in existing and proposed conditions using the Rational Method as explained in the Riverside County Flood Control and Water Conservation District (RCFCWCD) Hydrology Manual (HM). These areas correspond to the tributary areas to the receving storm drains. Information about the method is included in the appendices. A proposed condition's maps can be seen in Appendix 1.

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

General Hydrologic Considerations

Rainfall intensities have been obtained from the Hydrology Manual (HM) Plate D-4.1, see Table 1.

TABLE 1 – HYDROLOGY MANUAL PRECIPITATION VALUES

Event	P (inch/hr)	Source
10-yr, 1-hr	0.82	Plate D-4.1
100-yr, 1-hr	1.20	Plate D-4.1

Existing Conditions Hydrology

As previously mentioned, the City of Moreno Valley As-Built Drawing 4-888 shows the receving capacity for both storm drain inlets that the project will tie into. See Table 2 below. Please see the approved As-Built provided in Appendix 1.

TABLE 2 – EXISTING CONDITIONS HYDROLOGY

Receiving Storm Drain Location	Capacity (cfs)*
West	22.1
East	21.7

*Note: Values are per City of Moreno Valley Approved As-Built Drawing 4-888. See Appendix 1.

Proposed Conditions Hydrology

The application of the Rational Method for the post-development tributary areas to the receving storm drains allows for the determination of peak flows for the storms indicated. Results for the proposed conditions-unmitigated flows are shown in Table 3. Note that routing is not necessary as the receiving storm drain has sufficient capacity to convey the undetained runoff. The project area was divided into two areas. The peak flows were then calculated and conservatively summed at Inlet East.

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 3 – PROPOSED CONDITIONS HYDROLOGY – UNMITIGATED

DMA	10-Year, 1-hr	100-Year, 1-hr
	Peak (cfs)	Peak (cfs)
West	7.6	11.3
East	7.0	10.3
Total	**14.6**	**21.6***

*Note: The capacity of Inlet East is 22.1cfs as per City of Moreno Valley As-Built Drawing 4-888. Routing of onsite flows is not necessary.

Offsite flows

As previously mentioned, there is an adjacent parcel to the north of the project site. The parcel's runoff, both existing and proposed, is to be conveyed thru the western porton of the Centerpointe project site to the receiving western storm drain. The Centerpointe project will provide a means to convey such flows through the project site.

A preliminary rational method analsysis assuming similar characteristics to the Centerpointe project was performed for the adjacent parcel. Results can be seen in Table 4 below.

TABLE 4 – OFFSITE PROPOSED CONDITIONS HYDROLOGY – UNMITIGATED

Offsite Location	10-Year, 1-hr	100-Year, 1-hr
	Peak (cfs)	Peak (cfs)
North	13.5	19.9

It should be noted that the proposed project analyzed here is providing one (1) 24" stormdrain to receive and convey the future runoff from the northern property.

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Conclusion

The existing western and eastern inlets have sufficient capacity to convey the unmitigated offsite (west) and onsite (east) post development 100-yr peak flows. Therefore no mitigation is necessary. Additionally, the project provides a means to convey offsite project flows thru the project site into inlet west.

APPENDIX LIST

Appendix 1: Maps

Appendix 2: RCFCWCD-Hydrology Manual

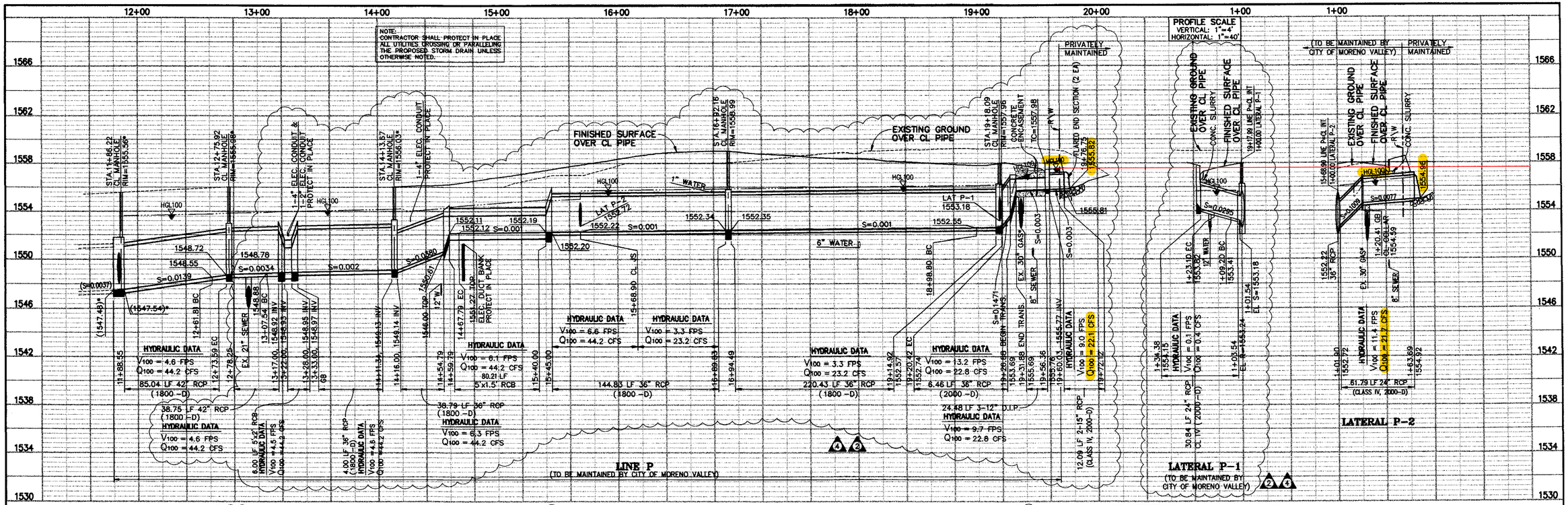
Appendix 3: Post-Development Rational Method Calculations

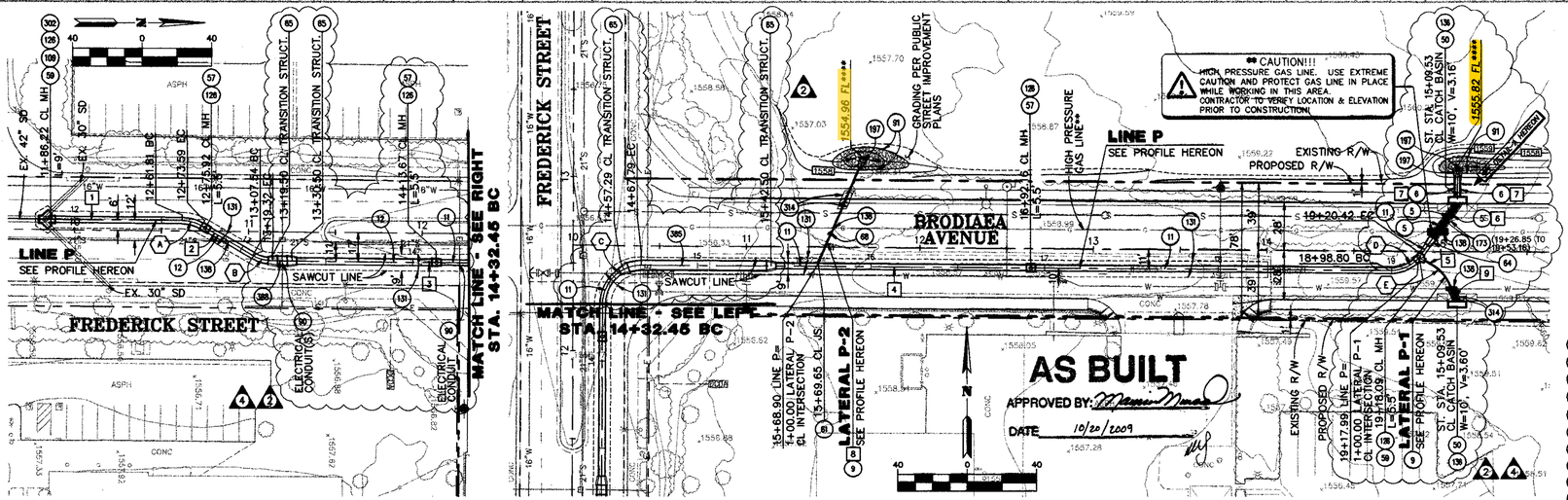
Appendix 4: Hydraulic Calculations

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 1: MAPS

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)





MANHOLE & JUNCTION STRUCTURE DATA TABLE									
S.D. MAINLINE STA.	STRUCTURE TYPE	LATERAL	ANGLE "A"	B	C	D1	D2	EL. S	EL. R
11+86.22	MH	EX.	45°00'00"	30"	3.5'	42"	42"	1548.03	*
15+69.65	JS	P-2	86°36'28"	24"	-	36"	36"	1550.28	-
19+18.09	MH	P-1	78°22'38"	24"	2'	36"	36"	1553.18	1553.24

CONSTRUCTION NOTES

(2) (5) INSTALL 12" DUCTILE IRON PIPE (PROFILE AS SHOWN ON PLANS)
(6) INSTALL 15" RCP (CLASS IV, 2000-D), PROFILE AS SHOWN ON PLANS
(9) INSTALL 24" RCP (CLASS IV, 2000-D), PROFILE AS SHOWN ON PLANS
(11) INSTALL 36" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(12) INSTALL 42" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)

(2) (50) CONSTRUCT CATCH BASIN PER R.C.F.C. & WCD STD. PLAN CB100 (WIDTH & V-DEPTH PER PLAN)
(57) CONSTRUCT MANHOLE No.2 PER R.C.F.C. & WCD STD. PLAN MH252
(59) CONSTRUCT MANHOLE No.4 PER R.C.F.C. & WCD STD. PLAN MH254
(2) (64) CONSTRUCT TRANSITION STRUCTURE PIPE TO PIPE PER R.C.F.C. & WCD STD. PLAN TS303
(2) (65) CONSTRUCT TRANSITION STRUCTURE No.1 PER R.C.F.C. & WCD STD. PLAN TS301
(68) CONSTRUCT CONCRETE COLLAR FOR RCP PER R.C.F.C. & WCD STD. PLAN M803

(2) (85) CONSTRUCT 5'x1.5' RCB PER CALTRANS STD. PLAN D80
(2) (86) CONSTRUCT 5'x2' RCB PER CALTRANS STD. PLAN D80

CONSTRUCTION NOTES CONT'D

(91) INSTALL RIP-RAP PER CALTRANS SPECIFICATIONS AND RIP-RAP DATA TABLE
(105) REMOVE EXISTING MANHOLE STRUCTURE
(106) ADJUST MANHOLE RIM TO GRADE AFTER FINAL SURFACE HAS BEEN INSTALLED
(131) REPLACE PAVEMENT SECTION PER DETAIL ON SHEET 21
(135) FOR CONSTRUCTION OF LOCAL DEPRESSION SEE PUBLIC STREET IMPROVEMENT PLANS
(138) CONSTRUCT BLANKET PROTECTION PER APWA STD. PLAN 225-1
(173) CONSTRUCT CONCRETE ENCASEMENT FOR STORM DRAIN PIPE PER DETAIL ON SHEET 22
(197) INSTALL FLARED END SECTION PER CALTRANS STD. PLAN D94
(301) INSTALL CONCRETE SLURRY BETWEEN PIPES
(302) PROTECT EXISTING LATERALS AND MAINLINE PIPING IN PLACE
(314) PROVIDE FULL DEPTH AC OVER MIN. 3" CONCRETE SLURRY OVER PIPE

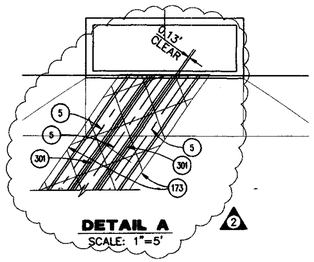
**** NOTE:
WORK OUTSIDE OF PUBLIC RIGHT-OF-WAY CANNOT COMMENCE UNTIL LETTER OF CONSENT HAS BEEN OBTAINED. PLUG PIPE AT RIGHT-OF-WAY, ON PUBLIC SIDE.

COURSE DATA

	BEARING	DISTANCE
1	N00°25'44"E	75.50'
2	N30°25'44"E	33.94'
3	N00°25'44"E	113.13'
4	N89°34'09"W	431.01'
5	N60°03'39"W	5.65'
6	N35°21'27"E	35.93'
7	N00°25'51"E	13.33'
8	N23°27'25"E	62.69
9	N24°39'43"W	11.28'

CURVE DATA

	Δ	R	L	T
A	30°00'00"	22.50'	11.78'	6.03'
B	30°00'00"	22.50'	11.78'	6.03'
C	90°00'07"	22.50'	35.34'	22.50'
D	55°04'23"	22.50'	21.63'	11.73'
E	35°23'55"	22.50'	13.90'	7.18'



NOTE:
LATERAL P-1, P-2 TO BE MAINTAINED BY THE CITY OF MORENO VALLEY WITHIN PUBLIC RIGHT OF WAY. STORM DRAIN OUTSIDE PUBLIC R/W TO BE PRIVATELY MAINTAINED.

* NOTE:
HORIZONTAL AND VERTICAL LOCATIONS TO BE VERIFIED IN THE FIELD AND ENGINEER NOTIFIED OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

CITY OF MORENO VALLEY APPROVALS
LINE P

PREM KUMAR
DEPT. PUBLIC WORKS DIR./ASST. CITY ENGINEER
R.C.E. NO. C52463
DATE 10/20/11

CHRIS V. VOGT
PUBLIC WORKS DIRECTOR/CITY ENGINEER
R.C.E. NO. C44250
DATE 10/20/11

DIGALERT — DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

REGISTERED PROFESSIONAL ENGINEER MAURICE H. MURAD NO. 33366 EXPIRATION 6-30-2010 CIVIL STATE OF CALIFORNIA

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
3990 CONCOURS, SUITE 450 * ONTARIO, CALIFORNIA 91764 * (909) 941-7799
PREPARED UNDER THE SUPERVISION OF: MAURICE H. MURAD
R.C.E. 33366 EXPIRES 6-30-10 DATE 10/20/09

PERMANENT BENCH MARK
B.M. NO. M-61-69 ELEV. 1569.963
LOCATION:
AT THE NORTHWEST CORNER OF FREDERICK STREET AND ALESSANDRO BLVD. 175 FEET WEST OF FREDERICK STREET, 48 FEET NORTH OF ALESSANDRO BLVD. 4 FEET SOUTHWEST OF A GAS STATION LIGHT STANCHION AT THE SOUTH END AND INSIDE OF A 4 INCH HIGH CONCRETE PLANTER SET A BRASS DISK MARKED M-61-69 IN THE TOP OF A CONCRETE POST "NO MARKER POST SET"

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE
1	AS BUILT/RECORD DRAWING		10/20/11
2	REVISED STORM DRAIN TO CLEAR EXISTING UTILITY LINE		

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

DESIGNED BY: M.H.M.
DRAWN BY: H-Z STAFF
DATE DRAWN: 7-2008
CHECKED BY: M.H.M.

RECOMMENDED FOR APPROVAL BY: DATE:
APPROVED BY: DATE:

LINE P
STA. 11+88.55 TO STA. 19+73.36
LATERALS P-1 & P-2

PROJECT NO. 4-0-00737
DRAWING NO. 4-888
SHEET NO. 15A OF 22

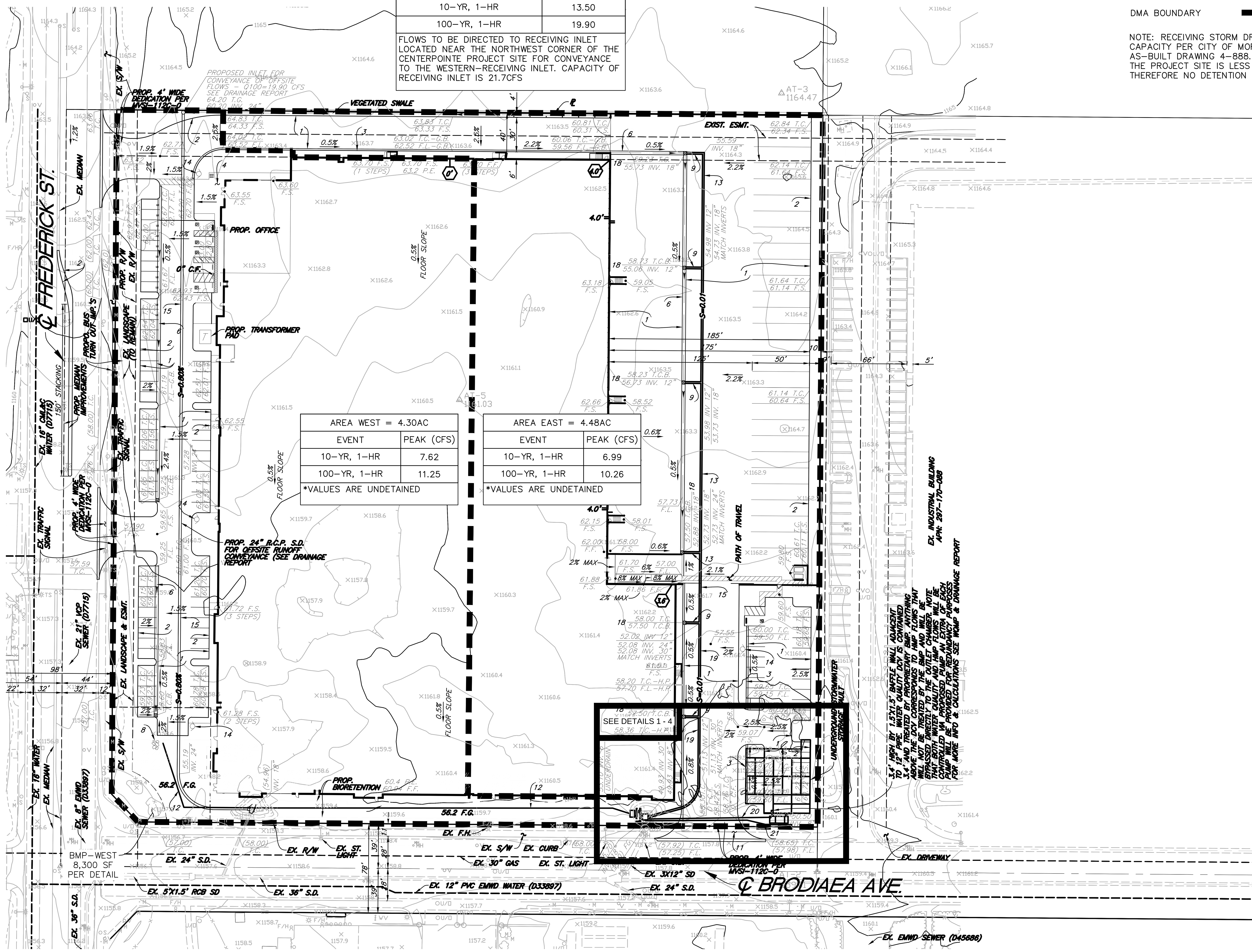
OCT. 15, 2009 16:45 H:\PROJ\1002400\12RHS.DWG

Attachment: Project 1 Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

PROPOSED HYDROLOGY

AREA OFFSITE = 8.9AC	
EVENT	PEAK (CFS)
10-YR, 1-HR	13.50
100-YR, 1-HR	19.90

FLOWS TO BE DIRECTED TO RECEIVING INLET LOCATED NEAR THE NORTHWEST CORNER OF THE CENTERPOINTE PROJECT SITE FOR CONVEYANCE TO THE WESTERN-RECEIVING INLET. CAPACITY OF RECEIVING INLET IS 21.7CFS



AREA WEST = 4.30AC	
EVENT	PEAK (CFS)
10-YR, 1-HR	7.62
100-YR, 1-HR	11.25
*VALUES ARE UNDETAINED	

AREA EAST = 4.48AC	
EVENT	PEAK (CFS)
10-YR, 1-HR	6.99
100-YR, 1-HR	10.26
*VALUES ARE UNDETAINED	

LEGEND

DMA BOUNDARY ▬ ▬ ▬ ▬

NOTE: RECEIVING STORM DRAINS HAVE A SPECIFIED CAPACITY PER CITY OF MORENO VALLEY APPROVED AS-BUILT DRAWING 4-888. UNMITIGATED RUNOFF FROM THE PROJECT SITE IS LESS THAN THE CAPACITY THEREFORE NO DETENTION IS NECESSARY.

50 25 0 50 100 150

SCALE: 1" = 50'

NO.	DESCRIPTION	DATE	APP'D
	REVISIONS		

REC Consultants, Inc.
Civil Engineering • Environmental Land Surveying
2442 Second Avenue
San Diego, CA 92101
(619)232-9200 (619)232-9210 Fax

DATE: 02/05/18
SCALE: 1" = 20'
DRAWN: J.M.W.
CHECKED: B.A.R.

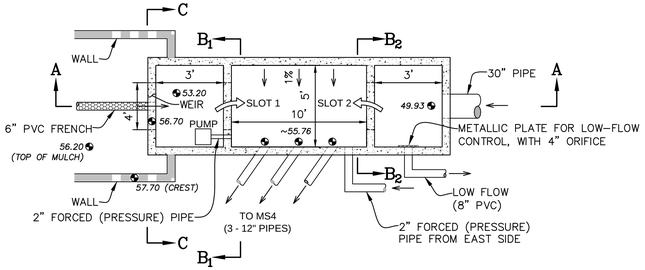
SHEET TITLE: PROPOSED HYDROLOGY

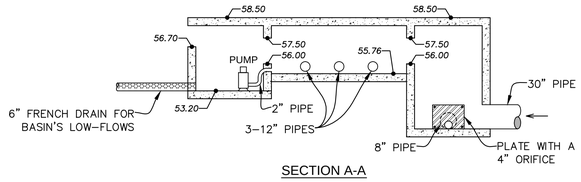
PROJECT: CENTERPOINTE INDUSIATRIAL
FREDERICK ST. AND BRODIAEA AVE.
MORENO VALLEY, CA 92557

SHEET 1 OF 2 SHEETS

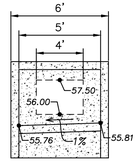
SAVE DATE: 6/11/2018 ~ PLOT DATE: 6/12/2018 ~ FILE NAME: P:\Acad\1379 SDH -- Newcastle Centerpointe\Reports\WQMP\180328_1379-Drainage - Standard\180328_1379-Drainage.dwg

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

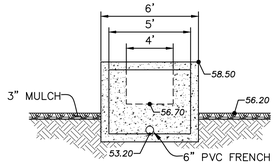




SECTION A-A

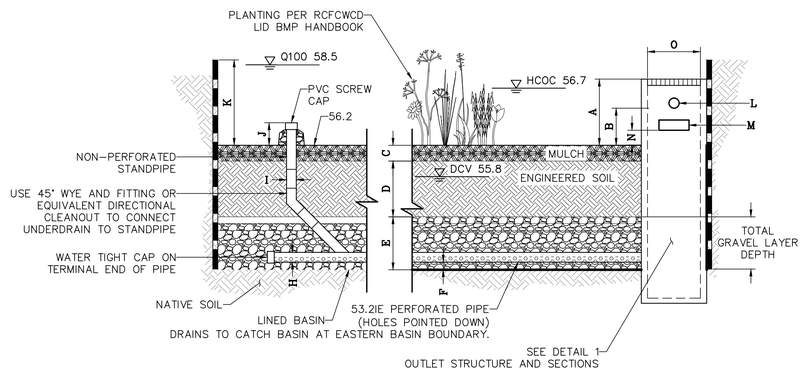


SECTION B1-B1 SLOT DETAILS
(SLOT 1 = SLOT 2) = SECTION B2-B2



SECTION C-C

NOTE:
FOR MODULAR WETLAND, UNDERGROUND SYSTEM & PRESSURE SYSTEM FOR EAST SIDE, SEE DETAIL 2.



TABULATED DATA
BASIN WEST

A	9"
B	N/A"
C	3"
D	24"
E	12"
F	3"
G	N/A
H	6"
I	6"
J	6"
K	4.3'
L	SEE DETAIL 1
M	N/A
N	N/A
O	SEE DETAIL 1
P	N/A

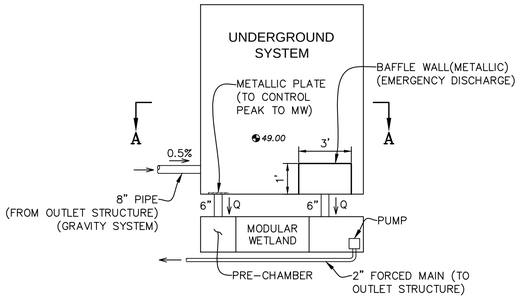
NOTE: ALL SPECIFICATIONS PER LID BMP MANUAL FACT SHEET FOR BIORETENTION BMP

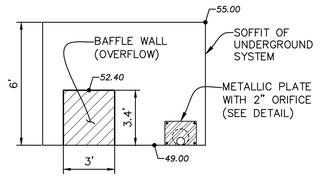
BMP TABLE

BMP #	TYPE	SIZE (SqFt)	ORIFICE SIZE
WEST	BIORETENTION BASIN	8,300	N/A

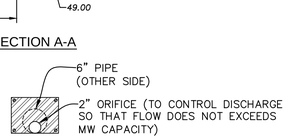
1 OUTLET & SECTIONS
NOT TO SCALE

3 BMP WEST (BIORETENTION)
NOT TO SCALE

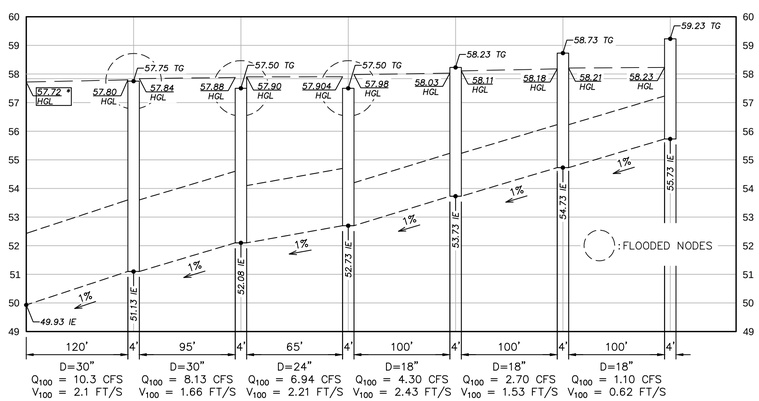




SECTION A-A



ORIFICE DETAIL



* – HGL (HYDRAULIC GRADIENT LINE) SET PER CITY OF MORENO VALLEY APPROVED PLANS (57.60) PLUS ENERGY LOSS TO CONVEY Q_{100} THRU 1.5'x4' RECTANGULAR SLOT (0.12'). HGL VALUES PER WSPG PRINTOUT. SEE PROJECT DRAINAGE STUDY.

2 UNDERGROUND SYSTEM DETAIL
NOT TO SCALE

SITE SPECIFIC DATA			
PROJECT NUMBER	7211		
PROJECT NAME	MORENO VALLEY INDUSTRIAL		
PROJECT LOCATION	MORENO VALLEY, CA		
STRUCTURE ID	BASIN B		
TREATMENT REQUIRED			
VOLUME BASED (CF)	FLOW BASED (CFS)		
8,575	N/A		
TREATMENT HGL AVAILABLE (FT)		N/A	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE		OFFLINE	
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	1550.50	PVC	6"
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE	1550.00	PVC	6"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	1558.00	1558.00	1558.00
SURFACE LOAD	H20 IN-DIRECT	H20 IN-DIRECT	H20 IN-DIRECT
FRAME & COVER	ø30"	30" X 48"	ø24"
WETLANDMEDIA VOLUME (CY)			5.58
WETLANDMEDIA DELIVERY METHOD			PER CONTRACT
ORIFICE SIZE (DIA. INCHES)			ø1.03"

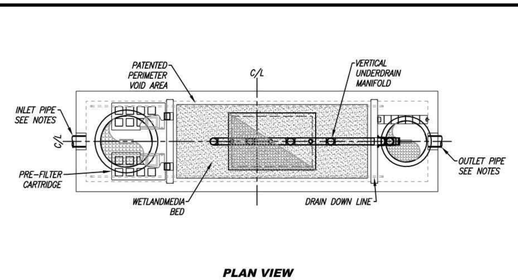
NOTES: PRELIMINARY; NOT FOR CONSTRUCTION. ENGINEER TO SET UPSTREAM BYPASS AT 1553.48.

INSTALLATION NOTES

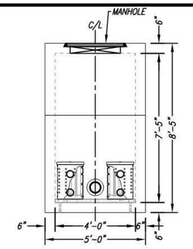
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
3. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. DRIP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING MODULAR WETLANDS FOR ACTIVATION OF UNIT. MANUFACTURES WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A MODULAR WETLANDS REPRESENTATIVE.

GENERAL NOTES

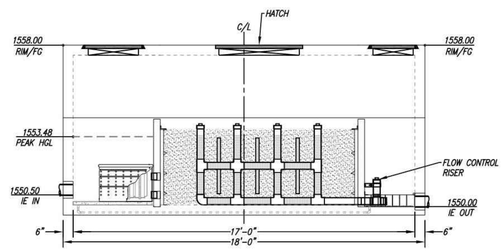
1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT MANUFACTURER.



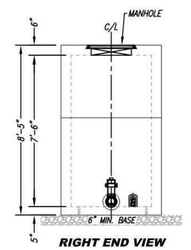
PLAN VIEW



LEFT END VIEW



ELEVATION VIEW



RIGHT END VIEW

REQUIRED TREATMENT VOLUME (CF)	8575
DRAINDOWN DURATION (HOURS)	46
AVERAGE DISCHARGE RATE PER MWS UNIT(GPM)	23.34
OPERATING HEAD (FT)	3.4
WETLANDMEDIA INFILTRATION RATE (IN/HR)	26
WETLANDMEDIA LOADING RATE (GPM/SF) OR	0.26

THE PRODUCT DESCRIBED MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,425,262; 7,470,362; 7,674,378; 8,303,816; RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

PROPRIETARY AND CONFIDENTIAL:
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF MODULAR WETLANDS SYSTEMS. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF MODULAR WETLANDS SYSTEMS IS PROHIBITED.

Bio Clean — A Forterra Company

MWS-L-4-17-V-UG
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

4 MODULAR WETLAND
NOT TO SCALE

REVISIONS

NO.	DESCRIPTION	DATE	APP'D

Civil Engineering · Environmental
Land Surveying
R·E·C Consultants, Inc.
2442 Second Avenue
San Diego, CA 92101
(619)232-9200 (619)232-9210 Fax

DATE: 02/05/18
SCALE: 1" = 20'
DRAWN: J.M.W.
CHECKED: B.A.R.

SHEET TITLE: DETAILS

PROJECT: CENTERPOINTE INDUSTRIAL
FREDERICK ST. AND BRODIAEA AVE.
MORENO VALLEY, CA 92557

SHEET 2 OF 2 SHEETS

SAVE DATE: 6/11/2018 ~ PLOT DATE: 6/12/2018 ~ FILE NAME: P:\Acad\1379 SDH — Newcastle Centerpointe\Reports\WQMP\180328_1379-Drainage — Standard\180328_1379-Drainage.dwg

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 2: HM RATIONAL METHOD - METHODOLOGY

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

INSTRUCTIONS FOR RATIONAL METHOD HYDROLOGY CALCULATIONS

(Based on the Rational Formula, Q = CIA)

1. On map of drainage area, draw drainage system and block off subareas tributary to it.

2. Determine the initial time of concentration, "T", using Plate D-3. The initial area should be less than 10 acres, have a flow path of less than 1,000 feet, and be the most upstream subarea.

3. Using the time of concentration, determine "I", intensity of rainfall in inches per hour, from the appropriate intensity-duration curve for the particular area under study. For areas where standard curves are available, use Plates D-4.1 and D-4.2 to reproduce the standard curve. For areas where curves have not been published by the District, use Plates D-4.3 through D-4.7 to develop a suitable intensity-duration curve.

4. Determine "C", the coefficient of runoff, using the runoff coefficient curve which corresponds as closely as possible with the soil, cover type and development of the drainage area. Standard curves (Plates D-5.1 through D-5.4) have been developed by the District for the common case of urban landscaping type cover. Where these curves are not applicable, curves may be developed using Plates D-5.5 through D-5.8.

5. Determine "A", the area of the subarea in acres.

6. Compute Q = CIA for the subarea.

7. Measure the length of flow to the point of inflow of the next subarea downstream. Determine the velocity of flow in this reach for the peak Q in the type of conveyance being considered (natural channel, street, pipe, or open channel), using the tabling aids on Plates D-6 through D-9.

   Using the reach length and velocity determined above, compute the travel time, and add this time to the time of concentration for the previous subarea to determine a new time of concentration.

8. Calculate Q for the new subarea, using steps 3 through 6 and the new time of concentration. Determine "Q_p", the peak Q for all subareas tributary to the system to this point by adding Q for the new subarea to the summation of Q for all upstream subareas. Determine the time of concentration for the next subarea downstream using Step 7. Continue tabling downstream in similar fashion until a junction with a lateral drain is reached.

RCFC & WCD
HYDROLOGY MANUAL

RATIONAL METHOD
INSTRUCTIONS

PLATE D-1 (1 of 2)

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

9. Start at the upper end of the lateral and table its Q down to the junction with the main line, using the methods outlined in the previous steps.

10. Compute the peak Q at the junction. Let Q_A, T_A, I_A correspond to the tributary area with the longer time of concentration, and Q_B, T_B, I_B correspond to the tributary area with the shorter time of concentration and Q_p, T_p correspond to the peak Q and time of concentration.

a. If the tributary areas have the same time of concentration, the tributary Q's are added directly to obtain the combined peak Q.

$$Q_p = Q_A + Q_B \qquad T_p = T_A = T_B$$

b. If the tributary areas have different times of concentration, the smaller of the tributary Q's must be corrected as follows:

(1) The usual case is where the tributary area with the longer time of concentration has the larger Q. In this case, the smaller Q is corrected by a ratio of the intensities and added to the larger Q to obtain the combined peak Q. The tabling is then continued downstream using the longer time of concentration.

$$Q_p = Q_A + Q_B \frac{I_A}{I_B} \qquad T_p = T_A$$

(2) In some cases, the tributary area with the shorter time of concentration has the larger Q. In this case, the smaller Q is corrected by a ratio of the times of concentration and added to the larger Q to obtain the combined peak Q. The tabling is then continued downsteam using the shorter time of concentration.

$$Q_p = Q_B + Q_A \frac{T_B}{T_A} \qquad T_p = T_B$$

RCFC & WCD
HYDROLOGY MANUAL

RATIONAL METHOD
INSTRUCTIONS

PLATE D-1 (2 of 2)

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

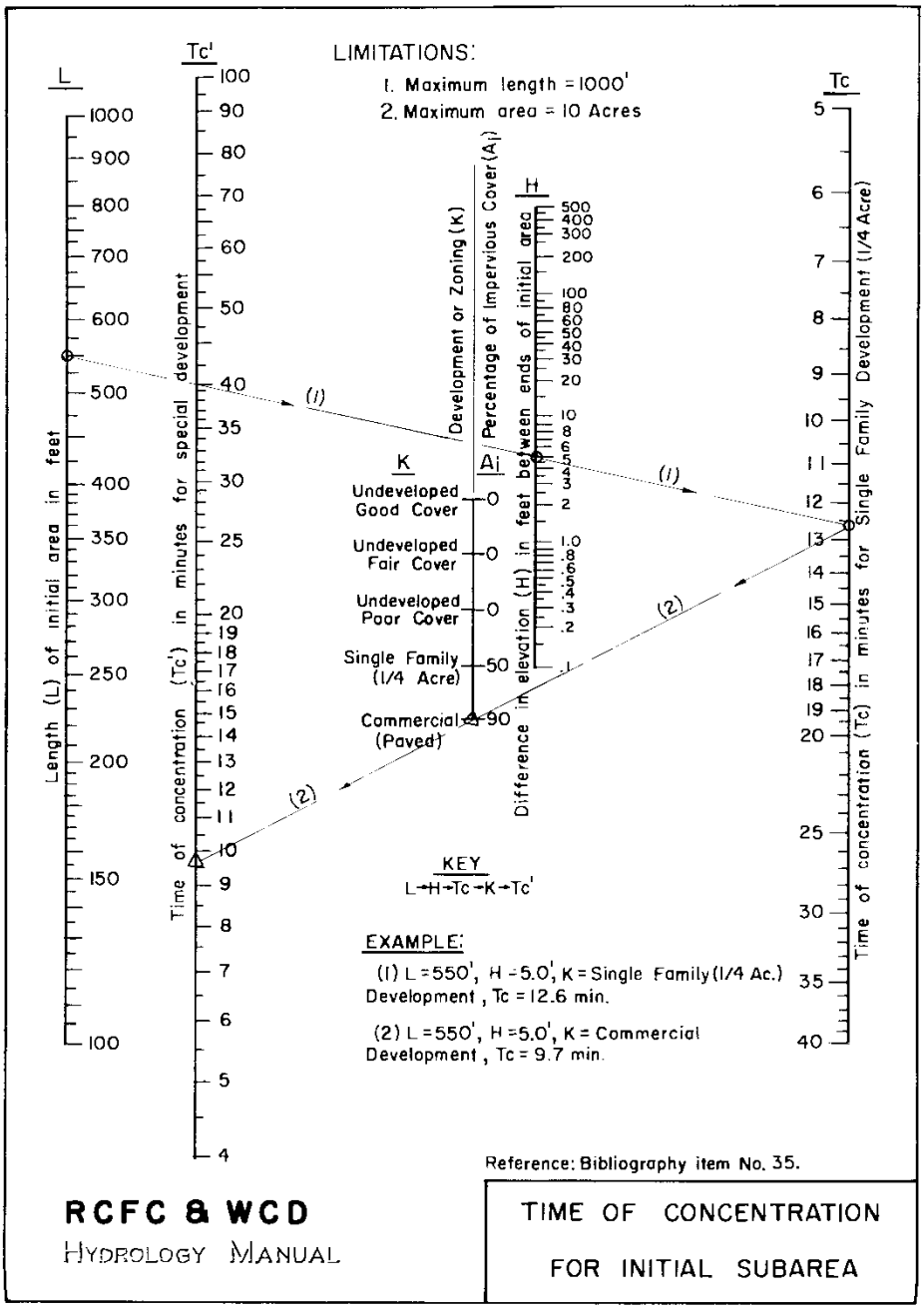


PLATE D-3

DMA WEST: L=600FT, H=8.0FT, K= COMMERCIAL DEVELOPMENT, TC=9.7MIN

DMA EAST: L=950FT, H=6.0FT, K= COMMERCIAL DEVELOPMENT, TC=13MIN

OFFSITE: L=750 FT, H=5.0FT, K= COMMERCIAL DEVELOPMENT, TC=11.5MIN

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

RAINFALL INTENSITY—INCHES PER HOUR

SUNNYMEAD - MORENO

DURATION MINUTES	FREQUENCY 10 YEAR	FREQUENCY 100 YEAR
5	2.84	4.16
6	2.59	3.79
7	2.40	3.51
8	2.25	3.29
9	2.12	3.10
10	2.01	2.94
11	1.92	2.80
12	1.83	2.68
13	1.76	2.58
14	1.70	2.48
15	1.64	2.40
16	1.59	2.32
17	1.54	2.25
18	1.50	2.19
19	1.46	2.13
20	1.42	2.08
22	1.35	1.98
24	1.30	1.90
26	1.25	1.82
28	1.20	1.76
30	1.16	1.70
32	1.12	1.64
34	1.09	1.59
36	1.06	1.55
38	1.03	1.51
40	1.00	1.47
45	.95	1.39
50	.90	1.31
55	.86	1.25
60	.82	1.20
65	.79	1.15
70	.76	1.11
75	.73	1.07
80	.71	1.04
85	.69	1.01

SLOPE = .500

WOODCREST

DURATION MINUTES	FREQUENCY 10 YEAR	FREQUENCY 100 YEAR
5	3.37	5.30
6	3.05	4.79
7	2.80	4.40
8	2.60	4.09
9	2.44	3.83
10	2.30	3.62
11	2.19	3.43
12	2.08	3.27
13	1.99	3.13
14	1.91	3.01
15	1.84	2.89
16	1.78	2.79
17	1.72	2.70
18	1.67	2.62
19	1.62	2.54
20	1.57	2.47
22	1.49	2.34
24	1.42	2.23
26	1.36	2.14
28	1.31	2.05
30	1.26	1.98
32	1.22	1.91
34	1.18	1.85
36	1.14	1.79
38	1.11	1.74
40	1.07	1.69
45	1.01	1.58
50	.95	1.49
55	.90	1.42
60	.86	1.35
65	.82	1.29
70	.79	1.24
75	.76	1.19
80	.73	1.15
85	.71	1.11

SLOPE = .550

RCFC & WCD
HYDROLOGY MANUAL

STANDARD
INTENSITY – DURATION
CURVES DATA

PLATE D-4.1 (6 of 6)

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

District analysis of all available recording rain gauge records in and near the District. This material is also discussed in Section B of this manual.

Coefficient of Runoff Curves - The coefficient of runoff is intended to account for the many factors which influence peak flow rate. The co-efficient depends on the rainfall intensity, soil type and cover, percentage of impervious area, antecedent moisture condition, etc. To account for the difference between actual and effective impervious area it is assumed the maximum runoff rate which can occur from impervious surfaces is 90-percent of the rainfall rate. The runoff from pervious surfaces is further reduced by infiltration. Runoff coefficient curves can be developed using the relationship:

$$C = 0.9\left[A_i + \frac{I - F_p}{I} A_p\right]$$

where:

C = Runoff coefficient

I = Rainfall intensity - inches/hour

F_p = Infiltration rate for pervious areas - inches/hour

A_i = Impervious area (actual) - decimal percent

A_p = Pervious area (actual) - decimal percent

and $A_p = 1.00 - A_i$

The infiltration rate for pervious areas, "F_p", can be estimated using the methods discussed in Section C of this manual for various combinations of soil type, cover type and antecedent moisture condition (AMC). In practice it is not necessary for the engineer to make these computations, as runoff coefficient curve data has been tabulated by the District on Plate D-5.7 for the working range of runoff index (RI) numbers. Runoff coefficient curves can be developed for any combination of conditions by simply plotting the data from Plate D-5.7 on Plate D-5.8.

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

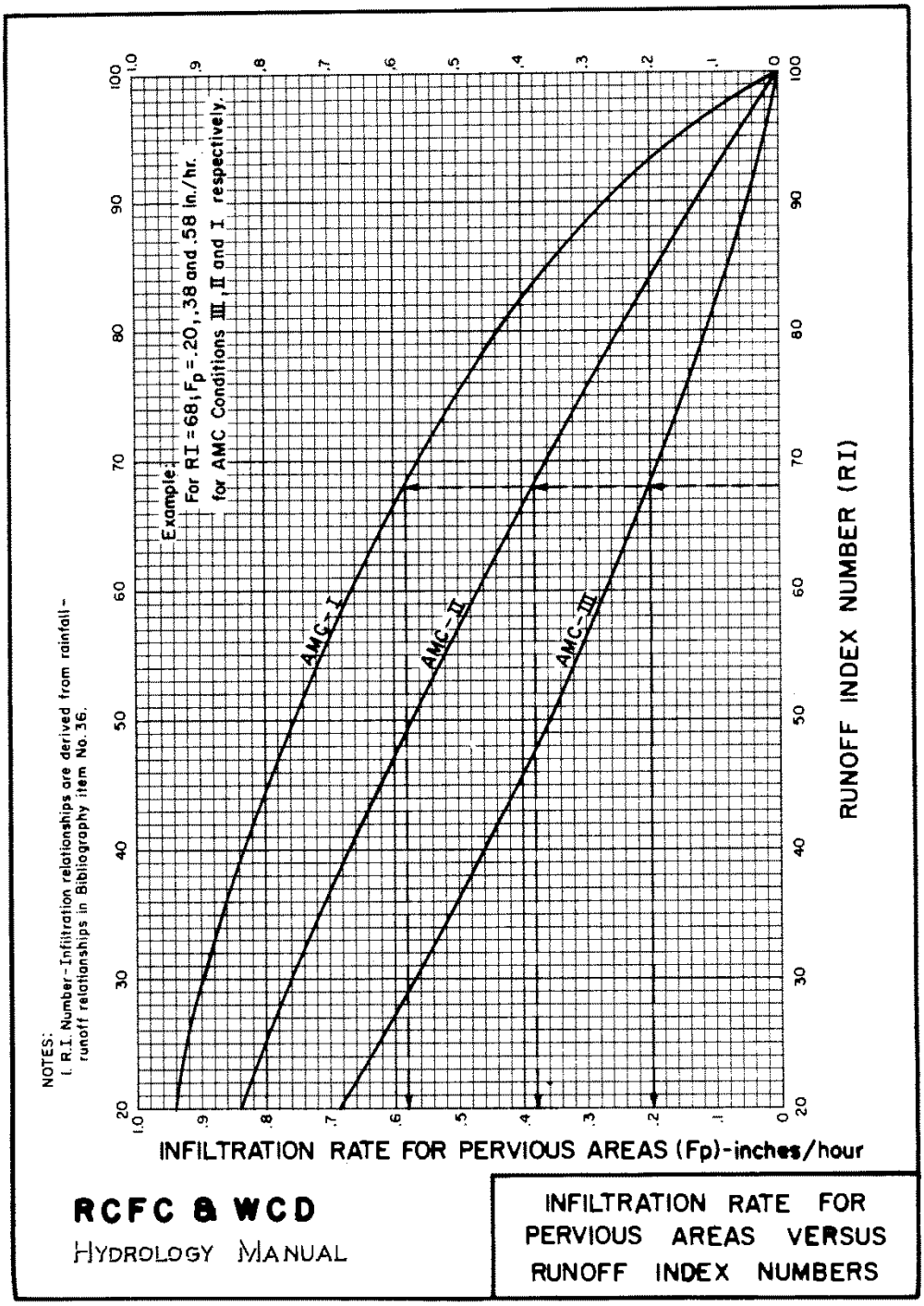


PLATE E-6.2

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 3: POST DEVELOPMENT RATIONAL METHOD CALCULATIONS

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

10-year-1hr-WEST			Reference
C	0.869		Plate D-5.3
tc	9.7	min	Plate D-3
i	2.04	in/hr	Plate D-4.1
a	4.30	ac	
Q	7.62	cfs	

10-year-1hr-EAST			Reference
C	0.885		Plate D-5.3
tc	13	min	Plate D-3
i	1.76	in/hr	Plate D-4.1
a	4.48	ac	
Q	6.99	cfs	

10-year-1hr-SUM 14.61 CFS

100-year-1hr-WEST			Reference
C	0.879		Plate D-5.3
tc	9.7	min	Plate D-3
i	2.98	in/hr	Plate D-4.1
a	4.30	ac	
Q	11.25	cfs	

100-year-1hr-EAST			Reference
C	0.890		Plate D-5.3
tc	13	min	Plate D-3
i	2.57	in/hr	Plate D-4.1
a	4.48	ac	
Q	10.26	cfs	

100-year-1hr-SUM 21.51 CFS

10-year-1hr-OFFSITE			Reference
C	0.871		Plate D-5.3
tc	13.3	min	Plate D-3
i	1.74	in/hr	Plate D-4.1
a	8.90	ac	
Q	13.5	cfs	

100-year-1hr-OFFSITE			Reference
C	0.880		Plate D-5.3
tc	13.3	min	Plate D-3
i	2.54	in/hr	Plate D-4.1
a	8.90	ac	
Q	19.9	cfs	

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 4: HYDRAULIC CALCULATIONS

Grate inlet calculations based on weir formula

Inlet 1 (2'x2' box) Grated Inlet		
c	3.1	
L	4	ft (include Safety Factor of 2)
H	0.20	
Q	1.10	cfs

Inlet 2 (2'x2' box) Grated Inlet		
c	3.1	
L	4	ft (include Safety Factor of 2)
H	0.26	
Q	1.60	cfs

Inlet 3 (2'x2' box) Grated Inlet		
c	3.1	
L	4	ft (include Safety Factor of 2)
H	0.26	
Q	1.60	cfs

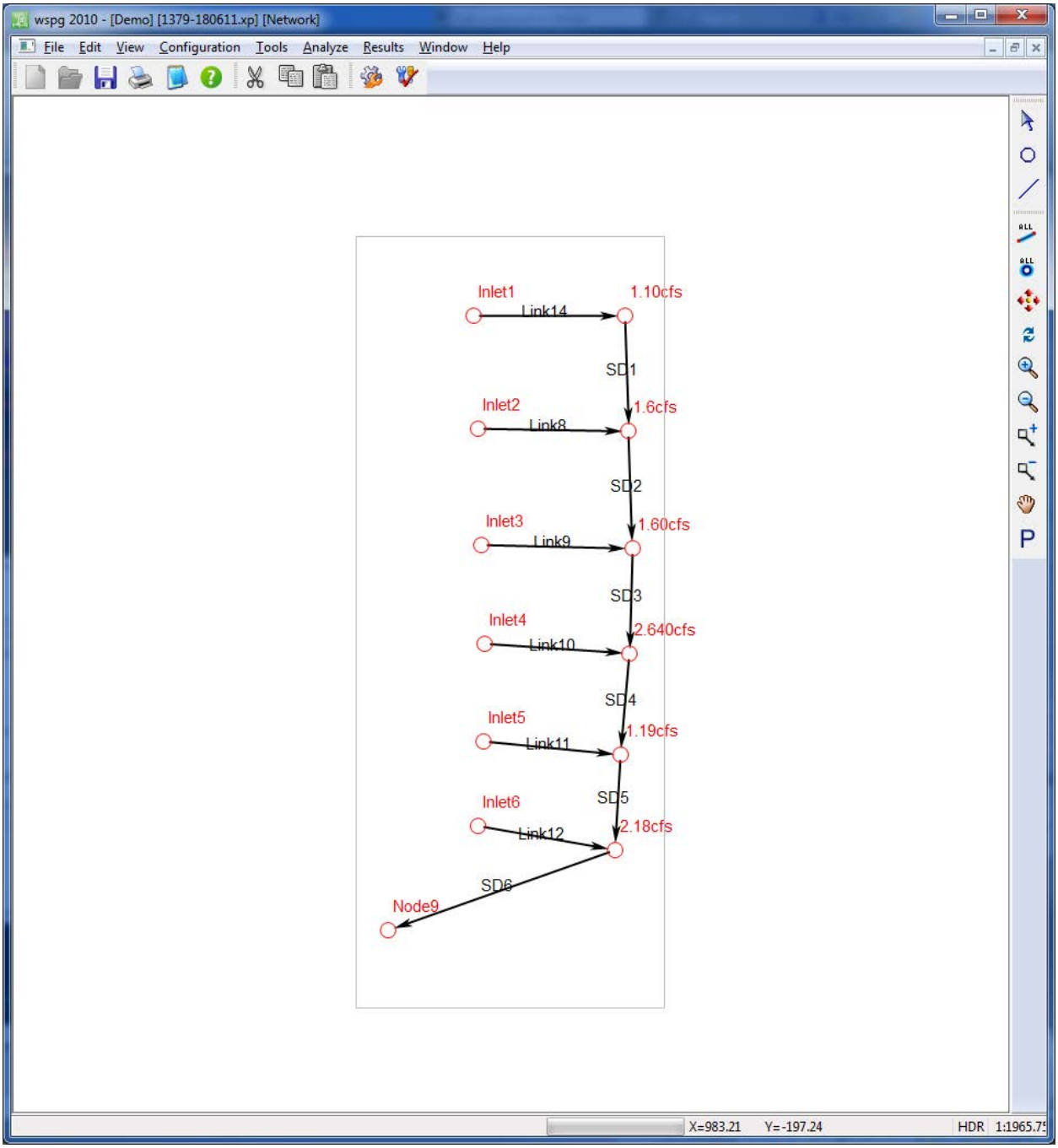
Inlet 4 (3'x3' box) Grated Inlet		
c	3.1	
L	6	ft (include Safety Factor of 2)
H	0.27	
Q	2.64	cfs

Inlet 5 (3'x3' box) Grated Inlet		
c	3.1	
L	6	ft (include Safety Factor of 2)
H	0.16	
Q	1.19	cfs

Inlet 6 (3'x3' box) Grated Inlet		
c	3.1	
L	4	ft (include Safety Factor of 2)
H	0.31	
Q	2.14	cfs

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Storm Drain Analysis to obtain WSE performed with WSPG



Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

```
************************************
Water Surface Profile Gradient (WSPG)
XP WSPG
Engine Version 1.3         06/09/2010
XP Software        www.xpsoftware.com
************************************

INPUT FILE
************************************
C:\XPS\wspg2010\Samples\1379-180611.wsx
Computed  06/12/18  09:13:54

TITLE INFORMATION
************************************

WARNING SUMMARY
************************************
 WARNING 48: Manning's n for pipe flow of element 1.6cfs not in recommended range 0.010 - 0.015.
 WARNING 48: Manning's n for pipe flow of element 1.60cfs not in recommended range 0.010 - 0.015.
 WARNING 48: Manning's n for pipe flow of element 2.640cfs not in recommended range 0.010 - 0.015.
 WARNING 48: Manning's n for pipe flow of element 1.19cfs not in recommended range 0.010 - 0.015.
 WARNING 48: Manning's n for pipe flow of element 2.18cfs not in recommended range 0.010 - 0.015.
 WARNING 36: D/S processing stopped in junction 1.10cfs because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction 1.6cfs because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction 1.60cfs because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction 2.640cfs because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction 1.19cfs because critical momentum is greater than maximum momentum.
 WARNING 36: D/S processing stopped in junction 2.18cfs because critical momentum is greater than maximum momentum.

RESULTS
************************************

============================================================
   Main Line
============================================================

 Composite Profile:

ELEMENT    TYPE       STATION    INVERT   GROUND   W.S.      DEPTH    Q        VELOC.  VELOC.  ENERGY     SUPER   CRITICAL  FROUDE  SLOPE    NORMAL   CROSS
NAME                             ELEV     ELEV     ELEV                         HEAD    GRADE LN   ELEV    DEPTH     NUMBER           DEPTH    SECTION
---------- ---------- ---------- -------- -------- --------  -------- -------- ------- ------  ---------- ------  --------  ------  -------  ------   ---------
###
"Node9"    Outlet     0.00       49.93    58.00    57.720    7.790    10.31    2.10    0.07    57.79      0.000   1.073     0.000   0.00000  0.000    Pipe
"SD6"      Reach      120.00     51.13    57.75    *57.796   6.666    10.31    2.10    0.07    57.86      0.000   1.073     0.000   0.01000  0.854    Pipe
"2.18cfs"  Join       120.00     51.13    57.75    *57.842   6.712    8.13     1.66    0.04    57.88      0.000   0.948     0.000   0.00000  0.000    Pipe
"SD5"      Reach      215.00     52.08    57.50    *57.879   5.799    8.13     1.66    0.04    57.92      0.000   0.948     0.000   0.01000  0.755    Pipe
"1.19cfs"  Join       215.00     52.08    57.50    *57.900   5.820    6.94     1.41    0.03    57.93      0.000   0.874     0.000   0.00000  0.000    Pipe
"SD4"      Transition 280.00     52.73    57.50    *57.904   5.174    6.94     2.21    0.08    57.98      0.000   0.934     0.000   0.01000  0.000    Pipe
"2.640cfs" Join       280.00     52.73    57.50    *57.976   5.246    4.30     1.37    0.03    58.00      0.000   0.728     0.000   0.00000  0.000    Pipe
"SD3"      Transition 380.00     53.73    58.23    58.027    4.297    4.30     2.43    0.09    58.12      0.000   0.795     0.000   0.01000  0.000    Pipe
"1.60cfs"  Join       380.00     53.73    58.23    58.113    4.383    2.70     1.53    0.04    58.15      0.000   0.623     0.000   0.00000  0.000    Pipe
"SD2"      Reach      480.00     54.73    58.73    58.179    3.449    2.70     1.53    0.04    58.22      0.000   0.623     0.000   0.01000  0.519    Pipe
"1.6cfs"   Join       480.00     54.73    58.73    58.214    3.484    1.10     0.62    0.01    58.22      0.000   0.392     0.000   0.00000  0.000    Pipe
"SD1"      Reach      580.00     55.59    59.23    58.225    2.635    1.10     0.62    0.01    58.23      0.000   0.392     0.000   0.00860  0.340    Pipe
"1.10cfs"  Junction   583.00     55.59    59.23    58.226    2.636    1.10     0.62    0.01    58.23      0.000   0.392     0.000   0.00000  0.000    Pipe
"Link14"   Reach      598.00     55.73    59.23    58.227    2.497    1.10     0.62    0.01    58.23      0.000   0.392     0.000   0.00933  0.333    Pipe
"Inlet1"   Headwrk    598.00     55.73    59.23    58.227    2.497    1.10     0.62    0.01    58.23      0.000   0.392     0.000   0.00000  0.000    Pipe

 *) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
    i.p. = intermediate point processing results for reaches
```

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

```
============================================================
   1.6cfs_Link8
============================================================

 Composite Profile:

ELEMENT    TYPE       STATION    INVERT   GROUND   W.S.      DEPTH    Q        VELOC.  VELOC.  ENERGY     SUPER   CRITICAL  FROUDE  SLOPE    NORMAL   CROSS
NAME                             ELEV     ELEV     ELEV                                HEAD    GRADE LN   ELEV    DEPTH     NUMBER           DEPTH    SECTION
---------- ---------- ---------- -------- -------- --------  -------- -------- ------- ------ ---------- ------  --------  ------  -------  ------   ---------
###
"Outlet/1" Outlet     480.00     54.73    58.73    58.197    3.467    1.60     0.91    0.01   58.21      0.000   0.475     0.000   0.00000  0.000    Pipe
"Link8"    Transition 495.00     55.06    58.73    58.172    3.112    1.60     2.04    0.06   58.24      0.000   0.536     0.000   0.02200  0.000    Pipe
"Inlet2"   Headwrk    495.00     55.06    58.73    58.172    3.112    1.60     2.04    0.06   58.24      0.000   0.536     0.000   0.00000  0.000    Pipe

 *) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
    i.p. = intermediate point processing results for reaches


============================================================
   1.60cfs_Branch2
============================================================

 Composite Profile:

ELEMENT    TYPE       STATION    INVERT   GROUND   W.S.      DEPTH    Q        VELOC.  VELOC.  ENERGY     SUPER   CRITICAL  FROUDE  SLOPE    NORMAL   CROSS
NAME                             ELEV     ELEV     ELEV                                HEAD    GRADE LN   ELEV    DEPTH     NUMBER           DEPTH    SECTION
---------- ---------- ---------- -------- -------- --------  -------- -------- ------- ------ ---------- ------  --------  ------  -------  ------   ---------
###
"Outlet/1" Outlet     380.00     53.73    58.23    58.070    4.340    1.60     0.91    0.01   58.08      0.000   0.475     0.000   0.00000  0.000    Pipe
"Link9"    Transition 395.00     56.73    58.23    58.046    1.316    1.60     2.04    0.06   58.11      0.000   0.536     0.000   0.20000  0.000    Pipe
"Inlet3"   Headwrk    395.00     56.73    58.23    58.046    1.316    1.60     2.04    0.06   58.11      0.000   0.536     0.000   0.00000  0.000    Pipe

 *) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
    i.p. = intermediate point processing results for reaches


============================================================
   2.640cfs_Branch1
============================================================

 Composite Profile:

ELEMENT    TYPE       STATION    INVERT   GROUND   W.S.      DEPTH    Q        VELOC.  VELOC.  ENERGY     SUPER   CRITICAL  FROUDE  SLOPE    NORMAL   CROSS
NAME                             ELEV     ELEV     ELEV                                HEAD    GRADE LN   ELEV    DEPTH     NUMBER           DEPTH    SECTION
---------- ---------- ---------- -------- -------- --------  -------- -------- ------- ------ ---------- ------  --------  ------  -------  ------   ---------
###
"Outlet/2" Outlet     280.00     52.73    57.50    *57.940   5.210    2.64     0.84    0.01   57.95      0.000   0.566     0.000   0.00000  0.000    Pipe
"Link10"   Transition 295.00     52.88    57.50    *57.927   5.047    2.64     1.49    0.03   57.96      0.000   0.616     0.000   0.01000  0.000    Pipe
"Inlet4"   Headwrk    295.00     52.88    57.50    *57.927   5.047    2.64     1.49    0.03   57.96      0.000   0.616     0.000   0.00000  0.000    Pipe

 *) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
    i.p. = intermediate point processing results for reaches


============================================================
   1.19cfs_Branch1
============================================================

 Composite Profile:

ELEMENT    TYPE       STATION    INVERT   GROUND   W.S.      DEPTH    Q        VELOC.  VELOC.  ENERGY     SUPER   CRITICAL  FROUDE  SLOPE    NORMAL   CROSS
NAME                             ELEV     ELEV     ELEV                                HEAD    GRADE LN   ELEV    DEPTH     NUMBER           DEPTH    SECTION
---------- ---------- ---------- -------- -------- --------  -------- -------- ------- ------ ---------- ------  --------  ------  -------  ------   ---------
```

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

```
###
"Outlet/1" Outlet     215.00     52.08    57.50    *57.889   5.809    1.19     0.24    0.00   57.89      0.000   0.354    0.000   0.00000  0.000    Pipe
"Link11"   Transition 227.00     55.50    57.50    *57.868   2.368    1.19     1.52    0.04   57.90      0.000   0.459    0.000   0.28500  0.000    Pipe
"Inlet5"   Headwrk    227.00     55.50    57.50    *57.868   2.368    1.19     1.52    0.04   57.90      0.000   0.459    0.000   0.00000  0.000    Pipe

 *) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
    i.p. = intermediate point processing results for reaches


============================================================
   2.18cfs_Branch1
============================================================

 Composite Profile:

ELEMENT    TYPE       STATION    INVERT   GROUND   W.S.      DEPTH    Q        VELOC.  VELOC.  ENERGY     SUPER   CRITICAL FROUDE  SLOPE    NORMAL   CROSS
NAME                             ELEV     ELEV     ELEV                         HEAD    GRADE LN   ELEV    DEPTH    NUMBER           DEPTH    SECTION
---------- ---------- ---------- -------- -------- --------  -------- -------- ------- ------ ---------- ------  -------- ------  -------  ------   ---------
###
"Outlet/2" Outlet     120.00     51.13    57.75    *57.819   6.689    2.18     0.44    0.00   57.82      0.000   0.482    0.000   0.00000  0.000    Pipe
 HYDRAULIC JUMP  at  129.83  of length  0.00
          jump data U/S processing: 129.83     64.77    71.39    64.880    0.111    2.18     45.57   32.24  97.12      0.000   0.630    33.934  1.38700  0.000    Pipe
          jump data D/S processing: 129.83     64.77    71.39    65.390    0.621    2.18     4.25    0.28   65.67      0.000   0.630    1.355   1.38700  0.000    Pipe
"Link12"   Transition 130.00     65.00    70.00    65.629    0.629    2.18     4.19    0.27   65.90      0.000   0.630    1.005   1.38700  0.000    Pipe
"Inlet6"   Headwrk    130.00     65.00    70.00    65.630    0.630    2.18     4.18    0.27   65.90      0.000   0.630    0.000   0.00000  0.000    Pipe

 *) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
    i.p. = intermediate point processing results for reaches
```

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Detail 1: Outlet Structure and Sections

Runoff from DMA-West will be conveyed via street flow to the proposed bioretention basin. For Q100 purposes, the runoff will pond to an elevation greater than 56.70 at which point it will begin to spillover a 4-ft weir into a proposed box with a floor elevation of 53.20. Water will then pond to an elevation of 56.0 at which point it will spillover a proposed slot 4ft x 1.5ft into an adjacent box. The adjacent box contains the 3-12" diameter existing laterals (55.76 ie) which will receive and convey onsite runoff. Once the water level receeds to below 56.0, flows will be conveyed to the adjacent box via pump.

The aforementioned weir and slot were sized to convey the unmitigated Q100 runoff (11.3cfs) from DMA-West. The weir was sized per the weir formula. Due to the anticipated water level in the slot, the slot was sized using the orifice formula.

DMA-West

Weir			Slot		
			h:	1.5	ft
c	3.1		Q:	11.3	cfs
L	4	ft	cg:	0.61	
h	0.94	ft	Ah:	0.148	ft
Q	11.3				
			W:	4.00	ft

Runoff from DMA-East will be conveyed via street flow and storm drain to another proposed box with a floor elevation of 49.93. For Q100 purposes, the water will then pond to an elevation of 56.0 at which point it will spillover a proposed slot 4ft x 1.5ft into the aforementioned box containing the existing latereals. Once the water level receeds to below 56.0, flows will be conveyed to a proposed underground detention system via stormdrain. The flows will then pass through or bypass directly into the outlet chamber of a proposed proprietary BMP. The outlet chamber contains a pump which will pump the flows to the box containing the laterals.

The aforementioned slot was sized to convey the unmitigated Q100 runoff (10.3cfs) from DMA-West. Due to the anticipated water level in the slot, the slot was sized using the orifice formula.

DMA-East

Slot

h:	1.5	ft
Q:	10.3	cfs
cg:	0.61	
Ah:	0.123	ft
Q	10.3	
W:	4.00	ft

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

It is important to understand the following:

Under the occurrence of Q100 conditions, most of the flow will be conveyed out of the drainage system by gravity as water will overflow into the chamber that contains the 3 – 12" existing pipes. Once the storm ends, water will drain out of the central chamber to the zero level, and will be ponding all over the drainage system to the slot level (56.0 ft). Therefore, all ponding water will be discharged via pumps as the existing drainage system receiving the peak flows is not deep enough to allow full gravity drainage.

Nonetheless, as the peak flows are draining by gravity, the pumps do not need to be designed for conveyance of the Q100, but rather for conveyance of the 10% Q2 criteria associated with hydromodification conditions.

Attachment: Project 1_Hydrology Report (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

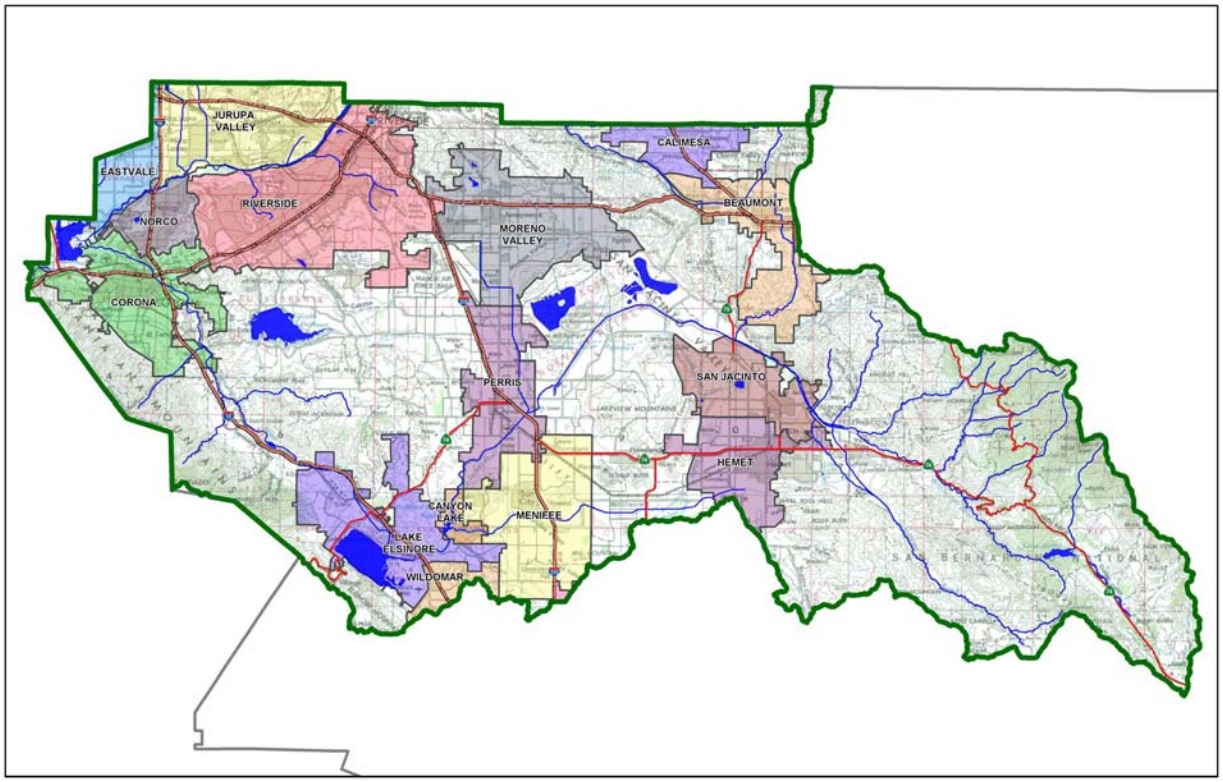
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Centerpointe Industrial Warehouse

Development No: Insert text here

Design Review/Case No: PEN18-0023/LWQ18-0004



☒ **Preliminary**
☐ **Final**

Original Date Prepared: 1-31-2018

Revision Date(s): 4/9/2018 5/30/2018

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**

Contact Information:

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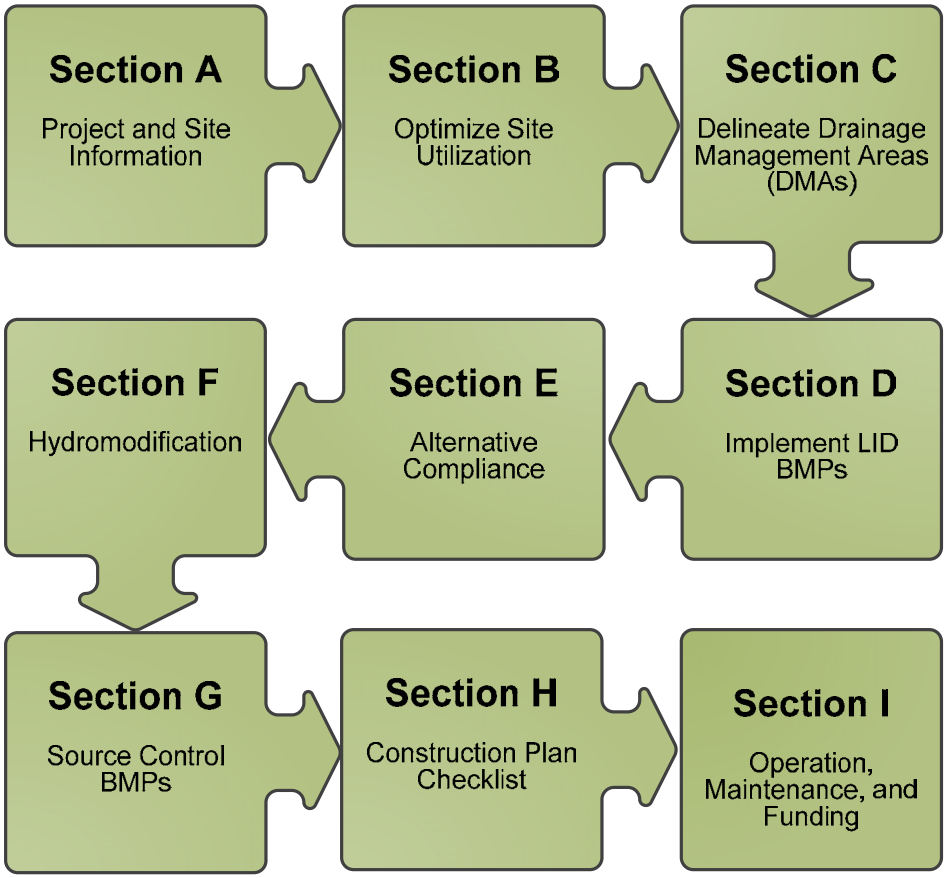
Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for Newcastle Partners by REC Consultants, Inc. for the Centerpointe Industrial Warehouse project.

This WQMP is intended to comply with the requirements of City of Moreno Valley for Ordinance No. 827 § 2.1, 2011 which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under City of Moreno Valley Water Quality Ordinance (Municipal Code Section8.10).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature	5/31/18 Date
Jason Evans, PE Preparer's Printed Name	Director of Water Quality Preparer's Title/Position

Preparer's Licensure: C74792 (exp. 12-31-19)

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Section A: Project and Site Information

The proposed project is an industrial warehouse development and encompasses a building and associated parking and landscape. Runoff from the western portion of the project is to be treated by a proposed bioretention basin. Runoff from the eastern portion of the project is to be treated by a proprietary BMP which is downstream of a proposed underground detention system.

PROJECT INFORMATION		
Type of Project:	Industrial Warehouse with associated parking lot, sidewalks, and landscape.	
Planning Area:	Vacant Land (VAC)	
Community Name:	TBD	
Development Name:	Centerpointe Industrial Warehouse	
PROJECT LOCATION		
Latitude & Longitude (DMS): 33°54'51.52 N and 117°15'36.82"		
Project Watershed and Sub-Watershed: Santa Ana Watershed (801), San Jacinto Valley Hydrologic Unit (802.00), and Perris Valley Hydrologic Sub-Area (802.11)		
APN(s): 297-170-029		
Map Book and Page No.: The Thomas Guide California Road Atlas (2001) -- Page 285, Grid A-6		
PROJECT CHARACTERISTICS		
Proposed or Potential Land Use(s)	Industrial Warhouse (specific use TBD depending on future occupant)	
Proposed or Potential SIC Code(s)	4225 (specific SIC code TBD depending on future occupant)	
Area of Impervious Project Footprint (SF)		343,636 sq-ft
Total Area of proposed Impervious Surfaces within the Project Limits (SF)/or Replacement		343,636 sq-ft
Does the project consist of offsite road improvements?		☐ Y ☒ N
Does the project propose to construct unpaved roads?		☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?		☐ Y ☒ N
EXISTING SITE CHARACTERISTICS		
Total area of existing Impervious Surfaces within the project limits (SF)		O sq-ft
Is the project located within any MSHCP Criteria Cell?		☐ Y ☒ N
If so, identify the Cell number:		N/A
Are there any natural hydrologic features on the project site?		☐ Y ☒ N
Is a Geotechnical Report attached?		☒ Y ☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)		N/A
What is the Water Quality Design Storm Depth for the project?		0.63

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
City of Moreno Valley Public Storm Drain	None Listed	None Listed	Not Designated As Rare
Perris Valley Storm Drain	None Listed	None Listed	Not Designated As Rare
San Jacinto River Reach 3 (H.U. No. 802.11)	None Listed	AGR, GWR, REC1, REC 2, WARM, WILD	Not Designated As RARE[A]
Canyon Lake (H.U. No. 802.11 ((802.12)	Nutrients and Pathogens	MUN, AGR, GWR, REC1, REC 2, WARM, WILD	Not Designated As RARE[A]
San Jacinto River Reach 1 (H.U. No. 802.32)	None Listed	MUN, AGR, GWR, REC1, REC 2, WARM, WILD	Not Designated As RARE[A]
Lake Elsinore (H.U. No. 802.31)	Nutrients, Organic Enrichment/Low Dissolved Oxygen, Polychlorinated Biphenyls (PCBs) Sediment Toxicity and Unknown Toxicity	REC 1, REC 2, WARM, WILD	Not Designated As RARE[A]

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☐ Y	☒ N
US Army Corps of Engineers, CWA Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☒ Y	☐ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)* • *City of Moreno Valley Grading Permit* • *City of Moreno Valley Building Permit*	 ☒ Y ☒ Y	 ☐ N ☐ N

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, constraints might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. Opportunities might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your LID design and explain your design decisions to others.

The 2010 Santa Ana MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

Yes -- in existing conditions the site drains from north to south and connects to the public storm drain system via 2 existing inlets located along the southern edge of the site. Site topography will be altered to in order to grade in the building pad but the drainage pattern will more or less be maintained by the proposed development. The modifications will be the replacement of overland flow on permeable surfaces with flows directed by impervious curbs, gutters and swales. Runoff will be directed to onsite BMPs designed to address post-development water quality, hydromodification and flood control. These stormwater BMPs have been designed to utilize the existing lateral connections to convey treated flows and overflows from the site to the public storm drain system in the same manner as in pre-development conditions (furthermore the outlet structures have been designed such that post-development peak flows will not exceed pre-development peak flow rates.

Did you identify and protect existing vegetation? If so, how? If not, why?

Yes – the site has been designed to preserve the vegetation (landscaping) along its western edge (Frederick Street frontage). The remainder of the site has been previously graded and contains only limited vegetation (i.e. no significant mature trees or shrubs) which will not be preserved as part of the development.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

No – according to the Updated Geotechnical Engineering Investigation prepared by NorCal Engineering (December, 2017) included under WQMP Appendix 3, soils onsite infiltrate relatively poorly (rates measured at 0.12-and-0.22 in/hr). This rate is well below what the County deems acceptable for implementing infiltration-based BMPs so the project has not attempted to maintain the soils natural infiltration capacity.

Did you identify and minimize impervious area? If so, how? If not, why?

Yes – impervious areas (including # of parking spaces, width of parking spaces, width of drive aisles, building size, etc.) have minimized as much as practical while still meeting the needs of the proposed site usage and maintaining compliance with the City of Moreno Valley design requirements.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

Yes – the site has been designed to direct runoff from impervious surfaces to permeable BMPs to address post-development water quality. A traditional Bioretention Basin has been incorporated near the southwest corner to treat runoff from the western portion of the project site. Similarly, a proprietary Bioretention BMP (combined with underground storage vaults) has been designed near the southeast corner to treat runoff from the eastern portion of the project site.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)[1]	Area (Sq. Ft.)	DMA Type
DMA East	Roofs, Concrete or Asphalt & Ornamental Landscaping	Total = 195,288 sq-ft -Impervious = 180,086 sq-ft -Pervious = 15,220 sq-ft	Type D (Area Draining to BMP)
DMA West	Concrete or Asphalt & Ornamental Landscaping	Total = 187,170sq-ft -Impervious = 152,256 sq-ft -Pervious = 34,914 sq-ft	Type D (Area Draining to BMP)

[1] *Reference Table 2-1 in the WQMP Guidance Document to populate this column*

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
N/A	N/A	N/A	N/A

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				**Type 'C' DMAs that are draining to the Self-Retaining Area**		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches) [D]
N/A	N/A	N/A	N/A	N/A	N/A	N/A

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet) [A]	Post-project surface type	Runoff factor [B]	Product [C] = [A] x [B]	DMA name /ID	Area (square feet) [D]	Ratio [C]/[D]
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA East	BMP East (Proprietary Bioretention BMP combined with underground vault)
DMA West	BMP West (Bioretention Basin)

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☒ Y ☐ N

If yes has been checked, Infiltration BMPs shall not be used for the site. If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		X
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?	X	
If Yes, list affected DMAs: All (DMA East and DMA West)		
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		X
Describe here:		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

D.2 Harvest and Use Assessment

Please check what applies*:*

☐ Reclaimed water will be used for the non-potable water demands for the project.

☐Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).

☐The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If neither of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: 1.10 acres

Type of Landscaping (Conservation Design or Active Turf): Native and/or drought tolerant vegetation

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 7.68 acres

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: 0.95 ac/ac

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: 7.27 acres

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
7.27 acres	1.10 acres

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: TBD -- asuumed to be 30 Users (exact value depends on future occupant use)

Project Type: Industrial

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 7.68 acres

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-1 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: 180 Users/imp acre

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users: 1381 Users

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	Projected number of toilet users (Step 1)
1381 Users	30 Users

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

TBD -- Potentail industiral uses for non-potable water may be applicable to future uses at the site depending on the future occupant.

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: TBD -- asuumed to be 2500 gpd (exact value depends on future occupant use)

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as

a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 7.68 acres

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-3 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-3: 990 gpd/imp acre

Step 4: Multiply the unit value obtained from Step 4 by the total of impervious areas from Step 3 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: 7600 gpd

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required non-potable use (Step 4)	**Projected average daily use (Step 1)**
7600 gpd	2500 gpd

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment, unless a site-specific analysis has been completed that demonstrates technical infeasibility as noted in D.3 below.

The feasibility analysis above demonstrates that the anticipated demands related to irrigation, toilets and other (industrial) uses are less than the applicable minimum values. Since neither Infiltration nor Harvest and Use BMPs are feasible, Bioretention and Biotreatment BMPs are evaluated in WQMP Section D.3, below.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

☒ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

The Updated Geotechnical Engineering Investigation prepared by NorCal Engineering (December, 2017) includes percolation testing with onsite infiltration rates ranging between 0.12-and-0.22 in/hr. The infiltration rates measured onsite are less than the 0.3 in/hr minimum threshold required for Bioretention BMPs, therefore Biotreatment BMPs have been implemented to treat post-development stormwater runoff.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA East	☐	☐	☒	☐	☐
DMA West	☐	☐	☒	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

For those DMAs where LID BMPs are not feasible, provide a brief narrative below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section E below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

Please note that DMA West will be treated by a traditional Bioretention BMP (basin) and DMA East will be treated by a proprietary Bioretention BMP (Modular Wetland Model No. MWS L-8-15 or equal). Based on the information provided in the WQMP Guidance Document, the proprietary Bioretention BMP is considered an alternative compliance and thus requires approval by the City of Moreno Valley prior to implementation.

Treated flows from proposed BMPs will be conveyed via pump (one in each BMP) to an existing storm drain located near the eastern entrance to the project. Note that the pumps have been designed to comply with both City and County water quality and hydromodification requirements.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First, calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second, design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Enter BMP Name / Identifier Here* **BMP-West**		
	[A]		[B]	[C]	[A] x [C]			
DMA West (Imperv.)	*152,256*	*Concrete & Asphalt*	*1.0*	*0.89*	*135812.4*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA West (Perv.)	*34914*	*Ornamental Landscaping*	*0.1*	*0.11*	*3856.5*			
	187170				*139668.9*	*0.63*	*7,379.2*	***14,525***

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document
14.325814,358[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Table D.4 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Enter BMP Name / Identifier Here* **BMP-East**		
	[A]		[B]	[C]	[A] x [C]			
DMA East (Imperv.)	*180068*	*Roofs, Concrete & Asphalt*	*1.0*	*0.89*	*269,154*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA East (Perv.)	*15220*	*Ornamental Landscaping*	*0.1*	*0.11*	*2599*			
	195,288				*162,301.9*	*0.63*	*8,575*	***8578****

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

**** = According to the manufacturer (Bio Clean Environmental), the selected Modular Wetland Unit (Model No. MWS L-4-17) is capable of treating 8,984 cu-ft of runoff using biofiltration technics and a 48-hour drawdown period. Note that the volume in the storage vaults has been divided such that the DCV is treated and any volume above the DCV (I.e. HMP) bypasses treatment and goes directly to the outlet chamber of the BMP to be pumped out.***

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

☒ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- *Or* -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

Please note that DMA West will be treated by a traditional Biotreatment BMP (basin) and DMA East will be treated by a proprietary Biotreatment BMP (Modular Wetland Model No. MWS L-8-12). All of the treated flows from both Biotreatment BMPs and the overflows from DMA East will be directed to an underground vault designed to comply with City and County hydromodification management and flood control detention requirements.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

E.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☐ Detached Residential Development	P	N	P	P	N	P	P	P
☐ Attached Residential Development	P	N	P	P	N	P	P	P(2)
☒ Commercial/Industrial Development	P(3)	P	P(1)	P(1)	P(5)	P(1)	P	P
☐ Automotive Repair Shops	N	P	N	N	P(4, 5)	N	P	P
☐ Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☐ Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☒ Parking Lots (>5,000 ft^2)	P(6)	P	P(1)	P(1)	P(4)	P(1)	P	P
☐ Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	☐	☐	☒	☒	☒	☒	☐	☐

P = Potential

N = Not Potential

(1) A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

(2) A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

(3) A potential Pollutant is land use involving animal waste

(4) Specifically petroleum hydrocarbons

(5) Specifically solvents

(6) Bacterial indicators are routinely detected in pavement runoff

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

E.2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
N/A	N/A
Total Credit Percentage[1]	

[1] *Cannot Exceed 50%*
[2] *Obtain corresponding data from Table 3-8 in the WQMP Guidance Document*

E.3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	**DMA Area (square feet)**	**Post-Project Surface Type**	**Effective Impervious Fraction, I_f**	**DMA Runoff Factor**	**DMA Area x Runoff Factor**		***Enter BMP Name / Identifier Here***		
	[A]		[B]	[C]	[A] x [C]				
N/A	N/A	N/A	N/A	N/A	N/A	*Design Storm Depth (in)*	*Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*
	N/A				N/A	N/A	N/A	N/A	N/A

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12
[H] is from the Total Credit Percentage as Calculated from Table E.2 above
[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

E.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]
N/A	N/A	N/A

[1] *Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.*
[2] *Cross Reference Table E.1 above to populate this column.*
[3] *As documented in a Co-Permittee Approved Study and provided in Appendix 6.*

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration	N/A	N/A	N/A
Volume (Cubic Feet)	N/A	N/A	N/A

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Sensitivity Maps.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

N/A

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Be sure to include all pertinent documentation used in your analysis of the items a, b or c in Appendix 7.

The subject development is not seeking any of the aforementioned Hydrologic Conditions of Concern (HCOC) exemptions. The proposed BMPs and storm drain system have been designed to mitigate the HCOC conditions by matching (or reducing) the flowrates within the pre-development hydrograph with the post-development hydrograph peak rates, for the 2-yr, 24-hr storm event. For further details, please refer to the hydromodification management documentation included under WQMP Appendix 7.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Section G: Source Control BMPs

Source control BMPs include permanent, structural features that may be required in your project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. ***Identify Pollutant Sources*:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.

2. ***Note Locations on Project-Specific WQMP Exhibit*:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.

3. ***Prepare a Table and Narrative*:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.

4. ***Identify Operational Source Control BMPs:*** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
On site storm drain inlets	*Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.*	*Maintain and periodically repaint or replace inlet markings.* *Provide stormwater pollution prevention information to new site owners, lessees, or operators.* *See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com* *Include the following in lease*

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

		agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drain."
Interior floor drains	*Interior floor drains shall be plumbed to sanitary sewer.*	*Inspect and maintain drains to prevent blockages and overflow.*
Need for future indoor & structural pest control	*Building design features including sealants barriers and fully closing windows and doors have been included to discourage entry of pests.*	*Integrated Pest Management information to be provided to owners, lessees, and operators.*
Landscape/outdoor pesticide use	*Final Landscape Plans will accomplish the following:* *Preserve existing native trees, shrubs, and ground cover to the maximum extent possible.* *Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.* *Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.* *Consider using pest-resistant plants, especially adjacent to hardscape.* *To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.*	*Maintain landscaping using minimum or no pesticides.* *Prevent erosion of slopes by planting fast-growing, dense ground covering plants.* *Plant native vegetation to reduce the amount of water, fertilizers, and pesticides applied to the landscape.* *Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro-spray systems. Periodically inspect and fix leaks and misdirected sprinklers.* *Do not rake or blow leaves, clippings, or pruning waste into the street, gutter, or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your City's program.* *Integrated Pest Management information to be provided to owners, lessees, and operators.*
Refuse areas	*Site design features dumpster enclosures.* *Signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.*	*Periodic inspections for leaky, overfilled, uncovered, or other problematic conditions will occur. Corrective action will be made upon detection, as circumstances permit.* *Dumping of liquid or hazardous wastes will be prohibited.* *Spill control materials will be available on-site.*

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

		All wastes to properly stored and disposed of in accordance with all applicable Local, State and Federal regulations
Industrial Processes	*All process activities to be performed indoors. No processes to drain to exterior or to storm drain system.*	*All process activities to be performed indoors. No processes to drain to exterior or to storm drain system.* *See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com* *See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at http://rcflood.org/stormwater/*
Loading Docks	*Maintain in a clean and orderly fashion*	*Move loaded and unloaded items indoors as soon as possible.* *See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com*
Fire Sprinkler Test Water	*Provide a means to drain fire sprinkler test water to the sanitary sewer.*	*See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com*
Miscellaneous Drain or Wash Water or Other Sources *Boiler drain lines Condensate drain lines Rooftop equipment Drainage sumps Roofing, gutters, and trim.* *Other sources*	*Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system.* *Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain* *Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary* *Any drainage sumps on-site shall feature a sediment sump to reduce pumped water.*	*Inspect periodically to verify that equipment is not leaking or discharging to the storm drain system*

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

	Roofing, gutters, and trim made out of unprotected metals that may leach into runoff have been avoided.	
Plazas, Sidewalks, and Parking Lots	*Maintain in a clean and orderly fashion*	*Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to the storm drain.*

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)
Biotreatment 1	Biotreatment BMP (basin) located near the southwest corner of the subject development	Grading Plan Sheet 2 (prepared by SDH & Associates)
Biotreatment 2	Biotreatment BMP (proprietary Modular Wetland Model No. MWS L-8-12) located near the southeast corner of the site	Grading Plan Sheet 2 (prepared by SDH & Associates)

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism: Property Owner assumes maintenance responsibilities for all onsite stormwater features and drainage infrastructure

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

☐ Y ☒ N

Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

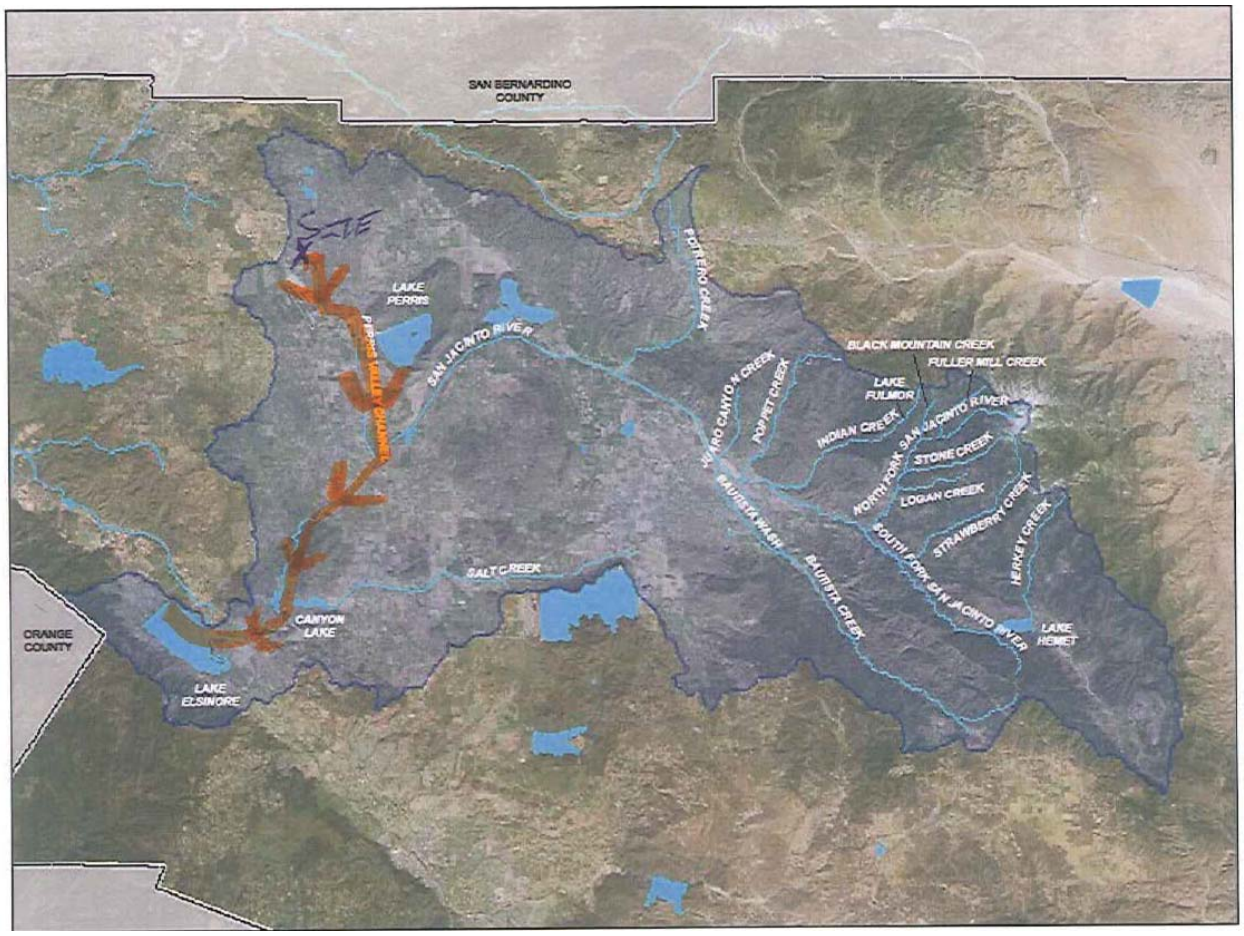
Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

LOCATION MAP

Source: Google Earth

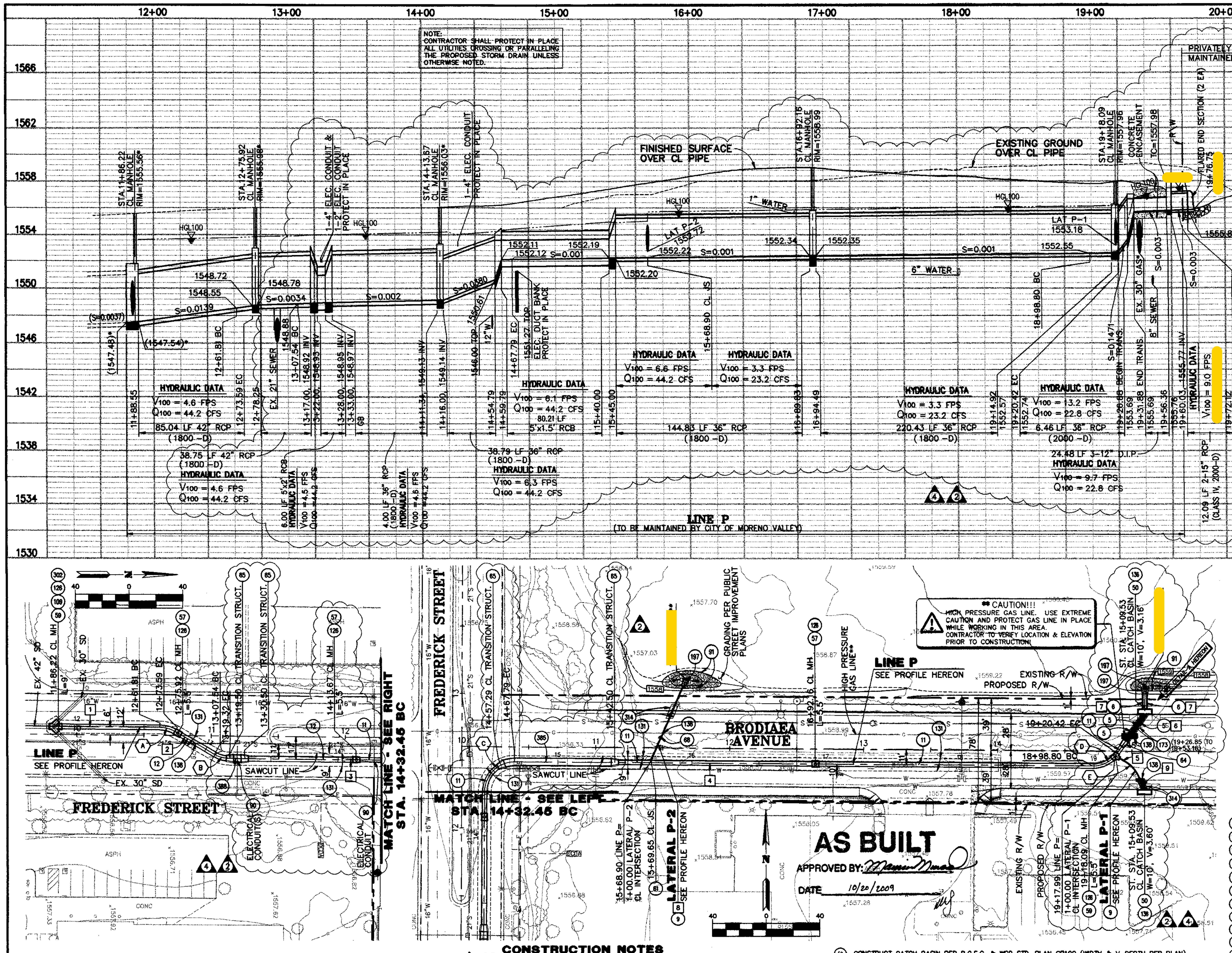
Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

RECEIVING WATERS MAP



Source: Santa Ana Regional Water Quality Control Board (SA RWQCB) -- San Jacinto River Watershed Fact Sheet

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



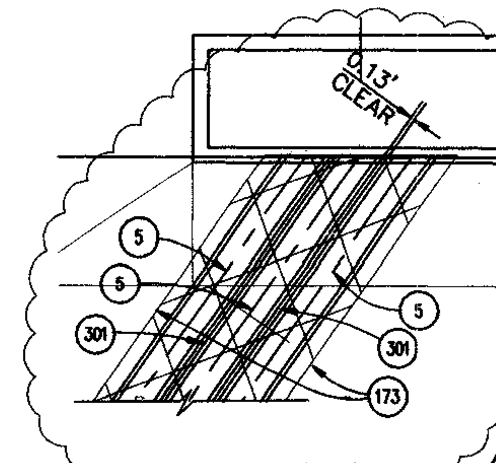
**** NOTE:
WORK OUTSIDE OF PUBLIC RIGHT-OF-WAY CANNOT COMMENCE UNTIL LETTER OF CONSENT HAS BEEN OBTAINED. PLUG PIPE AT RIGHT-OF-WAY, ON PUBLIC SIDE.

COURSE DATA

☐	BEARING	DISTANCE
1	N00°25'44"E	75.50'
2	N30°25'44"E	33.94'
3	N00°25'44"E	113.13'
4	N89°34'09"W	431.01'
5	N60°03'39"W	5.65'
6	N35°21'27"E	35.93'
7	N00°25'51"E	13.33'
8	N23°27'25"E	62.69
9	N24°39'43"W	11.28'

CURVE DATA

⬡	Δ	R	L	T
A	30°00'00"	22.50'	11.78'	6.03'
B	30°00'00"	22.50'	11.78'	6.03'
C	90°00'07"	22.50'	35.34'	22.50'
D	55°04'23"	22.50'	21.63'	11.73'
E	35°23'55"	22.50'	13.90'	7.18'



DETAIL A
SCALE: 1"=5'

NOTE:
LATERAL P-1, P-2 TO BE MAINTAINED BY THE CITY OF MORENO VALLEY WITHIN PUBLIC RIGHT OF WAY. STORM DRAIN OUTSIDE PUBLIC R/W TO BE PRIVATELY MAINTAINED.

✱ NOTE:
HORIZONTAL AND VERTICAL LOCATIONS TO BE VERIFIED IN THE FIELD AND ENGINEER NOTIFIED OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

MANHOLE & JUNCTION STRUCTURE DATA TABLE

S.D. MAINLINE STA.	STRUCTURE TYPE	LATERAL	ANGLE "A"	B	C	D1	D2	EL. S	EL. R
11+86.22	MH	EX.	45°00'00"	30"	3.5'	42"	42"	1548.03	*
15+69.65	JS	P-2	66°56'26"	24"	–	36"	36"	1550.28	–
19+18.09	MH	P-1	78°22'38"	24"	2'	36"	36"	1553.18	1553.24

CONSTRUCTION NOTES

(5) INSTALL 12" DUCTILE IRON PIPE (PROFILE AS SHOWN ON PLANS)
(6) INSTALL 15" RCP (CLASS IV, 2000-D), PROFILE AS SHOWN ON PLANS
(9) INSTALL 24" RCP (CLASS IV, 2000-D), PROFILE AS SHOWN ON PLANS
(11) INSTALL 36" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(12) INSTALL 42" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(50) CONSTRUCT CATCH BASIN PER R.C.F.C. & WCD STD. PLAN CB100 (WIDTH & V-DEPTH PER PLAN)
(57) CONSTRUCT MANHOLE No.2 PER R.C.F.C. & WCD STD. PLAN MH252
(59) CONSTRUCT MANHOLE No.4 PER R.C.F.C. & WCD STD. PLAN MH254
(64) CONSTRUCT TRANSITION STRUCTURE PIPE TO PIPE PER R.C.F.C. & WCD STD. PLAN TS303
(65) CONSTRUCT TRANSITION STRUCTURE No.1 PER R.C.F.C. & WCD STD. PLAN TS301
(68) CONSTRUCT CONCRETE COLLAR FOR RCP PER R.C.F.C. & WCD STD. PLAN M803

CONSTRUCTION NOTES CONT'D

(91) INSTALL RIP-RAP PER CALTRANS SPECIFICATIONS AND RIP-RAP DATA TABLE
(109) REMOVE EXISTING MANHOLE STRUCTURE
(126) ADJUST MANHOLE RIM TO GRADE AFTER FINAL SURFACE HAS BEEN INSTALLED
(131) REPLACE PAVEMENT SECTION PER DETAIL ON SHEET 21
(136) FOR CONSTRUCTION OF LOCAL DEPRESSION SEE PUBLIC STREET IMPROVEMENT PLANS
(138) CONSTRUCT BLANKET PROTECTION PER APWA STD. PLAN 225-1
(173) CONSTRUCT CONCRETE ENCASEMENT FOR STORM DRAIN PIPE PER DETAIL ON SHEET 22
(197) INSTALL FLARED END SECTION PER CALTRANS STD. PLAN D94
(301) INSTALL CONCRETE SLURRY BETWEEN PIPES
(302) PROTECT EXISTING LATERALS AND MAINLINE PIPING IN PLACE
(314) PROVIDE FULL DEPTH AC OVER MIN. 3" CONCRETE SLURRY OVER PIPE
(385) CONSTRUCT 5'x1.5' RCB PER CALTRANS STD. PLAN D80
(388) CONSTRUCT 5'x2' RCB PER CALTRANS STD. PLAN D80

CITY OF MORENO VALLEY APPROVALS
LINE P

PREM KUMAR — 10/20/11 DATE
DEPT. PUBLIC WORKS DIR./ASST. CITY ENGINEER
R.C.E. NO. C52463

CHRIS A. VOGT — 10/20/11 DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
R.C.E. NO. C44250

DIGALERT — DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

REGISTERED PROFESSIONAL ENGINEER — MAURICE H. MURAD — NO. 33366 — EXPIRATION 6-30-2010 — CIVIL — STATE OF CALIFORNIA

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
3990 CONCOURS, SUITE 450 * ONTARIO, CALIFORNIA 91764 * (909) 941-7799
PREPARED UNDER THE SUPERVISION OF: MAURICE H. MURAD
R.C.E. 33366 EXPIRES 6-30-10 DATE 10/20/09

PERMANENT BENCH MARK
B.M. NO. M-61-69 ELEV. 1569.963
LOCATION:
AT THE NORTHWEST CORNER OF FREDERICK STREET AND ALESSANDRO BLVD. 175 FEET WEST OF FREDERICK STREET, 48 FEET NORTH OF ALESSANDRO BLVD. 4 FEET SOUTHWEST OF A GAS STATION LIGHT STANCHION AT THE SOUTH END AND INSIDE OF A 4 INCH HIGH CONCRETE PLANTER SET A BRASS DISK MARKED M-61-69 IN THE TOP OF A CONCRETE POST "NO MARKER POST SET"

REVISIONS

REF.	DESCRIPTION	APPR.	DATE
4	AS BUILT/RECORD DRAWING		10/20/11
2	REVISED STORM DRAIN TO CLEAR EXISTING UTILITY LINE		

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

DESIGNED BY:	M.H.M.
DRAWN BY:	H-Z STAFF
DATE DRAWN:	7-2008
CHECKED BY:	M.H.M.

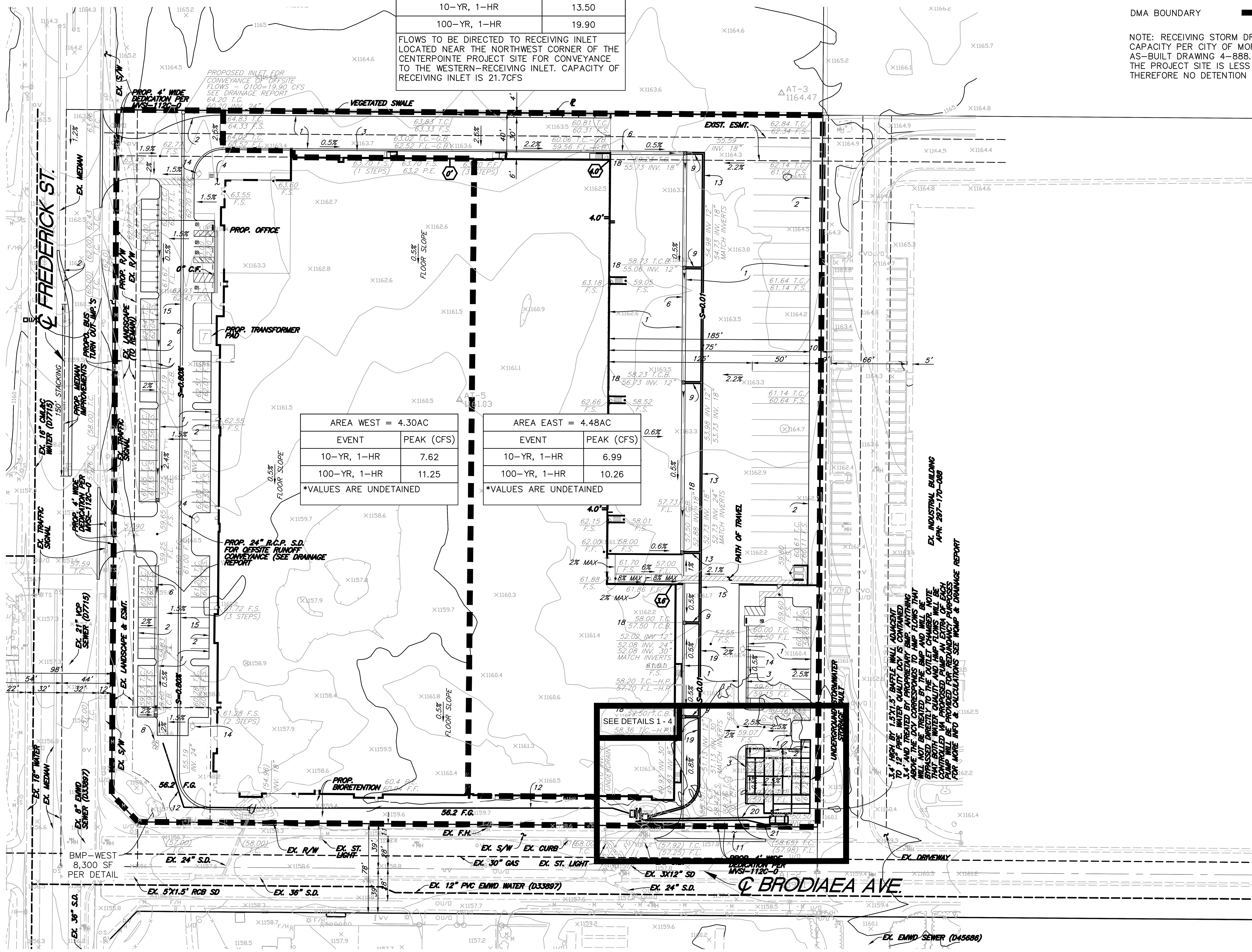
RECOMMENDED FOR APPROVAL BY: DATE:
APPROVED BY: DATE:

LINE P
STA. 11+88.55 TO STA. 19+73.36
LATERALS P-1 & P-2

PROJECT NO. 4-0-00737
DRAWING NO. 4-888
SHEET NO. 15A OF 22

H:\PROJ\1102440\1\LDRN15.DWG OCT. 15, 2009 15:43

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



AREA OFFSITE = 8.9AC	
EVENT	PEAK (CFS)
10–YR, 1–HR	13.50
100–YR, 1–HR	19.90

FLOWS TO BE DIRECTED TO RECEIVING INLET LOCATED NEAR THE NORTHWEST CORNER OF THE CENTERPOINTE PROJECT SITE FOR CONVEYANCE TO THE WESTERN–RECEIVING INLET. CAPACITY OF RECEIVING INLET IS 21.7CFS

AREA WEST = 4.30AC	
EVENT	PEAK (CFS)
10–YR, 1–HR	7.62
100–YR, 1–HR	11.25

*VALUES ARE UNDETAINED

AREA EAST = 4.48AC	
EVENT	PEAK (CFS)
10–YR, 1–HR	6.99
100–YR, 1–HR	10.26

*VALUES ARE UNDETAINED

LEGEND

DMA BOUNDARY ▬ ▬ ▬ ▬

NOTE: RECEIVING STORM DRAINS HAVE A SPECIFIED CAPACITY PER CITY OF MORENO VALLEY APPROVED AS–BUILT DRAWING 4–888. UNMITIGATED RUNOFF FROM THE PROJECT SITE IS LESS THAN THE CAPACITY THEREFORE NO DETENTION IS NECESSARY.

50 25 0 50 100 150

SCALE: 1" = 50'

REVISIONS			
NO.	DESCRIPTION	DATE	APP'D

R·E·C Consultants, Inc.
Civil Engineering · Environmental
Land Surveying
2442 Second Avenue
San Diego, CA 92101
(619)232–9200 (619)232–9210 Fax

DATE: 02/05/18
SCALE: 1" = 20'
DRAWN: J.M.W.
CHECKED: B.A.R.

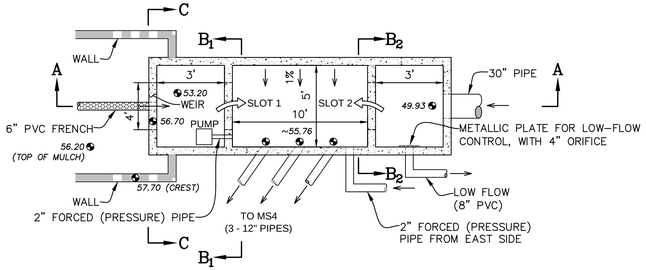
SHEET TITLE: PROPOSED HYDROLOGY

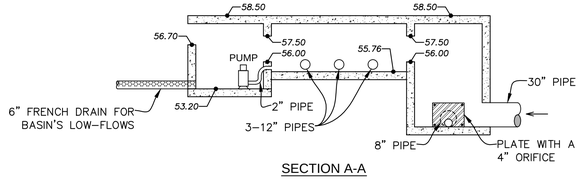
PROJECT: CENTERPOINTE INDUSIAL
FREDERICK ST. AND BRODIAEA AVE.
MORENO VALLEY, CA 92557

SHEET 1 OF 2 SHEETS

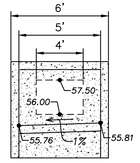
SAVE DATE: 6/11/2018 ~ PLOT DATE: 6/12/2018 ~ FILE NAME: P:\Acad\1379 SDH -- Newcastle Centerpointe\Reports\WQMP\180328_1379-Drainage - Standard\180328_1379-Drainage.dwg

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

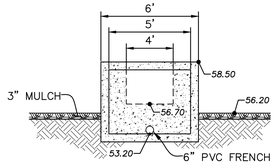




SECTION A-A

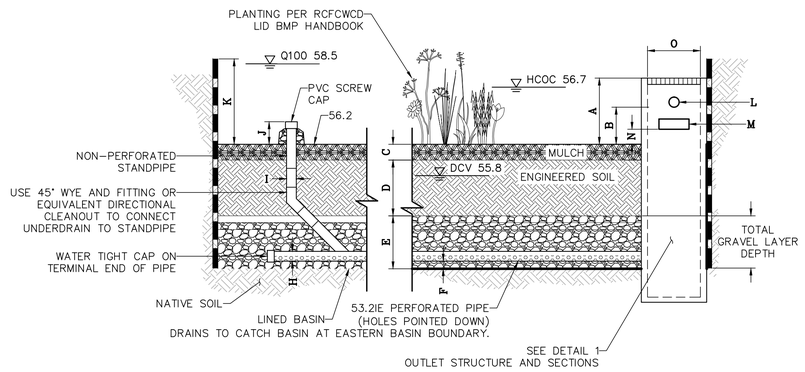


SECTION B1-B1 SLOT DETAILS
(SLOT 1 = SLOT 2) = SECTION B2-B2



SECTION C-C

NOTE:
FOR MODULAR WETLAND, UNDERGROUND SYSTEM & PRESSURE SYSTEM FOR EAST SIDE, SEE DETAIL 2.



TABULATED DATA
BASIN WEST

A	9"
B	N/A"
C	3"
D	24"
E	12"
F	3"
G	N/A
H	6"
I	6"
J	6"
K	4.3'
L	SEE DETAIL 1
M	N/A
N	N/A
O	SEE DETAIL 1
P	N/A

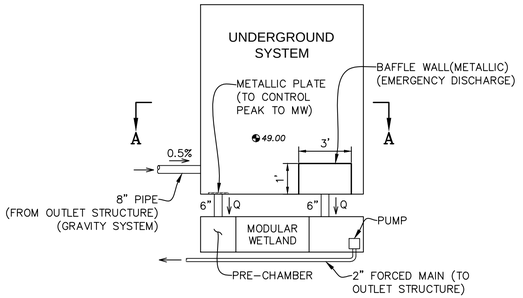
NOTE: ALL SPECIFICATIONS PER LID BMP MANUAL FACT SHEET FOR BIORETENTION BMP

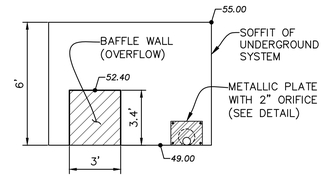
BMP TABLE

BMP #	TYPE	SIZE (SqFt)	ORIFICE SIZE
WEST	BIORETENTION BASIN	8,300	N/A

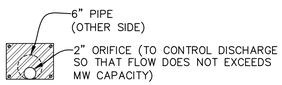
1 OUTLET & SECTIONS
NOT TO SCALE

3 BMP WEST (BIORETENTION)
NOT TO SCALE

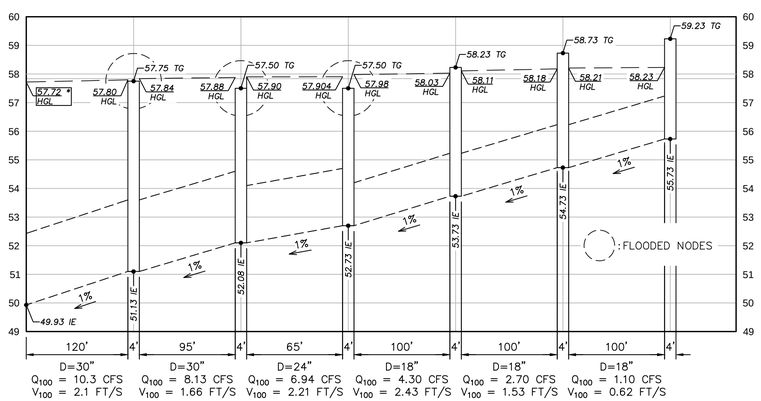




SECTION A-A



ORIFICE DETAIL



* – HGL (HYDRAULIC GRADIENT LINE) SET PER CITY OF MORENO VALLEY APPROVED PLANS (57.60) PLUS ENERGY LOSS TO CONVEY Q_{100} THRU 1.5'x4' RECTANGULAR SLOT (0.12'). HGL VALUES PER WSPG PRINTOUT. SEE PROJECT DRAINAGE STUDY.

2 UNDERGROUND SYSTEM DETAIL
NOT TO SCALE

SITE SPECIFIC DATA

PROJECT NUMBER		7211	
PROJECT NAME		MORENO VALLEY INDUSTRIAL	
PROJECT LOCATION		MORENO VALLEY, CA	
STRUCTURE ID		BASIN B	
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
8,575		N/A	
TREATMENT HGL AVAILABLE (FT)			N/A
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	1550.50	PVC	6"
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE	1550.00	PVC	6"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	1558.00	1558.00	1558.00
SURFACE LOAD	H20 IN-DIRECT	H20 IN-DIRECT	H20 IN-DIRECT
FRAME & COVER	ø30"	30" X 48"	ø24"
WETLANDMEDIA VOLUME (CY)			5.58
WETLANDMEDIA DELIVERY METHOD			PER CONTRACT
ORIFICE SIZE (DIA. INCHES)			ø1.03"

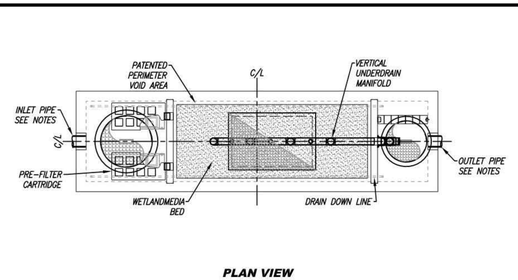
NOTES: PRELIMINARY; NOT FOR CONSTRUCTION. ENGINEER TO SET UPSTREAM BYPASS AT 1553.48.

INSTALLATION NOTES

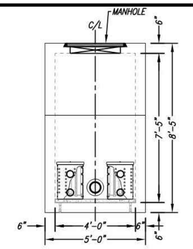
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS' SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS' CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
3. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS' STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. DRIP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING MODULAR WETLANDS FOR ACTIVATION OF UNIT. MANUFACTURES WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A MODULAR WETLANDS REPRESENTATIVE.

GENERAL NOTES

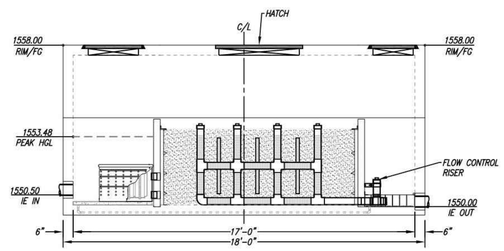
1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT MANUFACTURER.



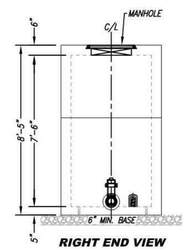
PLAN VIEW



LEFT END VIEW



ELEVATION VIEW



RIGHT END VIEW

REQUIRED TREATMENT VOLUME (CF)	8575
DRAINDOWN DURATION (HOURS)	46
AVERAGE DISCHARGE RATE PER MWS UNIT(GPM)	23.34
OPERATING HEAD (FT)	3.4
WETLANDMEDIA INFILTRATION RATE (IN/HR)	26
WETLANDMEDIA LOADING RATE (GPM/SF)	OR 0.26

THE PRODUCT DESCRIBED MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,425,262; 7,470,362; 7,674,378; 8,303,816; RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

PROPRIETARY AND CONFIDENTIAL:
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF MODULAR WETLANDS SYSTEMS. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF MODULAR WETLANDS SYSTEMS IS PROHIBITED.

Bio Clean — A Forterra Company

MWS-L-4-17-V-UG
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

4 MODULAR WETLAND
NOT TO SCALE

REVISIONS

NO.	DESCRIPTION	DATE	APP'D

R·E·C Consultants, Inc.
Civil Engineering · Environmental
Land Surveying
2442 Second Avenue
San Diego, CA 92101
(619)232-9200 (619)232-9210 Fax

DATE: 02/05/18
SCALE: 1" = 20'
DRAWN: J.M.W.
CHECKED: B.A.R.

SHEET TITLE: DETAILS

PROJECT: CENTERPOINTE INDUSTRIAL
FREDERICK ST. AND BRODIAEA AVE.
MORENO VALLEY, CA 92557

SHEET 2 OF 2 SHEETS

SAVE DATE: 6/11/2018 ~ PLOT DATE: 6/12/2018 ~ FILE NAME: P:\Acad\1379 SDH — Newcastle Centerpointe\Reports\WQMP\180328_1379-Drainage — Standard\180328_1379-Drainage.dwg

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendix 2: Construction Plans

Grading and Drainage Plans

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Updated Geotechnical Engineering Investigation

Proposed Industrial Warehouse Development
NWC of Frederick Street and Brodiaea Avenue
Moreno Valley, California

Newcastle Partners
4740 Green River Road, Suite 118
Corona, California 92880

Attn.: Mr. Brett Anderson

Project Number 20083-17
December 19, 2017

NorCal Engineering
Soils and Geotechnical Consultants
10641 Humbolt Street Los Alamitos, CA 90720
(562) 799-9469 Fax (562) 799-9459

December 19, 2017 Project Number 20083-17

Newcastle Partners
4740 Green River Road, Suite 118
Corona, California 92880

Attn.: Mr. Brett Anderson

RE: **Updated Geotechnical Engineering Investigation** - Proposed Industrial Warehouse Development - Located at the Northwest Corner of Frederick Street and Brodiaea Avenue, in the City of Moreno Valley, California

Dear Mr. Anderson:

Pursuant to your request, this firm has performed a Geotechnical Engineering Investigation for the above referenced project in accordance to our signed proposal dated November 22, 2017. The purpose of this investigation is to evaluate the subsurface conditions of the subject site and to provide recommendations for the proposed industrial warehouse development.

The scope of work included the following: 1) site reconnaissance; 2) subsurface geotechnical exploration and sampling; 3) laboratory testing; 4) engineering analysis of field and laboratory data; 5) and preparation of a geotechnical engineering report. It is the opinion of this firm that the proposed development is feasible from a geotechnical standpoint provided that the recommendations presented in this report are followed in the design and construction of the project.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

1.0 Project Description

It is proposed to construct an industrial warehouse development consisting of a concrete tilt-up building totaling 203,285 square feet as shown on the attached Site Plan. The proposed building will be supported by a conventional slab-on-grade foundation system with perimeter-spread footings and isolated interior footings. Other improvements will consist of concrete and/or asphalt pavement and hardscape. It is assumed that the proposed grading for the development will include minor cut and fill procedures. Final building plans shall be reviewed by this firm prior to submittal for city approval to determine the need for any additional study and revised recommendations pertinent to the proposed development, if necessary.

2.0 Site Description

The 8.94-acre property is located at the northeast corner of Frederick Street and Brodiaea Avenue, in the City of Moreno Valley. The generally square-shaped parcel is relatively level with topography descending gradually from north to south on the order of a few feet. The site is currently an undeveloped land covered with a low growth of vegetation cover consisting of natural grasses and weeds.

3.0 Site Exploration

Our field investigation consisted of the placement of two (2) subsurface exploratory borings by a truck-mounted drill rig to a depth of 20 and 50 feet and nine (9) subsurface exploratory trenches to depths ranging between 5 and 15 feet below current ground elevations. All explorations were visually classified and logged by a field engineer with locations of the subsurface explorations shown on the attached Site Plan. The exploratory borings and trenches revealed the existing earth materials to consist of a fill and natural soil. A detailed description of the subsurface conditions is listed on the excavation logs in Appendix A.

Fill: A surficial fill and/or disturbed top soil classifying as brown clayey SAND was encountered to a depth of 1 to 2½ feet. These soils were noted to be loose and damp.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Natural: An undisturbed alluvium soil classifying as a brown, clayey SAND was encountered directly beneath the fill and observed to be dense to very dense and damp to moist. Deeper soils consisted of silty sands and sandy silts which were noted to be very dense and stiff and damp to moist.

The overall engineering characteristics of the earth material were relatively uniform with each excavation. Groundwater was encountered at the depth of 30 feet below ground surface and no caving occurred.

4.0 Laboratory Tests

Relatively undisturbed samples of the subsurface soils were obtained to perform laboratory testing and analysis for direct shear, consolidation tests, and to determine in-place moisture/densities. These relatively undisturbed ring samples were obtained by driving a thin-walled steel sampler lined with one inch long brass rings with an inside diameter of 2.42 inches into the undisturbed soils.

Standard penetration tests were obtained by driving an unlined steel sampler with an inside diameter of 1.5 inches into the soils. This standard penetrometer sampler was driven a total of eighteen inches with blow counts tallied every six inches. Blow count data is given on the Boring Logs in Appendix A.

Bulk bag samples were obtained in the upper soils for expansion index tests and maximum density tests. All test results are included in Appendix B, unless otherwise noted.

4.1 **Field moisture content** (ASTM: D 2216) and the dry density of the ring samples were determined in the laboratory. This data is listed on the logs of explorations.

4.2 **Sieve analyses** (ASTM: D 422) and the percent by weight of soil finer than the No. 200 sieve (ASTM: 1140) were performed on selected soil samples. These results are shown later within the body of this report.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

4.3 **Maximum density tests** (ASTM: D-1557) were performed on typical samples of the upper soils. Results of these tests are shown on Table I.

4.4 **Expansion index tests** (ASTM: D 4829) were performed on remolded samples of the upper soils. Results of these tests are provided on Table II.

4.5 **Atterberg Limits** (ASTM: D 4318) consisting of liquid limit, plastic limit and plasticity index were performed on representative soil samples. Results are shown on Table III.

4.6 **Corrosion tests** consisting of sulfate, pH, resistivity and chloride analysis to determine potential corrosive effects of soils on concrete and underground utilities. Test results are provided on Table IV.

4.7 **R-Value test** per California Test Method 301 was performed on a representative sample, which may be anticipated to be near subgrade to determine pavement design. Result provided within pavement section design section of report.

4.8 **Direct Shear tests** (ASTM: D 3080) were performed on undisturbed and disturbed samples of the subsurface soils. The test is performed under saturated conditions at loads of 1,000 lbs./sq.ft., 2,000 lbs./sq.ft., and 3,000 lbs./sq.ft. with results shown on Plates A and B.

4.9 **Consolidation tests** (ASTM: D-2435) were performed on undisturbed samples to determine the differential and total settlement which may be anticipated based upon the proposed loads. Water was added to the samples at a surcharge of one KSF and the settlement curves are plotted on Plates C and D.

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5.0 Infiltration Characteristics

Infiltration tests within the site were performed to provide preliminary infiltration rates for the purpose of planning and design of an on-site water disposal system. The infiltration tests consisted of the double ring infiltration test per ASTM Method D 3385. Based upon the results of our testing, the soils encountered in the planned on-site drainage disposal system area exhibit the following infiltration rates. The field infiltration rate is listed below for two exploratory trenches at a depth of 5 and 10 feet measured from existing ground surface with our calculations given in Appendix C. .

Test No.	Depth	Infiltration Rate
T-1	5'	0.22 in/hr
T-2	10'	0.12 in/hr

The correction factors CF_t, CF_v and CF_s are given below based on soils in the upper 10 feet from our field tests.

a) $CF_t = R_f = 1.0$ for our double ring infiltration test holes.

b) CF_v = 1.0 based on uniform soils encountered in two trenches for infiltration tests.

c) CF_s = 3.0 for long-term siltation, plugging and maintenance. The subsurface soils are likely to have some plugging and regular maintenance of storm water discharge devices is required.

Based upon the results of our testing, the subsurface soils encountered in the proposed on-site drainage disposal system to a depth of 10 feet shall utilize a design infiltration rate of 0.05 in/hr in the upper 10 feet below existing grade. These fine grained soils have a very low permeability for use in a disposal system. All systems must meet the latest city and/or county specifications and California Regional Water Quality Control Board (CRWQCB) requirements.

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All systems must meet the latest city and/or county specifications and California Regional Water Quality Control Board (CRWQCB) requirements. Foundations shall be set back a minimum distance of 10 feet from the drainage disposal system and the bottom of footing shall be a minimum of 10 feet from the expected zone of saturation. The boundary of the zone of saturation may be assumed to project downward from the top of the permeable portion of the disposal system at an inclination of 1 to 1 or flatter, as determined by the soils engineer.

6.0 Seismicity Evaluation

There are no known active or potentially active faults trending toward or through the site. The proposed development lies outside of any Alquist Priolo Special Studies Zone and the potential for damage due to direct fault rupture is considered very remote. The site is located in an area of high regional seismicity and the San Jacinto fault is located about 8 kilometers from the site. Ground shaking originating from earthquakes along other active faults in the region is expected to induce lower horizontal accelerations due to smaller anticipated earthquakes and/or greater distances to other faults.

The seismic design of the project has been updated to the latest 2010 ASCE 7-10 (with July 2013 errata) standards and the mapped seismic ground motions were provided by using the Java based program available from the United States Geological Survey (USGS) website: http://geohazards.usgs.gov/designmaps/us/application.php. The earthquake design parameters are listed below.

Seismic Design Parameters

Site Location	Latitude	33.915°
	Longitude	-117.225°
Site Class		D
Risk Category		I/II/III
Maximum Spectral Response Acceleration	S_S	1.566g
	S_1	0.678g
Adjusted Maximum Acceleration	S_{MS}	1.566g
	S_{M1}	1.017g
Design Spectral Response Acceleration Parameters	S_{DS}	1.044g
	S_{D1}	0.678g

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7.0 Liquefaction Evaluation

The site is expected to experience ground shaking and earthquake activity that is typical of Southern California area. It is during severe ground shaking that loose, granular soils below the groundwater table can liquefy. A review of the exploratory boring log and the laboratory test results on selected soil samples obtained indicate the following soil classifications, field blowcounts and amounts of fines passing through the No. 200 sieve.

Field Blowcount and Gradation Data

Location	Classification	Blowcounts (blows/ft)	Relative Density	% Passing No. 200 Sieve
B-1 @ 5'	SC	45	Very Dense	36
B-1 @ 10'	SM	54	Very Dense	21
B-1 @ 15'	ML	47	Very Stiff	51
B-1 @ 20'	SM	42	Very Stiff	12
B-1 @ 25'	ML	37	Very Dense	52
B-1 @ 30'	SM	32	Dense	17
B-1 @ 35'	SM	41	Dense	27
B-1 @ 40'	SW	38	Dense	5
B-1 @ 45'	SM	61	Very Dense	30
B-1 @ 50'	SM	57	Very Dense	14

Our analysis indicates the potential for liquefaction at this site is considered to be very low due to stiff and dense subsurface soils with a groundwater depth of 30 feet. Thus, the design of the proposed construction in conformance with the latest Building Code provisions for earthquake design is expected to provide mitigation of ground shaking hazards that are typical to Southern California.

8.0 Conclusions and Recommendations

Based upon our evaluations, the proposed development is acceptable from a geotechnical engineering standpoint. By following the recommendations and guidelines set forth in our report, the structures will be safe from excessive settlements under the anticipated design loadings and conditions. The proposed development shall meet all requirements of the City Building Ordinance and will not impose any adverse effect on existing adjacent structures.

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The following recommendations are based upon geotechnical conditions encountered in our field investigation and laboratory data. Therefore, these surface and subsurface conditions could vary across the site. Variations in these conditions may not become evident until the commencement of grading operations and any unusual conditions which may be encountered in the course of the project development may require the need for additional study and revised recommendations.

It is recommended that site inspections be performed by a representative of this firm during all grading and construction of the development to verify the findings and recommendations documented in this report. The following sections present a discussion of geotechnical related requirements for specific design recommendations of different aspects of the project.

8.1 Site Grading Recommendations

Any vegetation and or demolition debris shall be removed and hauled from proposed grading areas prior to the start of grading operations. Existing vegetation shall not be mixed or disced into the soils. Any removed soils may be reutilized as compacted fill once any deleterious material or oversized materials (in excess of eight inches) is removed. Grading operations shall be performed in accordance with the attached "Specifications for Compacted Fill Operations".

8.1.1 Removal and Recompaction Recommendations

All disturbed soils and/or fill (about 1 to 2½ feet) shall be removed to competent native material, the exposed surface scarified to a depth of 12 inches, brought to within 2% of optimum moisture content and compacted to a minimum of 90% of the laboratory standard (ASTM: D-1557) prior to placement of any additional compacted fill soils, foundations, slabs-on-grade and pavement. Grading shall extend a minimum of five horizontal feet outside the edges of foundations or equidistant to the depth of fill placed, whichever is greater.

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It is possible that isolated areas of undiscovered fill not described in this report are present on site. If found, these areas should be treated as discussed earlier. A diligent search shall also be conducted during grading operations in an effort to uncover any underground structures, irrigation or utility lines. If encountered, these structures and lines shall be either removed or properly abandoned prior to the proposed construction.

Any imported fill material should be preferably soil similar to the upper soils encountered at the subject site. All soils shall be approved by this firm prior to importing at the site and will be subjected to additional laboratory testing to assure concurrence with the recommendations stated in this report.

Care should be taken to provide or maintain adequate lateral support for all adjacent improvements and structures at all times during the grading operations and construction phase. Adequate drainage away from the structures, pavement and slopes should be provided at all times.

If placement of slabs-on-grade and pavement is not completed immediately upon completion of grading operations, additional testing and grading of the areas may be necessary prior to continuation of construction operations. Likewise, if adverse weather conditions occur which may damage the subgrade soils, additional assessment by the geotechnical engineer as to the suitability of the supporting soils may be needed.

8.1.2 Fill Blanket Recommendations

In areas of transition between the underlying native material and engineered fill, additional overexcavation of the native material consisting of a depth of two feet below proposed foundations is required to mitigate the potential of differential settlement. This fill shall extend a minimum of five horizontal feet or to the depth of vertical overexcavation, whichever is greater, beyond the outside edge of the perimeter foundation.

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7.2 Shrinkage and Subsidence

Results of our in-place density tests reveal that the soil shrinkage will be on the order of 5 to 10% due to excavation and recompaction, based upon the assumption that the fill is compacted to 92% of the maximum dry density per ASTM standards. Subsidence should be 0.2 feet due to earthwork operations. The volume change does not include any allowance for vegetation or organic stripping, removal of subsurface improvements or topographic approximations. Although these values are only approximate, they represent our best estimate of lost yardage which will likely occur during grading. If more accurate shrinkage and subsidence factors are needed, it is recommended that field testing using the actual equipment and grading techniques should be conducted.

8.3 Temporary Excavations

Temporary unsurcharged excavations in the existing site materials less than 4 feet high may be made at a vertical gradient unless cohesionless soils are encountered. In areas where soils with little or no binder are encountered, where adverse geological conditions are exposed, or where excavations are adjacent to existing structures, shoring, slot-cutting, or flatter excavations may be required. The temporary cut slope gradients given do not preclude local raveling and sloughing. All excavations shall be made in accordance with the requirements of CAL-OSHA and other public agencies having jurisdiction. Care should be taken to provide or maintain adequate lateral support for all adjacent improvements and structures at all times during the grading operations and construction phase.

8.4 Foundation Design

All foundations may be designed utilizing the following safe bearing capacities for an embedded depth of 18 inches into approved fill materials with the corresponding widths:

Allowable Safe Bearing Capacity (psf)

Width (ft)	Continuous Foundation	Isolated Foundation
1.5	2000	2500
2.0	2075	2575
4.0	2375	2875
6.0	2500	3000

The bearing value may be increased by 500 psf for each additional foot of depth in excess of the 18-inch minimum depth, up to a maximum of 4,000 psf. A one third increase may be used when considering short-term loading and seismic forces. All continuous foundations shall be reinforced a minimum of one No. 4 bar, top and bottom. Isolated foundations shall be reinforced per the discretion of the project structural engineer. A representative of this firm shall inspect all foundation excavations prior to pouring concrete.

8.5 Settlement Analysis

Resultant pressure curves for the consolidation tests are shown on Plates C and D. Computations utilizing these curves and the recommended safe bearing capacities reveal that the foundations will experience settlements on the order of 3/4 inch and differential settlements of less than 1/4 inch.

8.6 Lateral Resistance

The following values may be utilized in resisting lateral loads imposed on the structure. Requirements of the California Building Code should be adhered to when the coefficient of friction and passive pressures are combined.

Coefficient of Friction – 0.35
Equivalent Passive Fluid Pressure = 200 lbs./cu.ft.
Maximum Passive Pressure = 2,000 lbs./cu.ft.

The passive pressure recommendations are valid only for approved compacted fill soils.

8.7 Retaining Wall Design Parameters

Active earth pressures against retaining wall will be equal to the pressures developed by the following fluid densities. These values are for **granular backfill material** placed behind the walls at various ground slopes above the walls.

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Surface Slope of Retained Materials (Horizontal to Vertical)	Equivalent Fluid Density (lb./cu.ft.)
Level	30
5 to 1	35
4 to 1	38
3 to 1	40
2 to 1	45

Any applicable short-term construction surcharges and seismic forces should be added to the referenced lateral pressure values. An equivalent fluid pressure of 45 pcf may be utilized for the restrained wall condition with a level grade behind the wall.

All walls shall be waterproofed as needed and protected from hydrostatic pressure by a reliable permanent subdrain system. The subsurface drainage system shall consist of 4-inch diameter perforated PVC pipe encased with gravel and wrapped with filter fabric. The granular backfill to be utilized immediately adjacent to the walls shall consist of an approved granular soils with a sand equivalency greater than 30. This backfill zone of free draining material shall consist of a wedge beginning a minimum of one horizontal foot from the base of the wall extending upward at an inclination of no less than 3/4 to 1 (horizontal to vertical).

The seismic-induced lateral soil pressure for walls greater than 6 feet shall be computed using a triangular pressure distribution with the maximum value at the top of the wall. The maximum lateral pressure of (20 pcf) H, where H is the height of the retained soils above the wall footing should be utilized in final design of retaining walls. Sliding resistance values and passive fluid pressures given in our referenced report may be increased by 1/3 during short-term wind and seismic loading conditions.

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8.8 Slab Design

All concrete slabs-on-grade shall be at least four inches in office and hardscape areas, six inches in warehouse, both reinforced with No. 3 bars at sixteen inch spacing in each direction and positioned in the center of the slab and placed on approved subgrade soils. Additional reinforcement requirements and an increase in thickness of the slabs-on-grade may be necessary based upon soils expansion potential and proposed loading conditions in the structures and should be evaluated further by the project engineers and/or architect. These slabs shall be placed on approved subgrade soils moisture conditioned to 3% above optimum moisture content to a depth of eighteen inches.

A vapor retarder (10-mil minimum thickness) should be utilized in areas which would be sensitive to the infiltration of moisture. This retarder shall meet requirements of ASTM E 96, *Water Vapor Transmission of Materials* and ASTM E 1745, *Standard Specification for Water Vapor Retarders used in Contact with Soil or Granular Fill Under Concrete Slabs.* The vapor retarder shall be installed in accordance with procedures stated in ASTM E 1643, *Standard practice for Installation of Water Vapor Retarders used in Contact with Earth or Granular Fill Under Concrete Slabs.*

The moisture retarder may be placed directly upon approved subgrade soils, although one to two inches of sand beneath the membrane is desirable. The subgrade upon which the retarder is placed shall be smooth and free of rocks, gravel or other protrusions which may damage the retarder. Use of sand above the retarder is under the purview of the structural engineer; if sand is used over the retarder, it should be placed in a dry condition.

8.9 Pavement Section Design

The table below provides a preliminary pavement design based upon an R-Value of 30 for the proposed pavement areas. Final pavement design may need to be based on R-Value testing of the subgrade soils near the conclusion of rough grading to assure that these soils are consistent with those assumed in this preliminary design.

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Type of Traffic	Traffic Index	Asphaltic Concrete (in)	Base Material (in)
Automobile Parking Stalls	4.0	3.0	4.0
Light Vehicle Circulation Areas	5.5	3.5	5.5
Heavy Truck Access Areas (GVW < 90,000 lbs.; 5 axle)	7.0	4.0	10.0

All concrete slabs to be utilized for pavement shall be a minimum of six inches in thickness and placed on approved subgrade soils. Client should submit anticipated traffic loadings, when available, so that pavement sections may be reviewed to determine adequacy to support these loads.

Any approved base material shall consist of a Class II aggregate or equivalent and should be compacted to a minimum of 95% relative compaction. All pavement materials shall conform to the requirements set forth by the City of Moreno Valley. The base material and asphaltic concrete should be tested prior to delivery to the site and during placement to determine conformance with the project specifications. A pavement engineer shall designate the specific asphalt mix design to meet the required project specifications.

All pavement areas shall have positive drainage toward an approved outlet from the site. Drain lines behind curbs and/or adjacent to landscape areas should be considered by client and the appropriate design engineers to prevent water from infiltrating beneath pavement. If such infiltration occurs, damage to pavement, curbs and flow lines, especially on sites with expansive soils, may occur during the life of the project.

8.10 Utility Trench and Excavation Backfill

Trenches from installation of utility lines and other excavations may be backfilled with on-site soils or approved imported soils compacted to a minimum of 90% relative compaction. All utility lines shall be properly bedded with clean sand having a sand equivalency rating of 30 (SE > 30) or more. This bedding material shall be thoroughly water jetted around the pipe structure prior to placement of compacted backfill soils.

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8.11 **Corrosion Design Criteria**

Representative samples of the surficial soils, typical of the subgrade soils expected to be encountered within foundation excavations and underground utilities were tested for corrosion potential. The minimum resistivity value obtained for the samples tested is representative of an environment that may be corrosive to metals. The soil pH value was considered mildly acidic and may have a significant effect on soil corrosivity. Consideration should be given to corrosion protection systems for buried metal such as protective coatings, wrappings or the use of PVC where permitted by local building codes.

According to Table 4.3.1, ACI 318 Building Code and Commentary, these contents revealed negligible levels of sulfate exposure. Therefore, a Type II cement according to latest CBC specifications may be utilized for building foundations at this time. Additional sulfate tests shall be performed at the completion of site grading to assure that these soils are consistent with the recommendations stated in this design. Sulfate test results may be found on the attached Table IV.

8.12 **Expansive Soil**

Since expansive soils were encountered, special attention should be given to the project design and maintenance. The attached *Expansive Soil Guidelines* should be reviewed by the engineers, architects, owner, maintenance personnel and other interested parties and considered during the design of the project and future property maintenance.

9.0 Closure

The recommendations and conclusions contained in this report are based upon the soil conditions uncovered in our test excavations. No warranty of the soil condition between our excavations is implied. NorCal Engineering should be notified for possible further recommendations if unexpected to unfavorable conditions are encountered during construction phase.

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It is the responsibility of the owner to ensure that all information within this report is submitted to the Architect and appropriate Engineers for the project. This firm should have the opportunity to review the final plans to verify that all our recommendations are incorporated. This report and all conclusions are subject to the review of the controlling authorities for the project.

A preconstruction conference should be held between the developer, general contractor, grading contractor, city inspector, architect, and soil engineer to clarify any questions relating to the grading operations and subsequent construction. Our representative should be present during the grading operations and construction phase to certify that such recommendations are complied within the field.

This geotechnical investigation has been conducted in a manner consistent with the level of care and skill exercised by members of our profession currently practicing under similar conditions in the Southern California area. No other warranty, expressed or implied is made.

We appreciate this opportunity to be of service to you. If you have any further questions, please do not hesitate to contact the undersigned.

Respectfully submitted,
NORCAL ENGINEERING

Keith D. Tucker
Project Engineer
R.G.E. 841

Scott D. Spensiero
Project Manager

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

SPECIFICATIONS FOR PLACEMENT OF COMPACTED FILL

Excavation

Any existing low density soils and/or saturated soils shall be removed to competent natural soil under the inspection of the Soils Engineering Firm. After the exposed surface has been cleansed of debris and/or vegetation, it shall be scarified until it is uniform in consistency, brought to the proper moisture content and compacted to a minimum of 90% relative compaction (in accordance with ASTM: D-1557).

In any area where a transition between fill and native soil or between bedrock and soil are encountered, additional excavation beneath foundations and slabs will be necessary in order to provide uniform support and avoid differential settlement of the structure.

Material For Fill

The on-site soils or approved import soils may be utilized for the compacted fill provided they are free of any deleterious materials and shall not contain any rocks, brick, asphaltic concrete, concrete or other hard materials greater than eight inches in maximum dimensions. Any import soil must be approved by the Soils Engineering firm a minimum of 24 hours prior to importation of site.

Placement of Compacted Fill Soils

The approved fill soils shall be placed in layers not excess of six inches in thickness. Each lift shall be uniform in thickness and thoroughly blended. The fill soils shall be brought to within 2% of the optimum moisture content, unless otherwise specified by the Soils Engineering firm. Each lift shall be compacted to a minimum of 90% relative compaction (in accordance with ASTM: D-1557) and approved prior to the placement of the next layer of soil. Compaction tests shall be obtained at the discretion of the Soils Engineering firm but to a minimum of one test for every 500 cubic yards placed and/or for every 2 feet of compacted fill placed.

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The minimum relative compaction shall be obtained in accordance with accepted methods in the construction industry. The final grade of the structural areas shall be in a dense and smooth condition prior to placement of slabs-on-grade or pavement areas. No fill soils shall be placed, spread or compacted during unfavorable weather conditions. When the grading is interrupted by heavy rains, compaction operations shall not be resumed until approved by the Soils Engineering firm.

Grading Observations

The controlling governmental agencies should be notified prior to commencement of any grading operations. This firm recommends that the grading operations be conducted under the observation of a Soils Engineering firm as deemed necessary. A 24 hour notice must be provided to this firm prior to the time of our initial inspection.

Observation shall include the clearing and grubbing operations to assure that all unsuitable materials have been properly removed; approve the exposed subgrade in areas to receive fill and in areas where excavation has resulted in the desired finished grade and designate areas of overexcavation; and perform field compaction tests to determine relative compaction achieved during fill placement. In addition, all foundation excavations shall be observed by the Soils Engineering firm to confirm that appropriate bearing materials are present at the design grades and recommend any modifications to construct footings.

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Expansive Soil Guidelines

The following expansive soil guidelines are provided for your project. The intent of these guidelines is to inform you, the client, of the importance of proper design and maintenance of projects supported on expansive soils. ***You, as the owner or other interested party, should be warned that you have a duty to provide the information contained in the soil report including these guidelines to your design engineers, architects, landscapers and other design parties in order to enable them to provide a design that takes into consideration expansive soils.***

In addition, you should provide the soil report with these guidelines to any property manager, lessee, property purchaser or other interested party that will have or assume the responsibility of maintaining the development in the future.

Expansive soils are fine-grained silts and clays which are subject to swelling and contracting. The amount of this swelling and contracting is subject to the amount of fine-grained clay materials present in the soils and the amount of moisture either introduced or extracted from the soils. Expansive soils are divided into five categories ranging from "very low" to "very high". Expansion indices are assigned to each classification and are included in the laboratory testing section of this report. *If the expansion index of the soils on your site, as stated in this report, is 21 or higher, you have expansive soils.* The classifications of expansive soils are as follows:

Classification of Expansive Soil*

Expansion Index	Potential Expansion
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
Above 130	Very High

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When expansive soils are compacted during site grading operations, care is taken to place the materials at or slightly above optimum moisture levels and perform proper compaction operations. Any subsequent excessive wetting and/or drying of expansive soils will cause the soil materials to expand and/or contract. These actions are likely to cause distress of foundations, structures, slabs-on-grade, sidewalks and pavement over the life of the structure. ***It is therefore imperative that even after construction of improvements, the moisture contents are maintained at relatively constant levels, allowing neither excessive wetting or drying of soils.***

Evidence of excessive wetting of expansive soils may be seen in concrete slabs, both interior and exterior. Slabs may lift at construction joints producing a trip hazard or may crack from the pressure of soil expansion. Wet clays in foundation areas may result in lifting of the structure causing difficulty in the opening and closing of doors and windows, as well as cracking in exterior and interior wall surfaces. In extreme wetting of soils to depth, settlement of the structure may eventually result. Excessive wetting of soils in landscape areas adjacent to concrete or asphaltic pavement areas may also result in expansion of soils beneath pavement and resultant distress to the pavement surface.

Excessive drying of expansive soils is initially evidenced by cracking in the surface of the soils due to contraction. Settlement of structures and on-grade slabs may also eventually result along with problems in the operation of doors and windows.

Projects located in areas of expansive clay soils will be subject to more movement and "hairline" cracking of walls and slabs than similar projects situated on non-expansive sandy soils. There are, however, measures that developers and property owners may take to reduce the amount of movement over the life the development. The following guidelines are provided to assist you in both design and maintenance of projects on expansive soils:

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

- Drainage away from structures and pavement is essential to prevent excessive wetting of expansive soils. Grades to the latest building code should be designed and maintained to allow flow of irrigation and rain water to approved drainage devices or to the street. Any "ponding" of water adjacent to buildings, slabs and pavement after rains is evidence of poor drainage; the installation of drainage devices or regrading of the area may be required to assure proper drainage. Installation of rain gutters is also recommended to control the introduction of moisture next to buildings. Gutters should discharge into a drainage device or onto pavement which drains to roadways.

- Irrigation should be strictly controlled around building foundations, slabs and pavement and may need to be adjusted depending upon season. This control is essential to maintain a relatively uniform moisture content in the expansive soils and to prevent swelling and contracting. Over-watering adjacent to improvements may result in damage to those improvements. NorCal Engineering makes no specific recommendations regarding landscape irrigation schedules.

- Planting schemes for landscaping around structures and pavement should be analyzed carefully. Plants (including sod) requiring high amounts of water may result in excessive wetting of soils. Trees and large shrubs may actually extract moisture from the expansive soils, thus causing contraction of the fine-grained soils.

- Thickened edges on exterior slabs will assist in keeping excessive moisture from entering directly beneath the concrete. A six-inch thick or greater deepened edge on slabs may be considered. Underlying interior and exterior slabs with 6 to 12 inches or more of non-expansive soils and providing presaturation of the underlying clayey soils as recommended in the soil report will improve the overall performance of on-grade slabs.

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- Increase the amount of steel reinforcing in concrete slabs, foundations and other structures to resist the forces of expansive soils. The precise amount of reinforcing should be determined by the appropriate design engineers and/or architects.

- Recommendations of the soil report should always be followed in the development of the project. Any recommendations regarding presaturation of the upper subgrade soils in slab areas should be performed in the field and verified by the Soil Engineer.

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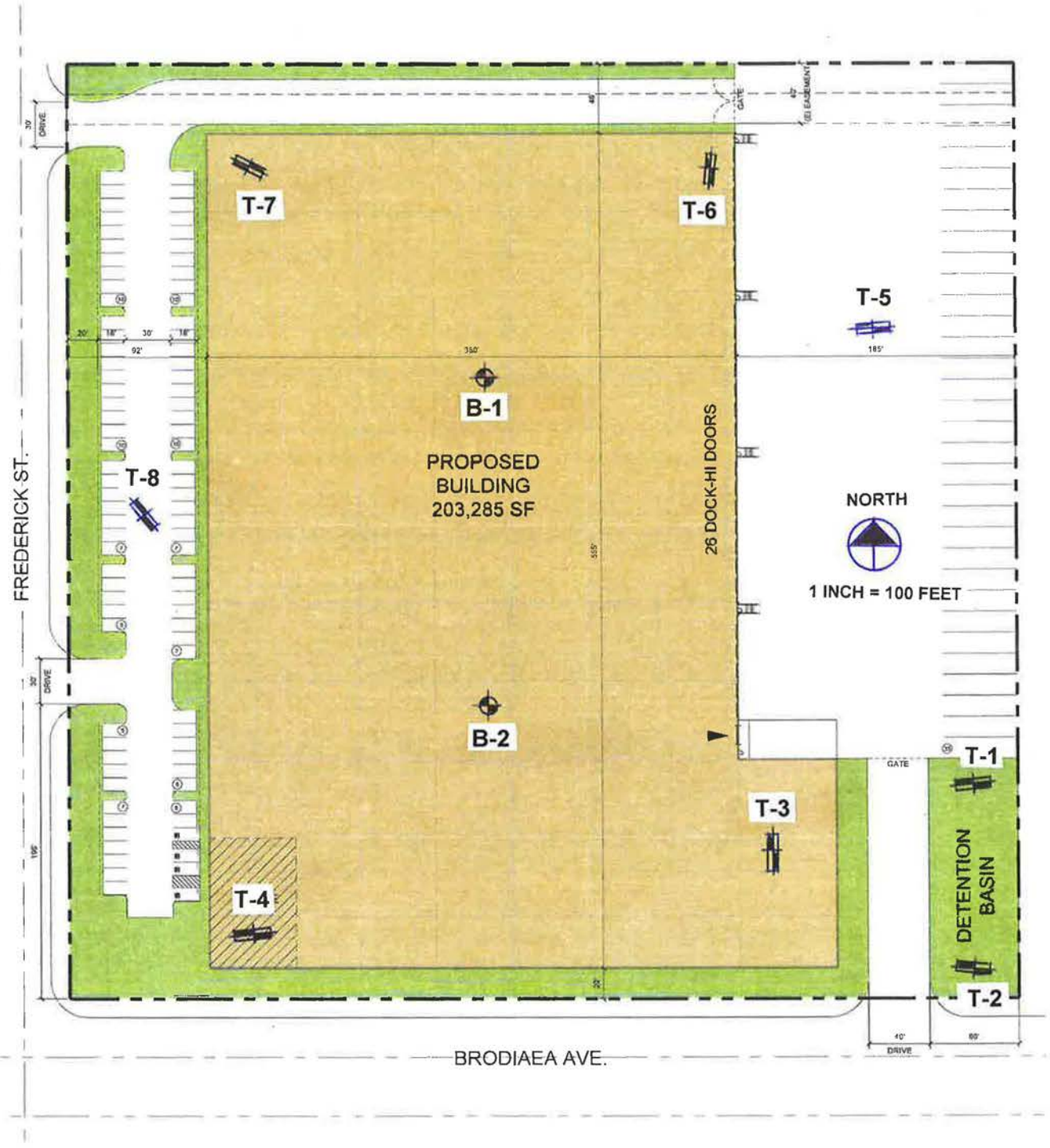

NorCal Engineering
SOILS AND GEOTECHNICAL CONSULTANTS

SITE PLAN

PROJECT 20081-17	DATE DECEMBER 2017

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

List of Appendices
(in order of appearance)

Appendix A - Log of Excavations

- Log of Borings B-1 and B-2
- Log of Trenches T-1 to T-8
-

- **Appendix B - Laboratory Tests**
- Table I - Maximum Dry Density
- Table II – Expansion
- Table III – Atterberg Limits
- Table IV – Corrosion

- Plates A and B - Direct Shear
- Plates C and D – Consolidation

Appendix C – Soil Infiltration Study

- Field Data

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Appendix A

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

MAJOR DIVISION			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL, SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINE (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

UNIFIED SOIL CLASSIFICATION SYSTEM

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

KEY:

- ■ Indicates 2.5-inch Inside Diameter. Ring Sample.
- ⊠ Indicates 2-inch OD Split Spoon Sample (SPT).
- ⧅ Indicates Shelby Tube Sample.
- ◫ Indicates No Recovery.
- ◧ Indicates SPT with 140# Hammer 30 in. Drop.
- ☒ Indicates Bulk Sample.
- ◩ Indicates Small Bag Sample.
- ◨ Indicates Non-Standard
- ⊠ Indicates Core Run.

COMPONENT PROPORTIONS

DESCRIPTIVE TERMS	RANGE OF PROPORTION
Trace	1 - 5%
Few	5 - 10%
Little	10 - 20%
Some	20 - 35%
And	35 - 50%

COMPONENT DEFINITIONS

COMPONENT	SIZE RANGE
Boulders	Larger than 12 in
Cobbles	3 in to 12 in
Gravel	3 in to No 4 (4.5mm)
Coarse gravel	3 in to 3/4 in
Fine gravel	3/4 in to No 4 (4.5mm)
Sand	No. 4 (4.5mm) to No. 200 (0.074mm)
Coarse sand	No. 4 (4.5 mm) to No. 10 (2.0 mm)
Medium sand	No. 10 (2.0 mm) to No. 40 (0.42 mm)
Fine sand	No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt and Clay	Smaller than No. 200 (0.074 mm)

MOISTURE CONTENT

DRY	Absence of moisture, dusty, dry to the touch.
DAMP	Some perceptible moisture; below optimum
MOIST	No visible water; near optimum moisture content
WET	Visible free water, usually soil is below water table.

RELATIVE DENSITY OR CONSISTENCY VERSUS SPT N -VALUE

COHESIONLESS SOILS		COHESIVE SOILS		
Density	N (blows/ft)	Consistency	N (blows/ft)	Approximate Undrained Shear Strength (psf)
Very Loose	0 to 4	Very Soft	0 to 2	< 250
Loose	4 to 10	Soft	2 to 4	250 - 500
Medium Dense	10 to 30	Medium Stiff	4 to 8	500 - 1000
Dense	30 to 50	Stiff	8 to 15	1000 - 2000
Very Dense	over 50	Very Stiff	15 to 30	2000 - 4000
		Hard	over 30	> 4000

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Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Newcastle Partners
20083-17

Log of Boring B-1

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: 30'

Drilling Method: Simco 2800HS

Hammer Weight: 140 lbs | Drop: 30"

Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp					
		NATURAL Clayey SAND Brown, very dense, damp to moist	X	20/24/21	9.1		3
10		Silty (fine to medium grained) SAND Brown, very dense, moist	X	17/25/29	8.5		2
15		Sandy SILT Grey-brown, stiff, moist	X	20/22/25	11.2		5
20		Silty (fine to coarse grained) SAND Brown, very dense, moist; with occasional gravel and slightly silty	X	18/20/22	8.6		1
25		Sandy SILT Grey-brown, stiff, moist to very moist	X	14/17/20	12.6		5
30		Silty (fine to coarse grained) SAND Brown, dense, wet; slightly silty to silty	X	12/15/17	17.4		1
35							

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Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Newcastle Partners
20083-17

Log of Boring B-1

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: 30'

Drilling Method: Simco 2800HS

Hammer Weight: 140 lbs | Drop: 30"

Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
35		Silty (fine to coarse grained) SAND Brown, dense, wet; slightly silty to silty		10/16/25	20.1		2
40		SAND (medium to coarse grained) Yellow-brown, dense, wet		13/17/21	19.3		5
45		Silty (fine to coarse grained) SAND Grey-brown, dense, wet; silty to slightly silty		15/29/32	17.2		3
50				14/25/32	17.5		1
		Boring completed at depth of 51.5'					
55							
60							
65							
70							

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Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Newcastle Partners
20083-17

Log of Boring B-2

Boring Location: Frederick & Brodiaea, Moreno Valley
Date of Drilling: 12/6/17
Groundwater Depth: None Encountered
Drilling Method: Simco 2800HS
Hammer Weight: 140 lbs
Drop: 30"
Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp					
		NATURAL Clayey SAND Brown, very dense, damp to moist	■	35/41	8.8	118.2	
5							
		Silty (fine to medium grained) SAND Brown, very dense, damp	■	30/42	7.7	121.7	
10							
		Sandy SILT Grey-brown, very stiff, moist	■	30/42	12.6	117.0	
15							
		Silty (fine to coarse grained) SAND Brown, very dense, moist; with occasional gravel; slightly silty					
20		Boring completed at depth of 20'	■	22/38	10.3	120.3	
25							
30							
35							

GWT not encountered

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Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Newcastle Partners
20083-17

Log of Trench T-1

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: None Encountered

Drilling Method: Backhoe

Hammer Weight: | Drop:

Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp					
		NATURAL Clayey SAND Brown, dense, damp					
5		Trench completed at depth of 5'					
10							
15							
20							
25							
30							
35							

GWT not encountered

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Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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20083-17

Log of Trench T-2

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: None Encountered

Drilling Method: Backhoe

Hammer Weight: | Drop:

Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp					
		NATURAL Clayey SAND Brown, dense to very dense, damp					
5		GWT not encountered					
10		Trench completed at depth of 10'					
15							
20							
25							
30							
35							

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Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Newcastle Partners
20083-17

Log of Trench T-3

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: None Encountered

Drilling Method: Backhoe

Hammer Weight: | Drop:

Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp	■		7.0	114.2	
		NATURAL Clayey SAND Brown, dense, damp	■		9.8	121.1	
10		Silty (fine to medium grained) SAND Brown, very dense, damp	■		6.4	122.9	
15		Sandy SILT Grey-brown, stiff, moist	■		12.1	115.5	
		Trench completed at depth of 15'					

GWT not encountered

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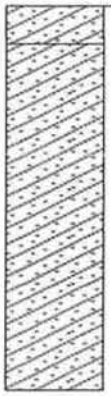
Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Newcastle Partners
20083-17

Log of Trench T-4

Boring Location: Frederick & Brodiaea, Moreno Valley
Date of Drilling: 12/6/17 | Groundwater Depth: None Encountered
Drilling Method: Backhoe
Hammer Weight: | Drop:
Surface Elevation: Not Measured



Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp	■		10.2	115.4	
		NATURAL Clayey SAND Brown, dense, moist					
5							
			■		12.5	120.7	
10		Trench completed at depth of 10'					
15							
20							
25							
30							
35							

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Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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20083-17

Log of Trench T-5

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: None Encountered

Drilling Method: Backhoe

Hammer Weight: | Drop:

Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp			5.5	120.3	
		NATURAL Clayey SAND Brown, dense, damp					
5		Trench completed at depth of 5'					
10							
15							
20							
25							
30							
35							

GWT not encountered

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Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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20083-17

Log of Trench T-6

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: None Encountered

Drilling Method: Backhoe

Hammer Weight: | Drop:

Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp					
		NATURAL Clayey SAND Brown, dense, damp to moist					
5		GWT not encountered	■		11.7	117.5	
10		Trench completed at depth of 10'	■		11.1	121.6	
15							
20							
25							
30							
35							

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Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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20083-17

Log of Trench T-7

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: None Encountered

Drilling Method: Backhoe

Hammer Weight: | Drop:

Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp	■		2.7	116.3	
		NATURAL Clayey SAND Brown, dense, damp	■		5.9	121.7	
10		Silty (fine to medium grained) SAND Brown, very dense, damp	■		8.1	119.5	
		Trench completed at depth of 12'					

GWT not encountered

15 20 25 30 35

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20083-17

Log of Trench T-8

Boring Location: Frederick & Brodiaea, Moreno Valley

Date of Drilling: 12/6/17 | Groundwater Depth: None Encountered

Drilling Method: Backhoe

Hammer Weight: | Drop:

Surface Elevation: Not Measured

Depth (feet)	Lith-ology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines
0		FILL Clayey SAND Brown, loose, damp					
		NATURAL Clayey SAND Brown, dense, damp					
5		Trench completed at depth of 5'					
10							
15							
20							
25							
30							
35							

GWT not encountered

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Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendix B

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

December 19, 2017 Project Number 20083-17

TABLE I
MAXIMUM DENSITY TESTS

Sample	Classification	Optimum Moisture	Maximum Dry Density (lbs./cu.ft.)
T-3 @ 2'	Clayey SAND	11.0	128.0

TABLE II
EXPANSION INDEX TESTS

Soil Type	Classification	Expansion Index
T-3 @ 2'	Clayey SAND	15

TABLE III
ATTERBERG LIMITS

Sample	Liquid Limit	Plastic Limit	Plasticity Index
B-1 @ 5'	24	19	5
B-1 @ 10'	20	17	3

TABLE IV
CORROSION TESTS

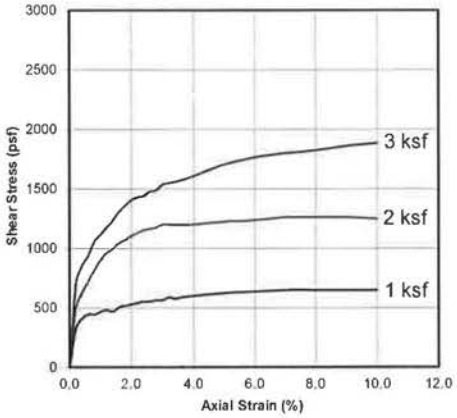
Sample	pH	Electrical Resistivity (ohm-cm)	Sulfate (%)	Chloride (ppm)
T-3 @ 2'	6.8	3,134	0.003	209

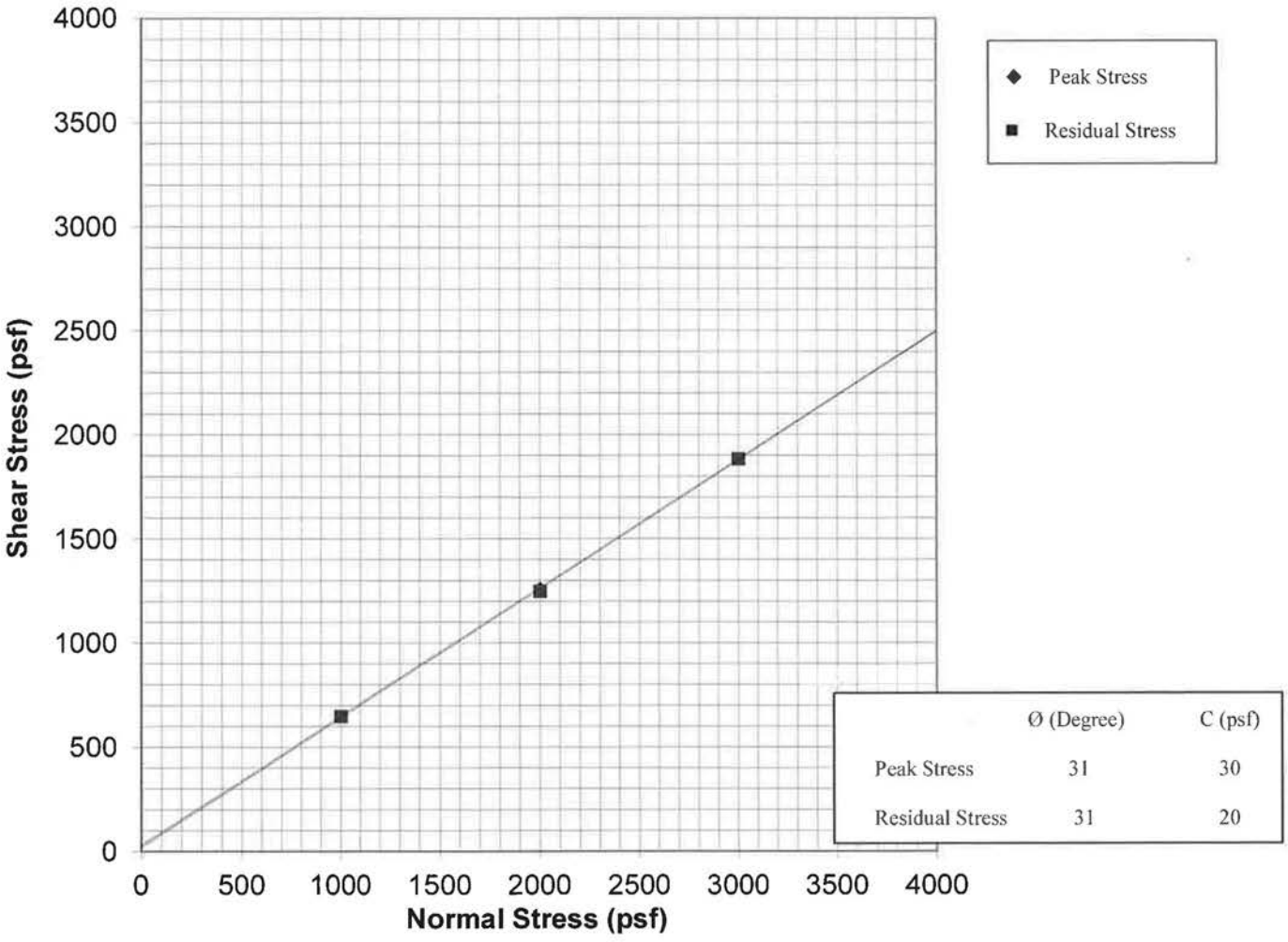
ND denotes not detected
% by weight
ppm – mg/kg

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Sample No.	T3@2'	
Sample Type:	Undisturbed/Saturated	
Soil Description:	Clayey Sand	

		1	2	3
Normal Stress	(psf)	1000	2000	3000
Peak Stress	(psf)	648	1260	1884
Displacement	(in)	0.175	0.175	0.250
Residual Stress	(psf)	648	1248	1884
Displacement	(in.)	0.250	0.250	0.250
In Situ Dry Density	(pcf)	114.2	114.2	114.2
In Situ Water Content	(%)	7.0	7.0	7.0
Saturated Water Content	(%)	17.6	17.6	17.6
Strain Rate	(in/min)	0.020	0.020	0.020





	Ø (Degree)	C (psf)
Peak Stress	31	30
Residual Stress	31	20

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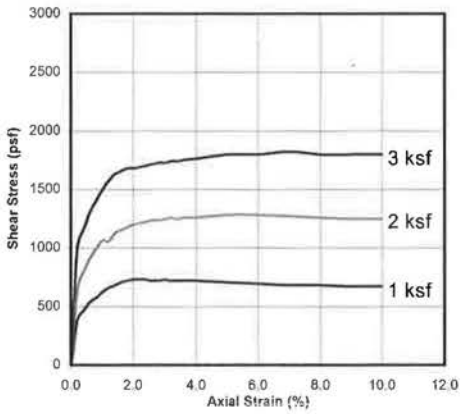
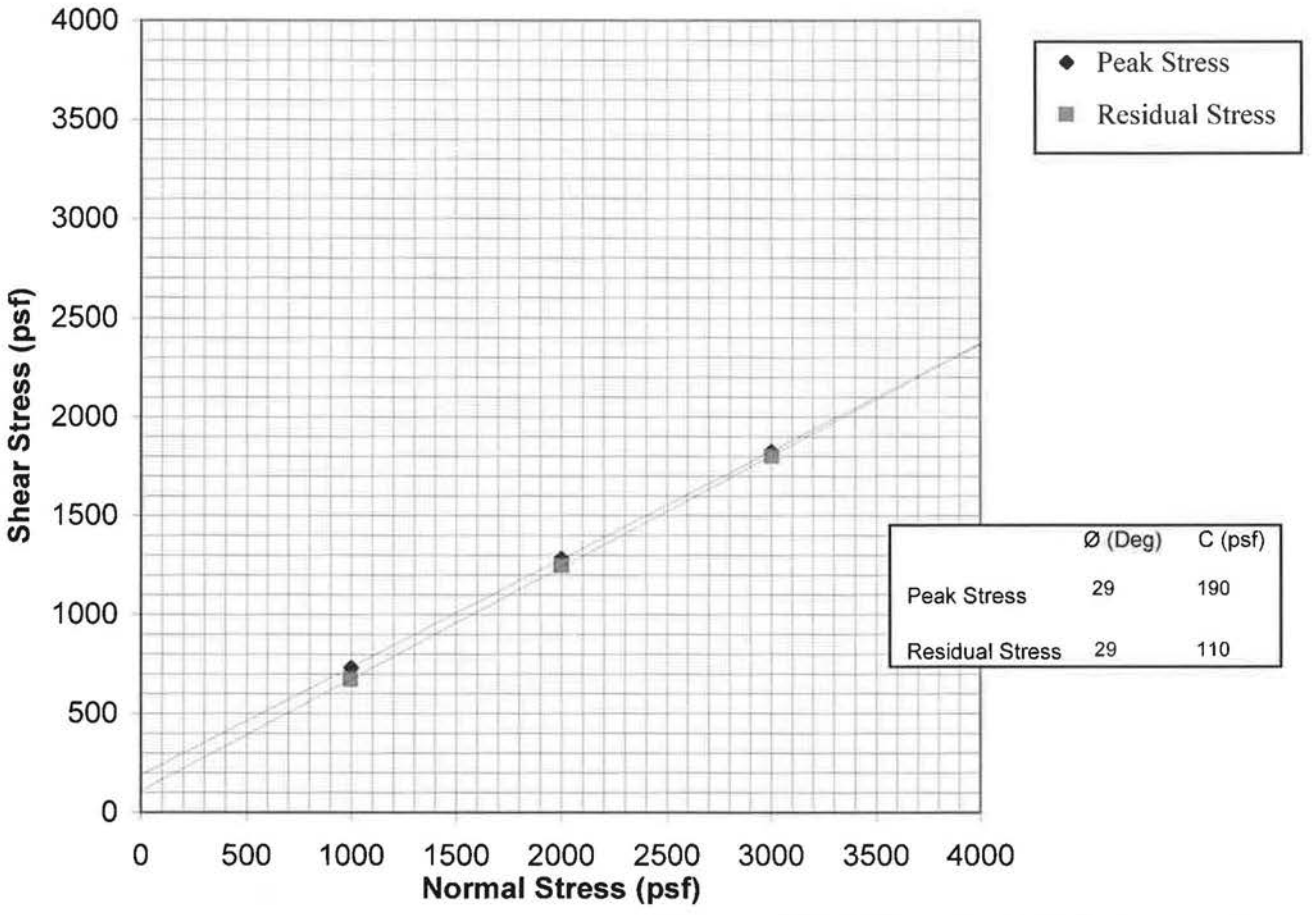
PROJECT NUMBER: 20083-17 DATE: 12/19/2017

DIRECT SHEAR TEST
ASTM D3080
Plate A

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Sample No.		T7@2'		
Sample Type:		Undisturbed-Saturated		
Soil Description:		Clayey Sand		
		1	2	3
Normal Stress	(psf)	1000	2000	3000
Peak Stress	(psf)	732	1284	1824
Displacement	(in.)	0.050	0.125	0.175
Residual Stress	(psf)	672	1248	1800
Displacement	(in.)	0.250	0.250	0.250
Initial Dry Density	(pcf)	116.3	116.3	116.3
Initial Water Content	(%)	2.7	2.7	2.7
Strain Rate	(in./min.)	0.020	0.020	0.020





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SOILS AND GEOTECHNICAL CONSULTANTS

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PROJECT NUMBER: 20083-17 DATE: 12/19/2017

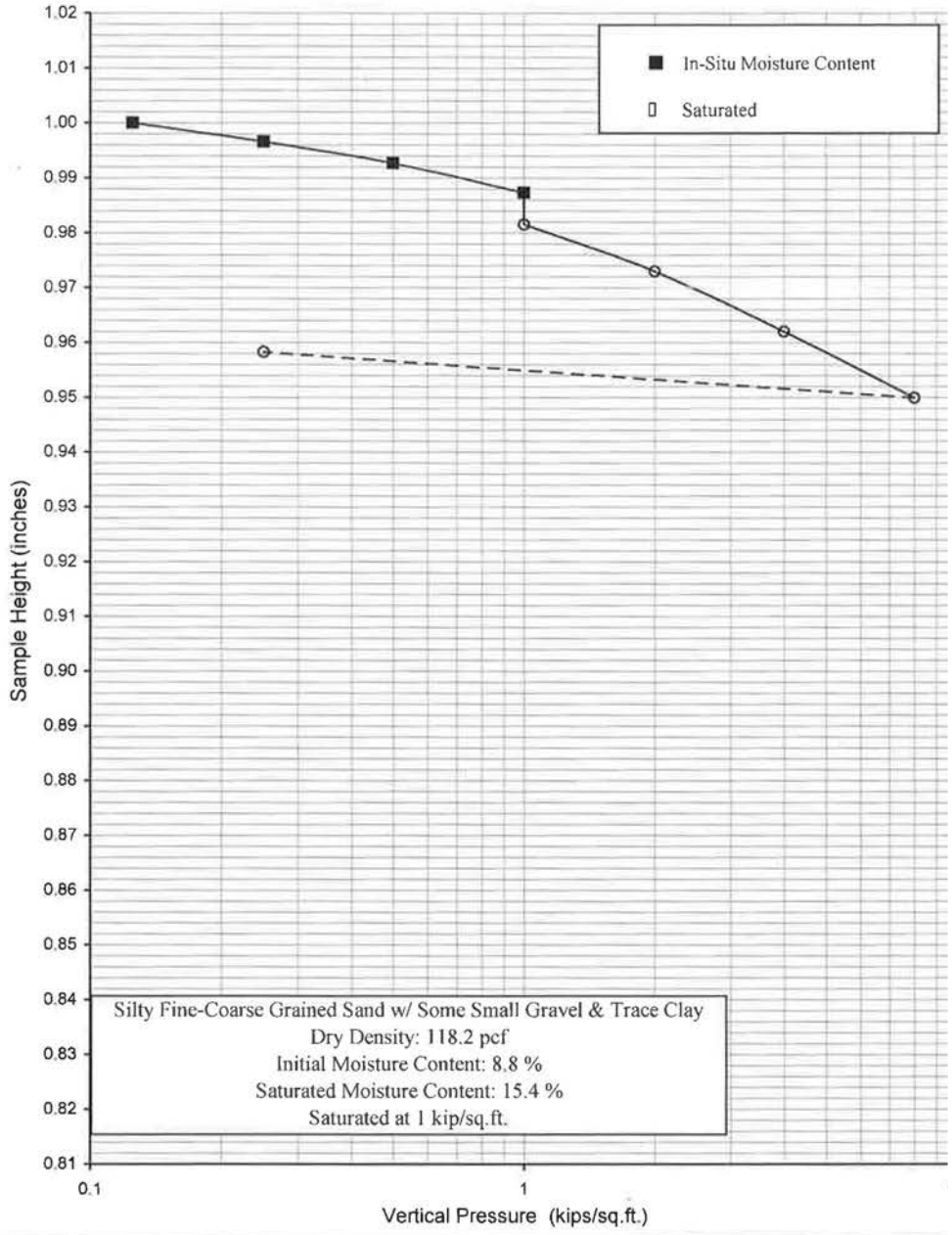
DIRECT SHEAR TEST
ASTM D3080
Plate B

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Vertical Pressure (kips/sq.ft.)	Sample Height (inches)	Consolidation (percent)	
0.125	1.0000	0.0	
0.25	0.9966	0.3	
0.5	0.9927	0.7	
1	0.9873	1.3	
1	0.9815	1.9	
2	0.9730	2.7	
4	0.9620	3.8	
8	0.9499	5.0	
0.25	0.9583	4.2	Saturated

Date Tested: 12/13/2017
Sample: B2
Depth: 5'

Sample No.	B2	Depth	5'	Date	12/19/2017



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SOILS AND GEOTECHNICAL CONSULTANTS

Newcastle Partners

PROJECT NUMBER: 20083-17 DATE: 12/19/2017

CONSOLIDATION TEST

ASTM D2435

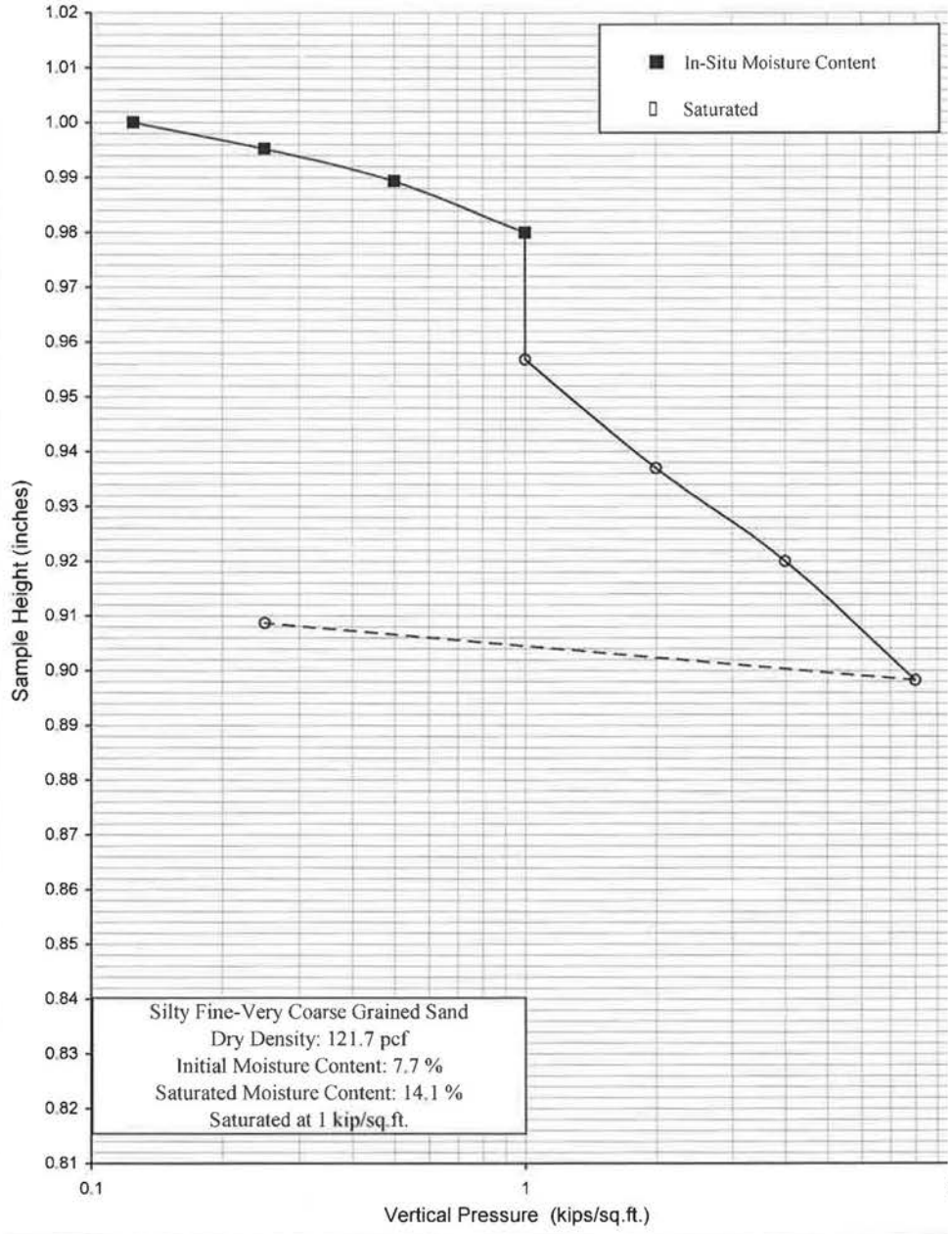
Plate C

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Vertical Pressure (kips/sq.ft.)	Sample Height (inches)	Consolidation (percent)	
0.125	1.0000	0.0	
0.25	0.9952	0.5	
0.5	0.9893	1.1	
1	0.9799	2.0	
1	0.9568	4.3	Saturated
2	0.9370	6.3	
4	0.9200	8.0	
8	0.8982	10.2	
0.25	0.9087	9.1	

Date Tested: 12/14/2017
Sample: B2
Depth: 10'

Sample No.	B2	Depth	10'	Date	12/19/2017



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PROJECT NUMBER: 20083-17 DATE: 12/19/2017

CONSOLIDATION TEST

ASTM D2435

Plate D

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendix C

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

NORCAL ENGINEERING
SOILS AND GEOTECHNICAL CONSULTANTS

Project:	**Newcastle Partners**
Project No:	20083-17
Date:	12/5/17
Test No.	1
Depth:	5'
Tested By:	J.S.

	TIME (hr/min)	CHANGE TIME (min)	CUMULATIVE TIME (min)	INNER RING READING (cm)	INNER RING CHANGE	INNER RING FLOW (cc)	OUTER RING READING (cm)	OUTER RING CHANGE (cm)	OUTER RING FLOW (cc)	INNER RING INF RATE (cm/hr)	OUTER RING INF RATE (cm/hr)	INNER RING INF RATE (ft/hr)
1	9:04			104.5			47.0					
	9:14	10	10	104.6	0.1		47.3	0.3		1.8	1.8	
2	9:14			104.6			47.3					
	9:24	10	20	105.0	0.4		47.6	0.3		1.8	1.8	
3	9:24			105.0			47.6					
	9:34	10	30	105.1	0.1		47.8	0.2		1.2	1.2	
4	9:34			105.1			47.8					
	9:44	10	40	105.2	0.1		47.9	0.1		0.6	0.5	
5	9:44			105.2			47.9					
	9:54	10	50	105.3	0.1		48.1	0.2		1.2	1.2	
6	9:54			105.3			48.1					
	10:04	10	60	105.3	0.0		48.1	0.0		0.0	0.0	
7	10:04			105.3			48.1					
	10:14	10	70	105.3	0.0		48.1	0.0		0.0	0.0	
8	10:14			105.3			48.1					
	10:24	10	80	105.3	0.0		48.1	0.0		0.0	0.0	
9	10:24			105.3			48.1					
	10:34	10	90	105.3	0.0		48.1	0.0		0.0	0.0	
10	10:34			105.3			48.1					
	10:44	10	100	105.3	0.0		48.1	0.0		0.0	0.0	
11	10:44			105.3			48.1					
	10:54	10	110	105.3	0.0		48.1	0.0		0.0	0.0	
12	10:54			105.3			48.1					
	11:04	10	120	105.3	0.0		48.1	0.0		0.0	0.0	

Average = 0.55 / 0.55

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

NORCAL ENGINEERING

SOILS AND GEOTECHNICAL CONSULTANTS

Project:	**Newcastle Partners**
Project No:	20083-17
Date:	12/5/17
Test No.	2
Depth:	10'
Tested By:	J.S.

	TIME (hr/min)	CHANGE TIME (min)	CUMULATIVE TIME (min)	INNER RING READING (cm)	INNER RING CHANGE	INNER RING FLOW (cc)	OUTER RING READING (cm)	OUTER RING CHANGE (cm)	OUTER RING FLOW (cc)	INNER RING INF RATE (cm/hr)	OUTER RING INF RATE (cm/hr)	INNER RING INF RAT (ft/hr)
1	11:32			106.4			49.6					
	11:42	10	10	106.5	0.1		49.9	0.3		0.6	1.8	
2	11:42			106.5			49.9					
	11:52	10	20	106.5	0.0		50.0	0.1		0.0	0.6	
3	11:52			106.5			50.0					
	12:02	10	30	106.6	0.1		50.0	0.0		0.6	0.0	
4	12:02			106.6			50.0					
	12:12	10	40	106.7	0.1		50.1	0.1		0.6	0.6	
5	12:12			106.7			50.1					
	12:22	10	50	106.7	0.0		50.1	0.0		0.0	0.0	
6	12:22			106.7			50.1					
	12:32	10	60	106.7	0.0		50.1	0.0		0.0	0.0	
7	12:32			106.7			50.1					
	12:42	10	70	106.8	0.1		50.2	0.1		0.6	0.6	
8	12:42			106.8			50.2					
	12:52	10	80	106.8	0.0		50.3	0.1		0.0	0.6	
9	12:52			106.8			50.3					
	1:02	10	90	106.9	0.1		50.4	0.1		0.6	0.6	
10	1:02			106.9			50.4					
	1:12	10	100	106.9	0.0		50.4	0.0		0.0	0.0	
11	1:12			106.9			50.4					
	1:22	10	110	107.0	0.1		50.5	0.1		0.6	0.6	
12	1:22			107.0			50.5					
	1:32	10	120	107.0	0.0		50.5	0.0		0.0	0.0	
									Average =	0.3	/ 0.4	

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

E.1.v

WQMP Project Report

County of Riverside Stormwater Program

Santa Ana River Watershed Geodatabase

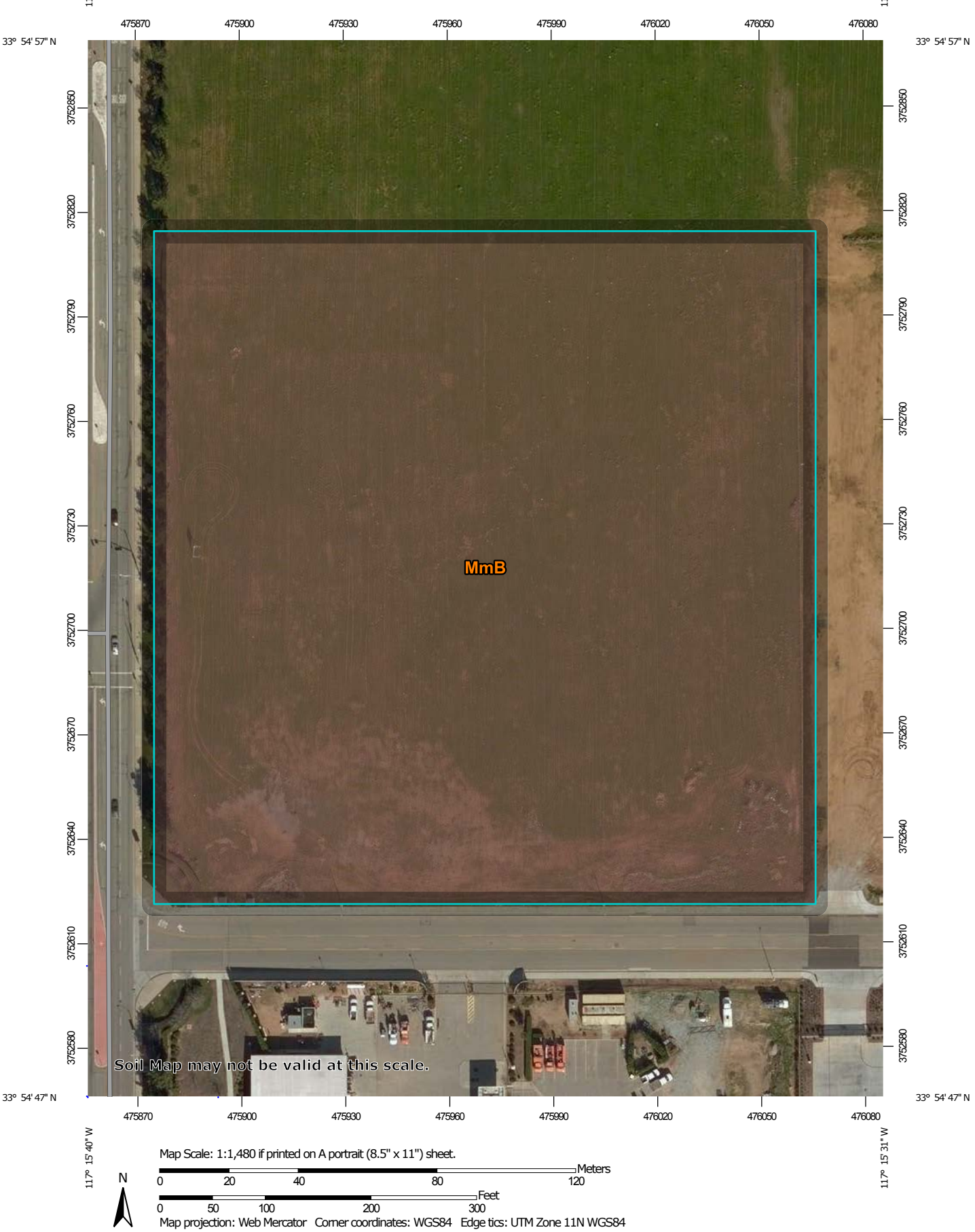
Thursday, January 25, 2018

Note: The information provided in this report and on the Stormwater Geodatabase for the County of Riverside Stormwater Program is intended to provide basic guidance in the preparation of the applicant's Water Quality Management Plan (WQMP) and should not be relied upon without independent verification.

Project Site Parcel Number(s):	297170029, 297170002, 297170064, 297170034
Latitude/Longitude:	33.9146, -117.2599
Thomas Brothers Page:	717
Project Site Acreage:	9.77
Watershed(s):	SANTA ANA
This Project Site Resides in the following Hydrologic Unit (s) (HUC):	**HUC Name** - HUC Number **Moreno Valley** - 180702020304
The HUCs Contribute stormwater to the following 303d listed water bodies and TMDLs which may include drainage from your proposed Project Site:	**WBID Name** - WBID Number **Canyon Lake (Railroad Canyon Reservoir)** - CAL8021100019990208151525 **Elsinore, Lake** - CAL8023100019990208151100
These 303d listed Water bodies and TMDLs have the following Pollutants of Concern (POC):	**Bacterial Indicators** - Pathogens **Nutrients** - Nutrients, Organic Enrichment/Low Dissolved Oxygen **Other Organics** - PCBs (Polychlorinated biphenyls) **Toxicity** - Sediment Toxicity, Unknown Toxicity
Limitations on Infiltration:	**Project Site Onsite Soils Group(s)** - C **Known Groundwater Contamination Plumes within 1000'** - No **Adjacent Water Supply Wells(s)** - No information available please contact your local water agency for more information. Your local contact agency is EASTERN MUNICIPAL W.D.. Your local wholesaler contact agency is METROPOLITAN WATER DISTRICT.
Environmentally Sensitive Areas within 200'(Fish and Wildlife Habitat/Species):	None
Environmentally Sensitive Areas within 200'(CVMSHCP):	None
Environmentally Sensitive Areas within 200'(WRMSHCP):	Burrowing Owl Survey Required Area
Groundwater elevation from Mean Sea Level:	1541
85th Percentile Design Storm Depth (in):	0.634
Groundwater Basin:	Perris-North
MSHCP/CVMSHCP Criteria Cell(s):	No Data
Retention Ordinance Information:	No Data
Studies and Reports Related to Project Site:	Comprehensive Nutrient Reduction Plan IBI Scores - Southern Cal RiversideBasin bulletin118_4-sc water_fact_3_7.11 8039-SAR-Hydromodification Sunnymead MDP West San Jacinto GW Basin Management Plan Sunnymead ADP Map Sunnymead ADP Report

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

All Ecological Sites -- Rangeland—Western Riverside Area, California
(Centerpointe Industrial Warehouse)



Map Scale: 1:1,480 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

R019XD029CA

Not rated or not available

Soil Rating Lines

R019XD029CA

Not rated or not available

Soil Rating Points

R019XD029CA

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 10, Sep 12, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 14, 2015—Jan 21, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and

All Ecological Sites — Rangeland

Map unit symbol	Map unit name	Component name (percent)	Ecological site	Acres in AOI	Percent of AOI
MmB	Monserate sandy loam, 0 to 5 percent slopes	Monserate (85%)	R019XD029CA — LOAMY (1975)	9.2	100.0%
		Greenfield (5%)			
		Hanford (5%)			
		Tujunga (5%)			
Totals for Area of Interest				**9.2**	**100.0%**

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

N/A – PROJECT PROPOSES TO TREAT STORMWATER RUNOFF WITH LID BMPs

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: REC Consultants, Inc. | Date: 3/30/2018
Designed by: Jason Evans, PE | Case No:
Company Project Number/Name: 1379 -- SDH Centerpointe Industrial Warehouse

BMP Identification

BMP NAME / ID: BMP WEST

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.63 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
WEST-IMP	*34914*	*Ornamental Landscaping*	*0.1*	*0.11*	*3856.5*			
WEST-PER	*152256*	*Concrete or Asphalt*	*1*	*0.89*	*135812.4*			

Bioretention Facility - Design Procedure	BMP ID	Legend:	Required Entries	
	BMP-WEST		Calculated Cells	

Company Name:	REC-Consultants, Inc	Date:	3/30/2018
Designed by:	Jason Evans, PE	County/City Case No.:	

Design Volume

Enter the area tributary to this feature	A_T=	4.3	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	7,380	ft^3

Type of Bioretention Facility Design

- ○ Side slopes required (parallel to parking spaces or adjacent to walkways)
- ◉ No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	2.0	ft
Top Width of Bioretention Facility, excluding curb	w_T =	20.0	ft
Total Effective Depth, d_E			
$d_E = [(0.3) \times d_S + (0.4) \times 1] + 0.5$	d_E =	1.50	ft
Minimum Surface Area, A_m			
$A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	4,920	ft^2
Proposed Surface Area	A=	8,300	ft^2
Minimum Required Length of Bioretention Facility, L	L =	246.0	ft

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	0	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		1.5	%
6" Check Dam Spacing		25	feet
Describe Vegetation:		Other	

Notes: Landscaping with native and/or drought tolerant vegetation.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Stage-Storage for BMP WEST

Elevation (ft)	Area (ft^2)	Volume (ft^3)	
0.00	8300	**0**	BOTTOM OF GRAVEL LAYER (0.4 Voids)
0.25	8300	830	
0.50	8300	1660	
0.75	8300	2490	
1.00	8300	3320	TOP OF GRAVEL LAYER
1.001	8300	3322	BOTTOM OF AMMENDED SOILS LAYER (0.3 Voids)
1.25	8300	3943	
1.50	8300	4565	
1.75	8300	5188	
2.00	8300	5810	
2.25	8300	6433	
2.50	8300	7055	
2.75	8300	7678	
3.00	8300	8300	TOP OF AMMENDED SOILS LAYER
3.001	8300	8308	BOTTOM OF MULCH
3.25	8300	10375	TOP OF MULCH
3.50	8300	12450	
3.75	8300	14525	SURFACE DISCHARGE(1,2)
4.00	8300	16600	
4.25	8300	18675	
4.50	8300	20750	
4.75	8300	22825	
5.00	8300	24900	
5.25	8300	26975	
5.50	8300	29050	
5.75	8300	31125	

(1): Volume at this elevation coresponds with surface volume for WQ purposes (invert of lowest surface outlet)
(2): This elevation corresponds to the top of the riser elevation and is equal to the invert of the existing-receiving stormdrain located along the southwestern project boundary

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: REC Consultants, Inc. Date: 3/30/2018

Designed by: Jason Evans, PE Case No:

Company Project Number/Name: 1379 SDH -- Centerpointe Industrial Warehouse

BMP Identification

BMP NAME / ID: BMP EAST

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.63 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
EAST-IMP	*180068*	*Concrete or Asphalt*	*1*	*0.89*	*160620.7*			
EAST-PER	*15220*	*Ornamental Landscaping*	*0.1*	*0.11*	*1681.2*			

Dimensions for BMP East

Proposing OldCastle Underground Vaults Model 7x15x6

Dimensions

Length (ft)	Width (ft)	Height (ft)	Number	Area (sf)	Volume (cf)
15	7	6	24	2520	15120

Outside				Footprint
Length (ft)	Width (ft)	Height (ft)	Number	Area (sf)
16	8	6.5	24	3072

Stage-Area for BMP East

Elevation (ft)	Area (ft^2)	Volume (ft^3)	
0.00	2520	**0**	
1.00	2520	2520	
2.00	2520	5040	
3.00	2520	7560	
3.40	2520	8578	DCV(1,2)
4.00	2520	10080	
5.00	2520	12600	
6.00	2520	15120	

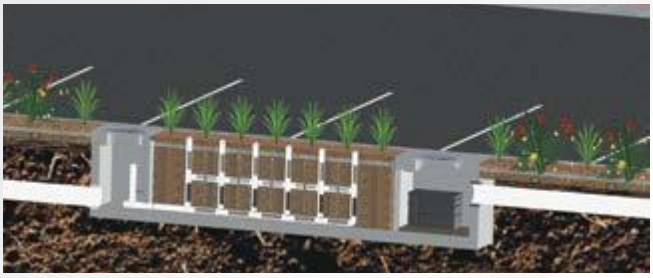
(1): Baffle wall to be set inside the storage system at 3.40' to ensure DCV is treated. Flows that reach above this elevation flow over the baffle wall, bypass treatment, and go directly to outflow chamber

(2): Proprietary BMP selected based on capacity to treat and discharge DCV within 48hours. Proprietary BMP selected is MWS-L-4-17 or equal.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Flow Based Sizing

The MWS Linear can be used in stand alone applications to meet treatment flow requirements. Since the MWS Linear is the only biofiltration system that can accept inflow pipes several feet below the surface it can be used not only in decentralized design applications but also as a large central end-of-the-line application for maximum feasibility.

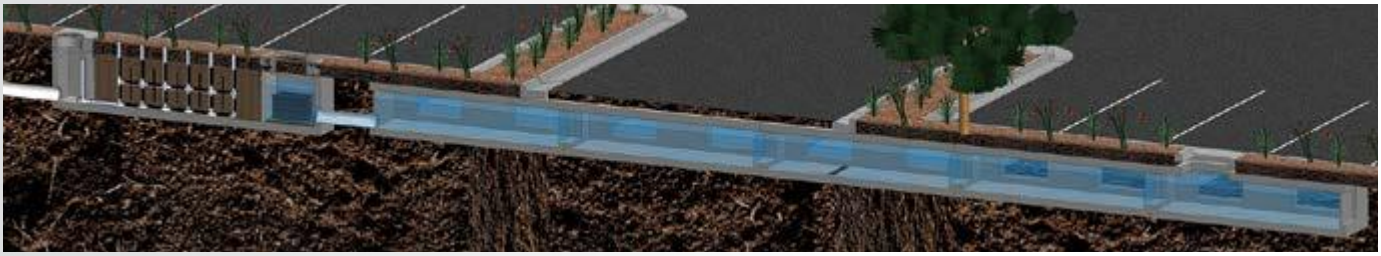


Treatment Flow Sizing Table

Model #	Dimensions	WetlandMedia Surface Area	Treatment Flow Rate (cfs)
MWS-L-4-4	4' x 4'	23 ft^2	0.052
MWS-L-4-6	4' x 6'	32 ft^2	0.073
MWS-L-4-8	4' x 8'	50 ft^2	0.115
MWS-L-4-13	4' x 13'	63 ft^2	0.144
MWS-L-4-15	4' x 15'	76 ft^2	0.175
MWS-L-4-17	4' x 17'	90 ft^2	0.206
MWS-L-4-19	4' x 19'	103 ft^2	0.237
MWS-L-4-21	4' x 21'	117 ft^2	0.268
MWS-L-8-8	8' x 8'	100 ft^2	0.230
MWS-L-8-12	8' x 12'	151 ft^2	0.346
MWS-L-8-16	8' x 16'	201 ft^2	0.462

Volume Based Sizing

Many states require treatment of a water quality volume and do not offer the option of flow based design. The MWS Linear and its unique horizontal flow makes it the only biofilter that can be used in volume based design installed downstream of ponds, detention basins, and underground storage systems.

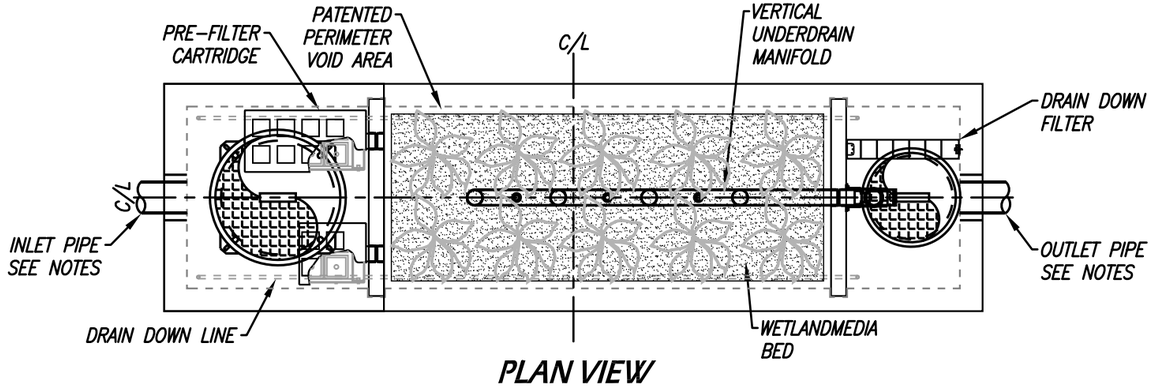


Treatment Volume Sizing Table

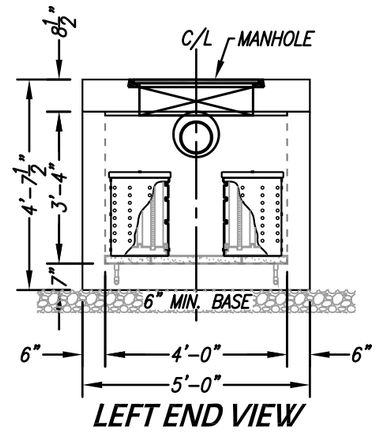
Model #	Treatment Capacity (cu. ft.) @ 24-Hour Drain Down	Treatment Capacity (cu. ft.) @ 48-Hour Drain Down
MWS-L-4-4	1140	2280
MWS-L-4-6	1600	3200
MWS-L-4-8	2518	5036
MWS-L-4-13	3131	6261
MWS-L-4-15	3811	7623
MWS-L-4-17	4492	8984
MWS-L-4-19	5172	10345
MWS-L-4-21	5853	11706
MWS-L-8-8	5036	10072
MWS-L-8-12	7554	15109
MWS-L-8-16	10073	20145

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

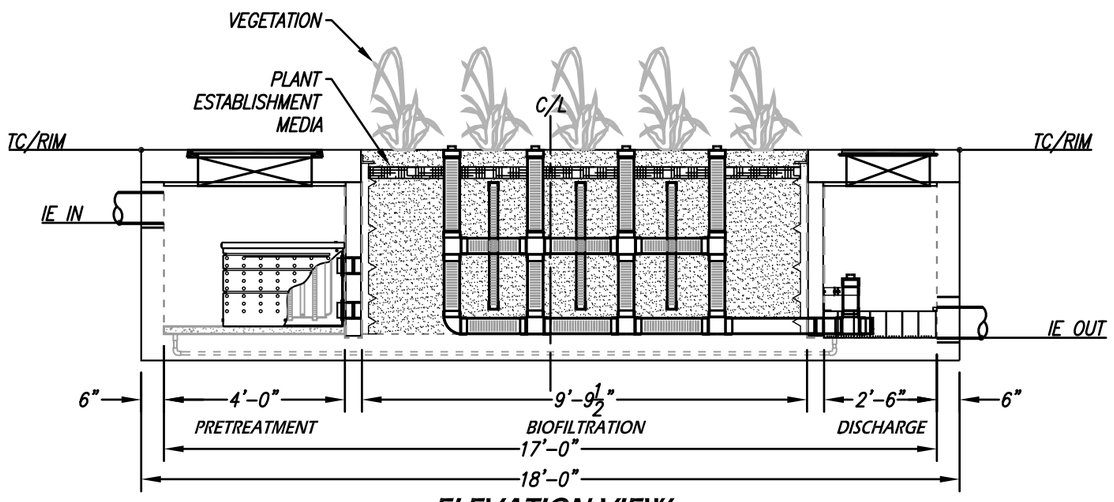
SITE SPECIFIC DATA			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PARKWAY	OPEN PLANTER	PARKWAY
FRAME & COVER	ø30"	N/A	ø24"
WETLANDMEDIA VOLUME (CY)			5.41
WETLANDMEDIA DELIVERY METHOD			TBD
ORIFICE SIZE (DIA. INCHES)			ø2.05"
MAXIMUM PICK WEIGHT (LBS)			36000
NOTES:			



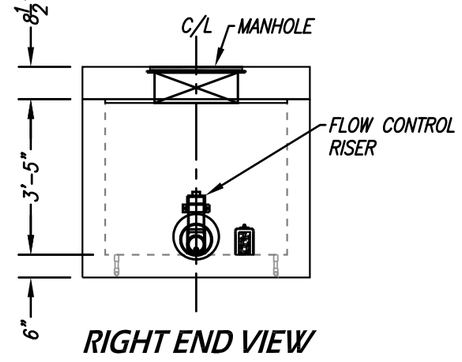
PLAN VIEW



LEFT END VIEW



ELEVATION VIEW



RIGHT END VIEW

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
3. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON–SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. DRIP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT MANUFACTURER.

TREATMENT FLOW (CFS)	0.206
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	TBD
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

THE PRODUCT DESCRIBED MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,425,262; 7,470,362; 7,674,378; 8,303,816; RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

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MWS-L-4-17-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Section [_____]
Modular Subsurface Flow Wetland System

PART 1 – GENERAL

01.01.00 Purpose
The purpose of this specification is to establish generally acceptable criteria for Modular Subsurface Flow Wetland Systems used for biofiltration of stormwater runoff including dry weather flows and other contaminated water sources. It is intended to serve as a guide to producers, distributors, architects, engineers, contractors, plumbers, installers, inspectors, agencies and users; to promote understanding regarding materials, manufacture and installation; and to provide for identification of devices complying with this specification.

01.02.00 Description
Modular Subsurface Flow Wetland Systems (MSFWS) are used for filtration of stormwater runoff including dry weather flows. The MSFWS is a pre-engineered biofiltration system composed of a pretreatment chamber containing filtration cartridges, a horizontal flow biofiltration chamber with a peripheral void area and a centralized and vertically extending underdrain, the biofiltration chamber containing a sorptive media mix which does not contain any organic material and a layer of plant establishment media, and a discharge chamber containing an orifice control structure . Treated water flows horizontally in series through the pretreatment chamber cartridges, biofiltration chamber and orifice control structure.

01.03.00 Manufacturer
The manufacturer of the MSFWS shall be one that is regularly engaged in the engineering design and production of systems developed for the treatment of stormwater runoff for at least (10) years, and which have a history of successful production, acceptable to the engineer of work. In accordance with the drawings, the MSFWS(s) shall be a filter device Manufactured by Bio Clean Environmental Services, Inc., or Modular Wetland Systems, Inc., or assigned distributors or licensees. Bio Clean Environmental Services Inc., and Modular Wetland Systems, Inc., can be reached at:

Corporate Headquarters:
Bio Clean Environmental Service, Inc.
2972 San Luis Rey Road
Oceanside, CA 92058
Phone: (760) 433-7640
Fax: (760) 433-3176
www.biocleanenvironmental.net

Corporate Headquarters:
Modular Wetland Systems, Inc.
P.O. Box 869
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Phone: (760) 433-7650
www.modularwetlands.net

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01.04.00 Submittals

01.04.01 Shop drawings are to be submitted with each order to the contractor and consulting engineer.

01.04.02 Shop drawings are to detail the MSFWS and all components required and the sequence for installation, including:

- System configuration with primary dimensions
- Interior components
- Any accessory equipment called out on shop drawings

01.04.03 Inspection and maintenance documentation submitted upon request.

01.05.00 Work Included

01.05.01 Specification requirements for installation of MSFWS.

01.05.02 Manufacturer to supply components of the MSFWS(s):

- Pretreatment chamber components (pre-assembled)
- Concrete Structure(s)
- Biofiltration chamber components (pre-assembled)
- Flow control discharge structure (pre-assembled)

01.06.00 Reference Standards

ASTM C 29	Standard Test Method for Unit Weight and Voids in Aggregate
ASTM C 88	C 88 Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C131	C 131 Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregates by Abrasion and Impact in the Los Angeles Machine
ASTM C 136	C 136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C 330	C 330 Standard Specification for Lightweight Aggregate for Structural Concrete
ASTM D 698	Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft.-lbf/ft3 (600 kN-m/m3)
ASTM D 1621	10 Standard Test Method for Compressive Properties Of Rigid Cellular Plastics
ASTM D 1777	ASTM D1777 - 96(2007) Standard Test Method for Thickness of Textile Materials
ASTM D 4716	Standard Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head
AASHTO T 99-01	Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in) Drop
AASHTO T 104	Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
AASHTO T 260	Standard Method of Test for Sampling and Testing for Chloride Ion in Concrete and Concrete Raw Materials.
AASHTO T 288	Standard Method of Test for Determining Minimum Laboratory Soil Resistivity
AASHTO T 289	Standard Method of Test for Determining ph of Soil for Use in Corrosion Testing
AASHTO T 291	Standard Method of Test for Determining Water Soluble Chloride Ion Content in Soil
AASHTO T 290	T 290 Standard Method of Test for Determining Water Soluble Sulfate Ion Content in Soil

PART 2 – COMPONENTS

The Modular Subsurface Flow Wetland Systems (MSFWS) and all of its components shall be self-contained within a concrete structure constructed of concrete with a minimum 28 day compressive strength of 5,000 psi, with reinforcing per ASTM A 615, Grade 60, and supports and H20 loading as indicated by AASHTO. Each Chamber shall have appropriate access hatches for easy maintenance and sized to allow removal of all internal components without disassembly. All water transfer system components shall conform with the following;

- Filter netting shall be 100% Polyester with a number 16 sieve size, and strength tested per ASTM D 3787.
- Drainage cells shall be manufactured of lightweight injection-molded plastic and have a minimum compressive strength test of 6,000 psi and a void area along the surface making contact with the filter media of 75% or greater. The cells shall be at least 2" in thickness and allow water to freely flow in all four directions.

02.01.00 Pretreatment Chamber Components

02.01.01 Filter Cartridges shall operate at a loading rate not to exceed 3 gallons per minute per square foot surface area.

02.01.02 Drain Down System shall include a pervious floor that allows water to drain into the underdrain pipe that is connected to the discharge chamber.

02.02.00 Biofiltration Chamber Components

02.02.01 Media shall consist of ceramic material produced by expanding and vitrifying select material in a rotary kiln. Media must be produced to meet the requirements of ASTM C330, ASTM C331, and AASHTO M195. Aggregates must have a minimum 24-hour water absorption of 10.5% mass. Media shall not contain any organic material. Flow through media shall be horizontal from the outer perimeter of the chamber toward the centralized and vertically extending underdrain. The retention time in the media shall be at least 3 minutes. Downward flow filters are not acceptable alternatives. The thickness of the media shall be at least 19" from influent end to effluent end. The loading rate on the media shall not exceed 1.1 gallons per minute per square foot surface area. Media must be contained within structure that spaces the surface of the media at least 2" from all vertically extending walls of the concrete structure.

02.02.02 Planting shall be native, drought tolerant species recommend by manufacturer and/or landscape architect.

02.02.03 Plant Support Media shall be made of a 3" thick moisture retention cell that is inert and contains no chemicals or fertilizers, is not made of organic material and has an internal void percentage of 80%.

02.03.00 Discharge Chamber

The discharge device shall house a flow control orifice plate that restricts flows greater than designed treatment flow rate. All piping components shall be made of a high-density polyethylene. The discharge chamber shall also contain a drain down filter if specified on the drawing.

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PART 3 – PERFORMANCE

03.01.00 General

03.01.01 Function - The MSFWS has no moving internal components and functions based on gravity flow, unless otherwise specified. The MSFWS is composed of a pretreatment chamber, a biofiltration chamber and a discharge chamber. The pretreatment device houses cartridge media filters, which consist of filter media housed in a perforated enclosure. The untreated runoff flows into the system via subsurface piping and or surface inlet. Water entering the system is forced through the filter cartridge enclosures by gravity flow. Then the flow contacts the filter media. The flow through the media is horizontal toward the center of each individual media filter. In the center of the media shall be a round slotted PVC pipe of no greater than 1.5" in diameter. The slotted PVC pipe shall extend downward into the water transfer cavity of the cartridge. The slotted PVC pipe shall be threaded on the bottom to connect to the water transfer cavity. After pollutants have been removed by the filter media the water discharges the pretreatment chamber and flows into the water transfer system and is conveyed to the biofiltration chamber. Once runoff has been filtered by the biofiltration chamber it is collected by the vertical underdrain and conveyed to a discharge chamber equipped with a flow control orifice plate. Finally the treated flow exits the system.

03.01.02 Pollutants - The MSFWS will remove and retain debris, sediments, TSS, dissolved and particulate metals and nutrients including nitrogen and phosphorus species, bacteria, BOD, oxygen demanding substances, organic compounds and hydrocarbons entering the filter during frequent storm events and continuous dry weather flows.

03.01.03 Treatment Flow Rate and Bypass - The MSFWS operates in-line. The MSFWS will treat 100% of the required water quality treatment flow based on a minimum filtration capacities listed in section 03.02.00. The size of the system must match those provided on the drawing to ensure proper performance and hydraulic residence time.

Minimum Treatment Capabilities

• System must be capable of treating flows to the specified treatment flow rate on the drawings. The flow rate shall be controlled by an orifice plate.

PART 4 - EXECUTION

04.01.00 General

The installation of the MSFWS shall conform to all applicable national, state, state highway, municipal and local specifications.

04.02.00 Installation

The Contractor shall furnish all labor, equipment, materials and incidentals required to install the (MSFWS) device(s) and appurtenances in accordance with the drawings and these specifications.

04.02.01 Grading and Excavation site shall be properly surveyed by a registered professional surveyor, and clearly marked with excavation limits and elevations. After site is marked it is the responsibility of the contractor to contact local utility companies and/or DigAlert to check for underground utilities. All grading permits shall be approved by governing agencies before commencement of grading and excavation. Soil conditions shall be tested in accordance with the governing agencies requirements. All earth removed shall be transported, disposed, stored, and handled per governing agencies standards. It is the responsibility of the contractor to install and maintain proper erosion control measures during grading and excavation operations.

04.02.02 Compaction – All soil shall be compacted per registered professional soils engineer's recommendations prior to installation of MSFWS components.

04.02.03 Backfill shall be placed according to a registered professional soils engineer's recommendations, and with a minimum of 6" of gravel under all concrete structures.

04.02.04 Concrete Structures – After backfill has been inspected by the governing agency and approved the concrete structures shall be lifted and placed in proper position per plans.

04.02.05 Subsurface Flow Wetland Media shall be carefully loaded into area so not to damage the Wetland Liner or Water Transfer Systems. The entire wetland area shall be filled to a level 9 inches below finished surface.

04.02.06 Planting layer shall be installed per manufacturer's drawings and consist of a minimum 3" grow enhancement media that ensures greater than 95% plant survival rate, and 6" of wetland media. Planting shall consist of native plants recommended by manufacturer and/or landscape architect. Planting shall be drip irrigated for at least the first 3 months to insure long term plant growth. No chemical herbicides, pesticides, or fertilizers shall be used in the planting or care and maintenance of the planted area.

04.03.00 Shipping, Storage and Handling

04.03.01 Shipping – MSFWS shall be shipped to the contractor's address or job site, and is the responsibility of the contractor to offload the unit(s) and place in the exact site of installation.

04.03.02 Storage and Handling– The contractor shall exercise care in the storage and handling of the MSFWS and all components prior to and during installation. Any repair or replacement costs associated with events occurring after delivery is accepted and unloading has commenced shall be born by the contractor. The MSFWS(s) and all components shall always be stored indoors and transported inside the original shipping container until the unit(s) are ready to be installed. The MSFWS shall always be handled with care and lifted according to OSHA and NIOSA lifting recommendations and/or contractor's workplace safety professional recommendations.

04.04.00 Maintenance and Inspection

04.04.01 Inspection – After installation, the contractor shall demonstrate that the MSFWS has been properly installed at the correct location(s), elevations, and with appropriate components. All components associated with the MSFWS and its installation shall be subject to inspection by the engineer at the place of installation. In addition, the contractor shall demonstrate that the MSFWS has been installed per the manufacturer's specifications and recommendations. All

components shall be inspected by a qualified person once a year and results of inspection shall be kept in an inspection log.

04.04.02 Maintenance – The manufacturer recommends cleaning and debris removal maintenance of once a year and replacement of the Cartridge Filters as needed. The maintenance shall be performed by someone qualified. A Maintenance Manual is available upon request from the manufacturer. The manual has detailed information regarding the maintenance of the MSFWS. A Maintenance/Inspection record shall be kept by the maintenance operator. The record shall include any maintenance activities preformed, amount and description of debris collected, and the condition of the filter.

04.04.03 Material Disposal - All debris, trash, organics, and sediments captured by the MSFWS shall be transported and disposed of at an approved facility for disposal in accordance with local and state requirements. Please refer to state and local regulations for the proper disposal of toxic and non-toxic material.

PART 5 – QUALITY ASSURNACE

05.01.00 Warranty

The Manufacturer shall guarantee the MSFWS against all manufacturing defects in materials and workmanship for a period of (5) years from the date of delivery to the _____. The manufacturer shall be notified of repair or replacement issues in writing within the warranty period. The MSFWS is limited to recommended application for which it was designed.

05.02.00 Performance Certification

The MSFWS manufacturer shall submit to the Engineer of Record a “Manufacturer’s Performance Certificate” certifying the MSFWS is capable of achieving the specified removal efficiency for suspended solids, phosphorous and dissolved metals.

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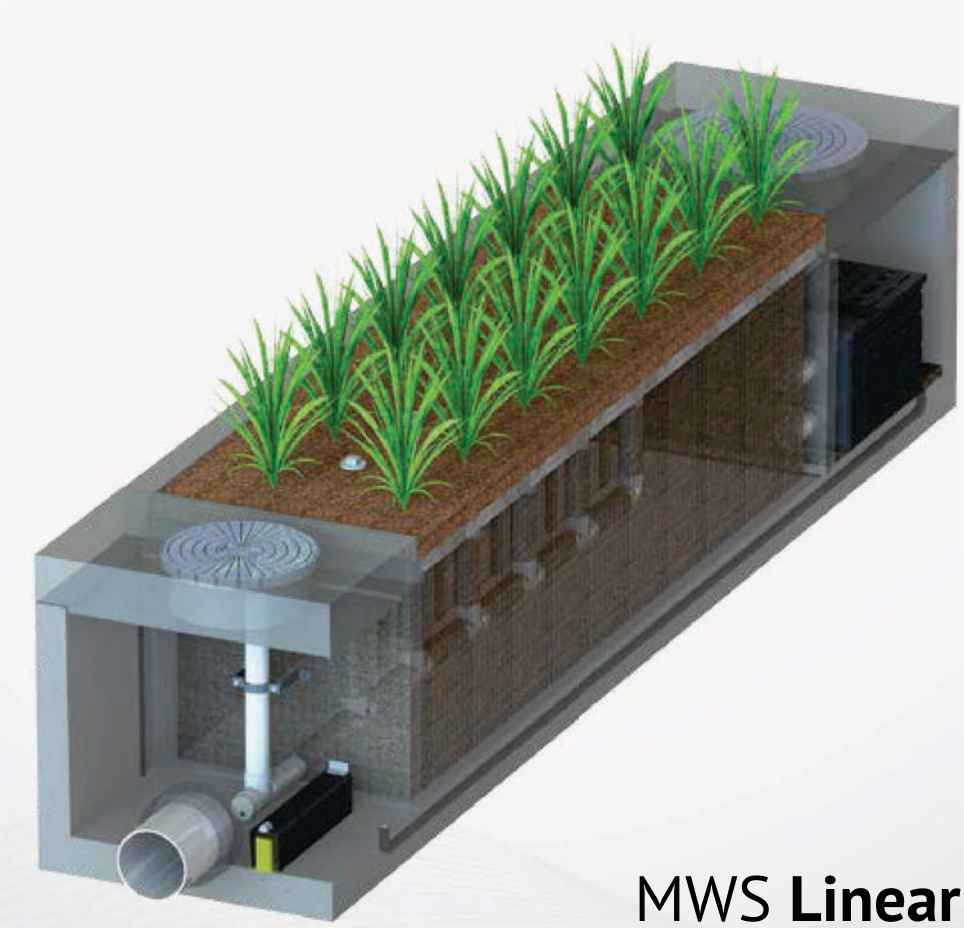
MODULAR WETLANDS™

*Advanced **Stormwater** Biofiltration*



MWS **Linear**

Contents

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2 Applications

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The Urban Impact

For hundreds of years natural wetlands surrounding our shores have played an integral role as nature's stormwater treatment system. But as our cities grow and develop, these natural wetlands have perished under countless roads, rooftops, and parking lots.

Plant A Wetland

Without natural wetlands our cities are deprived of water purification, flood control, and land stability. Modular Wetlands and the MWS Linear re-establish nature's presence and rejuvenate water ways in urban areas.

MWS **Linear**

The Modular Wetland System Linear represents a pioneering breakthrough in stormwater technology as the only biofiltration system to utilize patented horizontal flow, allowing for a smaller footprint and higher treatment capacity. While most biofilters use little or no pre-treatment, the MWS Linear incorporates an advanced pre-treatment chamber that includes separation and pre-filter cartridges. In this chamber sediment and hydrocarbons are removed from runoff before it enters the biofiltration chamber, in turn reducing maintenance costs and improving performance.

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Applications

The MWS Linear has been successfully used on numerous new construction and retrofit projects. The system's superior versatility makes it beneficial for a wide range of stormwater and waste water applications - treating rooftops, streetscapes, parking lots, and industrial sites.

Industrial

Many states enforce strict regulations for discharges from industrial sites. The MWS Linear has helped various sites meet difficult EPA mandated effluent limits for dissolved metals and other pollutants.

Residential

Low to high density developments can benefit from the versatile design of the MWS Linear. The system can be used in both decentralized LID design and cost-effective end-of-the-line configurations.

Streets

Street applications can be challenging due to limited space. The MWS Linear is very adaptable, and offers the smallest footprint to work around the constraints of existing utilities on retrofit projects.

Parking Lots

Parking lots are designed to maximize space and the MWS Linear's 4 ft. standard planter width allows for easy integration into parking lot islands and other landscape medians.

Commercial

Compared to bioretention systems, the MWS Linear can treat far more area in less space - meeting treatment and volume control requirements.

Mixed Use

The MWS Linear can be installed as a raised planter to treat runoff from rooftops or patios, making it perfect for sustainable "live-work" spaces.

More applications are available on our website: www.ModularWetlands.com/Applications

- Agriculture
- Reuse
- Low Impact Development
- Waste Water

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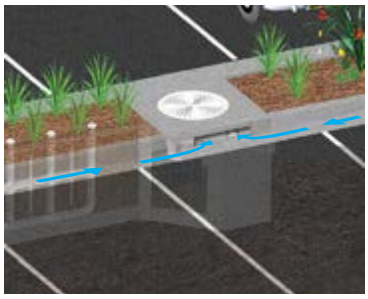
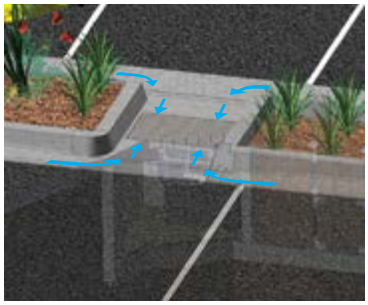
Configurations

The MWS Linear is the preferred biofiltration system of Civil Engineers across the country due to its versatile design. This highly versatile system has available "pipe-in" options on most models, along with built-in curb or grated inlets for simple integration into your stormdrain design.



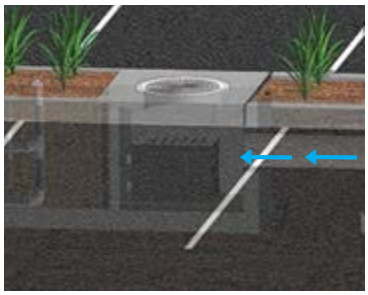
Curb Type

The *Curb Type* configuration accepts sheet flow through a curb opening and is commonly used along road ways and parking lots. It can be used in sump or flow by conditions. Length of curb opening varies based on model and size.



Grate Type

The *Grate Type* configuration offers the same features and benefits as the *Curb Type* but with a grated/drop inlet above the systems pre-treatment chamber. It has the added benefit of allowing for pedestrian access over the inlet. ADA compliant grates are available to assure easy and safe access. The *Grate Type* can also be used in scenarios where runoff needs to be intercepted on both sides of landscape islands.



Vault Type

The system's patented horizontal flow biofilter is able to accept inflow pipes directly into the pre-treatment chamber, meaning the MWS Linear can be used in end-of-the-line installations. This greatly improves feasibility over typical decentralized designs that are required with other biofiltration/bioretention systems. Another benefit of the "pipe in" design is the ability to install the system downstream of underground detention systems to meet water quality volume requirements.

Downspout Type

The *Downspout Type* is a variation of the *Vault Type* and is designed to accept a vertical downspout pipe from roof top and podium areas. Some models have the option of utilizing an internal bypass, simplifying the overall design. The system can be installed as a raised planter and the exterior can be stuccoed or covered with other finishes to match the look of adjacent buildings.

Advantages & Operation

The MWS Linear is the most efficient and versatile biofiltration system on the market, and the only system with horizontal flow which improves performance, reduces footprint, and minimizes maintenance. Figure-1 and Figure-2 illustrate the invaluable benefits of horizontal flow and the multiple treatment stages.

Featured Advantages

- Horizontal Flow Biofiltration
- Greater Filter Surface Area
- Pre-Treatment Chamber
- Patented Perimeter Void Area
- Flow Control
- No Depressed Planter Area

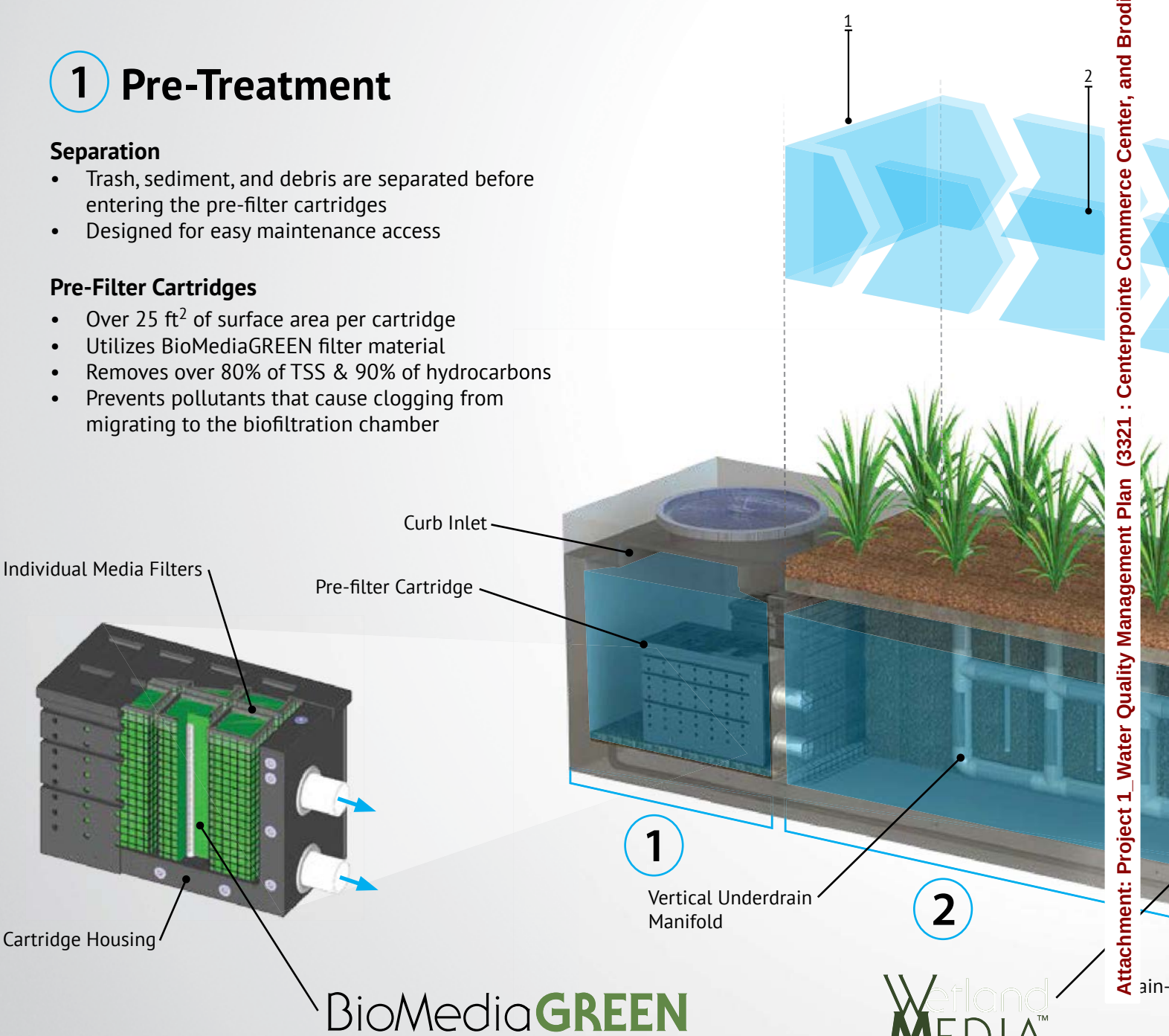
1 Pre-Treatment

Separation

- Trash, sediment, and debris are separated before entering the pre-filter cartridges
- Designed for easy maintenance access

Pre-Filter Cartridges

- Over 25 ft^2 of surface area per cartridge
- Utilizes BioMediaGREEN filter material
- Removes over 80% of TSS & 90% of hydrocarbons
- Prevents pollutants that cause clogging from migrating to the biofiltration chamber



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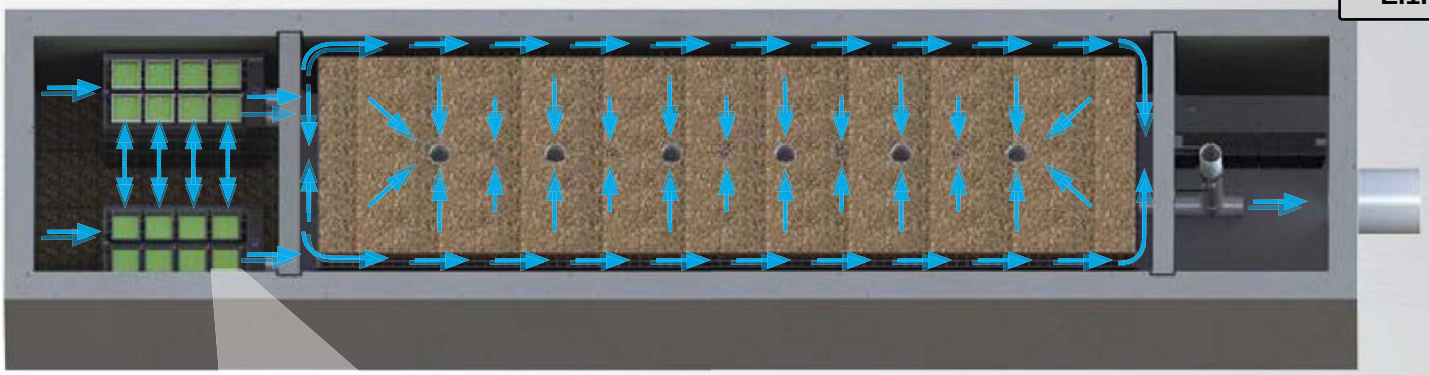

Fig. 2 - Top View

2x to 3x More Surface Area Than Traditional Downward Flow Bioretention Systems.

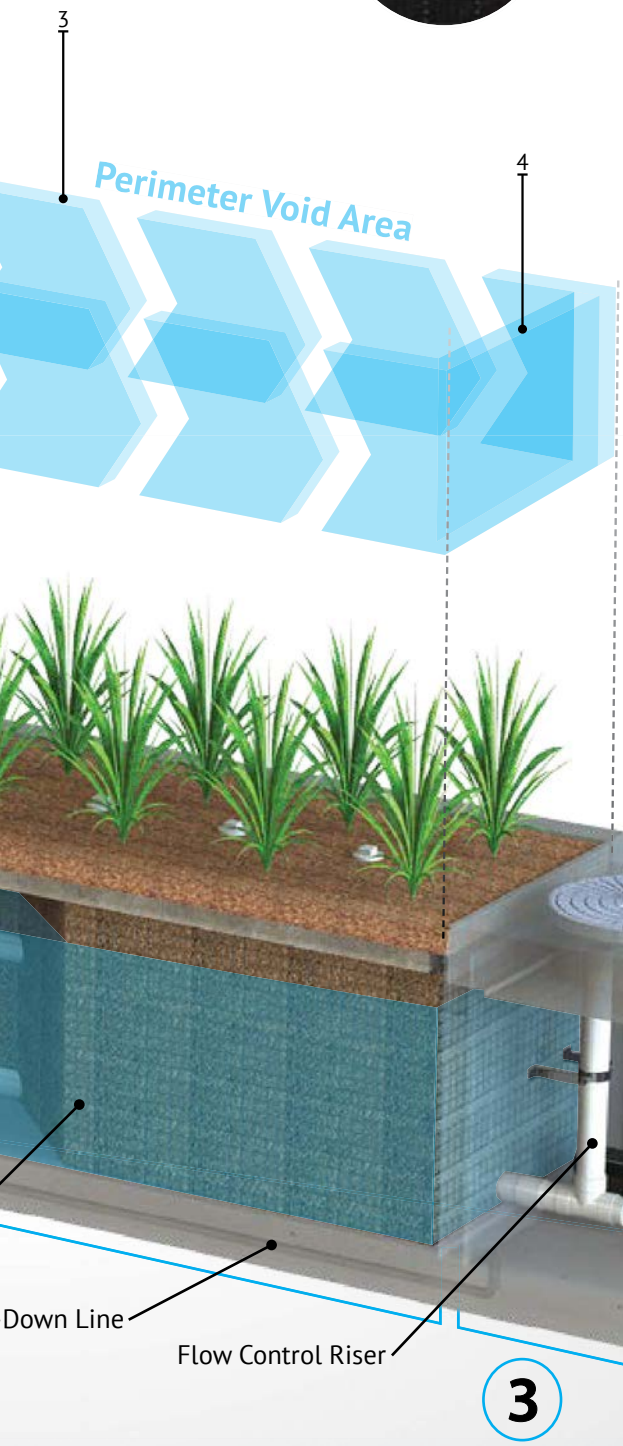

Fig. 1

2 Biofiltration

Horizontal Flow

- Less clogging than downward flow biofilters
- Water flow is subsurface
- Improves biological filtration

Patented Perimeter Void Area

- Vertically extends void area between the walls and the WetlandMEDIA on all four sides.
- Maximizes surface area of the media for higher treatment capacity

WetlandMEDIA

- Contains no organics and removes phosphorus
- Greater surface area and 48% void space
- Maximum evapotranspiration
- High ion exchange capacity and light weight

3 Discharge

Flow Control

- Orifice plate controls flow of water through WetlandMEDIA to a level lower than the media's capacity.
- Extends the life of the media and improves performance

Drain-Down Filter

- The Drain-Down is an optional feature that completely drains the pre-treatment chamber
- Water that drains from the pre-treatment chamber between storm events will be treated

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Orientations

Side-By-Side

The *Side-By-Side* orientation places the pre-treatment and discharge chamber adjacent to one another with the biofiltration chamber running parallel on either side. This minimizes the system length, providing a highly compact footprint. It has been proven useful in situations such as streets with directly adjacent sidewalks, as half of the system can be placed under that sidewalk. This orientation also offers internal bypass options as discussed below.

End-To-End

The *End-To-End* orientation places the pre-treatment and discharge chambers on opposite ends of the biofiltration chamber therefore minimizing the width of the system to 5 ft (outside dimension). This orientation is perfect for linear projects and street retrofits where existing utilities and sidewalks limit the amount of space available for installation. One limitation of this orientation is bypass must be external.

Bypass

Internal Bypass Weir (Side-by-Side Only)

The *Side-By-Side* orientation places the pre-treatment and discharge chambers adjacent to one another allowing for integration of internal bypass. The wall between these chambers can act as a bypass weir when flows exceed the system's treatment capacity, thus allowing bypass from the pre-treatment chamber directly to the discharge chamber.

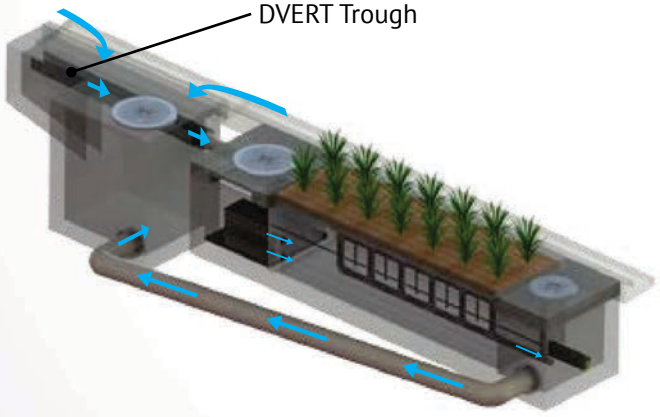
External Diversion Weir Structure

This traditional offline diversion method can be used with the MWS Linear in scenarios where runoff is being piped to the system. These simple and effective structures are generally configured with two outflow pipes. The first is a smaller pipe on the upstream side of the diversion weir - to divert low flows over to the MWS Linear for treatment. The second is the main pipe that receives water once the system has exceeded treatment capacity and water flows over the weir.

Flow By Design

This method is one in which the system is placed just upstream of a standard curb or grate inlet to intercept the first flush. Higher flows simply pass by the MWS Linear and into the standard inlet downstream.

DVERT Low Flow Diversion



This simple yet innovative diversion trough can be installed in existing or new curb and grate inlets to divert the first flush to the MWS Linear via pipe. It works similar to a rain gutter and is installed just below the opening into the inlet. It captures the low flows and channels them over to a connecting pipe exiting out the wall of the inlet and leading to the MWS Linear. The DVERT is perfect for retrofit and green street applications that allows the MWS Linear to be installed anywhere space is available.

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Performance

The MWS Linear continues to outperform other treatment methods with superior pollutant removal for TSS, heavy metals, nutrients, hydrocarbons and bacteria. Since 2007 the MWS Linear has been field tested on numerous sites across the country. With it's advanced pre-treatment chamber and innovative horizontal flow biofilter, the system is able to effectively remove pollutants through a combination of physical, chemical, and biological filtration processes. With the same biological processes found in natural wetlands, the MWS Linear harnesses natures ability to process, transform, and remove even the most harmful pollutants.

Approvals

The MWS Linear has successfully met years of challenging technical reviews and testing from some of the most prestigious and demanding agencies in the nation, and perhaps the world.

Washington State TAPE Approved

The MWS Linear is approved for General Use Level Designation (GULD) for Basic, Enhanced, and Phosphorus treatment at 1 gpm/ft^2 loading rate. The highest performing BMP on the market for all main pollutant categories.

TSS	Total Phosphorus	Ortho Phosphorus	Nitrogen	Dissolved Zinc	Dissolved Copper	Total Zinc	Total Copper	Motor Oil
85%	64%	67%	45%	66%	38%	69%	50%	95%

DEQ Assignment

The Virginia Department of Environmental Quality assigned the MWS Linear, the highest phosphorus removal rating for manufactured treatment devices to meet the new Virginia Stormwater Management Program (VSMP) Technical Criteria.

Maryland Department Of The Environment Approved

Granted ESD (Environmental Site Design) status for new construction, redevelopment and retrofitting when designed in accordance with the Design Manual.

MASTEP Evaluation

The University of Massachusetts at Amherst – Water Resources Research Center, issued a technical evaluation report noting removal rates up to 84% TSS, 70% Total Phosphorus, 68.5% Total Zinc, and more.

Rhode Island DEM Approved

Approved as an authorized BMP and noted to achieve the following minimum removal efficiencies: 85% TSS, 60% Pathogens, 30% Total Phosphorus, and 30% Total Nitrogen.

Flow Based Sizing

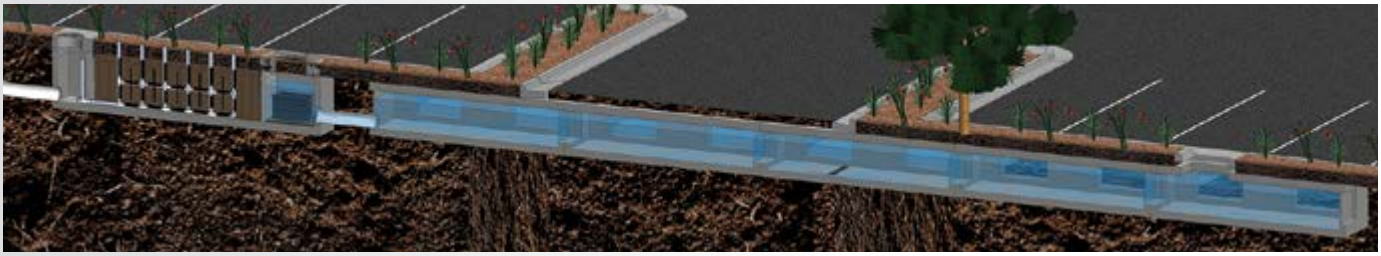
The MWS Linear can be used in stand alone applications to meet treatment flow requirements. Since the MWS Linear is the only biofiltration system that can accept inflow pipes several feet below the surface it can be used not only in decentralized design applications but also as a large central end-of-the-line application for maximum feasibility.

Treatment Flow Sizing Table

Model #	Dimensions	WetlandMedia Surface Area	Treatment Flow Rate (cfs)
MWS-L-4-4	4' x 4'	23 ft^2	0.052
MWS-L-4-6	4' x 6'	32 ft^2	0.073
MWS-L-4-8	4' x 8'	50 ft^2	0.115
MWS-L-4-13	4' x 13'	63 ft^2	0.144
MWS-L-4-15	4' x 15'	76 ft^2	0.175
MWS-L-4-17	4' x 17'	90 ft^2	0.206
MWS-L-4-19	4' x 19'	103 ft^2	0.237
MWS-L-4-21	4' x 21'	117 ft^2	0.268
MWS-L-8-8	8' x 8'	100 ft^2	0.230
MWS-L-8-12	8' x 12'	151 ft^2	0.346
MWS-L-8-16	8' x 16'	201 ft^2	0.462

Volume Based Sizing

Many states require treatment of a water quality volume and do not offer the option of flow based design. The MWS Linear and its unique horizontal flow makes it the only biofilter that can be used in volume based design installed downstream of ponds, detention basins, and underground storage systems.



Treatment Volume Sizing Table

Model #	Treatment Capacity (cu. ft.) @ 24-Hour Drain Down	Treatment Capacity (cu. ft.) @ 48-Hour Drain Down
MWS-L-4-4	1140	2280
MWS-L-4-6	1600	3200
MWS-L-4-8	2518	5036
MWS-L-4-13	3131	6261
MWS-L-4-15	3811	7623
MWS-L-4-17	4492	8984
MWS-L-4-19	5172	10345
MWS-L-4-21	5853	11706
MWS-L-8-8	5036	10072
MWS-L-8-12	7554	15109
MWS-L-8-16	10073	20145

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Installation

The MWS Linear is simple, easy to install, and has a space efficient design that offers lower excavation and installation costs compared to traditional tree-box type systems. The structure of the system resembles pre-cast catch basin or utility vaults and is installed in a similar fashion.

The system is delivered fully assembled for quick installation. Generally, the structure can be unloaded and set in place in 15 minutes. Our experienced team of field technicians are available to supervise installations and provide technical support.

Maintenance

Reduce your maintenance costs, man hours, and materials with the MWS Linear. Unlike other biofiltration systems that provide no pre-treatment, the MWS Linear is a self-contained treatment train which incorporates simple and effective pre-treatment.

Maintenance requirements for the biofilter itself are almost completely eliminated, as the pre-treatment chamber removes and isolates trash, sediments, and hydrocarbons. What's left is the simple maintenance of an easily accessible pre-treatment chamber that can be cleaned by hand or with a standard vac truck. Only periodic replacement of low-cost media in the pre-filter cartridges is required for long term operation and there is absolutely no need to replace expensive biofiltration media.

Plant Selection

Abundant plants, trees, and grasses bring value and an aesthetic benefit to any urban setting, but those in the MWS Linear do even more - they increase pollutant removal. What's not seen, but very important, is that below grade the stormwater runoff/flow is being subjected to nature's secret weapon: a dynamic physical, chemical, and biological process working to break down and remove non-point source pollutants. The flow rate is controlled in the MWS Linear, giving the plants more "contact time" so that pollutants are more successfully decomposed, volatilized and incorporated into the biomass of The MWS Linear's micro/macro flora and fauna.

A wide range of plants are suitable for use in the MWS Linear, but selections vary by location and climate. View suitable plants by selecting the list relative to your project location's hardy zone.

Please visit **www.ModularWetlands.com/Plants** for more information and various plant lists.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

3.5 Bioretention Facility

Type of BMP	LID – Bioretention
Treatment Mechanisms	Infiltration, Evapotranspiration, Evaporation, Biofiltration
Maximum Drainage Area	This BMP is intended to be integrated into a project's landscaped area in a distributed manner. Typically, contributing drainage areas to Bioretention Facilities range from less than 1 acre to a maximum of around 10 acres.
Other Names	Rain Garden, Bioretention Cell, Bioretention Basin, Biofiltration Basin, Landscaped Filter Basin, Porous Landscape Detention

Description

Bioretention Facilities are shallow, vegetated basins underlain by an engineered soil media. Healthy plant and biological activity in the root zone maintain and renew the macro-pore space in the soil and maximize plant uptake of pollutants and runoff. This keeps the Best Management Practice (BMP) from becoming clogged and allows more of the soil column to function as both a sponge (retaining water) and a highly effective and self-maintaining biofilter. In most cases, the bottom of a Bioretention Facility is unlined, which also provides an opportunity for infiltration to the extent the underlying onsite soil can accommodate. When the infiltration rate of the underlying soil is exceeded, fully biotreated flows are discharged via underdrains. Bioretention Facilities therefore will inherently achieve the maximum feasible level of infiltration and evapotranspiration and achieve the minimum feasible (but highly biotreated) discharge to the storm drain system.

Siting Considerations

These facilities work best when they are designed in a relatively level area. Unlike other BMPs, Bioretention Facilities can be used in smaller landscaped spaces on the site, such as:

- ✓ Parking islands
- ✓ Medians
- ✓ Site entrances

Landscaped areas on the site (such as may otherwise be required through minimum landscaping ordinances), can often be designed as Bioretention Facilities. This can be accomplished by:

- *Depressing* landscaped areas below adjacent impervious surfaces, rather than elevating those areas
- Grading the site to direct runoff from those impervious surfaces *into* the Bioretention Facility, rather than away from the landscaping
- Sizing and designing the depressed landscaped area as a Bioretention Facility as described in this Fact Sheet

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Bioretention Facilities should however not be used downstream of areas where large amounts of sediment can clog the system. Placing a Bioretention Facility at the toe of a steep slope should also be avoided due to the potential for clogging the engineered soil media with erosion from the slope, as well as the potential for damaging the vegetation.

Design and Sizing Criteria

The recommended cross section necessary for a Bioretention Facility includes:

- Vegetated area
- 18' minimum depth of engineered soil media
- 12' minimum gravel layer depth with 6' perforated pipes (added flow control features such as orifice plates may be required to mitigate for HCOC conditions)

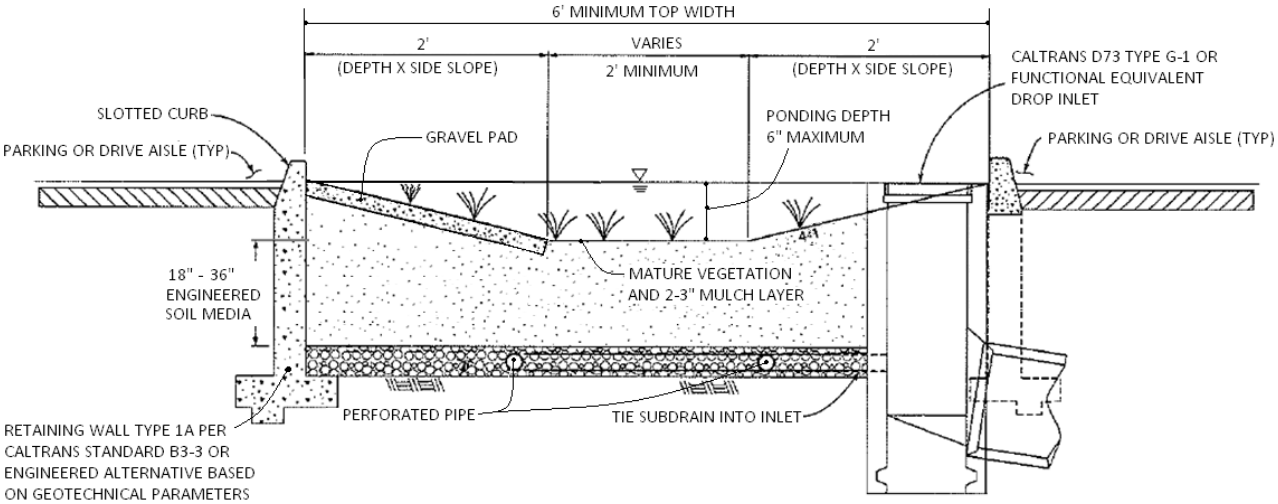


Figure 1: Standard Layout for a Bioretention Facility

While the 18-inch minimum engineered soil media depth can be used in some cases, it is recommended to use 24 inches or a preferred 36 inches to provide an adequate root zone for the chosen plant palate. Such a design also provides for improved removal effectiveness for nutrients. The recommended ponding depth inside of a Bioretention Facility is 6 inches; measured from the flat bottom surface to the top of the water surface as shown in Figure 1.

Because this BMP is filled with an engineered soil media, pore space in the soil and gravel layer is assumed to provide storage volume. However, several considerations must be noted:

- Surcharge storage above the soil surface (6 inches) is important to assure that design flows do not bypass the BMP when runoff exceeds the soil's absorption rate.
- In cases where the Bioretention Facility contains engineered soil media deeper than 36 inches, the pore space within the engineered soil media can only be counted to the 36-inch depth.
- A maximum of 30 percent pore space can be used for the soil media whereas a maximum of 40 percent pore space can be use for the gravel layer.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Engineered Soil Media Requirements

The engineered soil media shall be comprised of 85 percent mineral component and 15 percent organic component, by volume, drum mixed prior to placement. The mineral component shall be a Class A sandy loam topsoil that meets the range specified in Table 1 below. The organic component shall be nitrogen stabilized compost[1], such that nitrogen does not leach from the media.

Table 1: Mineral Component Range Requirements

Percent Range	Component
70-80	Sand
15-20	Silt
5-10	Clay

The trip ticket, or certificate of compliance, shall be made available to the inspector to prove the engineered mix meets this specification.

Vegetation Requirements

Vegetative cover is important to minimize erosion and ensure that treatment occurs in the Bioretention Facility. The area should be designed for at least 70 percent mature coverage throughout the Bioretention Facility. To prevent the BMP from being used as walkways, Bioretention Facilities shall be planted with a combination of small trees, densely planted shrubs, and natural grasses. Grasses shall be native or ornamental; preferably ones that do not need to be mowed. The application of fertilizers and pesticides should be minimal. To maintain oxygen levels for the vegetation and promote biodegradation, it is important that vegetation not be completely submerged for any extended period of time. Therefore, a maximum of 6 inches of ponded water shall be used in the design to ensure that plants within the Bioretention Facility remain healthy.

A 2 to 3-inch layer of standard shredded aged hardwood mulch shall be placed as the top layer inside the Bioretention Facility. The 6-inch ponding depth shown in Figure 1 above shall be measured from the top surface of the 2 to 3-inch mulch layer.

Curb Cuts

To allow water to flow into the Bioretention Facility, 1-foot-wide (minimum) curb cuts should be placed approximately every 10 feet around the perimeter of the Bioretention Facility. Figure 2 shows a curb cut in a Bioretention Facility. Curb cut flow lines must be at or above the V_{BMP} water surface level.

[1] For more information on compost, visit the US Composting Council website at: http://compostingcouncil.org/

BIORETENTION FACILITY BMP FACT SHEET

Figure 2: Curb Cut located in a Bioretention Facility

To reduce erosion, a gravel pad shall be placed at each inlet point to the Bioretention Facility. The gravel should be 1- to 1.5-inch diameter in size. The gravel should overlap the curb cut opening a minimum of 6 inches. The gravel pad inside the Bioretention Facility should be flush with the finished surface at the curb cut and extend to the bottom of the slope.

In addition, place an apron of stone or concrete, a foot square or larger, inside each inlet to prevent vegetation from growing up and blocking the inlet. See Figure 3.

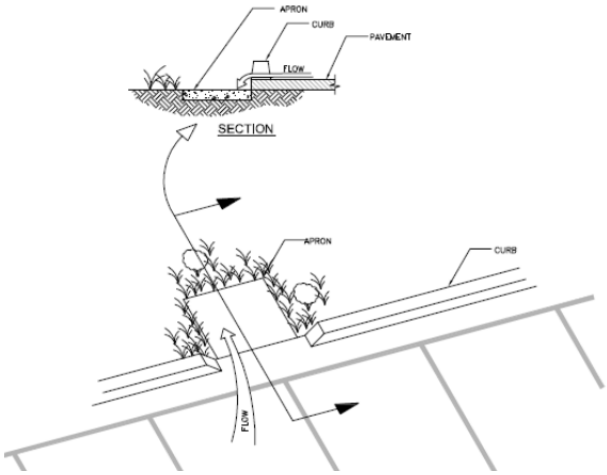


Figure 3: Apron located in a Bioretention Facility

Terracing the Landscaped Filter Basin

It is recommended that Bioretention Facilities be level. In the event the facility site slopes and lacks proper design, water would fill the lowest point of the BMP and then discharge from the basin without being treated. To ensure that the water will be held within the Bioretention Facility on sloped sites, the BMP must be terraced with nonporous check dams to provide the required storage and treatment capacity.

The terraced version of this BMP shall be used on non-flat sites with no more than a 3 percent slope. The surcharge depth cannot exceed 0.5 feet, and side slopes shall not exceed 4:1. Table 2 below shows the spacing of the check dams, and slopes shall be rounded up (i.e., 2.5 percent slope shall use 10' spacing for check dams).

Table 2: Check Dam Spacing

6" Check Dam Spacing	
Slope	**Spacing**
1%	*25'*
2%	*15'*
3%	*10'*

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Roof Runoff

Roof downspouts may be directed towards Bioretention Facilities. However, the downspouts must discharge onto a concrete splash block to protect the Bioretention Facility from erosion.

Retaining Walls

It is recommended that Retaining Wall Type 1A, per Caltrans Standard B3-3 or equivalent, be constructed around the entire perimeter of the Bioretention Facility. This practice will protect the sides of the Bioretention Facility from collapsing during construction and maintenance or from high service loads adjacent to the BMP. Where such service loads would not exist adjacent to the BMP, an engineered alternative may be used if signed by a licensed civil engineer.

Side Slope Requirements

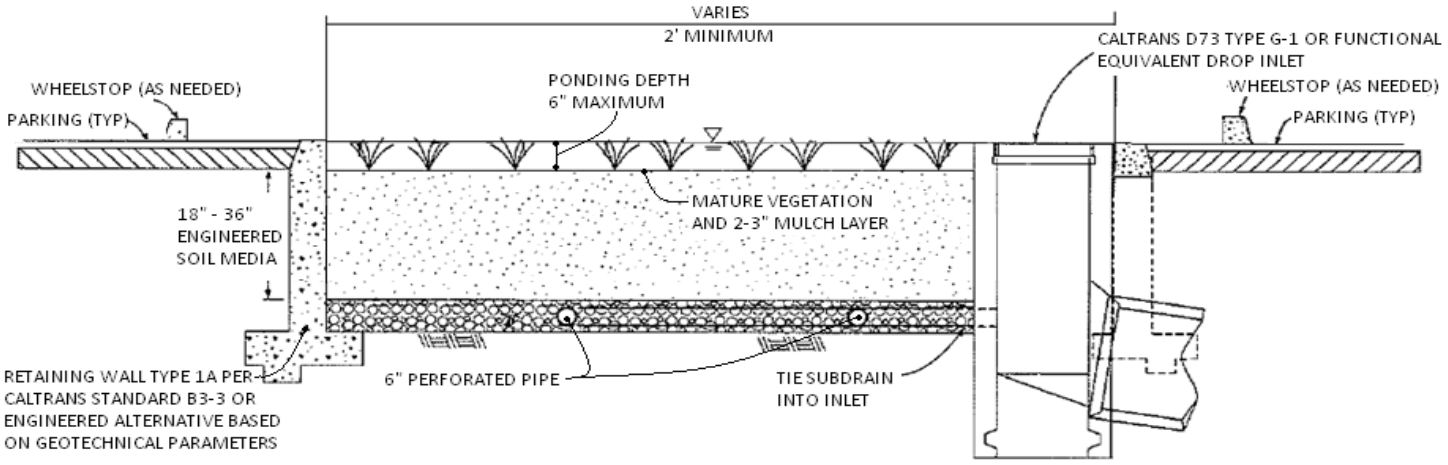
Bioretention Facilities Requiring Side Slopes

The design should assure that the Bioretention Facility does not present a tripping hazard. Bioretention Facilities proposed near pedestrian areas, such as areas parallel to parking spaces or along a walkway, must have a gentle slope to the bottom of the facility. Side slopes inside of a Bioretention Facility shall be 4:1. A typical cross section for the Bioretention Facility is shown in Figure 1.

Bioretention Facilities Not Requiring Side Slopes

Where cars park perpendicular to the Bioretention Facility, side slopes are not required. A 6-inch maximum drop may be used, and the Bioretention Facility must be planted with trees and shrubs to prevent pedestrian access. In this case, a curb is not placed around the Bioretention Facility,

but wheel stops shall be used to prevent vehicles from entering the Bioretention Facility, as shown in Figure 4.



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Planter Boxes

Bioretention Facilities can also be placed above ground as planter boxes. Planter boxes must have a minimum width of 2 feet, a maximum surcharge depth of 6 inches, and no side slopes are necessary. Planter boxes must be constructed so as to ensure that the top surface of the engineered soil media will remain level. This option may be constructed of concrete, brick, stone or other stable materials that will not warp or bend. Chemically treated wood or galvanized steel, which has the ability to contaminate stormwater, should not be used. Planter boxes must be lined with an impermeable liner on all sides, including the bottom. Due to the impermeable liner, the inside bottom of the planter box shall be designed and constructed with a cross fall, directing treated flows within the subdrain layer toward the point where subdrain exits the planter box, and subdrains shall be oriented with drain holes oriented down. These provisions will help avoid excessive stagnant water within the gravel underdrain layer. Similar to the in-ground Bioretention Facility versions, this BMP benefits from healthy plants and biological activity in the root zone. Planter boxes should be planted with appropriately selected vegetation.

Figure 5: Planter Box
Source: LA Team Effort

Overflow

An overflow route is needed in the Bioretention Facility design to bypass stored runoff from storm events larger than V_{BMP} or in the event of facility or subdrain clogging. Overflow systems must connect to an acceptable discharge point, such as a downstream conveyance system as shown in Figure 1 and Figure 4. The inlet to the overflow structure shall be elevated inside the Bioretention Facility to be flush with the ponding surface for the design capture volume (V_{BMP}) as shown in Figure 4. This will allow the design capture volume to be fully treated by the Bioretention Facility, and for larger events to safely be conveyed to downstream systems. The overflow inlet shall **not** be located in the entrance of a Bioretention Facility, as shown in Figure 6.

Underdrain Gravel and Pipes

An underdrain gravel layer and pipes shall be provided in accordance with Appendix B – Underdrains.

Figure 6: Incorrect Placement of an Overflow Inlet.

Inspection and Maintenance Schedule

The Bioretention Facility area shall be inspected for erosion, dead vegetation, soggy soils, or standing water. The use of fertilizers and pesticides on the plants inside the Bioretention Facility should be minimized.

Schedule	Activity
Ongoing	• Keep adjacent landscape areas maintained. Remove clippings from landscape maintenance activities. • Remove trash and debris • Replace damaged grass and/or plants • Replace surface mulch layer as needed to maintain a 2-3 inch soil cover.
After storm events	• Inspect areas for ponding
Annually	• Inspect/clean inlets and outlets

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Bioretention Facility Design Procedure

1) Enter the area tributary, A_T, to the Bioretention Facility.

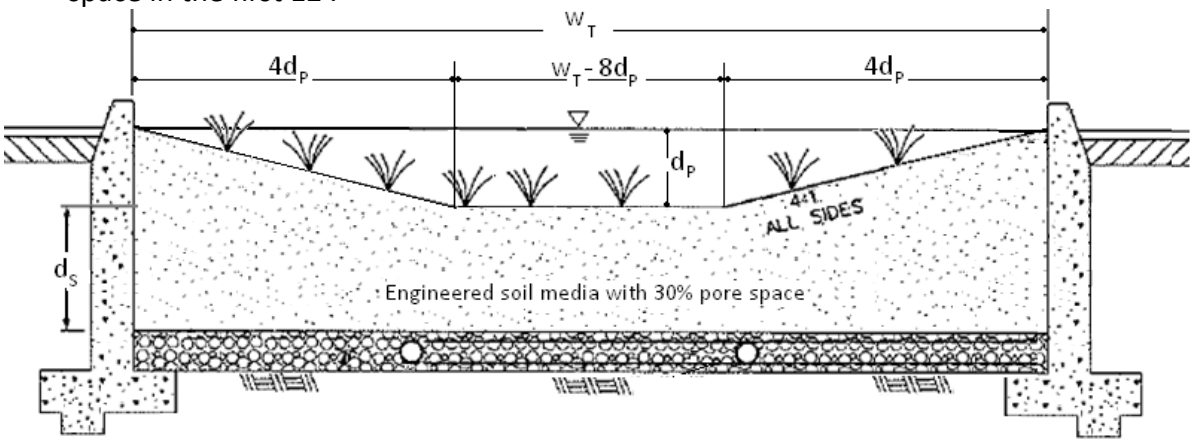
2) Enter the Design Volume, V_{BMP}, determined from Section 2.1 of this Handbook.

3) Select the type of design used. There are two types of Bioretention Facility designs: the standard design used for most project sites that include side slopes, and the modified design used when the BMP is located perpendicular to the parking spaces or with planter boxes that do not use side slopes.

4) Enter the depth of the engineered soil media, d_S. The minimum depth for the engineered soil media can be 18' in limited cases, but it is recommended to use 24' or a preferred 36' to provide an adequate root zone for the chosen plant palette. Engineered soil media deeper than 36' will only get credit for the pore space in the first 36'.

5) Enter the top width of the Bioretention Facility.

6) Calculate the total effective depth, d_E, within the Bioretention Facility. The maximum allowable pore space of the soil media is 30% while the maximum allowable pore space for the gravel layer is 40%. Gravel layer deeper than 12' will only get credit for the pore space in the first 12'.



a. For the design with side slopes the following equation shall be used to determine the total effective depth. Where, d_P is the depth of ponding within the basin.

$$d_E(\text{ft}) = \frac{0.3 \times \left[\left(w_T(\text{ft}) \times d_S(\text{ft})\right) + 4\left(d_P(\text{ft})\right)^2\right] + 0.4 \times 1(\text{ft}) + d_P(\text{ft})\left[4d_P(\text{ft}) + \left(w_T(\text{ft}) - 8d_P(\text{ft})\right)\right]}{w_T(\text{ft})}$$

This above equation can be simplified if the maximum ponding depth of 0.5' is used. The equation below is used on the worksheet to find the minimum area required for the Bioretention Facility:

$$d_E(\text{ft}) = (0.3 \times d_S(\text{ft}) + 0.4 \text{ x } 1(\text{ft})) - \left(\frac{0.7\ (\text{ft}^2)}{w_T(\text{ft})}\right) + 0.5(\text{ft})$$

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

b. For the design without side slopes the following equation shall be used to determine the total effective depth:

$$d_E(\text{ft}) = d_P(\text{ft}) + [(0.3) \times d_S(\text{ft}) + (0.4) \times 1(\text{ft})]$$

The equation below, using the maximum ponding depth of 0.5', is used on the worksheet to find the minimum area required for the Bioretention Facility:

$$d_E(\text{ft}) = 0.5\ (\text{ft}) + [(0.3) \times d_S(\text{ft}) + (0.4) \times 1(\text{ft})]$$

7) Calculate the minimum surface area, A_M, required for the Bioretention Facility. This does not include the curb surrounding the Bioretention Facility or side slopes.

$$A_M(\text{ft}^2) = \frac{V_{BMP}(\text{ft}^3)}{d_E\ (\text{ft})}$$

8) Enter the proposed surface area. This area shall not be less than the minimum required surface area.

9) Verify that side slopes are no steeper than 4:1 in the standard design, and are not required in the modified design.

10) Provide the diameter, minimum 6 inches, of the perforated underdrain used in the Bioretention Facility. See Appendix B for specific information regarding perforated pipes.

11) Provide the slope of the site around the Bioretention Facility, if used. The maximum slope is 3 percent for a standard design.

12) Provide the check dam spacing, if the site around the Bioretention Facility is sloped.

13) Describe the vegetation used within the Bioretention Facility.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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GOULDS PUMPS

HSU, HSUL & JCU

Submersible Pumps

ITT

ENGINEERED FOR LIFE

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HSU, HSUL, JCU

Model HSU

Hydro-solids pumps. Recessed impeller easily accomodates large, stringy and fibrous solids without clogging. Because it is completely submersible, the HSU can be used in virtually any sump application.

- Capacities to 295 m³/h (1,300 USgpm)
- Heads to 27 m (90 feet)
- Temperature Range 90°C (194°F)
- Pressures to 690 kPa (100 PSIG)
- Solids to 152 mm (6 in)

Solids Type
Will handle large, stringy, fibrous and abrasive solids.

Materials
- Cast Iron
- 28% Chrome Iron (HC600)
- CD4MCu
- 316 Stainless Steel

Features
- Recessed Impeller
- Concentric Casing
- Integral Support
- Heavy Duty Adapter
- Integral Discharge Elbow

Materials
- Cast Iron

Model HSUL

Submersible recessed impeller pumps easily handle any solid up to its suction/discharge size. Versatile mounting allows pump to stand or to be mounted on an optional slide rail arrangement.

- Capacities to 636 m³/h (2,800 USgpm)
- Heads to 43 m (140 feet)
- Temperature Range 90°C (194°F)
- Pressures to 690 kPa (100 PSIG)
- Solids to 152 mm (6 in)

Solids Type
Will handle large, stringy, fibrous and abrasive solids.

Materials
- Cast Iron
- 28% Chrome Iron (HC600)
- CD4MCu
- 316 Stainless Steel

Features
- Recessed Impeller
- Concentric Casing
- Flanged Suction and Discharge
- Interchangeability with Horizontal & Vertical Models
- Mounting Flexibility

Model JCU

Submersible pumps for handling tough abrasive slurries. Impeller design offers optimum combination of solids handling ability, wear resistance, and efficiency. Optional slide rail assembly available for ease of maintenance.

- Capacities to 910 m³/h (4,000 USgpm)
- Heads to 67 m (220 feet)
- Temperature Range 90°C (194°F)
- Pressures to 1,380 kPa (200 PSIG)
- Solids to 152 mm (2 in)

Solids Type
Will handle all types of abrasive solids

Materials
- Cast Iron
- 28% Chrome Iron (HC600)
- CD4MCu
- 316 Stainless Steel

Features
- Heavy Duty Slurry Design
- Replaceable Suction Liner
- Integral Strainer
- Mounting Flexibility
- Interchangeability with Horizontal & Vertical Models

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HSU

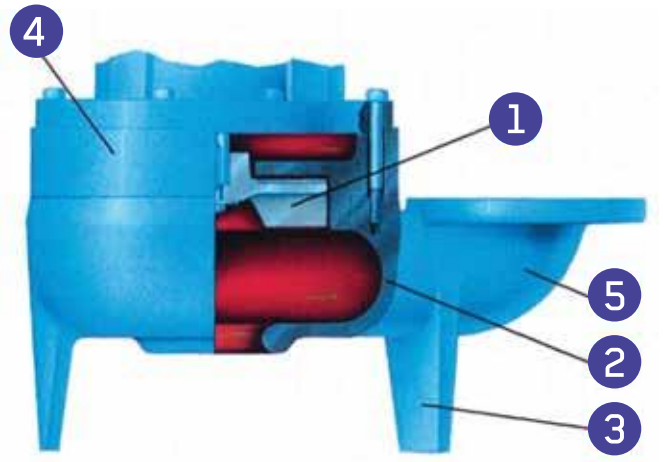
Submersible Hydro-Solids Pumps

Designed to handle large, stringy, fibrous and abrasive solids

Services

- Waste Treatment Plants
- General Service Sumps
- Sewage Wet Wells
- Reclaim Sumps
- Power Plants
- Industrial Waste Sumps
- Sludge Pits
- Drainage Sumps
- Collection Basins
- Wood Yard Sumps

Design Features



1. **Fully Recessed Impeller** Allows large stringy or fibrous material to pass through the pumps without binding or clogging.

2. **Concentric Casing** Concentric design facilitates flow of pumpage and solids through the pump while minimizing loads.

3. **Integral Support** Three cast-in legs provide simple, stable support without additiona parts.

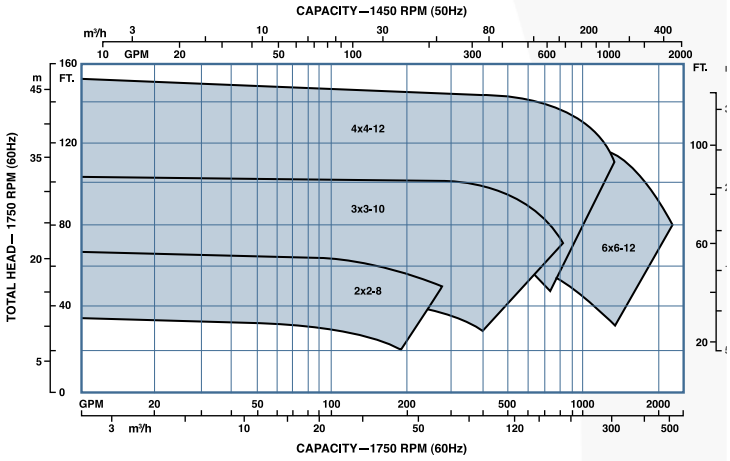
4. **Heavy-Duty Motor Adaptor** Extra thick in critical areas. Extended shroud encircles impeller and protects casing from wear.

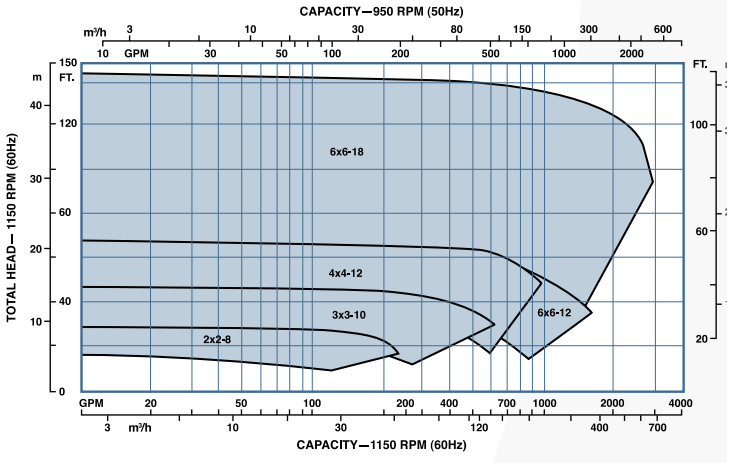
5. **Integral Discharge Elbow** Cast-in elbow reduces parts and allows easy installation.

What Goes In – Goes Out!

Unlike self-priming trash pumps or some other submersibles or vertical pumps, the HSU will pump any solid that enters its suction without clogging. This includes such hard to pump items as rags and string. Avoid costly downtime unplugging your pump with Goulds HSU.

Hydraulic Coverage 50 / 60 Hz





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HSUL

Submersible Hydro-Solids Pumps

Designed to handle large, stringy and abrasive solids

Services

- Waste Treatment Plants
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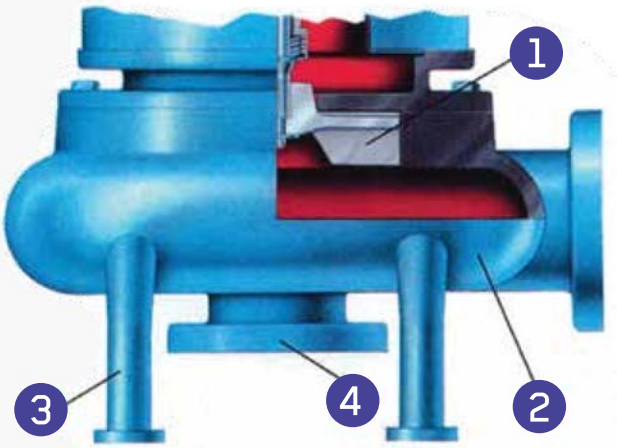
- Drainage Sumps
- Collection Basins
- Wood Yard Sumps

Design Features



1. **Fully Recessed Impeller** Allows large stringy or fibrous material to pass through the pumps without binding or clogging.

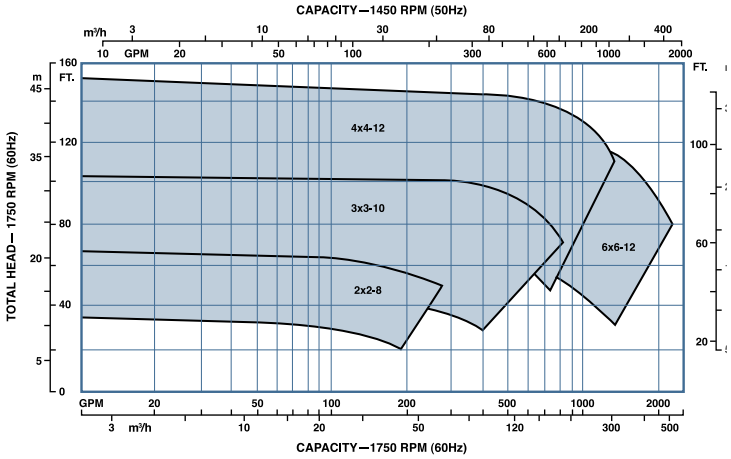
2. **Concentric Casing** Concentric design facilitates flow of pumpage and solids through the pump while minimizing loads.

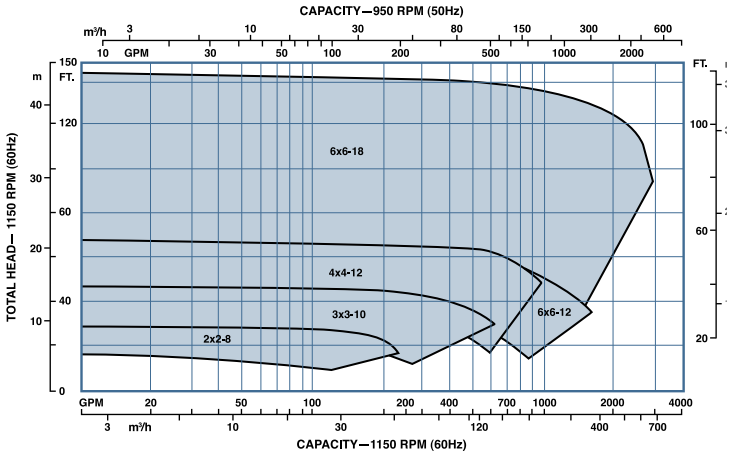
3. **Legs** Bolt-on legs provide stability on sump floor.

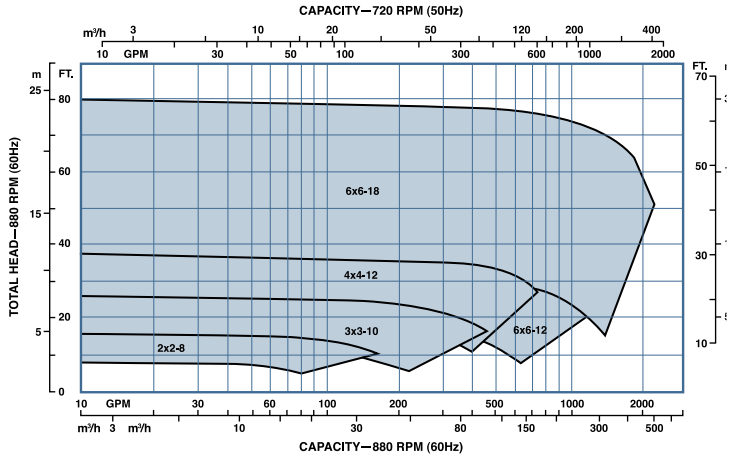
4. **Mounting Flexibility** Flanged suction and horizontal discharge allow pump to stand or be mounted on optional slide rail.

5. **Interchangeability** Reduce inventory by sharing parts with Horizontal HS pumps & Vertical Cantilever VHS pumps.

Hydraulic Coverage 50 / 60 Hz







Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

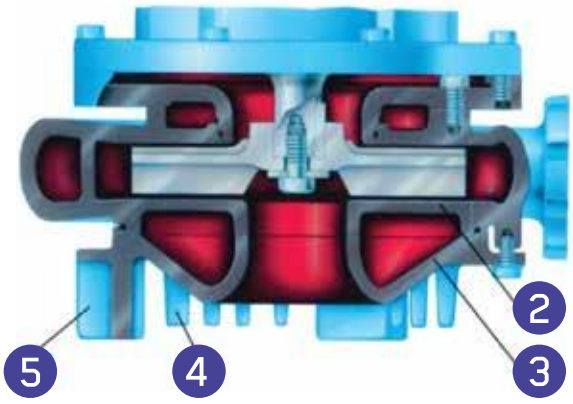
Heavy Duty Submersible Slurry Pumps

Designed to handle abrasive sump applications

Services

- Fly Ash
- Sand and Gravel
- Chemical Waste Sumps
- Dirty Water Sumps
- Foundry Sand
- Bauxite
- Lime Sumps
- Kaolin Clay
- Mill Scale
- Sludge Pits

Design Features



1. **Heavy Duty Design** Extra thick wall sections in high wear areas.

2. **Replaceable Suction Liner** Easy to replace – protects casing from wear.

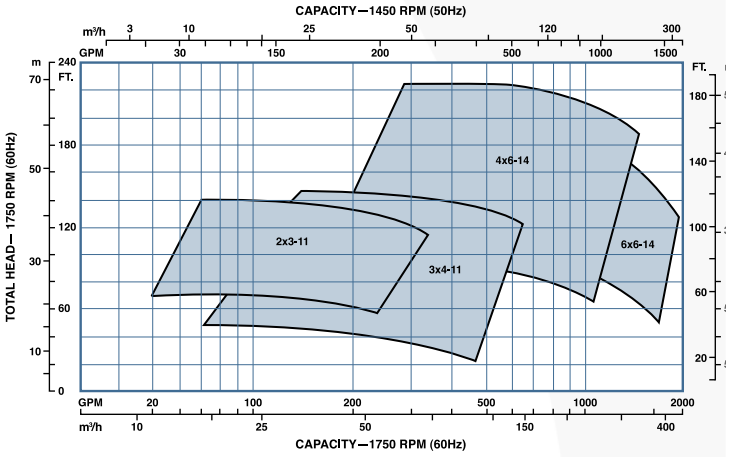
3. **Suction Cover** Bell shaped intake reduces entrance losses and improves suction characteristics.

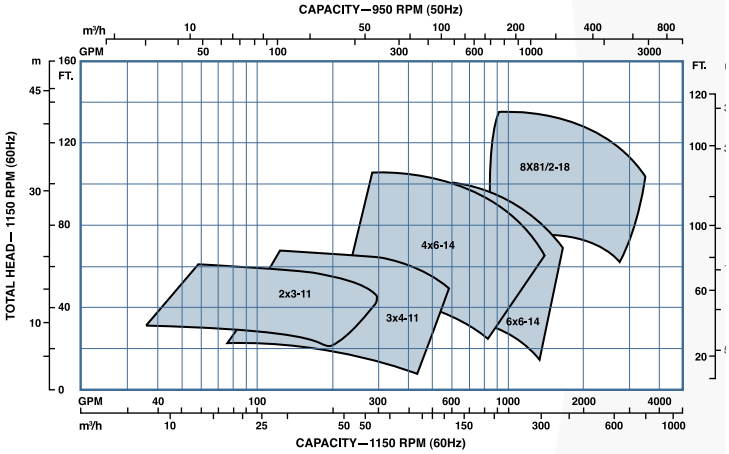
4. **Integral Strainer** Suction cover has cas-on vertical tines to prohibit oversized solids from clogging pump.

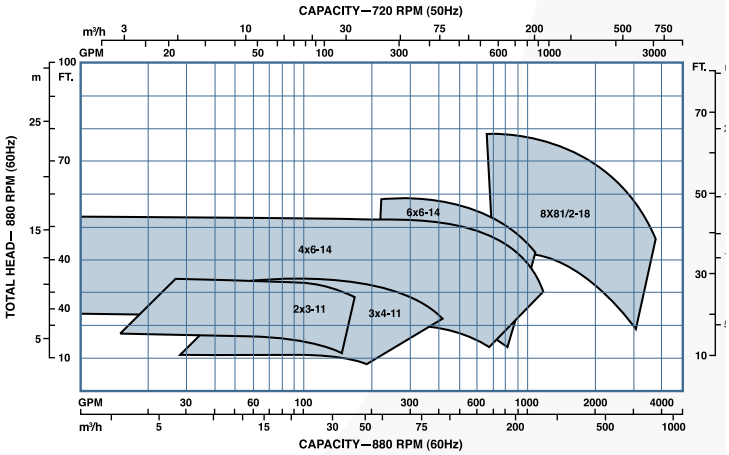
5. **Pump Mounting** Three cast-on legs give excellent support and stability. Optional slide rail also available to permit easy removal from sump.

6. **Maximum Interchangeability** Suction Cover liner and casing are interchangeable with Goulds Models JC (horizontal) and VJC (vertical cantilever) pumps.

Hydraulic Coverage 50 / 60 Hz







Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Options

For Application Flexibility

Slide Rail System

Available on Models HSUL and JCU, Goulds slide rail system provides easy removal of pump unit without disturbing discharge piping. Unique slurry design utilizes a locking cam action with locator lugs and a large O-ring for positive sealing (no leakage) while allowing a tangential discharge for high efficiency. This is an important feature when pumping slurries; if a tight seal is not achieved, leakage can cause rapid and excessive wear of the mating flanges resulting in reduction of performance as well as increased maintenance costs. Goulds slide rail system meets all requirements for toughest slurry devices.

Moisture Detector

Required on all submersibles for warranty validation. Provides one normally open and two normally closed connection for activating a warning and/or de-energizing the motor.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

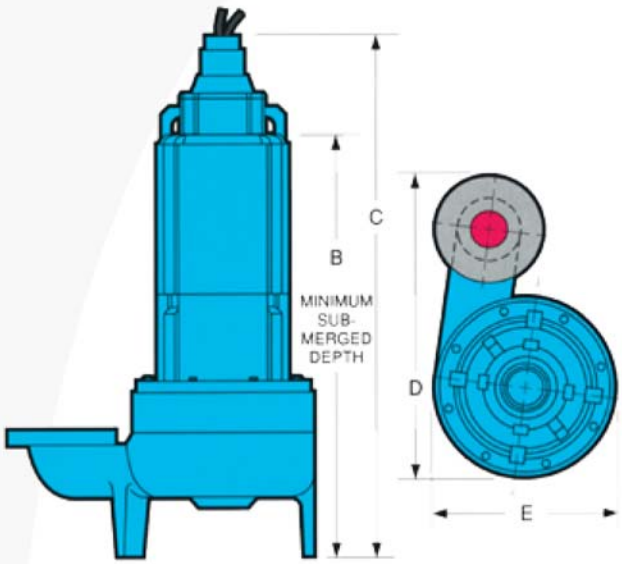
Submersible Motors

Goulds submersible series motors are designe and built specifically for tough slurry pumping. Heavy-duty design features for reliability include:

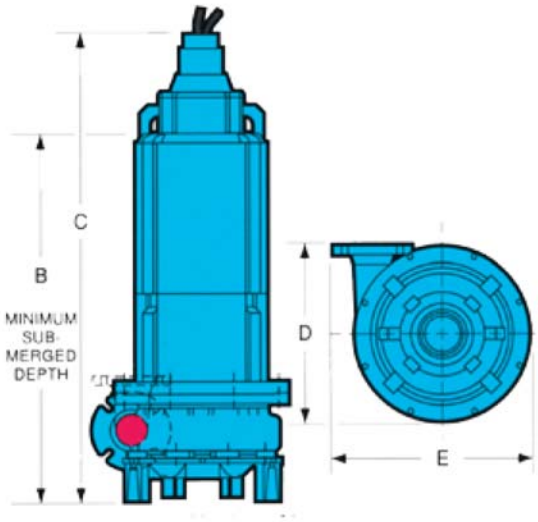
- UL and CSA Approved Explosion Proof
- Epoxy encapsulated and butt-spliced cable entry system prevents liquid from entering top of motor and provides non-wicking design.
- Permanently lubricated and sealed ball bearings.
- F Class insulation and 1.15 service factor standard.
- Tandem mechanical seals provide complete protection for motor internals.
- Thermal protection standard.
- Dual moisture probes provide early warning of seal failure.
- Conforms to NEMA, IEEE, ANSI and NEC standards.
- High temperature option allows operation to 90°C (194°F)
- 5-year Pro-Rated Warranty

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Dimensions



Model HSU



Model JCU & HSUL

Model	Pump Size	B*	C*	D	E	Weight Lbs. (kg)
HSU	3×3-8	32.3 (821)	39.8 (1010)	22.6 (575)	15.4(391)	470 (213)
	4×4-10	38.3 (972)	48.6 (1235)	28.6 (727)	18.3 (464)	1060 (481)
	6×6-11	45.6 (1159)	53.0 (1346)	32.0 (813)	20.3 (514)	1170 (531)
HSUL	2×2-8	32.0 (813)	40.0 (1016)	14.0 (356)	14.0 (356)	500 (227)
	3×3-10	42.0 (1067)	54.0 (1372)	19.0 (483)	19.0 (483)	1450 (658)
	4×4-12	44.0 (1118)	57.0 (1448)	21.0 (533)	21.0 (533)	1410 (640)
	6×6-12	57.0 (1448)	68.0 (1727)	24.0 (610)	23.0 (584)	1950 (885)
	6×6-18	57.0 (1448)	68.0 (1727)	30.0 (762)	29.0 (737)	2025 (918)
JCU	1×1.5-11	31.1 (790)	39.4 (1000)	19.5 (495)	15.4 (391)	500 (227)
	2×3-11	31.1 (790)	39.4 (1000)	23.1 (587)	17.2 (437)	500 (227)
	2×3-14	36.0 (914)	46.4 (1178)	25.8 (655)	20.3 (514)	900 (408)
	3×4-11	36.0 (914)	46.4 (1178)	26.5 (673)	19.3 (490)	990 (449)
	4×6-14	47.1 (1197)	58.0 (1473)	32.9 (836)	24.2 (614)	1880 (853)
	6×6-14	47.3 (1202)	58.2 (1478)	39.3 (998)	27.3 (692)	2030 (921)
	8×10-18	51.3 (1301)	62.9 (1597)	50.1 (1273)	34.8 (885)	2460 (1116)
	10×12-22	53.6 (1362)	64.5 (1638)	59.0 (1499)	43.1 (1095)	3280 (1488)

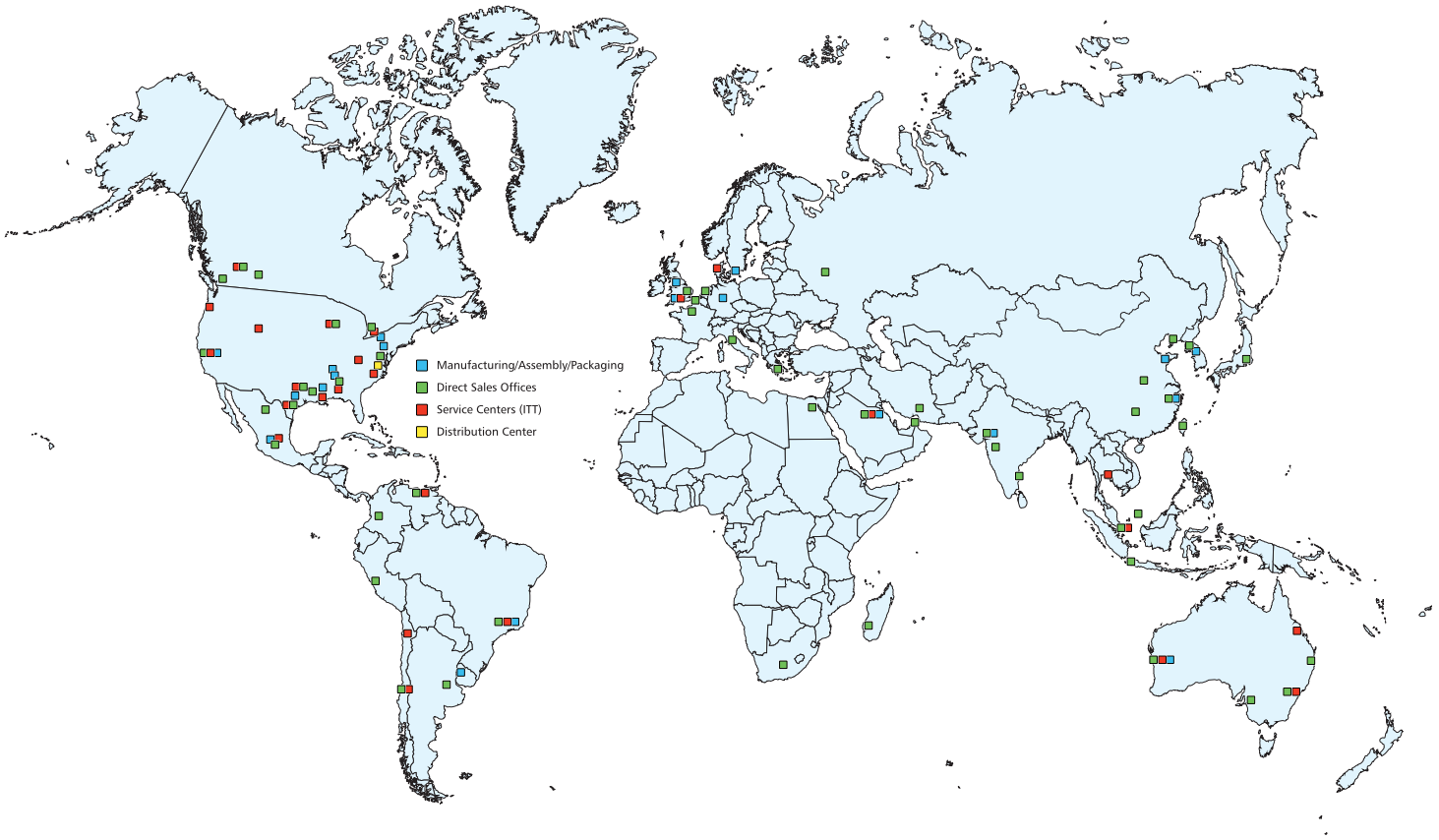
*Dimensions based on largest motor available for the given pump size.
All dimensions in inches and (mm). Not to be used for construction.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Notes

Visit our website at
www.gouldspumps.com

Wherever you are, we're there too.

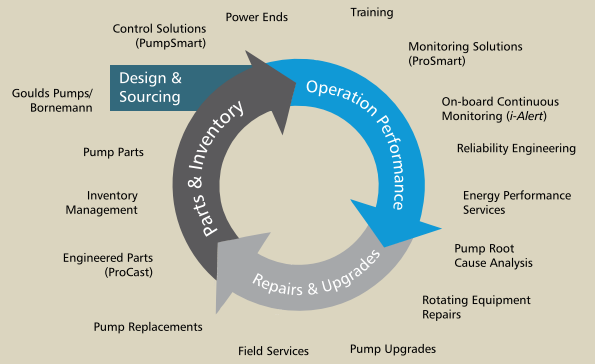


PRO services

Reliability has no quitting time.

Building on over 160 years of Goulds Pumps experience, PRO Services provides an array of services focused on reducing equipment total cost of ownership (TCO) and increasing plant output, including predictive monitoring, maintenance contracts, field service, engineered upgrades, inventory management, and overhauls for pumps and other rotating equipment.

Your Total Solution For Equipment Life Cycle Optimization



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Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HYDROMODIFICATION STUDY FOR NEWCASTLE CENTERPOINTE

CITY OF MORENO VALLEY, CA.

1. OBJECTIVE

The purpose of this study is to prove that hydromodification conditions are met for the Newcastle Centerpointe project when a bioretention basin and a combination underground detention/proprietary BMP are designed to control the runoff discharge of the post-development conditions. Per the Water Quality Management Plan for the Santa Ana Region of Riverside County, hydromodification conditions are met when: the post-development peak flows for the 24-hour, 2-year storm event are less, equal or do not exceed by more than 10 percent, the peak flows for the pre-development conditions of the same storm.

2. INTRODUCTION

The Newcastle Centerpointe project site is located in the City of Moreno Valley, in the Santa Ana Watershed Region of Riverside County, California. The project area is situated between Frederick Street and Brodiaea Avenue and Indian Street. The total project site is 8.78 acres.

To compare the pre and post-development runoff characteristics, methodologies outlined in the Riverside County Flood Control and Water Conservation District Hydrology Manual (Hydrology Manual) were used.

The underlying hydrologic soil group (HSG) for the project site is “D” type soils per the Web Soil Survey.

The 2 year storm is the design return period for analyzing the hydromodification impacts of the proposed project. This storm event was analyzed for 24-hr duration for both pre-development and post-development conditions.

Runoff from the project site flows in a southern direction onto two (2) discharge location. Points of Discharge West and East are existing inlets located along the southwest and southeast boundary of the project site. These inlets receive water from the entire project site which is then confluenced in the stormdrain beneath Brodiaea Avenue.

Per NOAA precipitation Frequency Data Server (PFDS), the design 2-year, 24 hour rainfall depth for the project site is: 1.83 inches.

The 2010 MS4 Permit, adopted by the Santa Ana Regional Water Quality Control Board, and issued to Riverside County, requires all new development and significant redevelopment projects covered by the Technical Guidance Document for Water Quality Management Plans (2013) to incorporate Low Impact Development (LID) Best Management Practices to the maximum extent practicable (MEP).Treatment of storm water runoff from the site has been addressed in a separate report – the “Water Quality Management Plan for Newcastle Centerpointe” dated April 2018 by REC Consultants.

3. PRE DEVELOPED CONDITIONS

The existing project site is an undeveloped vacant lot. The site currently sheet flows in a southwesterly direction to one (1) of two (2) inlets which then confluence in the existing stormdrain beneath Brodiaea Avenue.

4. POST DEVELOPMENT CONDITIONS

In the proposed condition the site will add one new building, parking lot, and associated landscaping. The site will also preserve the southern sheet flow drainage pattern. Low flows (i.e. water quality and HMP) will be conveyed into a bioretention basin or combination underground system/proprietary BMP for treatment and detention. Note that the discharge of HMP flows from either the bioretention basin or underground/proprietary BMP is to be controlled via pump.

ASSUMPTIONS

This study is complementary to WQMP prepared by REC Consultants.

The following is the list of assumptions for this complementary study:

1) The study will analyze the same area as the project WQMP: the property area of Newcastle Centerpointe. Thus, the analyzed pre development area is equal to the post development area.
2) Discharge location is the same in pre development and post development conditions; it is the confluence of the flows in the existing stormdrain beneath Brodiaea Avenue.
3) The Short Cut Synthetic Hydrograph Method (Plate E-1.2 of the RCFC & WCD Hydrology Manual) will be used as the area is very small (much less than 100 acres, with a lag time lesser than 7-8 minutes, which are the conditions to use this simplified method).
4) The shortest recommended time interval will be used (15 min for duration of 24 hours) to generate the largest possible peak flow according to the precipitation distribution of plate E-5.9 of the RCFC & WCD Hydrology Manual.
5) The curve number used for pervious areas will be AMC-I for 2-year storms, per recommendation of the RCFC & WCD Hydrology Manual.
6) In regards to the Curve Number used (CN), barren, graded land in soil type “D” will be the surface of choice of pervious areas in pre-development conditions (CN = 69), and turf in good conditions in soils Type “D” will be used for landscaped areas in post-development conditions (CN = 69). Impervious areas in pre and post-development conditions will have CN = 90.
7) The infiltration relationship (F_p) value for pervious areas are obtained based on the curve number (CN) per Plate E-6.2 of the RCFC & WCD HM and AMC-I: For pre developed conditions F_p = 0.29, and for post developed conditions F_p = 0.58.
8) A bioretention basin has been proposed to reduce the post development conditions runoff for the western portion of the project site.
9) A combination underground storage/proprietary BMP system has been proposed to reduce the post developed conditions runoff for the eastern portion of the project site.

10) The outlet system will be such that low flows (i.e. 2-yr/24hr) will be pumped out to the existing stormdrain inlets. The pump capacity will be limited by the infiltration capacity of the soil, 5 in/hr.
11) Routing calculations will be performed for each post development area. The results will then be summed in order to demonstrate reduction of the post development peak flows enough to be less than those for pre-development conditions.

Tables 1 and 2 below list the properties of the proposed bioretention basin and combination underground system/proprietary BMP through which post development conditions have been routed. A summary of the proposed outflow pumps in each BMP is provided in Table 3.

Table 1. Summary of Bioretention BMP Dimensions

BMP	DIMENSIONS						
	BMP Area (ft^2)	French Drain (in)	Gravel Depth[4] (in)	Amended Soil Depth (in)	Depth to Riser Invert (ft)[1]	Weir Length[2] (ft)	Total Surface Depth[3] (ft)
WEST	8,300	6	12	24	0.75	12	4.30

Notes: (1) Depth of ponding from top of amended soils layer to top of riser, includes 3" mulch layer
(2) Overflow weir is 3ftx2ft ID riser
(3) Depth of basin from top of amended soils layer to top of perimeter wall

Table 2. Summary of Underground Detention/Proprietary BMP Dimensions

BMP	DIMENSIONS			
	Storage(ft) (LxWxH)	#	Area (ft^2)	Proprietary BMP[1]
EAST	15x7x6	24	2,520	MWS-L-4-15

Notes (1) Or Equal

Table 3. Summary of Pumps

BMP	Rating (cfs)	Activate (ft)	Shut off (ft)	Draindown (hrs)
WEST	0.18	0.50	0.00	46.25
EAST	0.15	0.50	0.00	43.00

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

5. ROUTING OF HYDROGRAPHS

As previously mentioned, the proposed bioretention basin has been designed such that runoff from the HMP storm is captured and treated within the basin prior to being conveyed to the existing-eastern storm drain inlet. Note that the aforementioned inlet also accepts detained HMP flows from the underground detention/proprietary BMP. Thus the routed-HMP outflow hydrograph from the basin will be summed to the outflow hydrograph for the underground system. The combined flows will then be compared to the existing conditions flow rate for comparison purposes.

Routing in the proposed underground system is controlled by a proposed pump which is to be placed in the outflow chamber of the proposed BMP. Pump 1 was designed and analyzed such that it would strictly address the HMP flows. It is set to activate at 6-inches of ponding depth within the proposed system and discharge at a constant 0.18cfs. The analysis demonstrated that the constant outflow of the pump combined with the constant inflow of runoff from the eastern portion of the project results in the water level in the underground system reaching a maximum elevation of 5.72ft at which point the volume would begin to decrease until eventually reaching zero at which point Pump 1 would shut off.

Routing in the proposed bioretention basin is also controlled by a proposed pump which is to be placed in a box located along the eastern basin boundary. The box receives treated flows which are conveyed via 6-inch diameter underdrain. Pump 2 was also designed and analyzed such that it would strictly address the HMP flows. It is set to activate at 6-inches of ponding depth and discharge at a constant 0.15cfs. The analysis demonstrated that the constant outflow of the pump combined with the constant inflow of runoff from the western portion of the project results in the water level in the bioretention basin reaching a maximum elevation of 3.54ft at which point the volume would begin to decrease until eventually reaching zero at which point Pump 2 would shut off.

Routed hydrographs via the proposed pumps are provided in Appendix 2 of this report. Final pump specifications will be provided in final engineering.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

6. SUMMARY OF RESULTS

Table 4 shows the pre-development and post-development (un-routed) peak flows for the total area. Short-Cut hydrographs Tables are shown in Appendix 2. There is 1 Short-Cut Hydrograph Table for pre-development conditions (1 total area, 1 durations, 1 Return Period), and 1 for post-development conditions (1 sub-areas, 1 durations, 1 Return Period). Additionally, Table 5 shows the pre and post-development flow rates once the hydrographs have been routed.

TABLE 4. Peak Flow Results before routing, ft^3/s

DMA	CONDITION	AREA (acres)	PEAK FLOWS (cfs) 24-HR, 2-YR STORM
ENTIRE PROJECT	PRE-DEVELOPMENT	8.78	0.33
	POST-DEVELOPMENT (UNMITIGATED)	8.78	1.77
	DIFFERENCE	-	+1.44

TABLE 5. Peak Flow Results after routing, ft^3/s

DMA	CONDITION	AREA (acres)	PEAK FLOWS (cfs) 24-HR, 2-YR STORM
ENTIRE PROJECT	PRE-DEVELOPMENT	8.78	0.33
	POST-DEVELOPMENT (MITIGATED)	8.78	0.33
	DIFFERENCE	-	0.00

As can be seen, flows remain the same in proposed conditions as in existing conditions.

7. CONCLUSION

The proposed bioretention basin and underground detention/proprietary BMP reduce the proposed conditions peak flows to below pre development peak flows for the 2-yr, 24-hr storm event. Therefore, any hydromodification concerns regarding the proposed Newcastle Centerpointe development have been mitigated, according to According to Water Quality Management Plan for the Santa Ana Region of Riverside County.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX LIST

Appendix 1: Soil and Hydrology Supporting Documentation

Appendix 2: Short-Cut Hydrograph Results

Appendix 3: Hydrology Maps

REFERENCES

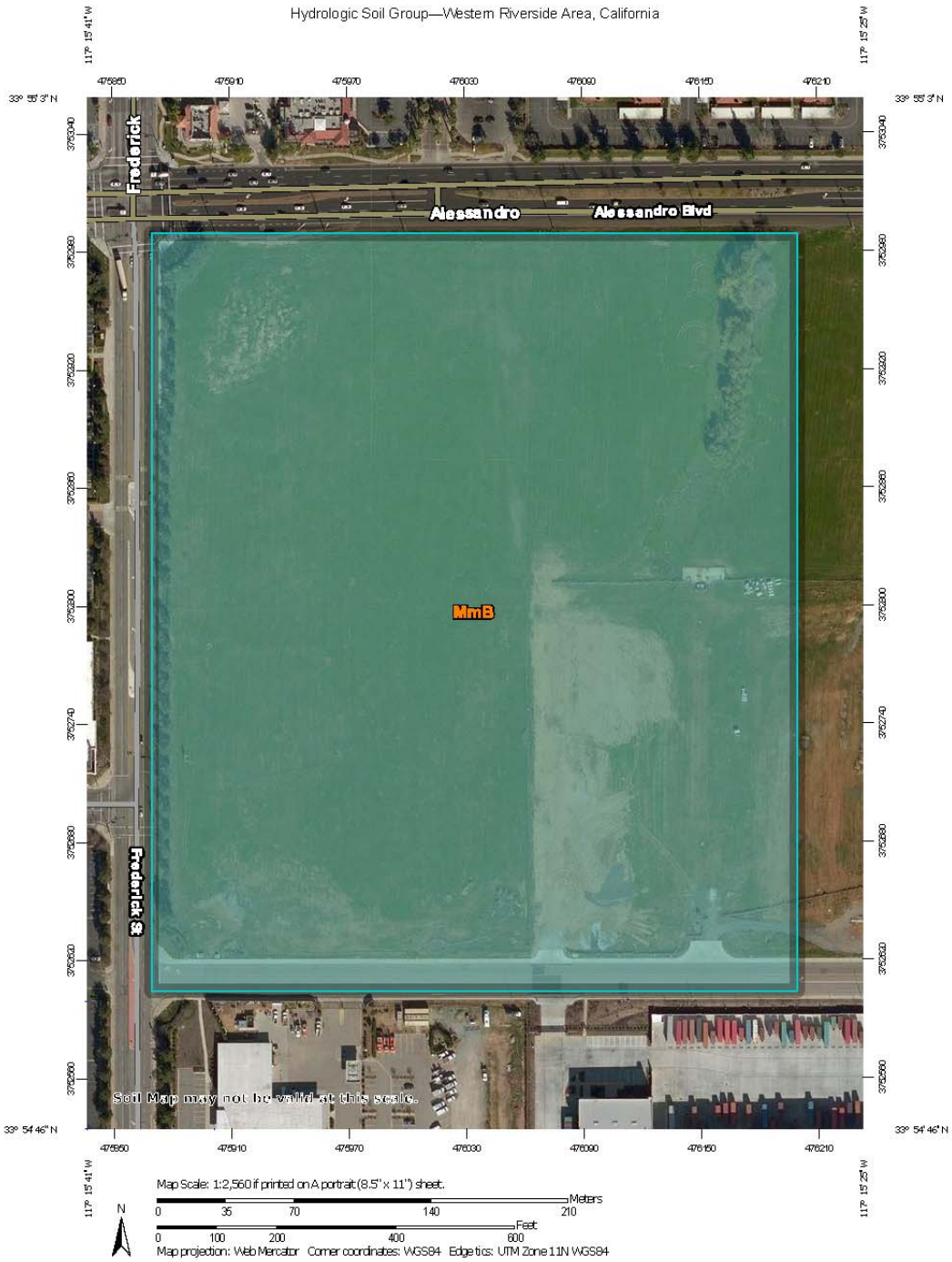
1. Riverside County Flood Control and Water Conservation District Hydrology Manual. April 1978.

2. Water Quality Management Plan for the Santa Ana Region of Riverside County.

3. "Project Specific Water Quality Management Plan for Newcastle Centerpointe" March 2018 by REC Consultants.

APPENDIX 1: SOIL AND HYDROLOGY SUPPORTING DOCUMENTATION

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 10, Sep 12, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 14, 2015—Jan 21, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
MmB	Monserate sandy loam, 0 to 5 percent slopes	C	31.5	100.0%
Totals for Area of Interest			**31.5**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Tie-break Rule: Higher

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

NOAA Atlas 14, Volume 6, Version 2
Location name: Moreno Valley, California, USA*
Latitude: 33.9149°, Longitude: -117.2595°
Elevation: 1564.56 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.088 (0.073-0.106)	0.117 (0.098-0.142)	0.157 (0.131-0.191)	0.191 (0.157-0.234)	0.238 (0.189-0.302)	0.276 (0.215-0.357)	0.315 (0.239-0.419)	0.357 (0.263-0.488)	0.415 (0.294-0.594)	0.463 (0.316-0.686)
10-min	0.126 (0.105-0.153)	0.168 (0.140-0.204)	0.226 (0.188-0.274)	0.274 (0.226-0.335)	0.341 (0.272-0.433)	0.395 (0.308-0.512)	0.451 (0.343-0.600)	0.511 (0.377-0.700)	0.596 (0.421-0.851)	0.663 (0.452-0.983)
15-min	0.152 (0.127-0.184)	0.204 (0.170-0.247)	0.273 (0.227-0.331)	0.331 (0.273-0.405)	0.413 (0.328-0.523)	0.478 (0.372-0.619)	0.546 (0.414-0.726)	0.618 (0.456-0.847)	0.720 (0.509-1.03)	0.802 (0.547-1.19)
30-min	0.239 (0.199-0.289)	0.319 (0.266-0.386)	0.427 (0.355-0.519)	0.518 (0.427-0.635)	0.646 (0.514-0.820)	0.748 (0.583-0.970)	0.855 (0.649-1.14)	0.968 (0.714-1.33)	1.13 (0.797-1.61)	1.26 (0.857-1.86)
60-min	0.336 (0.281-0.407)	0.449 (0.374-0.544)	0.601 (0.500-0.731)	0.730 (0.601-0.894)	0.910 (0.724-1.15)	1.05 (0.820-1.37)	1.20 (0.914-1.60)	1.36 (1.01-1.87)	1.59 (1.12-2.27)	1.77 (1.21-2.62)
2-hr	0.490 (0.409-0.593)	0.639 (0.532-0.774)	0.836 (0.695-1.02)	0.999 (0.824-1.23)	1.23 (0.976-1.56)	1.40 (1.09-1.82)	1.58 (1.20-2.11)	1.77 (1.31-2.43)	2.04 (1.44-2.91)	2.24 (1.53-3.32)
3-hr	0.601 (0.501-0.727)	0.776 (0.647-0.940)	1.01 (0.838-1.22)	1.20 (0.968-1.47)	1.46 (1.16-1.85)	1.66 (1.30-2.16)	1.87 (1.42-2.49)	2.09 (1.54-2.86)	2.38 (1.68-3.41)	2.62 (1.78-3.88)
6-hr	0.829 (0.692-1.00)	1.07 (0.888-1.29)	1.38 (1.14-1.67)	1.63 (1.34-2.00)	1.97 (1.57-2.50)	2.24 (1.74-2.90)	2.51 (1.91-3.34)	2.79 (2.06-3.82)	3.17 (2.24-4.52)	3.46 (2.36-5.12)
12-hr	1.07 (0.896-1.30)	1.39 (1.16-1.69)	1.81 (1.50-2.20)	2.15 (1.77-2.63)	2.61 (2.08-3.31)	2.96 (2.31-3.84)	3.32 (2.52-4.41)	3.68 (2.72-5.05)	4.18 (2.95-5.97)	4.56 (3.11-6.76)
24-hr	1.39 (1.23-1.60)	1.83 (1.62-2.12)	2.41 (2.13-2.79)	2.88 (2.52-3.37)	3.52 (2.98-4.25)	4.01 (3.33-4.94)	4.51 (3.65-5.68)	5.02 (3.96-6.50)	5.71 (4.32-7.69)	6.24 (4.57-8.70)
2-day	1.64 (1.45-1.89)	2.20 (1.94-2.54)	2.93 (2.58-3.39)	3.53 (3.09-4.12)	4.35 (3.68-5.24)	4.97 (4.13-6.12)	5.61 (4.55-7.07)	6.27 (4.94-8.11)	7.16 (5.42-9.65)	7.84 (5.74-10.9)
3-day	1.74 (1.54-2.01)	2.37 (2.09-2.73)	3.20 (2.82-3.70)	3.87 (3.39-4.52)	4.80 (4.06-5.78)	5.51 (4.57-6.78)	6.24 (5.05-7.86)	6.99 (5.51-9.05)	8.02 (6.07-10.8)	8.81 (6.45-12.3)
4-day	1.88 (1.67-2.17)	2.58 (2.28-2.98)	3.51 (3.09-4.06)	4.27 (3.74-4.98)	5.31 (4.50-6.40)	6.12 (5.08-7.53)	6.95 (5.63-8.75)	7.81 (6.15-10.1)	8.98 (6.80-12.1)	9.89 (7.24-13.8)
7-day	2.10 (1.86-2.42)	2.92 (2.58-3.38)	4.02 (3.55-4.66)	4.93 (4.31-5.75)	6.18 (5.23-7.45)	7.15 (5.93-8.79)	8.15 (6.60-10.3)	9.18 (7.24-11.9)	10.6 (8.03-14.3)	11.7 (8.57-16.3)
10-day	2.21 (1.95-2.54)	3.10 (2.74-3.58)	4.30 (3.79-4.97)	5.29 (4.63-6.18)	6.67 (5.65-8.04)	7.75 (6.43-9.53)	8.85 (7.17-11.1)	10.0 (7.89-13.0)	11.6 (8.78-15.6)	12.8 (9.40-17.9)
20-day	2.58 (2.28-2.98)	3.68 (3.25-4.24)	5.17 (4.56-5.98)	6.42 (5.62-7.49)	8.19 (6.93-9.86)	9.58 (7.95-11.8)	11.0 (8.94-13.9)	12.6 (9.91-16.3)	14.7 (11.1-19.8)	16.4 (12.0-22.8)
30-day	3.01 (2.66-3.47)	4.28 (3.79-4.95)	6.04 (5.33-6.99)	7.54 (6.59-8.79)	9.66 (8.18-11.6)	11.4 (9.42-14.0)	13.1 (10.6-16.5)	15.0 (11.8-19.4)	17.7 (13.4-23.8)	19.8 (14.5-27.6)
45-day	3.54 (3.13-4.08)	4.99 (4.41-5.76)	7.03 (6.19-8.13)	8.78 (7.67-10.2)	11.3 (9.56-13.6)	13.3 (11.1-16.4)	15.5 (12.6-19.5)	17.8 (14.0-23.0)	21.1 (16.0-28.4)	23.7 (17.3-33.0)
60-day	4.07 (3.60-4.69)	5.67 (5.01-6.55)	7.94 (7.00-9.19)	9.90 (8.66-11.6)	12.8 (10.8-15.4)	15.1 (12.5-18.6)	17.6 (14.2-22.1)	20.2 (16.0-26.2)	24.1 (18.2-32.4)	27.2 (19.9-37.9)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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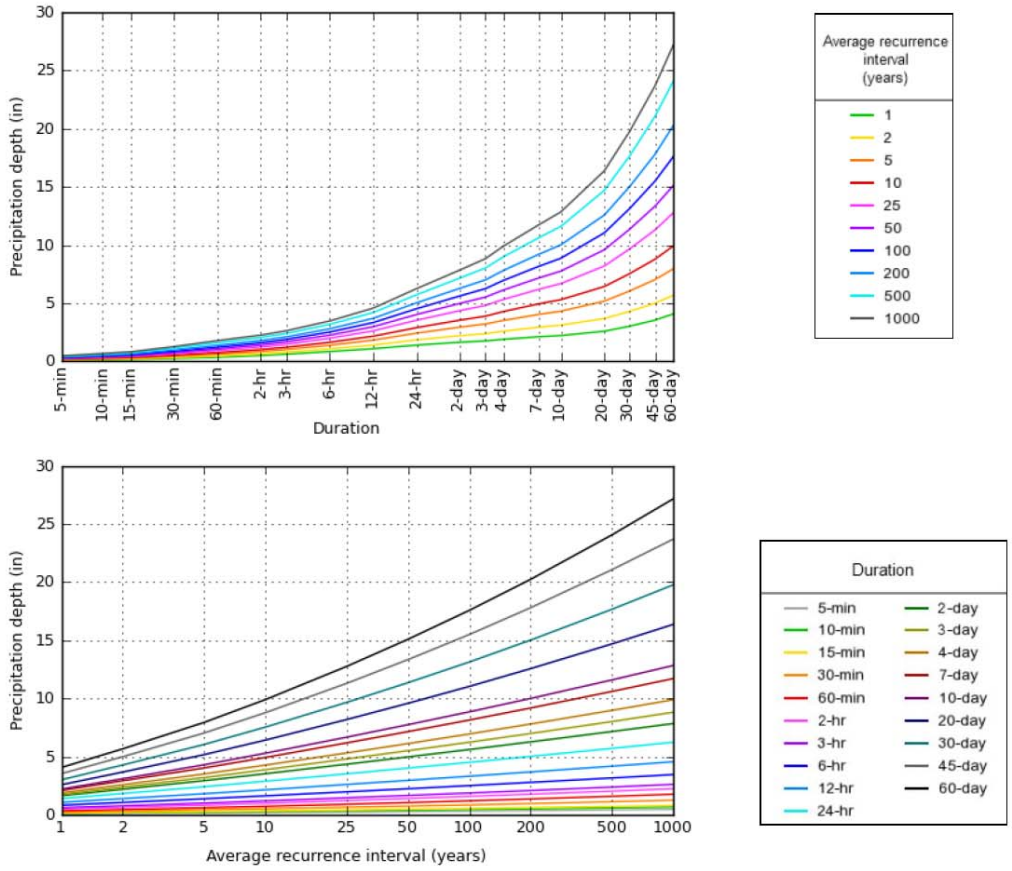
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 33.9149°, Longitude: -117.2595°



NOAA Atlas 14, Volume 6, Version 2

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Maps & aerials

Small scale terrain

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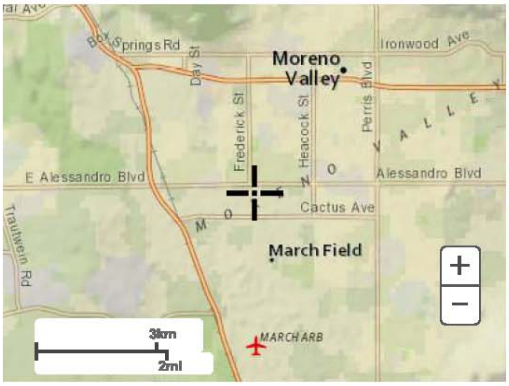
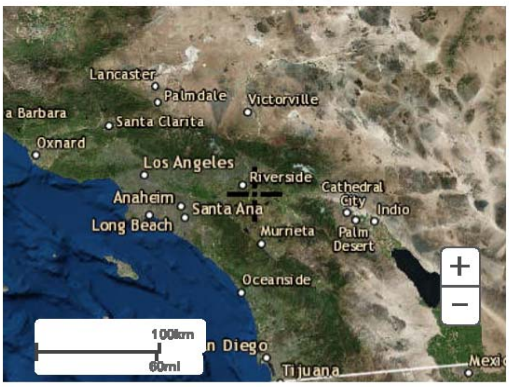


Large scale terrain

Large scale map

Large scale aerial

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



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Disclaimer

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 2: SHORT-CUT HYDROGRAPHS RESULTS

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Pre-Development

Area:	8.780	acres	Per Hydrology Map (to use in this report)	
Pervious:	8.780	acres		
% perv:	100.0%		Soil Type:	C
% imperv:	0.0%		RI (Plate D-5.5):	69 (100% poor grass, pervious)
			RI (Plate D-5.5):	90 (impervious)

RI:	AMC-I	AMC-II	AMC-III	
69	0.58	0.38	0.200	(Plate E-6.2)

Synthetic Unit Hydrograph

Pre-Development Determination (center line of larking lot)

n:	0.03		(interpretation of Plate E.3)	
L:	900	ft	0.095	miles
Lca:	425	ft	0.063	miles
s:	0.0082	ft/ft	211.2	ft/mile
tlag:	4.13	min		
Δt (3hr, 6hr):	5	min		
Δt (24hr):	15	min		

As tlag < 5 - 7 min, Short Cut Hydrograph Method Used.

PRE-DEVELOPMENT CONDITIONS. AREA: Total.

Return Period:	2	yr	Low Loss Rate %:	85%	
Duration of Rain:	24	hr	% impervious:	0.0%	
Rainfall:	1.83	inches	Fp:	0.58	in/hr
Area:	8.78	acres	Constant loss rate, F:	0.580	in/hr
			Fm (as a % of F):	0.500	
Volume:	**8748**	**cu-ft**	**Peak:**	**0.33**	**cfs**

Period	Time (min)	Pattern %	Intensity (in/hr)	Max Loss (in/hr)	Low (in/hr)	Effective (in/hr)	**TOTAL (cfs)**
	0						0.00
1	15	0.2	0.015	1.024	0.012	0.002	0.02
2	30	0.3	0.022	1.012	0.019	0.003	0.03
3	45	0.3	0.022	1.001	0.019	0.003	0.03
4	60	0.4	0.029	0.989	0.025	0.004	0.04
5	75	0.3	0.022	0.977	0.019	0.003	0.03
6	90	0.3	0.022	0.965	0.019	0.003	0.03
7	105	0.3	0.022	0.954	0.019	0.003	0.03
8	120	0.4	0.029	0.942	0.025	0.004	0.04
9	135	0.4	0.029	0.931	0.025	0.004	0.04
10	150	0.4	0.029	0.920	0.025	0.004	0.04
11	165	0.5	0.037	0.909	0.031	0.005	0.05
12	180	0.5	0.037	0.897	0.031	0.005	0.05
13	195	0.5	0.037	0.886	0.031	0.005	0.05
14	210	0.5	0.037	0.875	0.031	0.005	0.05
15	225	0.5	0.037	0.864	0.031	0.005	0.05
16	240	0.6	0.044	0.853	0.037	0.007	0.06
17	255	0.6	0.044	0.843	0.037	0.007	0.06
18	270	0.7	0.051	0.832	0.044	0.008	0.07
19	285	0.7	0.051	0.821	0.044	0.008	0.07
20	300	0.8	0.059	0.811	0.050	0.009	0.08
21	315	0.6	0.044	0.800	0.037	0.007	0.06
22	330	0.7	0.051	0.790	0.044	0.008	0.07
23	345	0.8	0.059	0.779	0.050	0.009	0.08
24	360	0.8	0.059	0.769	0.050	0.009	0.08
25	375	0.9	0.066	0.759	0.056	0.010	0.09
26	390	0.9	0.066	0.749	0.056	0.010	0.09
27	405	1	0.073	0.739	0.062	0.011	0.10
28	420	1	0.073	0.729	0.062	0.011	0.10
29	435	1	0.073	0.719	0.062	0.011	0.10
30	450	1.1	0.081	0.709	0.068	0.012	0.11
31	465	1.2	0.088	0.699	0.075	0.013	0.12
32	480	1.3	0.095	0.690	0.081	0.014	0.13
33	495	1.5	0.110	0.680	0.093	0.016	0.15
34	510	1.5	0.110	0.671	0.093	0.016	0.15
35	525	1.6	0.117	0.661	0.100	0.018	0.16
36	540	1.7	0.124	0.652	0.106	0.019	0.17
37	555	1.9	0.139	0.643	0.118	0.021	0.18
38	570	2	0.146	0.633	0.124	0.022	0.19
39	585	2.1	0.154	0.624	0.131	0.023	0.20
40	600	2.2	0.161	0.615	0.137	0.024	0.21
41	615	1.5	0.110	0.607	0.093	0.016	0.15
42	630	1.5	0.110	0.598	0.093	0.016	0.15
43	645	2	0.146	0.589	0.124	0.022	0.19

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

44	660	2	0.146	0.580	0.124	0.022	0.19	
45	675	1.9	0.139	0.572	0.118	0.021	0.18	
46	690	1.9	0.139	0.563	0.118	0.021	0.18	
47	705	1.7	0.124	0.555	0.106	0.019	0.17	
48	720	1.8	0.132	0.547	0.112	0.020	0.17	
49	735	2.5	0.183	0.539	0.156	0.027	0.24	
50	750	2.6	0.190	0.531	0.162	0.029	0.25	
51	765	2.8	0.205	0.523	0.174	0.031	0.27	
52	780	2.9	0.212	0.515	0.180	0.032	0.28	
53	795	3.4	0.249	0.507	0.212	0.037	0.33	
54	810	3.4	0.249	0.499	0.212	0.037	0.33	
55	825	2.3	0.168	0.492	0.143	0.025	0.22	
56	840	2.3	0.168	0.484	0.143	0.025	0.22	
57	855	2.7	0.198	0.477	0.168	0.030	0.26	
58	870	2.6	0.190	0.470	0.162	0.029	0.25	
59	885	2.6	0.190	0.462	0.162	0.029	0.25	
60	900	2.5	0.183	0.455	0.156	0.027	0.24	
61	915	2.4	0.176	0.448	0.149	0.026	0.23	
62	930	2.3	0.168	0.442	0.143	0.025	0.22	
63	945	1.9	0.139	0.435	0.118	0.021	0.18	
64	960	1.9	0.139	0.428	0.118	0.021	0.18	
65	975	0.4	0.029	0.422	0.025	0.004	0.04	
66	990	0.4	0.029	0.415	0.025	0.004	0.04	
67	1005	0.3	0.022	0.409	0.019	0.003	0.03	
68	1020	0.3	0.022	0.403	0.019	0.003	0.03	
69	1035	0.5	0.037	0.397	0.031	0.005	0.05	
70	1050	0.5	0.037	0.391	0.031	0.005	0.05	
71	1065	0.5	0.037	0.385	0.031	0.005	0.05	
72	1080	0.4	0.029	0.379	0.025	0.004	0.04	
73	1095	0.4	0.029	0.374	0.025	0.004	0.04	
74	1110	0.4	0.029	0.368	0.025	0.004	0.04	
75	1125	0.3	0.022	0.363	0.019	0.003	0.03	
76	1140	0.2	0.015	0.358	0.012	0.002	0.02	
77	1155	0.3	0.022	0.353	0.019	0.003	0.03	
78	1170	0.4	0.029	0.348	0.025	0.004	0.04	
79	1185	0.3	0.022	0.343	0.019	0.003	0.03	
80	1200	0.2	0.015	0.338	0.012	0.002	0.02	
81	1215	0.3	0.022	0.334	0.019	0.003	0.03	
82	1230	0.3	0.022	0.330	0.019	0.003	0.03	
83	1245	0.3	0.022	0.325	0.019	0.003	0.03	
84	1260	0.2	0.015	0.321	0.012	0.002	0.02	
85	1275	0.3	0.022	0.318	0.019	0.003	0.03	
86	1290	0.2	0.015	0.314	0.012	0.002	0.02	
87	1305	0.3	0.022	0.311	0.019	0.003	0.03	
88	1320	0.2	0.015	0.307	0.012	0.002	0.02	
89	1335	0.3	0.022	0.304	0.019	0.003	0.03	
90	1350	0.2	0.015	0.301	0.012	0.002	0.02	
91	1365	0.2	0.015	0.299	0.012	0.002	0.02	
92	1380	0.2	0.015	0.296	0.012	0.002	0.02	
93	1395	0.2	0.015	0.294	0.012	0.002	0.02	
94	1410	0.2	0.015	0.293	0.012	0.002	0.02	
95	1425	0.2	0.015	0.291	0.012	0.002	0.02	
96	1440	0.2	0.015	0.290	0.012	0.002	0.02	
97	1455						0.00	

Post-Development-West

Area:	4.297	acres	Per Hydrology Map (to use in this report)		
Pervious:	0.802	acres			
% perv:	18.7%		Soil Type:	C	
% imperv:	81.3%		RI (Plate D-5.5):	69	(100% poor grass, pervious)
			RI (Plate D-5.5):	90	(impervious)

RI:	AMC-I	AMC-II	AMC-III	
69	0.58	0.38	0.20	(Plate E-6.2)

Synthetic Unit Hydrograph

Pre-Development Determination (center line of larking lot)

n:	0.015		(interpretation of Plate E.3)	
L:	590	ft	0.095	miles
Lca:	330	ft	0.063	miles
s:	0.0081	ft/ft	211.2	ft/mile
tlag:	1.61	min		
Δt (3hr, 6hr):	5	min		
Δt (24hr):	15	min		

As tlag < 5 - 7 min, Short Cut Hydrograph Method Used.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Stage-Storage for BMP WEST

Elevation (ft)	Area (ft^2)	Volume (ft^3)	
0.00	8300	**0**	BOTTOM OF GRAVEL LAYER (0.4 Voids)
0.25	8300	830	
0.50	8300	1660	
0.75	8300	2490	
1.00	8300	3320	TOP OF GRAVEL LAYER
1.001	8300	3322	BOTTOM OF AMMENDED SOILS LAYER (0.3 Voids)
1.25	8300	3943	
1.50	8300	4565	
1.75	8300	5188	
2.00	8300	5810	
2.25	8300	6433	
2.50	8300	7055	
2.75	8300	7678	
3.00	8300	8300	TOP OF AMMENDED SOILS LAYER
3.001	8300	8308	BOTTOM OF MULCH
3.25	8300	10375	TOP OF MULCH
3.50	8300	12450	
3.75	8300	14525	SURFACE DISCHARGE(1,2)
4.00	8300	16600	
4.25	8300	18675	
4.50	8300	20750	
4.75	8300	22825	
5.00	8300	24900	
5.25	8300	26975	
5.50	8300	29050	
5.75	8300	31125	

(1): Volume at this elevation coresponds with surface volume for WQ purposes (invert of lowest surface outlet)
(2): This elevation corresponds to the top of the riser elevation and is equal to the invert of the existing-receiving stormdrain located along the southwestern project boundary

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

POST-DEVELOPMENT CONDITIONS. AREA: West.

Return Period:		2	yr		Low Loss Rate %:	24%	
Duration of Rain:		24	hr		% impervious:	81.3%	
Rainfall:		1.83	inches		Fp (AMC-I):	0.58	in/hr
Area:		4.30	acres		Constant loss rate, F:	0.155	in/hr
					Fm (as a % of F):	0.500	
	Volume:	**21694**	**cu-ft**		**Peak:**	**0.82**	**cfs**

Period	Time (min)	Pattern %	Intensity (in/hr)	Max Loss (in/hr)	Low (in/hr)	Effective (in/hr)	**TOTAL (cfs)**
	0						0.00
1	15	0.2	0.015	0.274	0.004	0.011	0.05
2	30	0.3	0.022	0.271	0.005	0.017	0.07
3	45	0.3	0.022	0.268	0.005	0.017	0.07
4	60	0.4	0.029	0.265	0.007	0.022	0.10
5	75	0.3	0.022	0.262	0.005	0.017	0.07
6	90	0.3	0.022	0.259	0.005	0.017	0.07
7	105	0.3	0.022	0.256	0.005	0.017	0.07
8	120	0.4	0.029	0.253	0.007	0.022	0.10
9	135	0.4	0.029	0.250	0.007	0.022	0.10
10	150	0.4	0.029	0.246	0.007	0.022	0.10
11	165	0.5	0.037	0.243	0.009	0.028	0.12
12	180	0.5	0.037	0.240	0.009	0.028	0.12
13	195	0.5	0.037	0.237	0.009	0.028	0.12
14	210	0.5	0.037	0.235	0.009	0.028	0.12
15	225	0.5	0.037	0.232	0.009	0.028	0.12
16	240	0.6	0.044	0.229	0.011	0.033	0.14
17	255	0.6	0.044	0.226	0.011	0.033	0.14
18	270	0.7	0.051	0.223	0.012	0.039	0.17
19	285	0.7	0.051	0.220	0.012	0.039	0.17
20	300	0.8	0.059	0.217	0.014	0.045	0.19
21	315	0.6	0.044	0.214	0.011	0.033	0.14
22	330	0.7	0.051	0.212	0.012	0.039	0.17
23	345	0.8	0.059	0.209	0.014	0.045	0.19
24	360	0.8	0.059	0.206	0.014	0.045	0.19
25	375	0.9	0.066	0.203	0.016	0.050	0.22
26	390	0.9	0.066	0.201	0.016	0.050	0.22
27	405	1	0.073	0.198	0.018	0.056	0.24
28	420	1	0.073	0.195	0.018	0.056	0.24
29	435	1	0.073	0.193	0.018	0.056	0.24
30	450	1.1	0.081	0.190	0.019	0.061	0.27
31	465	1.2	0.088	0.187	0.021	0.067	0.29
32	480	1.3	0.095	0.185	0.023	0.072	0.31
33	495	1.5	0.110	0.182	0.026	0.083	0.36
34	510	1.5	0.110	0.180	0.026	0.083	0.36
35	525	1.6	0.117	0.177	0.028	0.089	0.39
36	540	1.7	0.124	0.175	0.030	0.095	0.41
37	555	1.9	0.139	0.172	0.033	0.106	0.46
38	570	2	0.146	0.170	0.035	0.111	0.48
39	585	2.1	0.154	0.167	0.037	0.117	0.51
40	600	2.2	0.161	0.165	0.039	0.122	0.53
41	615	1.5	0.110	0.163	0.026	0.083	0.36
42	630	1.5	0.110	0.160	0.026	0.083	0.36
43	645	2	0.146	0.158	0.035	0.111	0.48

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

44	660	2	0.146	0.156	0.035	0.111	0.48	
45	675	1.9	0.139	0.153	0.033	0.106	0.46	
46	690	1.9	0.139	0.151	0.033	0.106	0.46	
47	705	1.7	0.124	0.149	0.030	0.095	0.41	
48	720	1.8	0.132	0.147	0.032	0.100	0.43	
49	735	2.5	0.183	0.144	0.044	0.139	0.60	
50	750	2.6	0.190	0.142	0.046	0.145	0.63	
51	765	2.8	0.205	0.140	0.049	0.156	0.67	
52	780	2.9	0.212	0.138	0.051	0.161	0.70	
53	795	3.4	0.249	0.136	0.060	0.189	0.82	
54	810	3.4	0.249	0.134	0.060	0.189	0.82	
55	825	2.3	0.168	0.132	0.040	0.128	0.55	
56	840	2.3	0.168	0.130	0.040	0.128	0.55	
57	855	2.7	0.198	0.128	0.047	0.150	0.65	
58	870	2.6	0.190	0.126	0.046	0.145	0.63	
59	885	2.6	0.190	0.124	0.046	0.145	0.63	
60	900	2.5	0.183	0.122	0.044	0.139	0.60	
61	915	2.4	0.176	0.120	0.042	0.134	0.58	
62	930	2.3	0.168	0.118	0.040	0.128	0.55	
63	945	1.9	0.139	0.117	0.033	0.106	0.46	
64	960	1.9	0.139	0.115	0.033	0.106	0.46	
65	975	0.4	0.029	0.113	0.007	0.022	0.10	
66	990	0.4	0.029	0.111	0.007	0.022	0.10	
67	1005	0.3	0.022	0.110	0.005	0.017	0.07	
68	1020	0.3	0.022	0.108	0.005	0.017	0.07	
69	1035	0.5	0.037	0.106	0.009	0.028	0.12	
70	1050	0.5	0.037	0.105	0.009	0.028	0.12	
71	1065	0.5	0.037	0.103	0.009	0.028	0.12	
72	1080	0.4	0.029	0.102	0.007	0.022	0.10	
73	1095	0.4	0.029	0.100	0.007	0.022	0.10	
74	1110	0.4	0.029	0.099	0.007	0.022	0.10	
75	1125	0.3	0.022	0.097	0.005	0.017	0.07	
76	1140	0.2	0.015	0.096	0.004	0.011	0.05	
77	1155	0.3	0.022	0.094	0.005	0.017	0.07	
78	1170	0.4	0.029	0.093	0.007	0.022	0.10	
79	1185	0.3	0.022	0.092	0.005	0.017	0.07	
80	1200	0.2	0.015	0.091	0.004	0.011	0.05	
81	1215	0.3	0.022	0.089	0.005	0.017	0.07	
82	1230	0.3	0.022	0.088	0.005	0.017	0.07	
83	1245	0.3	0.022	0.087	0.005	0.017	0.07	
84	1260	0.2	0.015	0.086	0.004	0.011	0.05	
85	1275	0.3	0.022	0.085	0.005	0.017	0.07	
86	1290	0.2	0.015	0.084	0.004	0.011	0.05	
87	1305	0.3	0.022	0.083	0.005	0.017	0.07	
88	1320	0.2	0.015	0.082	0.004	0.011	0.05	
89	1335	0.3	0.022	0.082	0.005	0.017	0.07	
90	1350	0.2	0.015	0.081	0.004	0.011	0.05	
91	1365	0.2	0.015	0.080	0.004	0.011	0.05	
92	1380	0.2	0.015	0.079	0.004	0.011	0.05	
93	1395	0.2	0.015	0.079	0.004	0.011	0.05	
94	1410	0.2	0.015	0.078	0.004	0.011	0.05	
95	1425	0.2	0.015	0.078	0.004	0.011	0.05	
96	1440	0.2	0.015	0.078	0.004	0.011	0.05	
97	1455						0.00	

Routing of 24 hr - 2 yr Hydrograph in BMP-West					Page #	1
Pump 1	0.15	cfs	Pump 2	0	cfs	
Activate	0.5	ft	Activate	0.00	ft	
Shut Off	0	ft	Shut Off	0.00	ft	

Volume Out	Maximum		
(ft^3)	Volume (ft^3)	Height (ft)	Outflow (cfs)
21465	13563	3.502	0.150

Time (min)	Post Q (cfs)	Volume (ft^3)	Height (ft)	Pump (cfs)
0	0.00	0	0.00	0.00
15	0.05	23	0.01	0.00
30	0.07	77	0.02	0.00
45	0.07	140	0.04	0.00
60	0.10	216	0.06	0.00
75	0.07	293	0.08	0.00
90	0.07	356	0.09	0.00
105	0.07	419	0.11	0.00
120	0.10	495	0.13	0.00
135	0.10	585	0.15	0.00
150	0.10	675	0.17	0.00
165	0.12	774	0.20	0.00
180	0.12	882	0.23	0.00
195	0.12	990	0.26	0.00
210	0.12	1098	0.28	0.00
225	0.12	1206	0.31	0.00
240	0.14	1323	0.34	0.00
255	0.14	1449	0.37	0.00
270	0.17	1589	0.41	0.00
285	0.17	1742	0.45	0.00
300	0.19	1904	0.49	0.00
315	0.14	1917	0.49	0.00
330	0.17	1922	0.50	0.15
345	0.19	1949	0.50	0.15
360	0.19	1985	0.51	0.15
375	0.22	2034	0.53	0.15
390	0.22	2097	0.54	0.15
405	0.24	2169	0.56	0.15
420	0.24	2250	0.58	0.15
435	0.24	2331	0.60	0.15
450	0.27	2426	0.63	0.15
465	0.29	2543	0.66	0.15
480	0.31	2678	0.69	0.15
495	0.36	2844	0.73	0.15
510	0.36	3033	0.78	0.15
525	0.39	3236	0.84	0.15
540	0.41	3461	0.89	0.15
555	0.46	3717	0.96	0.15
570	0.48	4005	1.03	0.15
585	0.51	4316	1.11	0.15
600	0.53	4649	1.20	0.15
615	0.36	4914	1.27	0.15
630	0.36	5103	1.32	0.15
645	0.48	5346	1.38	0.15
660	0.48	5643	1.46	0.15
675	0.46	5931	1.53	0.15
690	0.46	6210	1.60	0.15
705	0.41	6467	1.67	0.15
720	0.43	6710	1.73	0.15

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Routing of 24 hr - 2 yr Hydrograph in BMP-West					Page #	2
Time (min)	Post Q (cfs)	Volume (ft^3)	Height (ft)	Pump (cfs)		
735	0.60	7038	1.82	0.15		
750	0.63	7457	1.93	0.15		
765	0.67	7907	2.04	0.15		
780	0.70	8388	2.17	0.15		
795	0.82	8937	2.31	0.15		
810	0.82	9540	2.46	0.15		
825	0.55	10022	2.59	0.15		
840	0.55	10382	2.68	0.15		
855	0.65	10787	2.79	0.15		
870	0.63	11228	2.90	0.15		
885	0.63	11660	3.01	0.15		
900	0.60	12078	3.12	0.15		
915	0.58	12474	3.22	0.15		
930	0.55	12848	3.32	0.15		
945	0.46	13167	3.40	0.15		
960	0.46	13446	3.47	0.15		
975	0.10	13563	3.50	0.15		
990	0.10	13518	3.49	0.15		
1005	0.07	13460	3.48	0.15		
1020	0.07	13388	3.46	0.15		
1035	0.12	13338	3.44	0.15		
1050	0.12	13311	3.44	0.15		
1065	0.12	13284	3.43	0.15		
1080	0.10	13248	3.42	0.15		
1095	0.10	13203	3.41	0.15		
1110	0.10	13158	3.40	0.15		
1125	0.07	13100	3.38	0.15		
1140	0.05	13019	3.36	0.15		
1155	0.07	12938	3.34	0.15		
1170	0.10	12879	3.33	0.15		
1185	0.07	12821	3.31	0.15		
1200	0.05	12740	3.29	0.15		
1215	0.07	12659	3.27	0.15		
1230	0.07	12587	3.25	0.15		
1245	0.07	12515	3.23	0.15		
1260	0.05	12434	3.21	0.15		
1275	0.07	12353	3.19	0.15		
1290	0.05	12272	3.17	0.15		
1305	0.07	12191	3.15	0.15		
1320	0.05	12110	3.13	0.15		
1335	0.07	12029	3.11	0.15		
1350	0.05	11948	3.08	0.15		
1365	0.05	11858	3.06	0.15		
1380	0.05	11768	3.04	0.15		
1395	0.05	11678	3.02	0.15		
1410	0.05	11588	2.99	0.15		
1425	0.05	11498	2.97	0.15		
1440	0.05	11408	2.95	0.15		
1455	0.00	11295	2.92	0.15		

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Routing of 24 hr - 2 yr Hydrograph in BMP-West					Page #	4
Time (min)	Post Q (cfs)	Volume (ft^3)	Height (ft)	Pump (cfs)		
2205	0.00	4545	1.17	0.15		
2220	0.00	4410	1.14	0.15		
2235	0.00	4275	1.10	0.15		
2250	0.00	4140	1.07	0.15		
2265	0.00	4005	1.03	0.15		
2280	0.00	3870	1.00	0.15		
2295	0.00	3735	0.96	0.15		
2310	0.00	3600	0.93	0.15		
2325	0.00	3465	0.89	0.15		
2340	0.00	3330	0.86	0.15		
2355	0.00	3195	0.82	0.15		
2370	0.00	3060	0.79	0.15		
2385	0.00	2925	0.76	0.15		
2400	0.00	2790	0.72	0.15		
2415	0.00	2655	0.69	0.15		
2430	0.00	2520	0.65	0.15		
2445	0.00	2385	0.62	0.15		
2460	0.00	2250	0.58	0.15		
2475	0.00	2115	0.55	0.15		
2490	0.00	1980	0.51	0.15		
2505	0.00	1845	0.48	0.15		
2520	0.00	1710	0.44	0.15		
2535	0.00	1575	0.41	0.15		
2550	0.00	1440	0.37	0.15		
2565	0.00	1305	0.34	0.15		
2580	0.00	1170	0.30	0.15		
2595	0.00	1035	0.27	0.15		
2610	0.00	900	0.23	0.15		
2625	0.00	765	0.20	0.15		
2640	0.00	630	0.16	0.15		
2655	0.00	495	0.13	0.15		
2670	0.00	360	0.09	0.15		
2685	0.00	225	0.06	0.15		
2700	0.00	90	0.02	0.15		
2715	0.00	0	0.00	0.00		

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Post-Development-East

Area:	4.483	acres	Per Hydrology Map (to use in this report)		
Pervious:	0.349	acres			
% perv:	7.8%		Soil Type:	C	
% imperv:	92.2%		RI (Plate D-5.5):	69	(100% poor grass, pervious)
			RI (Plate D-5.5):	90	(impervious)

RI:	AMC-I	AMC-II	AMC-III	
69	0.58	0.38	0.20	(Plate E-6.2)

Synthetic Unit Hydrograph

Pre-Development Determination (center line of larking lot)

n:	0.015		(interpretation of Plate E.3)	
L:	920	ft	0.095	miles
Lca:	330	ft	0.063	miles
s:	0.0083	ft/ft	211.2	ft/mile
tlag:	1.89	min		
Δt (3hr, 6hr):	5	min		
Δt (24hr):	15	min		

As tlag < 5 - 7 min, Short Cut Hydrograph Method Used.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Dimensions for BMP East

Proposing OldCastle Underground Vaults Model 7x15x6

Dimensions

Length (ft)	Width (ft)	Height (ft)	Number	Area (sf)	Volume (cf)
15	7	6	24	2520	15120

Outside				Footprint
Length (ft)	Width (ft)	Height (ft)	Number	Area (sf)
16	8	6.5	24	3072

Stage-Area for BMP East

Elevation (ft)	Area (ft^2)	Volume (ft^3)	
0.00	2520	**0**	
1.00	2520	2520	
2.00	2520	5040	
3.00	2520	7560	
3.40	2520	8578	DCV(1,2)
4.00	2520	10080	
5.00	2520	12600	
6.00	2520	15120	

(1): Baffle wall to be set inside the storage system at 3.40' to ensure DCV is treated. Flows that reach above this elevation flow over the baffle wall, bypass treatment, and go directly to outflow chamber

(2): Proprietary BMP selected based on capacity to treat and discharge DCV within 48hours. Proprietary BMP selected is MWS-L-4-17 or equal.

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

POST-DEVELOPMENT CONDITIONS. AREA: East.

Return Period:		2	yr		Low Loss Rate %:	16%	
Duration of Rain:		24	hr		% impervious:	92.2%	
Rainfall:		1.83	inches		Fp (AMC-I):	0.58	in/hr
Area:		4.48	acres		Constant loss rate, F:	0.099	in/hr
					Fm (as a % of F):	0.500	
	Volume:	**25063**	**cu-ft**		**Peak:**	**0.95**	**cfs**

Period	Time (min)	Pattern %	Intensity (in/hr)	Max Loss (in/hr)	Low (in/hr)	Effective (in/hr)	**TOTAL (cfs)**
	0						0.00
1	15	0.2	0.015	0.174	0.002	0.012	0.06
2	30	0.3	0.022	0.172	0.003	0.018	0.08
3	45	0.3	0.022	0.170	0.003	0.018	0.08
4	60	0.4	0.029	0.168	0.005	0.025	0.11
5	75	0.3	0.022	0.166	0.003	0.018	0.08
6	90	0.3	0.022	0.164	0.003	0.018	0.08
7	105	0.3	0.022	0.162	0.003	0.018	0.08
8	120	0.4	0.029	0.160	0.005	0.025	0.11
9	135	0.4	0.029	0.158	0.005	0.025	0.11
10	150	0.4	0.029	0.156	0.005	0.025	0.11
11	165	0.5	0.037	0.155	0.006	0.031	0.14
12	180	0.5	0.037	0.153	0.006	0.031	0.14
13	195	0.5	0.037	0.151	0.006	0.031	0.14
14	210	0.5	0.037	0.149	0.006	0.031	0.14
15	225	0.5	0.037	0.147	0.006	0.031	0.14
16	240	0.6	0.044	0.145	0.007	0.037	0.17
17	255	0.6	0.044	0.143	0.007	0.037	0.17
18	270	0.7	0.051	0.141	0.008	0.043	0.19
19	285	0.7	0.051	0.140	0.008	0.043	0.19
20	300	0.8	0.059	0.138	0.009	0.049	0.22
21	315	0.6	0.044	0.136	0.007	0.037	0.17
22	330	0.7	0.051	0.134	0.008	0.043	0.19
23	345	0.8	0.059	0.133	0.009	0.049	0.22
24	360	0.8	0.059	0.131	0.009	0.049	0.22
25	375	0.9	0.066	0.129	0.010	0.055	0.25
26	390	0.9	0.066	0.127	0.010	0.055	0.25
27	405	1	0.073	0.126	0.012	0.062	0.28
28	420	1	0.073	0.124	0.012	0.062	0.28
29	435	1	0.073	0.122	0.012	0.062	0.28
30	450	1.1	0.081	0.121	0.013	0.068	0.31
31	465	1.2	0.088	0.119	0.014	0.074	0.33
32	480	1.3	0.095	0.117	0.015	0.080	0.36
33	495	1.5	0.110	0.116	0.017	0.092	0.42
34	510	1.5	0.110	0.114	0.017	0.092	0.42
35	525	1.6	0.117	0.112	0.019	0.099	0.45
36	540	1.7	0.124	0.111	0.020	0.105	0.47
37	555	1.9	0.139	0.109	0.022	0.117	0.53
38	570	2	0.146	0.108	0.023	0.123	0.56
39	585	2.1	0.154	0.106	0.024	0.129	0.58
40	600	2.2	0.161	0.105	0.026	0.136	0.61
41	615	1.5	0.110	0.103	0.017	0.092	0.42
42	630	1.5	0.110	0.102	0.017	0.092	0.42
43	645	2	0.146	0.100	0.023	0.123	0.56

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44	660	2	0.146	0.099	0.023	0.123	0.56	
45	675	1.9	0.139	0.097	0.022	0.117	0.53	
46	690	1.9	0.139	0.096	0.022	0.117	0.53	
47	705	1.7	0.124	0.094	0.020	0.105	0.47	
48	720	1.8	0.132	0.093	0.021	0.111	0.50	
49	735	2.5	0.183	0.092	0.029	0.154	0.70	
50	750	2.6	0.190	0.090	0.030	0.160	0.72	
51	765	2.8	0.205	0.089	0.032	0.172	0.78	
52	780	2.9	0.212	0.088	0.034	0.179	0.81	
53	795	3.4	0.249	0.086	0.039	0.209	0.95	
54	810	3.4	0.249	0.085	0.039	0.209	0.95	
55	825	2.3	0.168	0.084	0.027	0.142	0.64	
56	840	2.3	0.168	0.082	0.027	0.142	0.64	
57	855	2.7	0.198	0.081	0.031	0.166	0.75	
58	870	2.6	0.190	0.080	0.030	0.160	0.72	
59	885	2.6	0.190	0.079	0.030	0.160	0.72	
60	900	2.5	0.183	0.077	0.029	0.154	0.70	
61	915	2.4	0.176	0.076	0.028	0.148	0.67	
62	930	2.3	0.168	0.075	0.027	0.142	0.64	
63	945	1.9	0.139	0.074	0.022	0.117	0.53	
64	960	1.9	0.139	0.073	0.022	0.117	0.53	
65	975	0.4	0.029	0.072	0.005	0.025	0.11	
66	990	0.4	0.029	0.071	0.005	0.025	0.11	
67	1005	0.3	0.022	0.070	0.003	0.018	0.08	
68	1020	0.3	0.022	0.068	0.003	0.018	0.08	
69	1035	0.5	0.037	0.067	0.006	0.031	0.14	
70	1050	0.5	0.037	0.066	0.006	0.031	0.14	
71	1065	0.5	0.037	0.065	0.006	0.031	0.14	
72	1080	0.4	0.029	0.064	0.005	0.025	0.11	
73	1095	0.4	0.029	0.064	0.005	0.025	0.11	
74	1110	0.4	0.029	0.063	0.005	0.025	0.11	
75	1125	0.3	0.022	0.062	0.003	0.018	0.08	
76	1140	0.2	0.015	0.061	0.002	0.012	0.06	
77	1155	0.3	0.022	0.060	0.003	0.018	0.08	
78	1170	0.4	0.029	0.059	0.005	0.025	0.11	
79	1185	0.3	0.022	0.058	0.003	0.018	0.08	
80	1200	0.2	0.015	0.058	0.002	0.012	0.06	
81	1215	0.3	0.022	0.057	0.003	0.018	0.08	
82	1230	0.3	0.022	0.056	0.003	0.018	0.08	
83	1245	0.3	0.022	0.055	0.003	0.018	0.08	
84	1260	0.2	0.015	0.055	0.002	0.012	0.06	
85	1275	0.3	0.022	0.054	0.003	0.018	0.08	
86	1290	0.2	0.015	0.053	0.002	0.012	0.06	
87	1305	0.3	0.022	0.053	0.003	0.018	0.08	
88	1320	0.2	0.015	0.052	0.002	0.012	0.06	
89	1335	0.3	0.022	0.052	0.003	0.018	0.08	
90	1350	0.2	0.015	0.051	0.002	0.012	0.06	
91	1365	0.2	0.015	0.051	0.002	0.012	0.06	
92	1380	0.2	0.015	0.050	0.002	0.012	0.06	
93	1395	0.2	0.015	0.050	0.002	0.012	0.06	
94	1410	0.2	0.015	0.050	0.002	0.012	0.06	
95	1425	0.2	0.015	0.050	0.002	0.012	0.06	
96	1440	0.2	0.015	0.049	0.002	0.012	0.06	
97	1455						0.00	

Routing of 24 hr - 2 yr Hydrograph in BMP-East					Page #	1
Pump 1	0.18	cfs	Pump 2	0	cfs	
Activate	0.5	ft	Activate	0.00	ft	
Shut Off	0	ft	Shut Off	0.00	ft	

Volume Out	Maximum		
(ft^3)	Volume (ft^3)	Height (ft)	Outflow (cfs)
24948	14432	5.727	0.180

Time (min)	Post Q (cfs)	Volume (ft^3)	Height (ft)	Pump (cfs)
0	0.00	0	0.00	0.00
15	0.06	27	0.01	0.00
30	0.08	90	0.04	0.00
45	0.08	162	0.06	0.00
60	0.11	248	0.10	0.00
75	0.08	333	0.13	0.00
90	0.08	405	0.16	0.00
105	0.08	477	0.19	0.00
120	0.11	563	0.22	0.00
135	0.11	662	0.26	0.00
150	0.11	761	0.30	0.00
165	0.14	873	0.35	0.00
180	0.14	999	0.40	0.00
195	0.14	1125	0.45	0.00
210	0.14	1251	0.50	0.00
225	0.14	1215	0.48	0.18
240	0.17	1193	0.47	0.18
255	0.17	1184	0.47	0.18
270	0.19	1184	0.47	0.18
285	0.19	1193	0.47	0.18
300	0.22	1215	0.48	0.18
315	0.17	1229	0.49	0.18
330	0.19	1229	0.49	0.18
345	0.22	1251	0.50	0.18
360	0.22	1287	0.51	0.18
375	0.25	1337	0.53	0.18
390	0.25	1400	0.56	0.18
405	0.28	1476	0.59	0.18
420	0.28	1566	0.62	0.18
435	0.28	1656	0.66	0.18
450	0.31	1760	0.70	0.18
465	0.33	1886	0.75	0.18
480	0.36	2034	0.81	0.18
495	0.42	2223	0.88	0.18
510	0.42	2439	0.97	0.18
525	0.45	2669	1.06	0.18
540	0.47	2921	1.16	0.18
555	0.53	3209	1.27	0.18
570	0.56	3537	1.40	0.18
585	0.58	3888	1.54	0.18
600	0.61	4262	1.69	0.18
615	0.42	4563	1.81	0.18
630	0.42	4779	1.90	0.18
645	0.56	5058	2.01	0.18
660	0.56	5400	2.14	0.18
675	0.53	5729	2.27	0.18
690	0.53	6044	2.40	0.18
705	0.47	6332	2.51	0.18
720	0.50	6606	2.62	0.18

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Routing of 24 hr - 2 yr Hydrograph in BMP-East					Page #	2
Time (min)	Post Q (cfs)	Volume (ft^3)	Height (ft)	Pump (cfs)		
735	0.70	6984	2.77	0.18		
750	0.72	7461	2.96	0.18		
765	0.78	7974	3.16	0.18		
780	0.81	8528	3.38	0.18		
795	0.95	9158	3.63	0.18		
810	0.95	9851	3.91	0.18		
825	0.64	10404	4.13	0.18		
840	0.64	10818	4.29	0.18		
855	0.75	11282	4.48	0.18		
870	0.72	11781	4.68	0.18		
885	0.72	12267	4.87	0.18		
900	0.70	12744	5.06	0.18		
915	0.67	13199	5.24	0.18		
930	0.64	13626	5.41	0.18		
945	0.53	13991	5.55	0.18		
960	0.53	14306	5.68	0.18		
975	0.11	14432	5.73	0.18		
990	0.11	14369	5.70	0.18		
1005	0.08	14292	5.67	0.18		
1020	0.08	14202	5.64	0.18		
1035	0.14	14139	5.61	0.18		
1050	0.14	14103	5.60	0.18		
1065	0.14	14067	5.58	0.18		
1080	0.11	14018	5.56	0.18		
1095	0.11	13955	5.54	0.18		
1110	0.11	13892	5.51	0.18		
1125	0.08	13815	5.48	0.18		
1140	0.06	13716	5.44	0.18		
1155	0.08	13617	5.40	0.18		
1170	0.11	13541	5.37	0.18		
1185	0.08	13464	5.34	0.18		
1200	0.06	13365	5.30	0.18		
1215	0.08	13266	5.26	0.18		
1230	0.08	13176	5.23	0.18		
1245	0.08	13086	5.19	0.18		
1260	0.06	12987	5.15	0.18		
1275	0.08	12888	5.11	0.18		
1290	0.06	12789	5.08	0.18		
1305	0.08	12690	5.04	0.18		
1320	0.06	12591	5.00	0.18		
1335	0.08	12492	4.96	0.18		
1350	0.06	12393	4.92	0.18		
1365	0.06	12285	4.88	0.18		
1380	0.06	12177	4.83	0.18		
1395	0.06	12069	4.79	0.18		
1410	0.06	11961	4.75	0.18		
1425	0.06	11853	4.70	0.18		
1440	0.06	11745	4.66	0.18		
1455	0.00	11610	4.61	0.18		

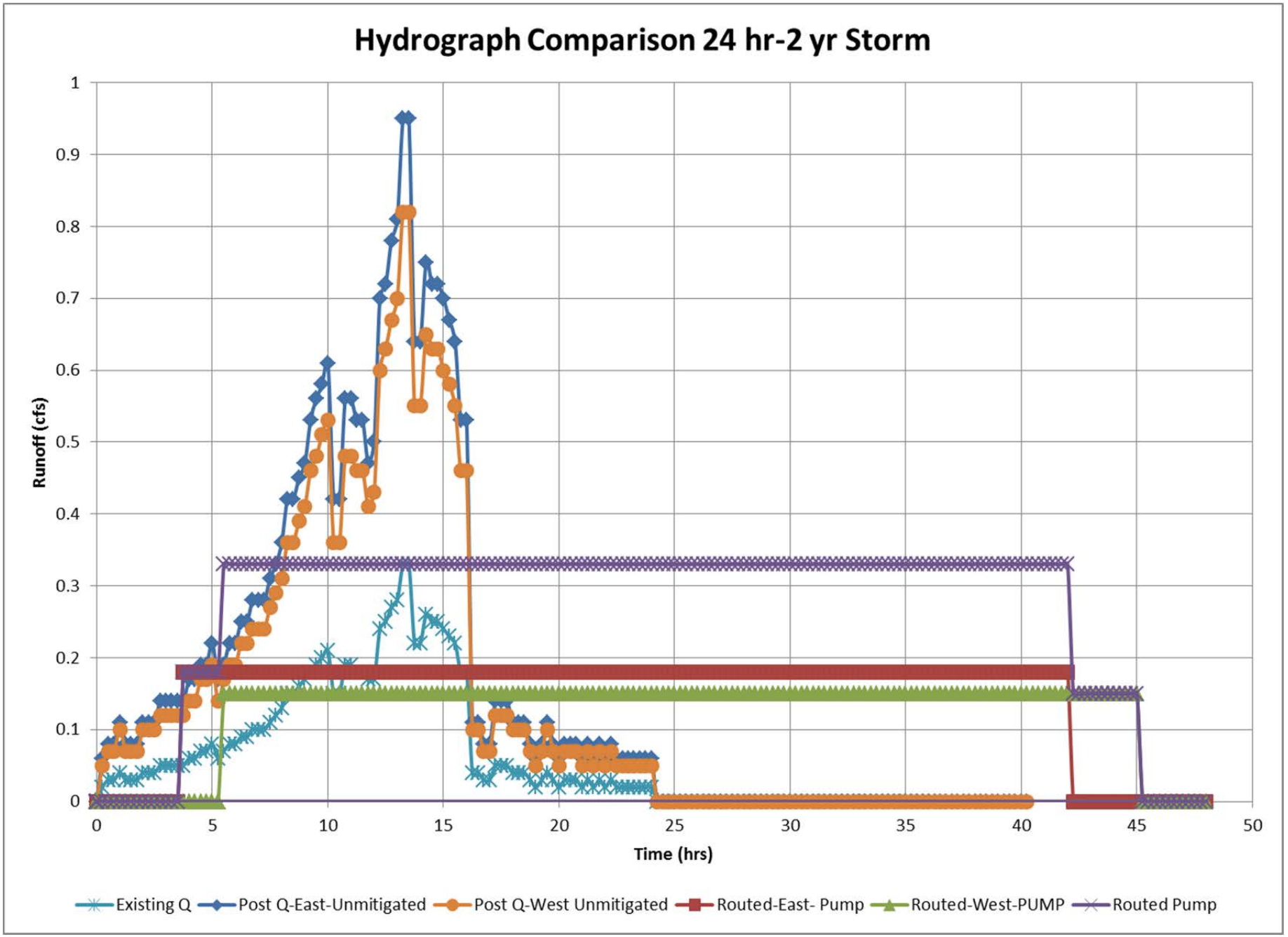
Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Routing of 24 hr - 2 yr Hydrograph in BMP-East					Page #	3
Time (min)	Post Q (cfs)	Volume (ft^3)	Height (ft)	Pump (cfs)		
1470	0.00	11448	4.54	0.18		
1485	0.00	11286	4.48	0.18		
1500	0.00	11124	4.41	0.18		
1515	0.00	10962	4.35	0.18		
1530	0.00	10800	4.29	0.18		
1545	0.00	10638	4.22	0.18		
1560	0.00	10476	4.16	0.18		
1575	0.00	10314	4.09	0.18		
1590	0.00	10152	4.03	0.18		
1605	0.00	9990	3.96	0.18		
1620	0.00	9828	3.90	0.18		
1635	0.00	9666	3.84	0.18		
1650	0.00	9504	3.77	0.18		
1665	0.00	9342	3.71	0.18		
1680	0.00	9180	3.64	0.18		
1695	0.00	9018	3.58	0.18		
1710	0.00	8856	3.51	0.18		
1725	0.00	8694	3.45	0.18		
1740	0.00	8532	3.39	0.18		
1755	0.00	8370	3.32	0.18		
1770	0.00	8208	3.26	0.18		
1785	0.00	8046	3.19	0.18		
1800	0.00	7884	3.13	0.18		
1815	0.00	7722	3.06	0.18		
1830	0.00	7560	3.00	0.18		
1845	0.00	7398	2.94	0.18		
1860	0.00	7236	2.87	0.18		
1875	0.00	7074	2.81	0.18		
1890	0.00	6912	2.74	0.18		
1905	0.00	6750	2.68	0.18		
1920	0.00	6588	2.61	0.18		
1935	0.00	6426	2.55	0.18		
1950	0.00	6264	2.49	0.18		
1965	0.00	6102	2.42	0.18		
1980	0.00	5940	2.36	0.18		
1995	0.00	5778	2.29	0.18		
2010	0.00	5616	2.23	0.18		
2025	0.00	5454	2.16	0.18		
2040	0.00	5292	2.10	0.18		
2055	0.00	5130	2.04	0.18		
2070	0.00	4968	1.97	0.18		
2085	0.00	4806	1.91	0.18		
2100	0.00	4644	1.84	0.18		
2115	0.00	4482	1.78	0.18		
2130	0.00	4320	1.71	0.18		
2145	0.00	4158	1.65	0.18		
2160	0.00	3996	1.59	0.18		
2175	0.00	3834	1.52	0.18		
2190	0.00	3672	1.46	0.18		

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Routing of 24 hr - 2 yr Hydrograph in BMP-East					Page #	4
Time (min)	Post Q (cfs)	Volume (ft^3)	Height (ft)	Pump (cfs)		
2205	0.00	3510	1.39	0.18		
2220	0.00	3348	1.33	0.18		
2235	0.00	3186	1.26	0.18		
2250	0.00	3024	1.20	0.18		
2265	0.00	2862	1.14	0.18		
2280	0.00	2700	1.07	0.18		
2295	0.00	2538	1.01	0.18		
2310	0.00	2376	0.94	0.18		
2325	0.00	2214	0.88	0.18		
2340	0.00	2052	0.81	0.18		
2355	0.00	1890	0.75	0.18		
2370	0.00	1728	0.69	0.18		
2385	0.00	1566	0.62	0.18		
2400	0.00	1404	0.56	0.18		
2415	0.00	1242	0.49	0.18		
2430	0.00	1080	0.43	0.18		
2445	0.00	918	0.36	0.18		
2460	0.00	756	0.30	0.18		
2475	0.00	594	0.24	0.18		
2490	0.00	432	0.17	0.18		
2505	0.00	270	0.11	0.18		
2520	0.00	108	0.04	0.18		
2535	0.00	0	0.00	0.00		

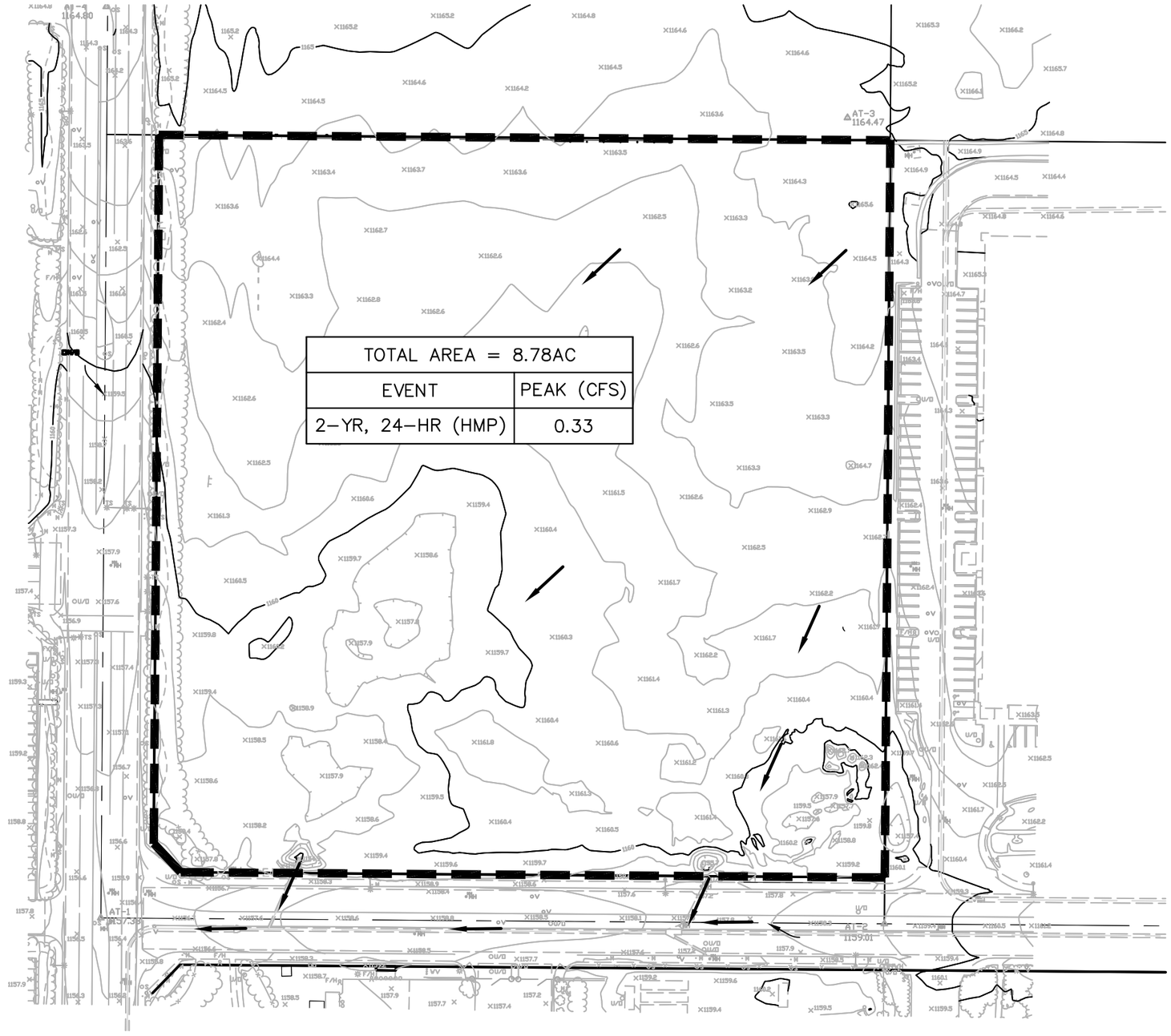
Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and

APPENDIX 3: HYDROLOGY MAPS

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



LEGEND

DRAINAGE BOUNDARY

FLOW ARROW

100 50 0 100 200 300

SCALE: 1" = 100'

Civil Engineering · Environmental Land Surveying
2442 Second Avenue
San Diego, CA 92101
(619)232-9200 (619)232-9210 Fax
RBF Consultants, Inc.

DATE: 04/05/18
SCALE: 1" = 100'
DRAWN:
CHECKED:

SHEET TITLE: EXISTING CONDITIONS HMP

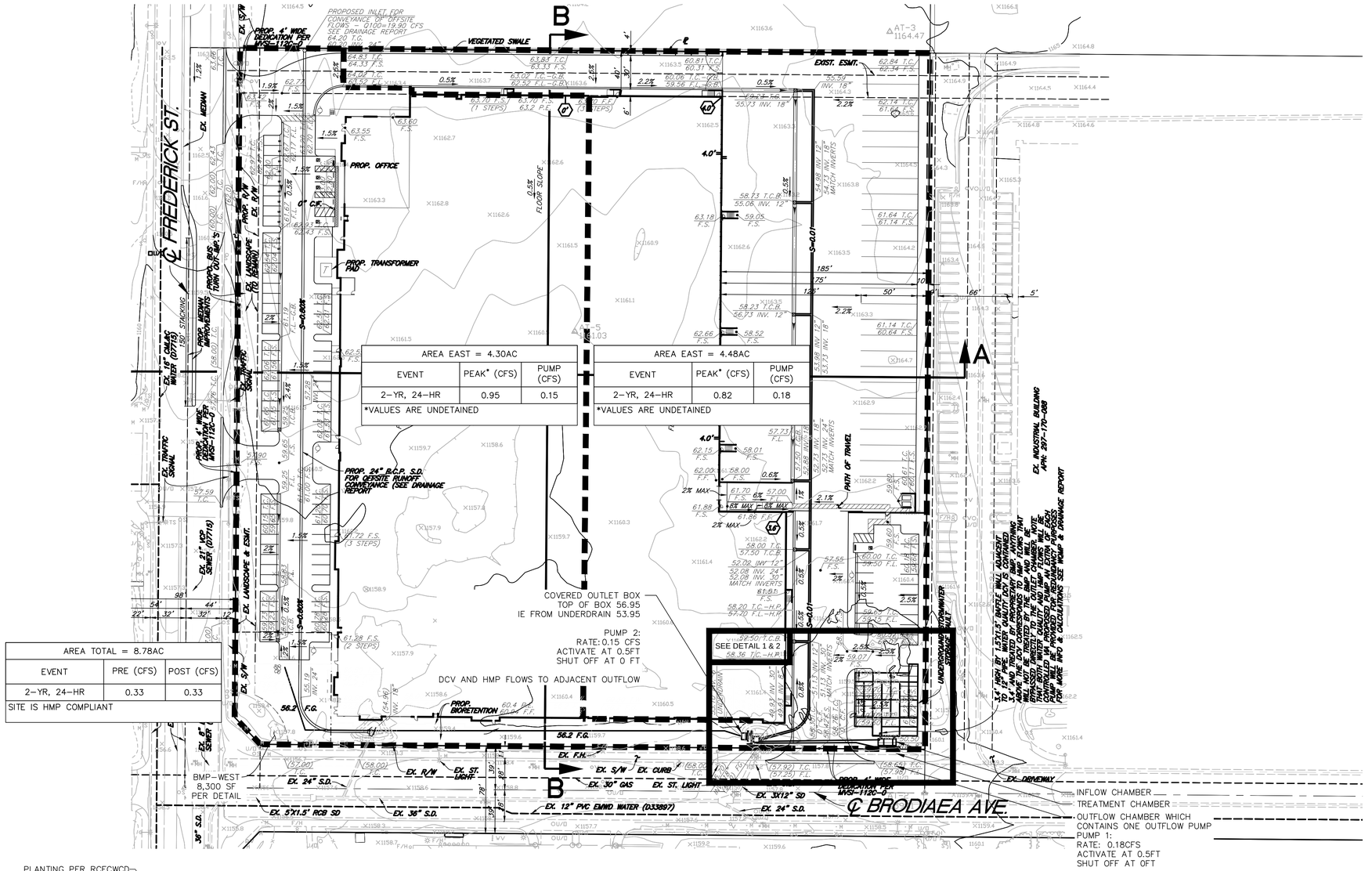
PROJECT: CENTERPOINTE INDUSTRIAL
NWC OF FREDERICK STREET AND BRODIAEA AVENUE
MORENO VALLEY, CA 92557

SHEET 1 OF 1 SHEETS

SAVE DATE: 4/6/2018 ~ PLOT DATE: 4/6/2018 ~ FILE NAME: P:\Acad\1379 SDH — Newcastle Centerpointe\Reports\Drainage\180328_1379-Drainage.dwg

LEGEND

DMA BOUNDARY

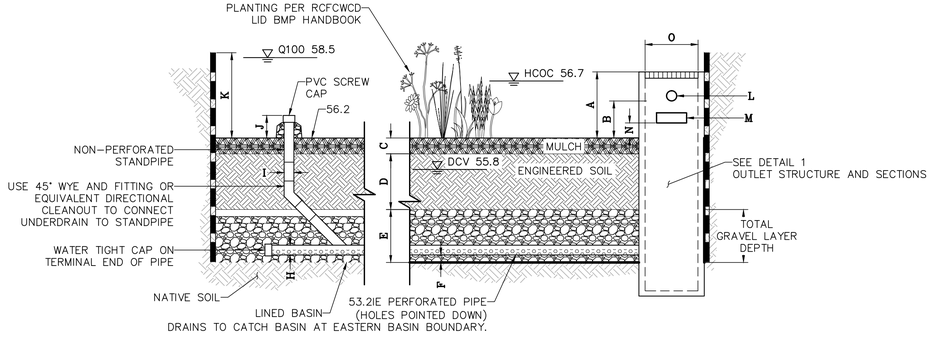


TABULATED DATA

BASIN WEST

A	9"
B	N/A"
C	3"
D	24"
E	12"
F	3"
G	N/A
H	6"
I	6"
J	6"
K	4.3'
L	SEE DETAIL 1
M	N/A
N	N/A
O	SEE DETAIL 1
P	N/A

NOTE: ALL SPECIFICATIONS PER LID BMP MANUAL FACT SHEET FOR BIORETENTION BMP



DETAIL 3 BMP WEST (BIORETENTION)
NTS

NOTE: RECEIVING STORM DRAINS HAVE A SPECIFIED CAPACITY PER CITY OF MORENO VALLEY APPROVED AS-BUILT DRAWING 4-888. DETAINED HMP RUNOFF FROM THE PROJECT SITE IS LESS THAN THE CAPACITY.

50 25 0 50 100 150
SCALE: 1" = 50'

REVISIONS			
NO.	DESCRIPTION	DATE	APP'D

R·E·C Consultants, Inc.
Civil Engineering · Environmental
Land Surveying
2442 Second Avenue
San Diego, CA 92101
(619)232-9200 (619)232-9210 Fax

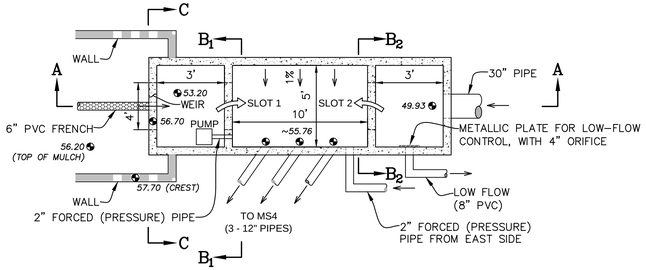
DATE: 04/06/18
SCALE: 1" = 50'
DRAWN:
CHECKED:

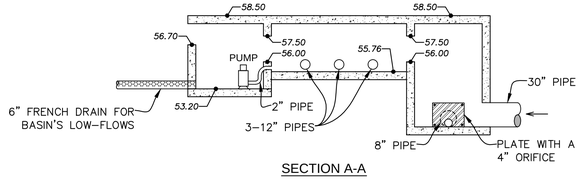
SHEET TITLE: PROPOSED HMP
PROJECT: CENTERPOINTE INDUSTRIAL
FREDERICK ST. AND BRODIAEA AVE.
MORENO VALLEY, CA 92557

SHEET 1 OF 1 SHEETS

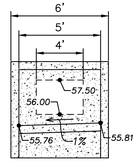
SAVE DATE: 6/12/2018 ~ PLOT DATE: 6/12/2018 ~ FILE NAME: P:\Acad\1379 SDH — Newcastle Centerpointe\Reports\WQMP\180328_1379-Drainage — Standard\180611_1379-Drainage.dwg

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

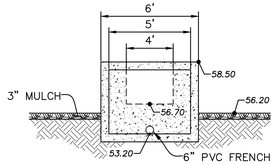




SECTION A-A



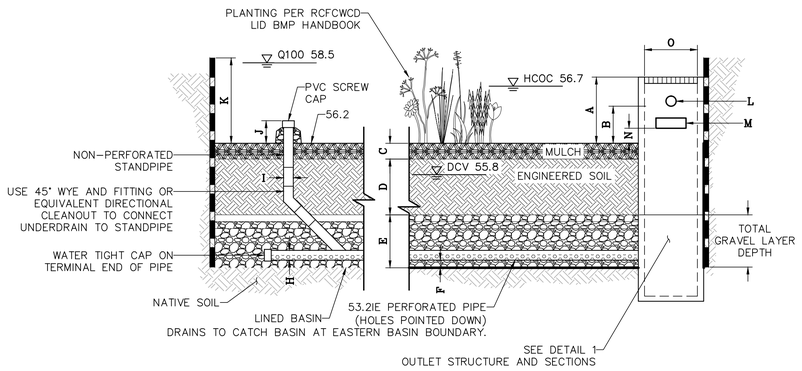
SECTION B1-B1 SLOT DETAILS
(SLOT 1 = SLOT 2) = SECTION B2-B2



SECTION C-C

NOTE:
FOR MODULAR WETLAND, UNDERGROUND SYSTEM & PRESSURE SYSTEM FOR EAST SIDE, SEE DETAIL 2.

1 OUTLET & SECTIONS
NOT TO SCALE



TABULATED DATA
BASIN WEST

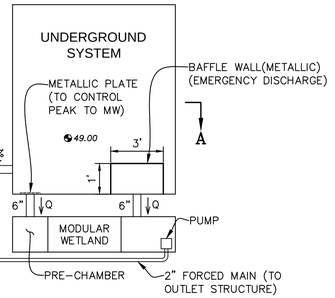
A	9"
B	N/A"
C	3"
D	24"
E	12"
F	3"
G	N/A
H	6"
I	6"
J	6"
K	4.3'
L	SEE DETAIL 1
M	N/A
N	N/A
O	SEE DETAIL 1
P	N/A

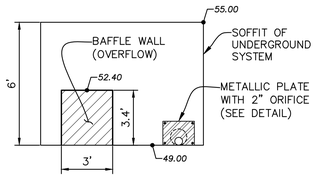
NOTE: ALL SPECIFICATIONS PER LID BMP MANUAL FACT SHEET FOR BIORETENTION BMP

BMP TABLE

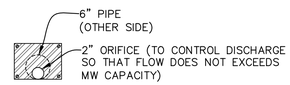
BMP #	TYPE	SIZE (SqFt)	ORIFICE SIZE
WEST	BIORETENTION BASIN	8,300	N/A

3 BMP WEST (BIORETENTION)
NOT TO SCALE

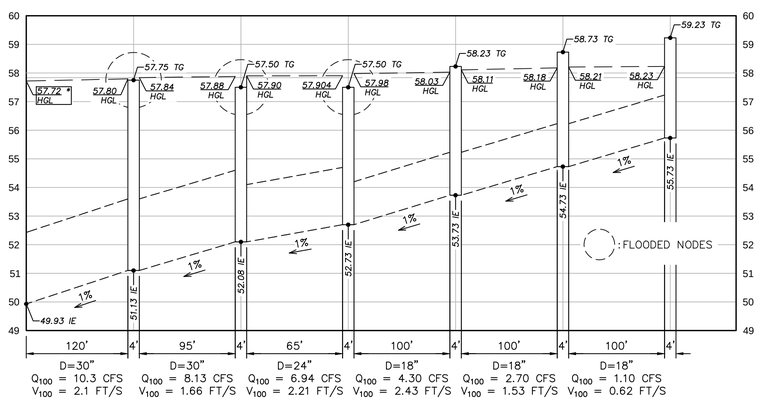




SECTION A-A



ORIFICE DETAIL



* – HGL (HYDRAULIC GRADIENT LINE) SET PER CITY OF MORENO VALLEY APPROVED PLANS (57.60) PLUS ENERGY LOSS TO CONVEY Q_{100} THRU 1.5'x4' RECTANGULAR SLOT (0.12'). HGL VALUES PER WSPG PRINTOUT. SEE PROJECT DRAINAGE STUDY.

2 UNDERGROUND SYSTEM DETAIL
NOT TO SCALE

SITE SPECIFIC DATA

PROJECT NUMBER		7211	
PROJECT NAME		MORENO VALLEY INDUSTRIAL	
PROJECT LOCATION		MORENO VALLEY, CA	
STRUCTURE ID		BASIN B	
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
8,575		N/A	
TREATMENT HGL AVAILABLE (FT)			N/A
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	1550.50	PVC	6"
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE	1550.00	PVC	6"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	1558.00	1558.00	1558.00
SURFACE LOAD	H20 IN-DIRECT	H20 IN-DIRECT	H20 IN-DIRECT
FRAME & COVER	ø30"	30" X 48"	ø24"
WETLANDMEDIA VOLUME (CY)			5.58
WETLANDMEDIA DELIVERY METHOD			PER CONTRACT
ORIFICE SIZE (DIA. INCHES)			ø1.03"

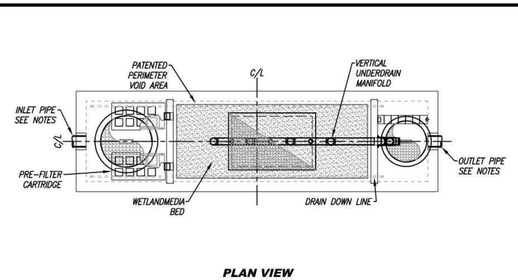
NOTES: PRELIMINARY; NOT FOR CONSTRUCTION. ENGINEER TO SET UPSTREAM BYPASS AT 1553.48.

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
3. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. DRIP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING MODULAR WETLANDS FOR ACTIVATION OF UNIT. MANUFACTURES WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A MODULAR WETLANDS REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT MANUFACTURER.



REQUIRED TREATMENT VOLUME (CF)	8575
DRAINDOWN DURATION (HOURS)	46
AVERAGE DISCHARGE RATE PER MWS UNIT(GPM)	23.34
OPERATING HEAD (FT)	3.4
WETLANDMEDIA INFILTRATION RATE (IN/HR)	26
WETLANDMEDIA LOADING RATE (GPM/SF) OR	0.26

THE PRODUCT DESCRIBED MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,425,262; 7,470,362; 7,674,378; 8,303,816; RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

PROPRIETARY AND CONFIDENTIAL:
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF MODULAR WETLANDS SYSTEMS. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF MODULAR WETLANDS SYSTEMS IS PROHIBITED.

Bio Clean — A Forterra Company

MWS-L-4-17-V-UG
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

4 MODULAR WETLAND
NOT TO SCALE

REVISIONS

NO.	DESCRIPTION	DATE	APP'D

Civil Engineering · Environmental
Land Surveying
2442 Second Avenue
San Diego, CA 92101
(619)232-9200 (619)232-9210 Fax
R·E·C Consultants, Inc.

DATE: 02/05/18
SCALE: 1" = 20'
DRAWN: J.M.W.
CHECKED: B.A.R.

SHEET TITLE: DETAILS
PROJECT: CENTERPOINTE INDUSTRIAL
FREDERICK ST. AND BRODIAEA AVE.
MORENO VALLEY, CA 92557

SHEET 2 OF 2 SHEETS

SAVE DATE: 6/11/2018 ~ PLOT DATE: 6/12/2018 ~ FILE NAME: P:\Acad\1379 SDH — Newcastle Centerpointe\Reports\WQMP\180328_1379-Drainage — Standard\180328_1379-Drainage.dwg

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

TO BE PROVIDED IN FINAL WQMP

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

TO BE PROVIDED IN FINAL WQMP

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

TO BE PROVIDED IN FINAL WQMP

Attachment: Project 1_Water Quality Management Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Centerpointe

NOISE IMPACT ANALYSIS

CITY OF MORENO VALLEY

PREPARED BY:

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MAY 25, 2018

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
Hz	Hertz
I-215	Interstate 215
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
L_{min}	Minimum level measured over the time interval
MARB/IPA	March Air Reserve Base/Inland Port Airport
mph	Miles per hour
OPR	Office of Planning and Research
PPV	Peak particle velocity
Project	Centerpointe
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the noise exposure and the necessary noise mitigation measures for the proposed Centerpointe development ("Project"). The Project site is located on the northeast corner of Frederick Street and Brodiaea Avenue in the City of Moreno Valley. The Project is proposed to consist of up to 204,022 square feet (sf) warehouse (without cold storage) use within a single building. This study has been prepared to satisfy the City of Moreno Valley noise standards and thresholds of significance based on guidance in Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

OFF-SITE TRAFFIC NOISE ANALYSIS

Traffic generated by the operation of the proposed Project will influence the traffic noise levels in surrounding off-site areas. To quantify the off-site traffic noise increases on the surrounding off-site areas, the changes in traffic noise levels on nine roadway segments surrounding the Project site were calculated based on the change in the average daily traffic (ADT) volumes. The traffic noise levels provided in this analysis are based on the traffic forecasts found in the *Centerpointe Traffic Impact Analysis* prepared by Urban Crossroads, Inc. (2) To assess the off-site noise level impacts associated with the proposed Project, noise contour boundaries were developed for Existing, Opening Year 2023, and General Plan Buildout (Post-2040) traffic conditions. The analysis shows that the Project-related traffic noise level increases under all traffic scenarios will be *less than significant*.

OPERATIONAL NOISE ANALYSIS

Using reference noise levels to represent the expected noise sources from the Centerpointe site, this analysis estimates the Project-related stationary-source noise levels at nearby sensitive receiver locations. The normal activities associated with the proposed Centerpointe are anticipated to include idling trucks, delivery truck activities, backup alarms, as well as loading and unloading of dry goods, roof-top air conditioning units, and parking lot vehicle movements. The operational noise analysis shows that the Project-related stationary-source noise levels due to the idling trucks, delivery truck activities, backup alarms, as well as loading and unloading of dry goods, roof-top air conditioning units, and parking lot vehicle movements will satisfy the City of Moreno Valley 65 dBA L_{eq} daytime and 60 dBA L_{eq} nighttime noise level standards at 200 feet from the property line of the noise source (Project site) and at all nearby sensitive receiver locations. Further, since the Project-related operational noise levels will satisfy the more restrictive 65 dBA L_{eq} daytime and 60 dBA L_{eq} nighttime exterior noise level standards, they will also comply with the 90 dBA L_{eq} 8-hour continuous noise level limit identified in the City of Moreno Valley Municipal Code.

In addition, this analysis demonstrates that the Project will contribute *less than significant* operational noise level contributions to the existing ambient noise environment during the daytime and nighttime hours at all of the sensitive receiver locations. Therefore, the operational noise level impacts associated with the proposed 24-hour seven days per week Project activities, such as the idling trucks, delivery truck activities, backup alarms, as well as loading and unloading

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

of dry goods, roof-top air conditioning units, and parking lot vehicle movements, will be *less than significant*.

OPERATIONAL VIBRATION ANALYSIS

The operation of the Project site will include heavy trucks transiting on site to and from the loading dock areas. Truck vibration levels are dependent on vehicle characteristics, load, speed, and pavement conditions. Typical vibration levels for heavy trucks at normal traffic speeds do not exceed 65 VdB, and therefore, will be below the Federal Transit Administration (FTA) vibration threshold of 80 VdB at nearby sensitive receiver locations. Since truck deliveries transiting on site will be travelling at very low speeds it is expected that delivery truck vibration impacts at nearby homes will be *less than significant*.

CONSTRUCTION NOISE ANALYSIS

Construction noise represents a short-term increase on the ambient noise levels. Construction-related noise impacts are expected to create temporary and intermittent high-level noise conditions at receivers surrounding the Project site when certain activities occur at the Project site boundary. Using sample reference noise levels to represent the planned construction activities of the Centerpointe site, this analysis estimates the Project-related construction noise levels at nearby sensitive receiver locations. The Project-related short-term construction noise levels are shown to satisfy the City of Moreno Valley Municipal Code Municipal Code 65 dBA L_{eq} daytime and 60 dBA L_{eq} nighttime noise level thresholds. Therefore, based on the results of this analysis, all receiver locations will experience *less than significant* impacts due to Project construction noise levels.

CONSTRUCTION VIBRATION ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. The analysis shows that the unmitigated Project-construction vibration levels will remain below the Federal Transit Administration (FTA) 80 VdB threshold at all receiver locations, and are therefore, considered a *less than significant* impact. Further, vibration levels at the site of the closest sensitive receiver are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating at the Project site perimeter.

CONSTRUCTION NOISE AND VIBRATION ABATEMENT MEASURES

Though construction noise is temporary, intermittent and of short duration, and will not present any long-term impacts, the following practices would reduce noise level increases produced by the construction equipment to the nearby noise-sensitive residential land uses:

- Prior to approval of grading plans and/or issuance of building permits, plans shall include a note indicating that Project construction activities shall comply with the City of Moreno Valley Municipal Code requirements. (3)

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

- During all Project site construction, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receivers nearest the Project site.
- The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise-sensitive receivers nearest the Project site during all Project construction (i.e., to the center).

SUMMARY OF SIGNIFICANCE FINDINGS

The results of this Centerpointe Noise Impact Analysis are summarized below based on the significance criteria in Section 4 of this report. Table ES-1 shows the findings of significance for each potential noise and/or vibration impact before and after any required mitigation measures.

TABLE ES-1: SUMMARY OF SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise	7	*Less Than Significant*	*n/a*
Operational Noise	9	*Less Than Significant*	*n/a*
Operational Vibration		*Less Than Significant*	*n/a*
Construction Noise	10	*Less Than Significant*	*n/a*
Construction Vibration		*Less Than Significant*	*n/a*

"n/a" = No mitigation is required.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Centerpointe ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, describes the local regulatory setting, provides the study methods and procedures for traffic noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term operational and short-term construction noise impacts.

1.1 SITE LOCATION

The proposed Centerpointe site is located on the northeast corner of Frederick Street and Brodiaea Avenue in the City of Moreno Valley, as shown on Exhibit 1-A. Existing uses in the Project study area include a commercial-designated vacant lot north of the Project site, existing business park/warehouse use to the east, the Riverside County Department of Waste Resources facilities to the south, and existing City of Moreno Valley offices to the west. The closest existing residential homes to the Project site are located approximately 800 feet north of the Project site across Alessandro Boulevard. The March Air Reserve Base/Inland Port Airport (MARB/IPA) runway is located approximately 1.2 miles southwest of the Project site, and Interstate 215 (I-215) is located roughly 1.2 miles west of the Project site.

1.2 PROJECT DESCRIPTION

The Project is proposed to consist of up to 204,022 square feet (sf) warehouse (without cold storage) use within a single building, as shown on Exhibit 1-B. At the time this noise analysis was prepared the future tenants of the proposed Project were unknown. To present the potential worst-case noise conditions, this analysis assumes the Project would be operational 24 hours per day, seven days per week. The Project business operations would primarily be conducted within the enclosed buildings, except for traffic movement, parking, as well as loading and unloading of trucks at designated loading bays. The on-site Project-related noise sources are expected to include: idling trucks, delivery truck activities, backup alarms, as well as loading and unloading of dry goods, roof-top air conditioning units, and parking lot vehicle movements. This noise analysis is intended to describe noise level impacts associated with the expected typical warehouse and distribution storage activities at the Project site. At the time of this analysis, no cold storage was planned at the Project site, and therefore is not analyzed in this report.

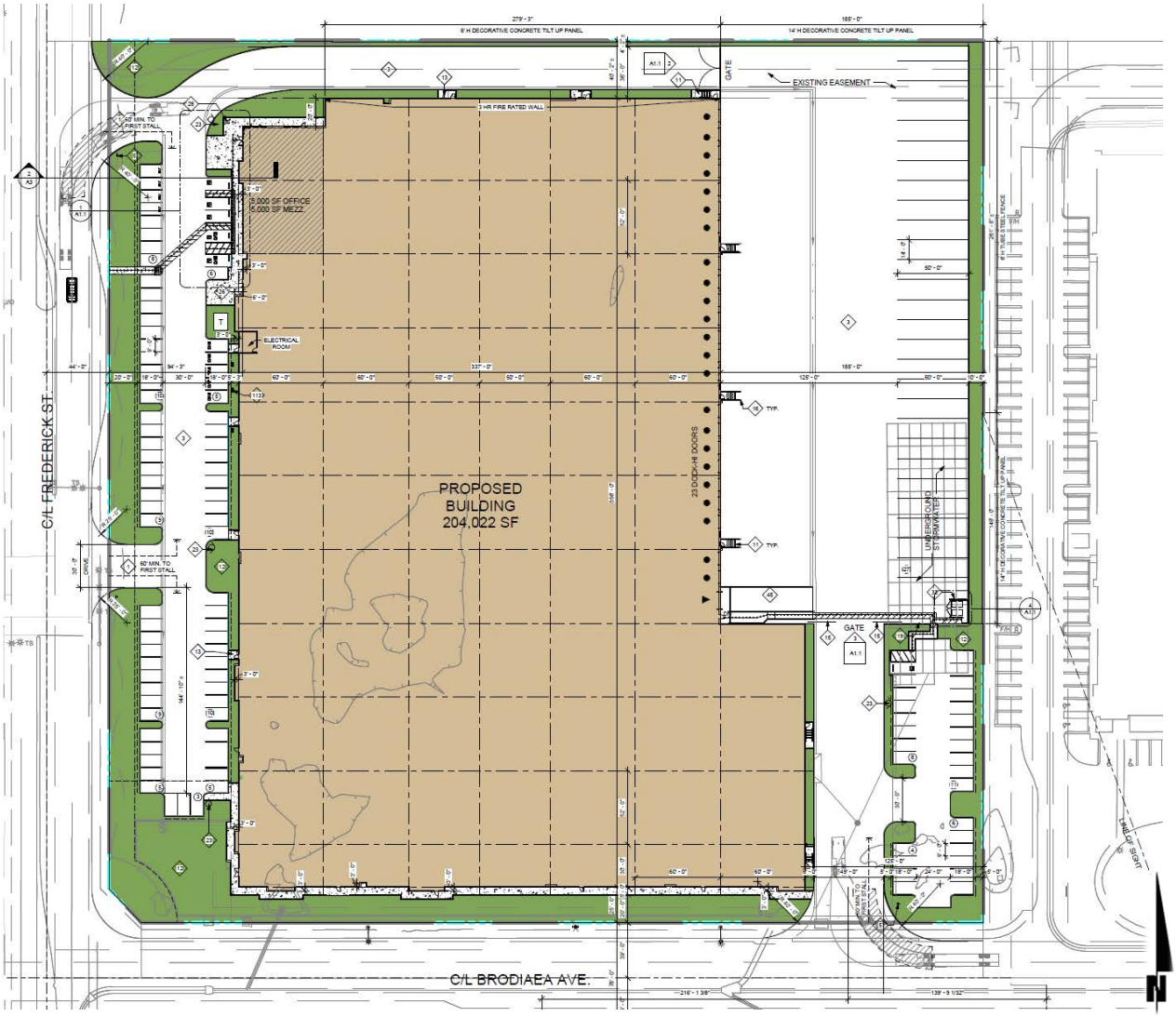
According to the *Centerpointe Traffic Impact Analysis* prepared by Urban Crossroads, Inc., the Project is expected to generate a net total of approximately 486 trip-ends per day (actual vehicles). (2) The Project trip generation includes 100 truck trip-ends per day from the proposed buildings within the Project site. This noise study relies on the net Project trips to accurately account for the effect of individual truck trips on the study area roadway network.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 1-A: LOCATION MAP

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 1-B: SITE PLAN



Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

2 FUNDAMENTALS

Noise has been simply defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

EXHIBIT 2-A: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	SLEEP DISTURBANCE
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

Source: Environmental Protection Agency Office of Noise Abatement and Control, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA/ONAC 550/9-74-004) March 1974.

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (4) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA

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at approximately 100 feet, which can cause serious discomfort. (5) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most commonly used figure is the equivalent level (L_{eq}). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period and is commonly used to describe the "average" noise levels within the environment.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Day-Night Average Noise Level (LDN) and the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The LDN and CNEL are weighted averages of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The LDN time of day corrections include the addition of 10 decibels to dBA L_{eq} sound levels at night between 10:00 p.m. and 7:00 a.m. The CNEL time of day corrections require the addition of 5 decibels to dBA L_{eq} sound levels in the evening from 7:00 p.m. to 10:00 p.m., in addition to the corrections for the LDN. These additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. LDN and CNEL do not represent the actual sound level heard at any particular time, but rather represent the total sound exposure. The City of Moreno Valley relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources, and therefore, this analysis uses the CNEL noise level to apply the more conservative evening hour corrections to the 24-hour noise levels.

2.3 SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. The manner in which noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. (4)

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2.3.2 Ground Absorption

The propagation path of noise from a highway to a receptor is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receptor, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receptor such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source. (6)

2.3.3 Atmospheric Effects

Receptors located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects. (4)

2.3.4 Shielding

A large object or barrier in the path between a noise source and a receptor can substantially attenuate noise levels at the receptor. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an “out of sight, out of mind” effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearby resident. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The FHWA does not consider the planting of vegetation to be a noise abatement measure. (6)

2.4 Noise Control

Noise control is the process of obtaining an acceptable noise environment for a particular observation point or receptor by controlling the noise source, transmission path, receptor, or all three. This concept is known as the source-path-receptor concept. In general, noise control measures can be applied to any and all of these three elements.

2.5 Noise Barrier Attenuation

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receptor.

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Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source. (6)

2.6 LAND USE COMPATIBILITY WITH NOISE

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (7)

2.7 COMMUNITY RESPONSE TO NOISE

Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon each individual's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- Fear associated with noise producing activities;
- Socio-economic status and educational level;
- Perception that those affected are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Belief that the noise source can be controlled.

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. Another twenty-five percent of the population will not complain even in very severe noise environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment. (8) Surveys have shown that about ten percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one dBA is associated with approximately two percent more people being highly annoyed. When traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people may begin to complain. (8)

Despite this variability in behavior on an individual level, the population as a whole can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. An increase or decrease of 1 dBA cannot be perceived except in carefully controlled laboratory experiments, a change of 3 dBA are considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (6)

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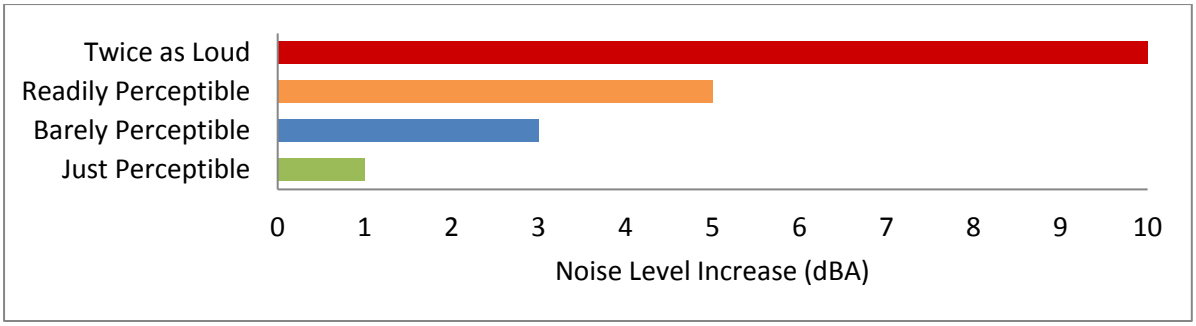
EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



2.8 VIBRATION

According to the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Assessment* (9), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings but is not always suitable for evaluating human response (annoyance) because it takes some time for the human body to respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square (RMS). The RMS amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body. Decibel notation (VdB) is commonly used to measure RMS. Decibel notation (VdB) serves to reduce the range of numbers used to describe human response to vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receivers for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment.

The background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

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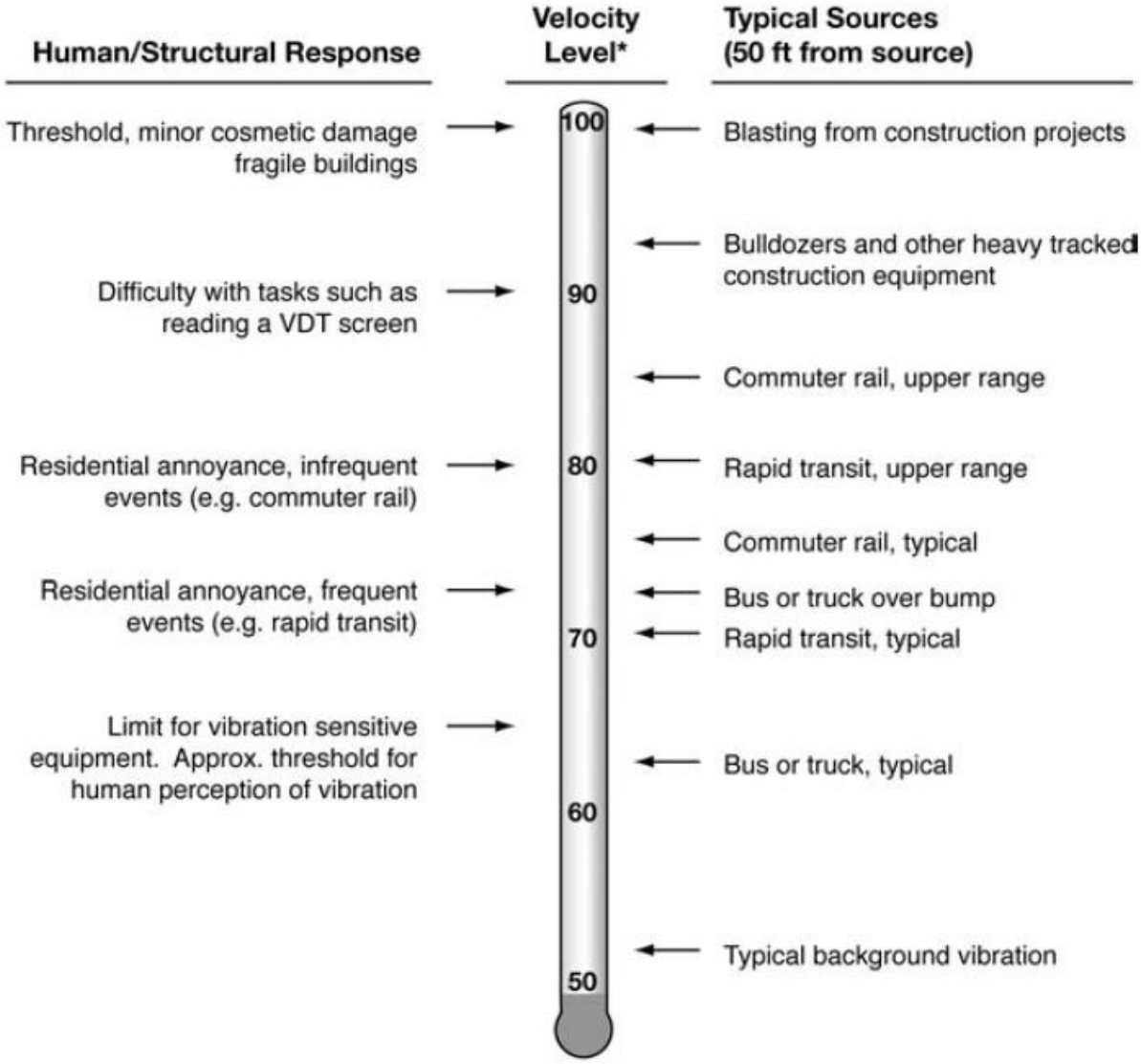
EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION



* *RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second*

Source: Federal Transit Administration (FTA) Transit Noise Impact and Vibration Assessment.

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3 REGULATORY SETTING

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains fairly constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared according to guidelines adopted by the Governor's Office of Planning and Research (OPR). (10) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*.

3.2 STATE OF CALIFORNIA GREEN BUILDING STANDARDS CODE

The 2016 State of California's Green Building Standards Code contains mandatory measures for non-residential building construction in Section 5.507 on Environmental Comfort. (11) These noise standards are applied to new construction in California for the purpose of controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when non-residential structures are developed in areas where the exterior noise levels exceed 65 dBA CNEL, such as within a noise contour of an airport, freeway, railroad, and other areas where noise contours are not readily available. If the development falls within an airport or freeway 65 dBA CNEL noise contour, the combined sound transmission class (STC) rating of the wall and roof-ceiling assemblies must be at least 50. For those developments in areas where noise contours are not readily available, and the noise level exceeds 65 dBA L_{eq} for any hour of operation, a wall and roof-ceiling combined STC rating of 45, and exterior windows with a minimum STC rating of 40 are required (Section 5.507.4.1).

3.3 CITY OF MORENO VALLEY GENERAL PLAN

The City of Moreno Valley Noise Element typically provides the standards for land use compatibility for community noise exposure. However, the City of Moreno Valley General Plan does not include a noise element or specific transportation-related noise standards. Rather, noise is considered in the Environmental Safety section of the General Plan Safety Element. (12) While the General Plan provides background and noise fundamentals, it does not identify criteria to assess the impacts associated with off-site transportation-related noise impacts. Therefore,

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for this analysis, the transportation noise criteria are derived from standards contained in the California Office of Planning and Research (OPR) *General Plan Guidelines*.

The OPR land use/noise compatibility standards are used by many California cities and counties and specify the maximum noise levels allowable for new developments impacted by transportation noise sources. The OPR land use/noise compatibility criteria, found in Figure 2 of the *General Plan Guidelines, Appendix C: Noise Element Guidelines,* identify the criteria for industrial land uses such as the Project, as shown on Exhibit 3-A. When the unmitigated exterior noise levels approach 70 dBA CNEL industrial land use is considered *normally acceptable*. With exterior noise levels ranging from 70 to 80 dBA CNEL, industrial land uses are considered *conditionally acceptable*, and with exterior noise levels greater than 80 dBA CNEL, they are considered *normally unacceptable*. For *normally unacceptable* land use, *new construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.* (10) For the purposes of this analysis, industrial land use such as the Project does not contain outdoor living areas requiring exterior noise mitigation as outlined in the OPR *General Plan Guidelines*, and therefore, only the interior noise levels experienced by employees at the Project site are evaluated against the appropriate noise level standards.

The purpose of the transportation noise criteria is to protect, create, and maintain an environment free from noise and vibration that may jeopardize the health or welfare of sensitive receptors, or degrade quality of life. City General Policies (City of Moreno Valley General Plan, pp.9-31, 9-32) act to ensure that when exterior noise levels exceed 65 dBA CNEL at sensitive receptors, mitigation is provided to ensure that interior noise levels of 45 dBA CNEL are maintained. General Plan Policies in this regard are consistent with, and support, the California Building Code interior noise standards.

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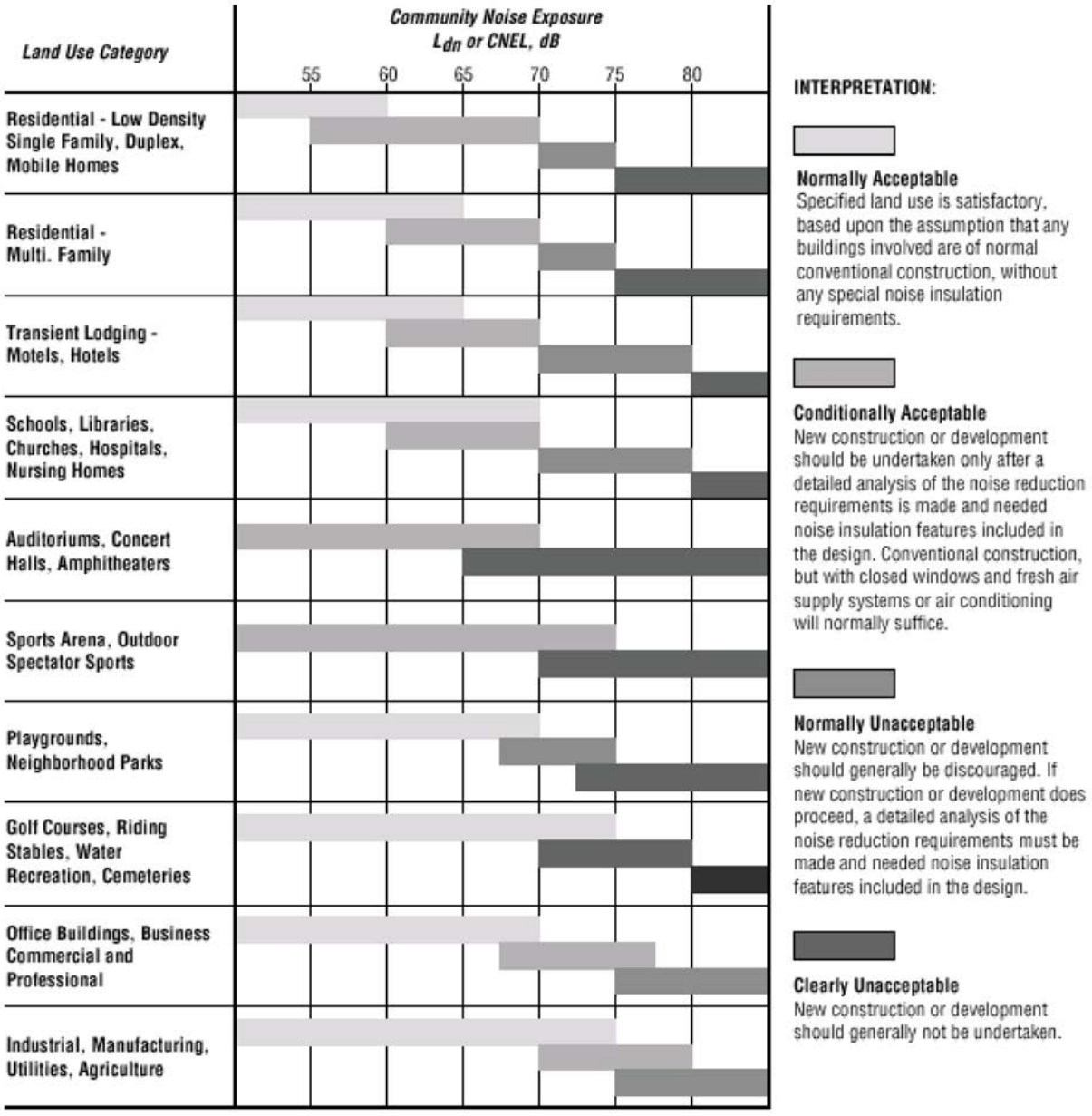
EXHIBIT 3-A: LAND USE NOISE COMPATIBILITY CRITERIA



Source: OPR General Plan Guidelines, Appendix C: Noise Element Guidelines, Figure 2.

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3.4 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the Centerpointe Project, stationary-source (operational) noise such as the expected idling trucks, delivery truck activities, backup alarms, as well as loading and unloading of dry goods, roof-top air conditioning units, and parking lot vehicle movements are typically evaluated against standards established under a City's Municipal Code.

The City of Moreno Valley Municipal Code, Chapter 11.80 *Noise Regulation*, provides performance standards and noise control guidelines for determining and mitigating non-transportation or stationary-source noise impacts from operations at private properties. The City of Moreno Valley Municipal Code defines *Maximum Sound Levels (in dB(A)) for Source Land Uses* in Table 11.80.030-2 for *Residential* and *Commercial* land uses. As defined by the Municipal Code, Section 11.80.020 *Definitions*, *Commercial* land use *means all uses of land not otherwise classified as residential,* and *Residential* land use *means all uses of land primarily for dwelling units, as well as hospitals, schools, colleges and universities, and places of religious assembly.* (3) For the purpose of this analysis, the Centerpointe Project is considered *Commercial* land use since it is not classified as residential. Based on this standard, the operational noise level limits for commercial land use, from Table 11.80.030-2, of 65 dBA L_{eq} during the daytime (8:00 a.m. to 10:00 p.m.) hours and 60 dBA L_{eq} during the nighttime (10:01 p.m. to 7:59 a.m.) hours shall apply to the operational noise from the Project.

Further, Section 11.80.030 (C) *Prohibited Acts*, *Nonimpulsive Sound Decibel Limits*, states: *No person shall maintain, create, operate or cause to be operated on private property any source of sound in such a manner as to create any nonimpulsive sound which exceeds the limits set forth for the source land use category (as defined in Section 11.80.020) in Table 11.80.030-2 when measured at a distance of two hundred (200) feet or more from the real property line of the source of the sound, if the sound occurs on a privately owned property…* (3) Therefore, at a distance of 200 feet from the property line, the Project's operational noise levels shall not exceed the 65 dBA L_{eq} daytime and 60 dBA L_{eq} nighttime noise level standards for commercial land uses, as shown on Table 3-1.

The City of Moreno Valley Municipal Code also identifies continuous sound level limits in Table 11.80.030-1 based on the Center for Disease Control and Prevention and the National Institute for Occupational Safety and Health (NIOSH) noise exposure guidelines. A division of the U.S. Department of Health and Human Services, NIOSH identifies a noise level threshold based on the duration of exposure to the source. The City of Moreno Valley noise level threshold starts at 90 dBA for more than eight hours per day, and for every increase, the exposure time is reduced. The City of Moreno Valley identifies noise level thresholds of 92 dBA for more than 6 hours per day, 95 dBA for more than 4 hour per day, 97 dBA for more than 3 hours per day, and up to 100 dBA for more than 2 hours per day. However, this noise study uses the more restrictive City of Moreno Valley noise level limits identified on Table 11.80.030-2 for source land uses in the Municipal Code, shown on Table 3-1 of this report, to evaluate the potential operational noise levels due to the operation of the Project.

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TABLE 3-1: OPERATIONAL NOISE STANDARDS AT 200 FEET FROM THE SOURCE

Jurisdiction	Source Land Use	Time Period	Maximum Noise Level for Source Land Uses @ 200' (dBA L_{eq})[2]
City of Moreno Valley[1]	Commercial	Daytime (8:00 a.m. - 10:00 p.m.)	65
		Nighttime (10:01 p.m. - 7:59 a.m.)	60

[1] Source: City of Moreno Valley Municipal Code, Chapter 11.80 Noise Regulation, Table 11.80.030-2 Maximum Sound Levels (in dB(A)) for Source Land Uses when measured at a distance of 200 feet from the property line of the source land use (Appendix 3.1).
[2] Leq represents a steady state sound level containing the same total energy as a time varying signal over a given sample period.

3.5 CONSTRUCTION NOISE STANDARDS

To analyze noise impacts originating from the construction of the Centerpointe site, noise from construction activities are typically evaluated against standards established under a City's Municipal Code. The Municipal Code noise standards for construction are described below for the City of Moreno Valley to determine the potential noise impacts at nearby receiver locations. The construction-related noise standards are shown on Table 3-2.

The Municipal Code noise standards for construction are described below for the City of Moreno Valley to determine the potential noise impacts at nearby sensitive receiver locations. As a subset of its stationary-source noise regulations, the City Municipal Code establishes permitted hours of construction activity. More specifically, Municipal Code Section 11.80.030 (D) (7), *Construction and Demolition*, provides the following:

> *No person shall operate, or cause operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between the hours of eight p.m. and seven a.m. the following day such that the sound there from creates a noise disturbance, except for emergency work by public service utilities or for other work approved by the city manager or designee.*

Therefore, based on the Section 11.80.030 (D) (7) construction regulations, a construction-related *noise disturbance* occurs if Project construction activity occurs outside of the permitted hours. However, for this analysis, the stationary-source noise level limits of 65 dBA L_{eq} during the daytime hours and 60 dBA L_{eq} during the nighttime hours are used as appropriate thresholds for the nearby sensitive land uses (e.g. residential homes) in the Project study area. In addition, grading operations shall be limited to the hours identified in Section 8.21.050 (O) of 7:00 a.m. to 6:00 p.m., Monday through Friday, and 8:00 a.m. to 4:00 p.m. on weekends and holidays or as approved by the City Engineer. The City of Moreno Valley construction noise standards are shown on Table 3-2 and included in Appendix 3.1. As previously discussed in Section 3.4, the construction noise level threshold used in this noise study represents a conservative approach, since it is more restrictive than the continuous sound level limits of Table 11.80.030-1 of the City of Moreno Valley Municipal Code.

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TABLE 3-2: CONSTRUCTION NOISE STANDARDS FROM THE SOURCE LAND USE

Jurisdiction	Permitted Hours of Construction Activity	Construction Noise Level Standard (dBA L_{eq})[2]	
		Daytime	Nighttime
City of Moreno Valley[1]	General Activity: 7:00 a.m. to 8:00 p.m. on any day. Grading is limited to 7:00 a.m. to 6:00 p.m. Monday to Friday; 8:00 a.m. to 4:00 p.m. on weekends and holidays.	65	60[3]

[1] Source: City of Moreno Valley Municipal Code, Section 11.80.030 (D) (7) and Section 8.21.050 (O) (Appendix 3.1).
[2] Acceptable threshold for determining the relative significance of short-term Project construction noise levels, based on the City of Moreno Valley stationary noise standards shown on Table 3-1.
[3] Any nighttime construction activity requires an exemption from the City of Moreno Valley Municipal Code as indicated in Section 11.80.030 (E) (8) for a special event permit (Section 11.80.040). The special event permit application shall be submitted to the City of Moreno Valley Planning Department for approval and meet the requirements of Municipal Code Section 11.80.040.
"Daytime" = 8:00 a.m. to 10:00 p.m.; "Nighttime" = 10:01 p.m. to 7:59 a.m.

3.6 VIBRATION STANDARDS

The City of Moreno Valley has not identified or adopted specific vibration level standards. However, the United States Department of Transportation Federal Transit Administration (FTA) provides guidelines for maximum-acceptable vibration criteria for different types of land uses. These guidelines allow 80 VdB for residential uses and buildings where people normally sleep. (9) Operational and construction activities can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration. Large bulldozers and loaded trucks can cause perceptible vibration levels proximate receptors. The FTA guidelines of 80 VdB for sensitive land uses provide a substantiated basis for determining the relative significance of potential Project-related vibration impacts due to on-site operational and construction activities.

3.7 MARCH AIR RESERVE BASE/INLAND PORT AIRPORT LAND USE COMPATIBILITY

The March Air Reserve Base/Inland Port Airport (MARB/IPA) is located approximately 1.2 miles southwest of the Project site. The *Riverside County Airport Land Use Compatibility Plan Policy Document* (RC ALUCP) includes the policies for determining the land use compatibility of the Project since it is located within 2 miles of an airport runway. Policy 4.1.5 *Noise Exposure for Other Land Uses* of the RC ALUCP requires that land uses, such as the industrial land use of the Project site, demonstrate compatibility with the acceptable noise levels on Table 2B. The Table 2B *Supporting Compatibility Criteria: Noise* matrix is shown on Exhibit 3-B and indicates that *clearly acceptable* industrial land uses experience exterior noise levels below 65 dBA CNEL. For *clearly acceptable* noise levels, *the activities associated with the specified land use can be carried out with essentially no interference from the noise exposure*. *Normally acceptable* noise levels for industrial land uses range from 65 to 70 dBA CNEL, and *noise is a factor to be considered in*

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that slight interference with outdoor activities may occur. Conventional construction methods will eliminate most noise intrusions upon indoor activities. (13)

The noise contour boundaries used to determine the potential aircraft-related noise impacts at the Project site are found on Exhibit MA-4 of the RC ALUCP and are presented on Exhibit 3-C of this report. Based on the RC ALUCP noise level contours for the MARB/IPA, the Project is located outside of the 60 dBA CNEL noise level contours, and therefore, represents *clearly acceptable* land use based on the RC ALUCP compatibility criteria, and no noise mitigation is required with typical building construction.

EXHIBIT 3-B: RC ALUCP SUPPORTING COMPATIBILITY CRITERIA: NOISE

	CNEL (dB)				
Land Use Category	**50–55**	**55–60**	**60–65**	**65–70**	**70–75**
Residential *					
single-family, nursing homes, mobile homes	++	o	–	– –	– –
multi-family, apartments, condominiums	++	+	o	– –	– –
Public					
schools, libraries, hospitals	+	o	–	– –	– –
churches, auditoriums, concert halls	+	o	o	–	– –
transportation, parking, cemeteries	++	++	++	+	o
Commercial and Industrial					
offices, retail trade	++	+	o	o	–
service commercial, wholesale trade, warehousing, light industrial	++	++	+	o	o
general manufacturing, utilities, extractive industry	++	++	++	+	+
Agricultural and Recreational					
cropland	++	++	++	++	+
livestock breeding	++	+	o	o	–
parks, playgrounds, zoos	++	+	+	o	–
golf courses, riding stables, water recreation	++	++	+	o	o
outdoor spectator sports	++	+	+	o	–
amphitheaters	+	o	–	– –	– –

Land Use Acceptability		**Interpretation/Comments**
++	*Clearly Acceptable*	The activities associated with the specified land use can be carried out with essentially no interference from the noise exposure.
+	*Normally Acceptable*	Noise is a factor to be considered in that slight interference with outdoor activities may occur. Conventional construction methods will eliminate most noise intrusions upon indoor activities.
o	*Marginally Acceptable*	The indicated noise exposure will cause moderate interference with outdoor activities and with indoor activities when windows are open. The land use is acceptable on the conditions that outdoor activities are minimal and construction features which provide sufficient noise attenuation are used (e.g., installation of air conditioning so that windows can be kept closed). Under other circumstances, the land use should be discouraged.
–	*Normally Unacceptable*	Noise will create substantial interference with both outdoor and indoor activities. Noise intrusion upon indoor activities can be mitigated by requiring special noise insulation construction. Land uses which have conventionally constructed structures and/or involve outdoor activities which would be disrupted by noise should generally be avoided.
– –	*Clearly Unacceptable*	Unacceptable noise intrusion upon land use activities will occur. Adequate structural noise insulation is not practical under most circumstances. The indicated land use should be avoided unless strong overriding factors prevail and it should be prohibited if outdoor activities are involved.

* Subtract 5 dB for low-activity outlying airports (Chiriaco Summit and Desert Center)

Source: Riverside County Airport Land Use Compatibility Plan, Table 2B.

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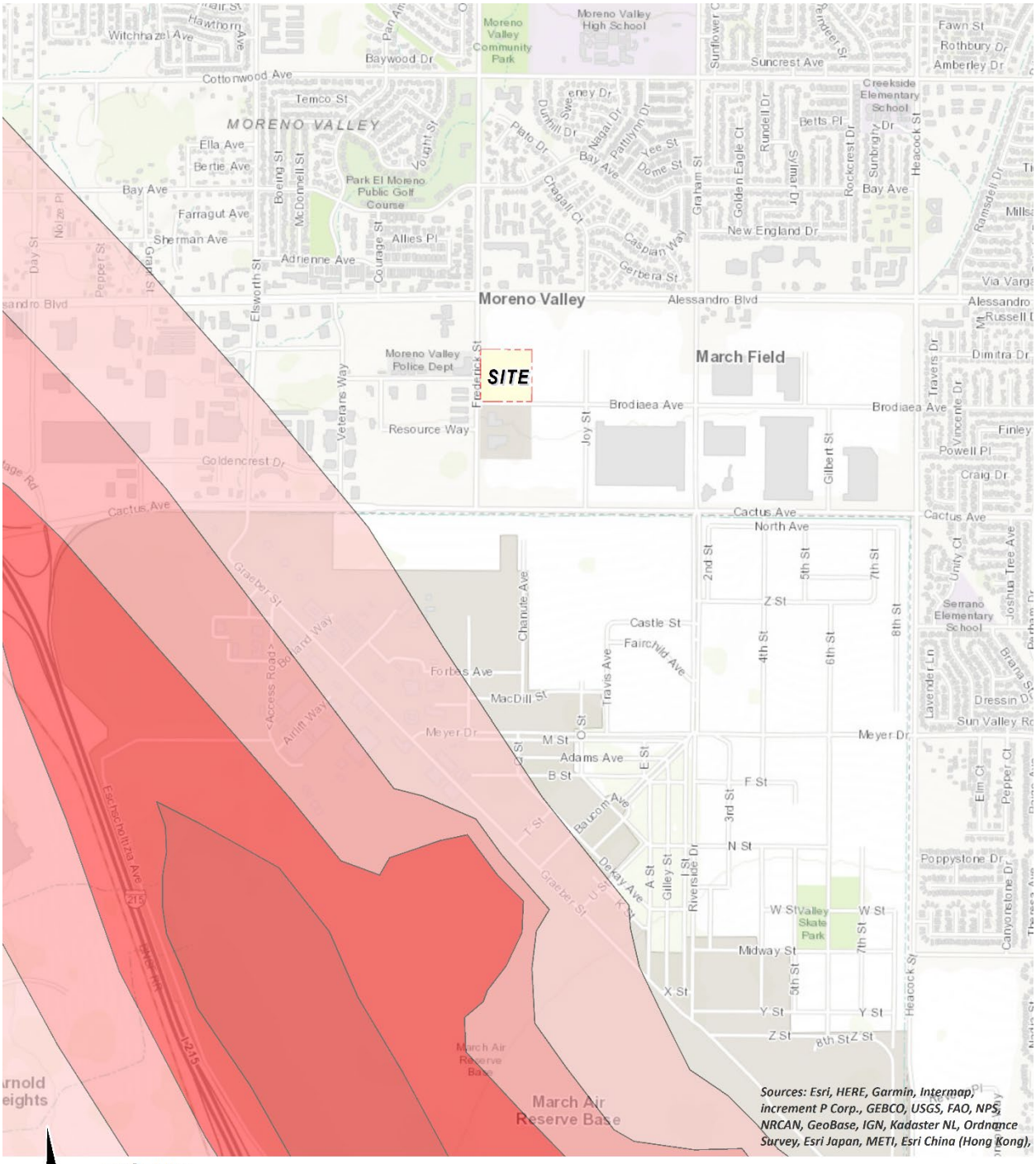
EXHIBIT 3-C: MARB/IPA FUTURE AIRPORT NOISE CONTOURS



LEGEND:

Unmitigated Noise Level Contour Boundaries

60 dBA CNEL | 65 dBA CNEL | 70 dBA CNEL | 75 dBA CNEL | 80 dBA CNEL

Source: Riverside County, Airport Land Use Compatibility Plan, Exhibit MA-4.

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4 SIGNIFICANCE CRITERIA

The following significance criteria are based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

A. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

B. Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.

C. A substantial permanent increase in ambient noise levels in the Project vicinity above existing levels without the proposed Project; or

D. A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above noise levels existing without the proposed Project.

E. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the Project area to excessive noise levels.

F. For a project within the vicinity of a private airstrip, expose people residing or working in the Project area to excessive noise levels.

While the CEQA Guidelines and the City of Moreno Valley General Plan Guidelines provide direction on noise compatibility and establish noise standards by land use type that are sufficient to assess the significance of noise impacts under CEQA Guideline A, they do not define the levels at which increases are considered substantial for use under Guidelines B, C, and D. CEQA Guidelines E and F apply to nearby public and private airports, if any, and the Project's land use compatibility. The closest airport which would require additional noise analysis under CEQA guidelines E and F is the MARB/IPA. As previously shown on Exhibit 3-C, the Project site is located outside of the 60 dBA CNEL noise level contour boundary of the MARB/IPA. Based on the RC ALUCP noise level contours for the MARB/IPA, the Project is located outside of the 60 dBA CNEL noise level contours, and therefore, represents *clearly acceptable* land use based on the RC ALUCP compatibility criteria, and no noise mitigation is required with typical building construction. Therefore, the potential impacts under CEQA guidelines E and F are considered to be *less than significant* and are not further analyzed in this noise study.

4.1 NOISE-SENSITIVE RECEIVERS

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels and the location of noise-sensitive receivers in order to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders the noise impact significant.* (14)

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Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding human reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment.

In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. The Federal Interagency Committee on Noise (FICON) (15) developed guidance to be used for the assessment of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (i.e., CNEL).

For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for this analysis, FICON identifies a *readily perceptible* 5 dBA or greater project-related noise level increase is considered a significant impact when the noise criteria for a given land use is exceeded. According to the FICON, in areas where the without project noise levels range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance. Table 4-1 below provides a summary of the potential noise impact significance criteria, based on guidance from FICON.

TABLE 4-1: SIGNIFICANCE OF NOISE IMPACTS AT NOISE-SENSITIVE RECEIVERS

Without Project Noise Level	Potential Significant Impact
< 60 dBA	5 dBA or more
60 - 65 dBA	3 dBA or more
> 65 dBA	1.5 dBA or more

Federal Interagency Committee on Noise (FICON), 1992.

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4.2 NON-NOISE-SENSITIVE RECEIVERS

Since the City of Moreno Valley General Plan Safety Element does not identify criteria to assess the impacts associated with off-site transportation-related noise impacts, the OPR land use/noise compatibility criteria, found in Figure 2 of the *General Plan Guidelines, Appendix C: Noise Element Guidelines* is used to determine potential impacts at adjacent land uses. As previously shown on Exhibit 3-A, the *normally acceptable* exterior noise level for non-noise-sensitive land use, such as industrial use, is 70 dBA CNEL. Noise levels greater than 70 dBA CNEL are considered *conditionally acceptable* according to the *Land Use Compatibility Criteria*. (10)

To determine if Project-related traffic noise level increases are significant at off-site non-noise-sensitive land uses, a *readily perceptible* 5 dBA and *barely perceptible* 3 dBA criteria are used. When the without Project noise levels at the non-noise-sensitive land uses are below the *normally acceptable* 70 dBA CNEL compatibility criteria, a *readily perceptible* 5 dBA or greater noise level increase is considered a significant impact. When the without Project noise levels are greater than the *normally acceptable* 70 dBA CNEL land use compatibility criteria, a *barely perceptible* 3 dBA or greater noise level increase is considered a significant impact since the noise level criteria is already exceeded. The noise level increases used to determine significant impacts for non-noise-sensitive land uses is generally consistent with the FICON noise level increase thresholds for noise-sensitive land uses but instead rely on the OPR land use/noise compatibility criteria, found in Figure 2 of the *General Plan Guidelines, Appendix C: Noise Element Guidelines normally acceptable* 70 dBA CNEL exterior noise level criteria.

4.3 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-2 shows the significance criteria summary matrix.

OFF-SITE TRAFFIC NOISE

- When the noise levels at existing and future noise-sensitive land uses (e.g. residential, etc.):
    - are less than 60 dBA CNEL and the Project creates a *readily perceptible* 5 dBA CNEL or greater Project-related noise level increase; or
    - range from 60 to 65 dBA CNEL and the Project creates a *barely perceptible* 3 dBA CNEL or greater Project-related noise level increase; or
    - already exceed 65 dBA CNEL, and the Project creates a community noise level impact of greater than 1.5 dBA CNEL (FICON, 1992).
- When the noise levels at existing and future non-noise-sensitive land uses (e.g. industrial, etc.):
    - are less than the OPR General Plan Guidelines, Figure 2, *normally acceptable* 70 dBA CNEL and the Project creates a *readily perceptible* 5 dBA CNEL or greater Project-related noise level increase; or
    - are greater than the OPR General Plan Guidelines, Figure 2, *normally acceptable* 70 dBA CNEL and the Project creates a *barely perceptible* 3 dBA CNEL or greater Project-related noise level increase.

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OPERATIONAL NOISE

- If Project-related operational (stationary source) noise levels:
    - exceed the 65 dBA L_{eq} daytime or 60 dBA L_{eq} nighttime noise level standards at 200 feet from the property line of the noise source (City of Moreno Valley Municipal Code, Table 11.80.030-2); or
    - exceed the 65 dBA L_{eq} daytime or 60 dBA L_{eq} nighttime noise level standards at residential receivers in the City of Moreno Valley (City of Moreno Valley Municipal Code, Table 11.80.030-2);
        - To present a conservative approach, the adjacent office uses in the Project study area are also analyzed based on the more conservative operational noise level limits required for noise-sensitive residential receiver locations.
- If the existing ambient noise levels at the nearby noise-sensitive receivers near the Project site:
    - are less than 60 dBA L_{eq} and the Project creates a *readily perceptible* 5 dBA L_{eq} or greater Project-related noise level increase; or
    - range from 60 to 65 dBA L_{eq} and the Project creates a *barely perceptible* 3 dBA L_{eq} or greater Project-related noise level increase; or
    - already exceed 65 dBA L_{eq}, and the Project creates a community noise level increase of greater than 1.5 dBA L_{eq} (FICON, 1992).

CONSTRUCTION NOISE AND VIBRATION

- If Project-related construction activities:
    - create noise levels at sensitive residential receivers in the City of Moreno Valley which exceed the short-term construction noise level threshold of 65 dBA L_{eq} during the daytime hours, or 60 dBA L_{eq} during the nighttime hours, or the continuous noise level limit of 90 dBA L_{eq} (based on the City of Moreno Valley Municipal Code, Table 11.80.030-2 source land use noise level limits, and the Table 11.80.030-1 continuous noise level limits).
- If short-term project generated construction source vibration levels could exceed the FTA maximum acceptable vibration standard of 80 vibration decibels (VdB) at noise-sensitive receiver locations.

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TABLE 4-2: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Receiving Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
Off-Site	Noise-Sensitive[1]	if ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
		if ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase	
		if ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase	
	Non-Noise-Sensitive[2]	if ambient is < 70 dBA CNEL	≥ 5 dBA CNEL Project increase	
		if ambient is > 70 dBA CNEL	≥ 3 dBA CNEL Project increase	
Operational	Noise-Sensitive	At 200' from the property line of the source[3]	65 dBA L_{eq}	60 dBA L_{eq}
		At residential land use[3]	65 dBA L_{eq}	60 dBA L_{eq}
		if ambient is < 60 dBA L_{eq}[1]	≥ 5 dBA L_{eq} Project increase	
		if ambient is 60 - 65 dBA L_{eq}[1]	≥ 3 dBA L_{eq} Project increase	
		if ambient is > 65 dBA L_{eq}[1]	≥ 1.5 dBA L_{eq} Project increase	
		Vibration Level Threshold[4]	80 VdB	n/a
Construction	Noise-Sensitive	At residential land use[3]	65 dBA L_{eq}	60 dBA L_{eq}
			90 dBA L_{eq}	90 dBA L_{eq}
		Vibration Level Threshold[4]	80 VdB	n/a

[1] Source: FICON, 1992.
[2] Source: OPR General Plan Guidelines, Figure 2 Land Use Compatibility Criteria.
[3] Source: City of Moreno Valley Municipal Code, Chapter 11.80 Noise Regulation (Appendix 3.1).
[4] Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.
"Daytime" = 8:00 a.m. - 10:00 p.m.; "Nighttime" = 10:01 p.m. - 7:59 a.m.

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5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, four 24-hour noise level measurements were taken at potential receiver locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Wednesday, January 3rd, 2018. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (16)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that, *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources*. (4) Further, FTA guidance states, t*hat it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community*. (9)

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (9) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise sensitive areas and are used to estimate the future noise level impacts. Collecting reference ambient noise level measurements at the nearby

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sensitive receiver locations allows for a comparison of the before and after Project noise levels and is necessary to assess potential noise impacts due to the Project's contribution to the ambient noise levels.

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the average or equivalent sound levels (L_{eq}). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the hourly daytime (8:00 a.m. to 10:00 p.m.) and nighttime (10:01 p.m. to 7:59 a.m.) noise levels at each noise level measurement location consistent with the City of Moreno Valley Municipal Code. Appendix 5.2 provides a summary of the existing hourly ambient noise levels described below:

- Location L1 represents the north of the Project site near existing residential homes and commercial land use on Alessandro Boulevard. The noise level measurements collected show an overall 24-hour exterior noise level of 62.2 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 57.4 dBA L_{eq} with an average nighttime noise level of 55.5 dBA L_{eq}.
- Location L2 represents the noise levels at the southern Project site boundary near existing industrial and public facility uses on Brodiaea Avenue. The noise level measurements collected show an overall 24-hour exterior noise level of 64.5 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 58.9 dBA L_{eq} with an average nighttime noise level of 57.9 dBA L_{eq}.
- Located west of the Project site, location L3 represents the noise levels across Frederick Street adjacent to existing office buildings. The noise level measurements collected show an overall 24-hour exterior noise level of 70.2 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 66.5 dBA L_{eq} with an average nighttime noise level of 62.9 dBA L_{eq}.
- Location L4 represents the noise levels west of the Project site on Frederick Street adjacent to the City of Moreno Valley City Hall building. The noise level measurements collected show an overall 24-hour exterior noise level of 62.8 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 59.0 dBA L_{eq} with an average nighttime noise level of 55.5 dBA L_{eq}.

Table 5-1 provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each hour as well as the minimum, maximum, L_1, L_2, L_5, L_8, L_{25}, L_{50}, L_{90}, L_{95}, and L_{99} percentile noise levels observed during the daytime and nighttime periods.

The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with the arterial roadway network. This includes the auto and heavy truck activities near the noise level measurement locations. Additional background noise sources in the Project study area include aircraft overflight noise from the MARB/IPA. The 24-hour existing noise level measurements are shown on Table 5-1.

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TABLE 5-1: 24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS

Location[1]	Distance to Project Boundary (Feet)	Description	Energy Average Noise Level (dBA L_{eq})[2]		CNEL
			Daytime	Nighttime	
L1	900'	Located north of the Project site near existing residential homes and commercial land use on Alessandro Boulevard.	57.4	55.5	62.2
L2	0'	Located at the southern Project site boundary near existing industrial and public facility uses on Brodiaea Avenue.	58.9	57.9	64.5
L3	100'	Located west of the Project site across Frederick Street adjacent to existing office buildings.	66.5	62.9	70.2
L4	100'	Located west of the Project site on Frederick Street adjacent to the City of Moreno Valley City Hall building.	59.0	55.5	62.8

[1] See Exhibit 5-A for the noise level measurement locations.
[2] Energy (logarithmic) average hourly levels. The long-term 24-hour measurement worksheets are included in Appendix 5.2.
"Daytime" = 8:00 a.m. to 10:00 p.m.; "Nighttime" = 10:01 p.m. to 7:59 a.m.

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EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS

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6 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future traffic noise environment.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The expected roadway noise level increases from vehicular traffic were calculated by Urban Crossroads, Inc. using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (17) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (18) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period. Research conducted by Caltrans has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this analysis. (19)

6.2 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site transportation noise impacts. Table 6-1 identifies the nine study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications according to the City of Moreno Valley *General Plan Circulation Element*, and the posted vehicle speeds. The ADT volumes used in this study are presented on Table 6-2 were obtained from the *Centerpointe Traffic Impact Analysis* prepared by Urban Crossroads, Inc., for the following traffic scenarios: Existing, Opening Year 2023, and General Plan Buildout (Post-2040) conditions. (2) Table 6-3 provides the time of day (daytime, evening, and nighttime) vehicle splits.

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TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Adjacent Planned (Existing) Land Use[1]	Distance from Centerline to Nearest Adjacent Land Use (Feet)[2]	Posted Speed Limit (mph)
1	Frederick St.	s/o Alessandro Bl.	Office/Commercial	44'	40
2	Frederick St.	n/o Brodiaea Av.	Office/Business Park	44'	40
3	Frederick St.	n/o Cactus Av.	Business Park	44'	40
4	Graham St.	s/o Brodiaea Av.	Business Park	44'	40
5	Alessandro Bl.	w/o Frederick St.	Office/Comm./(Residential)	67'	45
6	Calle San Juan De Los Lagos	w/o Frederick St.	Office/Business Park	39'	40
7	Calle San Juan De Los Lagos	e/o Veterans Wy.	Office/Business Park	39'	40
8	Brodiaea Av.	w/o Graham St.	Business Park	39'	40
9	Cactus Av.	w/o Frederick St.	Business Park	67'	50

[1] Source: City of Moreno Valley General Plan Land Use Map, Figure 2-2.
[2] Distance to adjacent land use is based upon the right-of-way distances for each functional roadway classification provided in the General Plan Circulation Element.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic Volumes[1]					
			Existing (2017)		Opening Year 2023		General Plan Buildout 2040+	
			Without Project	With Project	Without Project	With Project	Without Project	With Project
1	Frederick St.	s/o Alessandro Bl.	11,850	12,026	18,424	18,600	20,267	20,443
2	Frederick St.	n/o Brodiaea Av.	9,240	9,391	15,942	16,093	17,536	17,687
3	Frederick St.	n/o Cactus Av.	9,844	10,040	16,595	16,791	18,255	18,451
4	Graham St.	s/o Brodiaea Av.	7,649	7,719	11,502	11,572	12,652	12,722
5	Alessandro Bl.	w/o Frederick St.	34,230	34,320	40,989	41,079	52,919	53,009
6	Calle San Juan De Los Lagos	w/o Frederick St.	3,164	3,241	3,894	3,971	4,892	4,969
7	Calle San Juan De Los Lagos	e/o Veterans Wy.	1,818	1,895	2,007	2,084	2,810	2,887
8	Brodiaea Av.	w/o Graham St.	889	1,006	995	1,112	1,374	1,491
9	Cactus Av.	w/o Frederick St.	40,788	40,945	69,929	70,086	63,057	63,214

[1] Source: Centerpointe Traffic Impact Analysis, Urban Crossroads, Inc., May 2018.

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TABLE 6-3: TIME OF DAY VEHICLE SPLITS

Vehicle Type	Time of Day Splits[1]			Total of Time of Day Splits
	Daytime	Evening	Nighttime	
Autos	76.53%	11.31%	12.17%	100.00%
Medium Trucks	82.62%	6.84%	10.54%	100.00%
Heavy Trucks	81.46%	6.18%	12.36%	100.00%

[1] Based on existing ADT counts by vehicle type taken on 4/3/2018 Frederick Street north of Brodiaea Avenue (Centerpointe Traffic Impact Analysis, Urban Crossroads, Inc., May 2018). All values rounded to the nearest one-hundredth.
"Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

According to the *Centerpointe Traffic Impact Analysis* prepared by Urban Crossroads, Inc., the Project is expected to generate a net total of approximately 486 trip-ends per day (actual vehicles). (2) The Project trip generation includes 100 truck trip-ends per day from the proposed buildings within the Project site. This noise study relies on the net Project trips to accurately account for the effect of individual truck trips on the study area roadway network.

To quantify the off-site noise levels, the Project related truck trips were added to the heavy truck category in the FHWA noise prediction model. The addition of the Project related truck trips increases the percentage of heavy trucks in the vehicle mix. This approach recognizes that the FHWA noise prediction model is significantly influenced by the number of heavy trucks in the vehicle mix.

The 71 daily Project truck trip-ends were assigned to the individual off-site study area roadway segments based on the Project truck trip distribution percentages documented in the *Traffic Impact Analysis*. Using the Project truck trips in combination with the Project trip distribution, Urban Crossroads, Inc. calculated the number of additional Project truck trips and vehicle mix percentages for each of the study area roadway segments. Table 6-4 shows the traffic flow by vehicle type (vehicle mix) used for all without Project traffic scenarios, and Tables 6-5 to 6-7 show the vehicle mixes used for the with Project traffic scenarios.

TABLE 6-4: WITHOUT PROJECT CONDITIONS VEHICLE MIX

Classification	Total Daily % Traffic Flow[1]			Total
	Autos	Medium Trucks	Heavy Trucks	
All Segments	94.08%	3.93%	1.99%	100.00%

[1] Based on existing ADT counts by vehicle type taken on 4/3/2018 Frederick Street north of Brodiaea Avenue (Centerpointe Traffic Impact Analysis, Urban Crossroads, Inc., May 2018). All values rounded to the nearest one-hundredth.

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TABLE 6-5: EXISTING WITH PROJECT CONDITIONS VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Frederick St.	s/o Alessandro Bl.	93.66%	4.00%	2.34%	100.00%
2	Frederick St.	n/o Brodiaea Av.	93.80%	3.96%	2.24%	100.00%
3	Frederick St.	n/o Cactus Av.	93.39%	4.05%	2.55%	100.00%
4	Graham St.	s/o Brodiaea Av.	93.73%	4.00%	2.27%	100.00%
5	Alessandro Bl.	w/o Frederick St.	93.94%	3.96%	2.10%	100.00%
6	Calle San Juan De Los Lagos	w/o Frederick St.	94.22%	3.84%	1.95%	100.00%
7	Calle San Juan De Los Lagos	e/o Veterans Wy.	94.32%	3.77%	1.91%	100.00%
8	Brodiaea Av.	w/o Graham St.	90.79%	4.47%	4.74%	100.00%
9	Cactus Av.	w/o Frederick St.	93.90%	3.96%	2.13%	100.00%

[1] Source: Centerpointe Traffic Impact Analysis, Urban Crossroads, Inc., May 2018.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-6: OPENING YEAR WITH PROJECT CONDITIONS VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Frederick St.	s/o Alessandro Bl.	93.81%	3.97%	2.22%	100.00%
2	Frederick St.	n/o Brodiaea Av.	93.91%	3.95%	2.14%	100.00%
3	Frederick St.	n/o Cactus Av.	93.67%	4.00%	2.33%	100.00%
4	Graham St.	s/o Brodiaea Av.	93.84%	3.98%	2.18%	100.00%
5	Alessandro Bl.	w/o Frederick St.	93.96%	3.95%	2.08%	100.00%
6	Calle San Juan De Los Lagos	w/o Frederick St.	94.19%	3.85%	1.95%	100.00%
7	Calle San Juan De Los Lagos	e/o Veterans Wy.	94.30%	3.79%	1.92%	100.00%
8	Brodiaea Av.	w/o Graham St.	91.10%	4.42%	4.48%	100.00%
9	Cactus Av.	w/o Frederick St.	93.98%	3.95%	2.07%	100.00%

[1] Source: Centerpointe Traffic Impact Analysis, Urban Crossroads, Inc., May 2018.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

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TABLE 6-7: GENERAL PLAN BUILDOUT WITH PROJECT CONDITIONS VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Frederick St.	s/o Alessandro Bl.	93.83%	3.97%	2.20%	100.00%
2	Frederick St.	n/o Brodiaea Av.	93.93%	3.95%	2.12%	100.00%
3	Frederick St.	n/o Cactus Av.	93.71%	4.00%	2.30%	100.00%
4	Graham St.	s/o Brodiaea Av.	93.86%	3.97%	2.16%	100.00%
5	Alessandro Bl.	w/o Frederick St.	93.99%	3.95%	2.06%	100.00%
6	Calle San Juan De Los Lagos	w/o Frederick St.	94.17%	3.87%	1.96%	100.00%
7	Calle San Juan De Los Lagos	e/o Veterans Wy.	94.23%	3.83%	1.94%	100.00%
8	Brodiaea Av.	w/o Graham St.	91.86%	4.29%	3.85%	100.00%
9	Cactus Av.	w/o Frederick St.	93.96%	3.95%	2.08%	100.00%

[1] Source: Centerpointe Traffic Impact Analysis, Urban Crossroads, Inc., May 2018.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

6.3 VIBRATION ASSESSMENT

This analysis focuses on the potential ground-borne vibration associated with vehicular traffic and construction activities. Ground-borne vibration levels from automobile traffic are generally overshadowed by vibration generated by heavy trucks that roll over the same uneven roadway surfaces. However, due to the rapid drop-off rate of ground-borne vibration and the short duration of the associated events, vehicular traffic-induced ground-borne vibration is rarely perceptible beyond the roadway right-of-way, and rarely results in vibration levels that cause damage to buildings in the vicinity.

However, while vehicular traffic is rarely perceptible, construction has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used. Ground vibration levels associated with various types of construction equipment are summarized on Table 6-8. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the human response (annoyance) using the following vibration assessment methods defined by the FTA. To describe the human response (annoyance) associated with vibration impacts the FTA provides the following equation: $L_{VdB}(D) = L_{VdB}(25\ ft) - 30\log(D/25)$

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 6-8: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	Vibration Decibels (VdB) at 25 feet[1]
Small bulldozer	58
Jackhammer	79
Loaded Trucks	86
Large bulldozer	87

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

7 OFF-SITE TRANSPORTATION NOISE IMPACTS

To assess the off-site transportation CNEL noise level impacts associated with the proposed Project, noise contours were developed based on the *Centerpointe Traffic Impact Analysis*. (2) Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway. Noise contours were developed for the following traffic scenarios:

- Existing Conditions Without / With Project: This scenario refers to the existing present-day noise conditions without and with the proposed Project.
- Opening Year 2023 Without / With the Project: This scenario refers to Opening Year noise conditions without and with the proposed Project. This scenario includes all cumulative projects identified in the Traffic Impact Analysis.
- General Plan Buildout (Post-2040) Without / With the Project: This scenario refers to General Plan Buildout noise conditions without and with the proposed Project. This scenario includes all cumulative projects identified in the Traffic Impact Analysis.

7.1 TRAFFIC NOISE CONTOURS

Noise contours were used to assess the Project's incremental traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA noise levels. The noise contours do not take into account the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area. Tables 7-1 through 7-6 present a summary of the exterior traffic noise levels, without barrier attenuation, for the nine study area roadway segments analyzed from the without Project to the with Project conditions in each of the three timeframes: Existing, Opening Year 2023, and General Plan Buildout (Post-2040) conditions. Appendix 7.1 includes a summary of the traffic noise level contours for each of the traffic scenarios.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 7-1: EXISTING WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Frederick St.	s/o Alessandro Bl.	Office/Commercial	70.1	45	96	208
2	Frederick St.	n/o Brodiaea Av.	Office/Business Park	69.0	RW	82	176
3	Frederick St.	n/o Cactus Av.	Business Park	69.3	RW	85	183
4	Graham St.	s/o Brodiaea Av.	Business Park	68.2	RW	72	155
5	Alessandro Bl.	w/o Frederick St.	Office/Comm./(Residential)	73.4	113	243	524
6	Calle San Juan De Los Lagos	w/o Frederick St.	Office/Business Park	64.2	RW	RW	74
7	Calle San Juan De Los Lagos	e/o Veterans Wy.	Office/Business Park	61.8	RW	RW	51
8	Brodiaea Av.	w/o Graham St.	Business Park	58.7	RW	RW	RW
9	Cactus Av.	w/o Frederick St.	Business Park	75.2	149	321	691

[1] Source: City of Moreno Valley General Plan Land Use Map, Figure 2-2.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-2: EXISTING WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Frederick St.	s/o Alessandro Bl.	Office/Commercial	70.5	47	102	219
2	Frederick St.	n/o Brodiaea Av.	Office/Business Park	69.3	RW	85	183
3	Frederick St.	n/o Cactus Av.	Business Park	69.8	RW	92	199
4	Graham St.	s/o Brodiaea Av.	Business Park	68.5	RW	75	162
5	Alessandro Bl.	w/o Frederick St.	Office/Comm./(Residential)	73.5	114	247	531
6	Calle San Juan De Los Lagos	w/o Frederick St.	Office/Business Park	64.3	RW	RW	75
7	Calle San Juan De Los Lagos	e/o Veterans Wy.	Office/Business Park	61.9	RW	RW	52
8	Brodiaea Av.	w/o Graham St.	Business Park	61.1	RW	RW	46
9	Cactus Av.	w/o Frederick St.	Business Park	75.3	151	326	703

[1] Source: City of Moreno Valley General Plan Land Use Map, Figure 2-2.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 7-3: OPENING YEAR 2023 WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Frederick St.	s/o Alessandro Bl.	Office/Commercial	72.0	60	129	279
2	Frederick St.	n/o Brodiaea Av.	Office/Business Park	71.4	55	117	253
3	Frederick St.	n/o Cactus Av.	Business Park	71.6	56	121	260
4	Graham St.	s/o Brodiaea Av.	Business Park	70.0	44	94	204
5	Alessandro Bl.	w/o Frederick St.	Office/Comm./(Residential)	74.2	127	274	591
6	Calle San Juan De Los Lagos	w/o Frederick St.	Office/Business Park	65.1	RW	40	86
7	Calle San Juan De Los Lagos	e/o Veterans Wy.	Office/Business Park	62.2	RW	RW	55
8	Brodiaea Av.	w/o Graham St.	Business Park	59.2	RW	RW	RW
9	Cactus Av.	w/o Frederick St.	Business Park	77.5	213	459	990

[1] Source: City of Moreno Valley General Plan Land Use Map, Figure 2-2.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-4: OPENING YEAR 2023 WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Frederick St.	s/o Alessandro Bl.	Office/Commercial	72.3	62	134	289
2	Frederick St.	n/o Brodiaea Av.	Office/Business Park	71.6	56	120	259
3	Frederick St.	n/o Cactus Av.	Business Park	71.9	59	127	273
4	Graham St.	s/o Brodiaea Av.	Business Park	70.2	45	97	209
5	Alessandro Bl.	w/o Frederick St.	Office/Comm./(Residential)	74.3	129	278	598
6	Calle San Juan De Los Lagos	w/o Frederick St.	Office/Business Park	65.2	RW	40	86
7	Calle San Juan De Los Lagos	e/o Veterans Wy.	Office/Business Park	62.3	RW	RW	56
8	Brodiaea Av.	w/o Graham St.	Business Park	61.4	RW	RW	48
9	Cactus Av.	w/o Frederick St.	Business Park	77.6	215	464	1000

[1] Source: City of Moreno Valley General Plan Land Use Map, Figure 2-2.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 7-5: GENERAL PLAN BUILDOUT WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Frederick St.	s/o Alessandro Bl.	Office/Commercial	72.4	64	138	297
2	Frederick St.	n/o Brodiaea Av.	Office/Business Park	71.8	58	125	270
3	Frederick St.	n/o Cactus Av.	Business Park	72.0	60	129	277
4	Graham St.	s/o Brodiaea Av.	Business Park	70.4	47	101	217
5	Alessandro Bl.	w/o Frederick St.	Office/Comm./(Residential)	75.3	151	325	700
6	Calle San Juan De Los Lagos	w/o Frederick St.	Office/Business Park	66.1	RW	46	100
7	Calle San Juan De Los Lagos	e/o Veterans Wy.	Office/Business Park	63.7	RW	RW	69
8	Brodiaea Av.	w/o Graham St.	Business Park	60.6	RW	RW	43
9	Cactus Av.	w/o Frederick St.	Business Park	77.1	199	429	924

[1] Source: City of Moreno Valley General Plan Land Use Map, Figure 2-2.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-6: GENERAL PLAN BUILDOUT WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Adjacent Planned (Existing) Land Use[1]	CNEL at Nearest Adjacent Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Frederick St.	s/o Alessandro Bl.	Office/Commercial	72.6	66	142	307
2	Frederick St.	n/o Brodiaea Av.	Office/Business Park	72.0	59	128	276
3	Frederick St.	n/o Cactus Av.	Business Park	72.3	62	135	290
4	Graham St.	s/o Brodiaea Av.	Business Park	70.6	48	103	223
5	Alessandro Bl.	w/o Frederick St.	Office/Comm./(Residential)	75.4	152	328	707
6	Calle San Juan De Los Lagos	w/o Frederick St.	Office/Business Park	66.1	RW	46	100
7	Calle San Juan De Los Lagos	e/o Veterans Wy.	Office/Business Park	63.8	RW	RW	69
8	Brodiaea Av.	w/o Graham St.	Business Park	62.3	RW	RW	55
9	Cactus Av.	w/o Frederick St.	Business Park	77.2	201	434	934

[1] Source: City of Moreno Valley General Plan Land Use Map, Figure 2-2.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

7.2 EXISTING CONDITION PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 7-1 presents the Existing without Project conditions CNEL noise levels. The Exiting without Project exterior noise levels are expected to range from 58.7 to 75.2 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project conditions will range from 61.1 to 75.3 dBA CNEL. As shown on Table 7-7 the Project is expected to generate an exterior noise level increase of up to 2.4 dBA CNEL at adjacent land uses, which will satisfy the significance thresholds identified in Section 4. Therefore, the off-site Project-related traffic noise level increase is considered a *less than significant* impact under Existing conditions.

TABLE 7-7: EXISTING CONDITION OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACT

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[1]			Noise-Sensitive Land Use?[2]	Threshold Exceeded?[3]
			No Project	With Project	Project Addition		
1	Frederick St.	s/o Alessandro Bl.	70.1	70.5	0.4	No	No
2	Frederick St.	n/o Brodiaea Av.	69.0	69.3	0.3	No	No
3	Frederick St.	n/o Cactus Av.	69.3	69.8	0.5	No	No
4	Graham St.	s/o Brodiaea Av.	68.2	68.5	0.3	No	No
5	Alessandro Bl.	w/o Frederick St.	73.4	73.5	0.1	Yes	No
6	Calle San Juan De Los Lagos	w/o Frederick St.	64.2	64.3	0.1	No	No
7	Calle San Juan De Los Lagos	e/o Veterans Wy.	61.8	61.9	0.1	No	No
8	Brodiaea Av.	w/o Graham St.	58.7	61.1	2.4	No	No
9	Cactus Av.	w/o Frederick St.	75.2	75.3	0.1	No	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] "Yes" = Existing, noise-sensitive land uses adjacent to the study area roadway segment.
[3] Significance Criteria (Section 4).

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

7.3 OPENING YEAR 2023 PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 7-8 presents a comparison of the Opening Year 2023 without and with Project conditions CNEL noise levels. Table 7-3 shows that the exterior noise levels without accounting for any noise attenuation features are expected to range from 59.2 to 77.5 dBA CNEL without the Project. Table 7-4 presents the Opening Year 2023 with Project conditions noise level contours that are expected to range from 61.4 to 77.6 dBA CNEL. As shown on Table 7-8 the Project is expected to generate an exterior noise level increase of up to 2.2 dBA CNEL at adjacent land uses, which will satisfy the significance thresholds identified in Section 4. Therefore, the off-site Project-related traffic noise level increase is considered a *less than significant* impact under Opening Year 2023 conditions.

TABLE 7-8: OPENING YEAR 2023 OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[1]			Noise-Sensitive Land Use?[2]	Threshold Exceeded?[3]
			No Project	With Project	Project Addition		
1	Frederick St.	s/o Alessandro Bl.	72.0	72.3	0.3	No	No
2	Frederick St.	n/o Brodiaea Av.	71.4	71.6	0.2	No	No
3	Frederick St.	n/o Cactus Av.	71.6	71.9	0.3	No	No
4	Graham St.	s/o Brodiaea Av.	70.0	70.2	0.2	No	No
5	Alessandro Bl.	w/o Frederick St.	74.2	74.3	0.1	Yes	No
6	Calle San Juan De Los Lagos	w/o Frederick St.	65.1	65.2	0.1	No	No
7	Calle San Juan De Los Lagos	e/o Veterans Wy.	62.2	62.3	0.1	No	No
8	Brodiaea Av.	w/o Graham St.	59.2	61.4	2.2	No	No
9	Cactus Av.	w/o Frederick St.	77.5	77.6	0.1	No	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] "Yes" = Existing, noise-sensitive land uses adjacent to the study area roadway segment.
[3] Significance Criteria (Section 4).

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7.4 General Plan Buildout Project Traffic Noise Level Contributions

Table 7-9 presents a comparison of the General Plan Buildout (Post-2040) without and with Project conditions CNEL noise levels. Table 7-5 shows that the exterior noise levels without accounting for any noise attenuation features are expected to range from 60.6 to 77.1 dBA CNEL without the Project. Table 7-6 presents the General Plan Buildout (Post-2040) with Project conditions noise level contours that are expected to range from 62.3 to 77.2 dBA CNEL. As shown on Table 7-9 the Project is expected to generate an exterior noise level increase of up to 1.7 dBA CNEL at adjacent land uses, which will satisfy the significance thresholds identified in Section 4. Therefore, the off-site Project-related traffic noise level increase is considered a *less than significant* impact under General Plan Buildout (Post-2040) conditions.

TABLE 7-9: GENERAL PLAN BUILDOUT OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Adjacent Land Use (dBA)[1]			Noise-Sensitive Land Use?[2]	Threshold Exceeded?[3]
			No Project	With Project	Project Addition		
1	Frederick St.	s/o Alessandro Bl.	72.4	72.6	0.2	No	No
2	Frederick St.	n/o Brodiaea Av.	71.8	72.0	0.2	No	No
3	Frederick St.	n/o Cactus Av.	72.0	72.3	0.3	No	No
4	Graham St.	s/o Brodiaea Av.	70.4	70.6	0.2	No	No
5	Alessandro Bl.	w/o Frederick St.	75.3	75.4	0.1	Yes	No
6	Calle San Juan De Los Lagos	w/o Frederick St.	66.1	66.1	0.0	No	No
7	Calle San Juan De Los Lagos	e/o Veterans Wy.	63.7	63.8	0.1	No	No
8	Brodiaea Av.	w/o Graham St.	60.6	62.3	1.7	No	No
9	Cactus Av.	w/o Frederick St.	77.1	77.2	0.1	No	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] "Yes" = Existing, noise-sensitive land uses adjacent to the study area roadway segment.
[3] Significance Criteria (Section 4).

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

8 RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following seven receiver locations, as shown on Exhibit 8-A, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include: schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include: multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, natural open space, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

Noise-sensitive receivers near the Project site include existing residential homes, and non-noise-sensitive receivers include existing office uses, as described below. Other sensitive land uses in the Project study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures.

R1: Located approximately 794 feet north of the Project site, R1 represents existing residential homes north of Alessandro Boulevard. A long-term noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

R2: Location R2 represents existing Riverside County Department of Waste Resources facilities and offices at roughly 146 feet south of the Project site. A long-term noise measurement was taken near this location, L2, to describe the existing ambient noise environment.

R3: Location R3 represents the existing offices located west of the Project site at approximately 146 feet on Frederick Street. A long-term noise measurement was taken near this location, L3, to describe the existing ambient noise environment.

R4: Located approximately 109 feet west of the Project site, R4 represents the existing Moreno Valley City Hall building and offices. A long-term noise measurement was taken near this location, L4, to describe the existing ambient noise environment.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 8-A: RECEIVER LOCATIONS

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9 OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source operational noise impacts at the nearby receiver locations, identified in Section 8, resulting from operation of the proposed Centerpointe Project. Exhibit 9-A identifies the representative receiver locations and noise source locations used to assess the operational noise levels.

9.1 OPERATIONAL NOISE SOURCES

At the time this noise analysis was prepared the future tenants of the proposed Project were unknown. To present the potential worst-case noise conditions, this analysis assumes the Project would be operational 24 hours per day, seven days per week. The Project business operations would primarily be conducted within the enclosed buildings, except for traffic movement, parking, as well as loading and unloading of trucks at designated loading bays. The on-site Project-related noise sources are expected to include: idling trucks, delivery truck activities, backup alarms, as well as loading and unloading of dry goods, roof-top air conditioning units, and parking lot vehicle movements.

9.2 REFERENCE NOISE LEVELS

To estimate the Project operational noise impacts, reference noise level measurements were collected from similar types of activities to represent the noise levels expected with the development of the proposed Project. This section provides a detailed description of the reference noise level measurements shown on Table 9-1 used to estimate the Project operational noise impacts. It is important to note that the following projected noise levels assume the worst-case noise environment with the idling trucks, delivery truck activities, backup alarms, as well as loading and unloading of dry goods, roof-top air conditioning units, and parking lot vehicle movements all operating continuously. These noise level impacts will likely vary throughout the day.

9.2.1 TRUCK IDLING, DELIVERIES, BACKUP ALARMS, AND LOADING/UNLOADING

Short-term reference noise level measurements were collected on Wednesday, January 7th, 2015, by Urban Crossroads, Inc. at the Motivational Fulfillment & Logistics Services distribution facility located at 6810 Bickmore Avenue in the City of Chino. The noise level measurements represent the typical weekday dry goods logistics warehouse operation in a single building, of roughly 285,000 square feet, with a loading dock area on the western side of the building façade. Up to ten trucks were observed in the loading dock area including a combination of track trailer semi-trucks, two-axle delivery trucks, and background forklift operations.

The unloading/docking activity noise level measurement was taken over a fifteen-minute period and represents multiple noise sources taken from the center of loading dock activities generating a reference noise level of 62.8 dBA L_{eq} at a uniform reference distance of 50 feet. At this measurement location, the noise sources associated with employees unloading a docked truck container included the squeaking of the truck's shocks when weight was removed from the truck, employees playing music over a radio, as well as a forklift horn and backup alarm. In addition,

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during the noise level measurement a truck entered the loading dock area and proceeded to reverse and dock in a nearby loading bay, adding truck engine and air brakes noise.

9.2.2 ROOF-TOP AIR CONDITIONING UNITS

In order to assess the impacts created by the roof-top air conditioning units at the Project buildings, reference noise levels measurements were taken at the Santee Walmart on July 27th, 2015. Located at 170 Town Center Parkway in the City of Santee, the noise level measurements describe a single mechanical roof-top air conditioning unit on the roof of an existing Walmart store. The reference noise level represents a Lennox SCA120 series 10-ton model packaged air conditioning unit. At 5 feet from the roof-top air conditioning unit, the exterior noise levels were measured at 77.2 dBA L_{eq}. Using the uniform reference distance of 50 feet, the noise level is 57.2 dBA L_{eq}. The operating conditions of the reference noise level measurement reflect peak summer cooling requirements with measured temperatures approaching 96 degrees Fahrenheit (°F) with average daytime temperatures of 82°F. The roof-top air condition units were observed to operate the most during the daytime hours, for a total of 39 minutes per hour, and are anticipated to operate during the daytime and nighttime hours at the Project site. The noise attenuation provided by a parapet wall is not reflected in this reference noise level measurement.

9.2.3 PARKING LOT VEHICLE MOVEMENTS (AUTOS)

To determine the noise levels associated with parking lot vehicle movements, Urban Crossroads collected reference noise level measurements over a 24-hour period on May 17th, 2017 at the parking lot for the Panasonic Avionics Corporation in the City of Lake Forest. The peak hour of activity measured over the 24-hour noise level measurement period occurred between 12:00 p.m. to 1:00 p.m., or the typical lunch hour for employees working in the area. The measured reference noise level at 50 feet from parking lot vehicle movements was measured at 41.7 dBA L_{eq}. The parking lot noise levels are mainly due to cars pulling in and out of spaces during peak lunch hour activity and employees talking. Noise associated with parking lot vehicle movements is expected to operate for the entire hour (60 minutes).

TABLE 9-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source	Duration (hh:mm:ss)	Ref. Distance (Feet)	Noise Source Height (Feet)	Hourly Activity (Mins)[4]	Reference Noise Level (dBA L_{eq})	
					@ Ref. Dist.	@ 50 Feet
Truck Unloading/Docking Activity[1]	0:15:00	30'	8'	60	67.2	62.8
Roof-Top Air Conditioning Units[2]	96:00:00	5'	5'	39	77.2	57.2
Parking Lot Vehicle Movements[3]	01:00:00	10'	5'	60	52.2	41.7

[1] Reference noise level measurements were collected from the existing operations of the Motivational Fulfillment & Logistics Services distribution facility located at 6810 Bickmore Avenue in the City of Chino on Wednesday, January 7, 2015.
[2] As measured by Urban Crossroads, Inc. on 7/27/2015 at the Santee Walmart located at 170 Town Center Parkway.
[3] As measured by Urban Crossroads, Inc. on 5/17/2017 at the Panasonic Avionics Corporation parking lot in the City of Lake Forest.
[4] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site based on the reference noise level measurement activity.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 9-A: OPERATIONAL NOISE SOURCE LOCATIONS

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

9.3 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed warehouse operations that include idling trucks, delivery truck activities, backup alarms, as well as loading and unloading of dry goods, roof-top air conditioning units, and parking lot vehicle movements, Urban Crossroads, Inc. calculated the operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. The operational noise level calculations, shown on Table 9-2, account for the distance attenuation provided due to geometric spreading when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. With geometric spreading, sound levels attenuate (or decrease) at a rate of 6 dB for each doubling of distance from a point source (e.g. idling trucks, delivery truck activities, backup alarms, as well as loading and unloading of dry goods, roof-top air conditioning units, and parking lot vehicle movements).

Table 9-2 presents the combined total operational noise level projections at 200 feet consistent with the City of Moreno Valley Municipal Code. The Project operational noise levels at 200 feet are estimated at 51.5 dBA L_{eq}. Based on the results of this analysis, the Project operational noise levels associated with the Centerpointe will satisfy the City of Moreno Valley Municipal Code 65 dBA L_{eq} daytime and 60 dBA L_{eq} nighttime exterior noise level standards at 200 feet from the source land use. Further, it should be noted that the land uses within 200 feet of the Project site boundary are designated as business park, office, and commercial land use.

TABLE 9-2: OPERATIONAL NOISE LEVEL PROJECTIONS AT 200 FEET

Noise Source	Ref. Noise Level (dBA L_{eq})	Distance Atten. @ 200' (dBA L_{eq})[1]	Hourly Activity (Mins.)[2]	Hourly Activity Adjustment (dBA L_{eq})	Noise Level @ 200' (dBA L_{eq})
Truck Unloading/Docking Activity	67.2	-16.5	60	0.0	50.7
Roof-Top Air Conditioning Units	77.2	-32.0	39	-1.9	43.3
Parking Lot Vehicle Movements	52.2	-19.5	60	0.0	32.7
				Combined Total:	51.5

[1] Drop off rate of 6 dBA per doubling of distance (point source).
[2] Anticipated duration (minutes within the hour) of noise activity during peak hourly conditions expected at the Project site.

Table 9-3 indicates that the unmitigated hourly noise levels associated with the Centerpointe Project at the nearby sensitive receiver locations are expected to range from 35.7 to 42.7 dBA L_{eq}. The Project-related operational noise levels, as shown on Table 9-3, will satisfy the City of Moreno Valley 65 dBA L_{eq} daytime and 60 dBA L_{eq} nighttime exterior noise level standards at all nearby sensitive receiver locations. The operational noise level calculations are included in Appendix 9.1.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 9-3: UNMITIGATED OPERATIONAL NOISE LEVEL PROJECTIONS AT RECEIVER LOCATIONS

Receiver Location[1]	Land Use	Noise Levels by Noise Source (dBA L_{eq})[2]			Combined Operational Noise Levels (dBA L_{eq})[3]	Threshold Exceeded?[4]	
		Unloading/ Docking Activity	Roof-Top Air Conditioning Unit	Parking Lot Vehicle Movements		Daytime (65 dBA L_{eq})	Nighttime (60 dBA L_{eq})
R1	Residential	38.4	29.0	21.9	39.0	No	No
R2	Office	25.0	33.3	31.1	35.7	No	No
R3	Office	23.4	36.4	33.1	38.2	No	No
R4	Office	24.3	41.8	34.9	42.7	No	No

[1] See Exhibit 9-A for the receiver and noise source locations.
[2] Reference noise sources as shown on Table 9-1.
[3] Calculations for each noise source are provided in Appendix 9.2.
[4] Do the Project operational noise levels exceed the standards (Table 3-1)?

9.4 PROJECT OPERATIONAL NOISE CONTRIBUTION

To describe the Project operational noise level contributions, the Project operational noise levels are combined with the existing ambient noise levels measurements for the nearby receiver locations potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (4) Instead, they must be logarithmically added using the following base equation:

$$SPL_{Total} = 10\log_{10}[10^{SPL1/10} + 10^{SPL2/10} + \ldots 10^{SPLn/10}]$$

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describe the Project noise level contributions to the existing ambient noise environment. Noise levels that would be experienced at receiver locations when Project-source noise is added to the ambient daytime and nighttime conditions are presented on Tables 9-4 and 9-5.

As indicated on Tables 9-4 and 9-5, the Project will contribute a daytime operational noise level increase of up to 0.1 dBA L_{eq} and a nighttime operational noise level increase of up to 0.2 dBA L_{eq} at the sensitive receiver locations. Since the Project-related operational noise level contributions will satisfy the significance criteria discussed in Section 4, the increases at the sensitive receiver locations will be *less than significant*.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 9-4: PROJECT DAYTIME NOISE LEVEL CONTRIBUTIONS

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Contribution[6]	Threshold Exceeded?[7]
R1	39.0	L1	57.4	57.5	0.1	No
R2	35.7	L2	58.9	58.9	0.0	No
R3	38.2	L3	66.5	66.5	0.0	No
R4	42.7	L4	59.0	59.1	0.1	No

[1] See Exhibit 9-A for the sensitive receiver locations.
[2] Total Project operational noise levels as shown on Table 9-3.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance Criteria as defined in Section 4.

TABLE 9-5: PROJECT NIGHTTIME NOISE LEVEL CONTRIBUTIONS

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Contribution[6]	Threshold Exceeded?[7]
R1	39.0	L1	55.5	55.6	0.1	No
R2	35.7	L2	57.9	57.9	0.0	No
R3	38.2	L3	62.9	62.9	0.0	No
R4	42.7	L4	55.5	55.7	0.2	No

[1] See Exhibit 9-A for the sensitive receiver locations.
[2] Total Project operational noise levels as shown on Table 9-3.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed nighttime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance Criteria as defined in Section 4.

9.5 OPERATIONAL VIBRATION IMPACTS

Although the human threshold of perception for vibration is around 65 VdB, human response to vibration is not usually significant unless the vibration exceeds 70 VdB. Truck vibration levels are dependent on vehicle characteristics, load, speed, and pavement condition. Typical vibration levels for heavy trucks at normal traffic speeds do not exceed 65 VdB, and therefore, will be below the FTA vibration threshold of 80 VdB at nearby sensitive receiver locations. Truck deliveries transiting on site will be travelling at very low speeds so it is expected that delivery truck vibration impacts at nearby homes will not exceed the 80 VdB vibration threshold.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

10 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 10-A shows the construction noise source locations in relation to the nearby receiver locations previously described in Section 8.

10.1 CONSTRUCTION NOISE LEVELS

Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers and portable generators that when combined can reach high levels. The number and mix of construction equipment is expected to occur in the following stages:

- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

This construction noise analysis was prepared using reference noise level measurements taken by Urban Crossroads, Inc. to describe the typical construction activity noise levels for each stage of Project construction. The construction reference noise level measurements represent a list of typical construction activity noise levels. Noise levels generated by heavy construction equipment can range from approximately 68 dBA to in excess of 80 dBA when measured at 50 feet. However, these noise levels diminish with distance from the construction site at a rate of 6 dBA per doubling of distance. For example, a noise level of 80 dBA measured at 50 feet from the noise source to the receiver would be reduced to 74 dBA at 100 feet from the source to the receiver and would be further reduced to 68 dBA at 200 feet from the source to the receiver. The construction stages are based on the *Centerpointe Air Quality Impact Analysis* prepared by Urban Crossroads, Inc. (20)

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 10-A: CONSTRUCTION NOISE SOURCE LOCATIONS

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

10.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe the Project construction noise levels, measurements were collected for similar activities at several construction sites. Table 10-1 provides a summary of the construction reference noise level measurements. Since the reference noise levels were collected at varying distances of 30 feet and 50 feet, all construction noise level measurements presented on Table 10-1 have been adjusted for consistency to describe a common reference distance of 50 feet.

TABLE 10-1: CONSTRUCTION REFERENCE NOISE LEVELS

ID	Noise Source	Reference Distance From Source (Feet)	Reference Noise Levels @ Reference Distance (dBA L_{eq})	Reference Noise Levels @ 50 Feet (dBA L_{eq})[5]
1	Truck Pass-Bys & Dozer Activity[1]	30'	63.6	59.2
2	Dozer Activity[1]	30'	68.6	64.2
3	Construction Vehicle Maintenance Activities[2]	30'	71.9	67.5
4	Foundation Trenching[2]	30'	72.6	68.2
5	Rough Grading Activities[2]	30'	77.9	73.5
6	Framing[2]	30'	66.7	62.3
7	Concrete Mixer Truck Movements[3]	50'	71.2	71.2
8	Concrete Paver Activities[3]	30'	70.0	65.6
9	Concrete Mixer Pour & Paving Activities[3]	30'	70.3	65.9
10	Concrete Mixer Backup Alarms & Air Brakes[3]	50'	71.6	71.6
11	Concrete Mixer Pour Activities[3]	50'	67.7	67.7

[1] As measured by Urban Crossroads, Inc. on 10/14/15 at a business park construction site located at the northwest corner of Barranca Parkway and Alton Parkway in the City of Irvine.
[2] As measured by Urban Crossroads, Inc. on 10/20/15 at a construction site located in Rancho Mission Viejo.
[3] Reference noise level measurements were collected from a nighttime concrete pour at an industrial construction site, located at 27334 San Bernardino Avenue in the City of Redlands, between 1:00 a.m. to 2:00 a.m. on 7/1/15.
[4] As measured by Urban Crossroads, Inc. on 9/9/16 during the demolition of an existing parking lot at 41 Corporate Park in Irvine.
[5] Reference noise levels are calculated at 50 feet using a drop off rate of 6 dBA per doubling of distance (point source).

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

10.3 DAYTIME CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels, calculations of the daytime Project construction noise level impacts at the nearby sensitive receiver locations were completed. Tables 10-2 to 10-6 present the short-term daytime construction noise levels for each stage of construction. Table 10-8 provides a summary of the construction noise levels by phase at the noise receiver locations. Based on the stages of construction, the noise impacts associated with the proposed Project are expected to create temporarily high noise levels at the nearby receiver locations. To assess the peak daytime construction noise levels, this analysis shows the highest noise impacts when the equipment with the highest reference noise level is operating at the closest point from the primary construction activity to each receiver location.

TABLE 10-2: SITE PREPARATION EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})
Truck Pass-Bys & Dozer Activity	59.2
Dozer Activity	64.2
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	64.2

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{eq})[3]	Estimated Noise Barrier Attenuation (dBA L_{eq})[4]	Construction Noise Level (dBA L_{eq})
R1	824'	-24.3	0.0	39.8
R2	182'	-11.2	-5.0	47.9
R3	174'	-10.8	0.0	53.3
R4	134'	-8.6	0.0	55.6

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation (if any) from existing barriers/berms in the Project study area.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 10-3: GRADING EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})
Truck Pass-Bys & Dozer Activity	59.2
Dozer Activity	64.2
Rough Grading Activities	73.5
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	73.5

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{eq})[3]	Estimated Noise Barrier Attenuation (dBA L_{eq})[4]	Construction Noise Level (dBA L_{eq})
R1	824'	-24.3	0.0	49.1
R2	182'	-11.2	-5.0	57.2
R3	174'	-10.8	0.0	62.6
R4	134'	-8.6	0.0	64.9

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation (if any) from existing barriers/berms in the Project study area.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 10-4: BUILDING CONSTRUCTION EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})
Construction Vehicle Maintenance Activities	67.5
Foundation Trenching	68.2
Framing	62.3
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	68.2

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{eq})[3]	Estimated Noise Barrier Attenuation (dBA L_{eq})[4]	Construction Noise Level (dBA L_{eq})
R1	824'	-24.3	0.0	43.8
R2	182'	-11.2	-5.0	51.9
R3	174'	-10.8	0.0	57.3
R4	134'	-8.6	0.0	59.6

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation (if any) from existing barriers/berms in the Project study area.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 10-5: PAVING EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})
Concrete Mixer Truck Movements	71.2
Concrete Paver Activities	65.6
Concrete Mixer Pour & Paving Activities	65.9
Concrete Mixer Backup Alarms & Air Brakes	71.6
Concrete Mixer Pour Activities	67.7
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	71.6

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{eq})[3]	Estimated Noise Barrier Attenuation (dBA L_{eq})[4]	Construction Noise Level (dBA L_{eq})
R1	824'	-24.3	0.0	47.3
R2	182'	-11.2	-5.0	55.4
R3	174'	-10.8	0.0	60.8
R4	134'	-8.6	0.0	63.0

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation (if any) from existing barriers/berms in the Project study area.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 10-6: ARCHITECTURAL COATING EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})
Construction Vehicle Maintenance Activities	67.5
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	67.5

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{eq})[3]	Estimated Noise Barrier Attenuation (dBA L_{eq})[4]	Construction Noise Level (dBA L_{eq})
R1	824'	-24.3	0.0	43.1
R2	182'	-11.2	-5.0	51.2
R3	174'	-10.8	0.0	56.6
R4	134'	-8.6	0.0	58.9

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation (if any) from existing barriers/berms in the Project study area.

10.4 NIGHTTIME CONCRETE POUR NOISE ANALYSIS

Using the reference concrete pour activity construction equipment noise levels, calculations of the nighttime Project construction noise level impacts at the nearby sensitive receiver locations were completed. Table 10-7 presents the short-term nighttime construction noise levels at the noise receiver locations which are expected to range from 47.3 to 63.0 dBA L_{eq}. To assess the peak nighttime construction noise levels, this analysis shows the highest noise impacts when the equipment with the highest reference noise level is operating at the closest point from the primary construction activity to each receiver location.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 10-7: NIGHTTIME CONCRETE POUR EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})
Concrete Mixer Truck Movements	71.2
Concrete Paver Activities	65.6
Concrete Mixer Pour & Paving Activities	65.9
Concrete Mixer Backup Alarms & Air Brakes	71.6
Concrete Mixer Pour Activities	67.7
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	71.6

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{eq})[3]	Estimated Noise Barrier Attenuation (dBA L_{eq})[4]	Construction Noise Level (dBA L_{eq})
R1	824'	-24.3	0.0	47.3
R2	182'	-11.2	-5.0	55.4
R3	174'	-10.8	0.0	60.8
R4	134'	-8.6	0.0	63.0

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation (if any) from existing barriers/berms in the Project study area.

10.5 CONSTRUCTION NOISE THRESHOLDS OF SIGNIFICANCE

The construction noise analysis shows that the highest construction noise levels will occur when equipment is operating at the closest point from primary construction activity to each sensitive receiver location. As shown on Table 10-8, the highest unmitigated daytime construction noise levels are expected to range from 49.1 to 64.9 dBA L_{eq} and nighttime construction noise levels are expected to range from 47.3 to 63.0 dBA L_{eq} at the nearby sensitive receiver locations.

As shown on Table 10-8, the unmitigated Project daytime and nighttime construction noise levels satisfy the 65 dBA L_{eq} daytime and 60 dBA L_{eq} nighttime City of Moreno Valley Municipal Code thresholds, respectively, during peak Project construction activity at all receiver locations. Receiver locations R2 to R4 represent office uses that are unoccupied during nighttime hours when nighttime concrete pours would take place, and as such, are not analyzed against the nighttime noise level standards for the purpose of this analysis. Further, the unmitigated Project-related construction noise levels will satisfy the less restrictive 90 dBA L_{eq} 8-hour continuous noise level limit identified in the City of Moreno Valley Municipal Code. Therefore, impacts from Project construction noise levels are considered less than significant.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 10-8: UNMITIGATED CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location	Distance to Receiver (Feet)	Daytime Construction Noise Levels (dBA L_{eq})[1]						Nighttime Concrete Pour Noise Levels (dBA L_{eq})[2]	Threshold Exceeded?[3]	
		Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Construction Noise Levels		Daytime (65 dBA L_{eq})	Nighttime (60 dBA L_{eq})
R1	824'	39.8	49.1	43.8	47.3	43.1	49.1	47.3	No	No
R2	182'	47.9	57.2	51.9	55.4	51.2	57.2	55.4	No	n/a
R3	174'	53.3	62.6	57.3	60.8	56.6	62.6	60.8	No	n/a
R4	134'	55.6	64.9	59.6	63.0	58.9	64.9	63.0	No	n/a

[1] Daytime construction noise levels as shown on Tables 10-2 to 10-6.
[2] Nighttime construction noise levels as shown on Table 10-7.
[3] Do the peak daytime and/or nighttime construction noise levels exceed their respective, applicable Municipal Code noise level standards?
"n/a" = receiver location represents an office use that would be unoccupied during nighttime construction activity.

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

10.6 CONSTRUCTION VIBRATION IMPACTS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. The proposed Project's construction activities most likely to cause vibration impacts are:

- Heavy Construction Equipment: Although all heavy mobile construction equipment has the potential of causing at least some perceptible vibration while operating close to building, the vibration is usually short-term and is not of sufficient magnitude to cause building damage. It is not expected that heavy equipment such as large bulldozers would operate close enough to any residences to cause a vibration impact.
- Trucks: Trucks hauling building materials to construction sites can be sources of vibration intrusion if the haul routes pass through residential neighborhoods on streets with bumps or potholes. Repairing the bumps and potholes generally eliminates the problem.

Ground-borne vibration levels resulting from construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration. Construction activities that would have the potential to generate low levels of ground-borne vibration within the Project site include grading. Using the vibration source level of construction equipment provided on Table 6-8 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration impacts. Table 10-9 presents the expected Project related vibration levels at the nearby receiver locations.

Based on the reference vibration levels provided by the FTA, a large bulldozer represents the peak source of vibration with a reference level of 87 VdB at 25 feet. At distances ranging from 134 to 824 feet from the Project construction activities, construction vibration levels are expected to range from 41.5 to 65.1 VdB, as shown on Table 10-9. Using the construction vibration assessment methods provided by the FTA, Project construction vibration levels will remain below the FTA 80 VdB threshold at all sensitive receiver locations, and therefore, is considered a *less than significant* impact.

Further, vibration levels at the site of the closest sensitive receiver are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating at the Project site perimeter.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 10-9: UNMITIGATED CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver Location[1]	Distance to Construction Activity (Feet)	Receiver Vibration Levels (VdB)[2]					Threshold Exceeded?[3]
		Small Bulldozer	Jackhammer	Loaded Trucks	Large Bulldozer	Highest Vibration Level	
R1	824'	12.5	33.5	40.5	41.5	41.5	No
R2	182'	32.1	53.1	60.1	61.1	61.1	No
R3	174'	32.7	53.7	60.7	61.7	61.7	No
R4	134'	36.1	57.1	64.1	65.1	65.1	No

[1] Noise receiver locations are shown on Exhibit 10-A.
[2] Based on the Vibration Source Levels of Construction Equipment included on Table 6-8.
[3] Does the peak vibration exceed the FTA maximum acceptable vibration standard of 80 VdB?

10.7 CONSTRUCTION NOISE AND VIBRATION ABATEMENT MEASURES

Though construction noise is temporary, intermittent and of short duration, and will not present any long-term impacts, the following practices would reduce noise level increases produced by the construction equipment to the nearby noise-sensitive residential land uses:

- Prior to approval of grading plans and/or issuance of building permits, plans shall include a note indicating that Project construction activities shall comply with the City of Moreno Valley Municipal Code requirements. (3)
- During all Project site construction, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receivers nearest the Project site.
- The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise-sensitive receivers nearest the Project site during all Project construction (i.e., to the center).

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

11 REFERENCES

1. **State of California.** *California Environmental Quality Act, Appendix G.* 2016.
2. **Urban Crossroads, Inc.** *Centerpointe Traffic Impact Analysis.* May 2018.
3. **City of Moreno Valley.** *Municipal Code, Chapter 11.80 Noise Regulation.*
4. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
5. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.* March 1974. EPA/ONAC 550/9/74-004.
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7. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
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10. **Office of Planning and Research.** *State of California General Plan Guidelines.* October 2003.
11. **State of California.** *California Green Building Standards Code.* January 2016.
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20. **Urban Crossroads, Inc.** *Centerpointe Air Quality Impact Analysis.* May 2018.

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12 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Centerpointe Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 336-5979.

Bill Lawson, P.E., INCE
Principal
URBAN CROSSROADS, INC.
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(949) 336-5979
blawson@urbanxroads.com

EDUCATION

Master of Science in Civil and Environmental Engineering
California Polytechnic State University, San Luis Obispo • December, 1993

Bachelor of Science in City and Regional Planning
California Polytechnic State University, San Luis Obispo • June, 1992

PROFESSIONAL REGISTRATIONS

PE – Registered Professional Traffic Engineer – TR 2537 • January, 2009
AICP – American Institute of Certified Planners – 013011 • June, 1997–January 1, 2012
PTP – Professional Transportation Planner • May, 2007 – May, 2013
INCE – Institute of Noise Control Engineering • March, 2004

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
ITE – Institute of Transportation Engineers

PROFESSIONAL CERTIFICATIONS

Certified Acoustical Consultant – County of Orange • February, 2011
FHWA-NHI-142051 Highway Traffic Noise Certificate of Training • February, 2013

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APPENDIX 3.1:

CITY OF MORENO VALLEY MUNICIPAL CODE

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Chapter 11. 80 NOISE REGULATION

11.80.010 Legislative findings.

It is found and declared that:

A. Excessive sound within the limits of the city is a condition which has existed for some time, and the amount and intensity of such sound is increasing.

B. Such excessive sound is a detriment to the public health, safety, and welfare and quality of life of the residents of the city.

C. The necessity in the public interest for the provisions and prohibitions hereinafter contained and enacted is declared as a matter of legislative determination and public policy, and it is further declared that the provisions and prohibitions hereinafter contained and enacted are in pursuance of and for the purpose of securing and promoting the public health, safety, welfare and quality of life of the city and its inhabitants. (Ord. 740 § 1.2, 2007)

11.80.020 Definitions.

For purposes of this chapter, certain words and phrases used herein are defined as follows:

"A-weighted sound level" means the sound pressure level in decibels as measured with a sound level meter using the A-weighting network. The unit of measurement is the dB(A).

"Commercial" means all uses of land not otherwise classified as residential, as defined in this section.

"Construction" means any site preparation, and/or any assembly, erection, repair, or alteration, excluding demolition, of any structure, or improvements to real property.

"Continuous airborne sound" means sound that is measured by the slow-response setting of a meter manufactured to the specifications of ANSI Section 1.4-1983 (R2006) "Specification for Sound Level Meters," or its successor.

"Daytime" means eight a.m. to ten p.m. the same day.

"Decibel" (dB) means a unit for measuring the amplitude of sound, equal to twenty (20) times the logarithm to the base ten (10) of the ratio of the pressure of the sound measured to the reference pressure, which is twenty (20) microPascals (twenty (20) microNewtons per square meter.)

"Demolition" means any dismantling, intentional destruction or removal of structures or other improvements to real property.

"Disturb" means to interrupt, interfere with, or hinder the enjoyment of peace or quiet or the normal listening activities or the sleep, rest or mental concentration of the hearer.

"Emergency" means any occurrence or set of circumstances involving actual or imminent physical trauma or significant property damage which necessitates immediate action. Economic loss alone shall not constitute an emergency. It shall be the burden of an alleged violator to prove an "emergency."

"Emergency work" means any work made necessary to restore property to a safe condition following an emergency, or to protect persons or property threatened by an imminent emergency, to the extent such work is, in fact, necessary to protect persons or property from exposure to imminent danger or damage.

"Frequency" means the number of complete oscillation cycles per unit of time.

"Impulsive sound" means sound of short duration, usually less than one second, with an abrupt onset and rapid decay. Examples of sources of impulsive sound include explosions, drop forge impacts, and discharge of firearms.

"Nighttime" means 10:01 p.m. to 7:59 a.m. the following day.

"Noise disturbance" means any sound which:

1. Disturbs a reasonable person of normal sensitivities;

2. Exceeds the sound level limits set forth in this chapter; or

3. Is plainly audible as defined in this section. Where no specific distance is set forth for the determination of audibility, references to noise disturbance shall be deemed to mean plainly audible at a distance of two hundred (200) feet from the real property line of the source of the sound, if the sound occurs on privately owned property, or from the source of the sound, if the sound occurs on public right of way, public space or other publicly owned property.

"Person" means any person, person's firm, association, copartnership, joint venture, corporation, or any entity public or private in nature.

"Plainly audible" means that the sound or noise produced or reproduced by any particular source, can be clearly distinguished from ambient noise by a person using his/her normal hearing faculties.

"Public right-of-way" means any street, avenue, boulevard, sidewalk, bike path or alley, or similar place normally accessible to the public which is owned or controlled by a governmental entity.

"Public space" means any park, recreational or community facility, or lot which contains at least one building that is open to the general public during its hours of operation.

"Residential" means all uses of land primarily for dwelling units, as well as hospitals, schools, colleges and universities, and places of religious assembly.

"Sound" means an oscillation in pressure, particle displacement, particle velocity or other physical parameter, in a medium with internal forces that causes compression and rarefaction of that medium capable of producing an auditory impression. The description of sound may include any characteristic of such sound, including duration, intensity and frequency.

"Sound level" means the weighted sound pressure level as measured in dB(A) by a sound level meter and as specified in American National Standards Institute (ANSI) specifications for sound-level meters (ANSI Section 1.4-1971 (R1976)). If the frequency weighting employed is not indicated, the A-weighting shall apply.

"Sound level meter" means an instrument, demonstrably capable of accurately measuring sound levels as defined above.

All technical definitions not defined above shall be in accordance with applicable publications and standards of the American National Standards Institute (ANSI). (Ord. 740 § 1.2, 2007)

11.80.030 Prohibited acts.

A. General Prohibition. It is unlawful and a violation of this chapter to maintain, make, cause, or allow the making of any sound that causes a noise disturbance, as defined in Section 11.80.020.

B. Sound causing permanent hearing loss.

1. Sound level limits. Based on statistics from the Center for Disease Control and Prevention and the National Institute for Occupational Safety and Health, Table 1 and Table 1-A specify sound level limits which, if exceeded, will have a high probability of producing permanent hearing loss in anyone in the area where the sound levels are being exceeded. No sound shall be permitted within the city which exceeds the parameters set forth in Tables 11.80.030-1 and 11.80.030-1-A of this chapter:

Table 11.80.030-1
MAXIMUM CONTINUOUS SOUND LEVELS*

Duration per Day Continuous Hours	Sound level [db(A)]
8	90
6	92

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.25	115

* When the daily sound exposure is composed of two or more periods of sound exposure at different levels, the combined effect of all such periods shall constitute a violation of this section if the sum of the percent of allowed period of sound exposure at each level exceeds 100 percent

Table 11.80.030-1A

MAXIMUM IMPULSIVE SOUND LEVELS

Number of Repetitions per 24-Hour Period	Sound level [dB(A)]
1	145
10	135
100	125

2. Exemptions. No violation shall exist if the only persons exposed to sound levels in excess of those listed in Tables 11.80.030-1 and 11.80.030-1A are exposed as a result of:

a. Trespass;

b. Invitation upon private property by the person causing or permitting the sound; or

c. Employment by the person or a contractor of the person causing or permitting the sound.

C. Nonimpulsive Sound Decibel Limits. No person shall maintain, create, operate or cause to be operated on private property any source of sound in such a manner as to create any nonimplusive sound which exceeds the limits set forth for the source land use category (as defined in Section 11.80.020) in Table 11.80.030-2 when measured at a distance of two hundred (200) feet or more from the real property line of the source of the sound, if the sound occurs on privately owned property, or from the source of the sound, if the sound occurs on public right-of-way, public space or other publicly owned property. Any source of sound in violation of this subsection shall be deemed prima facie to be a noise disturbance.

Table 11.80.030-2

MAXIMUM SOUND LEVELS (IN dB(A)) FOR SOURCE LAND USES

Residential		Commer cial	
Daytime	Nighttime	Daytime	Nighttime
60	55	65	60

D. Specific Prohibitions. In addition to the general prohibitions set out in subsection A of this section, and unless otherwise exempted by this chapter, the following specific acts, or the causing or permitting thereof, are regulated as follows:

1. Motor Vehicles. No person shall operate or cause to be operated a public or private motor vehicle, or combination of vehicles towed by a motor vehicle, that creates a sound exceeding the sound level limits in Table 11.80.030-2 when the vehicle(s) are not otherwise subject to noise regulations provided for by the California Vehicle Code.

2. Radios, Televisions, Electronic Audio Equipment, Musical Instruments or Similar Devices from a Stationary Source. No person shall operate, play or permit the operation or playing of any radio, tape player, television, electronic audio equipment, musical instrument, sound amplifier or other mechanical or electronic sound making device that produces, reproduces or amplifies sound in such a manner as to create a noise disturbance. However, this subsection shall not apply to any use or activity exempted in subsection E of this section and any use or activity for which a special permit has been issued pursuant to Section 11.80.040.

3. Radios, Electronic Audio Equipment, or Similar Devices from a Mobile Source Such as a Motor Vehicle. Sound amplification or reproduction equipment on or in a motor vehicle is subject to regulation in accordance with the California Vehicle Code when upon the public right-of-way. When upon public space or publicly owned property other than the public right-of-way or upon private property open to the public, sound amplification or reproduction equipment shall not be operated in such a manner that it is plainly audible at a distance of fifty (50) feet in any direction from the vehicle.

4. Portable, Hand-Held Music or Sound Amplification or Reproduction Equipment. Such equipment shall not be operated on a public right-of-way, public space or other publicly owned property in such a manner as to be plainly audible at a distance of fifty (50) feet in any direction from the operator.

5. Loudspeakers and Public Address Systems.

a. Except as permitted by Section 11.80.040, no person shall operate, or permit the operation of, any loudspeaker, public address system or similar device, for any commercial purpose:

1. Which produces, reproduces or amplifies sound in such a manner as to create a noise disturbance; or

2. During nighttime hours on a public right-of-way, public space or other publicly owned property.

b. No person shall operate, or permit the operation of, any loudspeaker, public address system or similar device, for any noncommercial purpose, during nighttime hours in such a manner as to create a noise disturbance.

6. Animals. No person shall own, possess or harbor an animal or bird that howls, barks, meows, squawks, or makes other sounds that:

a. Create a noise disturbance;

b. Are of frequent or continued duration for ten (10) or more consecutive minutes and are plainly audible at a distance of fifty (50) feet from the real property line of the source of the sound; or

c. Are intermittent for a period of thirty (30) or more minutes and are plainly audible at a distance of fifty (50) feet from the real property line of the source of the sound.

7. Construction and Demolition. No person shall operate or cause the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between the hours of eight p.m. and seven a.m. the following day such that the sound there from creates a noise disturbance, except for emergency work by public service utilities or for other work approved by the city manager or designee. This section shall not apply to the use of power tools as provided in subsection (D)(9) of this section.

8. Emergency Signaling Devices. No person shall intentionally sound or permit the sounding outdoors of any fire, burglar or civil defense alarm, siren or whistle, or similar stationary emergency signaling device, except for emergency purposes or for testing as follows:

a. Testing of a stationary emergency signaling device shall not occur between seven p.m. and seven a.m. the following day;

b. Testing of a stationary emergency signaling device shall use only the minimum cycle test time, in no case to exceed sixty (60) seconds;

c. Testing of a complete emergency signaling system, including the functioning of the signaling device and the personnel response to the signaling device, shall not occur more than once in each calendar month. Such testing shall only occur only on weekdays between seven a.m. and seven p.m. and shall be exempt from the time limit specified in subsection (D)(8)(2) of this

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

section.

9. Power Tools. No person shall operate or permit the operation of any mechanically, electrically or gasoline motor-driven tool during nighttime hours so as to cause a noise disturbance across a residential real property boundary.

10. Pumps, Air Conditioners, Air-Handling Equipment and Other Continuously Operating Equipment. Notwithstanding the general prohibitions of subsection a of this section, no person shall operate or permit the operation of any pump, air conditioning, air-handling or other continuously operating motorized equipment in a state of disrepair or in a manner which otherwise creates a noise disturbance distinguishable from normal operating sounds.

E. Exemptions. The following uses and activities shall be exempt from the sound level regulations except the maximum sound levels provided in Tables 11.80.030-1 and 11.80.030-1A:

1. Sounds resulting from any authorized emergency vehicle when responding to an emergency call or acting in time of an emergency.

2. Sounds resulting from emergency work as defined in Section 11.80.020

3. Any aircraft operated in conformity with, or pursuant to, federal law, federal air regulations and air traffic control instruction used pursuant to and within the duly adopted federal air regulations; and any aircraft operating under technical difficulties in any kind of distress, under emergency orders of air traffic control, or being operated pursuant to and subsequent to the declaration of an emergency under federal air regulations.

4. All sounds coming from the normal operations of interstate motor and rail carriers, to the extent that local regulation of sound levels of such vehicles has been preempted by the Noise Control Act of 1972 (42 U.S.C. § 4901 et seq.) or other applicable federal laws or regulations

5. Sounds from the operation of motor vehicles, to the extent they are regulated by the California Vehicle Code.

6. Any constitutionally protected noncommercial speech or expression conducted within or upon a any public right-of-way, public space or other publicly owned property constituting an open or a designated public forum in compliance with any applicable reasonable time, place and manner restrictions on such speech or expression or otherwise pursuant to legal authority.

7. Sounds produced at otherwise lawful and permitted city-sponsored events, organized sporting events, school assemblies, school playground activities, by permitted fireworks, and by permitted parades on public right-of-way, public space or other publicly owned property.

8. An event for which a temporary use permit or special event permit has been issued under other provisions of this code, where the provisions of Section 11.80.040 are met, the permit granted expressly grants an exemption from specific standards contained in this chapter, and the permittee and all persons under the permittee's reasonable control actually comply with all conditions of such permit. Violation of any condition of such a permit related to sound or sound equipment shall be a violation of this chapter and punishable as such.

F. Nothing in this chapter shall be construed to limit, modify or repeal any other regulation elsewhere in this code relating to the regulation of noise sources, nor shall any such other regulation be read to permit the emission of noise in violation of any provision of this chapter. (Ord. 740 § 1.2, 2007)

11. 80. 040 Special provisions for t emporary use and special event permits.

The exemption by permit set forth in Section 11.80.030(E)(8) shall be subject to the following requirements and conditions:

A. The permit application shall include the name, address and telephone number of the permit applicant; the date, hours and location for which the permit is requested; and the nature of the event or activity. It shall also specify the types of sounds and/or sound equipment to be permitted, the proposed duration of such sound, the specific standards from which the sound is to be exempted, and the reasons for each requested exemption.

B. The permit shall be issued provided the proposed activity meets the requirements of this section and the issuing official determines that the sound to be emitted at the event as proposed would not be detrimental to the public health, safety or welfare, that the event cannot reasonably achieve its legitimate aims and purposes without the exemption and that the sound levels proposed will not unreasonably damage the peace and quiet enjoyment of the lawful users of surrounding properties, nor constitute a public nuisance.

C. The official issuing the permit may prescribe any reasonable conditions or requirements he/she deems necessary to minimize noise disturbances upon the community or the surrounding neighborhood, and/or to protect the health, safety or welfare of the public, including participants in the permitted event, including use of mufflers, screens or other sound-attenuating devices.

D. Any permit granted must be in writing and shall contain all conditions upon which the permit shall be effective.

E. No more than six events requiring a sound limit exemption may be held at any particular location upon privately owned or controlled property per calendar year, provided further that the number of events shall not exceed the number permitted under the regulations for the type of permit issued. For purposes of this subsection, "location" means a legal parcel of real property or a complete shopping or commercial center or mall sharing common parking and access even if comprised of multiple legal parcels.

F. The exemption from sound limits under such permit shall not exceed maximum period of four hours in one twenty-four (24) hour day.

G. The permit will only be granted for hours between nine a.m. and ten p.m. on all days other than Friday and Saturday; and, on Friday and Saturday, between the hours of nine a.m. and one a.m. of the following day, except in the following circumstances:

1. A permit may be granted for hours between nine a.m. on New Year's Eve and one a.m. the following day (New Year's Day).

2. A permit may be granted for hours between nine a.m. and two a.m. the following day if there are no residences, hospitals, or nursing homes within a 0.5 mile radius of the property where the function is taking place.

H. Functions for which the permits are issued shall be limited to a continuous airborne sound level not to exceed seventy (70) dB(A), as measured two hundred (200) feet from the real property boundary of the source property if on private property, or from the source if on public right of way, public space or other publicly owned property. (Ord. 740 § 1.2, 2007)

11. 80. 050 Measurement or assessment of sound.

A. Measurement With Sound Meter.

1. The measurement of sound shall be made with a sound level meter meeting the standards prescribed by ANSI Section 1.4-1983 (R2006). The instruments shall be maintained in calibration and good working order. A calibration check shall be made of the system at the time of any sound level measurement. Measurements recorded shall be taken so as to provide a proper representation of the source of the sound. The microphone during measurement shall be positioned so as not to create any unnatural enhancement or diminution of the measured sound. A windscreen for the microphone shall be used at all times. However, a violation of this chapter may occur without the occasion of the measurements being made as otherwise provided.

2. The slow meter response of the sound level meter shall be used in order to best determine the average amplitude.

3. The measurement shall be made at any point on the property into which the sound is being transmitted and shall be made at least three feet away from any ground, wall, floor, ceiling, roof and other plane surface.

4. In case of multiple occupancy of a property, the measurement may be made at any point inside the premises to which any complainant has right of legal private occupancy; provided that the measurement shall not be made within three feet of any ground, wall, floor, ceiling, roof or other plane surface.

5. All measurements of sound provided for in this chapter will be made by qualified officials of the city who are designated by the city manger or designee to operate the apparatus used to make the measurements.

B. Assessment Without Sound Level Meter. Any police officer, code enforcement officer, or other official designated by the city manager or designee who hears a noise or sound that is plainly audible, as defined in Section 11.80.020, in violation of this chapter, may enforce this chapter and shall assess the noise or sound according to the following standards:

1. The primary means of detection shall be by means of the official's normal hearing faculties, not artificially enhanced.

2. The official shall first attempt to have a direct line of sight and hearing to the vehicle or real property from which the sound or noise emanates so that the official can readily identify the offending source of the sound or noise and the distance involved. If the official is unable to have a direct line of sight and hearing to the vehicle or real property from which the sound or noise emanates, then the official shall confirm the source of the sound or noise by approaching the suspected vehicle or real property until the official is able to obtain a direct line of sight and hearing, and confirm the source of the sound or noise that was heard at the place of the original assessment of the sound or noise.

3. The official need not be required to identify song titles, artists, or lyrics in order to establish a violation. (Ord. 740 § 1.2, 2007)

11. 80. 060 Violation.

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

A. Violation of Sound Level Limits. Any person violating any of the provisions of this chapter shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punishable by a fine not to exceed one thousand dollars ($1,000.00) and/or six months in the county jail, or both. Notwithstanding the foregoing, any violation of the provisions of this chapter may, in the discretion of the citing officer or the city attorney, be cited and/or prosecuted as an infraction or be subject to civil citation pursuant to Chapter 1.10.

B. Joint and Several Responsibility. In addition to the person causing the offending sound, the owner, tenant or lessee of property, or a manager, overseer or agent, or any other person lawfully entitled to possess the property from which the offending sound is emitted at the time the offending sound is emitted, shall be responsible for compliance with this chapter if the additionally responsible party knows or should have known of the offending noise disturbance. It shall not be a lawful defense to assert that some other person caused the sound. The lawful possessor or operator of the premises shall be responsible for operating or maintaining the premises in compliance with this chapter and may be cited regardless of whether or not the person actually causing the sound is also cited.

C. Violation May be Declared a Public Nuisance. The operation or maintenance of any device, equipment, instrument, vehicle or machinery in violation of any provisions of this chapter which endangers the public health, safety and quality of life of residents in the area is declared to be a public nuisance, and may be subject to abatement summarily or by a restraining order or injunction issued

by a court of competent jurisdiction. (Ord. 824 § 1.2, 2011; Ord. 740 § 1.2, 2007)

View the mobile version.

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APPENDIX 5.1:

STUDY AREA PHOTOS

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

JN:11412 Centerpointe

L1-E
33, 55' 2.850000", 117, 15' 25.190000"

L1-N
33, 55' 2.780000", 117, 15' 25.210000"

L1-S
33, 55' 2.750000", 117, 15' 25.210000"

L1-W
33, 55' 2.740000", 117, 15' 25.240000"

L2-E
33, 54' 49.660000", 117, 15' 38.100000"

L2-N
33, 54' 49.830000", 117, 15' 38.200000"

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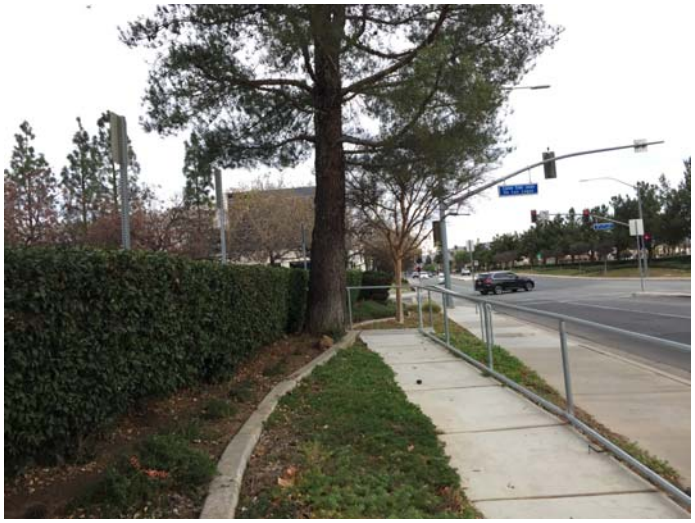
JN:11412 Centerpointe

L2-S
33, 54' 49.660000", 117, 15' 38.100000"

L2-W
33, 54' 49.660000", 117, 15' 38.100000"

L3-E
33, 54' 50.540000", 117, 15' 40.590000"



L3-N
33, 54' 50.530000", 117, 15' 40.620000"

L3-S
33, 54' 50.530000", 117, 15' 40.620000"

L3-W
33, 54' 50.530000", 117, 15' 40.620000"

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

JN:11412 Centerpointe

L4-E
33, 54' 54.830000", 117, 15' 40.810000"

L4-N
33, 54' 54.850000", 117, 15' 40.760000"

L4-S
33, 54' 54.840000", 117, 15' 40.790000"

L4-W
33, 54' 54.850000", 117, 15' 40.760000"

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

24-Hour Noise Level Measurement Summary

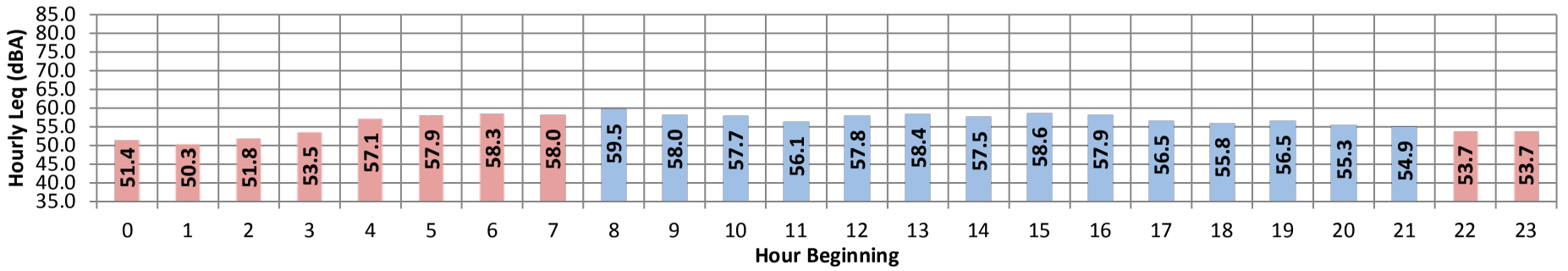
Project Name: Centerpointe

Location: L1 - Located north of the Project site near existing residential homes and commercial land use on Alessandro Boulevard.

JN: 11412
Analyst: A. Wolfe
Date: 1/3/2018

Energy Average Leq		*24-Hour*
Day	*Night*	*CNEL*
57.4	55.5	62.2

Hourly Leq dBA Readings (unadjusted)



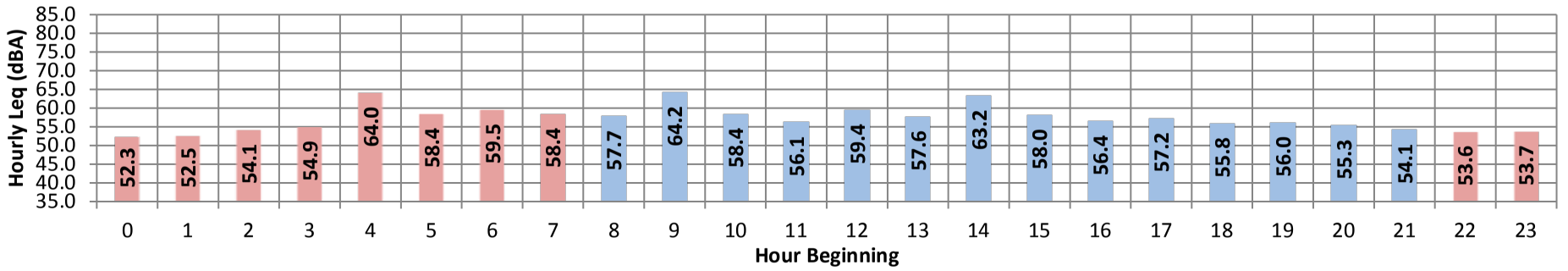
Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	54.9	68.7	45.2	63.0	61.0	59.0	57.0	53.0	51.0	48.0	47.0	46.0
	Max	59.5	81.2	50.9	68.0	65.0	63.0	62.0	60.0	57.0	54.0	53.0	52.0
Energy Average:		57.4	Average:		65.7	63.6	60.7	59.4	56.3	54.2	51.2	50.6	49.1
Night	Min	50.3	68.6	41.8	61.0	57.0	53.0	52.0	49.0	47.0	44.0	43.0	43.0
	Max	58.3	79.8	52.1	66.0	64.0	62.0	61.0	58.0	56.5	54.0	54.0	53.0
Energy Average:		55.5	Average:		63.2	60.5	57.7	56.5	53.5	51.6	48.9	48.3	47.3
Hourly Summary													
Night	0	51.4	70.1	42.8	62.0	59.0	55.0	53.0	49.0	47.0	44.0	44.0	43.0
	1	50.3	68.9	41.8	61.0	57.0	53.0	52.0	49.0	47.0	44.0	43.0	43.0
	2	51.8	69.1	44.2	61.0	58.0	55.0	54.0	51.0	49.0	47.0	46.0	45.0
	3	53.5	68.6	45.6	61.0	59.0	57.0	56.0	53.0	52.0	48.0	47.0	46.0
	4	57.1	79.8	49.8	65.0	62.0	59.0	58.0	56.0	54.0	52.0	51.0	50.0
	5	57.9	77.5	51.1	66.0	63.0	61.0	60.0	57.0	55.0	53.0	53.0	52.0
	6	58.3	72.6	52.1	65.0	63.0	62.0	61.0	58.0	56.5	54.0	54.0	53.0
	7	58.0	75.4	49.0	65.0	64.0	62.0	61.0	58.0	55.0	52.0	52.0	50.0
Day	8	59.5	74.4	50.5	67.0	65.0	63.0	62.0	60.0	57.0	54.0	53.0	51.0
	9	58.0	80.9	49.3	65.0	64.0	61.0	60.0	57.0	55.0	52.0	51.0	50.0
	10	57.7	73.7	48.6	67.0	65.0	61.0	60.0	57.0	54.0	51.0	51.0	50.0
	11	56.1	68.7	48.4	63.0	61.0	60.0	59.0	56.0	54.0	51.0	51.0	49.0
	12	57.8	73.3	48.2	68.0	64.0	61.0	60.0	57.0	55.0	53.0	52.0	51.0
	13	58.4	81.2	48.2	67.0	64.0	60.0	59.0	56.0	55.0	53.0	52.0	50.0
	14	57.5	74.4	50.9	64.0	62.0	60.0	60.0	57.0	56.0	53.0	53.0	52.0
	15	58.6	74.9	50.0	66.0	64.0	62.0	61.0	58.0	56.0	54.0	53.0	51.0
	16	57.9	76.5	47.9	67.0	65.0	62.0	61.0	57.0	55.0	52.0	51.0	49.0
	17	56.5	73.9	47.4	65.0	63.0	61.0	59.0	56.0	54.0	50.0	49.0	48.0
	18	55.8	69.9	46.7	65.0	63.0	60.0	58.0	55.0	53.0	49.0	49.0	47.0
	19	56.5	76.2	46.5	67.0	64.0	61.0	59.0	55.0	52.0	48.0	48.0	47.0
	20	55.3	76.6	45.2	64.0	63.0	59.0	57.0	54.0	52.0	48.0	47.0	46.0
	21	54.9	72.1	46.5	65.0	63.0	59.0	57.0	53.0	51.0	49.0	48.0	47.0
Night	22	53.7	75.6	44.4	63.0	60.0	57.0	55.0	52.0	50.0	48.0	47.0	46.0
	23	53.7	75.3	43.9	63.0	60.0	56.0	55.0	52.0	50.0	47.0	46.0	45.0

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

24-Hour Noise Level Measurement Summary

Project Name:	Centerpointe	*JN:*	11412	*Energy Average Leq*	*24-Hour*
Location:	L2 - Located at the southern Project site boundary near existing industrial and public facility uses on Brodiaea Avenue.	*Analyst:*	A. Wolfe	*Day* / *Night*	*CNEL*
		Date:	1/3/2018	58.9 / 57.9	64.5

Hourly Leq dBA Readings (unadjusted)



Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	54.1	70.8	40.6	64.0	61.0	58.0	56.0	52.0	49.0	44.0	43.0	41.0
	Max	64.2	92.8	46.0	75.0	68.0	63.0	61.0	56.0	53.0	49.0	49.0	47.0
Energy Average:		58.9	Average:		67.5	64.6	60.9	58.9	54.0	51.1	47.1	46.4	45.0
Night	Min	52.3	70.9	43.5	61.0	57.0	54.0	53.0	50.0	47.0	45.0	44.0	44.0
	Max	64.0	93.8	53.5	73.0	67.0	63.0	62.0	59.0	57.0	55.0	55.0	54.0
Energy Average:		57.9	Average:		65.4	62.2	58.4	57.0	53.9	51.9	49.2	48.8	48.1
Hourly Summary													
Night	0	52.3	75.5	43.5	61.0	57.0	54.0	53.0	50.0	48.0	45.0	44.0	44.0
	1	52.5	72.0	44.1	62.0	58.0	55.0	54.0	51.0	49.0	46.0	45.0	45.0
	2	54.1	79.1	45.2	62.0	60.0	56.0	55.0	52.0	50.0	48.0	47.0	46.0
	3	54.9	72.9	49.1	63.0	60.0	58.0	57.0	54.0	53.0	51.0	50.0	50.0
	4	64.0	93.8	50.7	73.0	67.0	61.0	59.0	56.0	54.0	52.0	52.0	51.0
	5	58.4	75.1	52.0	68.0	66.0	63.0	61.0	57.0	55.0	53.0	53.0	52.0
	6	59.5	73.6	53.5	67.0	66.0	63.0	62.0	59.0	57.0	55.0	55.0	54.0
	7	58.4	74.7	49.2	69.0	67.0	63.0	61.0	57.0	55.0	51.0	51.0	50.0
Day	8	57.7	79.5	44.7	69.0	65.0	61.0	58.0	53.0	51.0	48.0	48.0	46.0
	9	64.2	87.2	42.5	75.0	68.0	62.0	60.0	52.0	49.0	45.0	44.0	43.0
	10	58.4	80.7	40.6	70.0	67.0	63.0	61.0	54.0	50.0	44.0	43.0	41.0
	11	56.1	79.3	41.1	66.0	64.0	61.0	59.0	53.0	49.0	44.0	43.0	42.0
	12	59.4	88.1	41.7	69.0	66.0	61.0	59.0	53.0	50.0	45.0	44.0	42.0
	13	57.6	82.2	42.6	68.0	64.0	60.0	58.0	53.0	50.0	46.0	45.0	43.0
	14	63.2	92.8	44.8	70.0	66.0	63.0	61.0	56.0	52.0	48.0	47.0	46.0
	15	58.0	84.2	45.7	66.0	64.0	61.0	59.0	55.0	53.0	49.0	48.0	47.0
	16	56.4	71.6	45.7	66.0	65.0	62.0	59.0	55.0	53.0	49.0	48.0	47.0
	17	57.2	76.1	45.8	67.0	65.0	62.0	60.0	56.0	53.0	49.0	49.0	47.0
	18	55.8	72.0	46.0	65.0	64.0	60.0	59.0	55.0	52.0	48.0	48.0	47.0
	19	56.0	78.8	45.2	65.0	63.0	60.0	58.0	54.0	52.0	48.0	47.0	46.0
	20	55.3	74.0	45.7	65.0	63.0	59.0	57.0	54.0	51.0	48.0	48.0	47.0
	21	54.1	70.8	45.8	64.0	61.0	58.0	56.0	53.0	51.0	48.0	47.0	46.0
Night	22	53.6	70.9	44.3	64.0	60.0	56.0	55.0	53.0	51.0	46.0	46.0	45.0
	23	53.7	75.1	43.6	65.0	61.0	55.0	53.0	50.0	47.0	45.0	45.0	44.0

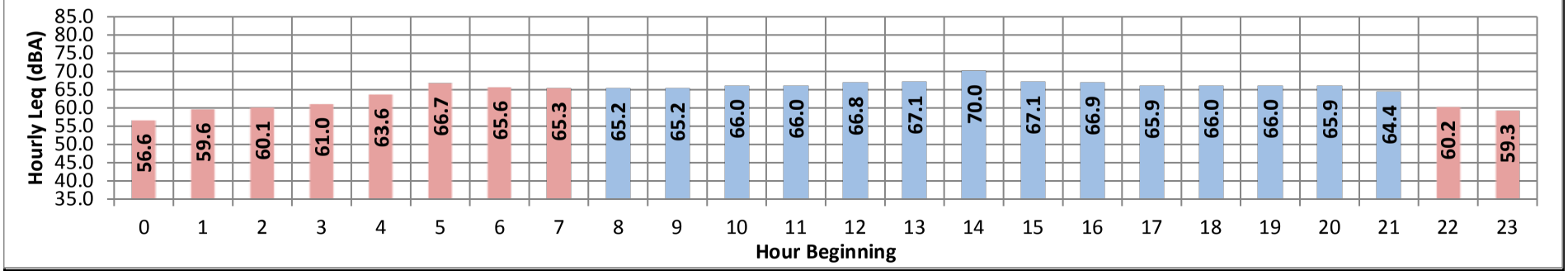
URBAN

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

24-Hour Noise Level Measurement Summary

Project Name:	Centerpointe	*JN:*	11412	*Energy Average Leq*	*24-Hour*
Location:	L3 - Located west of the Project site across Frederick Street adjacent to existing office buildings.	*Analyst:*	A. Wolfe	*Day* / *Night*	*CNEL*
		Date:	1/3/2018	66.5 / 62.9	70.2

Hourly Leq dBA Readings (unadjusted)

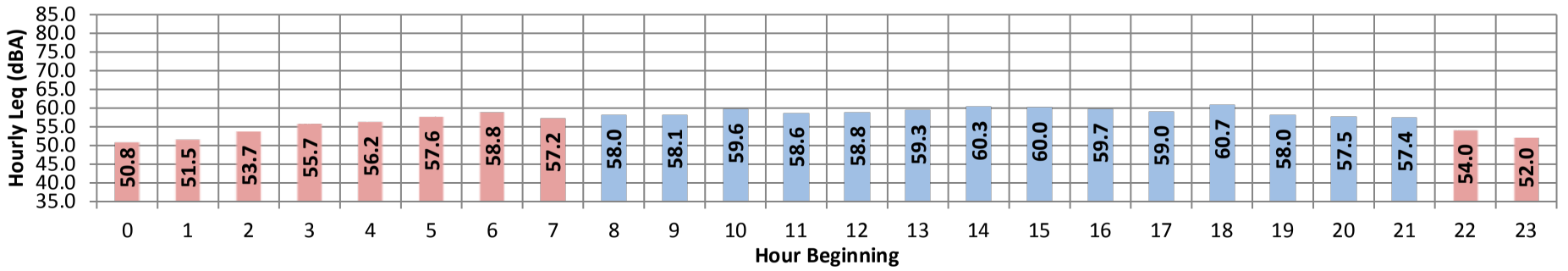


Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	64.4	81.1	42.2	74.0	73.0	71.0	68.0	60.0	52.0	47.0	46.0	44.0
	Max	70.0	96.7	48.5	80.0	76.0	73.0	72.0	67.0	61.0	52.0	50.0	49.0
Energy Average:		66.5	Average:		75.6	73.9	71.8	70.5	64.2	57.6	49.4	48.0	46.1
Night	Min	56.6	75.6	42.1	70.0	67.0	59.0	57.0	50.0	46.0	44.0	43.0	43.0
	Max	66.7	93.2	52.0	76.0	74.0	72.0	70.0	64.0	58.0	54.0	53.0	53.0
Energy Average:		62.9	Average:		73.3	71.1	66.8	63.9	56.0	52.1	49.0	48.0	47.3
Hourly Summary													
Night	0	56.6	75.6	42.1	70.0	67.0	61.0	57.0	50.0	48.0	45.0	44.0	43.0
	1	59.6	87.3	43.7	71.0	67.0	59.0	57.0	51.0	49.0	46.0	45.0	44.0
	2	60.1	86.0	45.7	72.0	69.0	63.0	59.0	53.0	50.0	48.0	47.0	46.0
	3	61.0	86.4	48.2	73.0	71.0	66.0	63.0	55.0	52.0	50.0	49.0	49.0
	4	63.6	82.6	49.4	75.0	74.0	70.0	68.0	58.0	54.0	52.0	51.0	50.0
	5	66.7	93.2	50.8	76.0	74.0	72.0	70.0	61.0	56.0	53.0	52.0	51.0
	6	65.6	85.9	52.0	76.0	74.0	72.0	70.0	63.0	58.0	54.0	53.0	53.0
	7	65.3	85.7	49.5	75.0	74.0	72.0	70.0	64.0	58.0	53.0	52.0	51.0
Day	8	65.2	81.1	47.4	75.0	74.0	71.0	70.0	64.0	58.0	51.0	50.0	48.0
	9	65.2	90.5	43.1	75.0	73.0	71.0	69.0	63.0	57.0	47.0	46.0	44.0
	10	66.0	88.2	42.2	76.0	74.0	71.0	70.0	64.0	58.0	48.0	47.0	44.0
	11	66.0	87.8	43.1	75.0	74.0	72.0	71.0	65.0	59.0	49.0	47.0	44.0
	12	66.8	91.9	43.8	76.0	74.0	72.0	71.0	65.0	59.0	50.0	48.0	45.0
	13	67.1	87.1	43.9	77.0	75.0	72.0	71.0	65.0	59.0	50.0	48.0	45.0
	14	70.0	96.7	45.7	80.0	76.0	73.0	72.0	67.0	60.0	50.0	48.0	47.0
	15	67.1	83.7	44.9	76.0	75.0	73.0	72.0	67.0	61.0	51.0	49.0	47.0
	16	66.9	87.0	48.5	75.0	74.0	73.0	72.0	67.0	60.0	52.0	50.0	49.0
	17	65.9	81.9	47.7	75.0	73.0	72.0	71.0	65.0	59.0	51.0	50.0	49.0
	18	66.0	88.6	45.2	75.0	74.0	72.0	71.0	64.0	56.0	48.0	47.0	46.0
	19	66.0	93.5	45.6	74.0	73.0	71.0	70.0	62.0	55.0	49.0	48.0	46.0
	20	65.9	94.1	45.7	74.0	73.0	71.0	69.0	61.0	53.0	48.0	48.0	47.0
	21	64.4	90.1	44.5	75.0	73.0	71.0	68.0	60.0	52.0	47.0	46.0	45.0
Night	22	60.2	78.9	42.3	73.0	71.0	67.0	63.0	54.0	50.0	45.0	44.0	43.0
	23	59.3	78.4	42.2	72.0	70.0	66.0	62.0	51.0	46.0	44.0	43.0	43.0

24-Hour Noise Level Measurement Summary

Project Name:	Centerpointe	*JN:*	11412	*Energy Average Leq*	*24-Hour*
Location:	L4 - Located west of the Project site on Frederick Street adjacent to the City of Moreno Valley City Hall building.	*Analyst:*	A. Wolfe	*Day* / *Night*	*CNEL*
		Date:	1/3/2018	59.0 / 55.5	62.8

Hourly Leq dBA Readings (unadjusted)



Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	57.4	75.4	41.1	66.0	64.0	62.0	61.0	55.0	51.0	46.0	45.0	43.0
	Max	60.7	85.4	46.4	69.0	68.0	65.0	64.0	60.0	57.0	51.0	49.0	48.0
Energy Average:		59.0	Average:		67.2	65.6	63.4	62.3	58.2	54.3	48.3	47.1	45.4
Night	Min	50.8	67.8	42.1	62.0	60.0	56.0	53.0	48.0	46.0	44.0	43.0	42.0
	Max	58.8	81.9	48.8	67.0	66.0	64.0	63.0	58.0	54.0	51.0	50.0	50.0
Energy Average:		55.5	Average:		64.3	62.6	59.6	57.7	52.4	49.3	46.8	46.2	45.4
Hourly Summary													
Night	0	50.8	67.8	42.2	62.0	60.0	56.0	54.0	48.0	46.0	44.0	43.0	42.0
	1	51.5	72.2	42.1	62.0	60.0	56.0	53.0	48.0	46.0	44.0	43.0	42.0
	2	53.7	77.3	43.1	64.0	61.0	57.0	54.0	49.0	47.0	45.0	44.0	43.0
	3	55.7	81.9	44.8	64.0	62.0	59.0	57.0	52.0	49.0	47.0	47.0	46.0
	4	56.2	74.7	47.5	66.0	64.0	61.0	60.0	54.0	51.0	49.0	48.0	48.0
	5	57.6	76.7	48.2	66.0	65.0	63.0	61.0	57.0	53.0	50.0	50.0	49.0
	6	58.8	79.7	48.8	67.0	66.0	64.0	63.0	58.0	54.0	51.0	50.0	50.0
	7	57.2	68.2	46.7	65.0	64.0	62.0	61.0	57.0	53.0	49.0	48.0	47.0
Day	8	58.0	78.1	44.5	67.0	66.0	63.0	61.0	57.0	54.0	48.0	47.0	46.0
	9	58.1	84.9	42.0	66.0	64.0	62.0	61.0	57.0	53.0	46.0	45.0	43.0
	10	59.6	83.2	41.1	69.0	66.0	63.0	62.0	58.0	54.0	46.0	45.0	43.0
	11	58.6	80.2	41.5	67.0	65.0	63.0	62.0	58.0	54.0	47.0	46.0	43.0
	12	58.8	79.5	43.5	67.0	65.0	63.0	62.0	59.0	55.0	49.0	47.0	45.0
	13	59.3	78.8	43.1	68.0	66.0	64.0	63.0	59.0	55.0	48.0	47.0	45.0
	14	60.3	78.3	45.0	69.0	68.0	65.0	64.0	60.0	56.0	50.0	48.0	46.0
	15	60.0	83.4	45.7	67.0	66.0	64.0	63.0	60.0	57.0	51.0	49.0	47.0
	16	59.7	76.1	46.4	67.0	66.0	64.0	64.0	60.0	56.0	50.0	49.0	48.0
	17	59.0	75.4	46.1	66.0	65.0	64.0	63.0	59.0	56.0	50.0	49.0	47.0
	18	60.7	85.4	46.3	68.0	66.0	64.0	63.0	59.0	54.0	49.0	48.0	47.0
	19	58.0	76.0	44.9	67.0	65.0	63.0	62.0	57.0	53.0	48.0	47.0	45.0
	20	57.5	76.1	45.0	66.0	65.0	63.0	61.0	57.0	52.0	48.0	47.0	46.0
	21	57.4	80.1	43.8	67.0	65.0	63.0	61.0	55.0	51.0	46.0	45.0	44.0
Night	22	54.0	69.8	43.0	64.0	63.0	60.0	58.0	52.0	48.0	45.0	45.0	44.0
	23	52.0	69.4	42.7	63.0	61.0	58.0	56.0	49.0	46.0	44.0	44.0	43.0

URBAN

Packet Pg. 1559

E.1.w

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE CONTOURS

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Frederick St.
Road Segment: s/o Alessandro Bl.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,850 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,185 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-0.85	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-14.64	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-17.59	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.4	64.4	62.2	57.7	65.8	66.3
Medium Trucks:	63.9	62.2	57.4	54.5	62.9	63.3
Heavy Trucks:	66.2	64.5	59.3	57.6	65.6	65.9
Vehicle Noise:	70.4	68.6	64.8	61.6	69.7	70.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	42	91	196	423
CNEL:	45	96	208	447

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Frederick St.
Road Segment: n/o Brodiaea Av.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,240 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	924 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-1.93	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-15.72	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-18.67	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.3	63.4	61.1	56.6	64.7	65.2
Medium Trucks:	62.8	61.2	56.3	53.5	61.9	62.2
Heavy Trucks:	65.1	63.4	58.2	56.5	64.5	64.8
Vehicle Noise:	69.3	67.5	63.8	60.5	68.7	69.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	36	77	166	358
CNEL:	38	82	176	379

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Frederick St.
Road Segment: n/o Cactus Av.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,844 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	984 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-1.66	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-15.45	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-18.40	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.6	63.6	61.4	56.9	65.0	65.5
Medium Trucks:	63.0	61.4	56.6	53.7	62.1	62.5
Heavy Trucks:	65.4	63.7	58.5	56.7	64.8	65.1
Vehicle Noise:	69.6	67.8	64.0	60.8	68.9	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	37	81	174	374
CNEL:	40	85	183	395

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Graham St.
Road Segment: s/o Brodiaea Av.

Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,649 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	765 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-2.76	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-16.54	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-19.49	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.5	62.5	60.3	55.8	63.9	64.4
Medium Trucks:	62.0	60.3	55.5	52.6	61.0	61.4
Heavy Trucks:	64.3	62.6	57.4	55.7	63.7	64.0
Vehicle Noise:	68.5	66.7	62.9	59.7	67.8	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	32	68	147	316
CNEL:	33	72	155	334

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Alessandro Bl.
Road Segment: w/o Frederick St.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34,230 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,423 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	82 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	3.24	-0.51	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	79.45	-10.55	-0.49	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-13.50	-0.49	-1.20	*-5.29*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	70.0	68.0	65.8	61.3	69.4	69.9
Medium Trucks:	67.2	65.6	60.8	57.9	66.3	66.6
Heavy Trucks:	69.1	67.4	62.2	60.4	68.5	68.8
Vehicle Noise:	73.7	71.9	68.2	64.9	73.0	73.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	107	230	495	1,066
CNEL:	113	243	524	1,129

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Calle San Juan De Los Lagos
Road Segment: w/o Frederick St.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,164 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	316 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	39.0 feet
Centerline Dist. to Observer:	39.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.229

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-6.59	1.78	-1.20	*-4.58*	0.000	0.000
Medium Trucks:	77.72	-20.38	1.82	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-23.33	1.82	-1.20	*-5.57*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.5	58.5	56.3	51.8	59.9	60.4
Medium Trucks:	58.0	56.3	51.5	48.6	57.1	57.4
Heavy Trucks:	60.3	58.6	53.4	51.7	59.7	60.0
Vehicle Noise:	64.5	62.7	59.0	55.7	63.9	64.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	15	33	70	152
CNEL:	16	35	74	160

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Calle San Juan De Los Lagos
Road Segment: e/o Veterans Wy.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,818 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	182 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	39.0 feet
Centerline Dist. to Observer:	39.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.229

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-9.00	1.78	-1.20	*-4.58*	0.000	0.000
Medium Trucks:	77.72	-22.79	1.82	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-25.73	1.82	-1.20	*-5.57*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.1	56.1	53.9	49.4	57.5	58.0
Medium Trucks:	55.6	53.9	49.1	46.2	54.6	55.0
Heavy Trucks:	57.9	56.2	51.0	49.3	57.3	57.6
Vehicle Noise:	62.1	60.3	56.5	53.3	61.4	61.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	10	23	49	105
CNEL:	11	24	51	111

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Brodiaea Av.
Road Segment: w/o Graham St.

Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	889 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	89 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	39.0 feet
Centerline Dist. to Observer:	39.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.229

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-12.10	1.78	-1.20	*-4.58*	0.000	0.000
Medium Trucks:	77.72	-25.89	1.82	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-28.84	1.82	-1.20	*-5.57*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.0	53.0	50.8	46.3	54.4	54.9
Medium Trucks:	52.4	50.8	46.0	43.1	51.5	51.9
Heavy Trucks:	54.8	53.1	47.9	46.1	54.2	54.5
Vehicle Noise:	59.0	57.2	53.4	50.2	58.3	58.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	7	14	30	65
CNEL:	7	15	32	69

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Cactus Av.
Road Segment: w/o Frederick St.

Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,788 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,079 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	82 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	3.55	-0.51	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	81.00	-10.24	-0.49	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-13.19	-0.49	-1.20	*-5.29*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	72.0	70.1	67.8	63.3	71.4	71.9
Medium Trucks:	69.1	67.4	62.6	59.8	68.2	68.5
Heavy Trucks:	70.5	68.8	63.6	61.9	69.9	70.2
Vehicle Noise:	75.5	73.7	70.1	66.7	74.8	75.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	140	303	652	1,405
CNEL:	149	321	691	1,488

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Frederick St.
Road Segment: s/o Alessandro Bl.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,026 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,203 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	93.66%
Medium Trucks:	82.6%	6.8%	10.5%	4.00%
Heavy Trucks:	81.5%	6.2%	12.4%	2.34%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-0.81	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-14.51	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-16.84	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.4	64.5	62.2	57.7	65.8	66.3
Medium Trucks:	64.0	62.4	57.6	54.7	63.1	63.4
Heavy Trucks:	66.9	65.3	60.1	58.3	66.4	66.6
Vehicle Noise:	70.7	69.0	65.1	62.0	70.1	70.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	45	96	207	447
CNEL:	47	102	219	472

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Frederick St.
Road Segment: n/o Brodiaea Av.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,391 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	939 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	93.80%
Medium Trucks:	82.6%	6.8%	10.5%	3.96%
Heavy Trucks:	81.5%	6.2%	12.4%	2.24%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-1.88	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-15.62	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-18.10	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.4	63.4	61.1	56.7	64.8	65.3
Medium Trucks:	62.9	61.3	56.5	53.6	62.0	62.3
Heavy Trucks:	65.7	64.0	58.8	57.0	65.1	65.4
Vehicle Noise:	69.6	67.8	64.0	60.8	68.9	69.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	37	81	174	374
CNEL:	40	85	183	395

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Frederick St.
Road Segment: n/o Cactus Av.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,040 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,004 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	93.39%
Medium Trucks:	82.6%	6.8%	10.5%	4.05%
Heavy Trucks:	81.5%	6.2%	12.4%	2.55%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-1.61	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-15.23	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-17.24	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.6	63.7	61.4	57.0	65.1	65.5
Medium Trucks:	63.3	61.6	56.8	54.0	62.4	62.7
Heavy Trucks:	66.5	64.8	59.7	57.9	66.0	66.2
Vehicle Noise:	70.1	68.4	64.5	61.3	69.5	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	41	88	189	407
CNEL:	43	92	199	429

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Graham St.
Road Segment: s/o Brodiaea Av.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	7,719 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	772 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	93.73%
Medium Trucks:	82.6%	6.8%	10.5%	4.00%
Heavy Trucks:	81.5%	6.2%	12.4%	2.27%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-2.73	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-16.43	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-18.88	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.5	62.6	60.3	55.8	63.9	64.4
Medium Trucks:	62.1	60.4	55.6	52.8	61.2	61.5
Heavy Trucks:	64.9	63.2	58.0	56.3	64.3	64.6
Vehicle Noise:	68.8	67.0	63.2	60.0	68.1	68.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	33	71	153	330
CNEL:	35	75	162	348

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Alessandro Bl.
Road Segment: w/o Frederick St.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	34,320 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,432 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	82 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	93.94%
Medium Trucks:	82.6%	6.8%	10.5%	3.96%
Heavy Trucks:	81.5%	6.2%	12.4%	2.10%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	3.25	-0.51	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	79.45	-10.51	-0.49	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-13.26	-0.49	-1.20	*-5.29*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	70.0	68.0	65.8	61.3	69.4	69.9
Medium Trucks:	67.3	65.6	60.8	57.9	66.3	66.7
Heavy Trucks:	69.3	67.6	62.4	60.7	68.7	69.0
Vehicle Noise:	73.8	72.0	68.3	65.0	73.1	73.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	108	233	502	1,082
CNEL:	114	247	531	1,145

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Calle San Juan De Los Lagos
Road Segment: w/o Frederick St.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,241 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	324 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	39.0 feet
Centerline Dist. to Observer:	39.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.22%
Medium Trucks:	82.6%	6.8%	10.5%	3.84%
Heavy Trucks:	81.5%	6.2%	12.4%	1.95%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.229

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-6.48	1.78	-1.20	*-4.58*	0.000	0.000
Medium Trucks:	77.72	-20.38	1.82	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-23.33	1.82	-1.20	*-5.57*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.6	58.7	56.4	51.9	60.0	60.5
Medium Trucks:	58.0	56.3	51.5	48.6	57.1	57.4
Heavy Trucks:	60.3	58.6	53.4	51.7	59.7	60.0
Vehicle Noise:	64.5	62.8	59.0	55.7	63.9	64.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	15	33	71	153
CNEL:	16	35	75	162

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Calle San Juan De Los Lagos
Road Segment: e/o Veterans Wy.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,895 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	190 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	39.0 feet
Centerline Dist. to Observer:	39.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.32%
Medium Trucks:	82.6%	6.8%	10.5%	3.77%
Heavy Trucks:	81.5%	6.2%	12.4%	1.91%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.229

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-8.80	1.78	-1.20	*-4.58*	0.000	0.000
Medium Trucks:	77.72	-22.79	1.82	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-25.73	1.82	-1.20	*-5.57*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.3	56.3	54.1	49.6	57.7	58.2
Medium Trucks:	55.6	53.9	49.1	46.2	54.6	55.0
Heavy Trucks:	57.9	56.2	51.0	49.3	57.3	57.6
Vehicle Noise:	62.2	60.4	56.6	53.4	61.5	61.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	11	23	49	106
CNEL:	11	24	52	112

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Brodiaea Av.
Road Segment: w/o Graham St.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,006 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	101 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	39.0 feet
Centerline Dist. to Observer:	39.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	90.79%
Medium Trucks:	82.6%	6.8%	10.5%	4.47%
Heavy Trucks:	81.5%	6.2%	12.4%	4.74%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.229

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-11.72	1.78	-1.20	*-4.58*	0.000	0.000
Medium Trucks:	77.72	-24.80	1.82	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-24.54	1.82	-1.20	*-5.57*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.4	53.4	51.1	46.7	54.8	55.3
Medium Trucks:	53.5	51.9	47.1	44.2	52.6	53.0
Heavy Trucks:	59.1	57.4	52.2	50.5	58.5	58.8
Vehicle Noise:	61.4	59.7	55.4	52.6	60.8	61.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	9	20	44	95
CNEL:	10	21	46	100

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project
Road Name: Cactus Av.
Road Segment: w/o Frederick St.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,945 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,095 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	82 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	93.90%
Medium Trucks:	82.6%	6.8%	10.5%	3.96%
Heavy Trucks:	81.5%	6.2%	12.4%	2.13%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	3.55	-0.51	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	81.00	-10.19	-0.49	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-12.89	-0.49	-1.20	*-5.29*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	72.0	70.1	67.8	63.4	71.5	71.9
Medium Trucks:	69.1	67.5	62.7	59.8	68.2	68.5
Heavy Trucks:	70.8	69.1	63.9	62.2	70.2	70.5
Vehicle Noise:	75.6	73.8	70.2	66.8	74.9	75.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	143	308	664	1,430
CNEL:	151	326	703	1,515

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY 2023 Without Project
Road Name: Frederick St.
Road Segment: s/o Alessandro Bl.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,424 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,842 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	1.06	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-12.73	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-15.68	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.3	66.4	64.1	59.6	67.7	68.2
Medium Trucks:	65.8	64.1	59.3	56.5	64.9	65.2
Heavy Trucks:	68.1	66.4	61.2	59.5	67.5	67.8
Vehicle Noise:	72.3	70.5	66.8	63.5	71.7	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	57	122	264	568
CNEL:	60	129	279	600

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY 2023 Without Project
Road Name: Frederick St.
Road Segment: n/o Brodiaea Av.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,942 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,594 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	0.43	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-13.36	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-16.31	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.7	65.7	63.4	59.0	67.1	67.6
Medium Trucks:	65.1	63.5	58.7	55.8	64.2	64.6
Heavy Trucks:	67.5	65.8	60.6	58.8	66.9	67.2
Vehicle Noise:	71.7	69.9	66.1	62.9	71.0	71.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	52	111	239	516
CNEL:	55	117	253	545

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY 2023 Without Project
Road Name: Frederick St.
Road Segment: n/o Cactus Av.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,595 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,660 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	0.61	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-13.18	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-16.13	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.9	65.9	63.6	59.2	67.3	67.7
Medium Trucks:	65.3	63.7	58.9	56.0	64.4	64.7
Heavy Trucks:	67.6	66.0	60.8	59.0	67.1	67.4
Vehicle Noise:	71.9	70.1	66.3	63.1	71.2	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	53	114	246	530
CNEL:	56	121	260	560

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY 2023 Without Project
Road Name: Graham St.
Road Segment: s/o Brodiaea Av.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,502 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,150 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-0.98	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-14.77	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-17.72	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.3	64.3	62.0	57.6	65.7	66.2
Medium Trucks:	63.7	62.1	57.3	54.4	62.8	63.1
Heavy Trucks:	66.0	64.4	59.2	57.4	65.5	65.8
Vehicle Noise:	70.3	68.5	64.7	61.5	69.6	70.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	41	89	192	415
CNEL:	44	94	204	439

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY 2023 Without Project
Road Name: Alessandro Bl.
Road Segment: w/o Frederick St.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	40,989 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,099 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	82 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	4.02	-0.51	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	79.45	-9.77	-0.49	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-12.72	-0.49	-1.20	*-5.29*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	70.8	68.8	66.5	62.1	70.2	70.7
Medium Trucks:	68.0	66.4	61.6	58.7	67.1	67.4
Heavy Trucks:	69.8	68.2	63.0	61.2	69.3	69.6
Vehicle Noise:	74.5	72.7	69.0	65.7	73.8	74.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	120	259	558	1,202
CNEL:	127	274	591	1,273

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY 2023 Without Project
Road Name: Calle San Juan De Los Lagos
Road Segment: w/o Frederick St.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,894 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	389 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	39.0 feet
Centerline Dist. to Observer:	39.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.229

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-5.69	1.78	-1.20	*-4.58*	0.000	0.000
Medium Trucks:	77.72	-19.48	1.82	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-22.43	1.82	-1.20	*-5.57*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.4	59.5	57.2	52.7	60.8	61.3
Medium Trucks:	58.9	57.2	52.4	49.5	58.0	58.3
Heavy Trucks:	61.2	59.5	54.3	52.6	60.6	60.9
Vehicle Noise:	65.4	63.6	59.9	56.6	64.8	65.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	17	38	81	174
CNEL:	18	40	86	184

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY 2023 Without Project
Road Name: Calle San Juan De Los Lagos
Road Segment: e/o Veterans Wy.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,007 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	201 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	39.0 feet
Centerline Dist. to Observer:	39.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.229

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-8.57	1.78	-1.20	*-4.58*	0.000	0.000
Medium Trucks:	77.72	-22.36	1.82	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-25.31	1.82	-1.20	*-5.57*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.5	56.6	54.3	49.8	57.9	58.4
Medium Trucks:	56.0	54.4	49.6	46.7	55.1	55.4
Heavy Trucks:	58.3	56.6	51.4	49.7	57.8	58.0
Vehicle Noise:	62.5	60.7	57.0	53.7	61.9	62.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	11	24	52	112
CNEL:	12	26	55	118

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY 2023 Without Project
Road Name: Brodiaea Av.
Road Segment: w/o Graham St.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	995 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	100 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	39.0 feet
Centerline Dist. to Observer:	39.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.229

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-11.61	1.78	-1.20	*-4.58*	0.000	0.000
Medium Trucks:	77.72	-25.40	1.82	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-28.35	1.82	-1.20	*-5.57*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.5	53.5	51.2	46.8	54.9	55.4
Medium Trucks:	52.9	51.3	46.5	43.6	52.0	52.3
Heavy Trucks:	55.3	53.6	48.4	46.6	54.7	55.0
Vehicle Noise:	59.5	57.7	53.9	50.7	58.8	59.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	7	15	33	70
CNEL:	7	16	34	74

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY 2023 Without Project
Road Name: Cactus Av.
Road Segment: w/o Frederick St.

Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	69,929 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	6,993 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	82 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	5.89	-0.51	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	81.00	-7.90	-0.49	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-10.85	-0.49	-1.20	*-5.29*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	74.4	72.4	70.1	65.7	73.8	74.3
Medium Trucks:	71.4	69.8	65.0	62.1	70.5	70.8
Heavy Trucks:	72.8	71.2	66.0	64.2	72.3	72.5
Vehicle Noise:	77.8	76.0	72.4	69.0	77.2	77.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	201	434	934	2,012
CNEL:	213	459	990	2,132

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY 2023 With Project
Road Name: Frederick St.
Road Segment: s/o Alessandro Bl.

Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,600 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,860 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	93.81%
Medium Trucks:	82.6%	6.8%	10.5%	3.97%
Heavy Trucks:	81.5%	6.2%	12.4%	2.22%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	1.09	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-12.64	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-15.17	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.3	66.4	64.1	59.6	67.8	68.2
Medium Trucks:	65.9	64.2	59.4	56.5	65.0	65.3
Heavy Trucks:	68.6	66.9	61.7	60.0	68.0	68.3
Vehicle Noise:	72.5	70.8	66.9	63.7	71.9	72.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	59	127	273	588
CNEL:	62	134	289	622

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY 2023 With Project
Road Name: Frederick St.
Road Segment: n/o Brodiaea Av.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,093 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,609 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	93.91%
Medium Trucks:	82.6%	6.8%	10.5%	3.95%
Heavy Trucks:	81.5%	6.2%	12.4%	2.14%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	0.47	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-13.29	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-15.96	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.7	65.8	63.5	59.0	67.1	67.6
Medium Trucks:	65.2	63.6	58.8	55.9	64.3	64.6
Heavy Trucks:	67.8	66.1	60.9	59.2	67.3	67.5
Vehicle Noise:	71.8	70.1	66.3	63.0	71.2	71.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	53	114	245	528
CNEL:	56	120	259	559

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY 2023 With Project
Road Name: Frederick St.
Road Segment: n/o Cactus Av.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	16,791 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,679 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	93.67%
Medium Trucks:	82.6%	6.8%	10.5%	4.00%
Heavy Trucks:	81.5%	6.2%	12.4%	2.33%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	0.64	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-13.05	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-15.41	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	67.9	65.9	63.7	59.2	67.3	67.8
Medium Trucks:	65.4	63.8	59.0	56.1	64.5	64.9
Heavy Trucks:	68.4	66.7	61.5	59.7	67.8	68.1
Vehicle Noise:	72.2	70.4	66.6	63.4	71.5	71.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	56	120	259	557
CNEL:	59	127	273	589

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY 2023 With Project
Road Name: Graham St.
Road Segment: s/o Brodiaea Av.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	11,572 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,157 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	93.84%
Medium Trucks:	82.6%	6.8%	10.5%	3.98%
Heavy Trucks:	81.5%	6.2%	12.4%	2.18%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-0.97	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-14.70	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-17.31	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.3	64.3	62.0	57.6	65.7	66.2
Medium Trucks:	63.8	62.2	57.4	54.5	62.9	63.2
Heavy Trucks:	66.5	64.8	59.6	57.8	65.9	66.2
Vehicle Noise:	70.4	68.7	64.9	61.7	69.8	70.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	43	92	198	427
CNEL:	45	97	209	451

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY 2023 With Project
Road Name: Alessandro Bl.
Road Segment: w/o Frederick St.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	41,079 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	4,108 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	82 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	93.96%
Medium Trucks:	82.6%	6.8%	10.5%	3.95%
Heavy Trucks:	81.5%	6.2%	12.4%	2.08%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	4.03	-0.51	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	79.45	-9.73	-0.49	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-12.52	-0.49	-1.20	*-5.29*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	70.8	68.8	66.5	62.1	70.2	70.7
Medium Trucks:	68.0	66.4	61.6	58.7	67.1	67.4
Heavy Trucks:	70.0	68.4	63.2	61.4	69.5	69.8
Vehicle Noise:	74.5	72.8	69.1	65.7	73.9	74.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	122	262	565	1,217
CNEL:	129	278	598	1,288

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY 2023 With Project
Road Name: Calle San Juan De Los Lagos
Road Segment: w/o Frederick St.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,971 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	397 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	39.0 feet
Centerline Dist. to Observer:	39.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.19%
Medium Trucks:	82.6%	6.8%	10.5%	3.85%
Heavy Trucks:	81.5%	6.2%	12.4%	1.95%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.229

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-5.60	1.78	-1.20	*-4.58*	0.000	0.000
Medium Trucks:	77.72	-19.48	1.82	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-22.43	1.82	-1.20	*-5.57*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	61.5	59.5	57.3	52.8	60.9	61.4
Medium Trucks:	58.9	57.2	52.4	49.5	58.0	58.3
Heavy Trucks:	61.2	59.5	54.3	52.6	60.6	60.9
Vehicle Noise:	65.4	63.7	59.9	56.6	64.8	65.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	18	38	81	175
CNEL:	19	40	86	185

Friday, May 18, 2018

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY 2023 With Project
Road Name: Calle San Juan De Los Lagos
Road Segment: e/o Veterans Wy.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,084 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	208 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	39.0 feet
Centerline Dist. to Observer:	39.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.30%
Medium Trucks:	82.6%	6.8%	10.5%	3.79%
Heavy Trucks:	81.5%	6.2%	12.4%	1.92%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.229

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-8.39	1.78	-1.20	*-4.58*	0.000	0.000
Medium Trucks:	77.72	-22.36	1.82	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-25.31	1.82	-1.20	*-5.57*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	58.7	56.7	54.5	50.0	58.1	58.6
Medium Trucks:	56.0	54.4	49.6	46.7	55.1	55.4
Heavy Trucks:	58.3	56.6	51.4	49.7	57.8	58.0
Vehicle Noise:	62.6	60.8	57.1	53.8	61.9	62.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	11	24	53	113
CNEL:	12	26	56	120

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY 2023 With Project
Road Name: Brodiaea Av.
Road Segment: w/o Graham St.

Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,112 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	111 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	39.0 feet
Centerline Dist. to Observer:	39.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	91.10%
Medium Trucks:	82.6%	6.8%	10.5%	4.42%
Heavy Trucks:	81.5%	6.2%	12.4%	4.48%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.229

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-11.27	1.78	-1.20	*-4.58*	0.000	0.000
Medium Trucks:	77.72	-24.41	1.82	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-24.35	1.82	-1.20	*-5.57*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	55.8	53.9	51.6	47.1	55.2	55.7
Medium Trucks:	53.9	52.3	47.5	44.6	53.0	53.3
Heavy Trucks:	59.3	57.6	52.4	50.6	58.7	59.0
Vehicle Noise:	61.7	59.9	55.7	52.9	61.1	61.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	10	21	46	99
CNEL:	10	22	48	104

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: OY 2023 With Project
Road Name: Cactus Av.
Road Segment: w/o Frederick St.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	70,086 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	7,009 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	82 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	93.98%
Medium Trucks:	82.6%	6.8%	10.5%	3.95%
Heavy Trucks:	81.5%	6.2%	12.4%	2.07%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	5.89	-0.51	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	81.00	-7.87	-0.49	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-10.67	-0.49	-1.20	*-5.29*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	74.4	72.4	70.1	65.7	73.8	74.3
Medium Trucks:	71.4	69.8	65.0	62.1	70.5	70.9
Heavy Trucks:	73.0	71.3	66.2	64.4	72.5	72.7
Vehicle Noise:	77.9	76.1	72.5	69.1	77.2	77.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	203	438	944	2,034
CNEL:	215	464	1,000	2,154

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2040 Without Project
Road Name: Frederick St.
Road Segment: s/o Alessandro Bl.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,267 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,027 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	1.48	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-12.31	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-15.26	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.7	66.8	64.5	60.0	68.1	68.6
Medium Trucks:	66.2	64.6	59.8	56.9	65.3	65.6
Heavy Trucks:	68.5	66.8	61.6	59.9	68.0	68.2
Vehicle Noise:	72.7	70.9	67.2	63.9	72.1	72.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	61	130	281	605
CNEL:	64	138	297	640

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2040 Without Project
Road Name: Frederick St.
Road Segment: n/o Brodiaea Av.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,536 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,754 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	0.85	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-12.94	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-15.89	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.1	66.1	63.9	59.4	67.5	68.0
Medium Trucks:	65.6	63.9	59.1	56.2	64.6	65.0
Heavy Trucks:	67.9	66.2	61.0	59.3	67.3	67.6
Vehicle Noise:	72.1	70.3	66.5	63.3	71.4	71.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	55	118	255	549
CNEL:	58	125	270	581

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2040 Without Project
Road Name: Frederick St.
Road Segment: n/o Cactus Av.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,255 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,826 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	1.02	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-12.77	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-15.72	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.3	66.3	64.0	59.6	67.7	68.2
Medium Trucks:	65.7	64.1	59.3	56.4	64.8	65.1
Heavy Trucks:	68.1	66.4	61.2	59.4	67.5	67.8
Vehicle Noise:	72.3	70.5	66.7	63.5	71.6	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	56	122	262	564
CNEL:	60	129	277	597

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2040 Without Project
Road Name: Graham St.
Road Segment: s/o Brodiaea Av.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,652 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,265 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-0.57	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-14.36	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-17.31	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.7	64.7	62.4	58.0	66.1	66.6
Medium Trucks:	64.1	62.5	57.7	54.8	63.2	63.5
Heavy Trucks:	66.5	64.8	59.6	57.8	65.9	66.2
Vehicle Noise:	70.7	68.9	65.1	61.9	70.0	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	44	95	205	442
CNEL:	47	101	217	467

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2040 Without Project
Road Name: Alessandro Bl.
Road Segment: w/o Frederick St.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	52,919 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,292 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	82 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	5.13	-0.51	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	79.45	-8.66	-0.49	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-11.61	-0.49	-1.20	*-5.29*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	71.9	69.9	67.6	63.2	71.3	71.8
Medium Trucks:	69.1	67.5	62.7	59.8	68.2	68.5
Heavy Trucks:	71.0	69.3	64.1	62.3	70.4	70.7
Vehicle Noise:	75.6	73.8	70.1	66.8	74.9	75.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	143	307	662	1,426
CNEL:	151	325	700	1,509

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2040 Without Project
Road Name: Calle San Juan De Los Lagos
Road Segment: w/o Frederick St.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,892 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	489 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	39.0 feet
Centerline Dist. to Observer:	39.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.229

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-4.70	1.78	-1.20	*-4.58*	0.000	0.000
Medium Trucks:	77.72	-18.49	1.82	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-21.44	1.82	-1.20	*-5.57*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.4	60.4	58.2	53.7	61.8	62.3
Medium Trucks:	59.9	58.2	53.4	50.5	58.9	59.3
Heavy Trucks:	62.2	60.5	55.3	53.6	61.6	61.9
Vehicle Noise:	66.4	64.6	60.8	57.6	65.7	66.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	20	44	94	203
CNEL:	21	46	100	215

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2040 Without Project
Road Name: Calle San Juan De Los Lagos
Road Segment: e/o Veterans Wy.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,810 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	281 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	39.0 feet
Centerline Dist. to Observer:	39.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.229

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-7.10	1.78	-1.20	*-4.58*	0.000	0.000
Medium Trucks:	77.72	-20.89	1.82	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-23.84	1.82	-1.20	*-5.57*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.0	58.0	55.8	51.3	59.4	59.9
Medium Trucks:	57.4	55.8	51.0	48.1	56.5	56.9
Heavy Trucks:	59.8	58.1	52.9	51.1	59.2	59.5
Vehicle Noise:	64.0	62.2	58.4	55.2	63.3	63.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	14	30	65	140
CNEL:	15	32	69	148

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2040 Without Project
Road Name: Brodiaea Av.
Road Segment: w/o Graham St.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,374 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	137 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	39.0 feet
Centerline Dist. to Observer:	39.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.229

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-10.21	1.78	-1.20	*-4.58*	0.000	0.000
Medium Trucks:	77.72	-24.00	1.82	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-26.95	1.82	-1.20	*-5.57*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.9	54.9	52.6	48.2	56.3	56.8
Medium Trucks:	54.3	52.7	47.9	45.0	53.4	53.7
Heavy Trucks:	56.7	55.0	49.8	48.0	56.1	56.4
Vehicle Noise:	60.9	59.1	55.3	52.1	60.2	60.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	9	19	40	87
CNEL:	9	20	43	92

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2040 Without Project
Road Name: Cactus Av.
Road Segment: w/o Frederick St.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	63,057 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	6,306 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	82 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.08%
Medium Trucks:	82.6%	6.8%	10.5%	3.93%
Heavy Trucks:	81.5%	6.2%	12.4%	1.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	5.44	-0.51	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	81.00	-8.35	-0.49	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-11.30	-0.49	-1.20	*-5.29*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	73.9	72.0	69.7	65.2	73.3	73.8
Medium Trucks:	71.0	69.3	64.5	61.6	70.1	70.4
Heavy Trucks:	72.4	70.7	65.5	63.8	71.8	72.1
Vehicle Noise:	77.4	75.6	72.0	68.6	76.7	77.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	188	405	872	1,878
CNEL:	199	429	924	1,990

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2040 With Project
Road Name: Frederick St.
Road Segment: s/o Alessandro Bl.

Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,443 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,044 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	93.83%
Medium Trucks:	82.6%	6.8%	10.5%	3.97%
Heavy Trucks:	81.5%	6.2%	12.4%	2.20%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	1.50	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-12.23	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-14.80	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.8	66.8	64.5	60.1	68.2	68.6
Medium Trucks:	66.3	64.6	59.8	57.0	65.4	65.7
Heavy Trucks:	69.0	67.3	62.1	60.3	68.4	68.7
Vehicle Noise:	72.9	71.2	67.3	64.1	72.3	72.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	62	135	290	625
CNEL:	66	142	307	660

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2040 With Project
Road Name: Frederick St.
Road Segment: n/o Brodiaea Av.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,687 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,769 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	93.93%
Medium Trucks:	82.6%	6.8%	10.5%	3.95%
Heavy Trucks:	81.5%	6.2%	12.4%	2.12%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	0.88	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-12.89	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-15.58	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.1	66.2	63.9	59.4	67.5	68.0
Medium Trucks:	65.6	64.0	59.2	56.3	64.7	65.0
Heavy Trucks:	68.2	66.5	61.3	59.6	67.6	67.9
Vehicle Noise:	72.2	70.5	66.7	63.4	71.6	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	56	121	261	562
CNEL:	59	128	276	594

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2040 With Project
Road Name: Frederick St.
Road Segment: n/o Cactus Av.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	18,451 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,845 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	93.71%
Medium Trucks:	82.6%	6.8%	10.5%	4.00%
Heavy Trucks:	81.5%	6.2%	12.4%	2.30%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	1.05	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-12.65	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-15.05	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	68.3	66.3	64.1	59.6	67.7	68.2
Medium Trucks:	65.8	64.2	59.4	56.5	64.9	65.3
Heavy Trucks:	68.7	67.0	61.9	60.1	68.2	68.4
Vehicle Noise:	72.6	70.8	67.0	63.8	71.9	72.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	59	127	274	591
CNEL:	62	135	290	625

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2040 With Project
Road Name: Graham St.
Road Segment: s/o Brodiaea Av.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	12,722 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,272 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	50 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	44.0 feet
Centerline Dist. to Observer:	44.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	93.86%
Medium Trucks:	82.6%	6.8%	10.5%	3.97%
Heavy Trucks:	81.5%	6.2%	12.4%	2.16%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	36.551
Medium Trucks:	36.308
Heavy Trucks:	36.332

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-0.56	1.94	-1.20	*-4.61*	0.000	0.000
Medium Trucks:	77.72	-14.29	1.98	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-16.93	1.98	-1.20	*-5.50*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.7	64.7	62.5	58.0	66.1	66.6
Medium Trucks:	64.2	62.6	57.8	54.9	63.3	63.6
Heavy Trucks:	66.8	65.2	60.0	58.2	66.3	66.6
Vehicle Noise:	70.8	69.1	65.3	62.1	70.2	70.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	45	98	211	454
CNEL:	48	103	223	479

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2040 With Project
Road Name: Alessandro Bl.
Road Segment: w/o Frederick St.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	53,009 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	5,301 vehicles
Vehicle Speed:	45 mph
Near/Far Lane Distance:	82 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	93.99%
Medium Trucks:	82.6%	6.8%	10.5%	3.95%
Heavy Trucks:	81.5%	6.2%	12.4%	2.06%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	68.46	5.14	-0.51	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	79.45	-8.63	-0.49	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	84.25	-11.45	-0.49	-1.20	*-5.29*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	71.9	69.9	67.6	63.2	71.3	71.8
Medium Trucks:	69.1	67.5	62.7	59.8	68.2	68.5
Heavy Trucks:	71.1	69.4	64.2	62.5	70.6	70.8
Vehicle Noise:	75.6	73.8	70.1	66.8	75.0	75.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	144	310	668	1,439
CNEL:	152	328	707	1,523

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2040 With Project
Road Name: Calle San Juan De Los Lagos
Road Segment: w/o Frederick St.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	4,969 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	497 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	39.0 feet
Centerline Dist. to Observer:	39.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.17%
Medium Trucks:	82.6%	6.8%	10.5%	3.87%
Heavy Trucks:	81.5%	6.2%	12.4%	1.96%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.229

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-4.62	1.78	-1.20	*-4.58*	0.000	0.000
Medium Trucks:	77.72	-18.49	1.82	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-21.44	1.82	-1.20	*-5.57*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.5	60.5	58.2	53.8	61.9	62.4
Medium Trucks:	59.9	58.2	53.4	50.5	58.9	59.3
Heavy Trucks:	62.2	60.5	55.3	53.6	61.6	61.9
Vehicle Noise:	66.4	64.6	60.9	57.6	65.8	66.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	20	44	95	204
CNEL:	22	46	100	216

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2040 With Project
Road Name: Calle San Juan De Los Lagos
Road Segment: e/o Veterans Wy.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,887 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	289 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	39.0 feet
Centerline Dist. to Observer:	39.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	94.23%
Medium Trucks:	82.6%	6.8%	10.5%	3.83%
Heavy Trucks:	81.5%	6.2%	12.4%	1.94%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.229

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-6.98	1.78	-1.20	*-4.58*	0.000	0.000
Medium Trucks:	77.72	-20.89	1.82	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-23.84	1.82	-1.20	*-5.57*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.1	58.2	55.9	51.4	59.5	60.0
Medium Trucks:	57.4	55.8	51.0	48.1	56.5	56.9
Heavy Trucks:	59.8	58.1	52.9	51.1	59.2	59.5
Vehicle Noise:	64.0	62.3	58.5	55.2	63.4	63.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	14	30	66	141
CNEL:	15	32	69	149

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2040 With Project
Road Name: Brodiaea Av.
Road Segment: w/o Graham St.

Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	1,491 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	149 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	24 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	39.0 feet
Centerline Dist. to Observer:	39.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	91.86%
Medium Trucks:	82.6%	6.8%	10.5%	4.29%
Heavy Trucks:	81.5%	6.2%	12.4%	3.85%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	37.443
Medium Trucks:	37.206
Heavy Trucks:	37.229

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	-9.96	1.78	-1.20	*-4.58*	0.000	0.000
Medium Trucks:	77.72	-23.26	1.82	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-23.74	1.82	-1.20	*-5.57*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	57.1	55.2	52.9	48.4	56.5	57.0
Medium Trucks:	55.1	53.5	48.7	45.8	54.2	54.5
Heavy Trucks:	59.9	58.2	53.0	51.3	59.3	59.6
Vehicle Noise:	62.6	60.8	56.7	53.8	62.0	62.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	11	24	53	113
CNEL:	12	26	55	119

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY 2040 With Project
Road Name: Cactus Av.
Road Segment: w/o Frederick St.
Project Name: Centerpointe
Job Number: 11412

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	63,214 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	6,321 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	82 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	67.0 feet
Centerline Dist. to Observer:	67.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	76.5%	11.3%	12.2%	93.96%
Medium Trucks:	82.6%	6.8%	10.5%	3.95%
Heavy Trucks:	81.5%	6.2%	12.4%	2.08%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	53.226
Medium Trucks:	53.059
Heavy Trucks:	53.076

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	70.20	5.44	-0.51	-1.20	*-4.71*	0.000	0.000
Medium Trucks:	81.00	-8.32	-0.49	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	85.38	-11.10	-0.49	-1.20	*-5.29*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	73.9	72.0	69.7	65.2	73.3	73.8
Medium Trucks:	71.0	69.4	64.6	61.7	70.1	70.4
Heavy Trucks:	72.6	70.9	65.7	64.0	72.0	72.3
Vehicle Noise:	77.4	75.7	72.0	68.6	76.8	77.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	190	409	882	1,900
CNEL:	201	434	934	2,013

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 9.1:

OPERATIONAL STATIONARY-SOURCE NOISE CALCULATIONS

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Attachment: Project 1_Noise Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

STATIONARY SOURCE NOISE PREDICTION MODEL 5/9/2018

Observer Location: **R1**
Source: Unloading/Docking Activity
Condition: Operational

Project Name: Centerpointe
Job Number: 11412
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	824.0 feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	824.0 feet	*Noise Source Height:*	8.0 feet
Barrier Distance to Observer:	0.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	30.0	67.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	824.0	-28.8	-28.8	-28.8	-28.8	-28.8	-28.8
Shielding (Barrier Attenuation)	824.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		38.4	-28.8	-28.8	-28.8	-28.8	-28.8
60 Minute Hourly Adjustment		**38.4**	**-28.8**	**-28.8**	**-28.8**	**-28.8**	**-28.8**

STATIONARY SOURCE NOISE PREDICTION MODEL 5/9/2018

Observer Location: **R1**
Source: Roof-Top Air Conditioning Unit
Condition: Operational

Project Name: Centerpointe
Job Number: 11412
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,030.0 feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	1,030.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	30.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	77.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	1,030.0	-46.3	-46.3	-46.3	-46.3	-46.3	-46.3
Shielding (Barrier Attenuation)	1,030.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		30.9	-46.3	-46.3	-46.3	-46.3	-46.3
39 Minute Hourly Adjustment		**29.0**	**-48.2**	**-48.2**	**-48.2**	**-48.2**	**-48.2**

STATIONARY SOURCE NOISE PREDICTION MODEL 5/9/2018

Observer Location: **R1**
Source: Parking Lot Vehicle Movements
Condition: Operational

Project Name: Centerpointe
Job Number: 11412
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,051.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	1,051.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	15.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	10.0	52.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	1,051.0	-30.3	-30.3	-30.3	-30.3	-30.3	-30.3
Shielding (Barrier Attenuation)	1,051.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		21.9	-30.3	-30.3	-30.3	-30.3	-30.3
60 Minute Hourly Adjustment		**21.9**	**-30.3**	**-30.3**	**-30.3**	**-30.3**	**-30.3**

STATIONARY SOURCE NOISE PREDICTION MODEL 5/9/2018

Observer Location: **R2**
Source: Unloading/Docking Activity
Condition: Operational

Project Name: Centerpointe
Job Number: 11412
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	511.0	feet	***Barrier Height:***	**30.0**	**feet**
Noise Distance to Barrier:	10.0	feet	*Noise Source Height:*	8.0	feet
Barrier Distance to Observer:	501.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	30.0	67.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	511.0	-24.6	-24.6	-24.6	-24.6	-24.6	-24.6
Shielding (Barrier Attenuation)	10.0	-17.6	-17.6	-17.6	-17.6	-17.6	-17.6
Raw (Distance + Barrier)		25.0	-42.2	-42.2	-42.2	-42.2	-42.2
60 Minute Hourly Adjustment		**25.0**	**-42.2**	**-42.2**	**-42.2**	**-42.2**	**-42.2**

STATIONARY SOURCE NOISE PREDICTION MODEL

5/9/2018

Observer Location: **R2**
Source: Roof-Top Air Conditioning Unit
Condition: Operational

Project Name: Centerpointe
Job Number: 11412
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	632.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	632.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	30.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	77.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	632.0	-42.0	-42.0	-42.0	-42.0	-42.0	-42.0
Shielding (Barrier Attenuation)	632.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		35.2	-42.0	-42.0	-42.0	-42.0	-42.0
39 Minute Hourly Adjustment		**33.3**	**-43.9**	**-43.9**	**-43.9**	**-43.9**	**-43.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

5/9/2018

Observer Location: **R2**
Source: Parking Lot Vehicle Movements
Condition: Operational

Project Name: Centerpointe
Job Number: 11412
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	256.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	256.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	15.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	10.0	52.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	256.0	-21.1	-21.1	-21.1	-21.1	-21.1	-21.1
Shielding (Barrier Attenuation)	256.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		31.1	-21.1	-21.1	-21.1	-21.1	-21.1
60 Minute Hourly Adjustment		**31.1**	**-21.1**	**-21.1**	**-21.1**	**-21.1**	**-21.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

5/9/2018

Observer Location: **R3**
Source: Unloading/Docking Activity
Condition: Operational

Project Name: Centerpointe
Job Number: 11412
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	612.0	feet	***Barrier Height:***	**30.0**	**feet**
Noise Distance to Barrier:	10.0	feet	*Noise Source Height:*	8.0	feet
Barrier Distance to Observer:	602.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	30.0	67.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	612.0	-26.2	-26.2	-26.2	-26.2	-26.2	-26.2
Shielding (Barrier Attenuation)	10.0	-17.6	-17.6	-17.6	-17.6	-17.6	-17.6
Raw (Distance + Barrier)		23.4	-43.8	-43.8	-43.8	-43.8	-43.8
60 Minute Hourly Adjustment		**23.4**	**-43.8**	**-43.8**	**-43.8**	**-43.8**	**-43.8**

STATIONARY SOURCE NOISE PREDICTION MODEL

5/9/2018

Observer Location: **R3**
Source: Roof-Top Air Conditioning Unit
Condition: Operational

Project Name: Centerpointe
Job Number: 11412
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	439.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	439.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	30.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	77.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	439.0	-38.9	-38.9	-38.9	-38.9	-38.9	-38.9
Shielding (Barrier Attenuation)	439.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		38.3	-38.9	-38.9	-38.9	-38.9	-38.9
39 Minute Hourly Adjustment		**36.4**	**-40.8**	**-40.8**	**-40.8**	**-40.8**	**-40.8**

STATIONARY SOURCE NOISE PREDICTION MODEL

5/9/2018

Observer Location: **R3**
Source: Parking Lot Vehicle Movements
Condition: Operational

Project Name: Centerpointe
Job Number: 11412
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	187.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	187.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	15.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	10.0	52.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	187.0	-19.1	-19.1	-19.1	-19.1	-19.1	-19.1
Shielding (Barrier Attenuation)	187.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		33.1	-19.1	-19.1	-19.1	-19.1	-19.1
60 Minute Hourly Adjustment		**33.1**	**-19.1**	**-19.1**	**-19.1**	**-19.1**	**-19.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

5/9/2018

Observer Location: **R4**
Source: Unloading/Docking Activity
Condition: Operational

Project Name: Centerpointe
Job Number: 11412
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	555.0	feet	***Barrier Height:***	**30.0**	**feet**
Noise Distance to Barrier:	10.0	feet	*Noise Source Height:*	8.0	feet
Barrier Distance to Observer:	545.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	30.0	67.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	555.0	-25.3	-25.3	-25.3	-25.3	-25.3	-25.3
Shielding (Barrier Attenuation)	10.0	-17.6	-17.6	-17.6	-17.6	-17.6	-17.6
Raw (Distance + Barrier)		24.3	-42.9	-42.9	-42.9	-42.9	-42.9
60 Minute Hourly Adjustment		**24.3**	**-42.9**	**-42.9**	**-42.9**	**-42.9**	**-42.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

5/9/2018

Observer Location: **R4**
Source: Roof-Top Air Conditioning Unit
Condition: Operational

Project Name: Centerpointe
Job Number: 11412
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	236.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	236.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	30.0	feet	*Drop Off Coefficient:*	20.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	5.0	77.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	236.0	-33.5	-33.5	-33.5	-33.5	-33.5	-33.5
Shielding (Barrier Attenuation)	236.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		43.7	-33.5	-33.5	-33.5	-33.5	-33.5
39 Minute Hourly Adjustment		**41.8**	**-35.4**	**-35.4**	**-35.4**	**-35.4**	**-35.4**

STATIONARY SOURCE NOISE PREDICTION MODEL

5/9/2018

Observer Location: **R4**
Source: Parking Lot Vehicle Movements
Condition: Operational

Project Name: Centerpointe
Job Number: 11412
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	142.0	feet	***Barrier Height:***	**0.0**	**feet**
Noise Distance to Barrier:	142.0	feet	*Noise Source Height:*	5.0	feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0	feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0	
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	15.0	
Barrier Elevation:	0.0	feet			

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	10.0	52.2	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	142.0	-17.3	-17.3	-17.3	-17.3	-17.3	-17.3
Shielding (Barrier Attenuation)	142.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		34.9	-17.3	-17.3	-17.3	-17.3	-17.3
60 Minute Hourly Adjustment		**34.9**	**-17.3**	**-17.3**	**-17.3**	**-17.3**	**-17.3**

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

CENTERPOINTE
TRAFFIC IMPACT ANALYSIS
CITY OF MORENO VALLEY

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SEPTEMBER 12, 2018

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
CA MUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
DIF	Development Impact Fee
E+P	Existing Plus Project
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
N/A	Not Applicable
NCHRP	National Cooperative Highway Research Program
NP	No Project (or Without Project)
PCE	Passenger Car Equivalents
PHF	Peak Hour Factor
Project	Centerpointe
RCTC	Riverside County Transportation Commission
RivTAM	Riverside County Transportation Analysis Model
RTA	Riverside Transit Authority
RTP	Regional Transportation Plan
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
sf	Square Feet
TIA	Traffic Impact Analysis
TUMF	Transportation Uniform Mitigation Fee
WP	With Project
WRCOG	Western Riverside Council of Governments
V/C	Volume to Capacity

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1 INTRODUCTION

This report presents the results of the traffic impact analysis (TIA) for the proposed Centerpointe development ("Project") located on the northeast corner of Frederick Street and Brodiaea Avenue in the City of Moreno Valley as shown on Exhibit 1-1.

The purpose of this traffic impact analysis is to evaluate the potential circulation system deficiencies that may result from the development of the proposed Project, and to recommend improvements to achieve acceptable circulation system operational conditions. This traffic study has been prepared in accordance with the City of Moreno Valley Transportation Engineering Division's Traffic Impact Analysis Preparation Guide (August 2007) and consultation with City of Moreno Valley staff during the scoping process. (1) The approved Project Traffic Study Scoping agreement is provided in Appendix 1.1 of this TIA.

1.1 PROJECT OVERVIEW

For the purposes of this analysis, in an effort to conduct a conservative analysis, the Project has been evaluated to consist of up to 163,218 square feet (sf) of warehouse (without cold storage) use (80 percent of the total square footage) and 40,804 sf of general light industrial use (20 percent of the total square footage) for a total of 204,022 sf within a single building. Per the City's traffic study guidelines, the Opening Year Cumulative will have a 5-year minimum time horizon from baseline conditions. As such, the Opening Year Cumulative analysis will assess 2023 traffic conditions.

Vehicular and truck traffic access will be provided via the following driveways (see Exhibit 1-1):

- Frederick St. & Driveway 1 – Right-in right-out only (trucks only)
- Frederick St. & Calle San Juan de Los Lagos/Driveway 2 – Full access driveway (passenger cars only)
- Driveway 3 & Brodiaea Av. – Full-access driveway (both passenger cars and trucks)

Regional access to the Project site is provided via the I-215 Freeway at Alessandro Boulevard and Cactus Avenue interchanges.

Trips generated by the Project's proposed land uses have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, 2017. (2) The Project is estimated to generate a net total of 629 passenger-car-equivalent (PCE) trip-ends per day on a typical weekday with approximately 72 net AM PCE peak hour trips and 74 net PM PCE peak hour trips. The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

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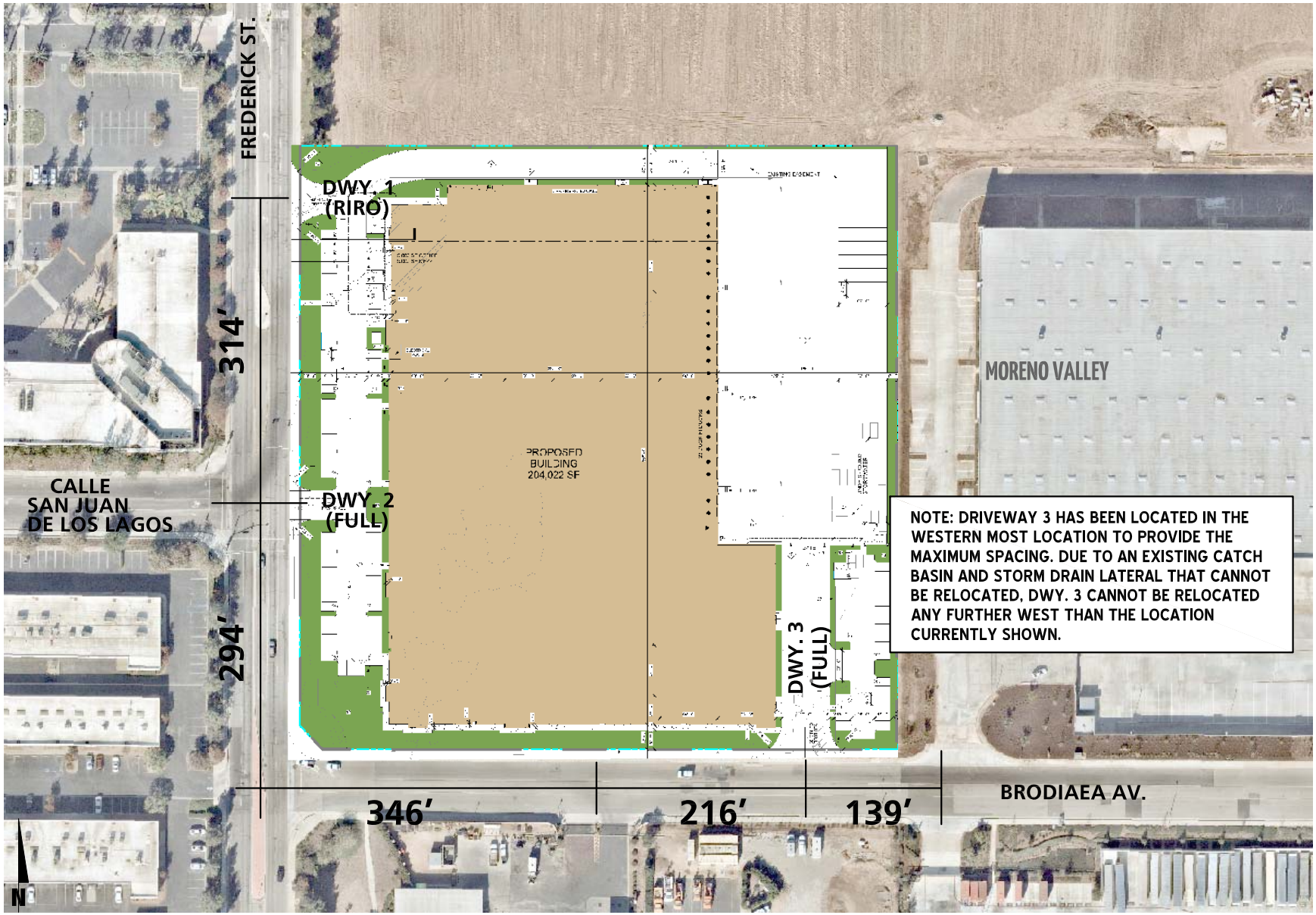
EXHIBIT 1-1: PRELIMINARY SITE PLAN



11410 - siteplan.dwg

URBAN CROSSROADS

1.1.1 Site Plan Driveway Locations

As shown on Exhibit 1-1, each driveway meets the required 150 foot spacing, with the exception of Driveway 3. The spacing of Driveway 3 has been located in the western most location to provide maxing spacing with the adjacent intersection. However, due to an existing catch basin and storm drain lateral that cannot be relocated, Driveway 3 cannot be relocated any further west than the location currently shown on Exhibit 1-1. Additionally, the location of Driveway 3 has been reviewed approved by the City of Moreno Valley through the scoping process. As such, the location of each Project driveway is acceptable based on the City of Moreno Valley Municipal Code and City staff.

1.2 Analysis Scenarios

For the purposes of this traffic study, potential impacts to traffic and circulation have been assessed for each of the following conditions:

- Existing (2018) (1 scenario)
- Existing plus Project (E+P) (1 scenario)
- Opening Year Cumulative (2023), Without and With Project (2 scenarios)
- General Plan Buildout (Post-2040), Without and With Project (2 scenarios)

1.2.1 Existing (2018) Conditions

Information for Existing (2018) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared.

1.2.2 Existing plus Project Conditions

The Existing plus Project (E+P) analysis determines circulation system deficiencies that would occur on the existing roadway system in the scenario of the Project being placed upon Existing conditions.

1.2.3 Opening Year Cumulative (2023) Conditions

To account for growth in traffic between Existing Conditions (2018) and the Project Opening Year Cumulative (2023), a compounded annual traffic growth rate of 2.0 percent was assumed (10.41 percent aggregate growth in background traffic for the period from 2018through 2023).

The 2.0 percent annual growth rate is intended to capture non-specific ambient traffic growth. Conservatively, the TIA estimates area-wide traffic growth, then adds traffic generated by other known or probable related projects. These related projects are at least in part already accounted for in the assumed annual 2.0 percent ambient growth in traffic noted above; and in some instances, these related projects would likely not be implemented and operational within the 2023 Opening Year Cumulative time frame assumed for the Project. The resulting traffic growth rate used in the TIA (2.0 percent compounded annual ambient growth plus traffic generated by related projects) would therefore tend to overstate rather than understate background cumulative traffic impacts under 2023 traffic conditions.

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1.2.4 General Plan Buildout (Post-2040) Conditions

The General Plan Buildout (Post-2040) Without Project traffic conditions were derived from the Riverside County Transportation Analysis Model (RivTAM) modified to represent General Plan Buildout conditions for the City of Moreno Valley using accepted procedures for model forecast refinement and smoothing. The traffic forecasts reflect the area-wide growth anticipated between Existing conditions and General Plan Buildout conditions. The General Plan Buildout With Project traffic forecasts were determined by adding the Project traffic to the General Plan Buildout Without Project traffic forecasts from the RivTAM model. The General Plan Buildout traffic forecasts used in the traffic analysis were refined with existing peak hour traffic count data collected at intersection analysis locations. The initial estimate of the future peak hour turning movements have, therefore, been reviewed for reasonableness. The reasonableness checks performed include a review of traffic flow conservation in addition to a comparison with the Existing and Opening Year Cumulative traffic volumes. Where necessary, the General Plan Buildout volumes have been adjusted to achieve flow conservation, reasonable growth, and reasonable diversion between parallel routes.

The General Plan Buildout Without and With Project traffic conditions analyses will be utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the Transportation Uniform Mitigation Fee (TUMF) and Development Impact Fee (DIF) programs, or other approved funding mechanism can accommodate the long-range cumulative traffic at the target Level of Service (LOS) identified in the City of Moreno Valley General Plan. (3) If the "funded" improvements can provide the target LOS, then the Project's payment into TUMF and/or DIF will be considered as long-range cumulative mitigation through the conditions of approval. Other improvements needed beyond the "funded" improvements (such as localized improvements to non-TUMF facilities) are identified as such. Post-processing worksheets for General Plan Buildout (Post-2040) Without Project traffic conditions are provided in Appendix 4.1.

1.3 Study Area

To ensure that this TIA satisfies the City of Moreno Valley's traffic study requirements, Urban Crossroads, Inc. prepared a project traffic study scoping package for review by City of Moreno Valley staff prior to the preparation of this report. The scoping agreement provides an outline of the Project study area, trip generation, trip distribution, and analysis methodology and is included in Appendix 1.1.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

1.3.1 INTERSECTIONS

The 8 study area intersections shown on Exhibit 1-2 and listed on Table 1-1 were selected for this TIA based on the City of Moreno Valley's Traffic Study Guidelines and in consultation with City of Moreno Valley staff. Pursuant to the Traffic Study Guidelines, the City requires analysis of intersections where the Project would contribute 50 or more peak hour trips.[1] In an effort to conduct a conservative analysis, the PCE trip generation for the proposed Project has been utilized to determine if the 50 peak hour trip criteria has been met at the study area intersections. Although the Project is anticipated to contribute less than 50 peak hour trips to the study area intersections, the study area shown on Exhibit 1-2 has been developed based on direction from City staff through the scoping process. (1)

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

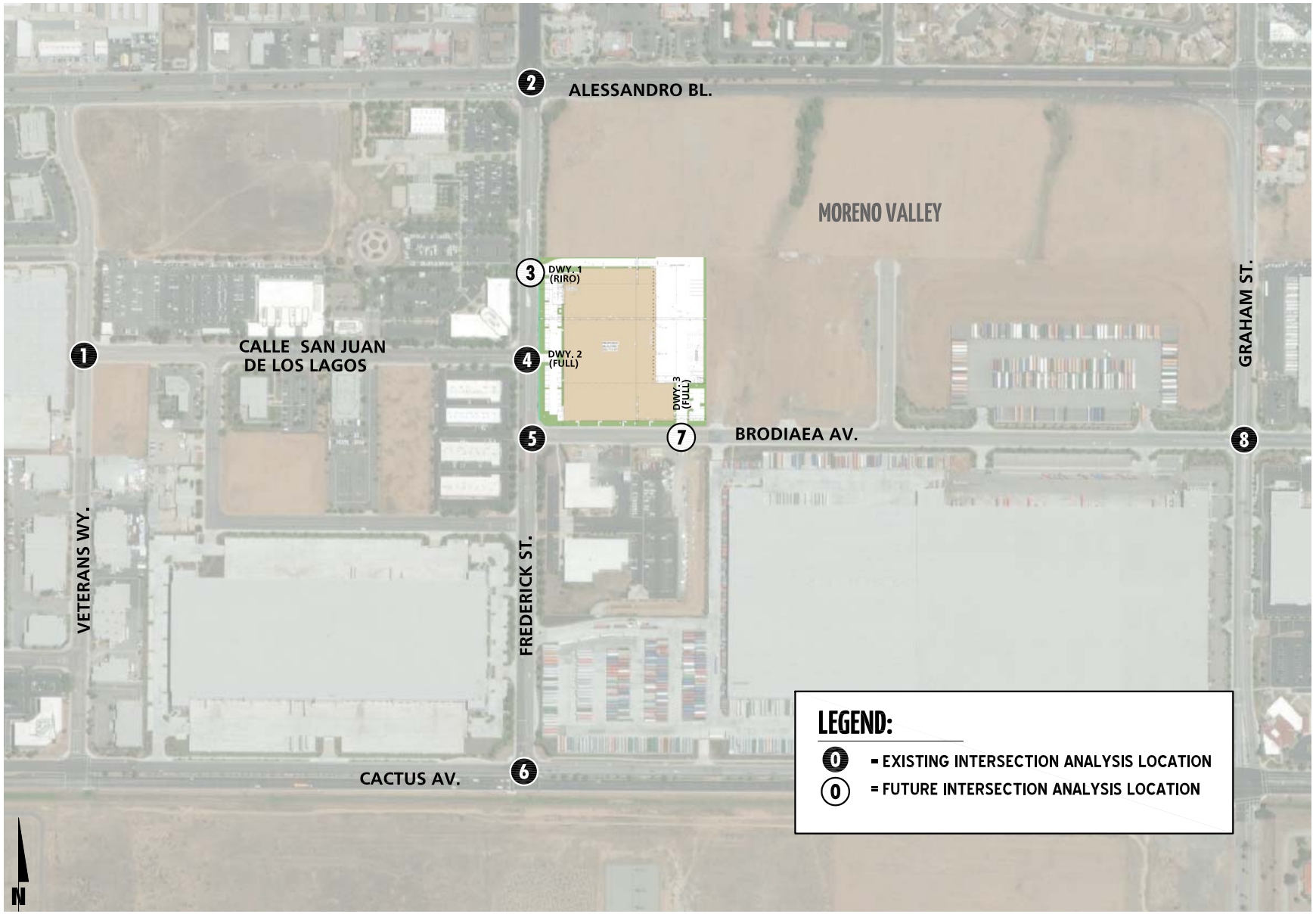
ID	Intersection Location	Jurisdiction	CMP?
1	Veterans Wy. & Calle San Juan de Los Lagos	Moreno Valley	No
2	Frederick St. & Alessandro Bl.	Moreno Valley	No
3	Frederick St. & Driveway 1 – Future Intersection	Moreno Valley	No
4	Frederick St. & Calle San Juan de Los Lagos/Driveway 2	Moreno Valley	No
5	Frederick St. & Brodiaea Av.	Moreno Valley	No
6	Frederick St. & Cactus Av.	Moreno Valley	No
7	Driveway 3 & Brodiaea Av. – Future Intersection	Moreno Valley	No
8	Graham St. & Brodiaea Av.	Moreno Valley	No

The intent of a Congestion Management Program (CMP) is to more directly link land use, transportation, and air quality, thereby prompting reasonable growth management programs that will effectively utilize new transportation funds, alleviate traffic congestion and related impacts, and improve air quality. Counties within California have developed CMPs with varying methods and strategies to meet the intent of the CMP legislation. The County of Riverside CMP became effective with the passage of Proposition 111 in 1990 and updated most recently in 2011. The Riverside County Transportation Commission (RCTC) adopted the 2011 CMP for the County of Riverside in December 2011. (4) There are currently no CMP intersections in this study area.

[1] The "50 or more peak hour trips" intersection analytic protocol stipulated in the City's Traffic Study Guidelines is consistent with standard industry practice. It is noted further that the 50 peak hour trip threshold is employed by other agencies throughout southern California including Caltrans, County of Riverside, County of San Bernardino, and the County of Orange.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 1-2: LOCATION MAP



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Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

1.3.2 ROADWAY SEGMENTS

No roadway segments were evaluated as the Project is anticipated to contribute fewer than 50 peak hour trips on all roadway segments adjacent to intersection analysis locations. In an effort to conduct a conservative analysis, the PCE trip generation for the proposed Project has been utilized to determine if the 50 peak hour trip criteria has been met on the study area roadway segments.

1.4 SUMMARY OF INTERSECTION ANALYSIS

This section provides a summary of the analysis results for Existing, E+P, Opening Year Cumulative, and General Plan Buildout traffic conditions. A summary of intersection LOS by analysis scenario is shown in Exhibit 1-3.

Existing (2018) Conditions

Intersection Operations Analysis

As shown on Exhibit 1-3, the study area intersections are currently operating at an acceptable LOS during both peak hours.

E+P Conditions

Intersection Operations Analysis

As shown in Exhibit 1-3, all 8 study area intersections are anticipated to continue to operate at an acceptable LOS during both peak hours.

Peak Hour Queuing Analysis

A queuing analysis was performed every study area intersection to determine if the turn pocket lengths can accommodate E+P 95th percentile queues. The analysis was conducted for the weekday AM and weekday PM peak hours for E+P traffic conditions.

There are queuing issues anticipated during the AM or PM peak hours at the intersection of Frederick Street and Alessandro Boulevard for the southbound, eastbound, and westbound left turn pockets. However, the Project is not anticipated to contribute trips to every movement. As such, improvement strategies have only been recommended at the location where the Project is anticipated to contribute trips during the AM or PM peak hours:

- Frederick Street & Alessandro Boulevard, westbound left turn lane (AM peak hour only)

Recommended Improvements

There are no deficient intersections anticipated for E+P traffic conditions and the Project is anticipated to contribute less than 50 peak hour trips and would result in a net increase to the peak hour delay of less than 1.0 second to the study area intersections. As such, there are no significant impacts.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 1-3: SUMMARY OF DEFICIENT INTERSECTIONS BY ANALYSIS SCENARIO

#	Intersection	Existing (2018)	E+P	Opening Year (2020) Without Project	Opening Year (2020) With Project	General Plan Buildout (Post-2040) Without Project	General Plan Buildout (Post-2040) With Project
1	Veterans Wy. & Calle San Jaun de Los Lagos	◐	◐	◐	◐	◐	◐
2	Frederick St. & Alessandro Bl.	◐	◐	◐	◐	◐	◐
3	Frederick St. & Dwy. 1	NA	◐	NA	◐	NA	◐
4	Frederick St. & Calle San Jaun de Los Lagos	◐	◐	◐	◐	◐	◐
5	Frederick St. & Brodiaea Av.	◐	◐	◐	◐	◐	◐
6	Frederick St. & Cactus Av.	◐	◐	◐	◐	◐	◐
7	Dwy. 3 & Brodiaea Av.	NA	◐	NA	◐	NA	◐
8	Graham St. & Brodiaea Av.	◐	◐	◐	◐	◐	◐

LEGEND:

◖ = AM PEAK HOUR
◗ = PM PEAK HOUR
◐ = ACCEPTABLE LOS A-D
◐ = DEFICIENT LOS E
◐ = DEFICIENT LOS F
NA = NOT AN ANALYSIS LOCATION FOR THIS SCENARIO

Although the Project's impact is less-than-significant, the following improvement has been identified to address the queuing issue for E+P traffic conditions at the request of City staff:

Improvement – Frederick Street & Alessandro Boulevard (#2)

- Modify the existing landscaped median to provide a 265-foot westbound left turn pocket with a 90-foot transition. The back-to-back left with the adjacent driveway would modify the left turn storage to 75-feet.

Opening Year Cumulative (2023) Conditions

Intersection Operations Analysis

As shown on Exhibit 1-3, there is one study area intersection that is anticipated to operate at an unacceptable LOS during one peak hour during both Opening Year Cumulative Without Project and With Project traffic conditions (i.e., intersection #2).

Peak Hour Queuing Analysis

A queuing analysis was performed every study area intersection to determine if the turn pocket lengths can accommodate near-term 95th percentile queues. The analysis was conducted for the weekday AM and weekday PM peak hours and only for the With Project analysis scenario.

There are queuing issues anticipated during the AM and/or PM peak hours at the intersection of Frederick Street and Alessandro Boulevard for the southbound left turn lane, eastbound left turn lane, eastbound right turn lane, and westbound left turn lane. The intersection of Frederick Street and Calle San Juan de Los Lagos/Driveway 2 is anticipated to experience queuing issues for the eastbound left turn lane. The intersection of Frederick Street and Cactus Avenue is anticipated to experience queuing issues for the westbound right turn lane. However, the Project is not anticipated to contribute trips to every movement. As such, improvement strategies have only been recommended at those locations where the Project is anticipated to contribute trips during the AM or PM peak hours:

- Frederick Street & Alessandro Boulevard, westbound left turn lane (AM and PM peak hours)
- Frederick Street & Cactus Avenue, westbound right turn lane (AM peak hour only)

Recommended Improvements

The Project is anticipated to contribute less than 50 peak hour trips to the intersections of Frederick Street and Alessandro Boulevard, Frederick Street and Calle San Juan de Los Lagos/Driveway 2, and Frederick Street and Cactus Avenue. The addition of Project traffic would result in an increase to the delay of less than 1.0 second. As such, the impact is considered less than significant and no mitigation measures are required to address intersection operations.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Although the Project's impact is less-than-significant, the following improvements have been identified to address the queuing issues for Opening Year Cumulative (2023) traffic conditions at the request of City staff:

Improvement – Frederick Street & Alessandro Boulevard (#2)

- Modify the existing landscaped median to provide a 265-foot westbound left turn pocket with a 90-foot transition. The back-to-back left with the adjacent driveway would modify the left turn storage to 75-feet.

Improvement – Frederick Street & Cactus Avenue (#6)

- Restripe the westbound right turn lane to provide 500-feet of storage

General Plan Buildout (Post-2040) Conditions

Intersection Operations Analysis

As shown on Exhibit 1-3, there are no additional study area intersections anticipated to operate at an unacceptable LOS for both General Plan Buildout Without Project and With Project, beyond those previously identified in Opening Year Cumulative (2023) traffic conditions.

Peak Hour Queuing Analysis

A queuing analysis was performed at every study area intersection to determine if the turn pocket lengths can accommodate long-term 95th percentile queues. The analysis was conducted for the weekday AM and weekday PM peak hours and only for the With Project analysis scenario.

There are queuing issues anticipated during the AM and/or PM peak hours at the intersection of Frederick Street and Alessandro Boulevard for the southbound left turn lane, southbound right turn lane, eastbound left turn lane, eastbound right turn lane, and westbound left turn lane. The intersection of Frederick Street and Calle San Juan de Los Lagos/Driveway 2 is anticipated to experience queuing issues for the eastbound left turn lane. The intersection of Frederick Street and Cactus Avenue is anticipated to experience queuing issues for the eastbound left turn lane and the westbound right turn lane. However, the Project is not anticipated to contribute trips to every movement. As such, improvement strategies have only been recommended at those locations where the Project is anticipated to contribute trips during the AM or PM peak hours:

- Frederick Street & Alessandro Boulevard, eastbound right turn lane (PM peak hour only)
- Frederick Street & Alessandro Boulevard, westbound left turn lane (AM and PM peak hours)
- Frederick Street & Cactus Avenue, eastbound left turn lane (AM peak hour only)
- Frederick Street & Cactus Avenue, westbound right turn lane (AM and PM peak hours)

Recommended Improvements

The Project is anticipated to contribute less than 50 peak hour trips to the intersections of Frederick Street and Alessandro Boulevard, Frederick Street and Calle San Juan de Los Lagos/Driveway 2, and Frederick Street and Cactus Avenue. The addition of Project traffic would

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

result in an increase to the delay of less than 1.0 second. As such, the impact is considered less than significant and no mitigation measures are required to address intersection operations.

Although the Project's impact is less-than-significant, the following improvements have been identified to address the queuing issues for General Plan Buildout (Post-2040) traffic conditions at the request of City staff:

Improvements – Frederick Street & Alessandro Boulevard (#2)

- Add a 200-foot eastbound right turn pocket (with the existing eastbound right turn restriped as a 3rd eastbound through lane, consistent with the City of Moreno Valley General Plan)
- Add a 2nd westbound left turn lane

Improvements – Frederick Street & Cactus Avenue (#6)

- Restripe the eastbound left turn lane to provide 450-feet of storage
- Restripe the westbound right turn lane to provide 500-feet of storage

1.5 LOCAL AND REGIONAL FUNDING MECHANISMS

Transportation improvements throughout the City of Moreno Valley are funded through a combination of project mitigation, fair share contributions or development impact fee programs, such as TUMF program or the City's DIF program.

1.5.1 TRANSPORTATION UNIFORM MITIGATION FEE (TUMF) PROGRAM

The Western Riverside Council of Governments (WRCOG) is responsible for establishing and updating Transportation Uniform Mitigation Fee (TUMF) rates. The County may grant to developers a credit against the specific components of fees for the dedication of land or the construction of facilities identified in the list of improvements funded by each of these fee programs. Fees are based upon projected land uses and a related transportation need to address growth based upon a 2016 Nexus study.

TUMF is an ambitious regional program created to address cumulative impacts of growth throughout western Riverside County. Program guidelines are being handled on an iterative basis. Exemptions, credits, reimbursements and local administration are being deferred to primary agencies. The County of Riverside serves this function for the proposed Project. Fees submitted to the County are passed on to the WRCOG as the ultimate program administrator.

TUMF guidelines empower a local zone committee to prioritize and arbitrate certain projects. The Project is located in the Central Zone. The zone has developed a 5-year capital improvement program to prioritize public construction of certain roads. TUMF is focused on improvements necessitated by regional growth. The TUMF Transportation Improvement Program map for Moreno Valley is included in Appendix 1.2.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

1.5.2 City of Moreno Valley Development Impact Fee (DIF) Program

The City of Moreno Valley has created its own local Development Impact Fee (DIF) program to impose and collect fees from new residential, commercial and industrial development for the purpose of funding roadways and intersections necessary to accommodate City growth as identified in the City's General Plan Circulation Element. The City's DIF program includes facilities that are not part of, or which may exceed improvements identified and covered by the TUMF program. As a result, the pairing of the regional and local fee programs provides a more comprehensive funding and implementation plan to ensure an adequate and interconnected transportation system. Under the City's DIF program, the City may grant to developers a credit against specific components of fees when those developers construct certain facilities and landscaped medians identified in the list of improvements funded by the DIF program.

The timing to use the DIF fees is established through periodic capital improvement programs which are overseen by the City's Public Works Department. Periodic traffic counts, review of traffic accidents, and a review of traffic trends throughout the City are also periodically performed by City staff and consultants. The City uses this data to determine the timing of implementing the improvements listed in its facilities list.

The Project Applicant would pay requisite DIF pursuant to incumbent City ordinance requirements. Payment of requisite DIF would satisfy the Applicant's mitigation responsibilities for potentially significant impacts affecting DIF-funded facilities.

1.5.3 Fair Share Fees

The Project Applicant's mitigation responsibilities may also be may be fulfilled through payment of fair-share fees. Fair share fees would be paid in instances where required traffic facilities are not otherwise funded by TUMF and/or DIF programs noted above. Fair share calculations are provided on Table 1-2 for each of the study area intersections where the Project is anticipated to contribute cumulatively to a peak hour queuing issue.

1.6 Site Adjacent Roadway and Site Access Improvements

This section summarizes Project site access and on-site circulation recommendations. Vehicular and truck traffic access will be provided via the following driveways:

- Driveway 1 & Frederick St. – Right-in right-out only (trucks only)
- Frederick St. & Calle San Juan de Los Lagos/Driveway 2 – Full access driveway (passenger cars only)
- Driveway 3 & Brodiaea Av. – Full access driveway (both passenger cars and trucks)

Regional access to the Project site is provided via the I-215 Freeway at Alessandro Boulevard and Cactus Avenue interchanges.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 1-2

Project Fair Share Calculations for Intersections

#	Intersection		Existing	Project	2040 With Project Volume	Total New Traffic	Project % of New Traffic
2	Frederick St. & Alessandro Bl.						
		AM:	2,927	17	4,922	1,995	0.85%
		PM:	3,659	28	6,560	2,901	**0.97%**
6	Frederick St. & Cactus Av.						
		AM:	3,177	14	5,945	2,768	**0.51%**
		PM:	3,709	14	6,892	3,183	0.44%

BOLD = Denotes highest fair share percentage.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

1.6.1 SITE ADJACENT ROADWAY IMPROVEMENTS

Since both Frederick Street and Brodiaea Avenue are built out to their ultimate cross-section, according to the City of Moreno Valley General Plan, there are no roadway improvement recommendations. The Project is proposing to provide a bus turnout along its frontage on Frederick Street. However, additional curb, gutter, and sidewalk improvements are recommended, as needed for site access along the Project's frontage consistent with the City's standards.

1.6.2 SITE ACCESS IMPROVEMENTS

The recommended site access driveway improvements for the Project are described below. Exhibit 1-4 illustrates the on-site and site adjacent recommended roadway lane improvements. Construction of on-site and site adjacent improvements are recommended to occur in conjunction with adjacent Project development activity or as needed for Project access purposes.

Frederick St. & Driveway 1 (#3) – Install a stop control on the westbound approach and construct the intersection with the following geometrics:

Northbound Approach: One through lane and one shared through-right turn lane.

Southbound Approach: Two through lanes.

Eastbound Approach: Not Applicable (N/A)

Westbound Approach: One right turn lane.

Frederick St. & Calle San Juan de Los Lagos/Driveway 2 (#4) – Modify the existing traffic signal to accommodate the Project driveway and construct the intersection with the following geometrics:

Northbound Approach: One left turn lane, one through lane, and one shared through-right turn lane.

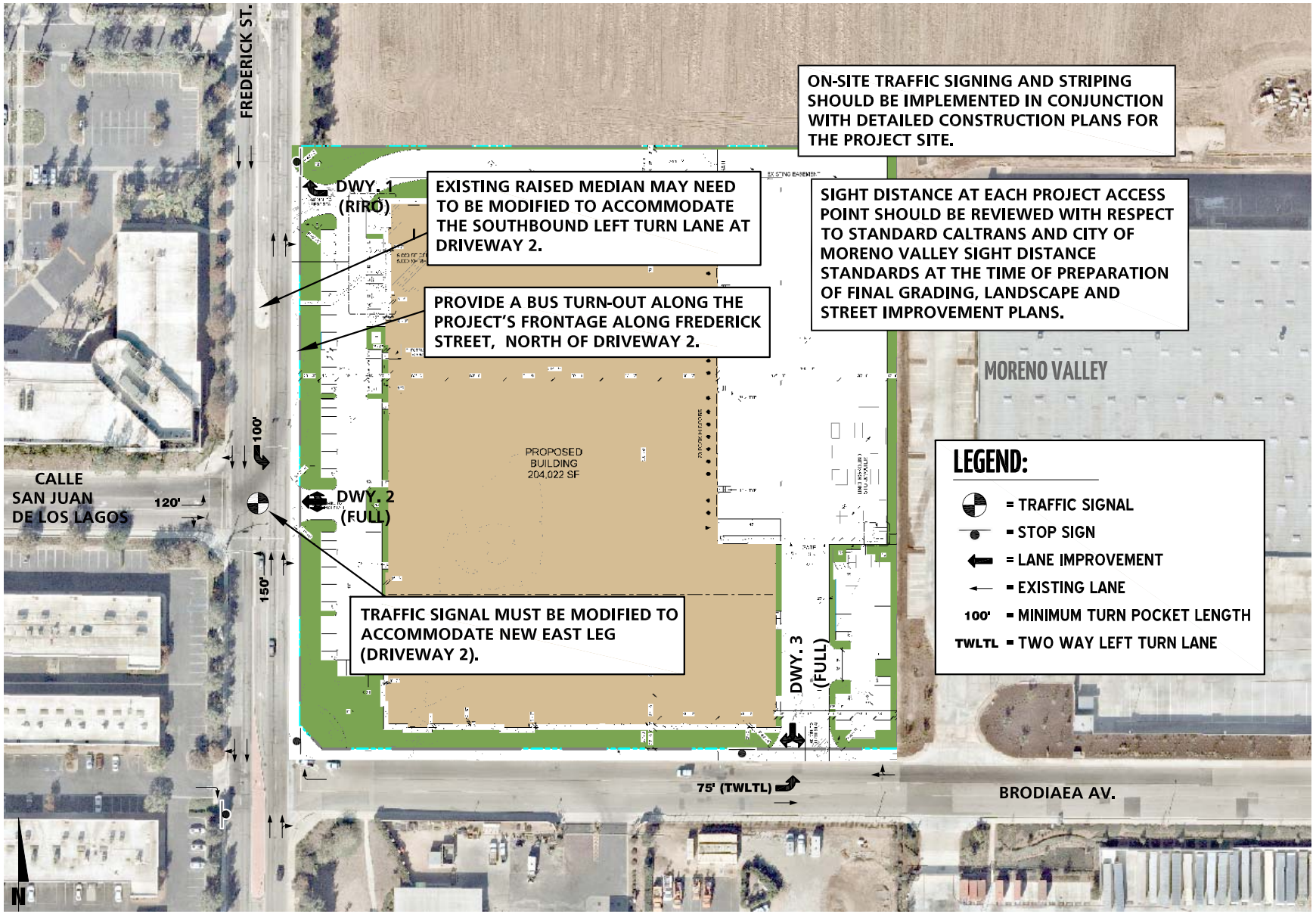
Southbound Approach: One left turn lane with a minimum of 100-feet of storage, one through lane, and one shared through-right turn lane. Modification may be necessary to the median on Frederick Street to accommodate the southbound left turn lane.

Eastbound Approach: One left turn lane and one shared through-right turn lane.

Westbound Approach: One shared left-through-right turn lane.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 1-4: SITE ADJACENT ROADWAY AND SITE ACCESS RECOMMENDATIONS



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Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Driveway 3 & Brodiaea Av. – Install a stop control on the southbound approach and construct the intersection with the following geometrics:

Northbound Approach: N/A

Southbound Approach: One shared left-right turn lane.

Eastbound Approach: One left turn lane with a minimum of 75-feet of storage within the painted median and one through lane.

Westbound Approach: One shared through-right turn lane.

1.6.3 QUEUING ANALYSIS AT THE PROJECT DRIVEWAYS

A queuing analysis was conducted for the Project driveways for General Plan Buildout (Post-2040) traffic conditions to determine the turn pocket lengths necessary to accommodate near-term 95th percentile queues. The analysis was conducted for the weekday AM and weekday PM peak hours for all analysis scenarios.

The queuing analysis indicates that a 100-foot southbound left turn lane can accommodate the 95th percentile queues at the intersection of Frederick Street & Calle San Juan de Los Lagos. The queuing analysis also indicates that 50 feet of storage can accommodate the eastbound left turn queues at the intersection of Driveway 3 & Brodiaea Avenue. However, consistent with the City's minimum storage length requirements for driveways serving heavy trucks, a 75-foot eastbound left turn lane has been recommended at Driveway 3 on Brodiaea Avenue. Queuing worksheets are included in Appendix 1.3.

1.7 TRUCK ACCESS AND CIRCULATION

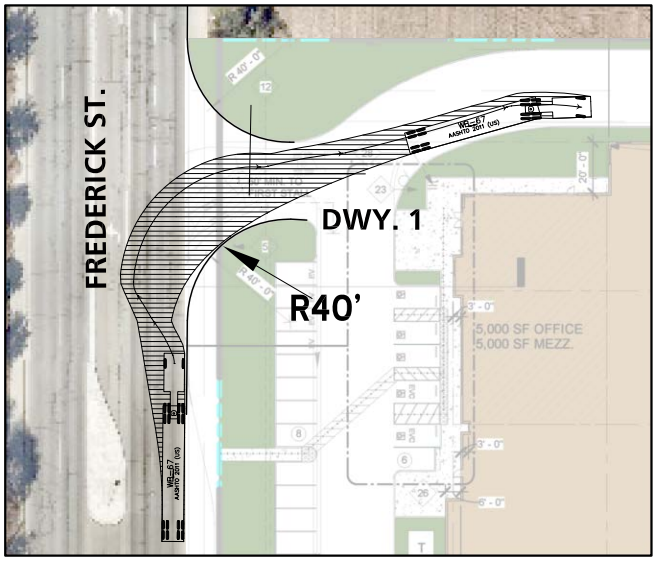
A truck turning template has been overlaid on the site plan at Driveway 1 on Frederick Street and Driveway 3 on Brodiaea Avenue, which are anticipated to be utilized by heavy trucks, in order to determine the appropriate curb radii and to verify that trucks will have sufficient space to execute turning maneuvers. For the purposes of this evaluation, the WB-67 class truck template has been utilized. WB-67 class trucks are approximately 73.5 feet in length.

Exhibit 1-5 illustrates the proposed truck access for the site and circulation for Driveway 1 and Driveway 3. As shown on Exhibit 1-5, the proposed curb radii of 40-feet at the intersections of Frederick Street at Driveway 1 and Driveway 3 at Brodiaea Avenue are anticipated to accommodate the ingress and egress of trucks.

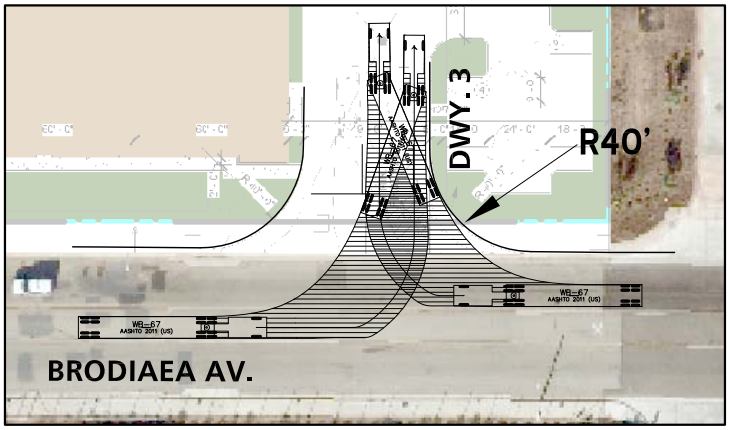
Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 1-5: TRUCK ACCESS

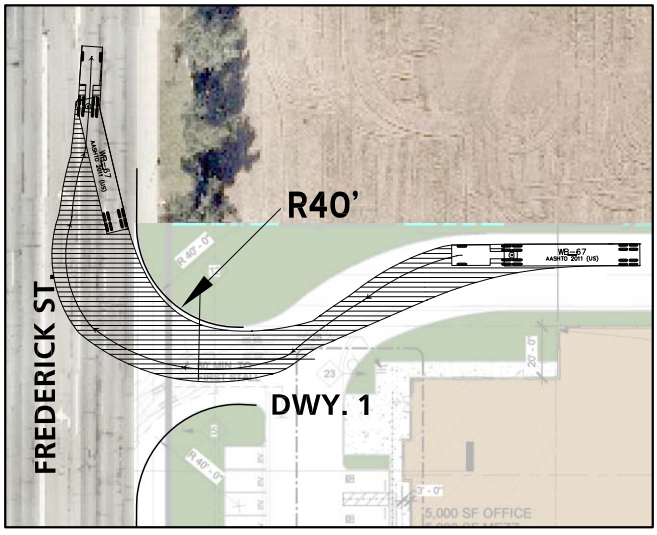
INBOUND



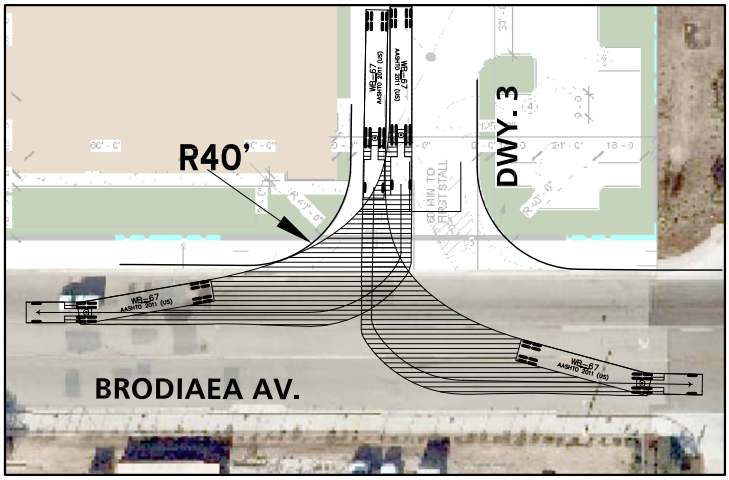
INBOUND



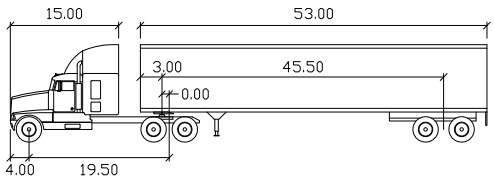
OUTBOUND



OUTBOUND

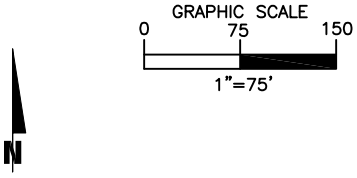


LEGEND:



WB-67 feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		



Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

2 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. The methodologies described are consistent with City of Moreno Valley's traffic study guidelines. (1)

2.1 LEVEL OF SERVICE

Traffic operations of roadway facilities are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on several factors such as speed, travel time, delay, and freedom to maneuver. Six levels are typically defined ranging from LOS A, representing completely free-flow conditions, to LOS F, representing breakdown in flow resulting in stop-and-go conditions. LOS E represents operations at or near capacity, an unstable level where vehicles are operating with the minimum spacing for maintaining uniform flow.

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The Highway Capacity Manual (HCM) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (5) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

City of Moreno Valley

The City of Moreno Valley requires signalized intersection operations analysis based on the methodology described in the HCM. (5) Intersection LOS operations are based on an intersection's average control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections, LOS is directly related to the average control delay per vehicle and is correlated to a LOS designation as described in Table 2-1. Study area intersections have been evaluated using the Synchro (Version 10) analysis software package.

Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the HCM. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 2-1: SIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00	A	F
Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00	B	F
Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.01 to 35.00	C	F
Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.01 to 55.00	D	F
Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.01 to 80.00	E	F
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths	80.01 and up	F	F

Source: HCM 6th Edition

The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. Common practice for LOS analysis is to use a peak 15-minute rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g. PHF = [Hourly Volume] / [4 x Peak 15-minute Flow Rate]). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for all analysis scenarios. Per the HCM, PHF values over 0.95 often are indicative of high traffic volumes with capacity constraints on peak hour flows, while lower PHF values are indicative of greater variability of flow during the peak hour. (5)

2.2.2 UNSIGNALIZED INTERSECTIONS

The unsignalized intersections in the study area are located within the City of Moreno Valley. The City of Moreno Valley require the operations of unsignalized intersections be evaluated using the methodology described the HCM. (5) The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2).

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay Per Vehicle (Seconds)	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Little or no delays.	0 to 10.00	A	F
Short traffic delays.	10.01 to 15.00	B	F
Average traffic delays.	15.01 to 25.00	C	F
Long traffic delays.	25.01 to 35.00	D	F
Very long traffic delays.	35.01 to 50.00	E	F
Extreme traffic delays with intersection capacity exceeded.	> 50.00	F	F

Source: HCM 6th Edition

At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. For all-way stop controlled intersections, LOS is computed for the intersection as a whole.

2.3 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by the California Department of Transportation (Caltrans) and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TIA uses the signal warrant criteria presented in the latest edition of the Caltrans California Manual on Uniform Traffic Control Devices (CA MUTCD) for all unsignalized study area intersections. (6)

The signal warrant criteria for Existing study area intersections are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The CA MUTCD indicate that the installation of a traffic signal should be considered if one or more of the signal warrants are met. (6) Specifically, this TIA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing traffic conditions. Warrant 3 is appropriate to use for this TIA because it provides specialized warrant criteria for intersections with urban characteristics (e.g. located in communities with populations of more than 10,000 persons or with adjacent major streets operating below 40 miles per hour). For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection.

Future unsignalized intersections, that currently do not exist, have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets.

As shown on Table 2-3, traffic signal warrant analyses were performed for the following unsignalized study area intersections during the peak weekday conditions wherein the Project is anticipated to contribute the highest trips:

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction
1	Veterans Wy. & Calle San Juan de Los Lagos	Moreno Valley
3	Frederick St. & Driveway 1 – Future Intersection	Moreno Valley
5	Frederick St. & Brodiaea Av.	Moreno Valley
7	Driveway 3 & Brodiaea Av. – Future Intersection	Moreno Valley

The Existing conditions traffic signal warrant analysis is presented in the subsequent section, Section 3 *Area Conditions* of this report. The traffic signal warrant analyses for future conditions are presented in Section 5 *E+P Traffic Analysis,* Section 6 *Opening Year Cumulative (2023) Traffic Analysis,* and Section 7 *General Plan Buildout (Post-2040) Traffic Analysis* of this report.

It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with LOS. An intersection may satisfy a signal warrant condition and operate at or above acceptable LOS or operate below acceptable LOS and not meet a signal warrant.

2.4 QUEUING ANALYSIS

A queuing analysis was conducted for all study area intersections for E+P, Opening Year Cumulative (2023), and General Plan Buildout (Post-2040) traffic conditions in an effort to determine the turn pocket lengths necessary to accommodate 95th percentile queues. The analysis was conducted for both the weekday AM and weekday PM peak hours.

The traffic modeling and signal timing optimization software package Synchro (Version 10) has been utilized to assess queues. Synchro is a macroscopic traffic software program that is based on the signalized and unsignalized intersection capacity analyses as specified in the Highway Capacity Manual (HCM). Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length in Synchro. The LOS and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network.

SimTraffic is designed to model networks of signalized and unsignalized intersections, with the primary purpose of checking and fine-tuning signal operations. SimTraffic uses the input parameters from Synchro to generate random simulations. SimTraffic has been utilized to assess peak hour queuing for both E+P and Opening Year Cumulative With Project traffic conditions. The random simulations generated by SimTraffic have been utilized to determine the 50th and 95th percentile queue lengths observed for each turn lane. A SimTraffic simulation has been recorded up to 5 times, during the weekday AM and weekday PM peak hours, and has been seeded for 60-minute periods with 60-minute recording intervals.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

A vehicle is considered queued whenever it is traveling at less than 10 feet/second. A vehicle will only become queued when it is either at the stop bar or behind another queued vehicle. Although only the 95th percentile queue has been utilized for purposes of determining the necessary turn pocket storage lengths, the 50th percentile queues are also reported. The 50th percentile queue is the maximum back of queue on a typical cycle during the peak hour, while the 95th percentile queue is the maximum back of queue with 95th percentile traffic volumes during the peak hour. The 50th percentile, or average, queue represents the typical queue length for peak hour traffic conditions, while the 95th percentile queue is derived from the average queue plus 1.65 standard deviations. The 95th percentile queue is not necessarily ever observed; it is simply based on statistical calculations. However, many jurisdictions utilize the 95th percentile queues for design purposes. The maximum back of queue observed for every two-minute period is recorded by SimTraffic.

2.5 MINIMUM LEVEL OF SERVICE (LOS)

The definition of an intersection deficiency in the City of Moreno Valley is based on the City of Moreno Valley General Plan Circulation Element. The City of Moreno Valley General Plan states that target LOS C or LOS D be maintained along City roads (including intersections) wherever possible. Exhibit 2-1 depicts the level of service standards within the City.

For the purposes of this study and based on Exhibit 2-1, the following intersections were evaluated using LOS C as the minimum acceptable LOS:

- Veterans Wy. & Calle San Juan de Los Lagos (#1)
- Frederick St. & Driveway 1 – Future Intersection (#3)
- Frederick St. & Calle San Juan de Los Lagos/Driveway 2 (#4)
- Frederick St. & Brodiaea Av. (#5)
- Driveway 3 & Brodiaea Av. – Future Intersection (#7)
- Graham St. & Brodiaea Av. (#8)

The following intersections were evaluated using LOS D as the minimum acceptable LOS:

- Frederick St. & Alessandro Bl. (#2)
- Frederick St. & Cactus Av. (#6)

2.6 THRESHOLDS OF SIGNIFICANCE

This section outlines the methodology used in this analysis related to identifying circulation system deficiencies. To determine whether the addition of project traffic (as defined through the comparison of Existing traffic conditions to E+P traffic conditions) at a study intersection would result in a direct project-specific traffic impact, and consistent with the City of Moreno Valley LOS standards as shown in Exhibit 2-1, the following will be utilized:

- When the pre-Project condition is at or better than the acceptable LOS C (or LOS D for City designated intersections), and project-generated traffic, as measured by 50 or more peak hour

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

trips, causes deterioration below the acceptable LOS D (or LOS E at City designated intersections), a deficiency is deemed to occur.

However, when the pre-Project condition is already below LOS D/LOS E (i.e., unacceptable LOS), the Project will be responsible for mitigating its impact to a level of service equal to or better than it was without the Project.

Cumulative traffic impacts are created as a result of a combination of the proposed Project together with other future developments contributing to the overall traffic impacts requiring additional improvements to maintain acceptable level of service operations with or without the Project. A Project's contribution to a significant cumulative impact can be reduced to less than significant if the Project is required to implement or fund its fair share of improvements designed to alleviate its cumulatively considerable contribution to the impact. Cumulatively considerable is defined as the addition of 50 or more peak hour trips.

In the event that an intersection is operating at or is forecast to operate at a deficient LOS, the CMP guidelines have defined a series of steps to be completed to determine the Project's contribution to the deficiency of intersections, which has been applied to both CMP and non-CMP study area intersections. The steps are as follows:

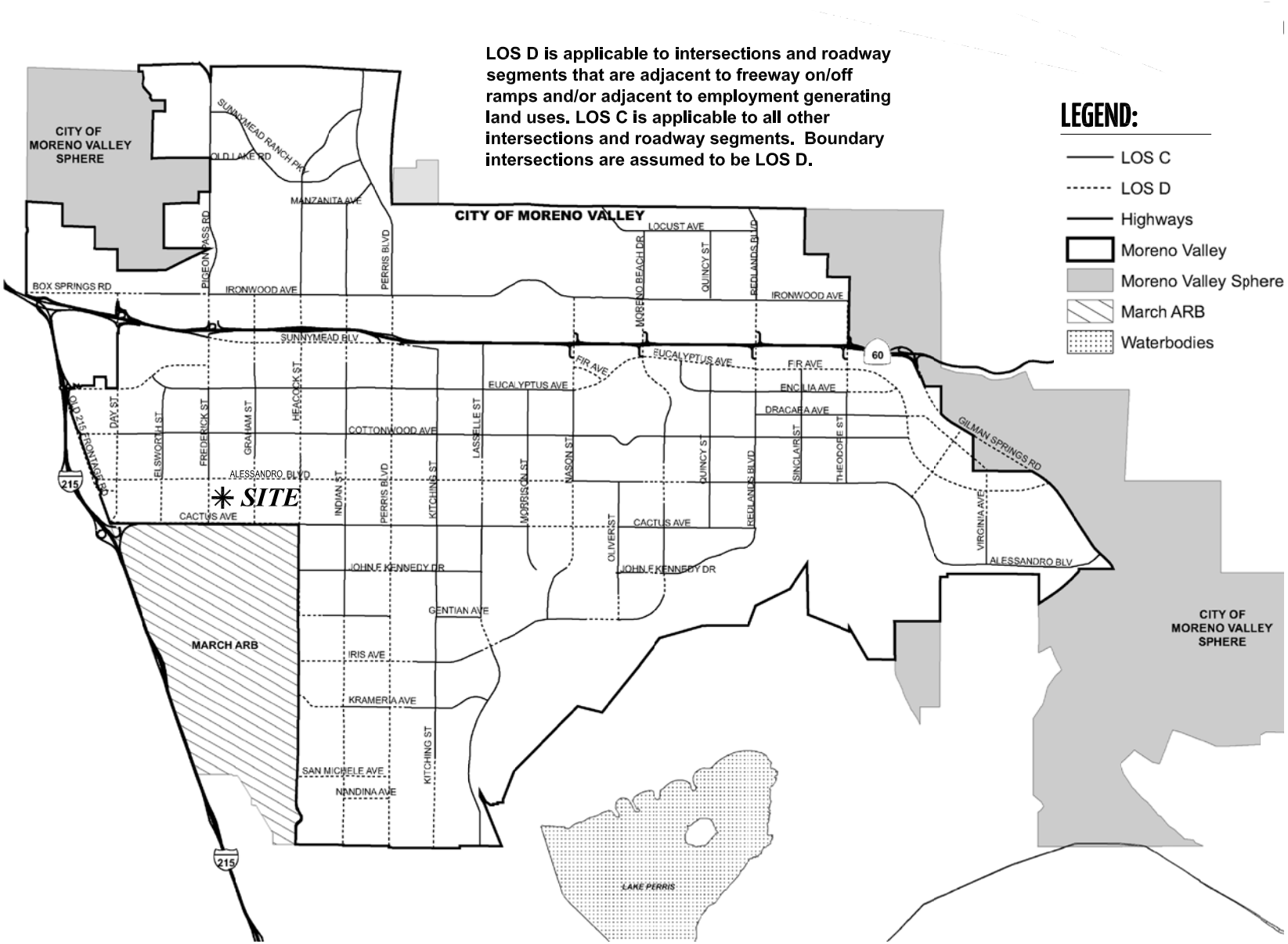
- Determine the mitigation measures necessary to achieve an acceptable service level,
- Calculate the Project's share in the future traffic volume projections for the peak hours,
- Estimate the cost to implement recommended mitigation measures, and
- Calculate the Project's fair-share contribution to mitigate the Project's traffic impacts

Although the City of Moreno Valley does not have a delay-based significance threshold for peak hour intersection operations, a 1.0 second delay has been utilized for the purposes of this analysis for study area intersections operating at a deficient LOS under pre-project traffic conditions. Since the Project is not anticipated to contribute 50 or more peak hour trips to any of the study area intersections, the delay-based criteria was utilized to identify significant impacts. Most other agencies that use a delay-based significance threshold use a delay-based criteria of 1.0 to 5.0 seconds. In other words, a significant impact is identified if the addition of Project traffic results in an increase to the delay by 1.0 second or more over the pre-project condition when the intersection is operating at a deficient LOS for pre-project traffic conditions.

Lastly, the City of Moreno Valley also does not have a significance threshold for peak hour queues. For the purposes of this analysis, if the addition of Project traffic is found to have a less than significant impact to the peak hour operations, then a less than significant impact has also been identified for the peak hour queues at the same intersection. However, queuing results have been reported at the City's request.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 2-1: CITY OF MORENO VALLEY LEVEL OF SERVICE (LOS) STANDARDS



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Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

2.7 PROJECT FAIR SHARE CALCULATION METHODOLOGY

In cases where this TIA identifies that the Project would contribute to cumulatively considerable traffic deficiencies, Project fair share costs of improvements necessary to address those deficiencies have been identified. The Project's fair share is determined based on the following equation, which is the ratio of Project traffic to new traffic, where new traffic is total future (Horizon Year) traffic less existing baseline traffic:

Project Fair Share % = Project Traffic / (2040 With Project Total Traffic – Existing Traffic)

The Project fair share contribution calculations are presented in Section 1.5 *Local and Regional Funding Mechanisms* of this TIA.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

3 AREA CONDITIONS

This section provides a summary of the existing circulation network, the City of Moreno Valley General Plan Circulation Network, and a review of existing peak hour intersection operations and traffic signal warrant analyses.

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the scoping agreement with City of Moreno Valley staff (Appendix 1.1), the study area includes a total of 8 existing and future intersections as shown previously on Exhibit 1-2 have been evaluated at the request of City staff. Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

3.2 CITY OF MORENO VALLEY GENERAL PLAN CIRCULATION ELEMENT

The roadway classifications and planned (ultimate) roadway cross-sections of the major roadways within the study area, as identified on the City of Moreno Valley General Plan Circulation Element, are described subsequently. Exhibit 3-2 shows the City of Moreno Valley General Plan Circulation Element, and Exhibit 3-3 illustrates the City of Moreno Valley General Plan roadway cross-sections.

3.3 TRUCK ROUTES

While the City of Moreno Valley's General Plan recognizes the trucking industry and the importance of the region's role in the movement of goods, there are no truck routes defined within the County. Exhibit 3-4 shows the existing truck routes throughout the City of Moreno Valley. Based on the exhibit, Frederick Street, Alessandro Boulevard, and Cactus Avenue are identified as truck routes within the study area.

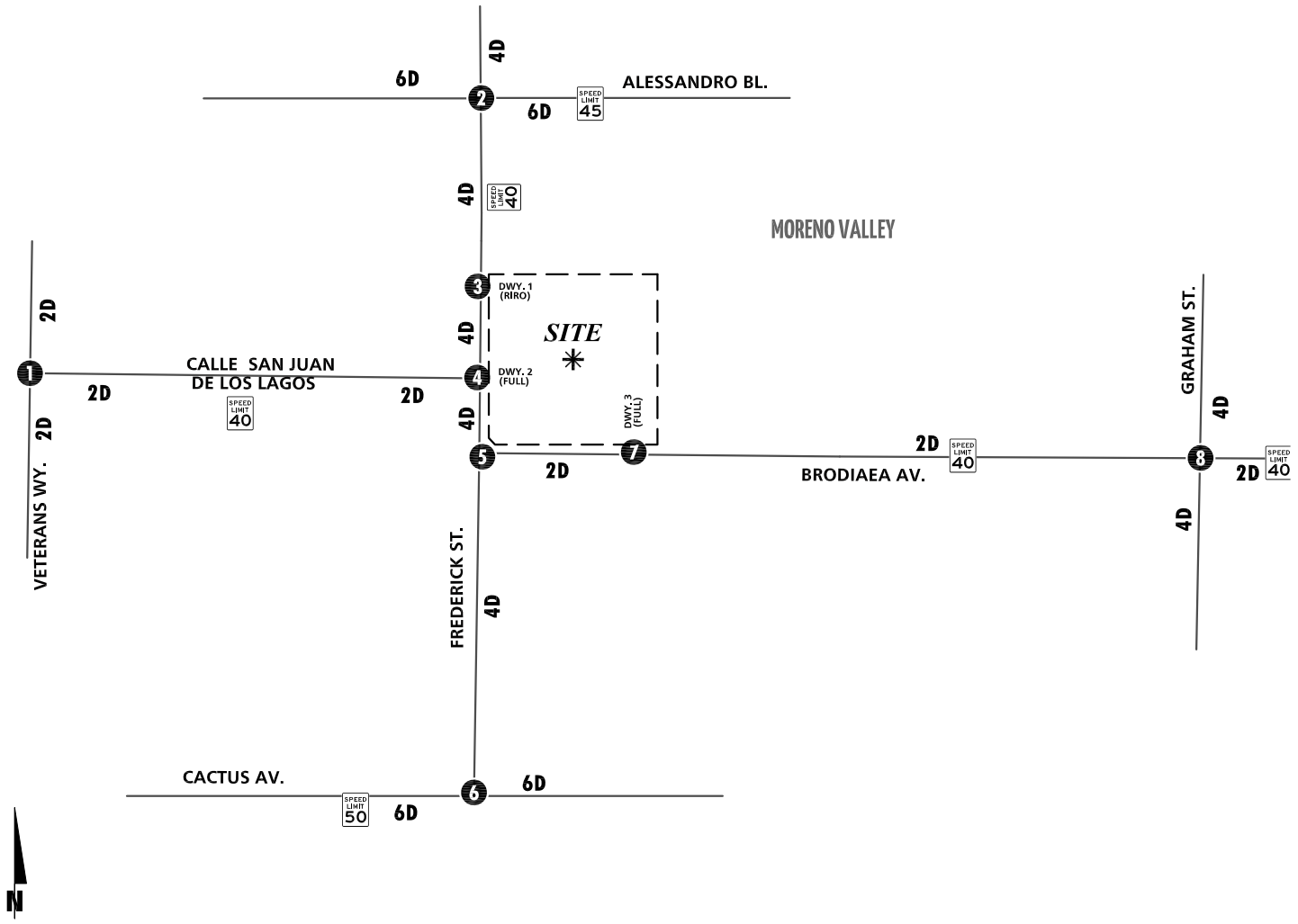
3.4 TRANSIT SERVICE

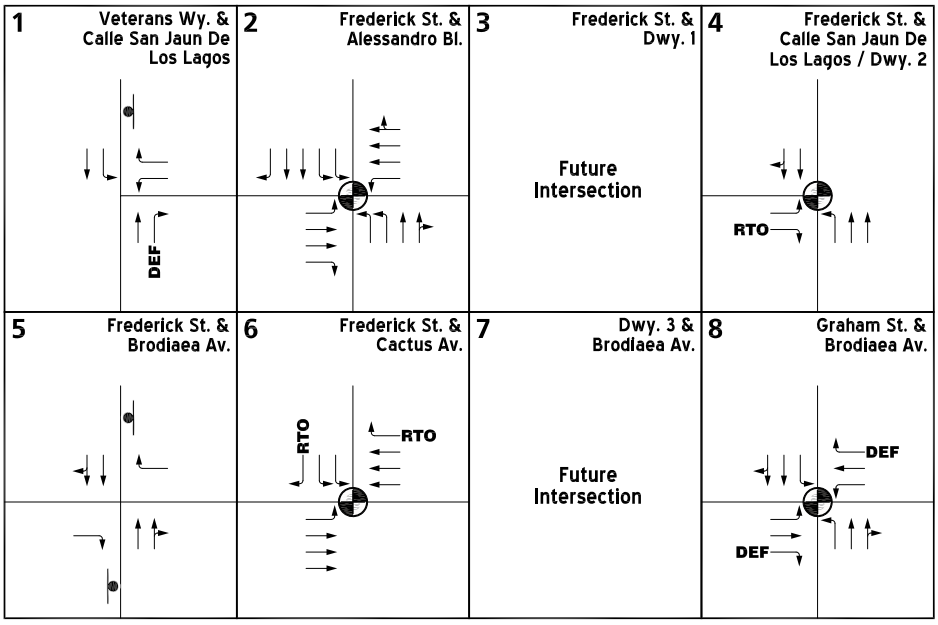
The study area is currently served by the Riverside Transit Authority (RTA), a public transit agency serving the unincorporated Riverside County region. As shown on Exhibit 3-5, RTA Route 11 serves Frederick Street and Cactus Avenue to the east of Frederick Street to southbound on Graham Street. RTA Route 20 serves Alessandro Boulevard within the study area.

Transit service is reviewed and updated by RTA periodically to address ridership, budget, and community demands Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate. The Project is proposing to provide a bus turnout along its frontage on Frederick Street.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS





LEGEND:

- = TRAFFIC SIGNAL
- = STOP SIGN
- 4 = NUMBER OF LANES
- D = DIVIDED
- U = UNDIVIDED
- RTO = RIGHT TURN OVERLAP
- DEF = DEFACTO RIGHT TURN
- SPEED LIMIT 25 = SPEED LIMIT (MPH)

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Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 3-2: CITY OF MORENO VALLEY GENERAL PLAN CIRCULATION ELEMENT

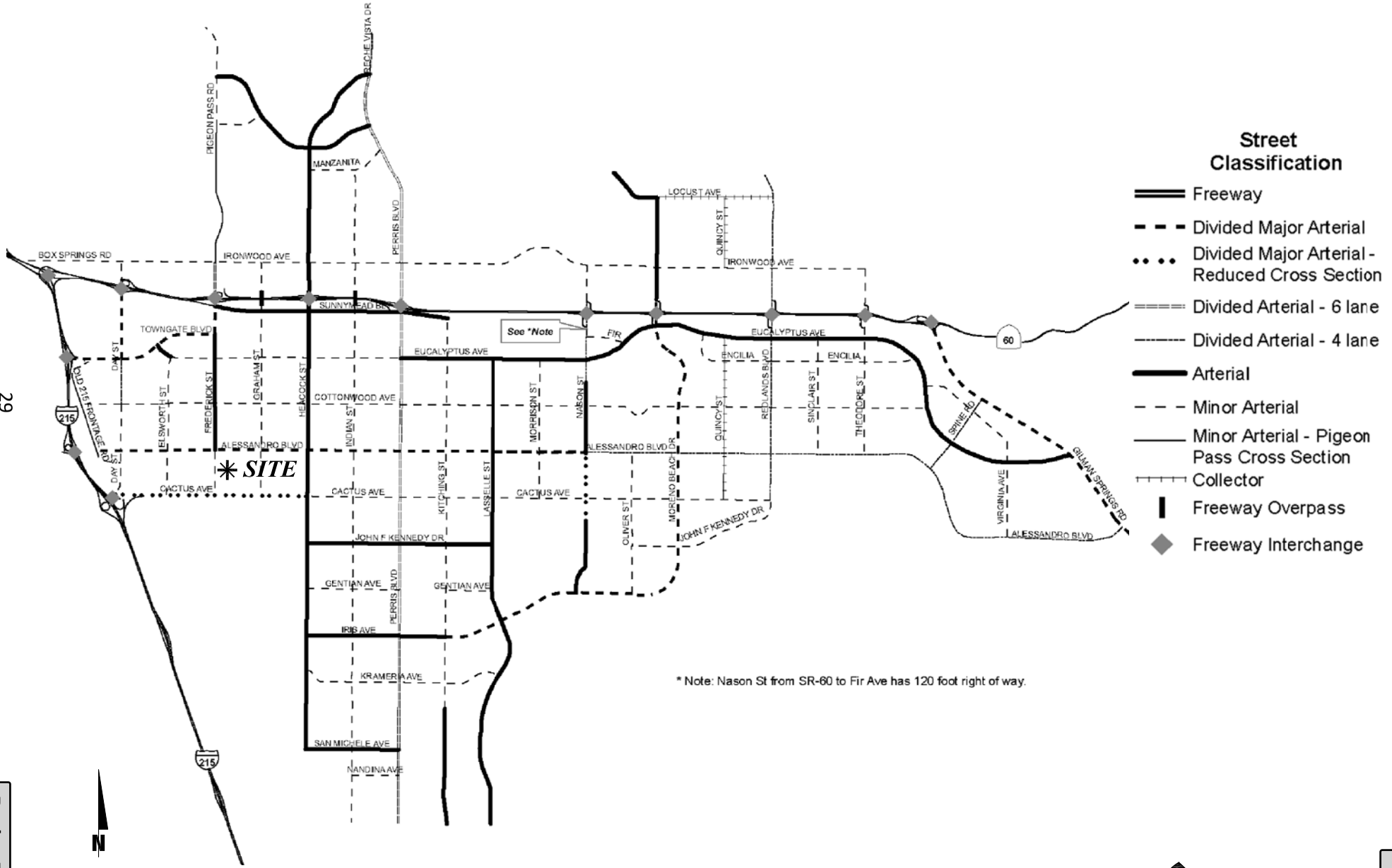

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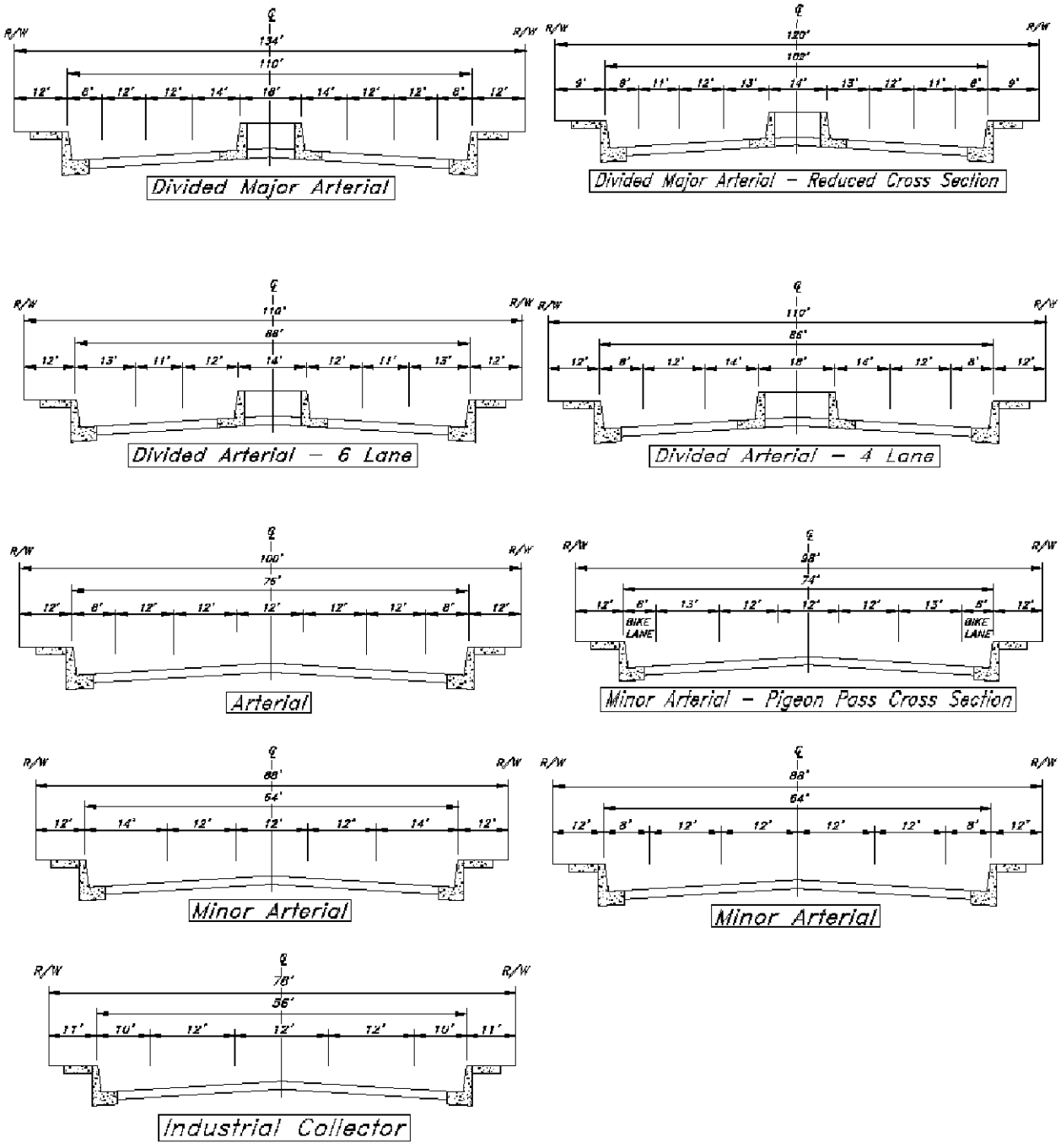
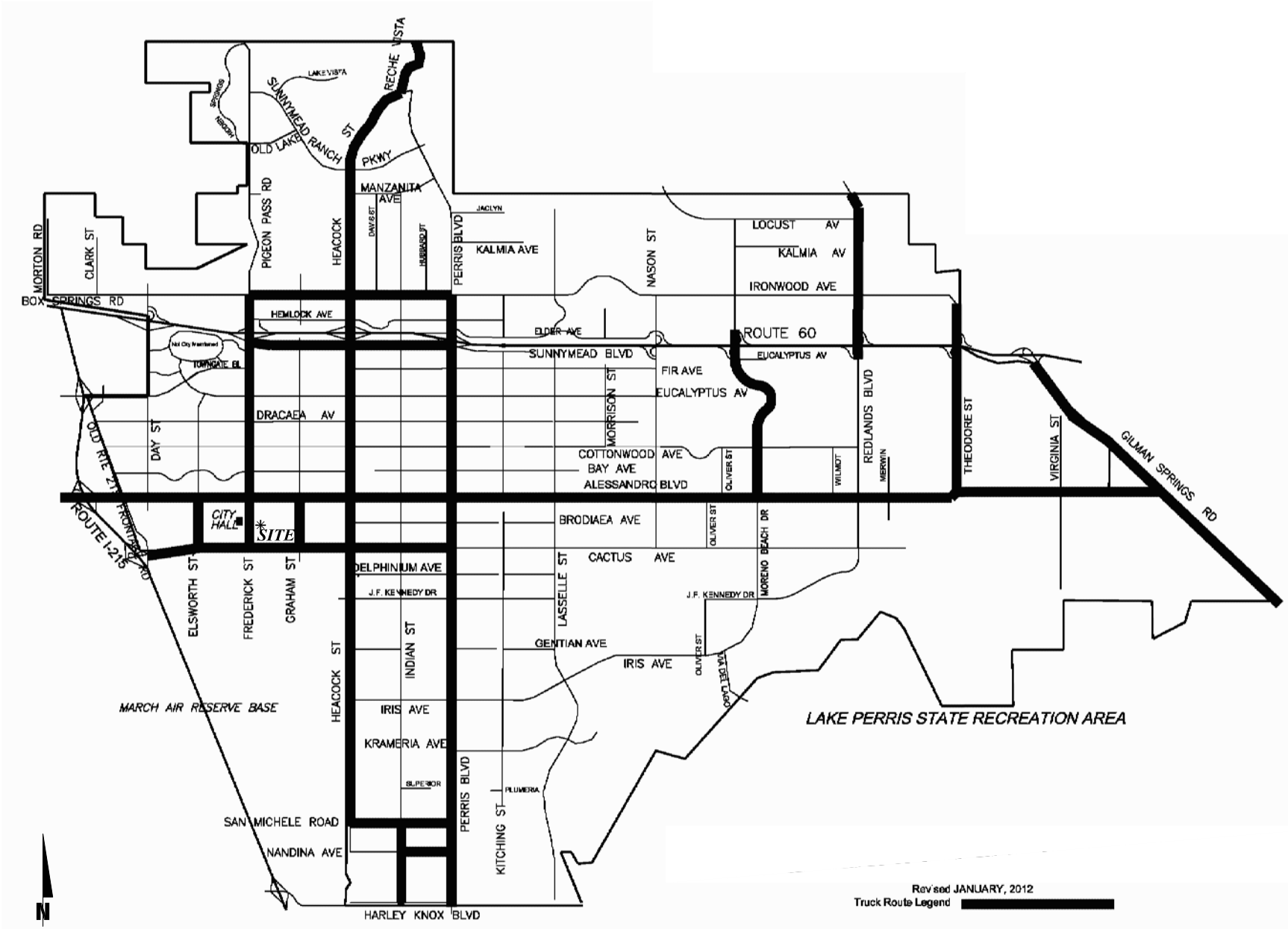
EXHIBIT 3-3: CITY OF MORENO VALLEY GENERAL PLAN ROADWAY CROSS-SECTIONS



Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 3-4: EXISTING TRUCK ROUTES



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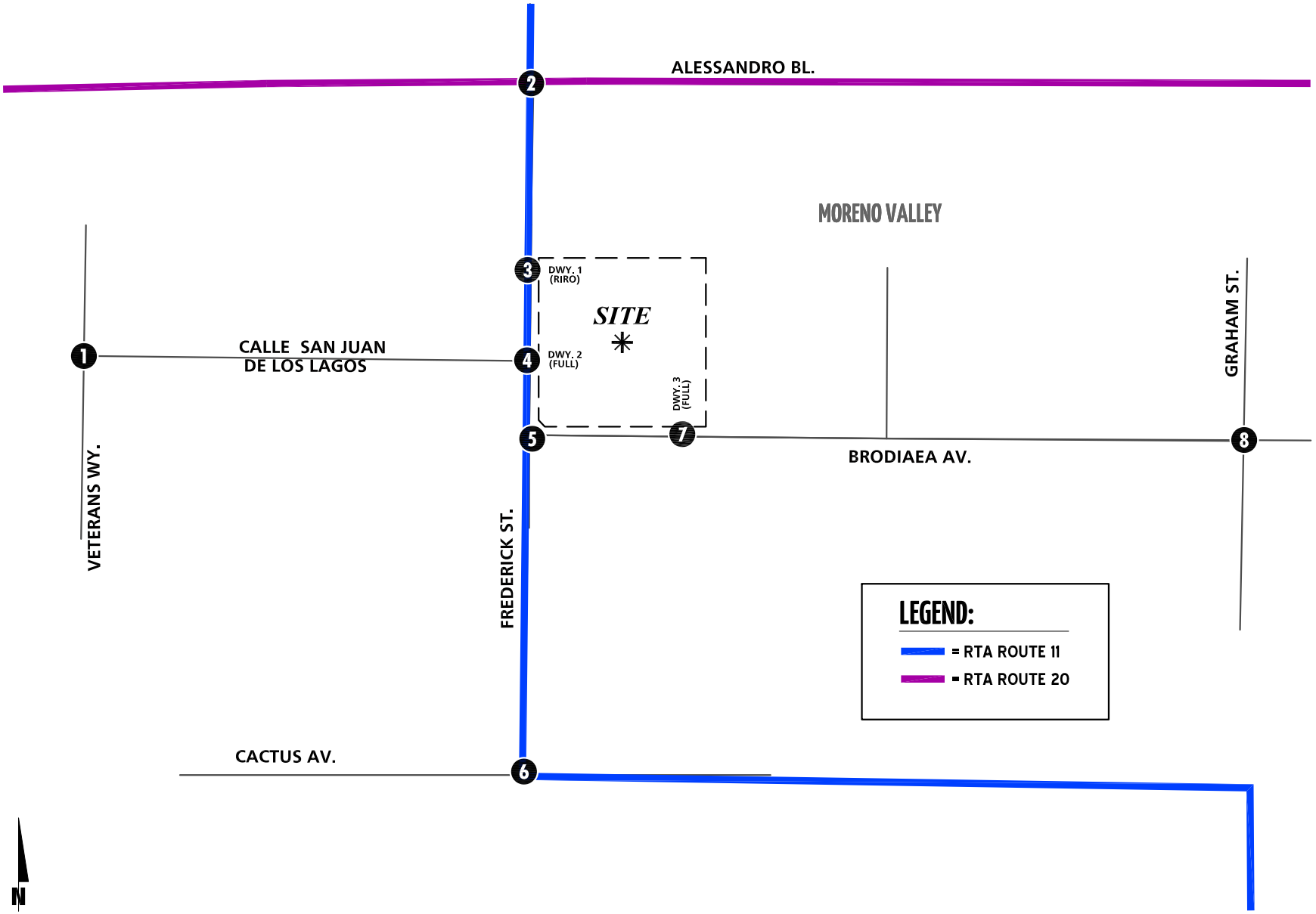
E.1.x

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 3-5: EXISTING TRANSIT ROUTES



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URBAN CROSSROADS

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Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

3.5 BICYCLE & PEDESTRIAN FACILITIES

In an effort to promote alternative modes of transportation, the City of Moreno Valley General Plan also includes a trails and bikeway system. The City of Moreno Valley trails and bikeway system are shown on Exhibit 3-6 and Exhibit 3-7. The Juan Bautista de Anza Class I Multi-Use Trail (previously the Aqueduct Multi-Use Trail) is located just east of the study area and runs in the north-south direction along Heacock Street. There are currently Class II bike lanes along Alessandro Boulevard, Frederick Street, and Cactus Avenue. Field observations conducted in September 2017 indicate nominal pedestrian and bicycle activity within the study area. Exhibit 3-8 illustrates the existing pedestrian facilities, including sidewalks and crosswalk locations, and the Class I trail and Class II bike lanes within the study area.

3.6 EXISTING (2018) TRAFFIC COUNTS

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in April 2018. The following peak hours were selected for analysis:

- Weekday AM Peak Hour (peak hour between 7:00 AM and 9:00 AM)
- Weekday PM Peak Hour (peak hour between 4:00 PM and 6:00 PM)

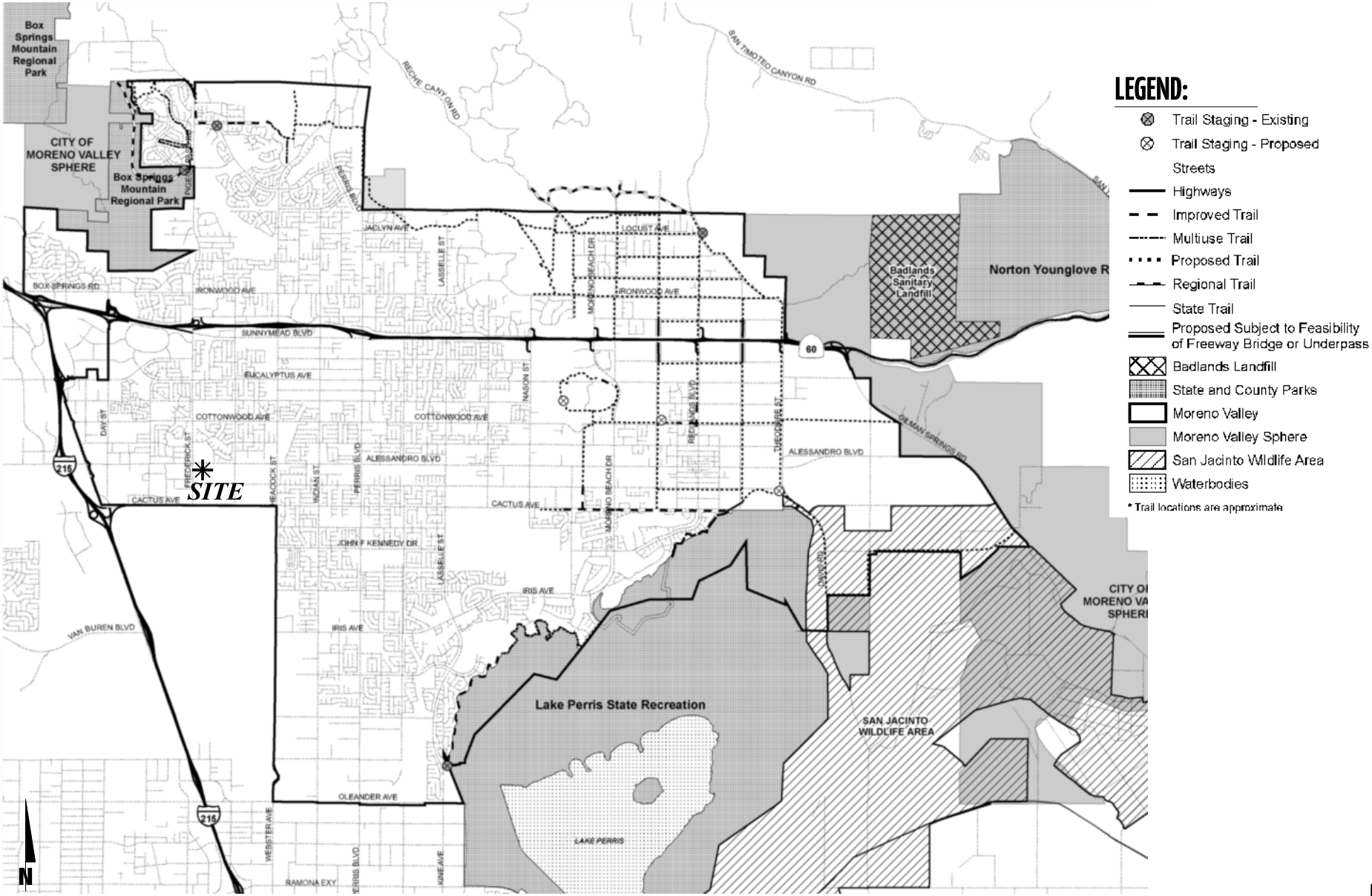
The weekday AM and weekday PM peak hour count data is representative of typical weekday peak hour traffic conditions in the study area. There were no observations made in the field that would indicate atypical traffic conditions on the count dates, such as construction activity or detour routes and near-by schools were in session and operating on normal schedules.

The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1. These raw turning volumes have been flow conserved between intersections with limited access, no access, and where there are currently no uses generating traffic (e.g., between ramp-to-arterial intersections, etc.). The traffic counts collected in April 2018 include the vehicle classifications as shown below:

- Passenger Cars
- 2-Axle Trucks
- 3-Axle Trucks
- 4 or More Axle Trucks

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 3-6: CITY OF MORENO VALLEY MASTER PLAN OF TRAILS



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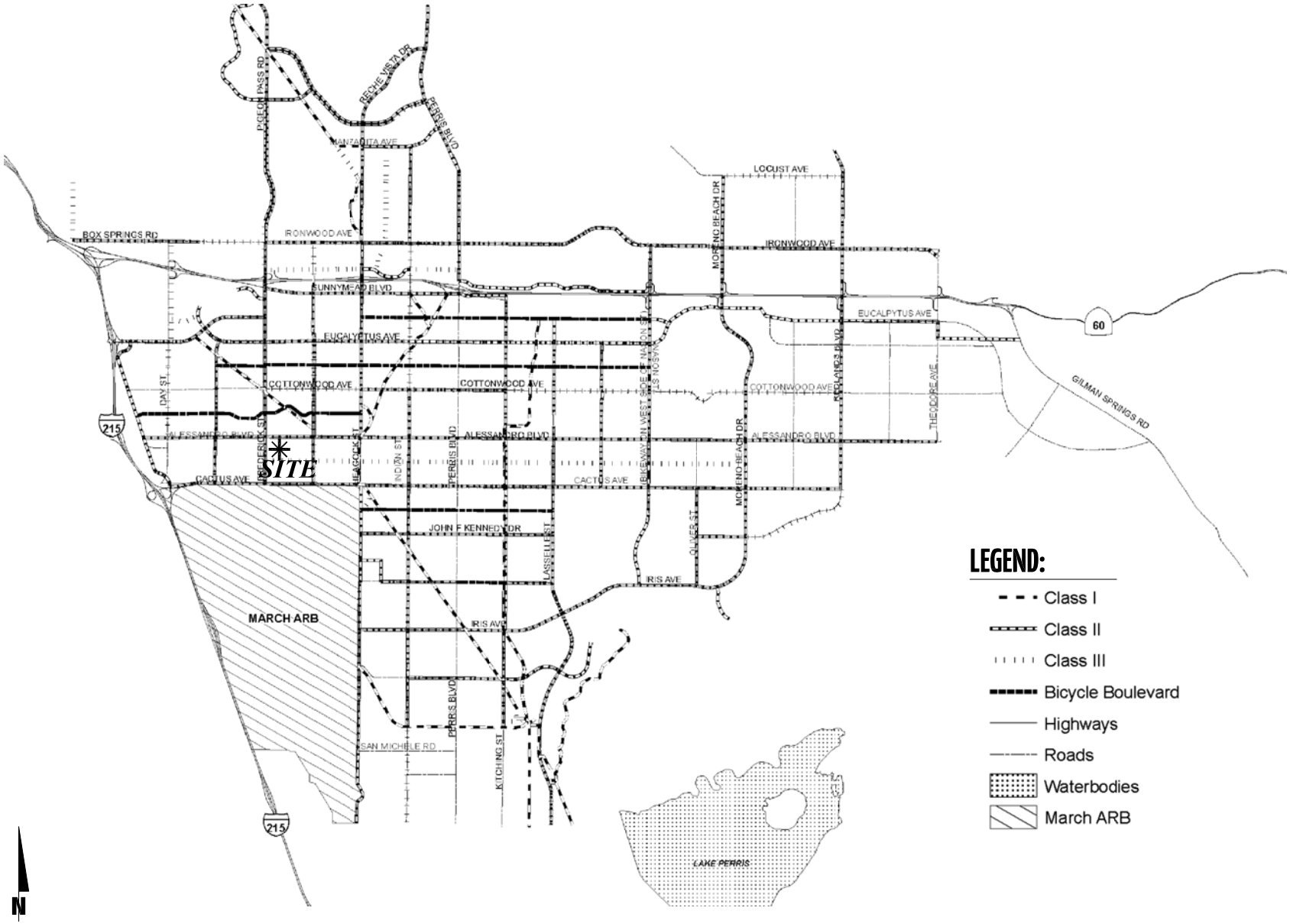
Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 3-7: CITY OF MORENO VALLEY BIKE PLAN



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URBAN CROSSROADS

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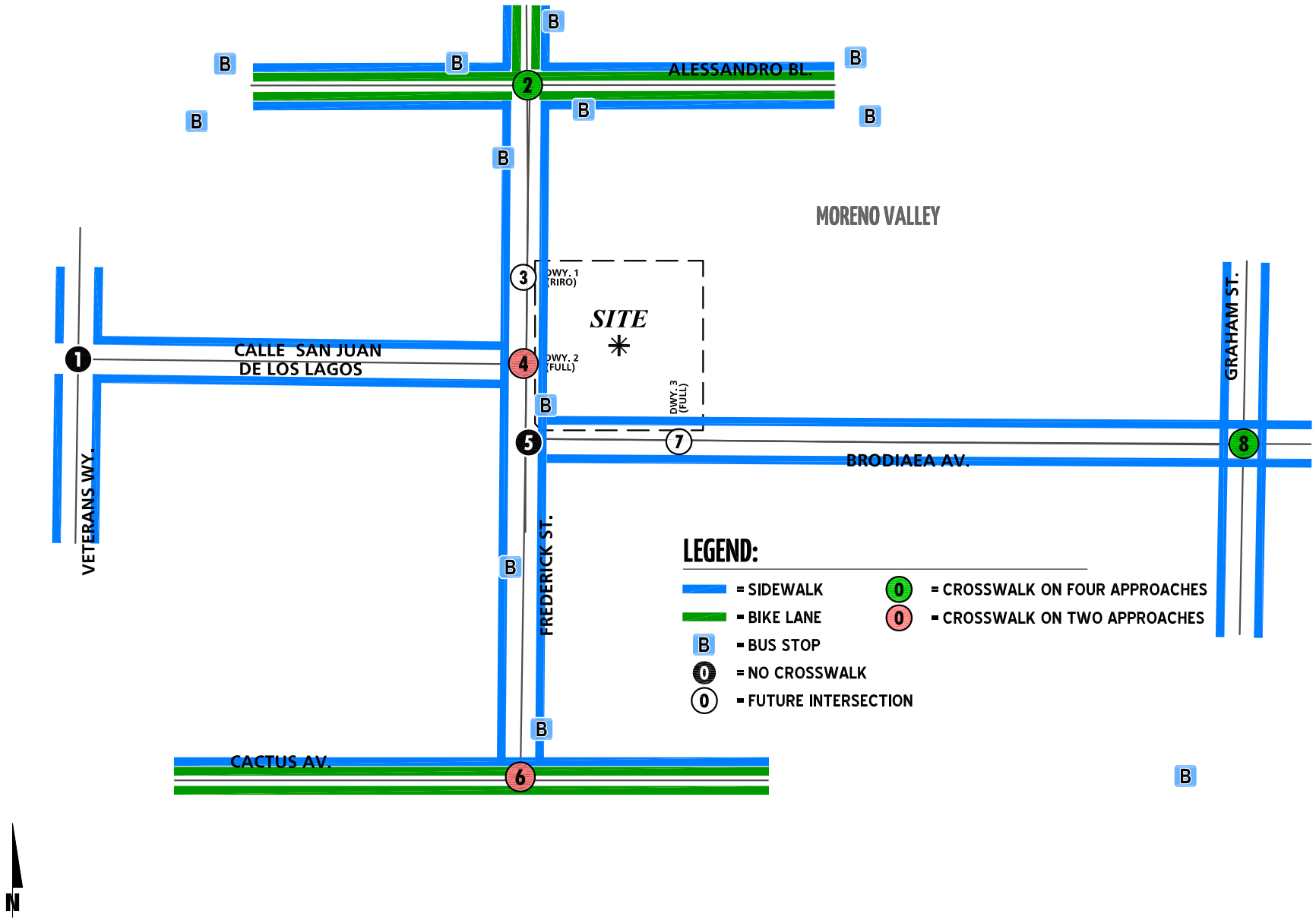
Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 3-8: EXISTING PEDESTRIAN FACILITIES



To represent the impact large trucks, buses, and recreational vehicles have on traffic flow, all trucks were converted into PCEs. By their size alone, these vehicles occupy the same space as two or more passenger cars. In addition, the time it takes for them to accelerate and slow-down is also much longer than for passenger cars and varies depending on the type of vehicle and number of axles. For the purpose of this analysis, a PCE factor of 1.5 has been applied to 2-axle trucks, 2.0 for 3-axle trucks, and 3.0 for 4+-axle trucks to estimate each turning movement. These factors are consistent with the values recommended for use in the San Bernardino County CMP and are in excess of the factor recommended for use in the County of Riverside traffic study guidelines. (7) Although the County of Riverside has a recommended PCE factor of 2.0, the San Bernardino County CMP PCE factors have been utilized in an effort to conduct a more conservative analysis.

Existing weekday average daily traffic (ADT) volumes on arterial highways throughout the study area are shown on Exhibit 3-9. Where actual 24-hour tube count data was not available, Existing ADT volumes were based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

Weekday PM Peak Hour (Approach Volume + Exit Volume) x 13.0298 = Leg Volume

A comparison of the PM peak hour and daily traffic volumes of various roadway segments within the study area indicated that the peak-to-daily relationship is approximately 7.67 percent. As such, the above equation utilizing a factor of 13.0298 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 7.67 percent (i.e., 1/0.0767 = 13.0298) and was assumed to sufficiently estimate average daily traffic (ADT) volumes for planning-level analyses. Existing weekday AM and weekday PM peak hour intersection volumes (in PCE) are also shown on Exhibit 3-9.

3.7 Intersection Operations Analysis

Existing peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized in Table 3-1 which indicates that the existing study area intersections are currently operating at an acceptable LOS during the peak hours (i.e., LOS C or better, or LOS D at City designated intersections).

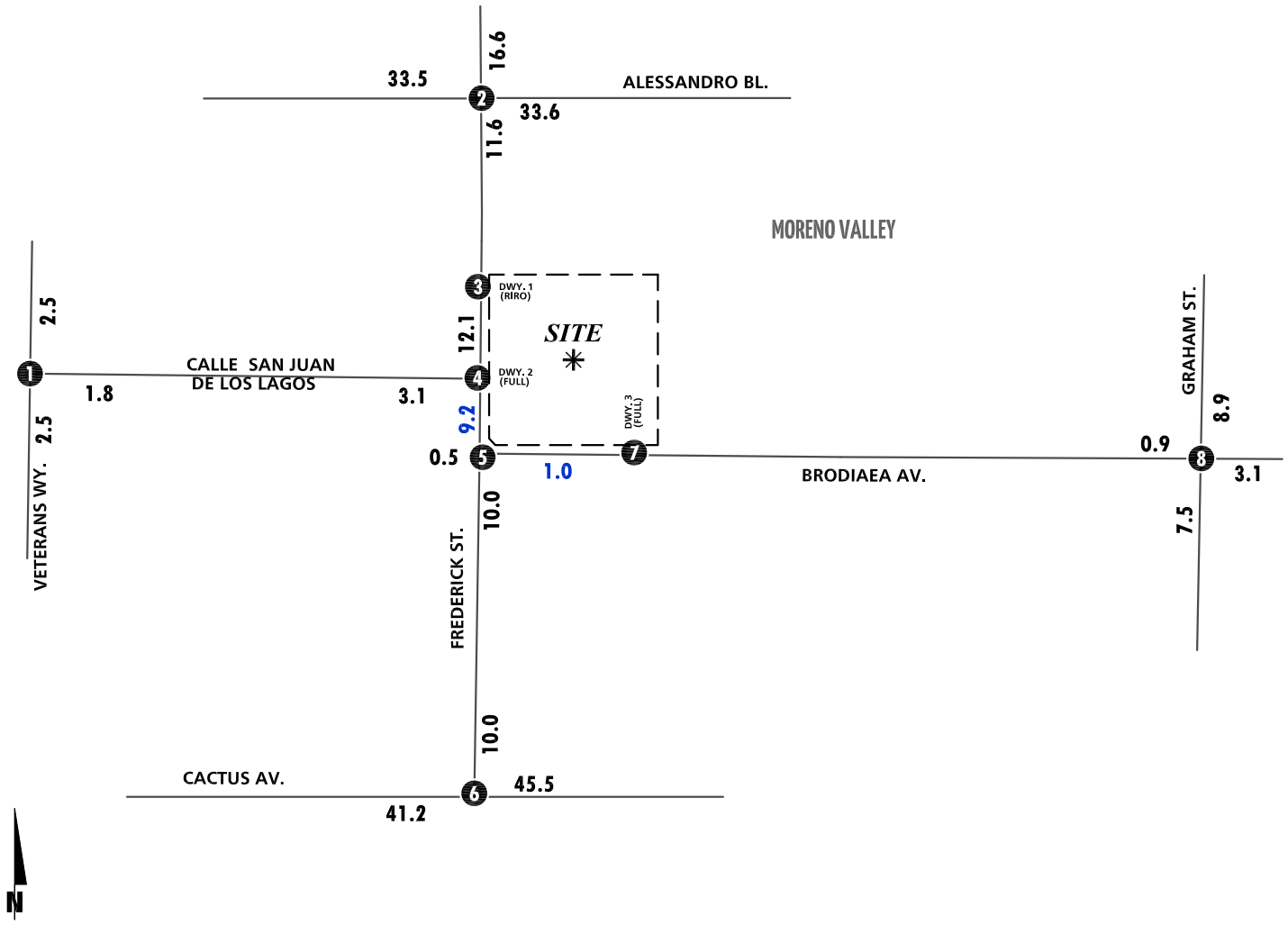
Consistent with Table 3-1, a summary of the peak hour intersection LOS for Existing conditions are shown on Exhibit 3-10. The intersection operations analysis worksheets are included in Appendix 3.2 of this TIA.

3.8 Traffic Signal Warrants Analysis

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. No study area intersections currently warrant a traffic signal for Existing traffic conditions (see Appendix 3.3).

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 3-9: EXISTING (2018) TRAFFIC VOLUMES (IN PCE)



1 Veterans Wy. & Calle San Jaun De Los Lagos 31(45) 40(27) 22(42) 33(42) 50(78) 61(28)	**2** Frederick St. & Alessandro Bl. 186(118) 248(267) 99(262) 105(162) 1315(804) 75(59) 110(196) 436(1224) 35(136) 85(97) 218(267) 17(70)	**3** Frederick St. & Dwy. 1 Future Intersection	**4** Frederick St. & Calle San Jaun De Los Lagos / Dwy. 2 77(55) 256(432) 24(136) 12(25) 45(22) 306(304)	**5** Frederick St. & Brodiaea Av. 13(10) 255(447) 67(48) 5(28) 284(277) 8(18)
6 Frederick St. & Cactus Av. 83(139) 131(408) 147(141) 1681(969) 164(77) 972(1976)	**7** Dwy. 3 & Brodiaea Av. Future Intersection	**8** Graham St. & Brodiaea Av. 5(3) 241(266) 42(75) 75(68) 52(46) 20(20) 2(3) 6(11) 3(3) 3(3) 194(265) 18(22)		

LEGEND:

10.0 = ACTUAL (COUNT-BASED) VEHICLES PER DAY (1000'S)
10.0 = ESTIMATED VEHICLES PER DAY (1000'S)
10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

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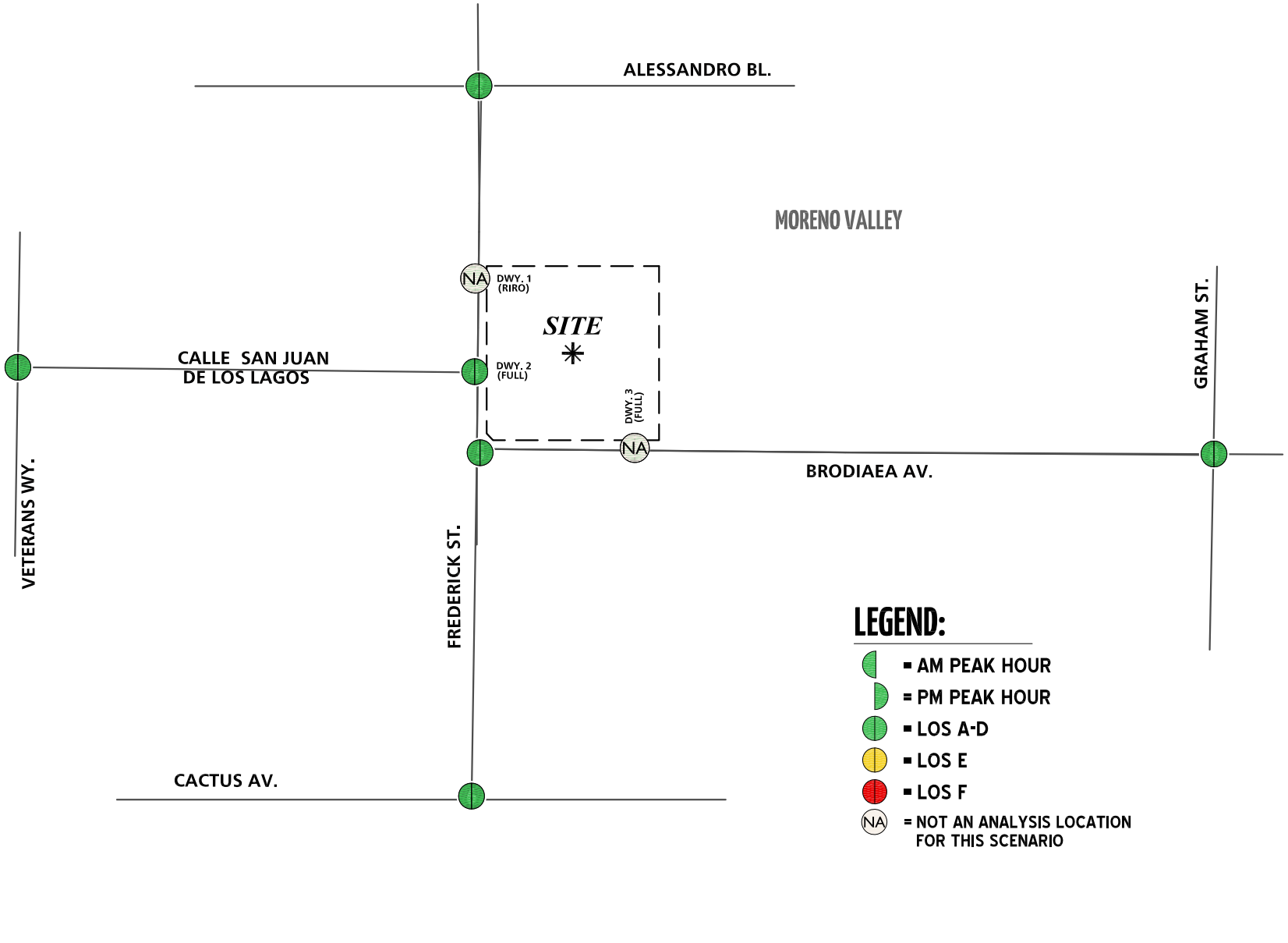
URBAN CROSSROADS

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 3-10: EXISTING (2018) SUMMARY OF LOS



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Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 3-1

Intersection Analysis for Existing (2018) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Veterans Wy. & Calle San Juan de Los Lagos	CSS	0	1	d	1	1	0	0	0	0	1	0	1	9.7	9.7	A	A
2	Frederick St. & Alessandro Bl.	TS	2	2	0	2	2	1	1	2	1	1	3	0	38.8	48.6	D	D
3	Frederick St. & Driveway 1		Future Intersection															
4	Frederick St. & Calle San Juan de Los Lagos/Driveway 2	TS	1	2	0	0	2	0	1	0	1>	0	0	0	6.4	11.7	A	B
5	Frederick St. & Brodiaea Av.	CSS	0	2	0	0	2	0	0	0	1	0	0	1	9.6	10.0	A	B
6	Frederick St. & Cactus Av.	TS	0	0	0	2	0	1>	1	3	0	0	3	1>	14.1	12.1	B	B
7	Driveway 3 & Brodiaea Av.		Future Intersection															
8	Graham St. & Brodiaea Av.	TS	1	2	0	1	2	0	1	1	d	1	1	d	13.2	13.3	B	B

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes

L = Left; T = Through; R = Right; d = Defacto Right-Turn Lane; > = Right-Turn Overlap Phasing

[2] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] TS = Traffic Signal; CSS = Cross-Street Stop

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

3.9 QUEUING ANALYSIS

A queuing analysis was conducted for all study area intersections to determine 95th percentile queues during the peak hours. The queuing analysis results are summarized on Table 3-2 for Existing (2018) traffic conditions, which indicates that the following movements currently experience queuing issues based on the 95th percentile peak hour traffic flows:

- Frederick Street & Alessandro Boulevard, southbound left turn lane (PM peak hour only)
- Frederick Street & Alessandro Boulevard, eastbound left turn lane (PM peak hour only)
- Frederick Street & Alessandro Boulevard, westbound left turn lane (AM peak hour only)

Queuing worksheets for Existing (2018) traffic conditions are included in Appendix 3.4.

3.10 RECOMMENDED IMPROVEMENTS

All study area intersections are currently operating at acceptable LOS (LOS C or better, or LOS D at City designated intersections) for Existing (2018) traffic conditions. As such, no intersection improvements have been recommended.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 3-2

Peak Hour Queuing Summary for Existing Conditions

Intersection	Movement	Available Stacking Distance (Feet)	95th Percentile Queue (Feet)		Acceptable? [1]	
			AM Peak Hour	PM Peak Hour	AM	PM
Veterans Wy. & Calle San Juan de Los Lagos	NBR	1,050	3	0	Yes	Yes
	SBL	115	16	14	Yes	Yes
	WBL	100	37	41	Yes	Yes
	WBR	380	26	31	Yes	Yes
Frederick St. & Alessandro Bl.	NBL	135	52	56	Yes	Yes
	NBL	135	69	76	Yes	Yes
	SBL	120	73	**202**	Yes	**No**
	SBL	120	123	**230**	Yes[3]	Yes[2]
	SBR	100	107	65	Yes[3]	Yes
	EBL	250	139	**373**	Yes	**No**
	EBR	1,600	23	52	Yes	Yes
	WBL	130	**213**	138	**No**	Yes[3]
Frederick St. & Calle San Juan de Los Lagos/Driveway 2	NBL	150	63	53	Yes	Yes
	EBL	120	45	128	Yes	Yes[3]
Frederick St. & Brodiaea Av.	WBR	490	46	45	Yes	Yes
Frederick St. & Cactus Av.	SBL	140	66	149	Yes	Yes[2]
	SBL	810	83	172	Yes	Yes
	SBR	810	59	67	Yes	Yes
	EBL	300	145	90	Yes	Yes
	WBR	265	52	49	Yes	Yes
Graham St. & Brodiaea Av.	NBL	160	12	13	Yes	Yes
	SBL	150	53	61	Yes	Yes
	EBL	210	10	17	Yes	Yes
	EBR	180	16	13	Yes	Yes
	WBL	150	43	42	Yes	Yes
	WBR	180	45	45	Yes	Yes

* **BOLD** = Queue length exceeds available stacking distance.

NOTE: The Project is anticipated to contribute less than 50 peak hour trips to the study area intersections. As such, the Project's impact to the identified queuing issues are less than significant.

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided.

[2] Although the 95th percentile queue is anticipated to exceed the available storage for the turn lane, however, there is sufficient storage within the striped median for vehicles to continue to stack without blocking the adjacent through lane.

[3] An additional 15 feet of stacking, which is assumed to be provided in the transition for turn pockets, is reflected in the stacking distance shown on this table, where applicable.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project, as well as the Project's trip assignment, onto the study area roadway network. The Project has been evaluated to consist of up to 163,218 sf of warehouse (without cold storage) use (80 percent of the total square footage) and 40,804 sf of general light industrial use (20 percent of the total square footage) for a total of 204,022 sf within a single building. Per the City's traffic study guidelines, the Opening Year Cumulative will have a 5-year minimum horizon from baseline conditions. As such, the Opening Year Cumulative analysis will assess 2023 traffic conditions.

Vehicular and truck traffic access will be provided via the following driveways (see Exhibit 1-1):

- Driveway 1 & Frederick St. – Right-in right-out only (trucks only)
- Frederick St. & Calle San Juan de Los Lagos/Driveway 2 – Full access driveway (passenger cars only)
- Driveway 3 & Brodiaea Av. – Full access driveway (both passenger cars and trucks)

Regional access to the Project site is provided via the I-215 Freeway at Alessandro Boulevard and Cactus Avenue interchanges.

4.1 PROJECT TRIP GENERATION

4.1.1 PROPOSED PROJECT

Trip generation represents the amount of traffic which is both attracted to and produced by a development. Determining traffic generation for a specific project is therefore based upon forecasting the amount of traffic that is expected to be both attracted to and produced by the specific land uses being proposed for a given development. The ITE Trip Generation Manual is a nationally recognized source for estimating site-specific trip generation. ITE's most current version of the Trip Generation Manual is based on more than 4,800 trip generation studies submitted to ITE by public agencies, consulting firms, universities/colleges, developers, associations, and local sections/districts/student chapters of ITE. (2)

The ITE Trip Generation Manual includes data regarding the types of vehicles that are generated (passenger cars and trucks), but provides no guidance on vehicle mix (different sizes of trucks). While trucks, as a percentage of total traffic, has been based on the ITE Trip Generation Handbook, data regarding the specific truck mix has been obtained from a separate report: The South Coast Air Quality Management District's (SCAQMD) Warehouse Truck Trip Study Data Results and Usage recommended truck mix. (8) (9) The ITE Trip Generation Handbook identifies a breakdown of trips between passenger cars (80 percent) and trucks (20 percent). The SCAQMD is currently recommending the use of the ITE Trip Generation Manual in conjunction with their truck mix by axle-type to better quantify trip rates associated with local warehouse and distribution projects, as truck emission represent more than 90 percent of air quality impacts from these projects. This recommended procedure has been utilized for the purposes of this analysis for the Warehousing use (ITE land use code 150) in effort to be consistent with other technical studies prepared for the Project.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Trip generation for heavy trucks was further broken down by truck type (or axle type). The total truck percentage is comprised of 3 different truck types: 2-axle, 3-axle, and 4+-axle trucks. For the purposes of this analysis, the percentage of trucks, by axle type, were obtained from the SCAQMD interim recommended truck mix. The SCAQMD has recently performed surveys of existing facilities and compiled the data to provide interim guidance on the mix of heavy trucks for these types of warehousing facilities. Based on this interim guidance from the SCAQMD, the following truck fleet mix was utilized for the purposes of estimating the truck trip generation for the site: 16.7% of the total trucks as 2-axle trucks, 20.7% of the total trucks as 3-axle trucks, and 62.5% of the total trucks as 4+-axle trucks.

The ITE Trip Generation Manual and the ITE Trip Generation Handbook does not provide a vehicle mix for the General Light Industrial (ITE land use code 110) land use. As such, the vehicle mix identified in the City of Fontana Truck Trip Generation Study has been utilized for the General Light Industrial land use. (10)

Lastly, PCE factors were applied to the trip generation rates for heavy trucks (large 2-axles, 3-axles, 4+-axles). PCE factors are consistent with the recommended PCE factors in Appendix B of the San Bernardino County CMP, 2016 Update (i.e., 1.5 for 2-axle trucks, 2.0 for 3-axle trucks, and 3.0 for 4+-axle trucks). Although the County of Riverside has a recommended PCE factor of 2.0, the San Bernardino County CMP PCE factors have been utilized in an effort to conduct a more conservative analysis as the resulting PCE trip generation is higher.

Trip generation rates used to estimate Project traffic are shown in Table 4-1 for PCE and Table 4-2 for actual vehicles. A summary of the Project's trip generation is also shown on Table 4-1 for PCE and Table 4-2 for actual vehicles. For purposes of this analysis, ITE land use code 150 (Warehousing) and ITE land use code 110 (General Light Industrial) have been used to derive site specific trip generation estimates. In order to accurately reflect the impact that heavy trucks would have on the street system, Project trips have been further broken down between passenger cars and trucks for each of the peak hours and weekday daily trip generation.

As directed by the City of Moreno Valley and consistent with standard traffic engineering practice in Southern California, PCE factors have been utilized due to the expected heavy truck component for the proposed Project uses. PCEs allow the typical "real-world" mix of vehicle types to be represented as a single, standardized unit, such as the passenger car, to be used for the purposes of capacity and level of service analyses. These PCE factors are consistent with the values recommended by the San Bernardino County CMP and are accepted factors in the City of Moreno Valley. (7) A PCE factor of 1.5 has been applied to 2-axle trucks, 2.0 for 3-axle trucks, and 3.0 for 4+-axle trucks.

As shown on Table 4-1, the proposed project is estimated to generate a net total of 629 passenger-car-equivalent (PCE) trip-ends per day on a typical weekday with approximately 72 net AM PCE peak hour trips and 74 net PM PCE peak hour trips.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 4-1

Project Trip Generation Summary (PCE)

Land Use	ITE LU Code	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Project Trip Generation Rates[1]									
General Light Industrial[3]	110	TSF	0.616	0.084	0.700	0.082	0.548	0.630	4.960
Passenger Cars (78.6%)			0.484	0.066	0.550	0.064	0.431	0.495	3.899
2-Axle Trucks (8.0%) (PCE = 1.5)[5]			0.074	0.010	0.084	0.010	0.066	0.076	0.595
3-Axle Trucks (3.9%) (PCE = 2.0)[5]			0.048	0.007	0.055	0.006	0.043	0.049	0.387
4-Axle+ Trucks (9.5%) (PCE = 3.0)[5]			0.176	0.024	0.200	0.023	0.156	0.180	1.414
Warehousing Without Cold Storage[3,4]	150	TSF	0.131	0.039	0.170	0.051	0.139	0.190	1.740
Passenger Cars (80.00%)			0.105	0.031	0.136	0.041	0.111	0.152	1.392
2-Axle Trucks (3.34%) (PCE = 1.5)[5]			0.007	0.002	0.009	0.003	0.007	0.010	0.087
3-Axle Trucks (4.14%) (PCE = 2.0)[5]			0.011	0.003	0.014	0.004	0.011	0.016	0.144
4-Axle+ Trucks (12.52%) (PCE = 3.0)[5]			0.049	0.015	0.064	0.019	0.052	0.071	0.654

Project	Quantity	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Project Trip Generation Summary									
Centerpointe									
General Light Industrial (20%)	40.804	TSF							
Passenger Cars:			20	3	23	3	18	21	159
Truck Trips:									
2-axle:			3	0	3	0	3	3	24
3-axle:			2	0	2	0	2	2	16
4+-axle:			7	1	8	1	6	7	58
- Net Truck Trips (PCE)			*12*	*1*	*13*	*1*	*11*	*12*	*98*
Warehousing Without Cold Storage (80%)	163.218	TSF							
Passenger Cars:			17	5	22	7	18	25	227
Truck Trips:									
2-axle:			1	0	1	0	1	1	14
3-axle:			2	1	3	1	2	3	24
4+-axle:			8	2	10	3	9	12	107
- Net Truck Trips (PCE)			*11*	*3*	*14*	*4*	*12*	*16*	*145*
TOTAL NET TRIPS (PCE)			***60***	***12***	***72***	***15***	***59***	***74***	***629***

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] TSF = Thousand Square Feet

[3] Vehicle Mix Source: City of Fontana Truck Trip Generation Study, August 2003.

[4] Truck Mix Source: SCAQMD Warehouse Truck Trip Study Data Results and Usage (2014).

Normalized % - Without Cold Storage:

16.7% 2-Axle trucks, 20.7% 3-Axle trucks, 62.5% 4-Axle trucks

[5] PCE rates are per SBCTA (more conservative than Riverside County).

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 4-2

Project Trip Generation Summary (Actual Vehicles)

Land Use	ITE LU Code	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Project Trip Generation Rates (Actual Vehicles)[1]									
General Light Industrial[3]	TSF	110	0.616	0.084	0.700	0.082	0.548	0.630	4.960
Passenger Cars (78.6%)			0.484	0.066	0.550	0.064	0.431	0.495	3.899
2-Axle Trucks (8.0%)			0.049	0.007	0.056	0.007	0.044	0.050	0.397
3-Axle Trucks (3.9%)			0.024	0.003	0.027	0.003	0.021	0.025	0.193
4-Axle+ Trucks (9.5%)			0.059	0.008	0.067	0.008	0.052	0.060	0.471
Warehousing Without Cold Storage[3,4]	150	TSF	0.131	0.039	0.170	0.051	0.139	0.190	1.740
Passenger Cars (80.00%)			0.105	0.031	0.136	0.041	0.111	0.152	1.392
2-Axle Trucks (3.34%)			0.004	0.001	0.006	0.002	0.005	0.006	0.058
3-Axle Trucks (4.14%)			0.005	0.002	0.007	0.002	0.006	0.008	0.072
4-Axle+ Trucks (12.52%)			0.016	0.005	0.021	0.006	0.017	0.024	0.218

Project	Quantity	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Project Trip Generation Summary									
Centerpointe									
General Light Industrial (20%)	40.804	TSF							
Passenger Cars:			20	3	23	3	18	21	159
Truck Trips:									
2-axle:			2	0	2	0	2	2	16
3-axle:			1	0	1	0	1	1	8
4+-axle:			2	0	2	0	2	2	19
- Net Truck Trips (Actual)			*5*	*0*	*5*	*0*	*5*	*5*	*43*
Warehousing Without Cold Storage (80%)	163.218	TSF							
Passenger Cars:			17	5	22	7	18	25	227
Truck Trips:									
2-axle:			1	0	1	0	1	1	9
3-axle:			1	0	1	0	1	1	12
4+-axle:			3	1	4	1	3	4	36
- Net Truck Trips (Actual)			*5*	*1*	*6*	*1*	*5*	*6*	*57*
TOTAL NET TRIPS (Actual)			***47***	***9***	***56***	***11***	***46***	***57***	***486***

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] TSF = Thousand Square Feet

[3] Vehicle Mix Source: City of Fontana Truck Trip Generation Study, August 2003.

[4] Truck Mix Source: SCAQMD Warehouse Truck Trip Study Data Results and Usage (2014).
Normalized % - Without Cold Storage:
16.7% 2-Axle trucks, 20.7% 3-Axle trucks, 62.5% 4-Axle trucks

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

4.1.2 Comparison Between Existing and Proposed Land Uses

Under the currently adopted City of Moreno Valley General Plan, the land use for the northeast corner of Frederick Street and Brodiaea Avenue is designated as Office. The proposed Project land use is Light Industrial. Based on a review of the City of Moreno Valley Municipal Code (Section 9.02.020), the most conservative allowable use was determined to be the medical-dental office use. Table 4-3 summarizes the trip generation for the medical-dental office land use in comparison to the proposed Project trip generation previously summarized on Table 4-1. As shown in Table 4-3, the proposed Project will result in a reduction of 2,048 PCE daily trips, with a reduction in 255 PCE AM trips and 246 PCE PM trips. As such, there would be an overall reduction to the trip generation with the proposed Project.

4.2 Project Trip Distribution

Trip distribution is the process of identifying the probable destinations, directions, or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered to identify the route where the Project traffic would distribute.

The Project trip distribution was developed based on anticipated travel patterns to and from the Project site for both passenger cars and truck traffic. The truck trip distribution patterns have been developed based on the anticipated travel patterns for trucks and the truck routes within the vicinity of the Project. The Project trip distribution patterns for both passenger cars and trucks were developed based on an understanding of existing travel patterns in the area, the geographical location of the site, and the site's proximity to the regional arterial and state highway system.

The passenger car trip distribution patterns utilized for the purposes of this analysis are shown on Exhibit 4-1 and truck trip distribution patterns are shown on Exhibit 4-2. In an effort to conduct a conservative analysis, the PCE trip generation for the proposed Project has been utilized to determine if the 50 peak hour trip criteria has been met at the study area intersections.

4.3 Modal Split

The traffic reducing potential of public transit, walking, or bicycling have not been considered in this TIA. Essentially, the traffic projections are "conservative" in that these alternative travel modes might be able to reduce the forecasted traffic volumes (employee trips only).

4.4 Project Trip Assignment

The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, Project ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-3 in PCE.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 4-3

Trip Generation Comparison Between Adopted Land Use and Proposed Land Use (PCE)

Land Use	Units[2]	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Currently Adopted Land Use Trip Generation Summary									
Medical-Dental Office[1,3]	TSF	270	2.17	0.61	2.78	0.97	2.49	3.46	34.80
Adopted Land Use Designation	TSF	229.474	498	140	638	222	572	794	7,986
CURRENTLY ADOPTED LAND USE TOTAL NET TRIPS			***498***	***140***	***638***	***222***	***572***	***794***	***7,986***
PROPOSED PROJECT TOTAL NET TRIPS[4] (PCE)			***60***	***12***	***72***	***15***	***59***	***74***	***629***
Trip Generation Comparison									
VARIANCE (PROJECT - ADOPTED)			***-438***	***-128***	***-566***	***-207***	***-513***	***-720***	***-7,357***

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

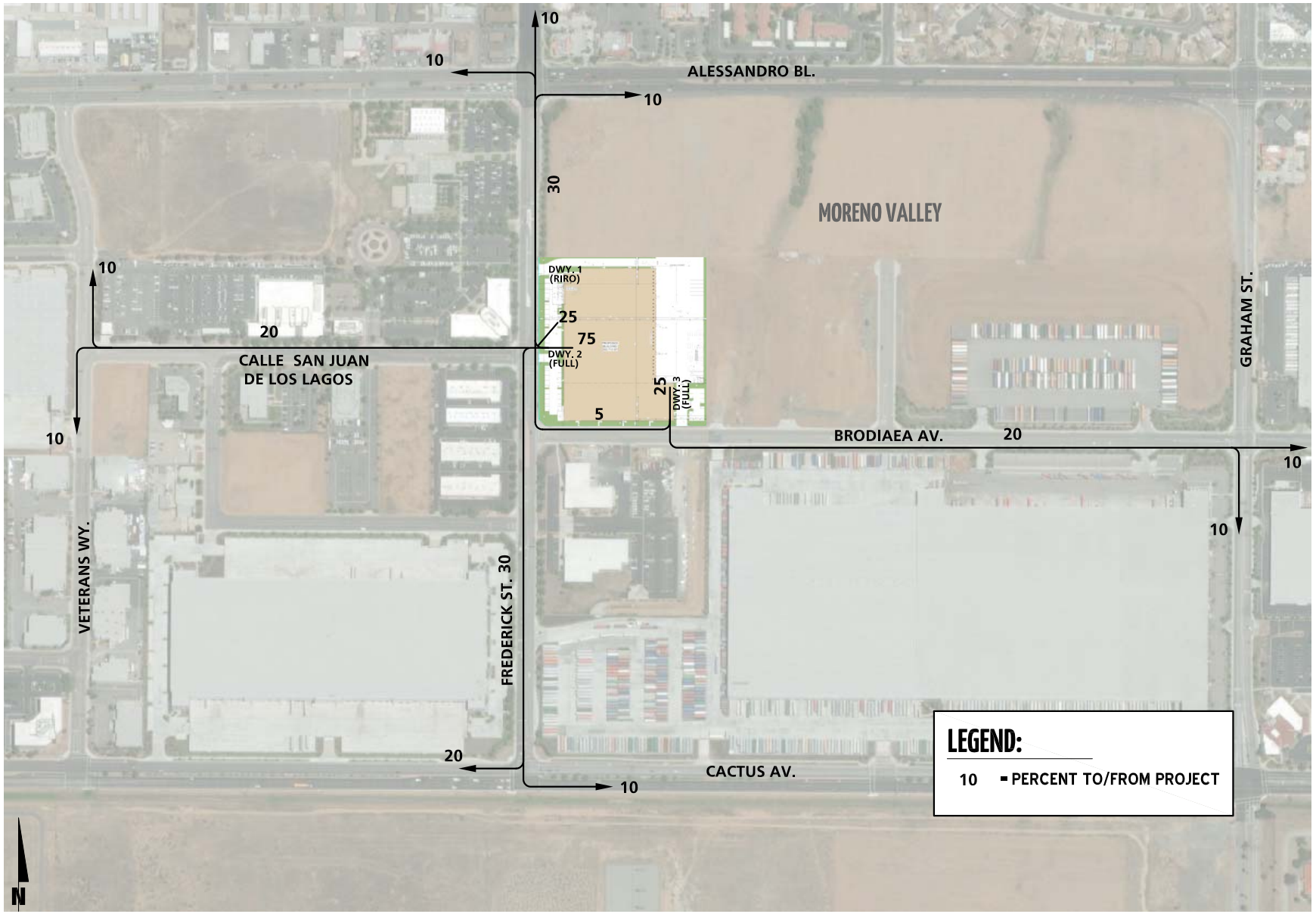
[2] TSF = thousand square feet

[3] Medical-Dental Office assumed to currently be the most conservative allowable use.

[4] Project trip generation (in PCE) from Table 4-1.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 4-1: PROJECT (PASSENGER CAR) TRIP DISTRIBUTION

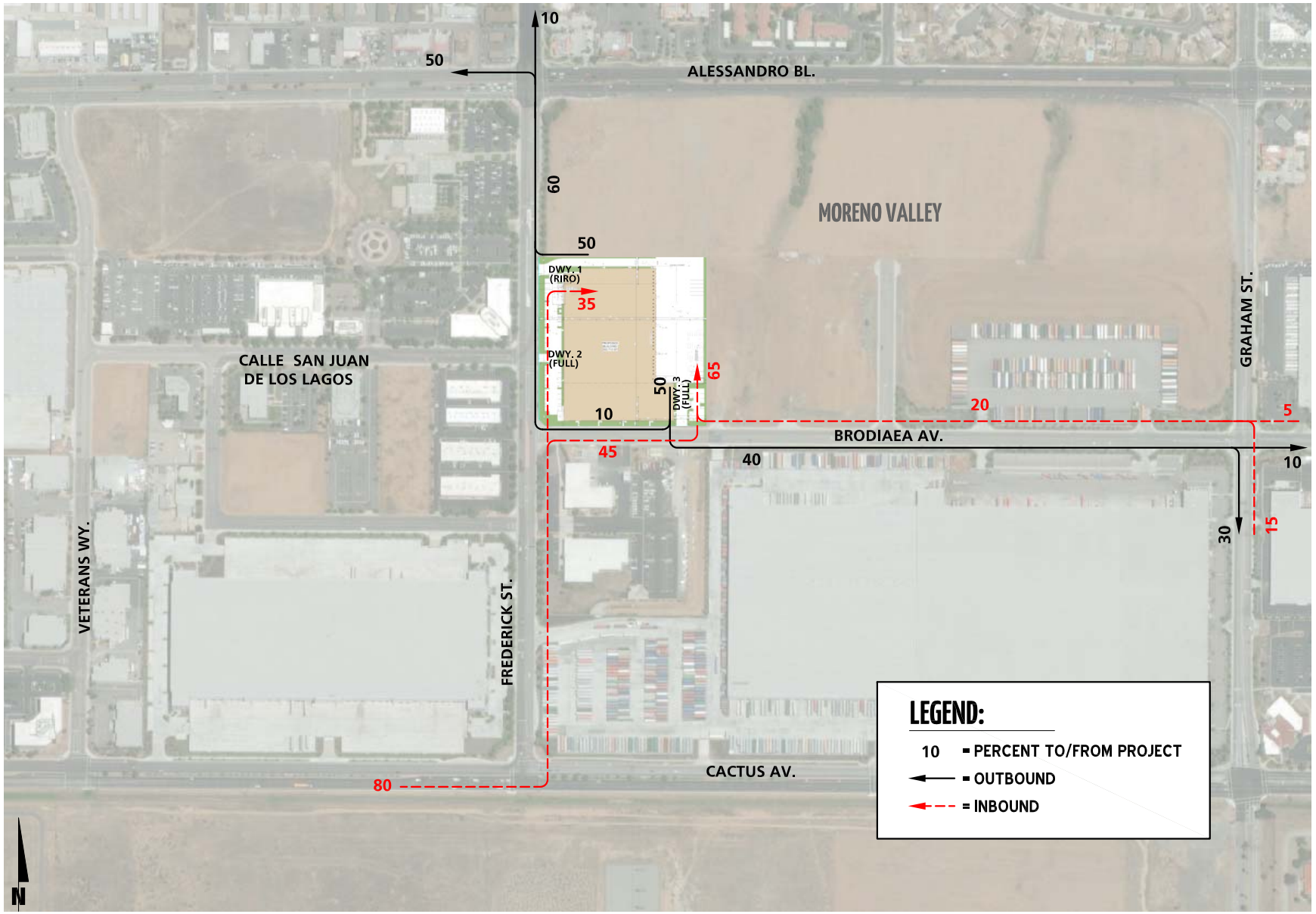


11410 - trip.dwg

URBAN CROSSROADS

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

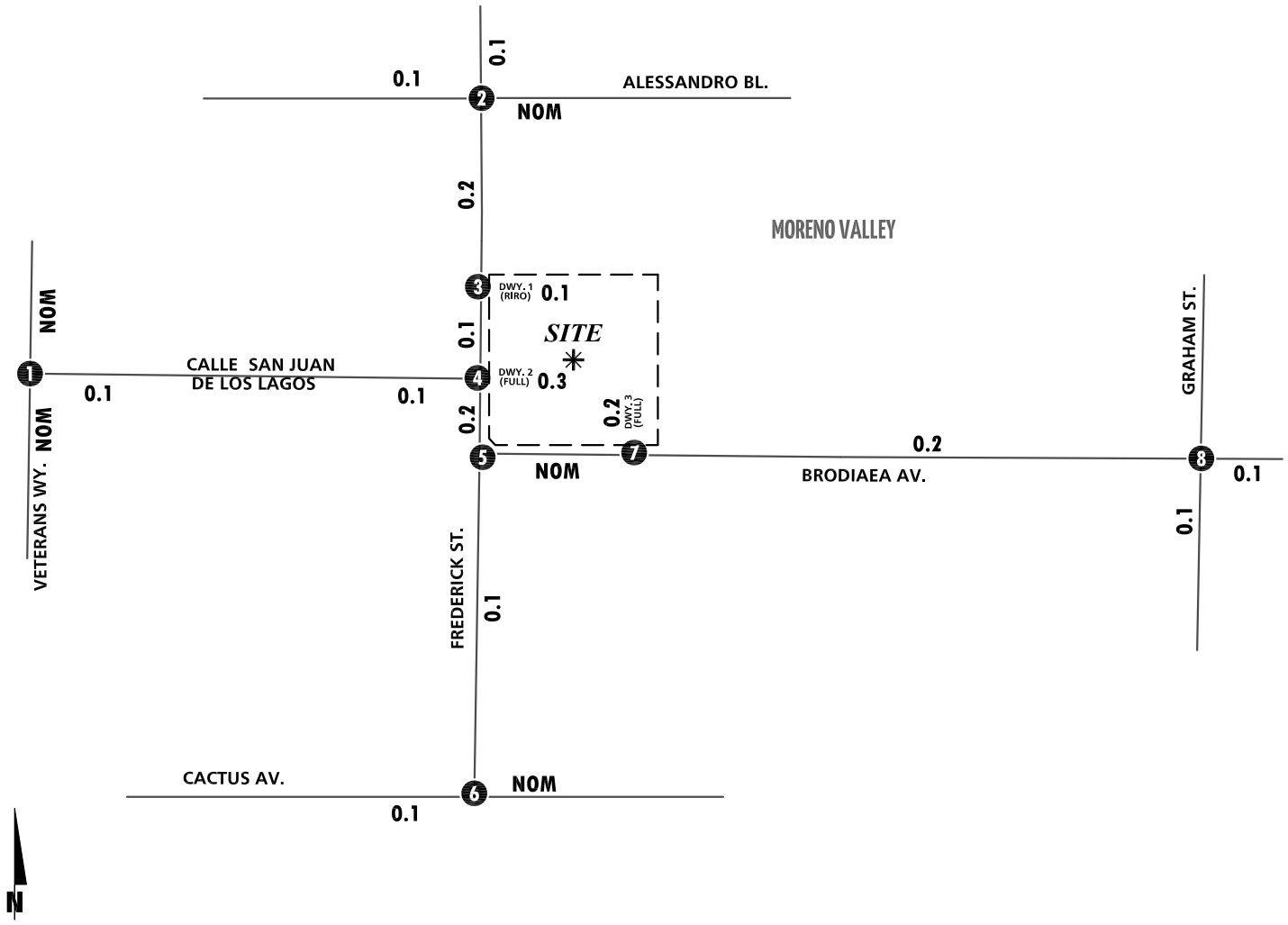
EXHIBIT 4-2: PROJECT (TRUCKS) TRIP DISTRIBUTION

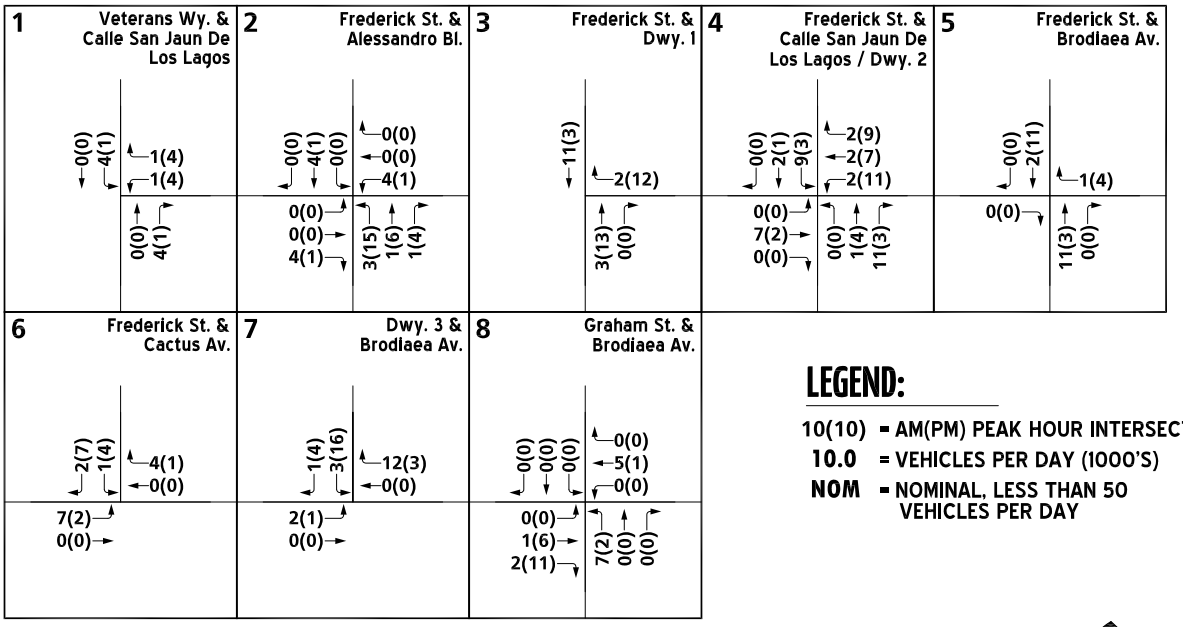


11410 - trip.dwg

URBAN CROSSROADS

EXHIBIT 4-3: PROJECT ONLY TRAFFIC VOLUMES (IN PCE)





LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)
NOM = NOMINAL, LESS THAN 50 VEHICLES PER DAY

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

4.5 BACKGROUND TRAFFIC

To account for growth in traffic between Existing Conditions (2018) and the Project Opening Year Cumulative (2023), a compounded annual traffic growth rate of 2.0 percent was assumed (10.41 percent aggregate growth in background traffic for the period between 2018 and 2023). The 2.0 percent annual growth rate is intended to capture non-specific ambient traffic growth.

In context, the TIA's assumed 2.0 percent compounded annual growth rate is considered a reasonable approximation of future traffic growth when compared to demographic projections reflected in other local and regional growth modeling efforts. More specifically, the Southern California Association of Governments (SCAG) 2016—2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) growth forecasts for the City of Moreno Valley assume the City population to increase from 197,600 in 2012 to 256,600 by the year 2040, or an approximate 0.94 percent growth rate compounded annually. The RTP/SCS assumed growth in households over the same 28-year period reflects an increase from 51,800 households to 73,000 households; a rate of 1.23 percent compounded annually. At the upper end of assumed RTP/SCS growth rates, employment over the same 28-year period is projected to increase from 31,400 jobs to 83,200 jobs; a rate of approximately 3.54 percent compounded annually. (11) The 2.0 percent compounded annual traffic growth rate used in the TIA reflects the fact that not all persons comprising population growth, household growth, or employment growth would translate on a one-to-one basis as a new vehicle trip in the region; and establishes a judicious midrange estimate lying between the RTP/SCS assumed regional population growth rate (0.94 percent) and the RTP/SCS assumed regional employment growth rate (3.54 percent).

Conservatively, the TIA estimates of area traffic growth then add traffic generated by other known or probable related projects. These related projects are at least in part already accounted for in the assumed annual 2.0 percent ambient growth in traffic noted above; and in some instances these related projects would likely not be implemented and functional within the 2023 Opening Year Cumulative time frame assumed for the Project. The resulting traffic growth rate used in the TIA (2.0 percent annual ambient growth plus traffic generated by related projects) would therefore tend to overstate rather than understate background cumulative traffic impacts under 2023 conditions.

4.6 CUMULATIVE DEVELOPMENT TRAFFIC

California Environmental Quality Act (CEQA) guidelines require that other reasonably foreseeable development projects which are either approved or being processed concurrently in the study area also be included as part of a cumulative analysis scenario. A cumulative project list was developed for the purposes of this analysis through consultation with planning and engineering staff from the City of Moreno Valley. The cumulative project list includes known and foreseeable projects that are anticipated to contribute traffic to the study area intersections.

Where applicable, cumulative projects anticipated to contribute measurable traffic (i.e. 50 or more peak hour trips) to study area intersections have been manually added to the study area network to generate Opening Year Cumulative forecasts. In other words, this list of cumulative development projects has been reviewed to determine which projects would likely contribute

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

measurable traffic through the study area intersections (e.g., those cumulative projects in close proximity to the proposed Project). For the purposes of this analysis, the cumulative projects that were determined to affect one or more of the study area intersections are shown on Exhibit 4-4, listed on Table 4-4, and have been considered for inclusion.

Although it is unlikely that these cumulative projects would be fully built and occupied by Year 2023, they have been included in an effort to conduct a conservative analysis and overstate as opposed to understate potential traffic impacts.

Any other cumulative projects that are not expected to contribute measurable traffic to study area intersections have not been included since the traffic would dissipate due to the distance from the Project site and study area intersections. Any additional traffic generated by other projects not on the cumulative projects list is accounted for through background ambient growth factors that have been applied to the peak hour volumes at study area intersections as discussed in Section 4.5 *Background Traffic*. Cumulative development project ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-5.

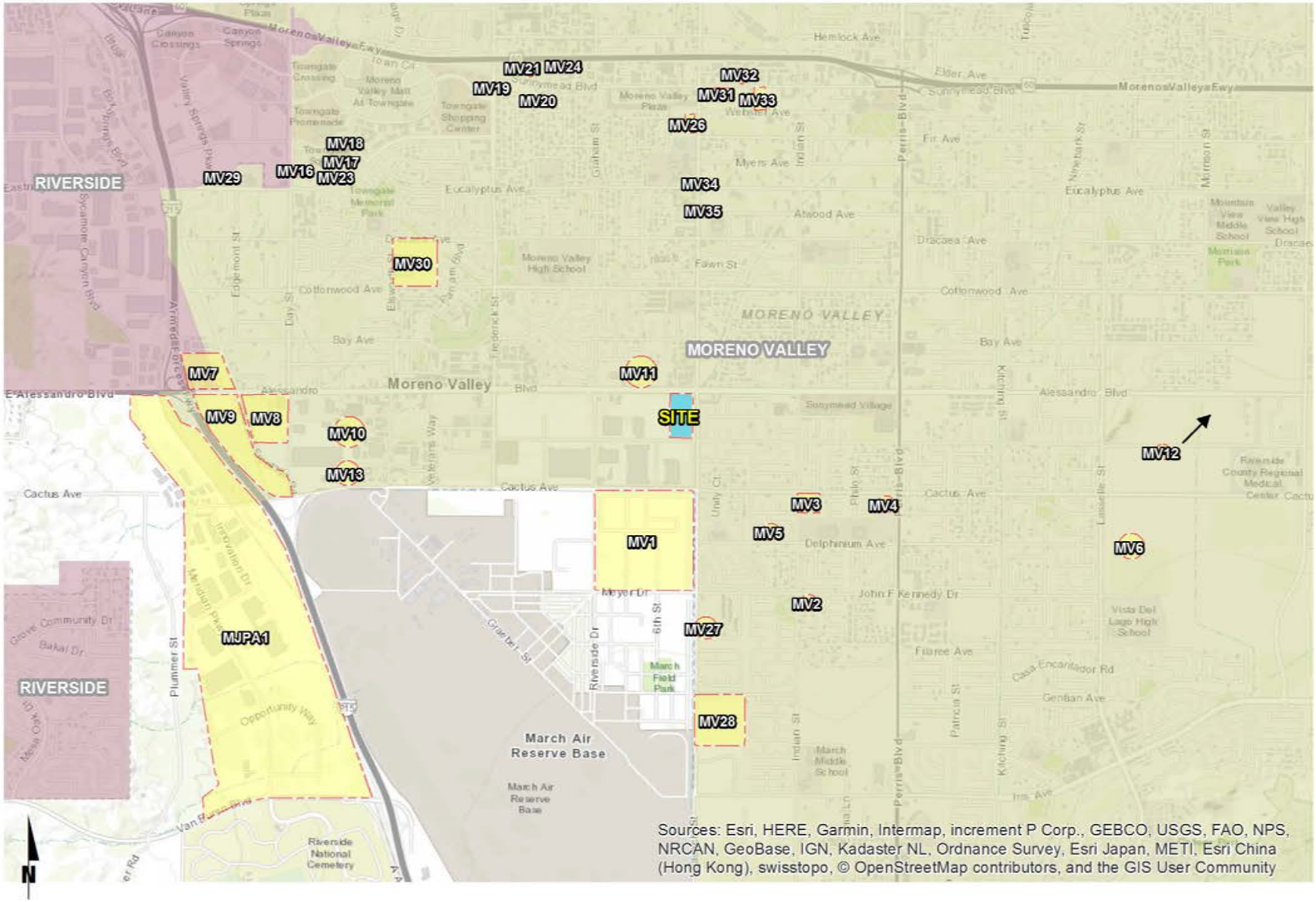
4.7 NEAR-TERM TRAFFIC FORECASTS

To provide a comprehensive assessment of potential transportation network deficiencies, a "buildup" analysis was performed in support of this work effort. The "buildup" method was used to approximate the Opening Year Cumulative traffic forecasts, and is intended to identify the cumulative impacts on both the existing and planned near-term circulation system. The Opening Year Cumulative traffic forecasts include background traffic, traffic generated by other cumulative development projects within the study area, and the traffic generated by the proposed Project.

The "buildup" approach combines existing traffic counts with a background ambient growth factor to forecast the near-term 2023 traffic conditions. An ambient growth factor of 10.41% (2023) accounts for background (area-wide) traffic increases that occur over time, up to the year 2023 from the year 2018 (compounded two percent per year growth over a 5-year period). Traffic volumes generated by the Project are then added to assess the Opening Year Cumulative traffic conditions. The 2023 roadway network is similar to the existing conditions roadway network with the exception of future roadways and intersections proposed to be developed by the Project.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 4-4: CUMULATIVE DEVELOPMENT LOCATION MAP



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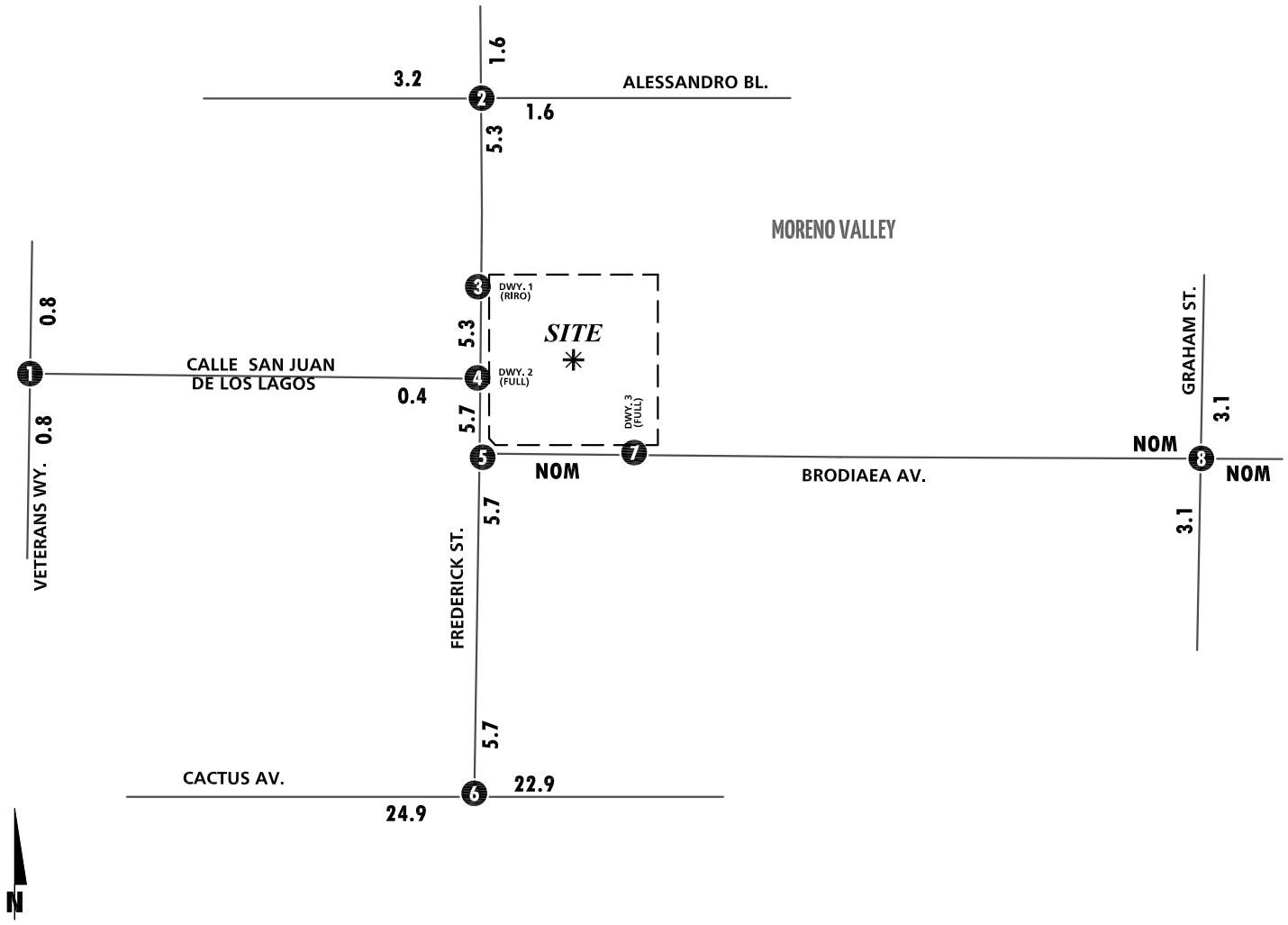
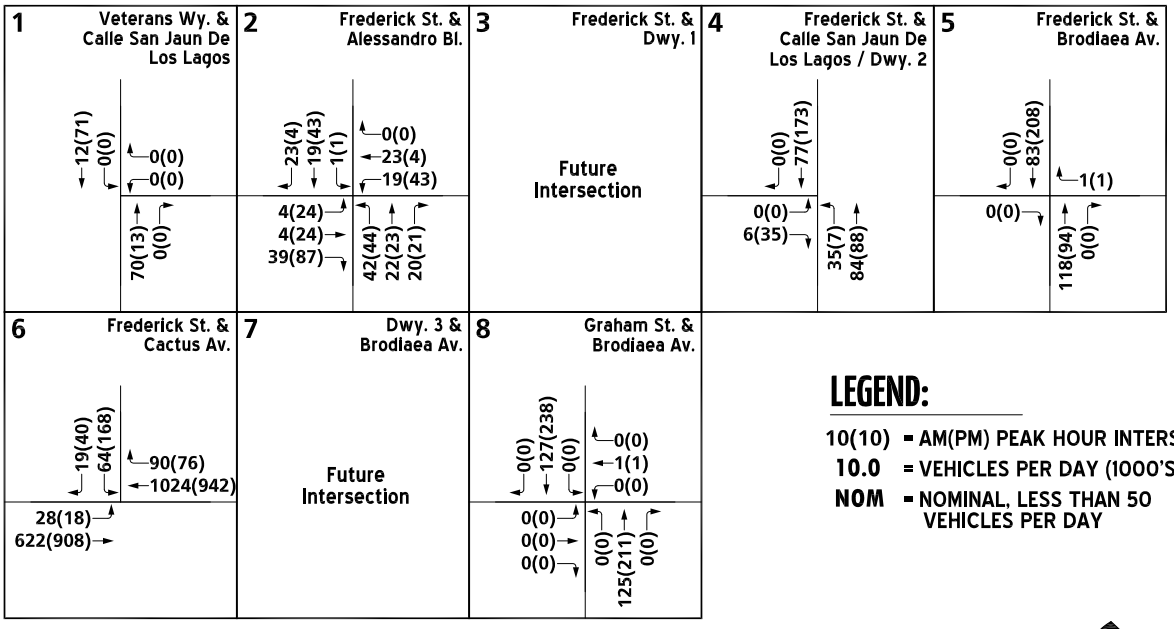
Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 4-5: CUMULATIVE PROJECT ONLY TRAFFIC VOLUMES (IN PCE)





LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)
NOM = NOMINAL, LESS THAN 50 VEHICLES PER DAY

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Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 4-4

Cumulative Development Land Use Summary

ID	Project Name	Land Use[1]	Quantity	Units[2]
MV1	March Lifecare Campus Specific Plan[3]	Medical Offices	190.000	TSF
		Commercial Retail	210.000	TSF
		Research & Education	200.000	TSF
		Hospital	50	Beds
		Institutional Residential	660	Beds
MV2	O'Reilly Automotive	Automobile Parts Sale	7.500	TSF
	PA15-004	Retail/Restaurant/Fast Food	2.973	TSF
MV3	TM 33417	Condo/Townhomes	60	DU
MV4	TM 33607	Condo/Townhomes	52	DU
MV5	32711 Isaac Genah	SFDR	9	DU
MV6	a Moreno Medical Campus	Medical Offices	80.000	TSF
	b Aqua Bella Specific Plan	SFDR	2,922	DU
	c TR 34329 (Granite Capitol)	SFDR	90	DU
	d Cresta Bella	General Office	30.000	TSF
MV7	P07-0102; and P09-0416, -0418, -0419	General Light Industrial	652.018	TSF
	Alessandro Bl. (APN 263-091-008; 263-100-019; 263-100-005; P14-0841 to 0848)	Commercial and Industrial Complex	101.580	TSF
MV8	Alessandro Metrolink Station	Light Rail Transit Station	300	SP
MV9	Freeway Business Center	High-Cube Warehouse	709.083	TSF
MV10	PA 08-0047-0052 (Komar Cactus Plaza)[3]	Hotel	110	Rooms
		Fast Food w/Drive Thru	8.000	TSF
		Commercial	42.400	TSF
MV11	PA 09-0031	Gas Station	12	VFP
MV12	Prologis	High-Cube Warehouse	1916.19	TSF
		High-Cube Warehouse	328.448	TSF
	World Logistics Center	High-Cube Warehouse	41400	TSF
		Warehousing	200	TSF
		Gas Station w/ Market	12	VFP
		Existing SFDR	7	DU
MV13	Moreno Valley Cactus Center (PEN16-0131)	Warehouse	36.95	TSF
		Fast Food w/Drive Thru	7.9	TSF
		Gas Station w/Car Wash	28	VFP
MV14	Brodiaea Commerce Center	High-Cube Warehouse	262.398	TSF
MV15	Hawthorne Inn	Hotel	79	RM
MV16	The Quarter	Hotel	216	RM
MV17	Ayres Hotel & Spa	Hotel	127	RM
MV18	Hampton Inn & Suites	Hotel	115	RM
MV19	La Quinta Inn & Suites	Hotel	58	RM
MV20	Travelers Inn	Hotel	55	RM
MV21	Comfort Inn	Hotel	92	RM
MV22	Sleep Inn & Suites	Hotel	66	RM
MV23	TownGate Square	Office	170.000	TSF
MV24	Olivewood Plaza	Office	22.758	TSF
MV25	Centerpointe Office Area	Office	258.000	TSF
MV26	Riverside County Office Building	Office	52.000	TSF
MV27	Invermex, Inc.	SFDR	32	DU
MV28	Rados	SFDR	135	DU
MV29	Latco SC Inc.	Multifamily Housing	112	DU
MV30	Winchester Associates "Scottish Village"	Multifamily Housing	194	DU
MV31	33771 Jian Qiang Liu	Multifamily Housing	12	DU
MV32	Cal Choice Inv. Inc.	Multifamily Housing	12	DU
MV33	35663 Jimmy Lee	Multifamily Housing	12	DU
MV34	35769 Michael Chen	Multifamily Housing	16	DU
MV35	PA09-0006 Jim Nydam	Multifamily Housing	15	DU
MV36	Nova Homes	Multifamily Housing	122	DU
MJPA1	Meridian Business Park North	Industrial Park	5,985.000	TSF

[1] SFDR = Single Family Detached Residential

[2] DU = Dwelling Units; TSF = Thousand Square Feet; SP = Spaces; VFP = Vehicle Fueling Positions

[3] Source: March Lifecare Campus Specific Plan Traffic Impact Analysis, Mountain Pacific, Inc., May 2009 (Revised).

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

As noted previously, an analysis of the proposed Project at various development tiers has been assessed for the purposes of this traffic study. The near-term traffic analysis includes the following traffic conditions, with the various traffic components:

- Opening Year Cumulative (2023) Without Project
  - Existing 2018 counts
  - Ambient growth (10.41%)
  - Cumulative Development traffic
- Opening Year Cumulative (2023) With Project
  - Existing 2018 counts
  - Ambient growth (10.41%)
  - Cumulative Development traffic
  - Project traffic

4.8 General Plan Buildout (Post-2040) Volume Development

The General Plan Buildout (Post-2040) With Project traffic conditions were derived from the RivTAM modified to represent General Plan Buildout conditions for the City of Moreno Valley using accepted procedures for model forecast refinement and smoothing. The traffic forecasts reflect the area-wide growth anticipated between Existing conditions and General Plan Buildout conditions.

In most instances the traffic model zone structure is not designed to provide accurate turning movements along arterial roadways unless refinement and reasonableness checking is performed. Therefore, the General Plan Buildout With Project peak hour forecasts were refined using the model derived long-range forecasts, along with existing peak hour traffic count data collected at each analysis location in April 2018. Future estimated peak hour traffic data was used for new intersections and intersections with an anticipated change in travel patterns to further refine the General Plan Buildout With Project peak hour forecasts.

The refined future peak hour approach and departure volumes obtained from the model output data are then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program (NCHRP Report 255), along with initial estimates of turning movement proportions. A linear programming algorithm is used to calculate individual turning movements which match the known directional roadway segment forecast volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg.

Typically, the model growth is prorated and is subsequently added to the existing (base validation) traffic volumes to represent Long Range traffic conditions. However, review of the resulting model growth indicates negative growth for several study area intersections. In an effort to conduct a conservative analysis, reductions to traffic forecasts from either Existing or Opening Year Cumulative traffic conditions were not assumed as part of this analysis. Additional growth has also been applied on a movement-by-movement basis, where applicable, to estimate reasonable General Plan Buildout forecasts. General Plan Buildout turning volumes were compared to Opening Year

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Cumulative volumes in order to ensure a minimum growth as a part of the refinement process. The minimum growth includes any additional growth between Opening Year Cumulative and General Plan Buildout traffic conditions that is not accounted for by the traffic generated by cumulative development projects and ambient growth rates assumed between Existing (2018) and Opening Year Cumulative traffic conditions. Future estimated peak hour traffic data was used for new intersections and intersections with an anticipated change in travel patterns to further refine the General Plan Buildout peak hour forecasts.

The future General Plan Buildout without Project peak hour turning movements were then reviewed by Urban Crossroads for reasonableness, and in some cases, were adjusted to achieve flow conservation, reasonable growth, and reasonable diversion between parallel routes. Flow conservation checks ensure that traffic flow between two closely spaced intersections, such as two freeway ramp locations, is verified in order to make certain that vehicles leaving one intersection are entering the adjacent intersection and that there are no unexplained loss of vehicles. The result of this traffic forecasting procedure is a series of traffic volumes which are suitable for traffic operations analysis.

The truck component of RivTAM has data that is unusually low. As such, in an effort to conduct a conservative analysis, the presence of trucks has been accounted for based on the manual volume adjustments made to demonstrate growth above Opening Year Cumulative traffic forecasts, which are presented and evaluated in PCE (see *Section 3.6 Existing (2018) Traffic Counts* for discussion on PCE). As such, the General Plan Buildout forecasts are also assumed to be in PCE for the purposes of this analysis.

Post-processing worksheets for General Plan Buildout Without Project traffic conditions are provided in Appendix 4.1.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

5 E+P TRAFFIC CONDITIONS

This section discusses the traffic forecasts for Existing plus Project (E+P) conditions and the resulting intersection operations, queuing, and traffic signal warrant analyses.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for E+P conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for E+P conditions only (e.g., intersection and roadway improvements at the Project's frontage and driveways).

5.2 E+P TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus Project traffic. Exhibit 5-1 shows the ADT and peak hour intersection turning movement volumes (in PCE), which can be expected for E+P traffic conditions.

5.3 INTERSECTION OPERATIONS ANALYSIS

E+P peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TIA. The intersection analysis results are summarized in Table 5-1, which indicate that the study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours, consistent with Existing traffic conditions. Exhibit 5-2 summarizes the weekday AM and PM peak hour study area intersections LOS under E+P traffic conditions, consistent with the results provided in Table 5-1. The intersection operations analysis worksheets are included in Appendix 5.1 of this TIA.

5.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

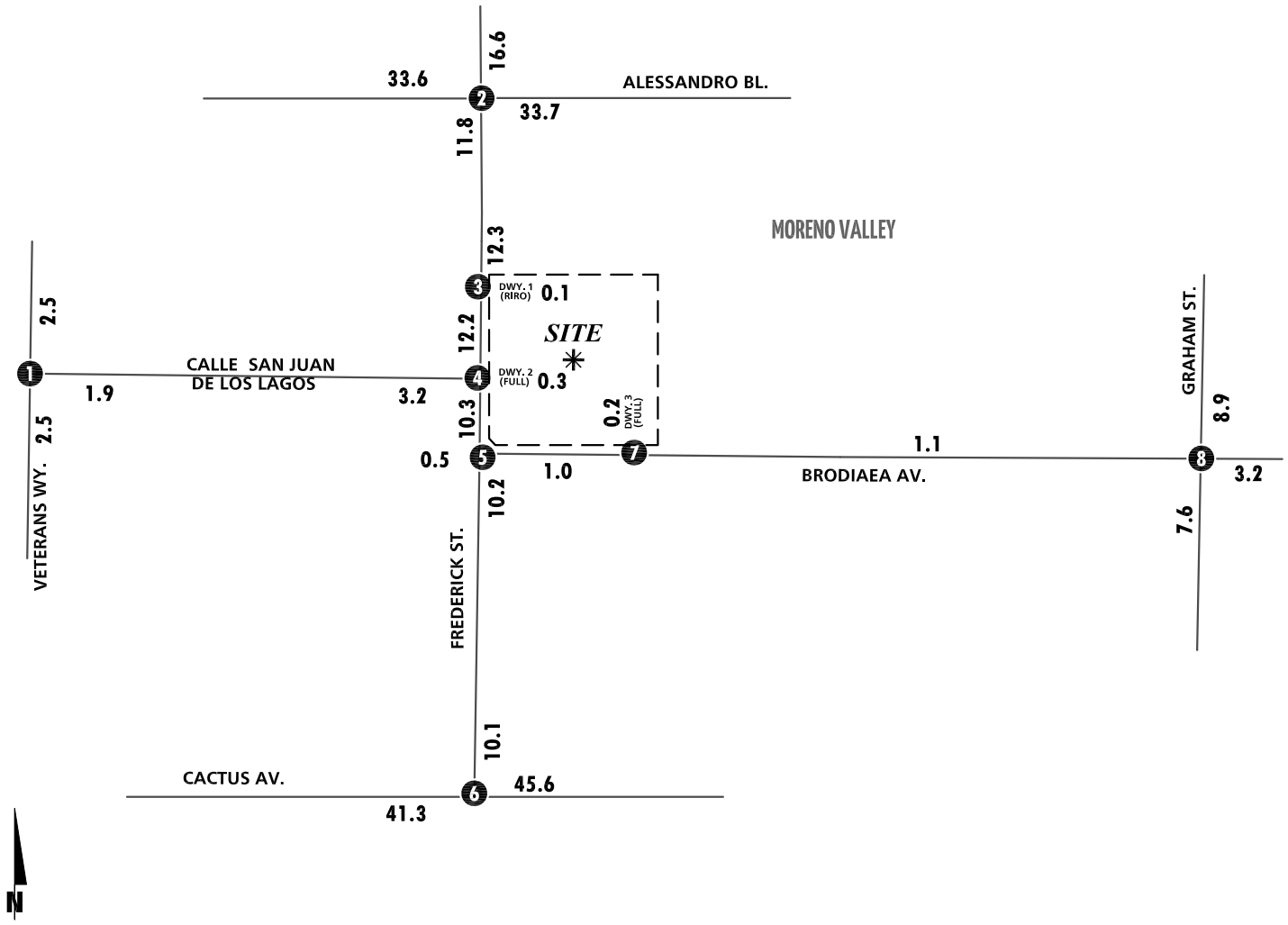
There are no unsignalized study area intersections anticipated to meet either peak hour or planning level (ADT) volume-based traffic signal warrants under E+P traffic conditions (see Appendix 5.2).

5.5 QUEUING ANALYSIS

A queuing analysis was conducted for all study area intersections to determine if the turn pocket lengths are adequate to accommodate near-term 95th percentile queues. The analysis was conducted for the weekday AM and weekday PM peak hours. The queuing analysis results are summarized on Table 5-2 for E+P traffic conditions. Queuing worksheets are included in Appendix 5.3.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 5-1: E+P TRAFFIC VOLUMES (IN PCE)



1 Veterans Wy. & Calle San Jaun De Los Lagos	2 Frederick St. & Alessandro Bl.	3 Frederick St. & Dwy. 1	4 Frederick St. & Calle San Jaun De Los Lagos / Dwy. 2	5 Frederick St. & Brodiaea Av.
31(45) 44(28) 23(46) 34(46)	186(118) 252(268) 99(262) 105(162) 1315(804) 79(60)	343(490) 2(12)	77(55) 258(433) 9(3) 2(9) 2(7) 2(11)	13(10) 257(458) 68(52)
50(78) 65(29)	110(196) 436(1224) 39(137) 88(112) 219(273) 18(74)	333(453) 0(0)	24(136) 7(2) 12(25) 45(22) 307(308) 11(3)	5(28) 295(280) 8(18)

6 Frederick St. & Cactus Av.	7 Dwy. 3 & Brodiaea Av.	8 Graham St. & Brodiaea Av.
85(146) 132(412) 151(142) 1681(969)	1(4) 3(16) 12(3) 67(48)	5(3) 241(266) 42(75) 75(68) 57(47) 20(20)
171(79) 972(1976)	2(1) 8(18)	2(3) 7(17) 5(14) 10(5) 194(265) 18(22)

LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)
NOM = NOMINAL, LESS THAN 50 VEHICLES PER DAY

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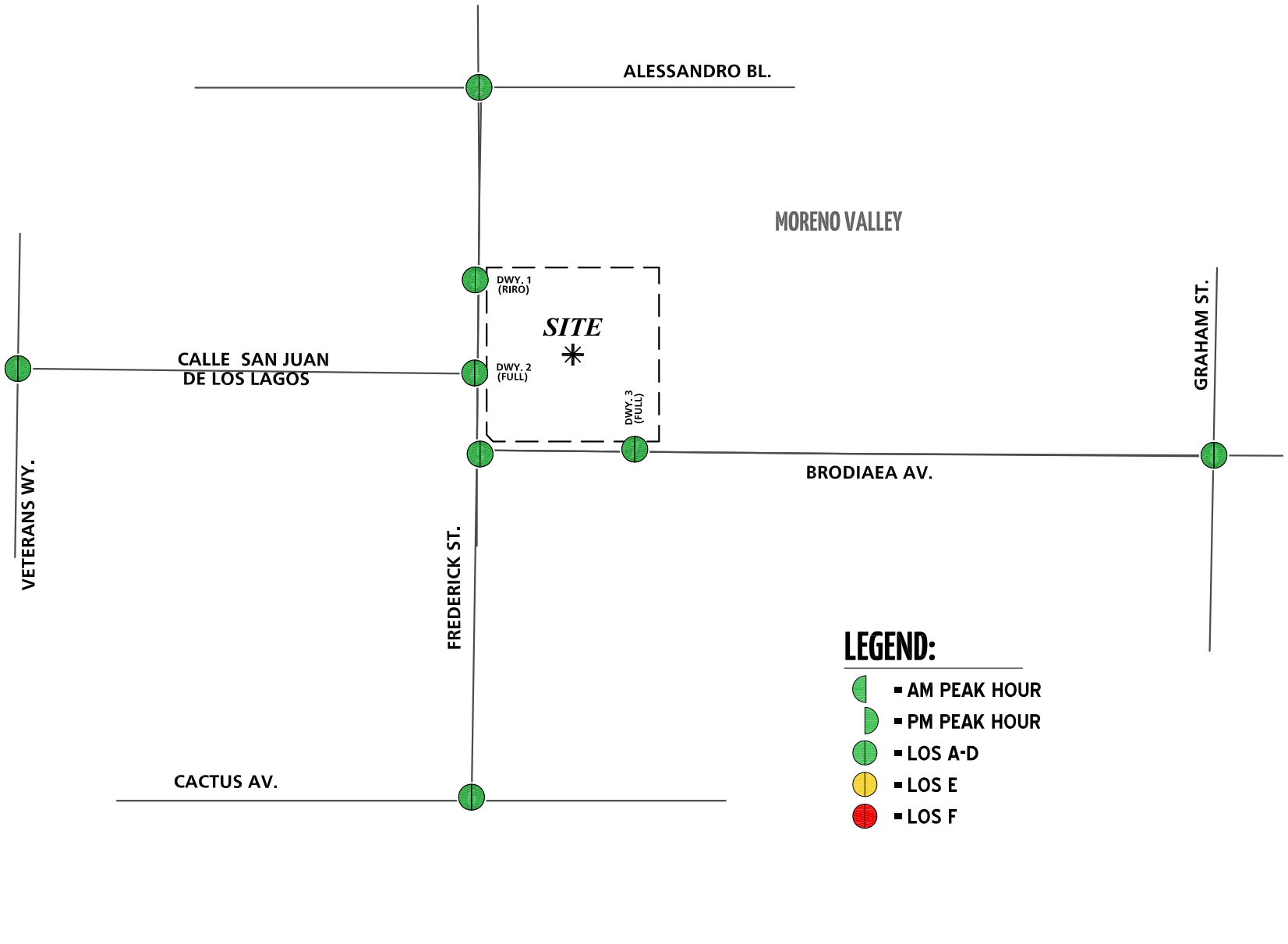
Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 5-2: E+P SUMMARY OF LOS



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Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 5-1

Intersection Analysis for E+P Conditions

#	Intersection	Traffic Control[2]	Existing (2018)				E+P			
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
1	Veterans Wy. & Calle San Juan de Los Lagos	CSS	9.7	9.7	A	A	9.8	9.7	A	A
2	Frederick St. & Alessandro Bl.	TS	38.8	48.6	D	D	39.5	49.0	D	D
3	Frederick St. & Driveway 1	**CSS**	Future Intersection				9.3	9.8	A	A
4	Frederick St. & Calle San Juan de Los Lagos/Driveway 2	TS	6.4	11.7	A	B	9.1	12.5	B	B
5	Frederick St. & Brodiaea Av.	CSS	9.6	10.0	A	B	9.6	10.0	A	B
6	Frederick St. & Cactus Av.	TS	14.1	12.1	B	B	14.2	12.5	B	B
7	Driveway 3 & Brodiaea Av.	**CSS**	Future Intersection				9.1	9.1	A	A
8	Graham St. & Brodiaea Av.	TS	13.2	13.3	B	B	13.5	14.2	B	B

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[2] TS = Traffic Signal; CSS = Cross-Street Stop; **CSS** = Improvement

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 5-2

Peak Hour Queuing Summary for E+P Conditions

Intersection	Movement[4]	Available Stacking Distance (Feet)	95th Percentile Queue (Feet)		Acceptable?[1]	
			AM Peak Hour	PM Peak Hour	AM	PM
Veterans Wy. & Calle San Juan de Los Lagos	NBR	1,050	0	0	Yes	Yes
	SBL	115	18	14	Yes	Yes
	WBL	100	37	37	Yes	Yes
	WBR	380	27	32	Yes	Yes
Frederick St. & Alessandro Bl.	NBL	135	59	73	Yes	Yes
	NBL	135	75	91	Yes	Yes
	SBL	120	50	**193**	Yes	**No**
	SBL	120	116	214	Yes	Yes[2]
	SBR	100	93	61	Yes	Yes
	EBL	250	145	**321**	Yes	**No**
	EBR	1,600	27	74	Yes	Yes
	WBL	130	**232**	119	**No**	Yes
Frederick St. & Calle San Juan de Los Lagos/Driveway 2	NBL	150	70	47	Yes	Yes
	SBL	**100**	36	18	Yes	Yes
	EBL	120	48	134	Yes	Yes[3]
Frederick St. & Brodiaea Av.	WBR	490	45	43	Yes	Yes
Frederick St. & Cactus Av.	SBL	140	65	162	Yes	Yes[2]
	SBL	810	86	192	Yes	Yes
	SBR	810	58	61	Yes	Yes
	EBL	300	150	91	Yes	Yes
	WBR	265	52	51	Yes	Yes
Driveway 3 & Brodiaea Av.	EBL	**100**	6	0	Yes	Yes
Graham St. & Brodiaea Av.	NBL	160	25	19	Yes	Yes
	SBL	150	48	71	Yes	Yes
	EBL	210	13	15	Yes	Yes
	EBR	180	16	30	Yes	Yes
	WBL	150	40	43	Yes	Yes
	WBR	180	48	48	Yes	Yes

* **BOLD** = Queue length exceeds available stacking distance.

NOTE: The Project is anticipated to contribute less than 50 peak hour trips to the study area intersections. As such, the Project's impact to the identified queuing issues are less than significant.

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided.

[2] Although the 95th percentile queue is anticipated to exceed the available storage for the turn lane, however, there is sufficient storage within the striped median for vehicles to continue to stack without blocking the adjacent through lane.

[3] An additional 15 feet of stacking, which is assumed to be provided in the transition for turn pockets, is reflected in the stacking distance shown on this table, where applicable.

[4] **100** = Improvement

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

5.6 RECOMMENDED IMPROVEMENTS

5.6.1 INTERSECTION IMPROVEMENTS

All study area intersections are anticipated to operate at an acceptable LOS (LOS C/D or better) for E+P traffic conditions. As the Project is anticipated to contribute less than 50 peak hour trips and the increase to the pre-project delay is less than 1.0 second, it is anticipated that the addition of Project traffic would result in a less than significant impact at the study area intersections. As such, no intersection improvements have been recommended to address peak hour operations.

5.6.2 QUEUING IMPROVEMENTS

As previously shown in Table 5-2, there are 3 movements that experience queuing issues during the AM or PM peak hours. However, the Project is not anticipated to contribute trips to every movement. As such, improvement strategies have only been recommended at the location where the Project is anticipated to contribute trips during the AM or PM peak hours (also currently experiencing queuing issues for Existing (2018) traffic conditions):

- Frederick Street & Alessandro Boulevard, westbound left turn lane (AM peak hour only)

Recommended improvements to address queuing issues for E+P traffic conditions are described below and shown in Table 5-3. Although the Project's impact is less-than-significant, the following improvement has been identified to address the queuing issue for E+P traffic conditions at the request of City staff:

Improvement – Frederick Street & Alessandro Boulevard (#2)

- Modify the existing landscaped median to provide a 265-foot westbound left turn pocket with a 90-foot transition. The back-to-back left with the adjacent driveway would modify the left turn storage to 75-feet.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

6 OPENING YEAR CUMULATIVE (2023) TRAFFIC CONDITIONS

This section discusses the methods used to develop Opening Year Cumulative (2023) traffic forecasts and the resulting intersection operations, queuing, and traffic signal warrant analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Opening Year Cumulative (2023) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for Opening Year Cumulative conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for Opening Year Cumulative conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages and driveways).

6.2 OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

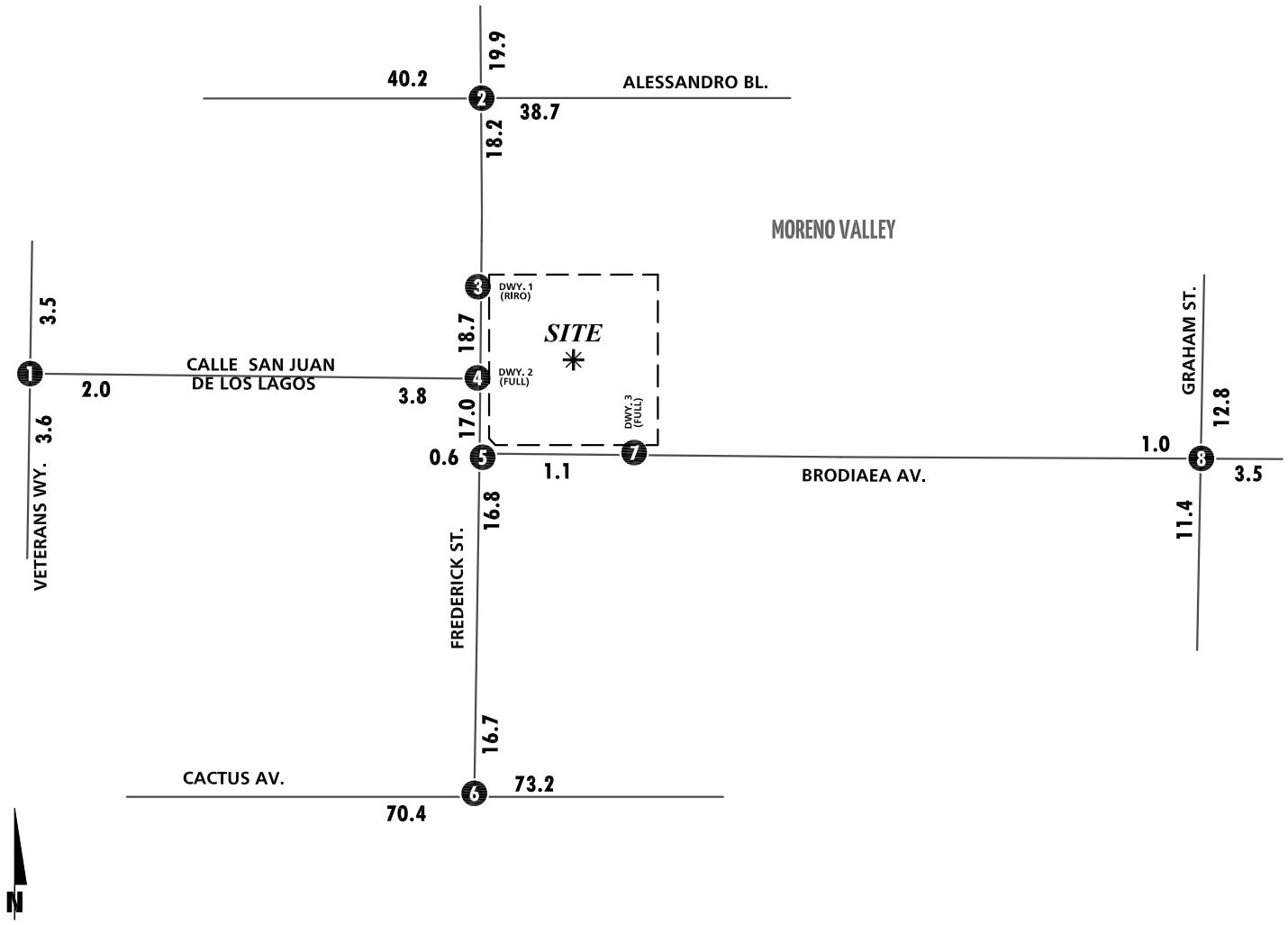
To account for background traffic, other known cumulative development projects in the study area were included in addition to 10.41% of ambient growth for Opening Year Cumulative traffic conditions. The weekday ADT and weekday AM and PM peak hour volumes (in PCE) which can be expected for Opening Year Cumulative (2023) Without Project traffic conditions are shown on Exhibit 6-1.

6.3 OPENING YEAR CUMULATIVE (2023) WITH PROJECT TRAFFIC VOLUME FORECASTS

To account for background traffic, other known cumulative development projects in the study area were included in addition to 10.41% of ambient growth for Opening Year Cumulative traffic conditions in conjunction with traffic associated with the proposed Project. The weekday ADT and weekday AM and PM peak hour volumes (in PCE) which can be expected for Opening Year Cumulative (2023) With Project traffic conditions are shown on Exhibit 6-2.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 6-1: OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT TRAFFIC VOLUMES (IN PCE)



1 Veterans Wy. & Calle San Jaun De Los Lagos 46(120) 44(30) → 24(46) ← 36(46) 125(99) ← 67(31) →	**2** Frederick St. & Alessandro Bl. 228(134) 293(337) 110(290) → 116(179) ← 1475(892) ← 102(108) 125(240) → 485(1375) → 77(237) ← 135(151) ← 263(317) → 38(98) →	**3** Frederick St. & Dwy. 1 Future Intersection	**4** Frederick St. & Calle San Jaun De Los Lagos / Dwy. 2 84(61) 359(650) → 26(150) → 19(63) ← 85(31) ← 422(423) →	**5** Frederick St. & Brodiaea Av. 14(11) 364(702) → 75(54) ← 6(31) → 432(400) ← 8(20) →
6 Frederick St. & Cactus Av. 111(193) 209(618) → 252(231) ← 2880(2011) ← 209(103) → 1695(3090) →	**7** Dwy. 3 & Brodiaea Av. Future Intersection	**8** Graham St. & Brodiaea Av. 6(3) 393(532) 46(83) → 83(75) ← 58(52) ← 22(22) 2(3) → 7(12) → 3(3) → 3(3) 339(504) ← 19(24) →		

LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)
NOM = NOMINAL, LESS THAN 50 VEHICLES PER DAY

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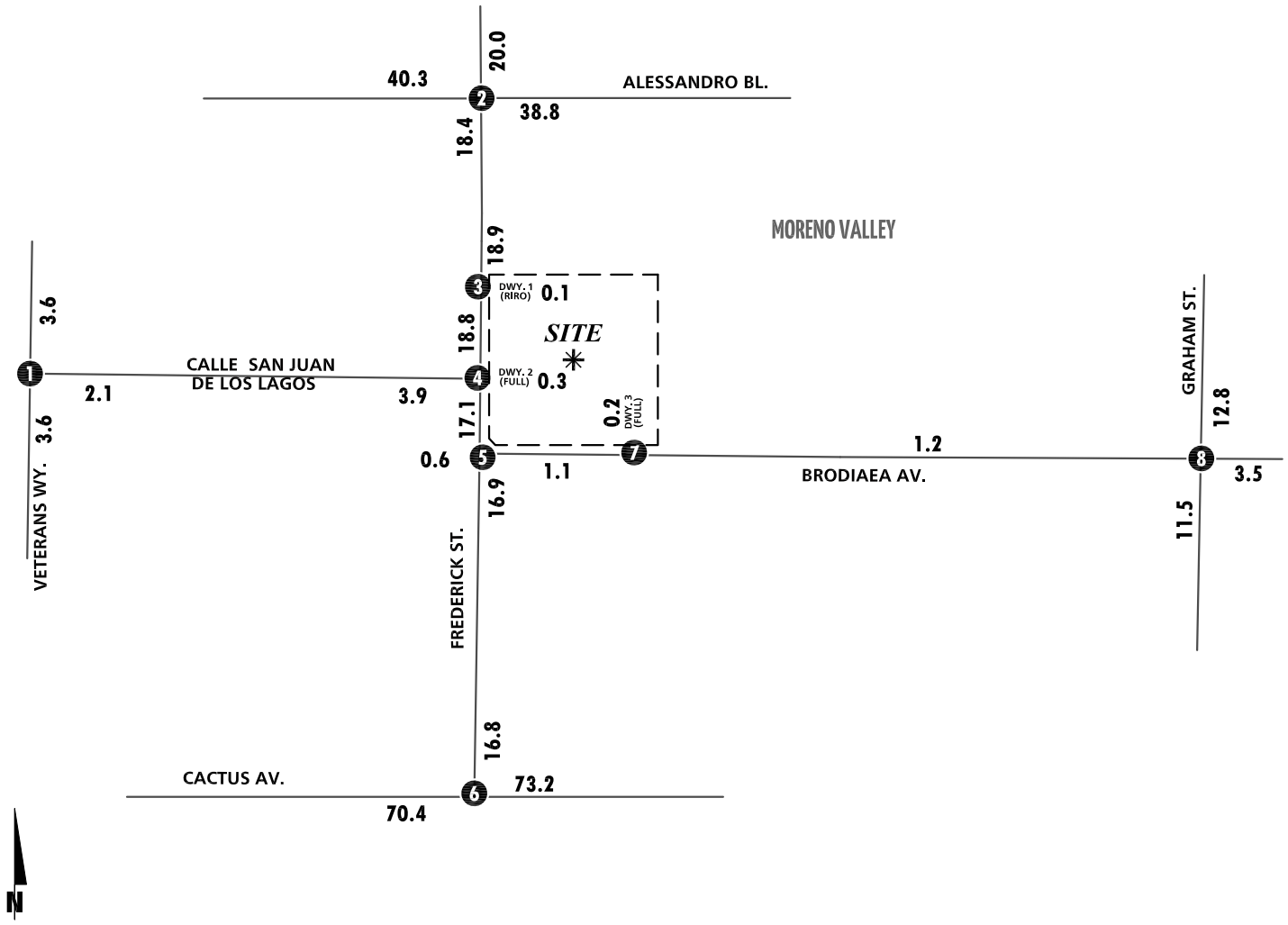
Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 6-2: OPENING YEAR CUMULATIVE (2023) WITH PROJECT TRAFFIC VOLUMES (IN PCE)



1 Veterans Wy. & Calle San Jaun De Los Lagos	2 Frederick St. & Alessandro Bl.	3 Frederick St. & Dwy. 1	4 Frederick St. & Calle San Jaun De Los Lagos / Dwy. 2	5 Frederick St. & Brodiaea Av.
46(120) 48(31) →25(50) ←37(50)	228(134) 297(338) 110(290) →116(179) ←1475(892) ←106(109)	455(714) →2(12)	84(61) 361(651) 9(3) →2(9) ←2(7) ←2(11)	14(11) 366(713) →76(58)
125(99) 71(32)→	125(240)→ 485(1375)→ 81(238)→ 138(166) 264(323) 39(102)→	451(586) 0(0)→	26(150)→ 7(2)→ 19(63)→ 85(31) 423(427) 11(3)→	6(31)→ 443(403) 8(20)→

6 Frederick St. & Cactus Av.	7 Dwy. 3 & Brodiaea Av.	8 Graham St. & Brodiaea Av.
113(200) 210(622) →256(232) ←2880(2011)	1(4) 3(16) →12(3) ←75(54)	6(3) 393(532) 46(83) →83(75) ←63(53) ←22(22)
216(105)→ 1695(3090)→	2(1)→ 8(20)→	2(3)→ 8(18)→ 5(14)→ 10(5) 339(504) 19(24)→

LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)
NOM = NOMINAL, LESS THAN 50 VEHICLES PER DAY

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

6.4 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under Opening Year Cumulative conditions with roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*. As shown in Table 6-1, the study area intersections are anticipated to operate at an acceptable LOS during the peak hours under Opening Year Cumulative (2023) Without Project traffic conditions, with the exception of the following study area intersection:

- Frederick St. & Alessandro Bl. (#2) – LOS E PM Peak Hour only

No additional intersections are anticipated to operate at an unacceptable LOS under Opening Year (2023) With Project traffic conditions. A summary of the peak hour intersection LOS for Opening Year Cumulative (2023) Without Project conditions are shown on Exhibit 6-3 and on Exhibit 6-4 for Opening Year Cumulative (2023) With Project traffic conditions. The intersection operations analysis worksheets for Opening Year Cumulative (2023) Without and With Project traffic conditions are included in Appendix 6.1 and Appendix 6.2 of this TIA, respectively. Measures to address near-term cumulative deficiencies for Opening Year Cumulative traffic conditions are discussed in Section 6.7 *Opening Year Cumulative Deficiencies and Recommended Improvements.*

6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

There are no unsignalized study area intersections that are anticipated to meet either peak hour or planning level (ADT) volume-based traffic signal warrants for Opening Year Cumulative traffic conditions (see Appendix 6.3 and Appendix 6.4).

6.6 QUEUING ANALYSIS

A queuing analysis was conducted for all study area intersections for Opening Year Cumulative (2023) traffic conditions to determine if turn pocket lengths are adequate to accommodate near-term 95th percentile queues. The analysis was conducted for the weekday AM and weekday PM peak hours. The queuing analysis results are summarized on Table 6-2 indicates for Opening Year Cumulative (2023) With Project traffic conditions. Queuing worksheets are included in Appendix 6.5 and Opening Year Cumulative (2023) With Project traffic conditions.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 6-1

Intersection Analysis for Opening Year Cumulative (2023) Conditions

#	Intersection	Traffic Control[2]	2023 Without Project				2023 With Project			
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
1	Veterans Wy. & Calle San Juan de Los Lagos	CSS	10.1	10.2	B	B	10.2	10.3	B	B
2	Frederick St. & Alessandro Bl.	TS	48.7	**72.1**	D	**E**	49.6	**72.9**	D	**E**
3	Frederick St. & Driveway 1	**CSS**	Future Intersection				9.7	10.4	A	B
4	Frederick St. & Calle San Juan de Los Lagos/Driveway 2	TS	7.5	11.8	A	B	10.3	12.7	B	B
5	Frederick St. & Brodiaea Av.	CSS	10.3	11.3	B	B	10.4	11.3	B	B
6	Frederick St. & Cactus Av.	TS	19.3	19.6	B	B	20.7	21.5	C	C
7	Driveway 3 & Brodiaea Av.	**CSS**	Future Intersection				9.1	9.1	A	A
8	Graham St. & Brodiaea Av.	TS	14.0	14.2	B	B	14.3	15.1	B	B

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[2] TS = Traffic Signal; CSS = Cross-Street Stop; **CSS** = Improvement

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 6-2

Peak Hour Queuing Summary for Opening Year Cumulative (2023) With Project Conditions

Intersection	Movement[4]	Available Stacking Distance (Feet)	95th Percentile Queue (Feet)		Acceptable?[1]	
			AM Peak Hour	PM Peak Hour	AM	PM
Veterans Wy. & Calle San Juan de Los Lagos	NBR	1,050	0	0	Yes	Yes
	SBL	115	19	16	Yes	Yes
	WBL	100	44	44	Yes	Yes
	WBR	380	28	31	Yes	Yes
Frederick St. & Alessandro Bl.	NBL	135	86	127	Yes	Yes
	NBL	135	92	131	Yes	Yes
	SBL	120	70	**191**	Yes	**No**
	SBL	120	120	244	Yes	Yes[2]
	SBR	100	153	69	Yes[2]	Yes
	EBL	250	167	**395**	Yes	**No**
	EBR	1,600	40	1,296	Yes	Yes
	WBL	130	**216**	**253**	**No**	**No**
Frederick St. & Calle San Juan de Los Lagos/Driveway 2	NBL	150	106	58	Yes	Yes
	SBL	**100**	34	27	Yes	Yes
	EBL	120	55	**143**	Yes	**No**
Frederick St. & Brodiaea Av.	WBR	490	46	47	Yes	Yes
Frederick St. & Cactus Av.	SBL	140	91	224	Yes	Yes[2]
	SBL	810	106	328	Yes	Yes
	SBR	810	99	145	Yes	Yes
	EBL	300	266	193	Yes	Yes
	WBR	265	**335**	62	**No**	Yes
Driveway 3 & Brodiaea Av.	EBL	**100**	0	0	Yes	Yes
Graham St. & Brodiaea Av.	NBL	160	28	20	Yes	Yes
	SBL	150	48	75	Yes	Yes
	EBL	210	15	16	Yes	Yes
	EBR	180	15	27	Yes	Yes
	WBL	150	42	43	Yes	Yes
	WBR	180	52	55	Yes	Yes

* **BOLD** = Queue length exceeds available stacking distance.

NOTE: The Project is anticipated to contribute less than 50 peak hour trips to the study area intersections. As such, the Project's impact to the identified queuing issues are less than significant.

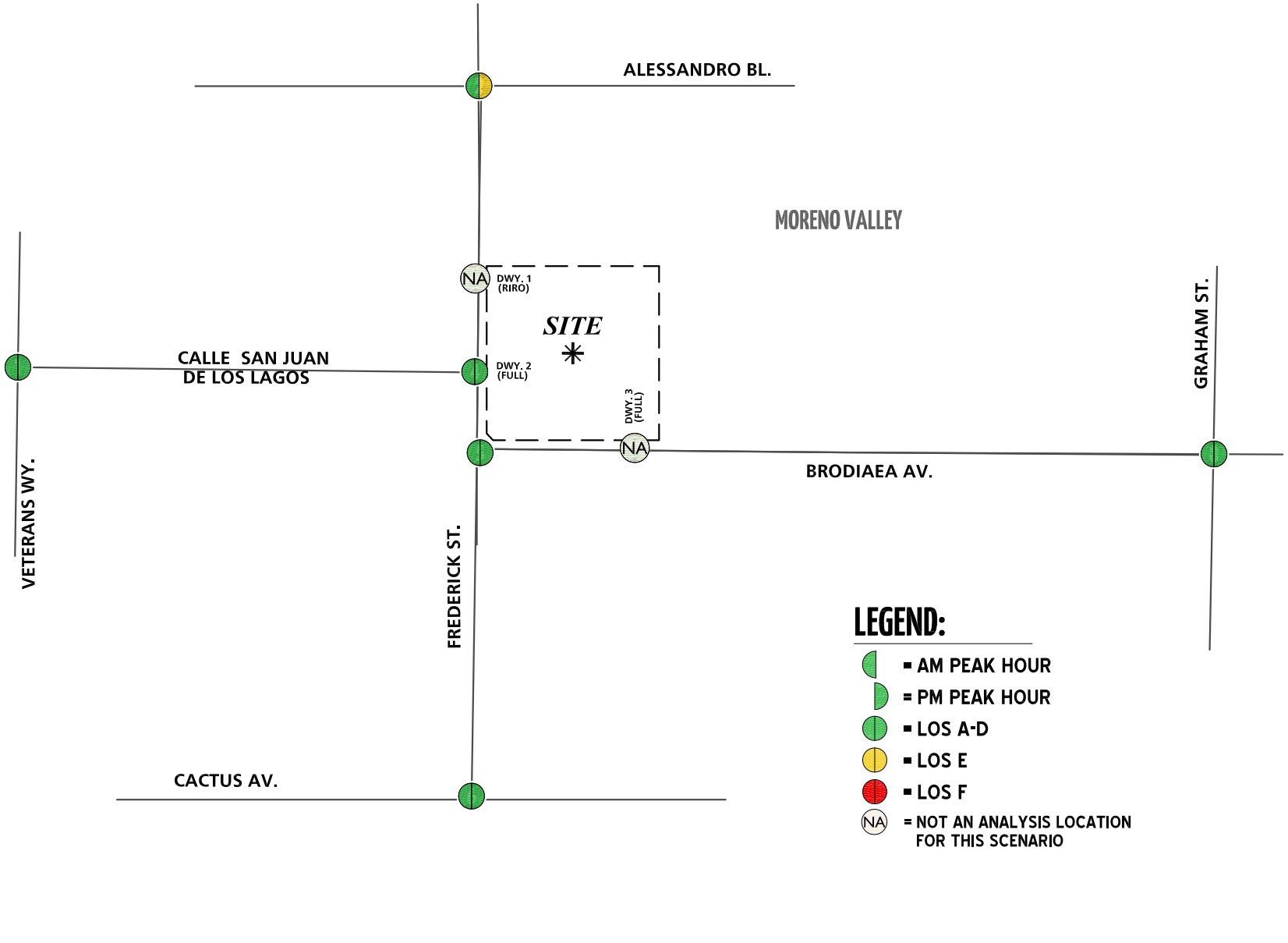
[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided.

[2] Although the 95th percentile queue is anticipated to exceed the available storage for the turn lane, however, there is sufficient storage within the striped median for vehicles to continue to stack without blocking the adjacent through lane.

[4] **100** = Improvement

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 6-3: OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT SUMMARY OF LOS



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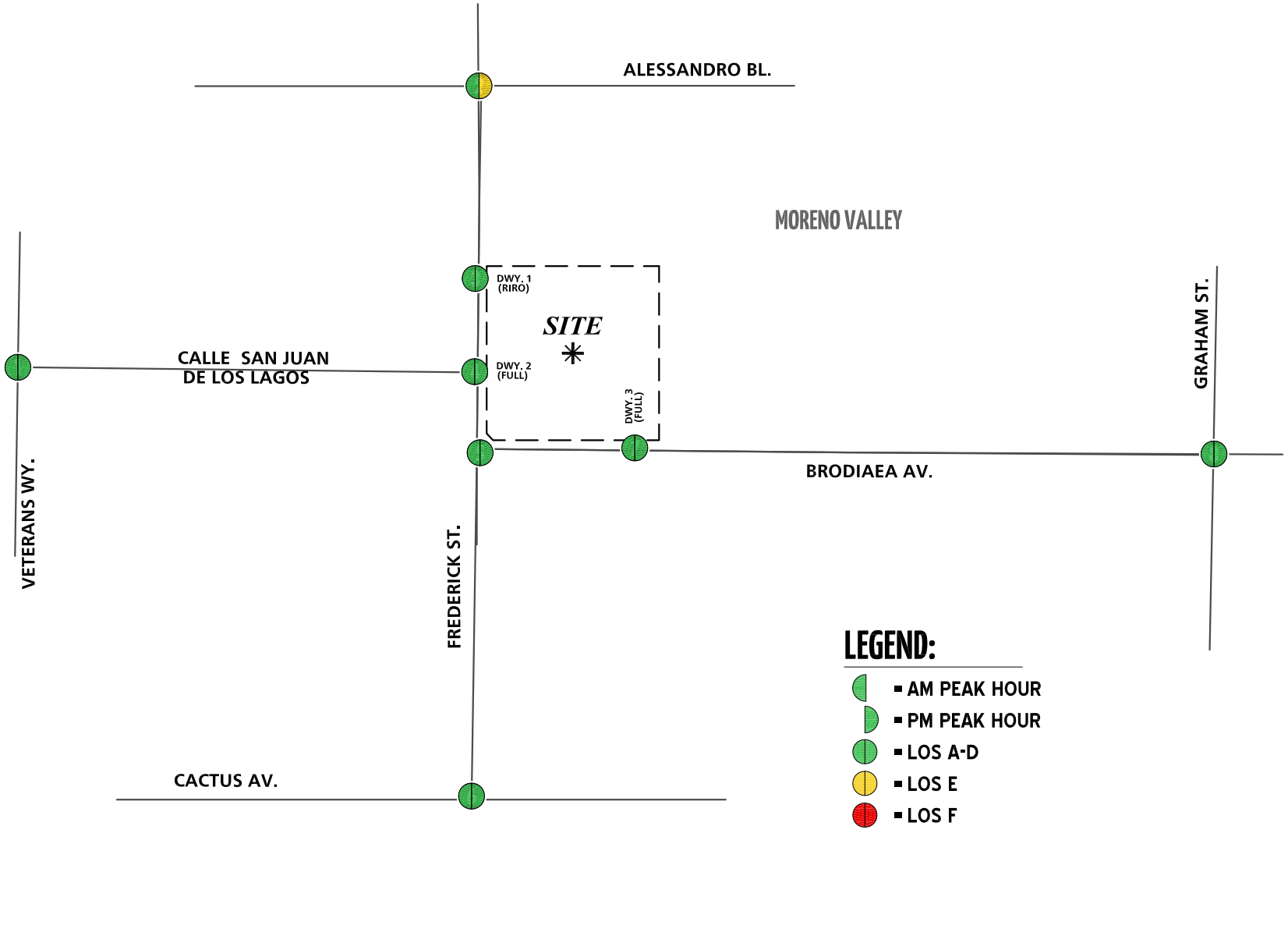
Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 6-4: OPENING YEAR CUMULATIVE (2023) WITH PROJECT SUMMARY OF LOS



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Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

6.7 OPENING YEAR CUMULATIVE DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

6.7.1 INTERSECTION IMPROVEMENTS

Although the intersection of Frederick Street and Alessandro Boulevard is anticipated to operate at an unacceptable LOS during the PM peak hour under Opening Year Cumulative (2023) traffic conditions, the Project is anticipated to contribute less than 50 peak hour trips and the increase to the pre-project delay is less than 1.0 second. As such, it is anticipated that the addition of Project traffic would result in a less than significant impact at the study area intersections and no intersection improvements have been recommended to address peak hour operations.

6.7.2 QUEUING IMPROVEMENTS

As previously shown in Table 6-2, there are 5 movements that experience queuing issues during the AM or PM peak hours. However, the Project is not anticipated to contribute trips to every movement. As such, improvement strategies have only been recommended at those locations where the Project is anticipated to contribute trips during the AM or PM peak hours:

- Frederick Street & Alessandro Boulevard, westbound left turn lane (AM and PM peak hours)
- Frederick Street & Cactus Avenue, westbound right turn lane (AM peak hour only)

Recommended improvements to address queuing issues for Opening Year Cumulative (2023) With Project traffic conditions are described below and shown in Table 6-3. Although the Project's impact is less-than-significant, the following improvements have been identified to address the queuing issues for Opening Year Cumulative (2023) traffic conditions at the request of City staff:

Improvement – Frederick Street & Alessandro Boulevard (#2)

- Modify the existing landscaped median to provide a 265-foot westbound left turn pocket with a 90-foot transition. The back-to-back left with the adjacent driveway would modify the left turn storage to 75-feet.

Improvement – Frederick Street & Cactus Avenue (#6)

- Restripe the westbound right turn lane to provide 500-feet of storage

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

7 GENERAL PLAN BUILDOUT (POST-2040) TRAFFIC CONDITIONS

This section discusses the methods used to develop General Plan Buildout (Post-2040) Without and With Project traffic forecasts, and the resulting intersection operations, queuing, and traffic signal warrant analyses.

7.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for General Plan Buildout conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for General Plan Buildout conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for General Plan Buildout conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages and driveways).

7.2 GENERAL PLAN BUILDOUT (POST-2040) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the RivTAM. For additional information on the development of the General Plan Buildout Without Project traffic forecasts, see Section 4.8 *General Plan Buildout (Post-2040) Volume Development* of this TIA. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for General Plan Buildout Without Project traffic conditions are shown on Exhibit 7-1.

7.3 GENERAL PLAN BUILDOUT (POST-2040) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the RivTAM, plus Project traffic. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for General Plan Buildout With Project traffic conditions are shown on Exhibit 7-2.

7.4 INTERSECTION OPERATIONS ANALYSIS

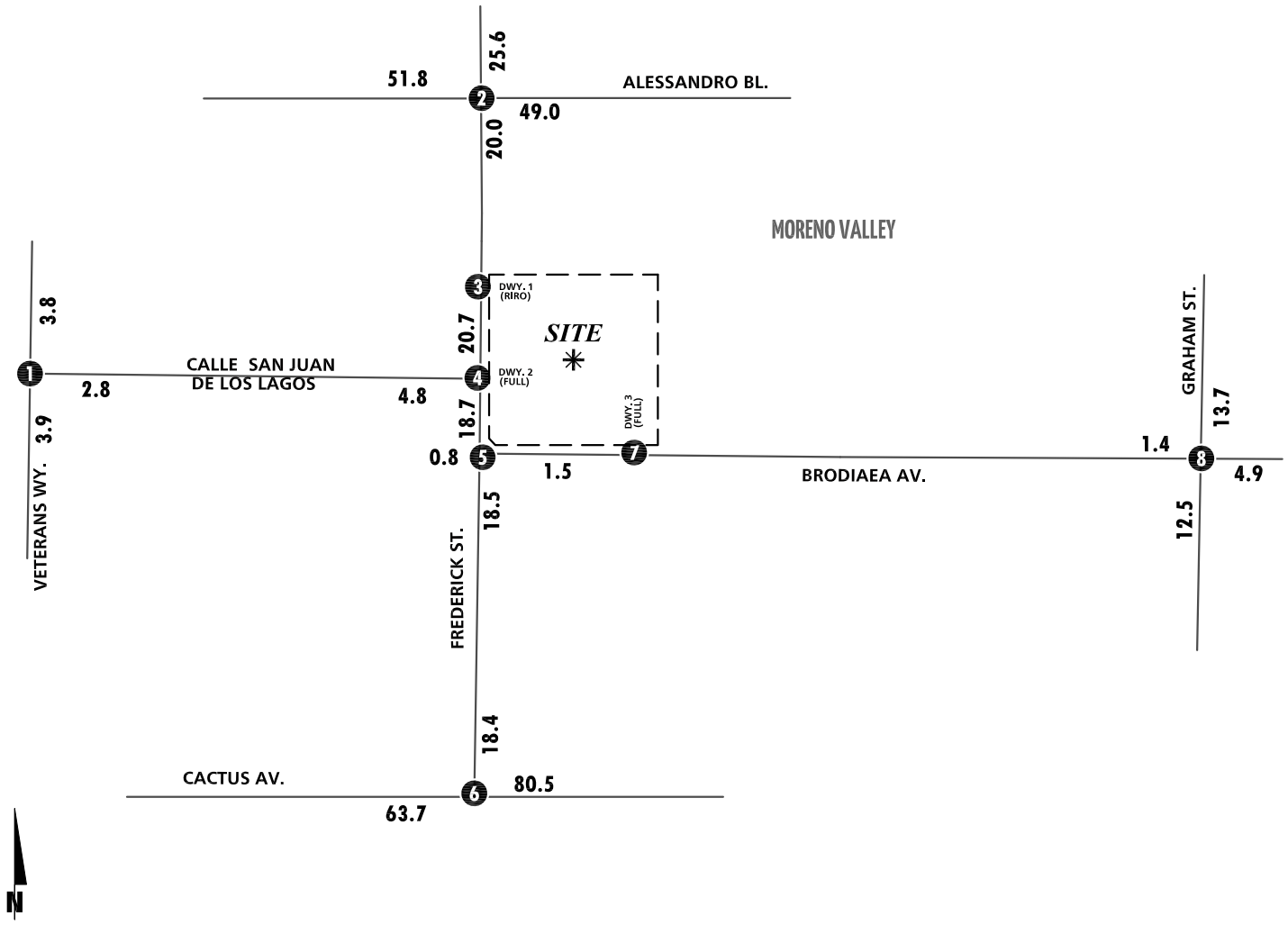
7.4.1 GENERAL PLAN BUILDOUT WITHOUT PROJECT TRAFFIC CONDITIONS

LOS calculations were conducted for the study intersections to evaluate their operations under General Plan Buildout Without Project conditions with roadway and intersection geometrics consistent with Section 7.1 *Roadway Improvements*. As shown in Table 7-1, the study area intersections are anticipated to operate at acceptable LOS for General Plan Buildout (Post-2040) Without Project traffic conditions, with the exception of the following study area intersection:

- Frederick St. & Alessandro Bl. (#2) – LOS F AM and PM Peak Hours

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 7-1: GENERAL PLAN BUILDOUT (POST-2040) WITHOUT PROJECT TRAFFIC VOLUMES (IN PCE)



1 Veterans Wy. & Calle San Jaun De Los Lagos 48(132) 62(42) 33(64) 51(65) 137(120) 94(43)	**2** Frederick St. & Alessandro Bl. 288(182) 383(612) 230(498) 313(374) 1970(1359) 116(119) 211(303) 781(2140) 85(260) 149(166) 337(412) 42(107)	**3** Frederick St. & Dwy. 1 Future Intersection	**4** Frederick St. & Calle San Jaun De Los Lagos / Dwy. 2 118(85) 392(818) 36(210) 21(69) 93(33) 485(469)	**5** Frederick St. & Brodiaea Av. 20(15) 393(772) 104(74) 8(43) 475(428) 12(28)
6 Frederick St. & Cactus Av. 140(275) 229(631) 277(254) 3168(2212) 253(126) 1865(3379)	**7** Dwy. 3 & Brodiaea Av. Future Intersection	**8** Graham St. & Brodiaea Av. 8(5) 432(585) 65(116) 116(104) 80(71) 30(30) 2(5) 9(17) 4(5) 5(5) 373(554) 27(34)		

LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)
NOM = NOMINAL, LESS THAN 50 VEHICLES PER DAY

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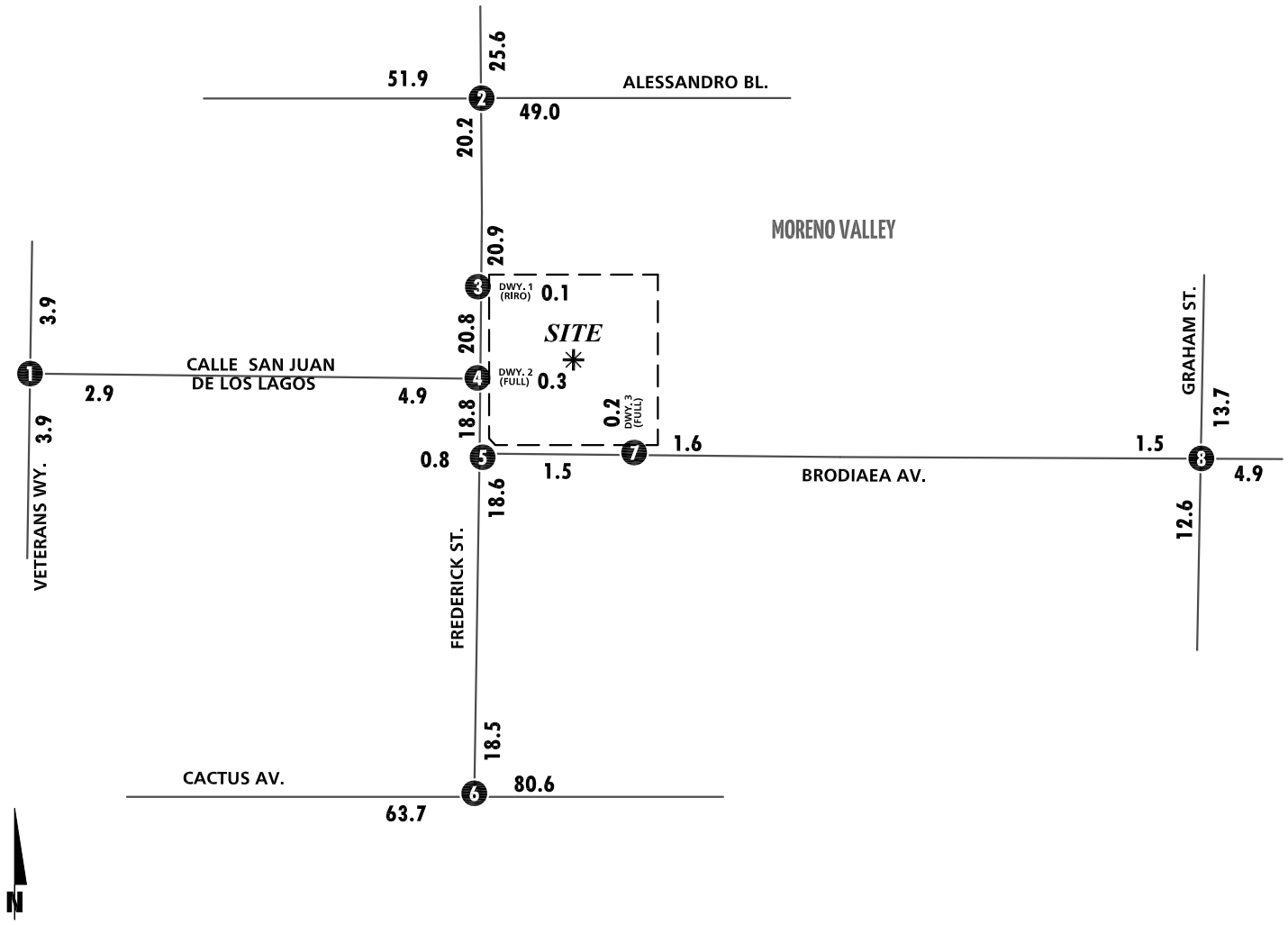
Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 7-2: GENERAL PLAN BUILDOUT (POST-2040) WITH PROJECT TRAFFIC VOLUMES (IN PCE)



1 Veterans Wy. & Calle San Jaun De Los Lagos	48(132) 66(43) 34(68) 52(69) 137(120) 98(44)	2 Frederick St. & Alessandro Bl.	288(182) 387(613) 230(498) 313(374) 1970(1359) 120(120) 211(303) 781(2140) 89(261) 152(181) 338(418) 43(111)	3 Frederick St. & Dwy. 1	521(906) 2(12) 524(692) 0(0)	4 Frederick St. & Calle San Jaun De Los Lagos / Dwy. 2	118(85) 394(819) 9(3) 2(9) 2(7) 2(11) 36(210) 7(2) 21(69) 93(33) 486(473) 11(3)	5 Frederick St. & Brodiaea Av.	20(15) 395(783) 105(78) 8(43) 486(431) 12(28)
6 Frederick St. & Cactus Av.	142(282) 230(635) 281(255) 3168(2212) 260(128) 1865(3379)	7 Dwy. 3 & Brodiaea Av.	1(4) 3(16) 12(3) 104(74) 2(1) 12(28)	8 Graham St. & Brodiaea Av.	8(5) 432(585) 65(116) 116(104) 85(72) 30(30) 2(5) 10(23) 6(16) 12(7) 373(554) 27(34)				

LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)
NOM = NOMINAL, LESS THAN 50 VEHICLES PER DAY

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 7-1

Intersection Analysis for General Plan Buildout (Post-2040) Conditions

#	Intersection	Traffic Control[2]	Post-2040 Without Project				Post-2040 With Project			
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
1	Veterans Wy. & Calle San Juan de Los Lagos	CSS	10.5	10.7	B	B	10.6	10.8	B	B
2	Frederick St. & Alessandro Bl.	TS	**112.1**	**>200.0**	**F**	**F**	**112.5**	**>200.0**	**F**	**F**
3	Frederick St. & Driveway 1	**CSS**	Future Intersection				10.0	10.9	B	B
4	Frederick St. & Calle San Juan de Los Lagos/Driveway 2	TS	7.9	13.7	A	B	11.2	15.1	B	B
5	Frederick St. & Brodiaea Av.	CSS	10.8	11.8	B	B	10.8	11.8	B	B
6	Frederick St. & Cactus Av.	TS	39.6	24.9	D	C	40.0	29.5	D	C
7	Driveway 3 & Brodiaea Av.	**CSS**	Future Intersection				9.3	9.2	A	A
8	Graham St. & Brodiaea Av.	TS	14.6	15.6	B	B	14.8	15.8	B	B

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[2] TS = Traffic Signal; CSS = Cross-Street Stop; **CSS** = Improvement

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

A summary of the peak hour intersection LOS for General Plan Buildout Without Project conditions are shown on Exhibit 7-3. The intersection operations analysis worksheets for General Plan Buildout Without Project traffic conditions are included in Appendix 7.1.

7.4.2 General Plan Buildout With Project Traffic Conditions

As shown on Table 7-1 and illustrated on Exhibit 7-4, there are no additional study area intersections anticipated to experience unacceptable LOS (LOS E or worse) with the addition of Project traffic during one or more peak hours in addition to those previously identified under General Plan Buildout Without Project traffic conditions. The intersection operations analysis worksheets for General Plan Buildout With Project traffic conditions are included in Appendix 7.2 of this TIA.

7.5 Traffic Signal Warrants Analysis

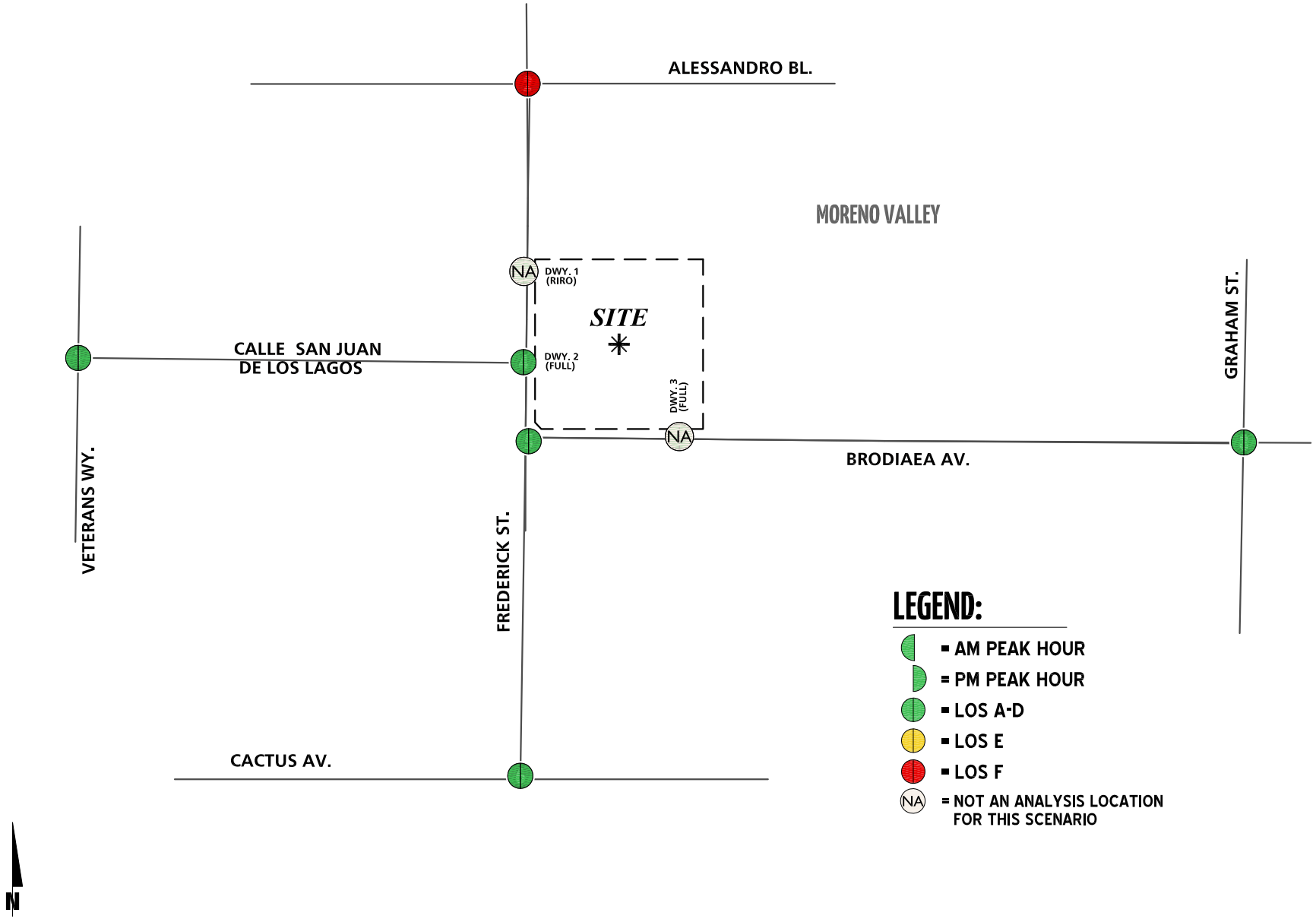
There are no unsignalized study area intersections that are anticipated to meet either peak hour or planning level (ADT) volume-based traffic signal warrants for General Plan Buildout (Post-2040) Without Project traffic conditions (see Appendix 7.3). The intersection of Frederick Street and Brodiaea Avenue is anticipated to meet the peak hour traffic signal warrant under General Plan Buildout (Post-2040) With Project traffic conditions (see Appendix 7.4). Although the warrant is met, this intersection is anticipated to operate at an acceptable LOS during both peak hours and the installation of a traffic signal may not be appropriate for this intersection as access is currently restricted to right-in/right-out access only. Installation of a traffic signal is dependent on several factors, such as pedestrian traffic and other traffic warrants, not just peak hour volume-based warrants. As such, the intersection of Frederick Street and Brodiaea Avenue should be monitored and a traffic signal should be installed at the City Traffic Engineer's discretion.

7.6 Queuing Analysis

A queuing analysis was conducted for all study area intersections for General Plan Buildout (Post-2040) With Project traffic conditions to determine if turn pocket lengths are adequate to accommodate long-term 95th percentile queues. The analysis was conducted for the weekday AM and weekday PM peak hours. The queuing analysis results are summarized on Table 7-2 for General Plan Buildout (Post-2040) With Project traffic conditions. Queuing worksheets are included in Appendix 7.5 for General Plan Buildout (Post-2040) With Project traffic conditions.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 7-3: GENERAL PLAN BUILDOUT (POST-2040) WITHOUT PROJECT SUMMARY OF LOS



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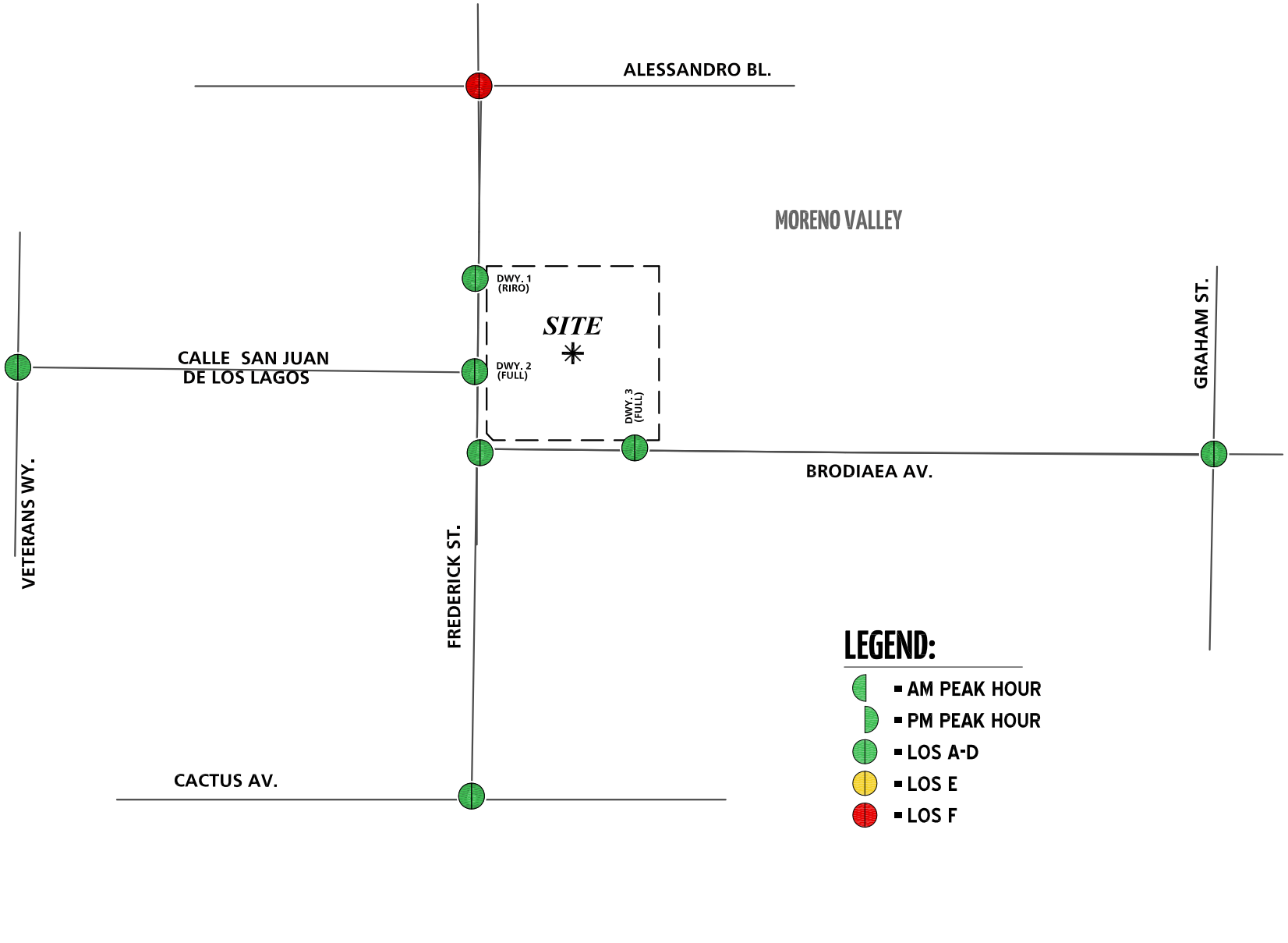
Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 7-4: GENERAL PLAN BUILDOUT (POST-2040) WITH PROJECT SUMMARY OF LOS



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Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 7-2

Peak Hour Queuing Summary for General Plan Buildout (Post-2040) With Project Conditions

Intersection	Movement[4]	Available Stacking Distance (Feet)	95th Percentile Queue (Feet)		Acceptable?[1]	
			AM Peak Hour	PM Peak Hour	AM	PM
Veterans Wy. & Calle San Juan de Los Lagos	NBR	1,050	5	0	Yes	Yes
	SBL	115	34	24	Yes	Yes
	WBL	100	40	44	Yes	Yes
	WBR	380	30	31	Yes	Yes
Frederick St. & Alessandro Bl.	NBL	135	91	106	Yes	Yes
	NBL	135	109	125	Yes	Yes
	SBL	120	**183**	**164**	**No**	**No**
	SBL	120	193	220	Yes[2]	Yes[2]
	SBR	100	**150**	61	**No**	Yes
	EBL	250	**367**	**421**	**No**	**No**
	EBR	1,600	40	**3,710**	Yes	**No**
	WBL	130	**262**	**222**	**No**	**No**
Frederick St. & Calle San Juan de Los Lagos/Driveway 2	NBL	150	108	55	Yes	Yes
	SBL	**100**	33	10	Yes	Yes
	EBL	120	60	**165**	Yes	**No**
Frederick St. & Brodiaea Av.	WBR	490	60	58	Yes	Yes
Frederick St. & Cactus Av.	SBL	140	105	161	Yes	Yes[2]
	SBL	810	110	196	Yes	Yes
	SBR	810	117	123	Yes	Yes
	EBL	300	**446**	260	**No**	Yes
	WBR	265	**476**	**445**	**No**	**No**
Driveway 3 & Brodiaea Av.	EBL	**100**	8	0	Yes	Yes
Graham St. & Brodiaea Av.	NBL	160	24	24	Yes	Yes
	SBL	150	68	86	Yes	Yes
	EBL	210	14	21	Yes	Yes
	EBR	180	18	29	Yes	Yes
	WBL	150	49	55	Yes	Yes
	WBR	180	55	52	Yes	Yes

* **BOLD** = Queue length exceeds available stacking distance.

NOTE: The Project is anticipated to contribute less than 50 peak hour trips to the study area intersections. As such, the Project's impact to the identified queuing issues are less than significant.

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided.

[2] Although the 95th percentile queue is anticipated to exceed the available storage for the turn lane, however, there is sufficient storage within the striped median for vehicles to continue to stack without blocking the adjacent through lane.

[4] **100** = Improvement

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

7.7 General Plan Buildout Deficiencies and Recommended Improvements

7.7.1 Intersection Improvements

Although the intersection of Frederick Street and Alessandro Boulevard is anticipated to operate at an unacceptable LOS during the PM peak hour under General Plan Buildout (Post-2040) traffic conditions, the Project is anticipated to contribute less than 50 peak hour trips and the increase to the pre-project delay is less than 1.0 second. As such, it is anticipated that the addition of Project traffic would result in a less than significant impact at the study area intersections and no intersection improvements have been recommended to address peak hour operations.

Furthermore, although the Project will have a less than significant impact at the intersection of Frederick Street and Alessandro Boulevard, the Project applicant will still be required to pay TUMF and City of Moreno Valley DIF fees. Alessandro Boulevard is a six lane TUMF Facility while Frederick Street from the Alessandro Boulevard intersection is a four lane TUMF facility. The intersection of Alessandro Boulevard and Frederick Street is also identified in the DIF as an existing signalized intersection with a future controller upgrade location. The payment of the TUMF and DIF fees will allow the respective jurisdictions to ensure that regional highways and arterial expansions with the projected population increases.

7.7.2 Queuing Improvements

As previously shown in Table 7-2, there are 8 movements that experience queuing issues during the AM or PM peak hours. However, the Project is not anticipated to contribute trips to every movement. As such, improvement strategies have only been recommended at those locations where the Project is anticipated to contribute trips during the AM or PM peak hours:

- Frederick Street & Alessandro Boulevard, eastbound right turn lane (PM peak hour only)
- Frederick Street & Alessandro Boulevard, westbound left turn lane (AM and PM peak hours)
- Frederick Street & Cactus Avenue, eastbound left turn lane (AM peak hour only)
- Frederick Street & Cactus Avenue, westbound right turn lane (AM and PM peak hours)

Recommended improvements to address queuing issues for General Plan Buildout (Post-2040) With Project traffic conditions are described below and shown in Table 7-3. Although the Project's impact is less-than-significant, the following improvements have been identified to address the queuing issues for General Plan Buildout (Post-2040) traffic conditions at the request of City staff:

Improvements – Frederick Street & Alessandro Boulevard (#2)

- Add a 200-foot eastbound right turn pocket (with the existing eastbound right turn restriped as a 3rd eastbound through lane, consistent with the City of Moreno Valley General Plan)
- Add a 2nd westbound left turn lane

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Improvements – Frederick Street & Cactus Avenue (#6)

- Restripe the eastbound left turn lane to provide 450-feet of storage
- Restripe the westbound right turn lane to provide 500-feet of storage

Queuing worksheets for General Plan Buildout (Post-2040) With Project traffic conditions with improvements are included in Appendix 7.6.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 7-3

Peak Hour Queuing Summary for General Plan Buildout (Post-2040) With Project Conditions With Improvements

Intersection	Movement[3]	Available Stacking Distance (Feet)[4]	95th Percentile Queue (Feet)		Acceptable?[1]	
			AM Peak Hour	PM Peak Hour	AM	PM
Frederick St. & Alessandro Bl.	EBR	**200**	57	200	Yes	Yes
	WBL	130	99	145	Yes	Yes[2]
Frederick St. & Cactus Av.	EBL	**450**	408	177	Yes	Yes
	WBR	**500**	477	136	Yes	Yes

* **BOLD** = Queue length exceeds available stacking distance.

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided.

[2] An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

[3] **NBR** = Improvement

[4] **100** = Improvement

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

8 REFERENCES

1. **City of Moreno Valley Transportation Engineering Division.** *Traffic Impact Analysis Preparation Guide.* Moreno Valley : s.n., August 2007.

2. **Institute of Transportation Engineers.** *Trip Generation.* 9th Edition. 2017.

3. **City of Moreno Valley.** *City of Moreno Valley General Plan.* Moreno Valley : s.n., July 11, 2006.

4. **Riverside County Transportation Commission.** *2011 Riverside County Congestion Management Program.* County of Riverside : RCTC, December 14, 2011.

5. **Transportation Research Board.** *Highway Capacity Manual (HCM).* s.l. : National Academy of Sciences, 2016.

6. **California Department of Transportation.** Manual on Uniform Traffic Control Devices (MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CAMUTCD).* 2014.

7. **San Bernardino Associated Governments.** *Congestion Management Program for County of San Bernardino.* County of San Bernardino : s.n., Updated June 2016.

8. **Institute of Transportation Engineers.** *Trip Generation Handbook.* 3rd Edition. September 2017.

9. **South Coast Air Quality Managment District (SCAQMD).** *Warehouse Truck Trip Study Data Results and Usage.* June 2014.

10. **City of Fontana.** *Truck Trip Generation Study.* Fontana : s.n., August 2003.

11. **Southern California Association of Governments.** *2016 Regional Transportation Plan/Sustainable Communities Strategy.* April 2016.

Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Attachment: Project 1_Traffic Impact Analysis (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 1.1:

APPROVED TRAFFIC STUDY SCOPING AGREEMENT

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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URBAN CROSSROADS

260 E. Baker St. | Suite 200 | Costa Mesa, CA 92626 | (949) 660-1994
urbanxroads.com

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Date: March 14, 2018

This letter acknowledges the City of Moreno Valley Transportation Engineering Division requirements for the traffic impact analysis of the following project:

Case No.	PP (PEN 18-0023); GPA (PEN 18-0024); ZC (PEN 18-0025)
Project Name:	Centerpointe
Project Address:	Northeast corner of Frederick Street and Brodiaea Avenue
Project Description:	Total building is 203,712 square feet of Warehouse Without Cold Storage use
Related Cases:	

	Consultant	Developer Representative
Name:	URBAN CROSSROADS, INC. Attn: Aric Evatt	T&B Planning, Inc. Attn: David Ornelas
Address:	260 E. Baker Street, Suite 200 Costa Mesa, CA 92626	17542 E. 17th Street Suite 100 Tustin, CA 92780
Telephone:	949-336-5978	714-505-6360

I. Background

The proposed Centerpointe development (referred to as "Project") is located on the northeast corner of Frederick Street and Brodiaea Avenue in the City of Moreno Valley. The Project is proposed to consist of a total of 203,712 square feet of Warehouse Without Cold Storage use within a single building.

The Project is anticipated to be built in a single phase and the opening year of 2023 will be evaluated for the purposes of this analysis (minimum five-year opening year per Moreno Valley traffic study guidelines). In addition, Horizon Year (2040) traffic conditions will also be evaluated as the site is currently zoned for Office (O) and will be modified to Light Industrial (LI). See preliminary site plan on **Exhibit 1**. **Exhibit 2** illustrates the study area and proposed intersection analysis locations.

II. Trip Geographic Distribution and Assignment

The project trip distribution patterns were developed based on an understanding of existing travel patterns in the area, the geographical location of the site, the site's proximity to the local arterial and regional state highway system:

- **Exhibit 3:** Project Passenger Car Trip Distribution
- **Exhibit 4:** Project Trucks Trip Distribution

III. Site Trip Generation Forecast

A. Source for trip generation rates: Institute of Transportation Engineers (ITE) Trip Generation Manual 10th Edition (2017) for ITE Land Use Code 150 (Warehousing) using ITE *Trip Generation Handbook* 3rd Edition (2017) recommended vehicle mix (80% cars and 20% trucks) and SCAQMD *Warehouse Truck Trip Study Data Results and Usage* (2014) recommended truck mix.

B. Weekday AM Peak: 7:00-9:00 AM

C. Weekday PM Peak: 4:00-6:00 PM

D. Intersection and link acceptable Level of Service D for some intersections and links and Level of Service C for others based upon the current City policy. (Use Highway Capacity Manual 6 operations procedures; parameters per County of Riverside Traffic Impact Analysis Guidelines)

Proposed Use Rates [(1)] (See attached **Table 1 and Table 2**)

Warehouse (per TSF)	Daily: 1.740	AM: 0.170	PM: 0.190

Internal Trip Allowance:	Yes: _____	No: X	Percentage: _____
Pass-by Trip Allowance:	Yes: _____	No: X	Percentage: _____

(1) Institute of Transportation Engineers 10th Edition *Trip Generation Manual* (2017).

E. As noted on **Table 1 and Table 2**, refinements to raw trip generation estimates have been made to provide a more detailed breakdown of trips by vehicle type. Trip generation rates for Warehousing were obtained from the ITE's most current Trip Generation Manual.

Warehouse: Total vehicle mix percentages were obtained from the ITE Trip Generation Handbook (3rd Edition) in conjunction with the South Coast Air Quality Management District's (SCAQMD) recommended truck mix, by axle type for non-cold storage uses. The recommended SCAQMD truck mix was utilized as the ITE only provides guidance on the vehicle split between passenger cars and trucks, but not between the different axle types (2-axle, 3-axle, 4+-axle) PCE factors were applied to the trip generation rates for heavy

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

trucks (large 2-axles, 3-axles, 4+-axles). PCE factors are consistent with the recommended PCE factors by the San Bernardino County Transportation Authority (SBCTA) as they are more conservative than the PCE factor of 2.0 utilized for all heavy vehicles per the Riverside County traffic guidelines.

F. As shown on **Table 1**, the proposed Project is anticipated to generate a net total of 464 PCE trip-ends per day with 44 PCE AM peak hour trips and 51 PCE PM peak hour trips. Table 2 also shows the Project trip generation based on actual vehicles. Consistent with other studies prepared for projects in the City, the PCE trip generation will be utilized for the purposes of the peak hour intersection operations analysis.

IV. Specific Project Issues to be Analyzed

A. The traffic study will address the adequacy of site access and identify specific near-term circulation improvements required at study area intersections and roadways to maintain acceptable peak hour and daily levels of service (LOS).

B. The traffic study shall address the project traffic impacts at all study intersections listed in Section VI and provide appropriate mitigation measures if applicable. Peak-hour traffic signal warrants shall be evaluated for all intersections that are not currently signalized.

C. Qualitative assessment of existing and planned non-motorized facilities (e.g., pedestrians, bike routes, trails, etc.) within the study area. The site plan will be modified to include the bus turnout required on the east side of Frederick Street along the Project's frontage starting from the northeast corner of Frederick Street & Calle San Juan de Los Lagos. Although not currently available, the revised site plan reflecting the bus turnout will be included in the traffic study.

D. The traffic study shall provide a detail analysis of each driveway location based on Table 9.11.080-14 of the City of Moreno Valley Municipal Code - Design Guidelines, by preparing a table or an exhibit to show the required minimum spacing distance between the Project driveways and whether each proposed driveway location can meet the minimum distance. The location of Driveway 3 will be revised on the final site plan used in the traffic study to meet the City's minimum 150-foot spacing for full access. Although not currently available, the revised site plan reflecting the bus turnout will be included in the traffic study.

E. The traffic study will include fair share calculations for any potentially impacted study area intersection.

F. The traffic study shall provide a Queuing Analysis section to determine the 95th percentile queues for turning movements based on forecasted E+P, Opening Year Cumulative (2023) With Project, and Horizon Year (2040) With Project traffic volumes using the Synchro Version 10 software at the Project driveways and the study area intersections. If there is not sufficient queuing storage length available, the traffic study shall provide mitigation measures to resolve such issue.

G. The traffic study shall include a section that discusses the difference in trip generation between the existing land use and the proposed project, if applicable.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

V. Study Horizon Year

A. Existing (2018)
B. Existing (2018) Plus Project
C. Opening Year Cumulative (2023) Without Project (existing to opening year-2023, assuming a growth rate of 2% per year and includes the traffic from other cumulative development projects in the vicinity)
D. Opening Year Cumulative (2023) With Project
E. Horizon Year (2040) Without Project
F. Horizon Year (2040) With Project

VI. Facilities to be Studied

A. Analysis Locations: (See **Exhibit 2**)
   1. Veterans Way & Calle San Juan de Los Lagos
   2. Frederick Street & Alessandro Boulevard
   3. Frederick Street & Driveway 1 – Right-in/Right-out Only
   4. Frederick Street & Calle San Juan de Los Lagos/Driveway 2 – Full Access
   5. Frederick Street & Brodiaea Avenue
   6. Frederick Street & Cactus Avenue
   7. Driveway 3 & Brodiaea Avenue – Full Access
   8. Graham Street & Brodiaea Avenue

B. Roadway Segments:
   No roadway segments will be evaluated as the Project is anticipated to contribute fewer than 50 peak hour trips on all roadway segments adjacent to intersection analysis locations.

VII. Open Items

A. **Cumulative Development Projects:** There is a list of cumulative projects provided on **Table 3** (also shown graphically on **Exhibit 5**) and is consistent with the cumulative lists on other recent projects. It is requested that the list of cumulative development projects be reviewed by the City and projects be removed/added, where applicable.

B. **Signal Timing:** It is requested that the City provide us with the existing signal timing for use in the traffic impact analysis for the applicable study area intersections.

VIII. Deliverables

a. Draft traffic impact studies (2 hard copies plus PDF on a CD or USB drive)
b. Final traffic impact studies (4 hard copies plus PDF on a CD or USB drive)

All draft and final traffic impact studies shall be delivered with the appropriate review fee to the Permit Technician, Land Development Division - Moreno Valley City Hall, 14177 Frederick Street, Moreno Valley, CA 92552. Please contact the Land Development Division at 951-413-3110 prior to the delivery of the traffic study.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

A review fee of $3,118 will be required upon submittal of the traffic study. **A signed copy of this *Scoping Agreement* must be included in the submitted draft and final traffic impact studies.** If you have any questions regarding this *Scoping Agreement*, please contact Eric Lewis at 951-413-3140.

If you have any questions regarding this *Scoping Agreement*, please contact Eric Lewis at 951-413-3140.

Recommended By:

Charlene So, PE
Senior Associate
Urban Crossroads, Inc.

Approved By:

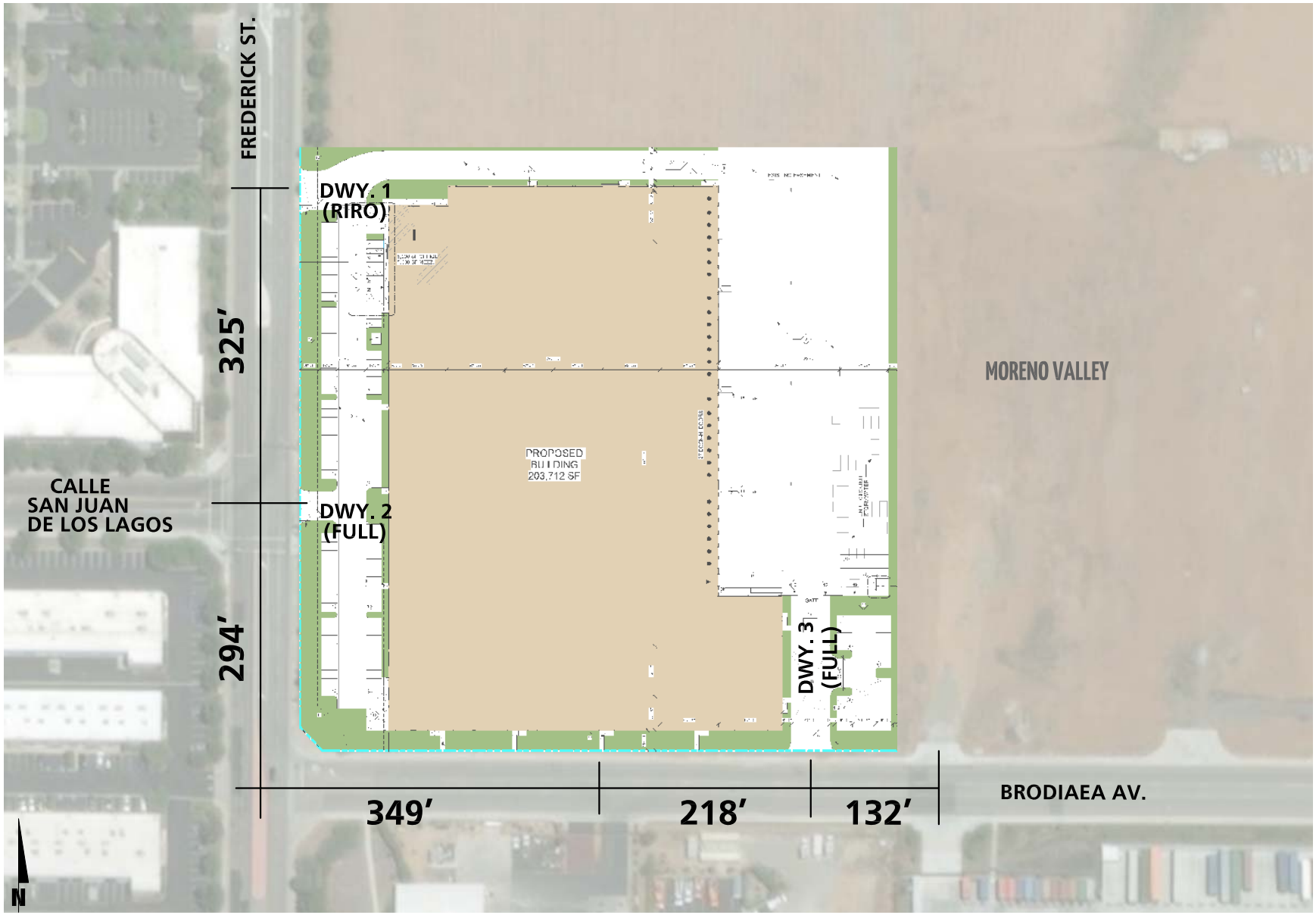
Eric Lewis, City of Moreno Valley

* NOTE: This scoping agreement was reviewed and approved based on the information submitted by Urban Crossroads, Inc. on 3/14/2018. Urban Crossroads and the Project Applicant acknowledge that any changes to the Project (zoning, size, type of use, number or location of access points, etc.) after 3/14/2018 may require this scoping agreement to be revised and resubmitted for review and approval by the City of Moreno Valley.

Attachments

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 1: PRELIMINARY SITE PLAN



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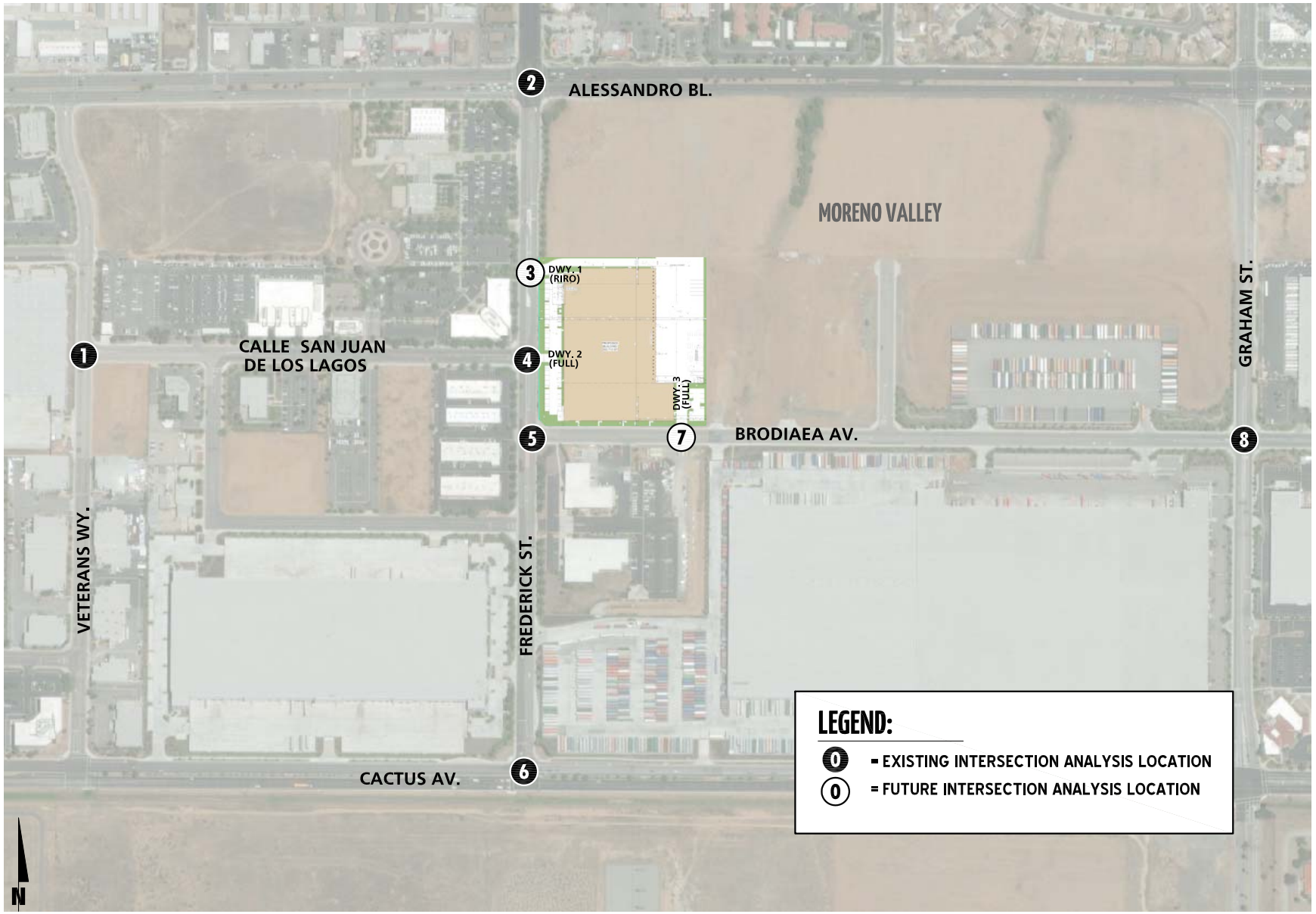
Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 2: LOCATION MAP



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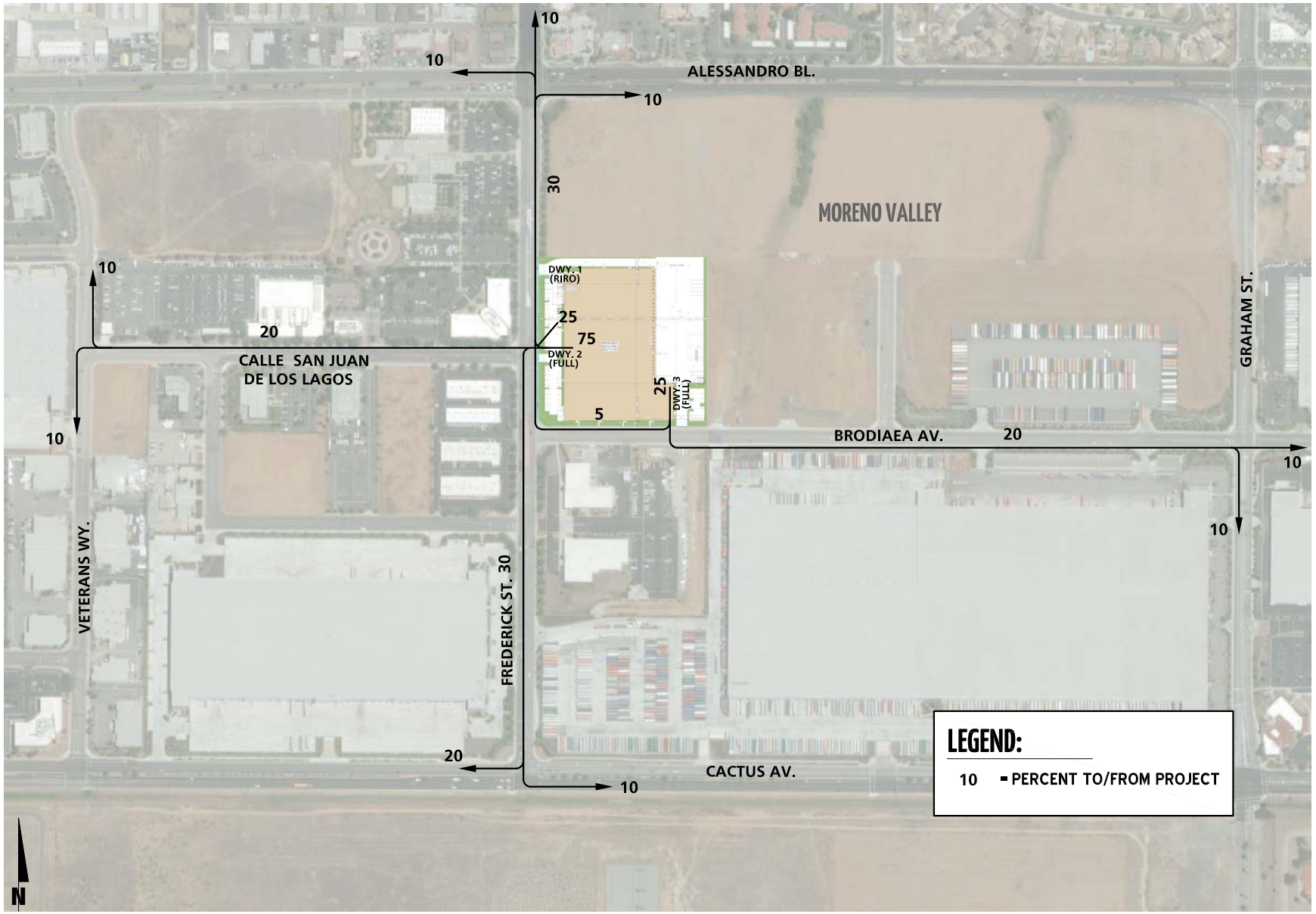
Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 3: PROJECT (PASSENGER CAR) TRIP DISTRIBUTION



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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXHIBIT 4: PROJECT (TRUCKS) TRIP DISTRIBUTION

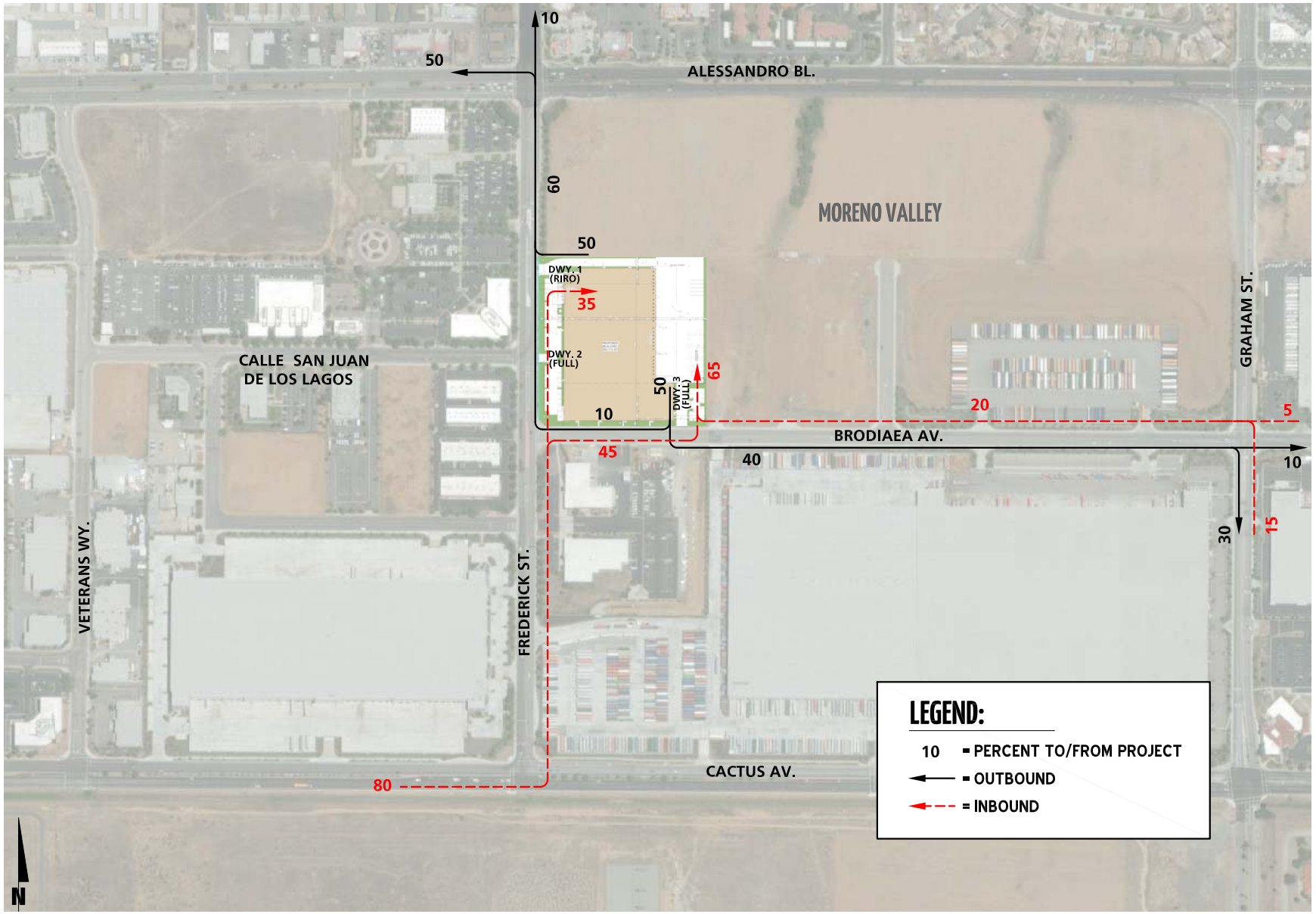

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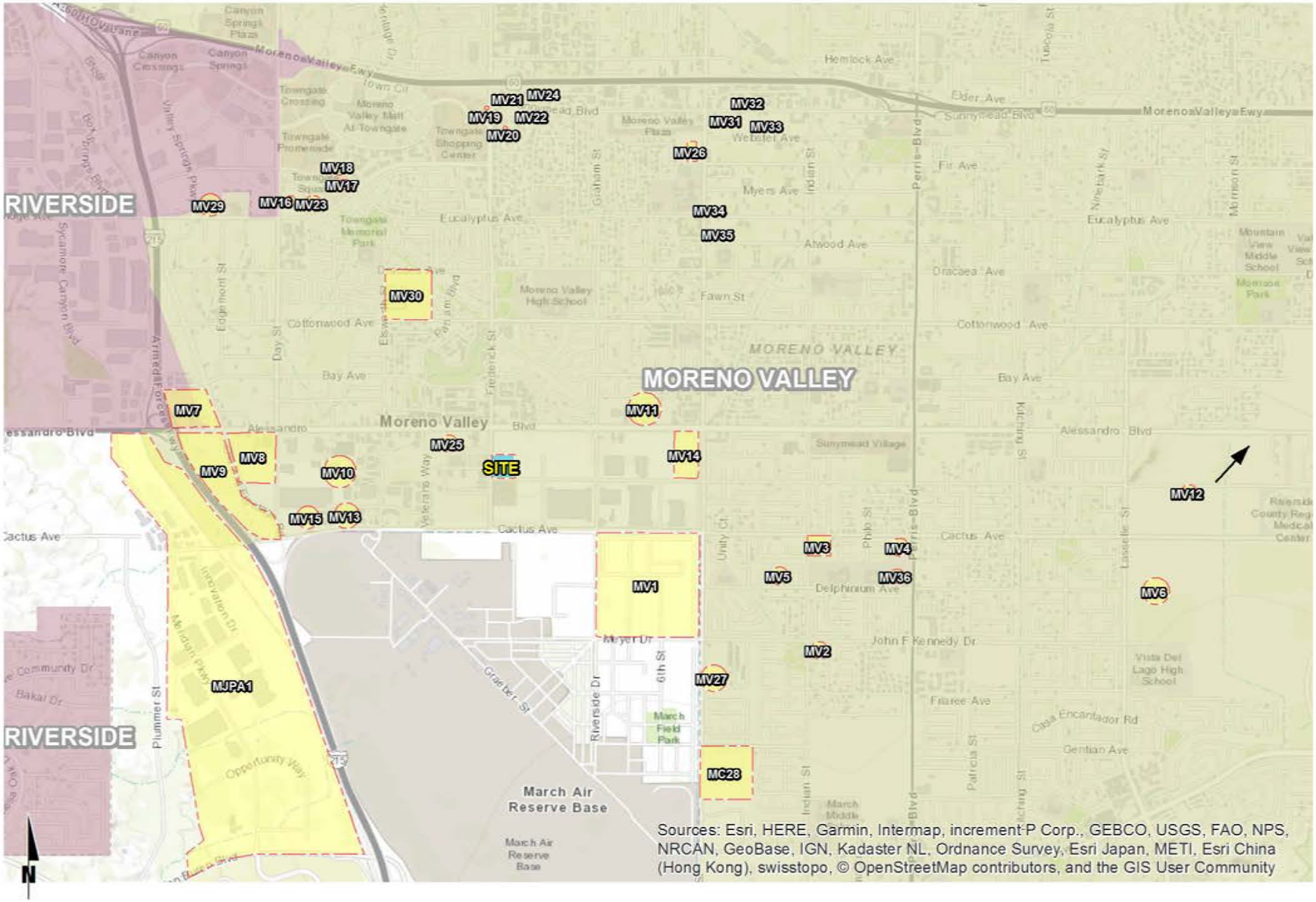
EXHIBIT 5: CUMULATIVE DEVELOPMENT LOCATION MAP



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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 1

Project Trip Generation Summary (PCE)

Land Use	ITE LU Code	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Project Trip Generation Rates[1]									
Warehousing Without Cold Storage[3,4]	150	TSF	0.131	0.039	0.170	0.051	0.139	0.190	1.740
Passenger Cars (80.00%)			0.105	0.031	0.136	0.041	0.111	0.152	1.392
2-Axle Trucks (3.34%) (PCE = 1.5)[5]			0.007	0.002	0.009	0.003	0.007	0.010	0.087
3-Axle Trucks (4.14%) (PCE = 2.0)[5]			0.011	0.003	0.014	0.004	0.011	0.016	0.144
4-Axle+ Trucks (12.52%) (PCE = 3.0)[5]			0.049	0.015	0.064	0.019	0.052	0.071	0.654

Project	Quantity	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Project Trip Generation Summary									
Centerpointe	203.712	TSF							
Passenger Cars:			21	6	27	8	23	31	284
Truck Trips:									
2-axle:			1	0	1	1	1	2	18
3-axle:			2	1	3	1	2	3	29
4+-axle:			10	3	13	4	11	15	133
- Net Truck Trips			*13*	*4*	*17*	*6*	*14*	*20*	*180*
TOTAL NET TRIPS			***34***	***10***	***44***	***14***	***37***	***51***	***464***

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] TSF = Thousand Square Feet

[3] Vehicle Mix Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[4] Truck Mix Source: SCAQMD Warehouse Truck Trip Study Data Results and Usage (2014).

Normalized % - Without Cold Storage:

16.7% 2-Axle trucks, 20.7% 3-Axle trucks, 62.5% 4-Axle trucks

[5] PCE rates are per SBCTA (more conservative than Riverside County).

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 2

Project Trip Generation Summary (Actual Vehicles)

Land Use	ITE LU Code	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Project Trip Generation Rates[1]									
Warehousing Without Cold Storage[3,4]	150	TSF	0.131	0.039	0.170	0.051	0.139	0.190	1.740
Passenger Cars (80.00%)			0.105	0.031	0.136	0.041	0.111	0.152	1.392
2-Axle Trucks (3.34%)			0.004	0.001	0.006	0.002	0.005	0.006	0.058
3-Axle Trucks (4.14%)			0.005	0.002	0.007	0.002	0.006	0.008	0.072
4-Axle+ Trucks (12.52%)			0.016	0.005	0.021	0.006	0.017	0.024	0.218

Project	Quantity	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Project Trip Generation Summary									
Centerpointe	203.712	TSF							
Passenger Cars:			21	6	27	8	23	31	284
Truck Trips:									
2-axle:			1	0	1	0	1	1	12
3-axle:			1	0	1	0	1	1	15
4+-axle:			3	1	4	1	4	5	44
- Net Truck Trips			*5*	*1*	*6*	*1*	*6*	*7*	*71*
TOTAL NET TRIPS			***26***	***7***	***33***	***9***	***29***	***38***	***355***

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] TSF = Thousand Square Feet

[3] Vehicle Mix Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[4] Truck Mix Source: SCAQMD Warehouse Truck Trip Study Data Results and Usage (2014).

Normalized % - Without Cold Storage:

16.7% 2-Axle trucks, 20.7% 3-Axle trucks, 62.5% 4-Axle trucks

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 3

Cumulative Development Land Use Summary

ID	Project Name	Land Use[1]	Quantity	Units[2]
MV1	March Lifecare Campus Specific Plan[3]	Medical Offices	190.000	TSF
		Commercial Retail	210.000	TSF
		Research & Education	200.000	TSF
		Hospital	50	Beds
		Institutional Residential	660	Beds
MV2	O'Reilly Automotive	Automobile Parts Sale	7.500	TSF
	PA15-004	Retail/Restaurant/Fast Food	2.973	TSF
MV3	TM 33417	Condo/Townhomes	60	DU
MV4	TM 33607	Condo/Townhomes	52	DU
MV5	32711 Isaac Genah	SFDR	9	DU
MV6	a Moreno Medical Campus	Medical Offices	80.000	TSF
	b Aqua Bella Specific Plan	SFDR	2,922	DU
	c TR 34329 (Granite Capitol)	SFDR	90	DU
	d Cresta Bella	General Office	30.000	TSF
MV7	P07-0102; and P09-0416, -0418, -0419	General Light Industrial	652.018	TSF
	Alessandro Bl. (APN 263-091-008; 263-100-019; 263-100-005; P14-0841 to 0848)	Commercial and Industrial Complex	101.580	TSF
MV8	Alessandro Metrolink Station	Light Rail Transit Station	300	SP
MV9	Freeway Business Center	High-Cube Warehouse	709.083	TSF
MV10	PA 08-0047-0052 (Komar Cactus Plaza)[3]	Hotel	110	Rooms
		Fast Food w/Drive Thru	8.000	TSF
		Commercial	42.400	TSF
MV11	PA 09-0031	Gas Station	12	VFP
MV12	Prologis	High-Cube Warehouse	1916.19	TSF
		High-Cube Warehouse	328.448	TSF
	World Logistics Center	High-Cube Warehouse	41400	TSF
		Warehousing	200	TSF
		Gas Station w/ Market	12	VFP
		Existing SFDR	7	DU
MV13	Moreno Valley Cactus Center (PEN16-0131)	Warehouse	36.95	TSF
		Fast Food w/Drive Thru	7.9	TSF
		Gas Station w/Car Wash	28	VFP
MV14	Brodiaea Commerce Center	High-Cube Warehouse	262.398	TSF
MV15	Hawthorne Inn	Hotel	79	RM
MV16	The Quarter	Hotel	216	RM
MV17	Ayres Hotel & Spa	Hotel	127	RM
MV18	Hampton Inn & Suites	Hotel	115	RM
MV19	La Quinta Inn & Suites	Hotel	58	RM
MV20	Travelers Inn	Hotel	55	RM
MV21	Comfort Inn	Hotel	92	RM
MV22	Sleep Inn & Suites	Hotel	66	RM

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 3

Cumulative Development Land Use Summary

ID	Project Name	Land Use[1]	Quantity	Units[2]
MV23	TownGate Square	Office	170.000	TSF
MV24	Olivewood Plaza	Office	22.758	TSF
MV25	Centerpointe Office Area	Office	258.000	TSF
MV26	Riverside County Office Building	Office	52.000	TSF
MV27	Invermex, Inc.	SFDR	32	DU
MV28	Rados	SFDR	135	DU
MV29	Latco SC Inc.	Multifamily Housing	112	DU
MV30	Winchester Associates "Scottish Village"	Multifamily Housing	194	DU
MV31	33771 Jian Qiang Liu	Multifamily Housing	12	DU
MV32	Cal Choice Inv. Inc.	Multifamily Housing	12	DU
MV33	35663 Jimmy Lee	Multifamily Housing	12	DU
MV34	35769 Michael Chen	Multifamily Housing	16	DU
MV35	PA09-0006 Jim Nydam	Multifamily Housing	15	DU
MV36	Nova Homes	Multifamily Housing	122	DU
MJPA1	Meridian Business Park North	Industrial Park	5,985.000	TSF

[1] SFDR = Single Family Detached Residential

[2] DU = Dwelling Units; TSF = Thousand Square Feet; SP = Spaces; VFP = Vehicle Fueling Positions

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 1.2:

TUMF TRANSPORTATION IMPROVEMENT PROGRAM FOR MORENO VALLEY

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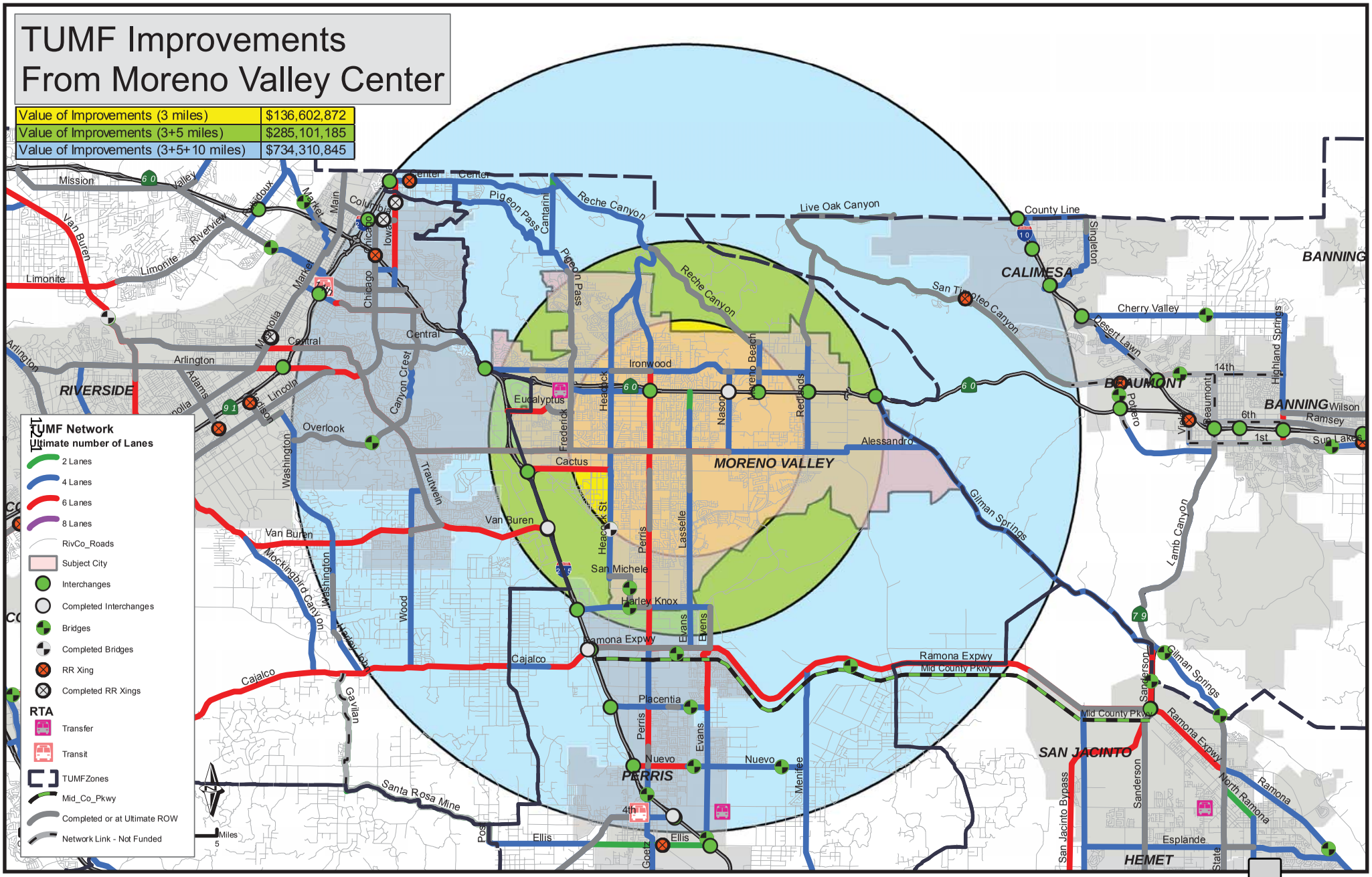
Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)


TUMF Improvements
From Moreno Valley Center
Value of Improvements (3 miles) $136,602,872
Value of Improvements (3+5 miles) $285,101,185
Value of Improvements (3+5+10 miles) $734,310,845
TUMF Network
Ultimate number of Lanes
2 Lanes
4 Lanes
6 Lanes
8 Lanes
RivCo_Roads
Subject City
Interchanges
Completed Interchanges
Bridges
Completed Bridges
RR Xing
Completed RR Xings
RTA
Transfer
Transit
TUMFZones
Mid_Co_Pkwy
Completed or at Ultimate ROW
Network Link - Not Funded
Miles
5
MORENO VALLEY
RIVERSIDE
CALIMESA
BEAUMONT
BANNING
PERRIS
SAN JACINTO
HEMET
Mission
Van Buren
Limonite
Arlington
Central
Overlook
Cactus
Alessandro
Eucalyptus
Ironwood
Nason
Moreno Beach
Redlands
Pigeon Pass
Reche Canyon
Live Oak Canyon
County Line
Cherry Valley
Desert Lawn
Highland Springs
14th
6th
1st
Wilson
Ramsey
Sun Lakes
Potrero
Beaumont
Singleton
San Timoteo Canyon
Canyon Crest
Trautwein
Washington
Lincoln
Adams
Magnolia
Market
Main
Columbia
Iowa
Chicago
Riverview
Frederick
Heacock
Perris
Lasselle
Evans
San Michele
Harley Knox
Ramona Expwy
Mid County Pkwy
Cajalco
Placentia
Nuevo
Menifee
Wood
Mockingbird Canyon
Gavilan
Santa Rosa Mine
Ellis
4th
Goetz
Lamb Canyon
Gilman Springs
Sanderson
San Jacinto Bypass
North Ramona
Ramona
Esplande
State

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 1.3:

SITE ADJACENT QUEUING ANALYSIS

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 1: Veterans Wy. & Calle San Juan De Los Lagos

Movement	WB	WB	NB	NB	SB
Directions Served	L	R	T	R	L
Maximum Queue (ft)	49	28	4	9	35
Average Queue (ft)	22	14	0	0	12
95th Queue (ft)	43	31	3	4	35
Link Distance (ft)		1530	1143	1143	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100				115
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	TR	L	L	T	TR
Maximum Queue (ft)	330	1066	1043	57	215	2589	2589	2589	119	124	144	168
Average Queue (ft)	322	764	728	19	134	2589	2589	2589	52	73	83	98
95th Queue (ft)	373	1222	1207	41	259	2589	2589	2589	99	112	136	148
Link Distance (ft)		3252	3252	3252		2574	2574	2574			571	571
Upstream Blk Time (%)						89	96	97				
Queuing Penalty (veh)						0	0	0				
Storage Bay Dist (ft)	250				130				135	135		
Storage Blk Time (%)	90	0			12	66			0	0	1	
Queuing Penalty (veh)	350	1			77	80			0	0	2	

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	R
Maximum Queue (ft)	160	197	192	186	167
Average Queue (ft)	92	135	116	111	85
95th Queue (ft)	180	194	179	169	142
Link Distance (ft)			1184	1184	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100	100			100
Storage Blk Time (%)	5	39	9	12	5
Queuing Penalty (veh)	9	76	20	36	10

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 3: Frederick St. & Dwy. 1

Movement	WB
Directions Served	R
Maximum Queue (ft)	31
Average Queue (ft)	2
95th Queue (ft)	16
Link Distance (ft)	345
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	72	52	31	128	112	108	34	142	188
Average Queue (ft)	28	19	6	58	27	35	7	47	61
95th Queue (ft)	61	47	25	104	78	83	28	114	134
Link Distance (ft)		1530	288		230	230		276	276
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	120			150			100		
Storage Blk Time (%)				0	0			2	
Queuing Penalty (veh)				0	0			0	

Intersection: 5: Frederick St. & Private Driveway/Brodiaea Av.

Movement	EB	WB	SB
Directions Served	R	R	LT
Maximum Queue (ft)	31	90	16
Average Queue (ft)	6	37	1
95th Queue (ft)	26	66	9
Link Distance (ft)	167	481	230
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 6: Cactus Av. & Frederick St.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	T	T	T	T	R	L	L	R
Maximum Queue (ft)	374	632	602	300	2544	2544	2544	340	126	139	161
Average Queue (ft)	266	209	156	68	2532	2535	2527	299	62	72	64
95th Queue (ft)	407	534	436	181	2664	2638	2696	470	111	124	135
Link Distance (ft)		1599	1599	1599	2529	2529	2529			1150	1150
Upstream Blk Time (%)					56	60	83				
Queuing Penalty (veh)					0	0	0				
Storage Bay Dist (ft)	300							265	140		
Storage Blk Time (%)	23	0					42		0	0	
Queuing Penalty (veh)	140	0					117		0	0	

Intersection: 7: Brodiaea Av. & Dwy. 3

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	6	31
Average Queue (ft)	0	4
95th Queue (ft)	4	20
Link Distance (ft)		326
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Graham St. & Brodiaea Av.

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	18	31	29	56	94	72	41	114	77	80	125	84
Average Queue (ft)	1	7	4	19	37	31	10	60	28	31	55	28
95th Queue (ft)	10	27	20	47	77	52	32	101	62	63	96	64
Link Distance (ft)		2009			828	828		1200	1200		1170	1170
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210		100	150			160			150		
Storage Blk Time (%)											0	
Queuing Penalty (veh)											0	

Network Summary

Network wide Queuing Penalty: 918

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 1: Veterans Wy. & Calle San Juan De Los Lagos

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	51	38	28
Average Queue (ft)	22	17	4
95th Queue (ft)	42	34	20
Link Distance (ft)		1530	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		115
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	TR	L	L	T	TR
Maximum Queue (ft)	330	3710	3710	3710	215	1084	1066	1109	180	224	484	462
Average Queue (ft)	286	3710	3710	3710	195	666	663	664	148	181	298	220
95th Queue (ft)	416	3710	3710	3710	264	1222	1205	1184	224	279	586	446
Link Distance (ft)		3695	3695	3695		2574	2574	2574			571	571
Upstream Blk Time (%)		99	98	94							7	0
Queuing Penalty (veh)		0	0	0							26	0
Storage Bay Dist (ft)	250				130				135	135		
Storage Blk Time (%)	25	57			67	56			49	68	4	
Queuing Penalty (veh)	265	173			301	67			102	141	8	

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	R
Maximum Queue (ft)	160	220	1199	1199	166
Average Queue (ft)	158	219	1199	1198	51
95th Queue (ft)	164	220	1199	1205	124
Link Distance (ft)			1184	1184	
Upstream Blk Time (%)			95	48	
Queuing Penalty (veh)			0	0	
Storage Bay Dist (ft)	100	100			100
Storage Blk Time (%)	85	90	12	18	0
Queuing Penalty (veh)	261	276	58	32	1

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 3: Frederick St. & Dwy. 1

Movement	WB	NB	NB
Directions Served	R	T	TR
Maximum Queue (ft)	39	78	55
Average Queue (ft)	12	16	7
95th Queue (ft)	37	100	74
Link Distance (ft)	345	276	276
Upstream Blk Time (%)		0	0
Queuing Penalty (veh)		1	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	172	210	66	72	124	107	30	227	233
Average Queue (ft)	116	44	20	28	45	46	3	81	75
95th Queue (ft)	171	126	53	63	95	97	17	183	181
Link Distance (ft)		1530	288		230	230		276	276
Upstream Blk Time (%)								0	0
Queuing Penalty (veh)								0	0
Storage Bay Dist (ft)	120			150			100		
Storage Blk Time (%)	14	0			0			5	
Queuing Penalty (veh)	10	0			0			0	

Intersection: 5: Frederick St. & Private Driveway/Brodiaea Av.

Movement	EB	WB	NB	SB
Directions Served	R	R	T	LT
Maximum Queue (ft)	50	55	11	6
Average Queue (ft)	23	28	0	0
95th Queue (ft)	48	49	8	4
Link Distance (ft)	167	481	1150	230
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 6: Cactus Av. & Frederick St.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	T	T	T	T	R	L	L	R
Maximum Queue (ft)	335	518	489	494	425	424	416	338	199	269	171
Average Queue (ft)	123	270	269	248	253	251	229	56	125	153	79
95th Queue (ft)	271	458	453	434	367	366	354	191	203	243	155
Link Distance (ft)		1599	1599	1599	2529	2529	2529			1150	1150
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	300							265	140		
Storage Blk Time (%)		5					4		7	13	
Queuing Penalty (veh)		6					10		21	42	

Intersection: 7: Brodiaea Av. & Dwy. 3

Movement	SB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	15
95th Queue (ft)	40
Link Distance (ft)	326
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Graham St. & Brodiaea Av.

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	30	44	39	60	85	73	25	162	160	110	124	112
Average Queue (ft)	4	16	11	22	30	30	6	89	60	49	64	42
95th Queue (ft)	19	43	34	52	65	57	24	144	123	88	108	89
Link Distance (ft)		2009			828	828		1200	1200		1170	1170
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210		100	150			160			150		
Storage Blk Time (%)								0		0	0	
Queuing Penalty (veh)								0		0	0	

Network Summary

Network wide Queuing Penalty: 1801

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 3.1:

EXISTING TRAFFIC COUNTS – APRIL 2018

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Veterans Way
E/W: Calle San Juan De Los Lagos
Weather: Clear

File Name : 01_MRV_Veterans_Calle SJDLL AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	15	4	19	6	1	7	4	15	19	45
07:15 AM	16	7	23	9	3	12	4	27	31	66
07:30 AM	11	9	20	8	6	14	10	11	21	55
07:45 AM	4	9	13	8	1	9	16	10	26	48
Total	46	29	75	31	11	42	34	63	97	214
08:00 AM	9	3	12	7	10	17	19	12	31	60
08:15 AM	10	11	21	6	4	10	23	12	35	66
08:30 AM	7	12	19	6	7	13	11	6	17	49
08:45 AM	13	6	19	6	8	14	12	9	21	54
Total	39	32	71	25	29	54	65	39	104	229
Grand Total	85	61	146	56	40	96	99	102	201	443
Apprch %	58.2	41.8		58.3	41.7		49.3	50.7		
Total %	19.2	13.8	33	12.6	9	21.7	22.3	23	45.4	
Passenger Vehicles	84	56	140	54	34	88	97	99	196	424
% Passenger Vehicles	98.8	91.8	95.9	96.4	85	91.7	98	97.1	97.5	95.7
Large 2 Axle Vehicles	1	3	4	1	6	7	2	3	5	16
% Large 2 Axle Vehicles	1.2	4.9	2.7	1.8	15	7.3	2	2.9	2.5	3.6
3 Axle Vehicles	0	1	1	1	0	1	0	0	0	2
% 3 Axle Vehicles	0	1.6	0.7	1.8	0	1	0	0	0	0.5
4+ Axle Trucks	0	1	1	0	0	0	0	0	0	1
% 4+ Axle Trucks	0	1.6	0.7	0	0	0	0	0	0	0.2

	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	**16**	7	**23**	**9**	3	12	4	**27**	**31**	**66**
07:30 AM	11	**9**	20	8	6	14	10	11	21	55
07:45 AM	4	9	13	8	1	9	16	10	26	48
08:00 AM	9	3	12	7	**10**	**17**	**19**	12	31	60
Total Volume	40	28	68	32	20	52	49	60	109	229
% App. Total	58.8	41.2		61.5	38.5		45	55		
PHF	.625	.778	.739	.889	.500	.765	.645	.556	.879	.867

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Weather: Clear

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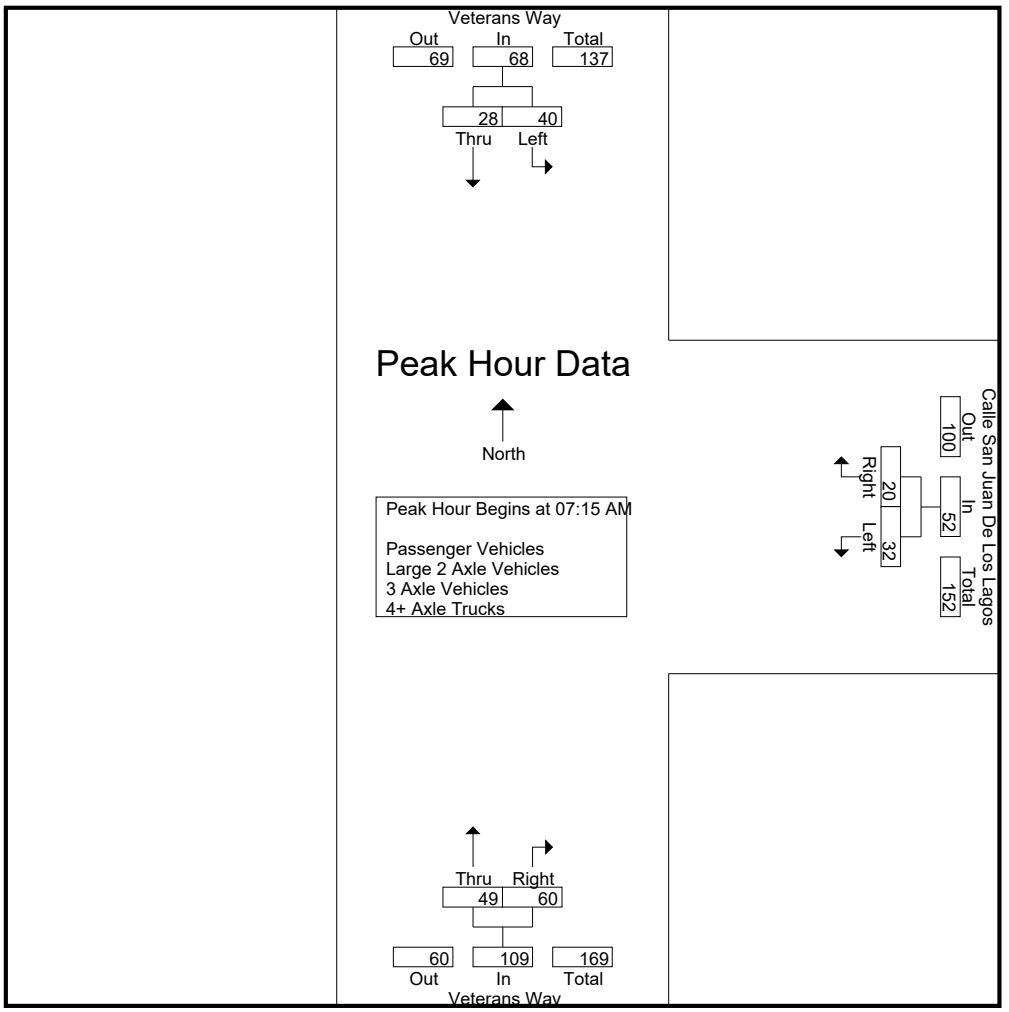
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			08:00 AM			07:30 AM		
+0 mins.	15	4	19	**7**	**10**	**17**	10	11	21
+15 mins.	**16**	7	**23**	6	4	10	16	10	26
+30 mins.	11	**9**	20	6	7	13	19	**12**	31
+45 mins.	4	9	13	6	8	14	**23**	12	**35**
Total Volume	46	29	75	25	29	54	68	45	113
% App. Total	61.3	38.7		46.3	53.7		60.2	39.8	
PHF	.719	.806	.815	.893	.725	.794	.739	.938	.807

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Weather: Clear

File Name : 01_MRV_Veterans_Calle SJDLL AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	15	3	18	5	1	6	4	15	19	43
07:15 AM	16	6	22	9	2	11	4	27	31	64
07:30 AM	11	8	19	8	5	13	9	10	19	51
07:45 AM	4	9	13	7	1	8	16	10	26	47
Total	46	26	72	29	9	38	33	62	95	205
08:00 AM	9	2	11	7	9	16	19	12	31	58
08:15 AM	9	11	20	6	4	10	22	11	33	63
08:30 AM	7	11	18	6	6	12	11	5	16	46
08:45 AM	13	6	19	6	6	12	12	9	21	52
Total	38	30	68	25	25	50	64	37	101	219
Grand Total	84	56	140	54	34	88	97	99	196	424
Apprch %	60	40		61.4	38.6		49.5	50.5		
Total %	19.8	13.2	33	12.7	8	20.8	22.9	23.3	46.2	

	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	**16**	6	**22**	**9**	2	11	4	**27**	**31**	**64**
07:30 AM	11	8	19	8	5	13	9	10	19	51
07:45 AM	4	**9**	13	7	1	8	16	10	26	47
08:00 AM	9	2	11	7	**9**	**16**	**19**	12	31	58
Total Volume	40	25	65	31	17	48	48	59	107	220
% App. Total	61.5	38.5		64.6	35.4		44.9	55.1		
PHF	.625	.694	.739	.861	.472	.750	.632	.546	.863	.859

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City of Moreno Valley
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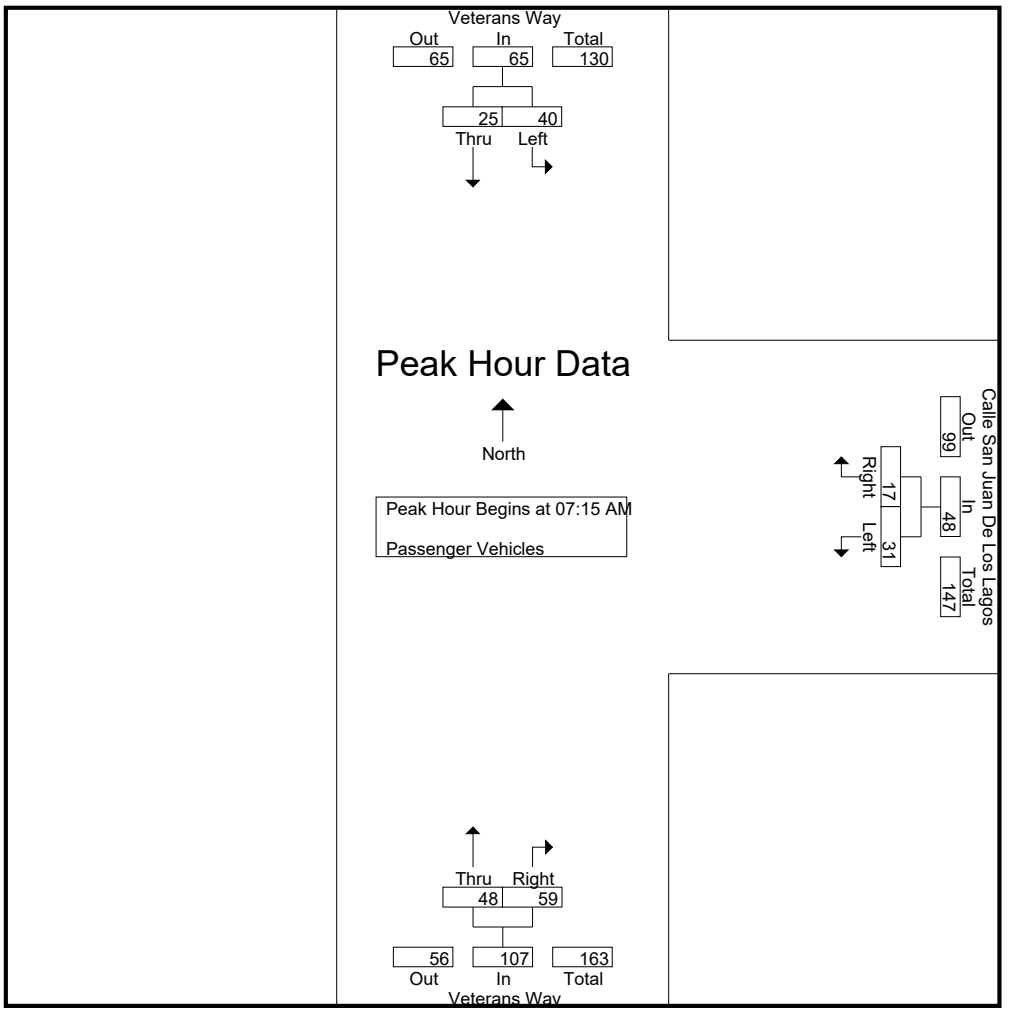
E/W: Calle San Juan De Los Lagos
Weather: Clear

File Name : 01_MRV_Veterans_Calle SJDLL AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	**16**	6	**22**	**9**	2	11	4	**27**	**31**
+15 mins.	11	8	19	8	5	13	9	10	19
+30 mins.	4	**9**	13	7	1	8	16	10	26
+45 mins.	9	2	11	7	**9**	**16**	**19**	12	31
Total Volume	40	25	65	31	17	48	48	59	107
% App. Total	61.5	38.5		64.6	35.4		44.9	55.1	
PHF	.625	.694	.739	.861	.472	.750	.632	.546	.863

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
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City of Moreno Valley
N/S: Veterans Way
E/W: Calle San Juan De Los Lagos
Weather: Clear

File Name : 01_MRV_Veterans_Calle SJDLL AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	1	0	1	0	0	0	1
07:15 AM	0	1	1	0	1	1	0	0	0	2
07:30 AM	0	0	0	0	1	1	1	1	2	3
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	1	1	1	2	3	1	1	2	6
08:00 AM	0	1	1	0	1	1	0	0	0	2
08:15 AM	1	0	1	0	0	0	1	1	2	3
08:30 AM	0	1	1	0	1	1	0	1	1	3
08:45 AM	0	0	0	0	2	2	0	0	0	2
Total	1	2	3	0	4	4	1	2	3	10
Grand Total	1	3	4	1	6	7	2	3	5	16
Apprch %	25	75		14.3	85.7		40	60		
Total %	6.2	18.8	25	6.2	37.5	43.8	12.5	18.8	31.2	

	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	**1**	**1**	0	**1**	**1**	0	0	0	2
07:30 AM	0	0	0	0	1	1	**1**	**1**	**2**	**3**
07:45 AM	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	1	1	0	1	1	0	0	0	2
Total Volume	0	2	2	0	3	3	1	1	2	7
% App. Total	0	100		0	100		50	50		
PHF	.000	.500	.500	.000	.750	.750	.250	.250	.250	.583

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
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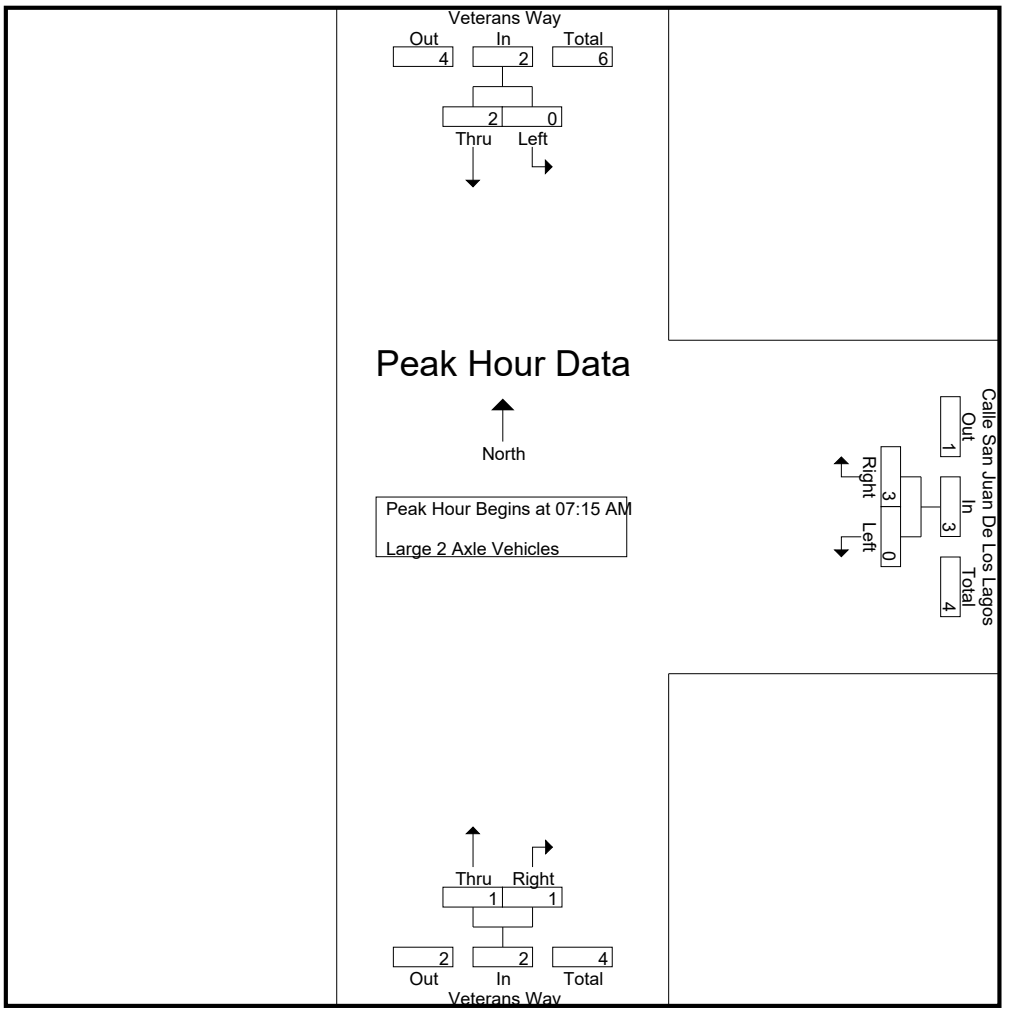
(951) 268-6268

City of Moreno Valley
N/S: Veterans Way
E/W: Calle San Juan De Los Lagos
Weather: Clear

File Name : 01_MRV_Veterans_Calle SJDLL AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	**1**	**1**	0	**1**	**1**	0	0	0
+15 mins.	0	0	0	0	1	1	**1**	**1**	**2**
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	1	1	0	1	1	0	0	0
Total Volume	0	2	2	0	3	3	1	1	2
% App. Total	0	100		0	100		50	50	
PHF	.000	.500	.500	.000	.750	.750	.250	.250	.250

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Veterans Way
E/W: Calle San Juan De Los Lagos
Weather: Clear

File Name : 01_MRV_Veterans_Calle SJDLL AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 3 Axle Vehicles

	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	1	1	0	0	0	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	1	0	1	0	0	0	1
Total	0	1	1	1	0	1	0	0	0	2
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	1	1	0	1	0	0	0	2
Apprch %	0	100		100	0		0	0		
Total %	0	50	50	50	0	50	0	0	0	

	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	**1**	0	**1**	0	0	0	**1**
08:00 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	1	0	1	0	0	0	1
% App. Total	0	0		100	0		0	0		
PHF	.000	.000	.000	.250	.000	.250	.000	.000	.000	.250

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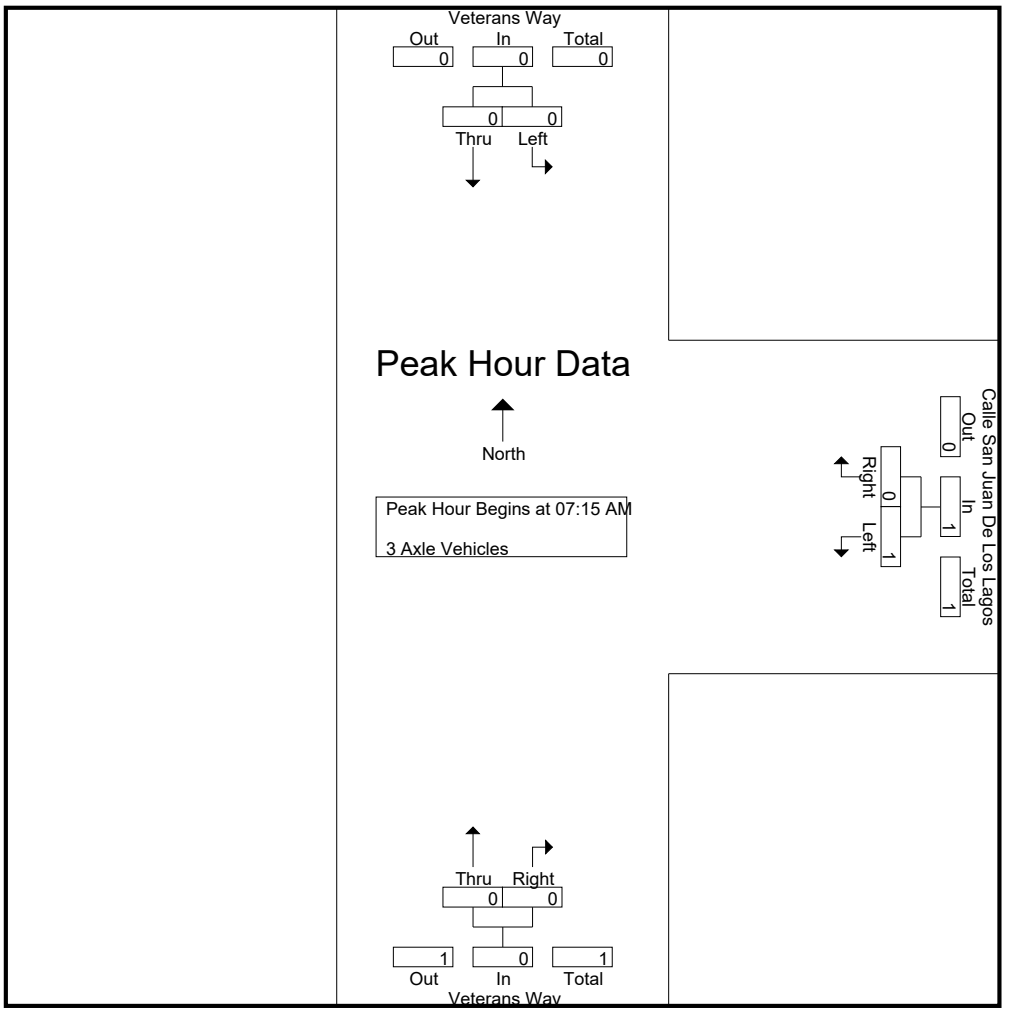

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	**1**	0	**1**	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	1	0	1	0	0	0
% App. Total	0	0		100	0		0	0	
PHF	.000	.000	.000	.250	.000	.250	.000	.000	.000

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City of Moreno Valley
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Weather: Clear

File Name : 01_MRV_Veterans_Calle SJDLL AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 4+ Axle Trucks

	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	1	1	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	1	1	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	1	0	0	0	0	0	0	1
Apprch %	0	100		0	0		0	0		
Total %	0	100	100	0	0	0	0	0	0	

	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	**1**	**1**	0	0	0	0	0	0	**1**
07:45 AM	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	1	0	0	0	0	0	0	1
% App. Total	0	100		0	0		0	0		
PHF	.000	.250	.250	.000	.000	.000	.000	.000	.000	.250

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File Name : 01_MRV_Veterans_Calle SJDLL AM
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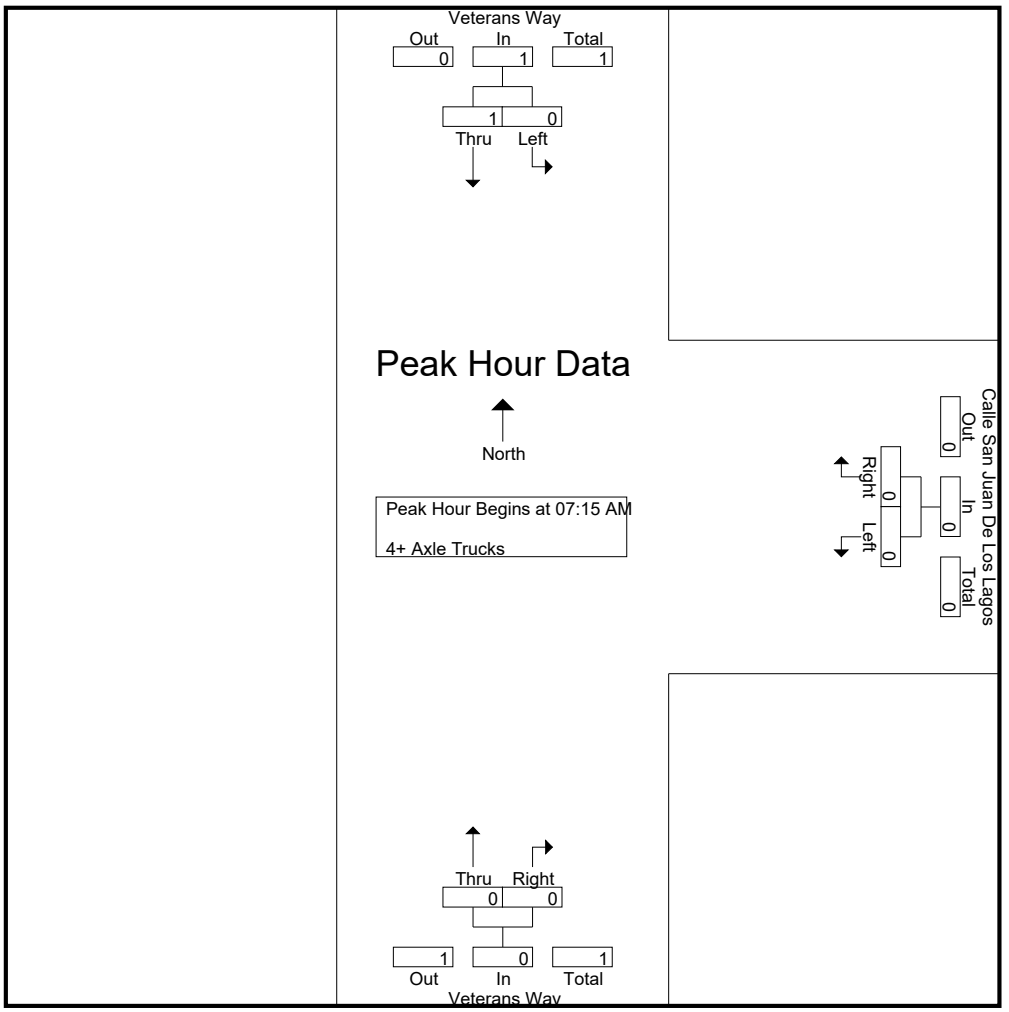

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	**1**	**1**	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	1	1	0	0	0	0	0	0
% App. Total	0	100		0	0		0	0	
PHF	.000	.250	.250	.000	.000	.000	.000	.000	.000

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City of Moreno Valley
N/S: Veterans Way
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Weather: Clear

File Name : 01_MRV_Veterans_Calle SJDLL PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	3	14	17	19	16	35	22	5	27	79
04:15 PM	2	7	9	10	11	21	12	6	18	48
04:30 PM	7	9	16	9	11	20	26	3	29	65
04:45 PM	2	12	14	10	9	19	13	7	20	53
Total	14	42	56	48	47	95	73	21	94	245
05:00 PM	7	12	19	15	15	30	18	4	22	71
05:15 PM	10	10	20	8	6	14	17	12	29	63
05:30 PM	5	7	12	13	10	23	9	4	13	48
05:45 PM	3	4	7	16	14	30	11	7	18	55
Total	25	33	58	52	45	97	55	27	82	237
Grand Total	39	75	114	100	92	192	128	48	176	482
Apprch %	34.2	65.8		52.1	47.9		72.7	27.3		
Total %	8.1	15.6	23.7	20.7	19.1	39.8	26.6	10	36.5	
Passenger Vehicles	37	71	108	100	91	191	120	41	161	460
% Passenger Vehicles	94.9	94.7	94.7	100	98.9	99.5	93.8	85.4	91.5	95.4
Large 2 Axle Vehicles	2	4	6	0	1	1	4	6	10	17
% Large 2 Axle Vehicles	5.1	5.3	5.3	0	1.1	0.5	3.1	12.5	5.7	3.5
3 Axle Vehicles	0	0	0	0	0	0	2	1	3	3
% 3 Axle Vehicles	0	0	0	0	0	0	1.6	2.1	1.7	0.6
4+ Axle Trucks	0	0	0	0	0	0	2	0	2	2
% 4+ Axle Trucks	0	0	0	0	0	0	1.6	0	1.1	0.4

	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	7	9	16	9	11	20	**26**	3	**29**	65
04:45 PM	2	**12**	14	10	9	19	13	7	20	53
05:00 PM	7	12	19	**15**	**15**	**30**	18	4	22	**71**
05:15 PM	**10**	10	**20**	8	6	14	17	**12**	29	63
Total Volume	26	43	69	42	41	83	74	26	100	252
% App. Total	37.7	62.3		50.6	49.4		74	26		
PHF	.650	.896	.863	.700	.683	.692	.712	.542	.862	.887

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
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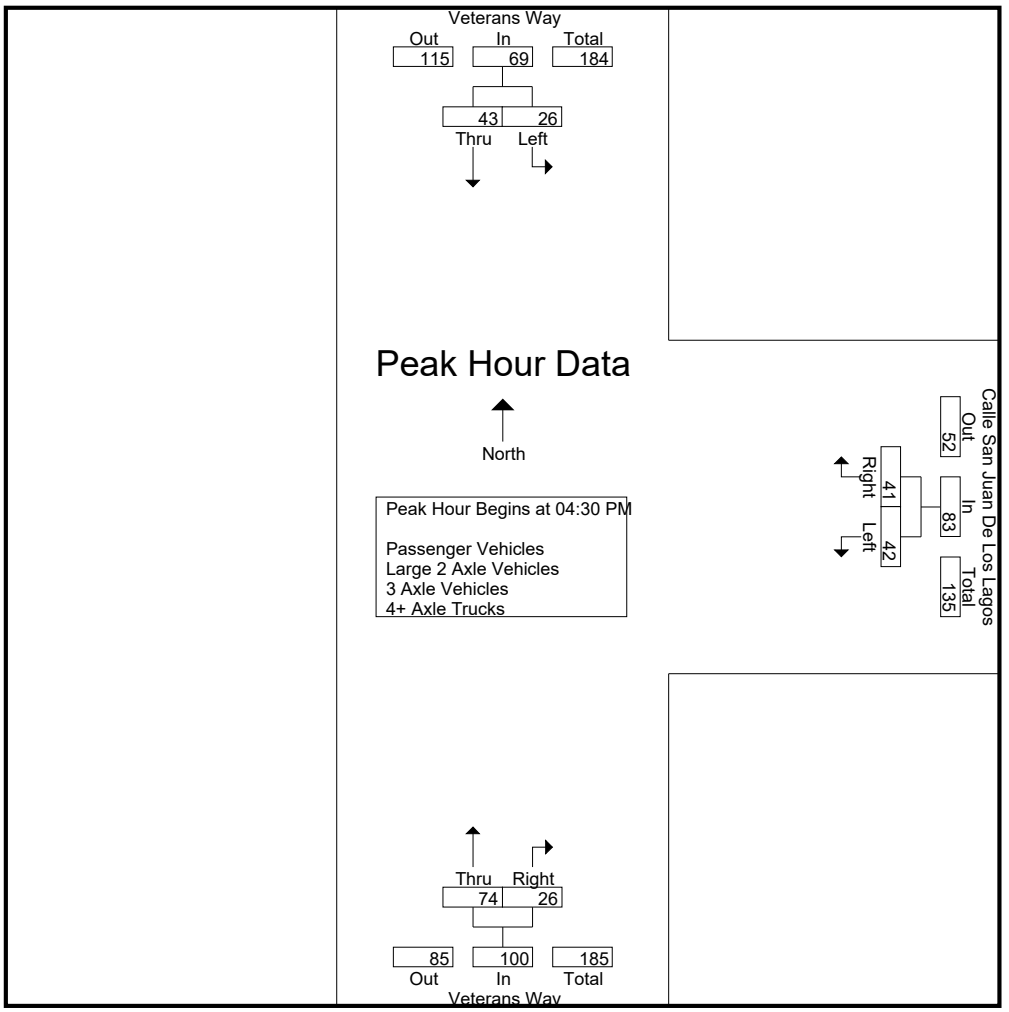
City of Moreno Valley
N/S: Veterans Way
E/W: Calle San Juan De Los Lagos
Weather: Clear

File Name : 01_MRV_Veterans_Calle SJDLL PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			05:00 PM			04:30 PM		
+0 mins.	7	9	16	15	**15**	**30**	**26**	3	**29**
+15 mins.	2	**12**	14	8	6	14	13	7	20
+30 mins.	7	12	19	13	10	23	18	4	22
+45 mins.	**10**	10	**20**	**16**	14	30	17	**12**	29
Total Volume	26	43	69	52	45	97	74	26	100
% App. Total	37.7	62.3		53.6	46.4		74	26	
PHF	.650	.896	.863	.813	.750	.808	.712	.542	.862

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Veterans Way
E/W: Calle San Juan De Los Lagos
Weather: Clear

File Name : 01_MRV_Veterans_Calle SJDLL PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	3	14	17	19	16	35	20	5	25	77
04:15 PM	2	7	9	10	11	21	10	5	15	45
04:30 PM	6	9	15	9	11	20	25	3	28	63
04:45 PM	2	11	13	10	8	18	13	4	17	48
Total	13	41	54	48	46	94	68	17	85	233
05:00 PM	6	11	17	15	15	30	16	4	20	67
05:15 PM	10	9	19	8	6	14	17	11	28	61
05:30 PM	5	6	11	13	10	23	8	4	12	46
05:45 PM	3	4	7	16	14	30	11	5	16	53
Total	24	30	54	52	45	97	52	24	76	227
Grand Total	37	71	108	100	91	191	120	41	161	460
Apprch %	34.3	65.7		52.4	47.6		74.5	25.5		
Total %	8	15.4	23.5	21.7	19.8	41.5	26.1	8.9	35	

	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	6	9	15	9	11	20	**25**	3	**28**	63
04:45 PM	2	**11**	13	10	8	18	13	4	17	48
05:00 PM	6	11	17	**15**	**15**	**30**	16	4	20	**67**
05:15 PM	**10**	9	**19**	8	6	14	17	**11**	28	61
Total Volume	24	40	64	42	40	82	71	22	93	239
% App. Total	37.5	62.5		51.2	48.8		76.3	23.7		
PHF	.600	.909	.842	.700	.667	.683	.710	.500	.830	.892

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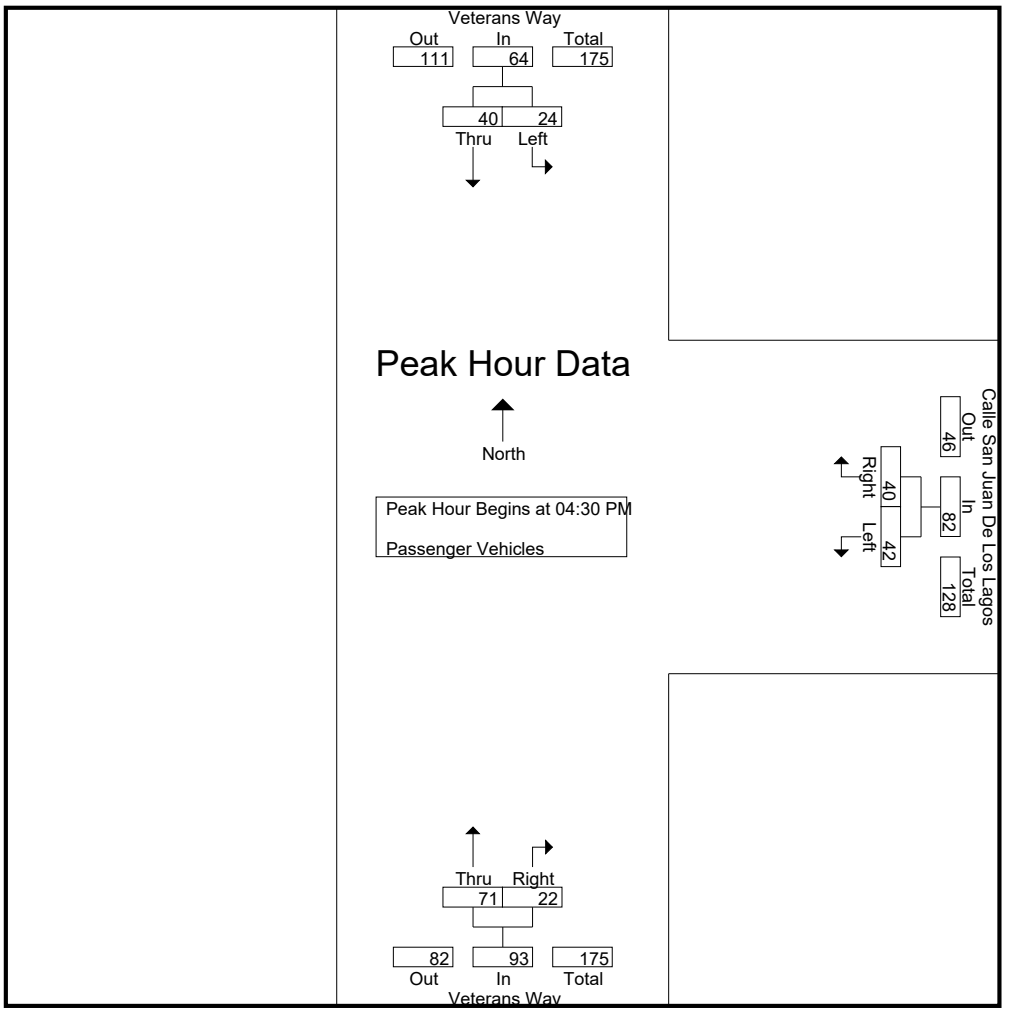
File Name : 01_MRV_Veterans_Calle SJDLL PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	6	9	15	9	11	20	**25**	3	**28**
+15 mins.	2	**11**	13	10	8	18	13	4	17
+30 mins.	6	11	17	**15**	**15**	**30**	16	4	20
+45 mins.	**10**	9	**19**	8	6	14	17	**11**	28
Total Volume	24	40	64	42	40	82	71	22	93
% App. Total	37.5	62.5		51.2	48.8		76.3	23.7	
PHF	.600	.909	.842	.700	.667	.683	.710	.500	.830

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Weather: Clear

File Name : 01_MRV_Veterans_Calle SJDLL PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	1	0	1	1
04:15 PM	0	0	0	0	0	0	1	1	2	2
04:30 PM	1	0	1	0	0	0	0	0	0	1
04:45 PM	0	1	1	0	1	1	0	3	3	5
Total	1	1	2	0	1	1	2	4	6	9
05:00 PM	1	1	2	0	0	0	1	0	1	3
05:15 PM	0	1	1	0	0	0	0	1	1	2
05:30 PM	0	1	1	0	0	0	1	0	1	2
05:45 PM	0	0	0	0	0	0	0	1	1	1
Total	1	3	4	0	0	0	2	2	4	8
Grand Total	2	4	6	0	1	1	4	6	10	17
Apprch %	33.3	66.7		0	100		40	60		
Total %	11.8	23.5	35.3	0	5.9	5.9	23.5	35.3	58.8	

	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	**1**	0	1	0	0	0	0	0	0	1
04:45 PM	0	**1**	1	0	**1**	**1**	0	**3**	**3**	**5**
05:00 PM	1	1	**2**	0	0	0	**1**	0	1	3
05:15 PM	0	1	1	0	0	0	0	1	1	2
Total Volume	2	3	5	0	1	1	1	4	5	11
% App. Total	40	60		0	100		20	80		
PHF	.500	.750	.625	.000	.250	.250	.250	.333	.417	.550

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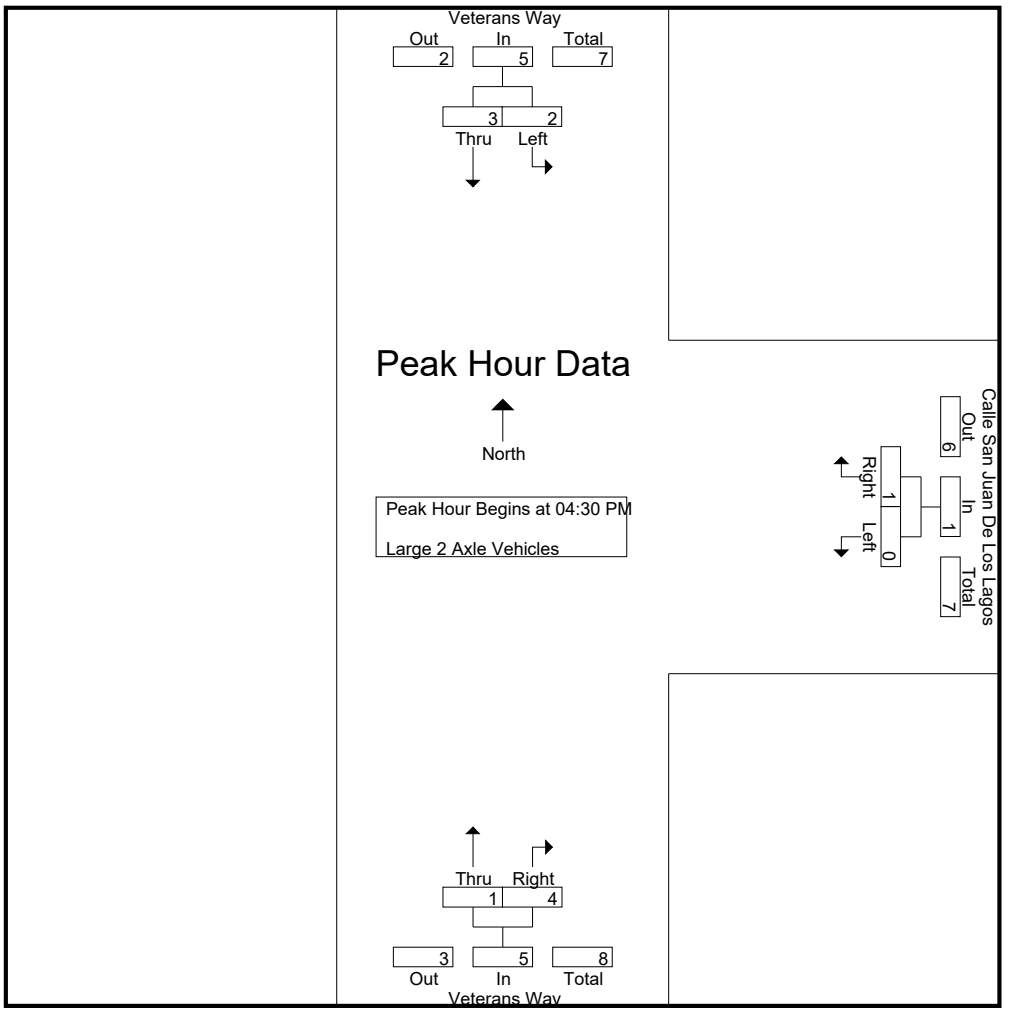

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	**1**	0	1	0	0	0	0	0	0
+15 mins.	0	**1**	1	0	**1**	**1**	0	**3**	**3**
+30 mins.	1	1	**2**	0	0	0	**1**	0	1
+45 mins.	0	1	1	0	0	0	0	1	1
Total Volume	2	3	5	0	1	1	1	4	5
% App. Total	40	60		0	100		20	80	
PHF	.500	.750	.625	.000	.250	.250	.250	.333	.417

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Start Date : 4/3/2018
Page No : 1

Groups Printed- 3 Axle Vehicles

	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	1	0	1	1
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	1	1
05:00 PM	0	0	0	0	0	0	1	0	1	1
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	1	1	1
Total	0	0	0	0	0	0	1	1	2	2
Grand Total	0	0	0	0	0	0	2	1	3	3
Apprch %	0	0		0	0		66.7	33.3		
Total %	0	0	0	0	0	0	66.7	33.3	100	

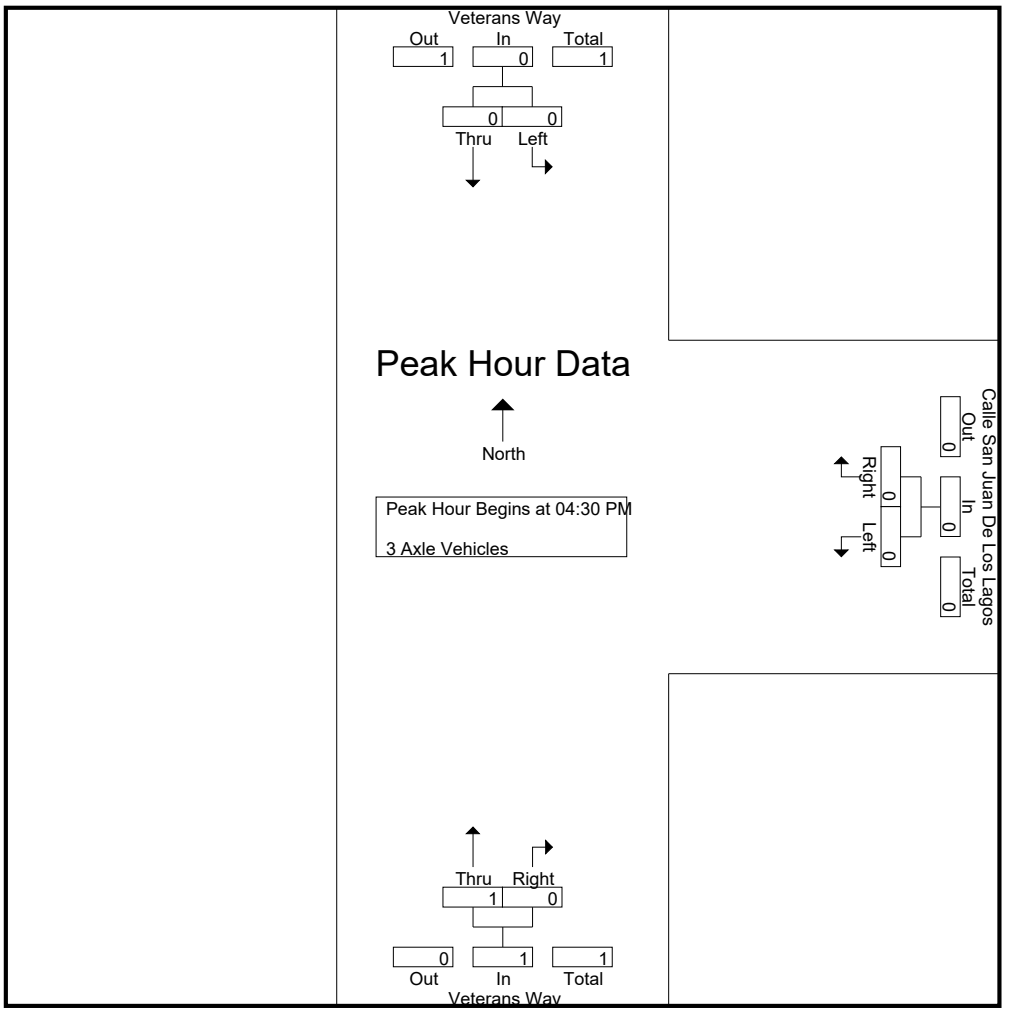
	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	**1**	0	**1**	**1**
05:15 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	1	0	1	1
% App. Total	0	0		0	0		100	0		
PHF	.000	.000	.000	.000	.000	.000	.250	.000	.250	.250

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Veterans Way
E/W: Calle San Juan De Los Lagos
Weather: Clear

File Name : 01_MRV_Veterans_Calle SJDLL PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	**1**	0	**1**
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	1	0	1
% App. Total	0	0		0	0		100	0	
PHF	.000	.000	.000	.000	.000	.000	.250	.000	.250

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City of Moreno Valley
N/S: Veterans Way
E/W: Calle San Juan De Los Lagos
Weather: Clear

File Name : 01_MRV_Veterans_Calle SJDLL PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 4+ Axle Trucks

	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	1	0	1	1
04:30 PM	0	0	0	0	0	0	1	0	1	1
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	2	0	2	2
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	2	0	2	2
Apprch %	0	0		0	0		100	0		
Total %	0	0	0	0	0	0	100	0	100	

	Veterans Way Southbound			Calle San Juan De Los Lagos Westbound			Veterans Way Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	0	0	0	0	0	**1**	0	**1**	**1**
04:45 PM	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	1	0	1	1
% App. Total	0	0		0	0		100	0		
PHF	.000	.000	.000	.000	.000	.000	.250	.000	.250	.250

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City of Moreno Valley
N/S: Veterans Way
E/W: Calle San Juan De Los Lagos
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File Name : 01_MRV_Veterans_Calle SJDLL PM
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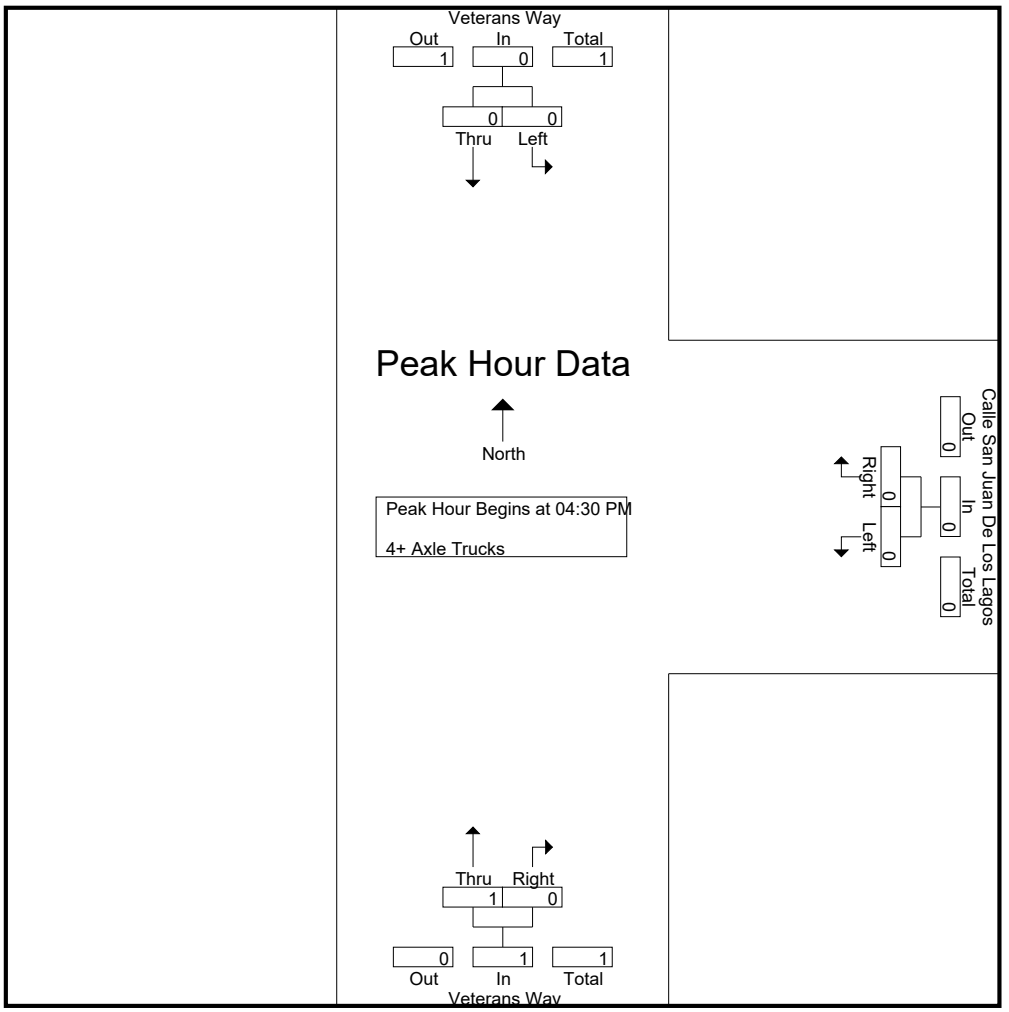
Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	0	0	0	0	0	0	**1**	0	**1**
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	1	0	1
% App. Total	0	0		0	0		100	0	
PHF	.000	.000	.000	.000	.000	.000	.250	.000	.250

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Location: Moreno Valley
N/S: Veterans Way
E/W: Calle San Juan De Los Lagos

Date: 4/3/2018
Date: Tuesday

PEDESTRIANS

	North Leg Veterans Way Pedestrians	East Leg Calle San Juan De Los Lagos Pedestrians	South Leg Veterans Way Pedestrians	West Leg Dead End Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	1	0	0	0	1
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	1	0	0	0	1

	North Leg Veterans Way Pedestrians	East Leg Calle San Juan De Los Lagos Pedestrians	South Leg Veterans Way Pedestrians	West Leg Dead End Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	1	0	1	0	2
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	1	0	1	0	2

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Corona, CA 92878
951-268-6268

Location: Moreno Valley
N/S: Veterans Way
E/W: Calle San Juan De Los Lagos

Date: 4/3/2018
Date: Tuesday

BICYCLES

	Southbound Veterans Way			Westbound Calle San Juan De Los Lagos			Northbound Veterans Way			Eastbound Dead End			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	1	0	0	0	0	0	0	0	0	0	0	1

	Southbound Veterans Way			Westbound Calle San Juan De Los Lagos			Northbound Veterans Way			Eastbound Dead End			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	1	0	0	0	0	1

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandro
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Frederick Street Southbound					Alessandro Boulevard Westbound					Frederick Street Northbound					Alessandro Boulevard Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
07:00 AM	13	47	40	13	100	15	337	26	5	378	10	30	2	1	42	14	63	9	6	86	25	606	63
07:15 AM	21	61	32	12	114	21	317	23	8	361	19	57	5	3	81	25	96	9	7	130	30	686	71
07:30 AM	34	65	58	17	157	22	301	25	7	348	13	56	3	1	72	25	107	11	6	143	31	720	75
07:45 AM	25	71	42	10	138	18	347	31	2	396	25	50	5	4	80	20	93	5	3	118	19	732	75
Total	93	244	172	52	509	76	1302	105	22	1483	67	193	15	9	275	84	359	34	22	477	105	2744	284
08:00 AM	17	46	48	17	111	14	315	26	6	355	18	43	3	0	64	36	108	5	4	149	27	679	70
08:15 AM	34	66	39	10	139	10	241	26	6	277	21	46	1	0	68	32	92	7	6	131	22	615	63
08:30 AM	28	32	33	13	93	21	239	14	5	274	6	45	6	0	57	31	103	5	4	139	22	563	58
08:45 AM	19	56	21	4	96	22	189	25	6	236	13	52	6	2	71	28	100	9	8	137	20	540	56
Total	98	200	141	44	439	67	984	91	23	1142	58	186	16	2	260	127	403	26	22	556	91	2397	248
Grand Total	191	444	313	96	948	143	2286	196	45	2625	125	379	31	11	535	211	762	60	44	1033	196	5141	533
Apprch %	20.1	46.8	33			5.4	87.1	7.5			23.4	70.8	5.8			20.4	73.8	5.8					
Total %	3.7	8.6	6.1		18.4	2.8	44.5	3.8		51.1	2.4	7.4	0.6		10.4	4.1	14.8	1.2		20.1	3.7	96.3	
Passenger Vehicles	184	426	304		1007	140	2195	195		2575	113	356	29		508	203	700	54		997	0	0	508
% Passenger Vehicles	96.3	95.9	97.1	96.9	96.5	97.9	96	99.5	100	96.4	90.4	93.9	93.5	90.9	93	96.2	91.9	90	90.9	92.6	0	0	95
Large 2 Axle Vehicles	4	10	4		21	3	34	0		37	3	13	2		19	5	24	3		35	0	0	11
% Large 2 Axle Vehicles	2.1	2.3	1.3	3.1	2	2.1	1.5	0	0	1.4	2.4	3.4	6.5	9.1	3.5	2.4	3.1	5	6.8	3.2	0	0	2
3 Axle Vehicles	1	6	3		10	0	47	0		47	3	7	0		10	1	33	1		36	0	0	10
% 3 Axle Vehicles	0.5	1.4	1	0	1	0	2.1	0	0	1.8	2.4	1.8	0	0	1.8	0.5	4.3	1.7	2.3	3.3	0	0	1
4+ Axle Trucks	2	2	2		6	0	10	1		11	6	3	0		9	2	5	2		9	0	0	3
% 4+ Axle Trucks	1	0.5	0.6	0	0.6	0	0.4	0.5	0	0.4	4.8	0.8	0	0	1.6	0.9	0.7	3.3	0	0.8	0	0	0

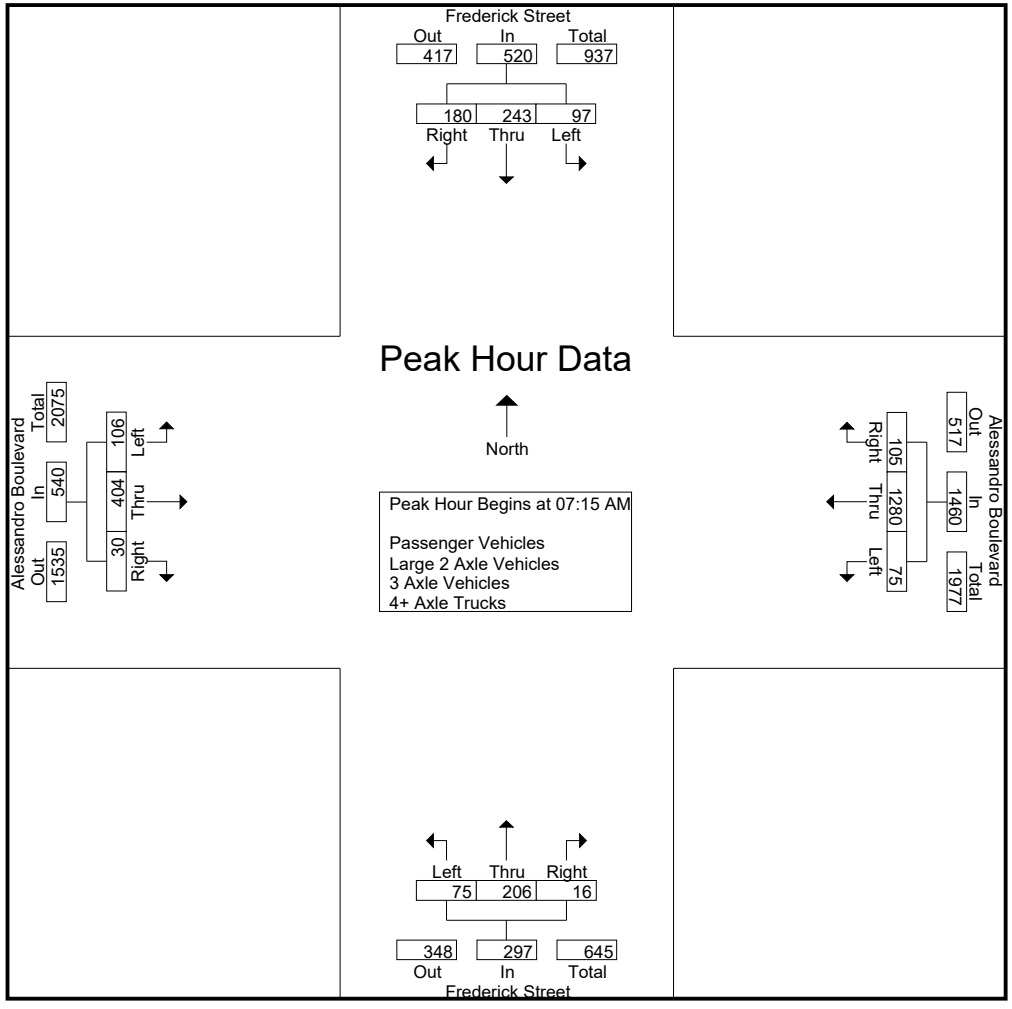
	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	21	61	32	114	21	317	23	361	19	**57**	**5**	**81**	25	96	9	130	6
07:30 AM	**34**	65	**58**	**157**	**22**	301	25	348	13	56	3	72	25	107	**11**	143	7
07:45 AM	25	**71**	42	138	18	**347**	**31**	**396**	**25**	50	5	80	20	93	5	118	**7**
08:00 AM	17	46	48	111	14	315	26	355	18	43	3	64	**36**	**108**	5	**149**	6
Total Volume	97	243	180	520	75	1280	105	1460	75	206	16	297	106	404	30	540	28
% App. Total	18.7	46.7	34.6		5.1	87.7	7.2		25.3	69.4	5.4		19.6	74.8	5.6		
PHF	.713	.856	.776	.828	.852	.922	.847	.922	.750	.904	.800	.917	.736	.935	.682	.906	.9

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandro
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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City of Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandrc
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:30 AM				07:00 AM				07:15 AM				08:00 AM				
+0 mins.	**34**	65	**58**	**157**	15	337	26	378	19	**57**	**5**	**81**	**36**	**108**	5	**149**	
+15 mins.	25	**71**	42	138	21	317	23	361	13	56	3	72	32	92	7	131	
+30 mins.	17	46	48	111	**22**	301	25	348	**25**	50	5	80	31	103	5	139	
+45 mins.	34	66	39	139	18	**347**	**31**	**396**	18	43	3	64	28	100	**9**	137	
Total Volume	110	248	187	545	76	1302	105	1483	75	206	16	297	127	403	26	556	
% App. Total	20.2	45.5	34.3		5.1	87.8	7.1		25.3	69.4	5.4		22.8	72.5	4.7		
PHF	.809	.873	.806	.868	.864	.938	.847	.936	.750	.904	.800	.917	.882	.933	.722	.933	

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File Name : 02_MRV_Frederick_Alessandro
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Frederick Street Southbound					Alessandro Boulevard Westbound					Frederick Street Northbound					Alessandro Boulevard Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
07:00 AM	13	46	38	12	97	15	325	25	5	365	9	28	2	1	39	14	52	8	5	74	23	575	59
07:15 AM	20	59	31	11	110	21	310	23	8	354	14	54	5	3	73	25	87	8	6	120	28	657	68
07:30 AM	34	65	55	17	154	22	290	25	7	337	13	51	3	1	67	23	97	10	6	130	31	688	71
07:45 AM	24	70	41	10	135	18	335	31	2	384	23	46	4	3	73	19	84	4	3	107	18	699	71
Total	91	240	165	50	496	76	1260	104	22	1440	59	179	14	8	252	81	320	30	20	431	100	2619	271
08:00 AM	16	44	47	17	107	14	303	26	6	343	17	41	3	0	61	35	104	5	4	144	27	655	68
08:15 AM	33	60	39	10	132	10	228	26	6	264	20	45	0	0	65	31	84	7	6	122	22	583	60
08:30 AM	27	28	32	12	87	18	224	14	5	256	5	43	6	0	54	28	96	5	4	129	21	526	54
08:45 AM	17	54	21	4	92	22	180	25	6	227	12	48	6	2	66	28	96	7	6	131	18	516	53
Total	93	186	139	43	418	64	935	91	23	1090	54	177	15	2	246	122	380	24	20	526	88	2280	236
Grand Total	184	426	304	93	914	140	2195	195	45	2530	113	356	29	10	498	203	700	54	40	957	188	4899	508
Apprch %	20.1	46.6	33.3			5.5	86.8	7.7			22.7	71.5	5.8			21.2	73.1	5.6					
Total %	3.8	8.7	6.2		18.7	2.9	44.8	4		51.6	2.3	7.3	0.6		10.2	4.1	14.3	1.1		19.5	3.7	96.3	

	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	20	59	31	110	21	310	23	354	14	**54**	**5**	**73**	25	87	8	120	6
07:30 AM	**34**	65	**55**	**154**	**22**	290	25	337	13	51	3	67	23	97	**10**	130	6
07:45 AM	24	**70**	41	135	18	**335**	**31**	**384**	**23**	46	4	73	19	84	4	107	**6**
08:00 AM	16	44	47	107	14	303	26	343	17	41	3	61	**35**	**104**	5	**144**	6
Total Volume	94	238	174	506	75	1238	105	1418	67	192	15	274	102	372	27	501	26
% App. Total	18.6	47	34.4		5.3	87.3	7.4		24.5	70.1	5.5		20.4	74.3	5.4		
PHF	.691	.850	.791	.821	.852	.924	.847	.923	.728	.889	.750	.938	.729	.894	.675	.870	.9

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File Name : 02_MRV_Frederick_Alessandro
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Start Date : 4/3/2018
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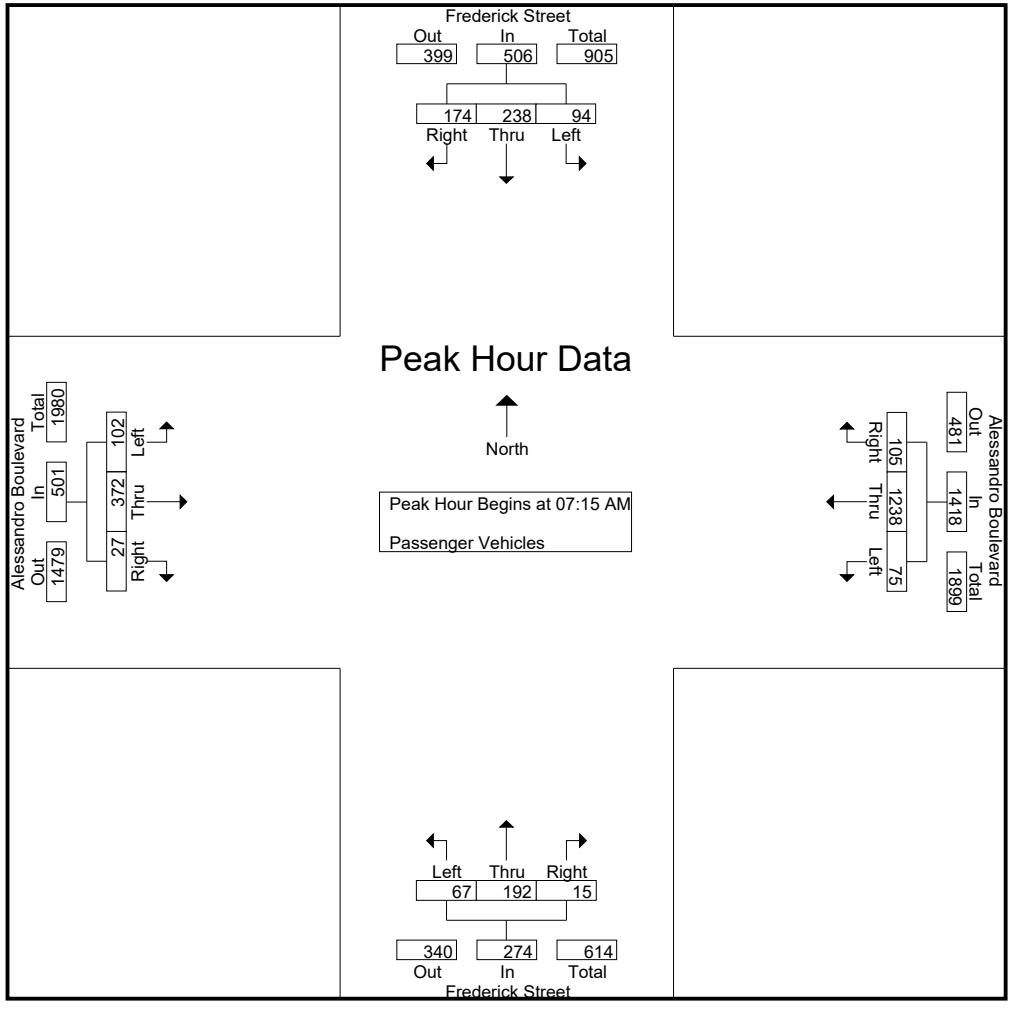

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Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandrc
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:15 AM				07:15 AM				07:15 AM				07:15 AM				
+0 mins.	20	59	31	110	21	310	23	354	14	**54**	**5**	**73**	25	87	8	120	
+15 mins.	**34**	65	**55**	**154**	**22**	290	25	337	13	51	3	67	23	97	**10**	130	
+30 mins.	24	**70**	41	135	18	**335**	**31**	**384**	**23**	46	4	73	19	84	4	107	
+45 mins.	16	44	47	107	14	303	26	343	17	41	3	61	**35**	**104**	5	**144**	
Total Volume	94	238	174	506	75	1238	105	1418	67	192	15	274	102	372	27	501	
% App. Total	18.6	47	34.4		5.3	87.3	7.4		24.5	70.1	5.5		20.4	74.3	5.4		
PHF	.691	.850	.791	.821	.852	.924	.847	.923	.728	.889	.750	.938	.729	.894	.675	.870	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

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City of Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandrc
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Frederick Street Southbound					Alessandro Boulevard Westbound					Frederick Street Northbound					Alessandro Boulevard Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
07:00 AM	0	1	1	1	2	0	1	0	0	1	0	2	0	0	2	0	7	1	1	8	2	13	1
07:15 AM	0	0	1	1	1	0	4	0	0	4	1	3	0	0	4	0	1	1	1	2	2	11	1
07:30 AM	0	0	0	0	0	0	4	0	0	4	0	2	0	0	2	1	3	0	0	4	0	10	1
07:45 AM	1	1	1	0	3	0	6	0	0	6	2	2	1	1	5	1	3	0	0	4	1	18	1
Total	1	2	3	2	6	0	15	0	0	15	3	9	1	1	13	2	14	2	2	18	5	52	5
08:00 AM	1	1	0	0	2	0	8	0	0	8	0	1	0	0	1	1	2	0	0	3	0	14	1
08:15 AM	1	3	0	0	4	0	4	0	0	4	0	1	1	0	2	0	4	0	0	4	0	14	1
08:30 AM	0	3	1	1	4	3	4	0	0	7	0	0	0	0	0	2	2	0	0	4	1	15	1
08:45 AM	1	1	0	0	2	0	3	0	0	3	0	2	0	0	2	0	2	1	1	3	1	10	1
Total	3	8	1	1	12	3	19	0	0	22	0	4	1	0	5	3	10	1	1	14	2	53	5
Grand Total	4	10	4	3	18	3	34	0	0	37	3	13	2	1	18	5	24	3	3	32	7	105	11
Apprch %	22.2	55.6	22.2			8.1	91.9	0			16.7	72.2	11.1			15.6	75	9.4					
Total %	3.8	9.5	3.8		17.1	2.9	32.4	0		35.2	2.9	12.4	1.9		17.1	4.8	22.9	2.9		30.5	6.2	93.8	

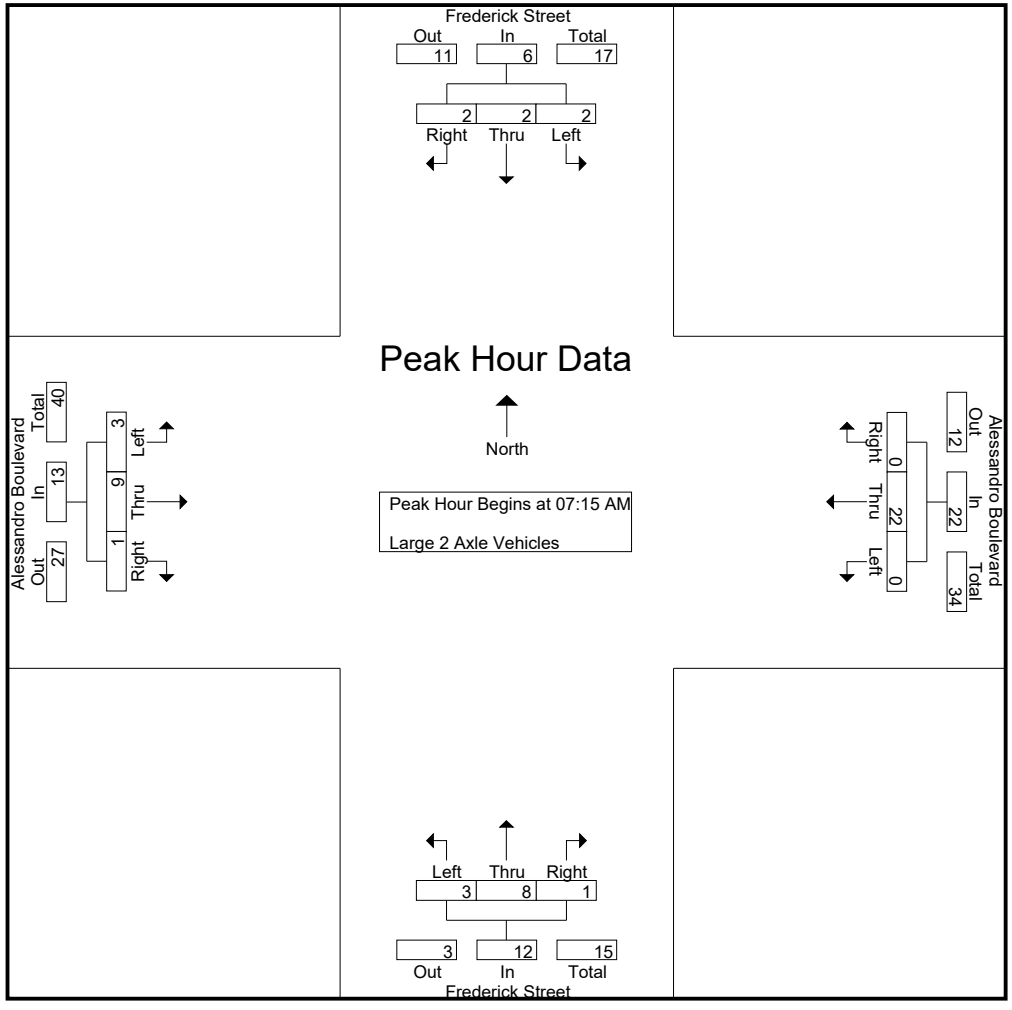
	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	**1**	1	0	4	0	4	1	**3**	0	4	0	1	**1**	2	
07:30 AM	0	0	0	0	0	4	0	4	0	2	0	2	**1**	**3**	0	**4**	
07:45 AM	**1**	**1**	1	**3**	0	6	0	6	**2**	2	**1**	**5**	1	3	0	4	
08:00 AM	1	1	0	2	0	**8**	0	**8**	0	1	0	1	1	2	0	3	
Total Volume	2	2	2	6	0	22	0	22	3	8	1	12	3	9	1	13	
% App. Total	33.3	33.3	33.3		0	100	0		25	66.7	8.3		23.1	69.2	7.7		
PHF	.500	.500	.500	.500	.000	.688	.000	.688	.375	.667	.250	.600	.750	.750	.250	.813	.7

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandro
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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City of Moreno Valley
N/S: Frederick Street
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Weather: Clear

File Name : 02_MRV_Frederick_Alessandro
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:15 AM				07:15 AM				07:15 AM				07:15 AM				
+0 mins.	0	0	**1**	1	0	4	0	4	1	**3**	0	4	0	1	**1**	2	
+15 mins.	0	0	0	0	0	4	0	4	0	2	0	2	**1**	**3**	0	**4**	
+30 mins.	**1**	**1**	1	**3**	0	6	0	6	**2**	2	**1**	**5**	1	3	0	4	
+45 mins.	1	1	0	2	0	**8**	0	**8**	0	1	0	1	1	2	0	3	
Total Volume	2	2	2	6	0	22	0	22	3	8	1	12	3	9	1	13	
% App. Total	33.3	33.3	33.3		0	100	0		25	66.7	8.3		23.1	69.2	7.7		
PHF	.500	.500	.500	.500	.000	.688	.000	.688	.375	.667	.250	.600	.750	.750	.250	.813	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

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PO Box 1178
Corona, CA 92878
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City of Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandrc
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 3 Axle Vehicles

	Frederick Street Southbound					Alessandro Boulevard Westbound					Frederick Street Northbound					Alessandro Boulevard Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
07:00 AM	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	0	3	0	0	3	0	12	1
07:15 AM	1	2	0	0	3	0	3	0	0	3	1	0	0	0	1	0	7	0	0	7	0	14	1
07:30 AM	0	0	2	0	2	0	4	0	0	4	0	1	0	0	1	0	7	0	0	7	0	14	1
07:45 AM	0	0	0	0	0	0	5	0	0	5	0	2	0	0	2	0	3	0	0	3	0	10	1
Total	1	2	2	0	5	0	21	0	0	21	1	3	0	0	4	0	20	0	0	20	0	50	5
08:00 AM	0	0	1	0	1	0	4	0	0	4	1	1	0	0	2	0	2	0	0	2	0	9	
08:15 AM	0	2	0	0	2	0	8	0	0	8	1	0	0	0	1	1	4	0	0	5	0	16	1
08:30 AM	0	1	0	0	1	0	9	0	0	9	0	2	0	0	2	0	5	0	0	5	0	17	1
08:45 AM	0	1	0	0	1	0	5	0	0	5	0	1	0	0	1	0	2	1	1	3	1	10	1
Total	0	4	1	0	5	0	26	0	0	26	2	4	0	0	6	1	13	1	1	15	1	52	5
Grand Total	1	6	3	0	10	0	47	0	0	47	3	7	0	0	10	1	33	1	1	35	1	102	10
Apprch %	10	60	30			0	100	0			30	70	0			2.9	94.3	2.9					
Total %	1	5.9	2.9		9.8	0	46.1	0		46.1	2.9	6.9	0		9.8	1	32.4	1		34.3	1	99	

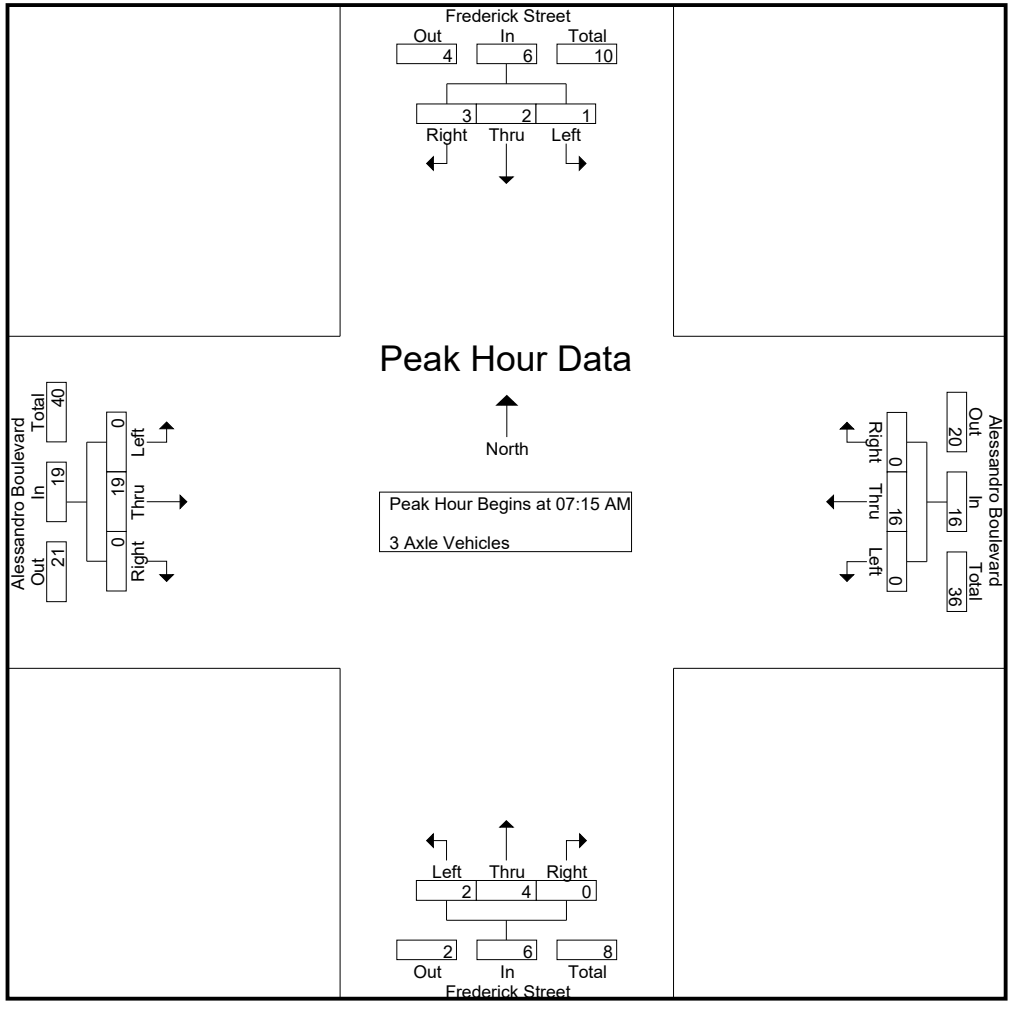
	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**1**	**2**	0	**3**	0	3	0	3	**1**	0	0	1	0	**7**	0	**7**	
07:30 AM	0	0	**2**	2	0	4	0	4	0	1	0	1	0	7	0	7	
07:45 AM	0	0	0	0	0	**5**	0	**5**	0	**2**	0	**2**	0	3	0	3	
08:00 AM	0	0	1	1	0	4	0	4	1	1	0	2	0	2	0	2	
Total Volume	1	2	3	6	0	16	0	16	2	4	0	6	0	19	0	19	
% App. Total	16.7	33.3	50		0	100	0		33.3	66.7	0		0	100	0		
PHF	.250	.250	.375	.500	.000	.800	.000	.800	.500	.500	.000	.750	.000	.679	.000	.679	.8

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandro
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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Weather: Clear

File Name : 02_MRV_Frederick_Alessandro
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:15 AM				07:15 AM				07:15 AM				07:15 AM				
+0 mins.	**1**	**2**	0	**3**	0	3	0	3	**1**	0	0	1	0	**7**	0	**7**	
+15 mins.	0	0	**2**	2	0	4	0	4	0	1	0	1	0	7	0	7	
+30 mins.	0	0	0	0	0	**5**	0	**5**	0	**2**	0	**2**	0	3	0	3	
+45 mins.	0	0	1	1	0	4	0	4	1	1	0	2	0	2	0	2	
Total Volume	1	2	3	6	0	16	0	16	2	4	0	6	0	19	0	19	
% App. Total	16.7	33.3	50		0	100	0		33.3	66.7	0		0	100	0		
PHF	.250	.250	.375	.500	.000	.800	.000	.800	.500	.500	.000	.750	.000	.679	.000	.679	

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City of Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandrc
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 4+ Axle Trucks

	Frederick Street Southbound					Alessandro Boulevard Westbound					Frederick Street Northbound					Alessandro Boulevard Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
07:00 AM	0	0	1	0	1	0	2	1	0	3	1	0	0	0	1	0	1	0	0	1	0	6	
07:15 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	1	0	0	1	0	4	
07:30 AM	0	0	1	0	1	0	3	0	0	3	0	2	0	0	2	1	0	1	0	2	0	8	
07:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	1	0	4	0	5	
Total	0	0	2	0	2	0	6	1	0	7	4	2	0	0	6	1	5	2	0	8	0	23	2
08:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
08:15 AM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	
08:30 AM	1	0	0	0	1	0	2	0	0	2	1	0	0	0	1	1	0	0	0	1	0	5	
08:45 AM	1	0	0	0	1	0	1	0	0	1	1	1	0	0	2	0	0	0	0	0	0	4	
Total	2	2	0	0	4	0	4	0	0	4	2	1	0	0	3	1	0	0	0	1	0	12	1
Grand Total	2	2	2	0	6	0	10	1	0	11	6	3	0	0	9	2	5	2	0	9	0	35	3
Apprch %	33.3	33.3	33.3			0	90.9	9.1			66.7	33.3	0			22.2	55.6	22.2					
Total %	5.7	5.7	5.7		17.1	0	28.6	2.9		31.4	17.1	8.6	0		25.7	5.7	14.3	5.7		25.7	0	100	

	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	0	0	0	**3**	0	0	**3**	0	1	0	1	
07:30 AM	0	0	**1**	**1**	0	**3**	0	**3**	0	**2**	0	2	**1**	0	**1**	2	
07:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	**3**	1	**4**	
08:00 AM	0	**1**	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
Total Volume	0	1	1	2	0	4	0	4	3	2	0	5	1	4	2	7	
% App. Total	0	50	50		0	100	0		60	40	0		14.3	57.1	28.6		
PHF	.000	.250	.250	.500	.000	.333	.000	.333	.250	.250	.000	.417	.250	.333	.500	.438	.5

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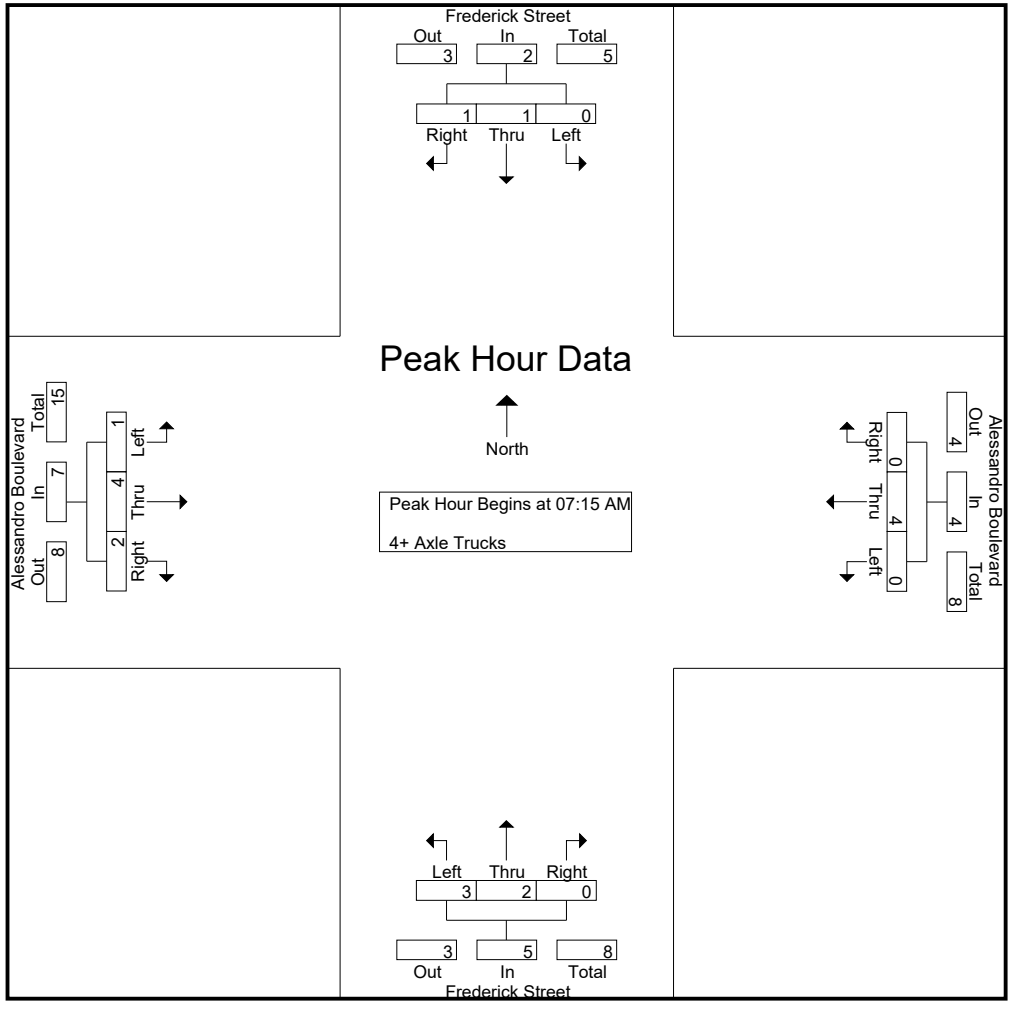
Start Date : 4/3/2018
Page No : 2



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	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:15 AM				07:15 AM				07:15 AM				07:15 AM				
+0 mins.	0	0	0	0	0	0	0	0	**3**	0	0	**3**	0	1	0	1	
+15 mins.	0	0	**1**	**1**	0	**3**	0	**3**	0	**2**	0	2	**1**	0	**1**	2	
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	**3**	1	**4**	
+45 mins.	0	**1**	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
Total Volume	0	1	1	2	0	4	0	4	3	2	0	5	1	4	2	7	
% App. Total	0	50	50		0	100	0		60	40	0		14.3	57.1	28.6		
PHF	.000	.250	.250	.500	.000	.333	.000	.333	.250	.250	.000	.417	.250	.333	.500	.438	

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File Name : 02_MRV_Frederick_Alessandro
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Frederick Street Southbound					Alessandro Boulevard Westbound					Frederick Street Northbound					Alessandro Boulevard Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
04:00 PM	51	64	35	12	150	15	220	40	12	275	31	75	21	3	127	54	307	39	12	400	39	952	99
04:15 PM	65	68	36	10	169	16	188	44	13	248	23	71	25	6	119	45	297	39	4	381	33	917	95
04:30 PM	85	67	25	13	177	15	159	40	25	214	21	66	15	5	102	56	277	26	4	359	47	852	89
04:45 PM	61	63	21	12	145	12	222	38	17	272	21	50	8	5	79	41	330	29	4	400	38	896	93
Total	262	262	117	47	641	58	789	162	67	1009	96	262	69	19	427	196	1211	133	24	1540	157	3617	377
05:00 PM	79	89	21	8	189	16	178	25	15	219	14	65	13	3	92	42	282	22	2	346	28	846	87
05:15 PM	67	84	31	22	182	12	197	37	19	246	11	59	5	2	75	49	338	37	5	424	48	927	97
05:30 PM	68	88	23	12	179	10	154	40	14	204	15	68	8	1	91	50	326	23	1	399	28	873	90
05:45 PM	68	78	24	15	170	12	156	37	22	205	13	45	7	2	65	38	301	28	5	367	44	807	85
Total	282	339	99	57	720	50	685	139	70	874	53	237	33	8	323	179	1247	110	13	1536	148	3453	360
Grand Total	544	601	216	104	1361	108	1474	301	137	1883	149	499	102	27	750	375	2458	243	37	3076	305	7070	737
Apprch %	40	44.2	15.9			5.7	78.3	16			19.9	66.5	13.6			12.2	79.9	7.9					
Total %	7.7	8.5	3.1		19.3	1.5	20.8	4.3		26.6	2.1	7.1	1.4		10.6	5.3	34.8	3.4		43.5	4.1	95.9	
Passenger Vehicles	544	593	215		1455	105	1447	300		1989	145	492	100		764	373	2426	240		3076	0	0	728
% Passenger Vehicles	100	98.7	99.5	99	99.3	97.2	98.2	99.7	100	98.5	97.3	98.6	98	100	98.3	99.5	98.7	98.8	100	98.8	0	0	98
Large 2 Axle Vehicles	0	6	1		8	3	18	1		22	1	4	1		6	2	24	1		27	0	0	6
% Large 2 Axle Vehicles	0	1	0.5	1	0.5	2.8	1.2	0.3	0	1.1	0.7	0.8	1	0	0.8	0.5	1	0.4	0	0.9	0	0	0
3 Axle Vehicles	0	1	0		1	0	2	0		2	0	2	1		3	0	4	0		4	0	0	1
% 3 Axle Vehicles	0	0.2	0	0	0.1	0	0.1	0	0	0.1	0	0.4	1	0	0.4	0	0.2	0	0	0.1	0	0	0
4+ Axle Trucks	0	1	0		1	0	7	0		7	3	1	0		4	0	4	2		6	0	0	1
% 4+ Axle Trucks	0	0.2	0	0	0.1	0	0.5	0	0	0.3	2	0.2	0	0	0.5	0	0.2	0.8	0	0.2	0	0	0

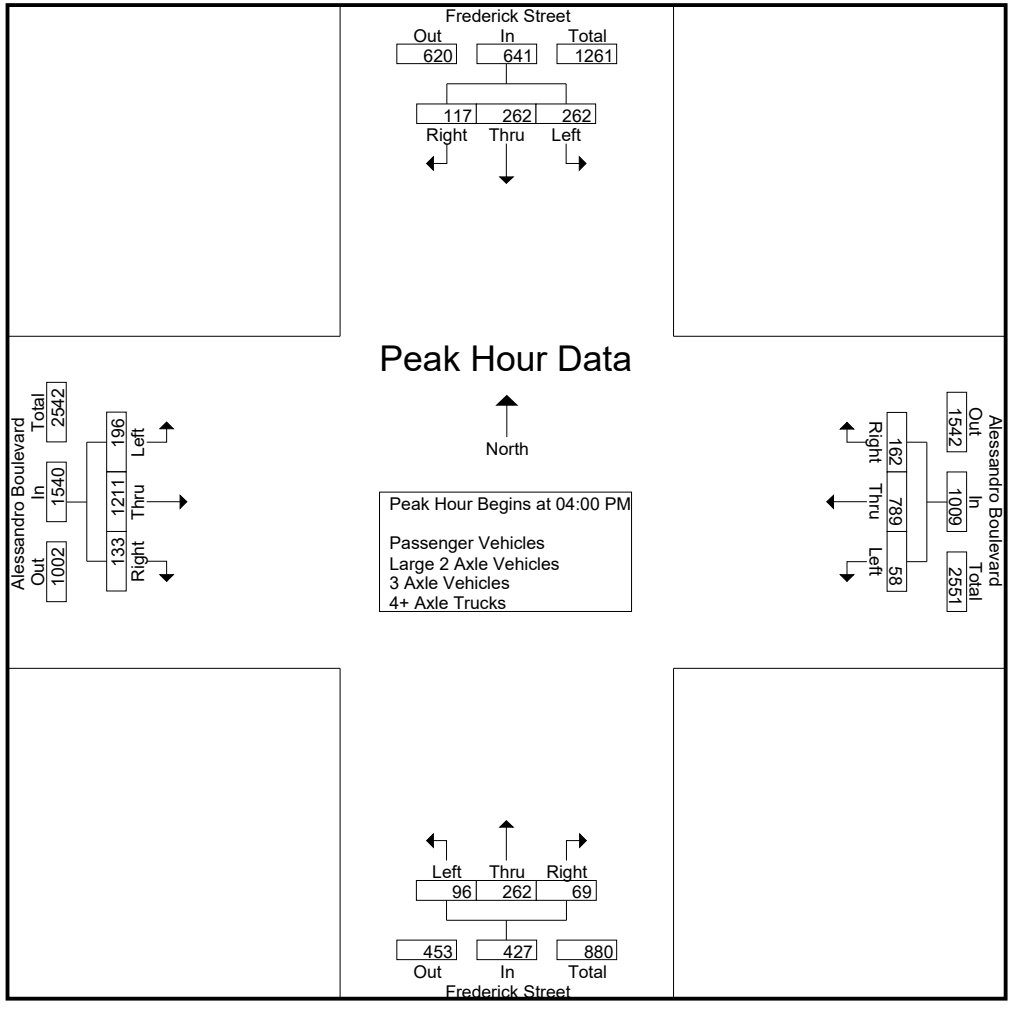
	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	51	64	35	150	15	220	40	**275**	**31**	**75**	21	**127**	54	307	**39**	**400**	**9**
04:15 PM	65	**68**	**36**	169	**16**	188	**44**	248	23	71	**25**	119	45	297	39	381	9
04:30 PM	**85**	67	25	**177**	15	159	40	214	21	66	15	102	**56**	277	26	359	8
04:45 PM	61	63	21	145	12	**222**	38	272	21	50	8	79	41	**330**	29	400	8
Total Volume	262	262	117	641	58	789	162	1009	96	262	69	427	196	1211	133	1540	36
% App. Total	40.9	40.9	18.3		5.7	78.2	16.1		22.5	61.4	16.2		12.7	78.6	8.6		
PHF	.771	.963	.813	.905	.906	.889	.920	.917	.774	.873	.690	.841	.875	.917	.853	.963	.9

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandro
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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City of Moreno Valley
N/S: Frederick Street
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File Name : 02_MRV_Frederick_Alessandro
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	05:00 PM				04:00 PM				04:00 PM				04:45 PM				
+0 mins.	**79**	**89**	21	**189**	15	220	40	**275**	**31**	**75**	21	**127**	41	330	29	400	
+15 mins.	67	84	**31**	182	**16**	188	**44**	248	23	71	**25**	119	42	282	22	346	
+30 mins.	68	88	23	179	15	159	40	214	21	66	15	102	49	**338**	**37**	**424**	
+45 mins.	68	78	24	170	12	**222**	38	272	21	50	8	79	**50**	326	23	399	
Total Volume	282	339	99	720	58	789	162	1009	96	262	69	427	182	1276	111	1569	
% App. Total	39.2	47.1	13.8		5.7	78.2	16.1		22.5	61.4	16.2		11.6	81.3	7.1		
PHF	.892	.952	.798	.952	.906	.889	.920	.917	.774	.873	.690	.841	.910	.944	.750	.925	

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City of Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandro
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Frederick Street Southbound					Alessandro Boulevard Westbound					Frederick Street Northbound					Alessandro Boulevard Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
04:00 PM	51	64	35	12	150	15	217	40	12	272	31	72	21	3	124	54	302	39	12	395	39	941	98
04:15 PM	65	65	36	10	166	15	181	44	13	240	22	71	25	6	118	45	292	37	4	374	33	898	93
04:30 PM	85	66	25	13	176	15	155	40	25	210	21	65	15	5	101	56	275	26	4	357	47	844	89
04:45 PM	61	62	20	11	143	11	220	38	17	269	21	49	7	5	77	41	328	29	4	398	37	887	92
Total	262	257	116	46	635	56	773	162	67	991	95	257	68	19	420	196	1197	131	24	1524	156	3570	372
05:00 PM	79	89	21	8	189	16	174	25	15	215	13	65	13	3	91	42	275	22	2	339	28	834	86
05:15 PM	67	82	31	22	180	11	193	37	19	241	11	58	5	2	74	48	333	36	5	417	48	912	96
05:30 PM	68	87	23	12	178	10	152	39	14	201	14	68	8	1	90	49	322	23	1	394	28	863	89
05:45 PM	68	78	24	15	170	12	155	37	22	204	12	44	6	2	62	38	299	28	5	365	44	801	84
Total	282	336	99	57	717	49	674	138	70	861	50	235	32	8	317	177	1229	109	13	1515	148	3410	355
Grand Total	544	593	215	103	1352	105	1447	300	137	1852	145	492	100	27	737	373	2426	240	37	3039	304	6980	728
Apprch %	40.2	43.9	15.9			5.7	78.1	16.2			19.7	66.8	13.6			12.3	79.8	7.9					
Total %	7.8	8.5	3.1		19.4	1.5	20.7	4.3		26.5	2.1	7	1.4		10.6	5.3	34.8	3.4		43.5	4.2	95.8	

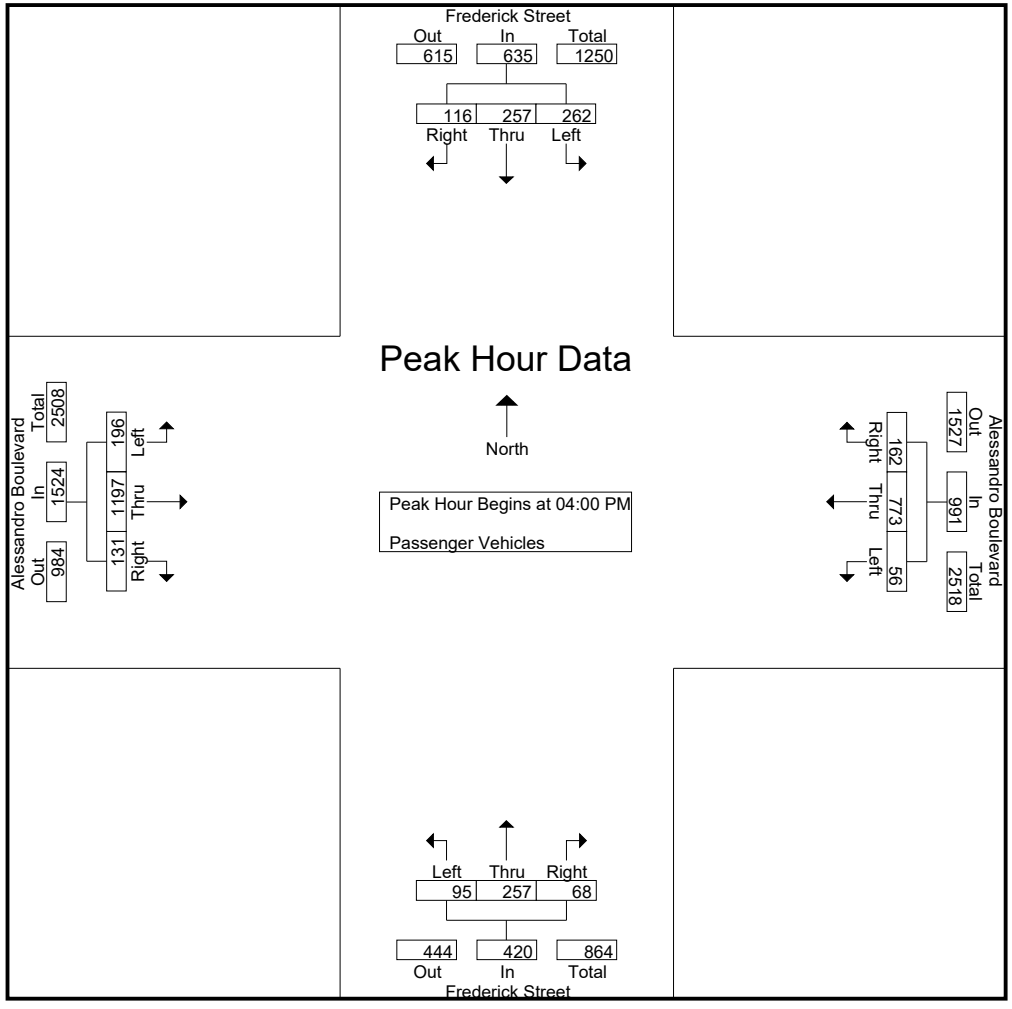
	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	51	64	35	150	**15**	217	40	**272**	**31**	**72**	21	**124**	54	302	**39**	395	**9**
04:15 PM	65	65	**36**	166	15	181	**44**	240	22	71	**25**	118	45	292	37	374	8
04:30 PM	**85**	**66**	25	**176**	15	155	40	210	21	65	15	101	**56**	275	26	357	8
04:45 PM	61	62	20	143	11	**220**	38	269	21	49	7	77	41	**328**	29	**398**	8
Total Volume	262	257	116	635	56	773	162	991	95	257	68	420	196	1197	131	1524	35
% App. Total	41.3	40.5	18.3		5.7	78	16.3		22.6	61.2	16.2		12.9	78.5	8.6		
PHF	.771	.973	.806	.902	.933	.878	.920	.911	.766	.892	.680	.847	.875	.912	.840	.957	.9

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandro
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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File Name : 02_MRV_Frederick_Alessandro
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:00 PM				04:00 PM				04:00 PM				04:00 PM				
+0 mins.	51	64	35	150	**15**	217	40	**272**	**31**	**72**	21	**124**	54	302	**39**	395	
+15 mins.	65	65	**36**	166	15	181	**44**	240	22	71	**25**	118	45	292	37	374	
+30 mins.	**85**	**66**	25	**176**	15	155	40	210	21	65	15	101	**56**	275	26	357	
+45 mins.	61	62	20	143	11	**220**	38	269	21	49	7	77	41	**328**	29	**398**	
Total Volume	262	257	116	635	56	773	162	991	95	257	68	420	196	1197	131	1524	
% App. Total	41.3	40.5	18.3		5.7	78	16.3		22.6	61.2	16.2		12.9	78.5	8.6		
PHF	.771	.973	.806	.902	.933	.878	.920	.911	.766	.892	.680	.847	.875	.912	.840	.957	

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City of Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandro
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Frederick Street Southbound					Alessandro Boulevard Westbound					Frederick Street Northbound					Alessandro Boulevard Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
04:00 PM	0	0	0	0	0	0	2	0	0	2	0	3	0	0	3	0	2	0	0	2	0	7	
04:15 PM	0	2	0	0	2	1	6	0	0	7	1	0	0	0	1	0	5	1	0	6	0	16	1
04:30 PM	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	3	
04:45 PM	0	0	1	1	1	1	0	0	0	1	0	0	1	0	1	0	2	0	0	2	1	5	
Total	0	3	1	1	4	2	10	0	0	12	1	3	1	0	5	0	9	1	0	10	1	31	3
05:00 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	7	0	0	7	0	10	1
05:15 PM	0	2	0	0	2	1	2	0	0	3	0	1	0	0	1	1	3	0	0	4	0	10	1
05:30 PM	0	1	0	0	1	0	2	1	0	3	0	0	0	0	0	1	3	0	0	4	0	8	
05:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	3	
Total	0	3	0	0	3	1	8	1	0	10	0	1	0	0	1	2	15	0	0	17	0	31	3
Grand Total	0	6	1	1	7	3	18	1	0	22	1	4	1	0	6	2	24	1	0	27	1	62	6
Apprch %	0	85.7	14.3			13.6	81.8	4.5			16.7	66.7	16.7			7.4	88.9	3.7					
Total %	0	9.7	1.6		11.3	4.8	29	1.6		35.5	1.6	6.5	1.6		9.7	3.2	38.7	1.6		43.5	1.6	98.4	

	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	2	0	2	0	**3**	0	**3**	0	2	0	2	
04:15 PM	0	**2**	0	**2**	**1**	**6**	0	**7**	**1**	0	0	1	0	**5**	**1**	**6**	
04:30 PM	0	1	0	1	0	2	0	2	0	0	0	0	0	0	0	0	
04:45 PM	0	0	**1**	1	1	0	0	1	0	0	**1**	1	0	2	0	2	
Total Volume	0	3	1	4	2	10	0	12	1	3	1	5	0	9	1	10	
% App. Total	0	75	25		16.7	83.3	0		20	60	20		0	90	10		
PHF	.000	.375	.250	.500	.500	.417	.000	.429	.250	.250	.250	.417	.000	.450	.250	.417	.4

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
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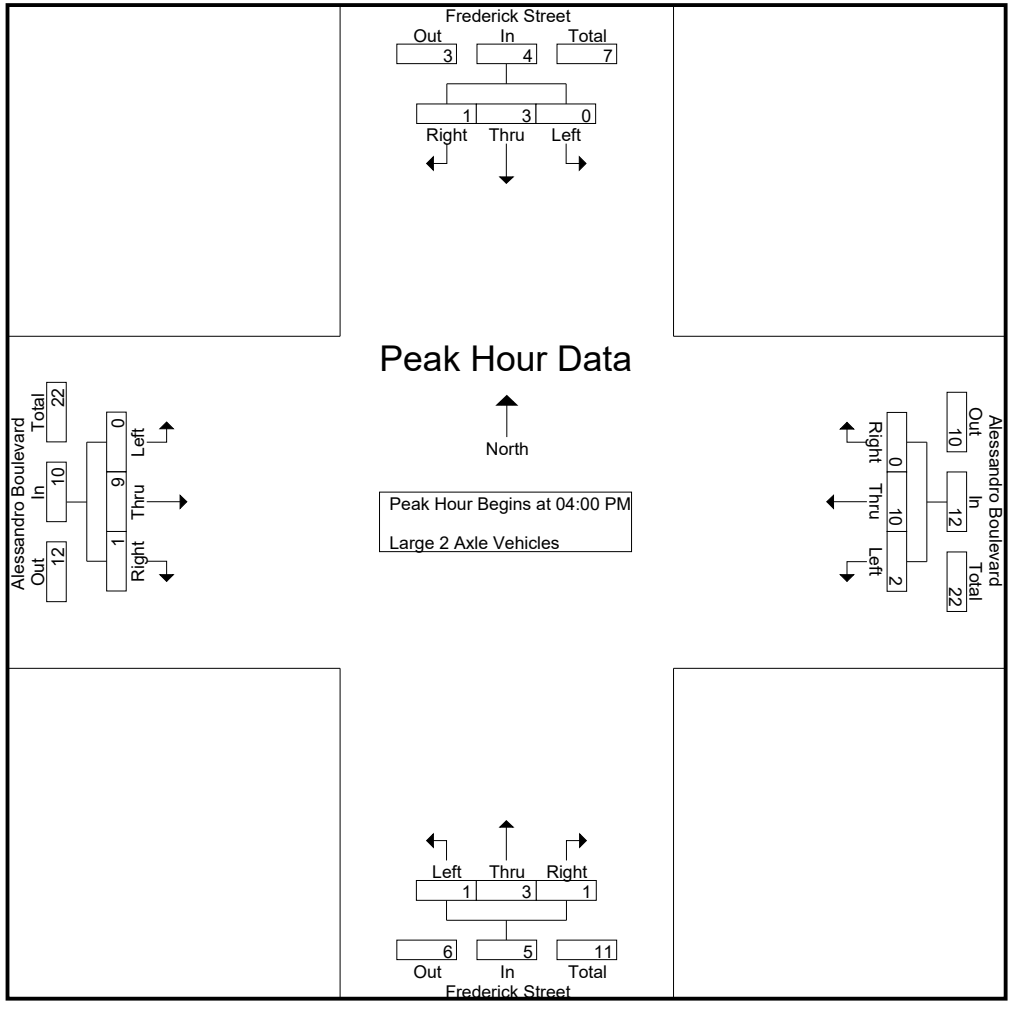
City of Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandro
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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City of Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandrc
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:00 PM				04:00 PM				04:00 PM				04:00 PM				
+0 mins.	0	0	0	0	0	2	0	2	0	**3**	0	**3**	0	2	0	2	
+15 mins.	0	**2**	0	**2**	**1**	**6**	0	**7**	**1**	0	0	1	0	**5**	**1**	**6**	
+30 mins.	0	1	0	1	0	2	0	2	0	0	0	0	0	0	0	0	
+45 mins.	0	0	**1**	1	1	0	0	1	0	0	**1**	1	0	2	0	2	
Total Volume	0	3	1	4	2	10	0	12	1	3	1	5	0	9	1	10	
% App. Total	0	75	25		16.7	83.3	0		20	60	20		0	90	10		
PHF	.000	.375	.250	.500	.500	.417	.000	.429	.250	.250	.250	.417	.000	.450	.250	.417	

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Weather: Clear

File Name : 02_MRV_Frederick_Alessandro
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 3 Axle Vehicles

	Frederick Street Southbound					Alessandro Boulevard Westbound					Frederick Street Northbound					Alessandro Boulevard Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	2	
04:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	
04:45 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	
Total	0	1	0	0	1	0	2	0	0	2	0	1	0	0	1	0	2	0	0	2	0	6	
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	2	
Total	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	2	0	0	2	0	4	
Grand Total	0	1	0	0	1	0	2	0	0	2	0	2	1	0	3	0	4	0	0	4	0	10	1
Apprch %	0	100	0			0	100	0			0	66.7	33.3			0	100	0					
Total %	0	10	0		10	0	20	0		20	0	20	10		30	0	40	0		40	0	100	

	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	0	**2**	
04:15 PM	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	
04:30 PM	0	0	0	0	0	0	0	0	0	**1**	0	**1**	0	0	0	0	
04:45 PM	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	0	0	0	
Total Volume	0	1	0	1	0	2	0	2	0	1	0	1	0	2	0	2	
% App. Total	0	100	0		0	100	0		0	100	0		0	100	0		
PHF	.000	.250	.000	.250	.000	.250	.000	.250	.000	.250	.000	.250	.000	.250	.000	.250	.7

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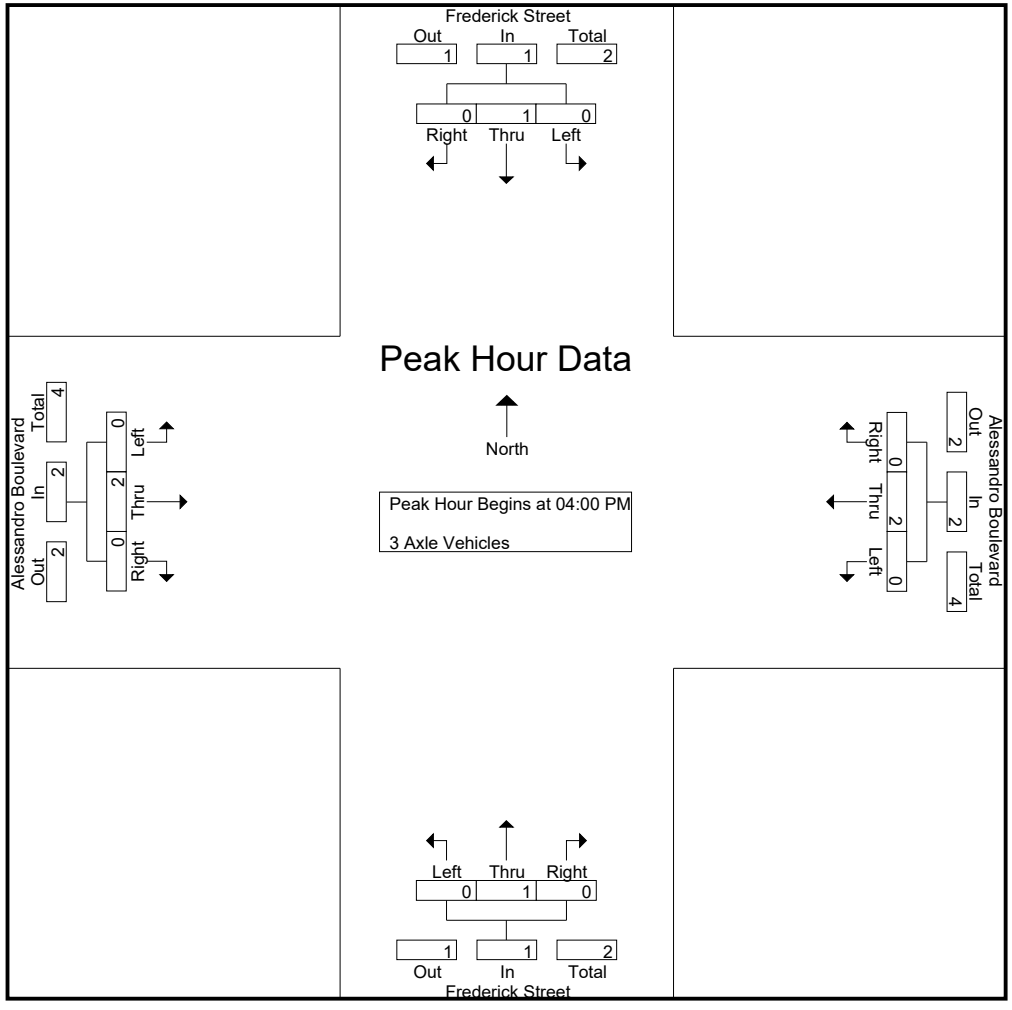
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandro
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandro
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:00 PM				04:00 PM				04:00 PM				04:00 PM				
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	0	**2**	
+15 mins.	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	
+30 mins.	0	0	0	0	0	0	0	0	0	**1**	0	**1**	0	0	0	0	
+45 mins.	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	0	0	0	
Total Volume	0	1	0	1	0	2	0	2	0	1	0	1	0	2	0	2	
% App. Total	0	100	0		0	100	0		0	100	0		0	100	0		
PHF	.000	.250	.000	.250	.000	.250	.000	.250	.000	.250	.000	.250	.000	.250	.000	.250	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
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Corona, CA 92878
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City of Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandrc
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 4+ Axle Trucks

	Frederick Street Southbound					Alessandro Boulevard Westbound					Frederick Street Northbound					Alessandro Boulevard Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
04:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	2	
04:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	0	2	
04:30 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	4	
04:45 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	
Total	0	1	0	0	1	0	4	0	0	4	0	1	0	0	1	0	3	1	0	4	0	10	1
05:00 PM	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	2	
05:15 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	1	0	2	0	4	
05:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	
05:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	
Total	0	0	0	0	0	0	3	0	0	3	3	0	0	0	3	0	1	1	0	2	0	8	
Grand Total	0	1	0	0	1	0	7	0	0	7	3	1	0	0	4	0	4	2	0	6	0	18	1
Apprch %	0	100	0			0	100	0			75	25	0			0	66.7	33.3					
Total %	0	5.6	0		5.6	0	38.9	0		38.9	16.7	5.6	0		22.2	0	22.2	11.1		33.3	0	100	

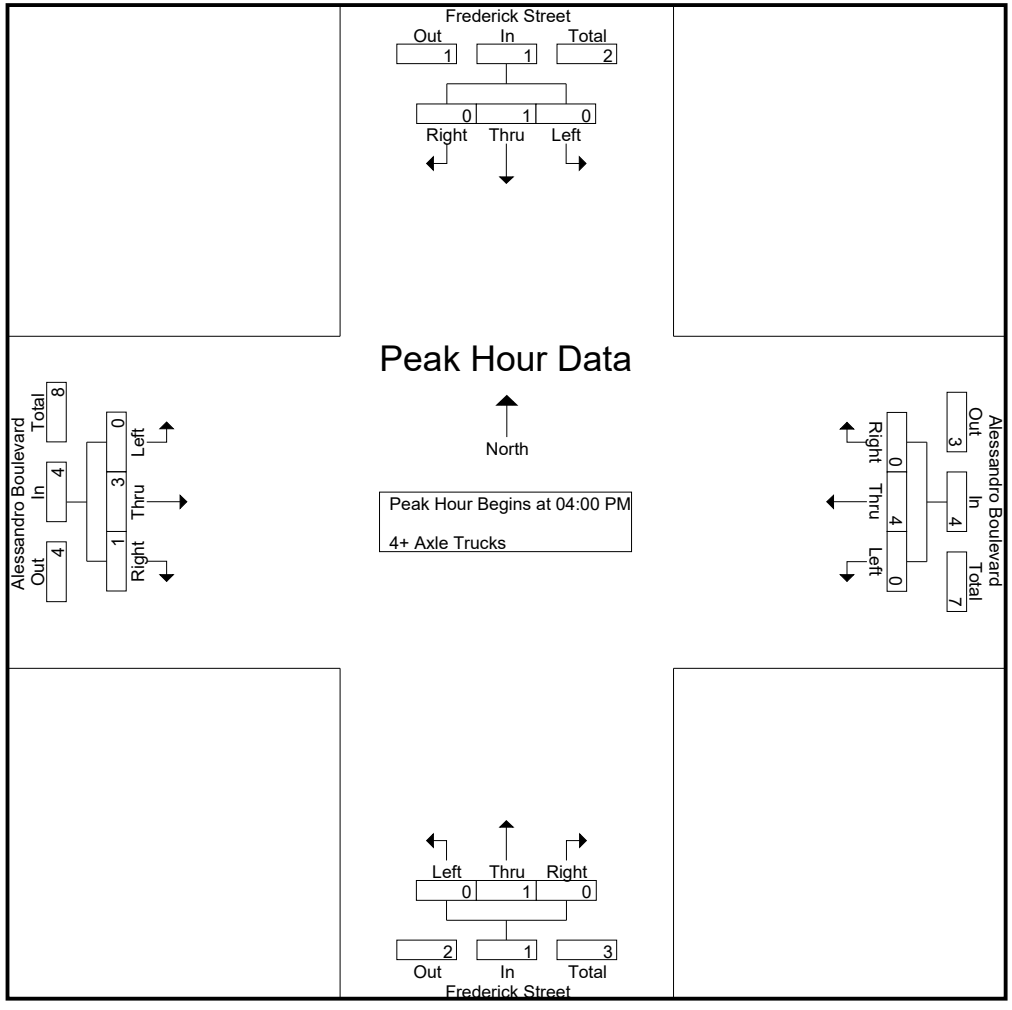
	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	
04:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	**1**	1	
04:30 PM	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	**2**	0	**2**	
04:45 PM	0	**1**	0	**1**	0	0	0	0	0	**1**	0	**1**	0	0	0	0	
Total Volume	0	1	0	1	0	4	0	4	0	1	0	1	0	3	1	4	
% App. Total	0	100	0		0	100	0		0	100	0		0	75	25		
PHF	.000	.250	.000	.250	.000	.500	.000	.500	.000	.250	.000	.250	.000	.375	.250	.500	.6

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandro
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

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City of Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard
Weather: Clear

File Name : 02_MRV_Frederick_Alessandrc
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Frederick Street Southbound				Alessandro Boulevard Westbound				Frederick Street Northbound				Alessandro Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:00 PM				04:00 PM				04:00 PM				04:00 PM				
+0 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	
+15 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	**1**	1	
+30 mins.	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	**2**	0	**2**	
+45 mins.	0	**1**	0	**1**	0	0	0	0	0	**1**	0	**1**	0	0	0	0	
Total Volume	0	1	0	1	0	4	0	4	0	1	0	1	0	3	1	4	
% App. Total	0	100	0		0	100	0		0	100	0		0	75	25		
PHF	.000	.250	.000	.250	.000	.500	.000	.500	.000	.250	.000	.250	.000	.375	.250	.500	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Location: Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard

Date: 4/3/2018
Date: Tuesday

PEDESTRIANS

	North Leg Frederick Street	East Leg Alessandro Boulevard	South Leg Frederick Street	West Leg Alessandro Boulevard	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	1	1	0	0	2
7:15 AM	0	0	0	0	0
7:30 AM	3	0	0	0	3
7:45 AM	1	1	0	0	2
8:00 AM	0	1	0	2	3
8:15 AM	2	0	0	0	2
8:30 AM	0	0	1	2	3
8:45 AM	1	0	0	3	4
TOTAL VOLUMES:	8	3	1	7	19

	North Leg Frederick Street	East Leg Alessandro Boulevard	South Leg Frederick Street	West Leg Alessandro Boulevard	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	8	0	0	4	12
4:15 PM	1	4	2	1	8
4:30 PM	1	1	0	1	3
4:45 PM	1	0	0	0	1
5:00 PM	0	2	1	1	4
5:15 PM	3	1	0	2	6
5:30 PM	3	0	0	2	5
5:45 PM	1	0	1	2	4
TOTAL VOLUMES:	18	8	4	13	43

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Location: Moreno Valley
N/S: Frederick Street
E/W: Alessandro Boulevard

Date: 4/3/2018
Date: Tuesday

BICYCLES

	Southbound Frederick Street			Westbound Alessandro Boulevard			Northbound Frederick Street			Eastbound Alessandro Boulevard			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	1	0	0	0	0	0	0	1	2
8:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	1	0	0	1	0	0	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
TOTAL VOLUMES:	1	0	1	1	2	0	0	1	0	0	1	1	8

	Southbound Frederick Street			Westbound Alessandro Boulevard			Northbound Frederick Street			Eastbound Alessandro Boulevard			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	1	1	0	1	0	0	2	0	5

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited, Inc.
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951-268-6268

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PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Frederick Street Southbound					Driveway 4 Westbound					Frederick Street Northbound					Calle San Juan De Los Lagos Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
07:00 AM	0	50	14	2	64	0	0	0	0	0	5	44	0	0	49	4	0	2	2	6	4	119	12
07:15 AM	0	57	22	1	79	0	0	0	0	0	8	77	0	0	85	6	0	5	3	11	4	175	17
07:30 AM	0	69	16	1	85	0	0	0	0	0	11	70	0	0	81	6	0	1	0	7	1	173	17
07:45 AM	0	69	20	3	89	0	0	0	0	0	12	77	0	0	89	4	0	3	2	7	5	185	19
Total	0	245	72	7	317	0	0	0	0	0	36	268	0	0	304	20	0	11	7	31	14	652	66
08:00 AM	0	49	18	0	67	0	0	0	0	0	13	59	0	0	72	6	0	3	1	9	1	148	14
08:15 AM	0	64	15	1	79	0	0	0	0	0	10	58	0	0	68	7	0	4	1	11	2	158	16
08:30 AM	0	39	16	0	55	0	0	0	0	0	12	53	0	0	65	2	0	2	1	4	1	124	12
08:45 AM	0	39	27	0	66	0	0	0	0	0	11	65	0	0	76	10	0	3	0	13	0	155	15
Total	0	191	76	1	267	0	0	0	0	0	46	235	0	0	281	25	0	12	3	37	4	585	58
Grand Total	0	436	148	8	584	0	0	0	0	0	82	503	0	0	585	45	0	23	10	68	18	1237	125
Apprch %	0	74.7	25.3			0	0	0			14	86	0			66.2	0	33.8					
Total %	0	35.2	12		47.2	0	0	0		0	6.6	40.7	0		47.3	3.6	0	1.9		5.5	1.4	98.6	
Passenger Vehicles	0	412	143		562	0	0	0		0	79	471	0		550	42	0	22		74	0	0	118
% Passenger Vehicles	0	94.5	96.6	87.5	94.9	0	0	0	0	0	96.3	93.6	0	0	94	93.3	0	95.7	100	94.9	0	0	94
Large 2 Axle Vehicles	0	13	5		19	0	0	0		0	3	15	0		18	2	0	0		2	0	0	3
% Large 2 Axle Vehicles	0	3	3.4	12.5	3.2	0	0	0	0	0	3.7	3	0	0	3.1	4.4	0	0	0	2.6	0	0	3
3 Axle Vehicles	0	7	0		7	0	0	0		0	0	8	0		8	1	0	0		1	0	0	1
% 3 Axle Vehicles	0	1.6	0	0	1.2	0	0	0	0	0	0	1.6	0	0	1.4	2.2	0	0	0	1.3	0	0	1
4+ Axle Trucks	0	4	0		4	0	0	0		0	0	9	0		9	0	0	1		1	0	0	1
% 4+ Axle Trucks	0	0.9	0	0	0.7	0	0	0	0	0	0	1.8	0	0	1.5	0	0	4.3	0	1.3	0	0	1

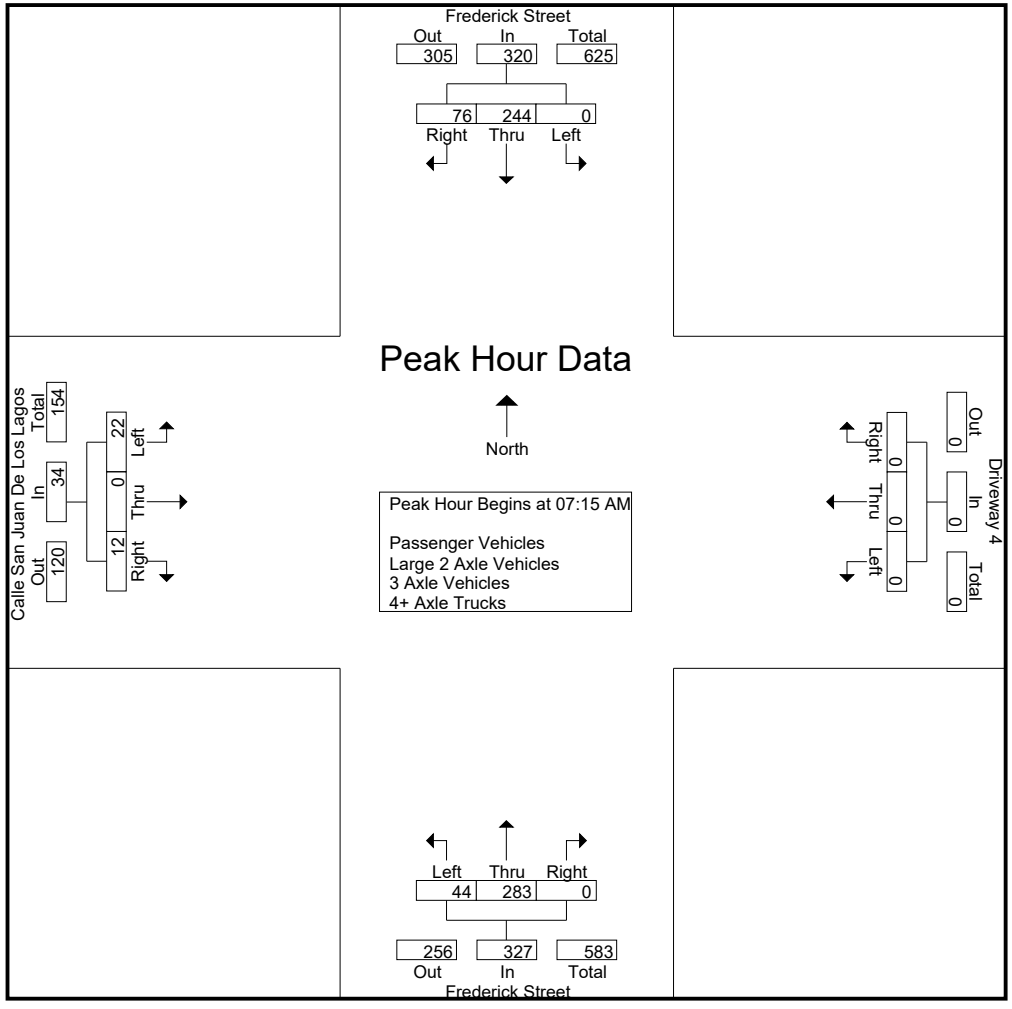
	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	57	**22**	79	0	0	0	0	8	**77**	0	85	**6**	0	**5**	**11**	1
07:30 AM	0	**69**	16	85	0	0	0	0	11	70	0	81	6	0	1	7	1
07:45 AM	0	69	20	**89**	0	0	0	0	12	77	0	**89**	4	0	3	7	**1**
08:00 AM	0	49	18	67	0	0	0	0	**13**	59	0	72	6	0	3	9	1
Total Volume	0	244	76	320	0	0	0	0	44	283	0	327	22	0	12	34	6
% App. Total	0	76.2	23.8		0	0	0		13.5	86.5	0		64.7	0	35.3		
PHF	.000	.884	.864	.899	.000	.000	.000	.000	.846	.919	.000	.919	.917	.000	.600	.773	.9

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:15 AM				07:00 AM				07:15 AM				08:00 AM				
+0 mins.	0	57	**22**	79	0	0	0	0	8	**77**	0	85	6	0	3	9	
+15 mins.	0	**69**	16	85	0	0	0	0	11	70	0	81	7	0	**4**	11	
+30 mins.	0	69	20	**89**	0	0	0	0	12	77	0	**89**	2	0	2	4	
+45 mins.	0	49	18	67	0	0	0	0	**13**	59	0	72	**10**	0	3	**13**	
Total Volume	0	244	76	320	0	0	0	0	44	283	0	327	25	0	12	37	
% App. Total	0	76.2	23.8		0	0	0		13.5	86.5	0		67.6	0	32.4		
PHF	.000	.884	.864	.899	.000	.000	.000	.000	.846	.919	.000	.919	.625	.000	.750	.712	

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File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Frederick Street Southbound					Driveway 4 Westbound					Frederick Street Northbound					Calle San Juan De Los Lagos Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
07:00 AM	0	48	13	1	61	0	0	0	0	0	5	41	0	0	46	4	0	2	2	6	3	113	11
07:15 AM	0	55	21	1	76	0	0	0	0	0	7	69	0	0	76	6	0	5	3	11	4	163	16
07:30 AM	0	68	16	1	84	0	0	0	0	0	11	65	0	0	76	5	0	1	0	6	1	166	16
07:45 AM	0	67	20	3	87	0	0	0	0	0	12	71	0	0	83	3	0	3	2	6	5	176	18
Total	0	238	70	6	308	0	0	0	0	0	35	246	0	0	281	18	0	11	7	29	13	618	63
08:00 AM	0	44	18	0	62	0	0	0	0	0	12	58	0	0	70	6	0	3	1	9	1	141	14
08:15 AM	0	59	15	1	74	0	0	0	0	0	10	54	0	0	64	7	0	3	1	10	2	148	15
08:30 AM	0	32	15	0	47	0	0	0	0	0	12	51	0	0	63	2	0	2	1	4	1	114	11
08:45 AM	0	39	25	0	64	0	0	0	0	0	10	62	0	0	72	9	0	3	0	12	0	148	14
Total	0	174	73	1	247	0	0	0	0	0	44	225	0	0	269	24	0	11	3	35	4	551	55
Grand Total	0	412	143	7	555	0	0	0	0	0	79	471	0	0	550	42	0	22	10	64	17	1169	118
Apprch %	0	74.2	25.8			0	0	0			14.4	85.6	0			65.6	0	34.4					
Total %	0	35.2	12.2		47.5	0	0	0		0	6.8	40.3	0		47	3.6	0	1.9		5.5	1.4	98.6	

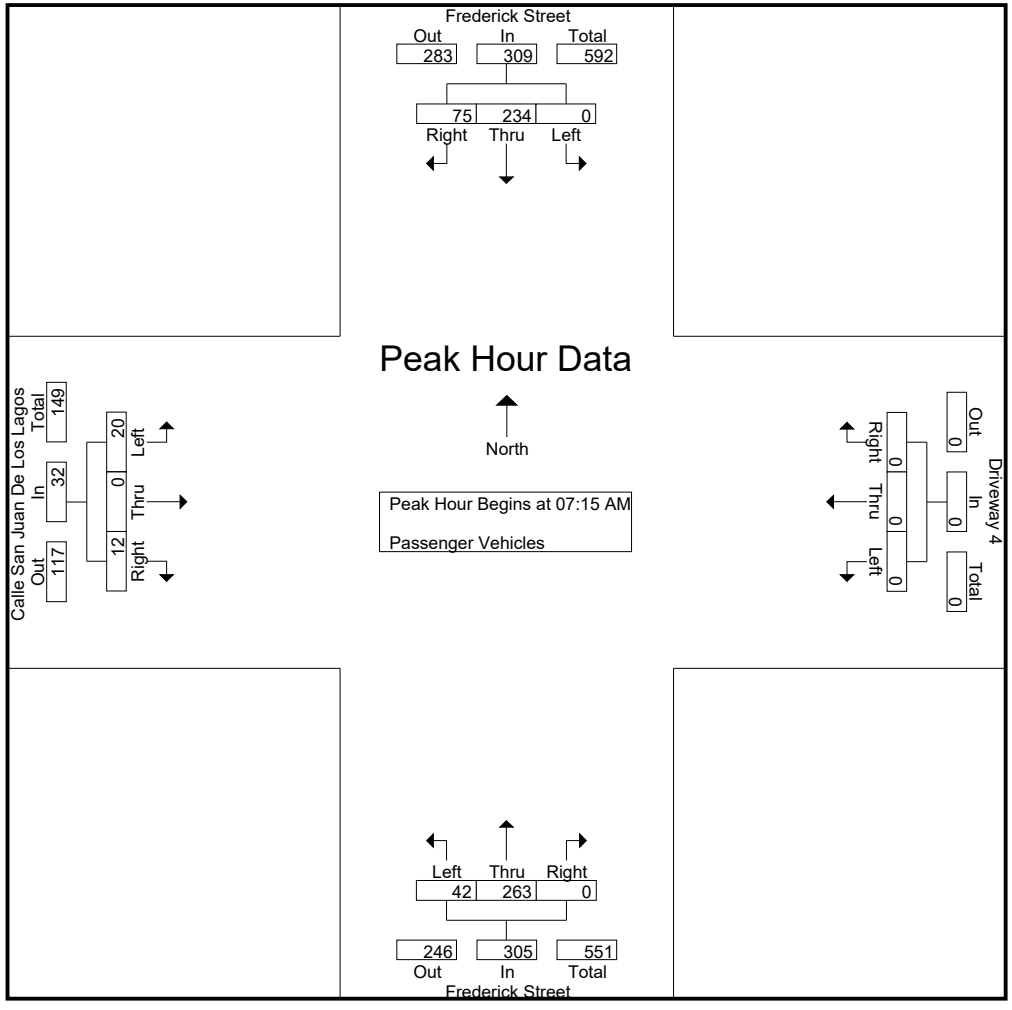
	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	55	**21**	76	0	0	0	0	7	69	0	76	**6**	0	**5**	**11**	1
07:30 AM	0	**68**	16	84	0	0	0	0	11	65	0	76	5	0	1	6	1
07:45 AM	0	67	20	**87**	0	0	0	0	**12**	**71**	0	**83**	3	0	3	6	**1**
08:00 AM	0	44	18	62	0	0	0	0	12	58	0	70	6	0	3	9	1
Total Volume	0	234	75	309	0	0	0	0	42	263	0	305	20	0	12	32	6
% App. Total	0	75.7	24.3		0	0	0		13.8	86.2	0		62.5	0	37.5		
PHF	.000	.860	.893	.888	.000	.000	.000	.000	.875	.926	.000	.919	.833	.000	.600	.727	.9

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
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Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:15 AM				07:15 AM				07:15 AM				07:15 AM				
+0 mins.	0	55	**21**	76	0	0	0	0	7	69	0	76	**6**	0	**5**	**11**	
+15 mins.	0	**68**	16	84	0	0	0	0	11	65	0	76	5	0	1	6	
+30 mins.	0	67	20	**87**	0	0	0	0	**12**	**71**	0	**83**	3	0	3	6	
+45 mins.	0	44	18	62	0	0	0	0	12	58	0	70	6	0	3	9	
Total Volume	0	234	75	309	0	0	0	0	42	263	0	305	20	0	12	32	
% App. Total	0	75.7	24.3		0	0	0		13.8	86.2	0		62.5	0	37.5		
PHF	.000	.860	.893	.888	.000	.000	.000	.000	.875	.926	.000	.919	.833	.000	.600	.727	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
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City of Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Frederick Street Southbound					Driveway 4 Westbound					Frederick Street Northbound					Calle San Juan De Los Lagos Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
07:00 AM	0	2	1	1	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	1	5	
07:15 AM	0	0	1	0	1	0	0	0	0	0	1	3	0	0	4	0	0	0	0	0	0	5	
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	0	3	
07:45 AM	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	5	
Total	0	3	2	1	5	0	0	0	0	0	1	11	0	0	12	1	0	0	0	1	1	18	1
08:00 AM	0	2	0	0	2	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	4	
08:15 AM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	5	
08:30 AM	0	5	1	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	
08:45 AM	0	0	2	0	2	0	0	0	0	0	1	1	0	0	2	1	0	0	0	1	0	5	
Total	0	10	3	0	13	0	0	0	0	0	2	4	0	0	6	1	0	0	0	1	0	20	2
Grand Total	0	13	5	1	18	0	0	0	0	0	3	15	0	0	18	2	0	0	0	2	1	38	3
Apprch %	0	72.2	27.8			0	0	0			16.7	83.3	0			100	0	0					
Total %	0	34.2	13.2		47.4	0	0	0		0	7.9	39.5	0		47.4	5.3	0	0		5.3	2.6	97.4	

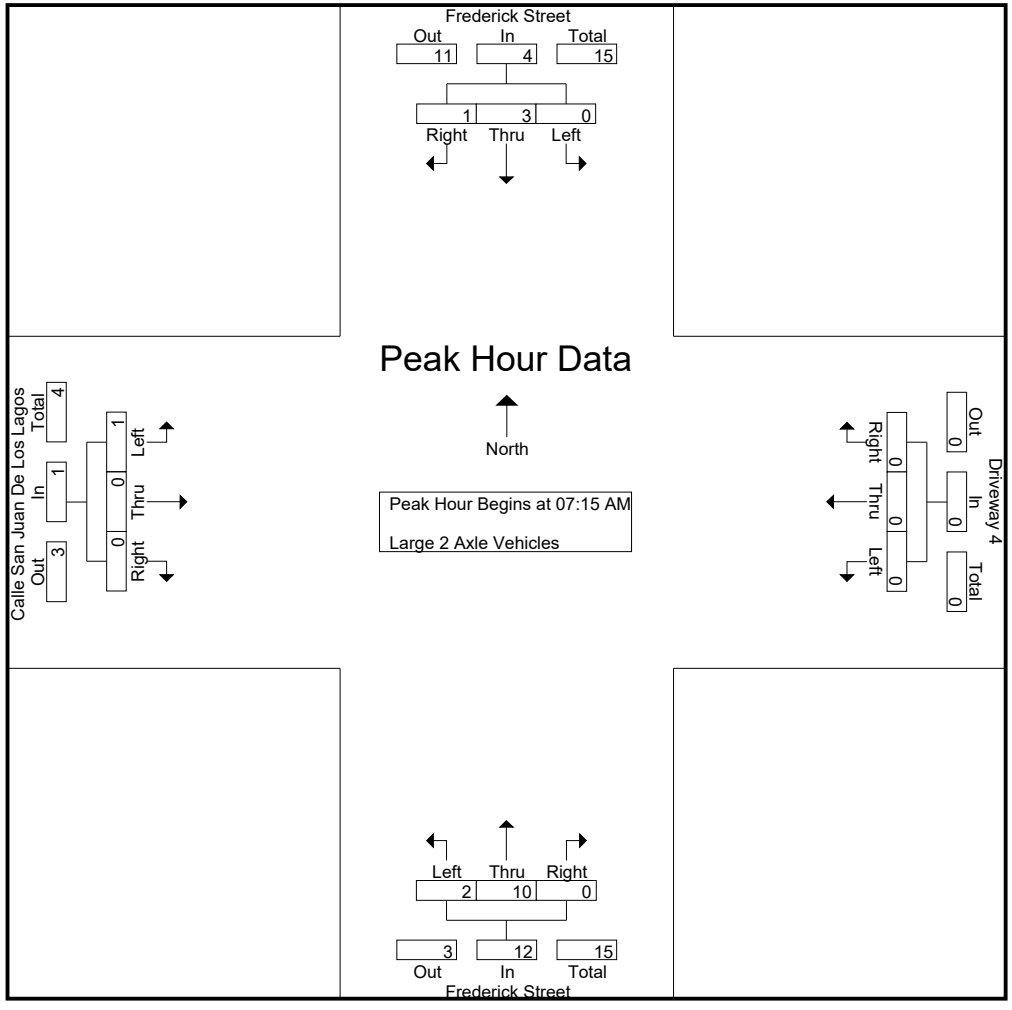
	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	**1**	1	0	0	0	0	**1**	3	0	**4**	0	0	0	0	
07:30 AM	0	0	0	0	0	0	0	0	0	2	0	2	**1**	0	0	**1**	
07:45 AM	0	1	0	1	0	0	0	0	0	**4**	0	4	0	0	0	0	
08:00 AM	0	**2**	0	**2**	0	0	0	0	1	1	0	2	0	0	0	0	
Total Volume	0	3	1	4	0	0	0	0	2	10	0	12	1	0	0	1	
% App. Total	0	75	25		0	0	0		16.7	83.3	0		100	0	0		
PHF	.000	.375	.250	.500	.000	.000	.000	.000	.500	.625	.000	.750	.250	.000	.000	.250	.8

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:15 AM				07:15 AM				07:15 AM				07:15 AM				
+0 mins.	0	0	**1**	1	0	0	0	0	**1**	3	0	**4**	0	0	0	0	
+15 mins.	0	0	0	0	0	0	0	0	0	2	0	2	**1**	0	0	**1**	
+30 mins.	0	1	0	1	0	0	0	0	0	**4**	0	4	0	0	0	0	
+45 mins.	0	**2**	0	**2**	0	0	0	0	1	1	0	2	0	0	0	0	
Total Volume	0	3	1	4	0	0	0	0	2	10	0	12	1	0	0	1	
% App. Total	0	75	25		0	0	0		16.7	83.3	0		100	0	0		
PHF	.000	.375	.250	.500	.000	.000	.000	.000	.500	.625	.000	.750	.250	.000	.000	.250	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

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PO Box 1178
Corona, CA 92878
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City of Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 3 Axle Vehicles

	Frederick Street Southbound					Driveway 4 Westbound					Frederick Street Northbound					Calle San Juan De Los Lagos Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
07:15 AM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	0	3	
Total	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	1	0	0	0	1	0	8	
08:00 AM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
08:15 AM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	3	
08:30 AM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	5	0	0	5	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	8	
Grand Total	0	7	0	0	7	0	0	0	0	0	0	8	0	0	8	1	0	0	0	1	0	16	1
Apprch %	0	100	0			0	0	0			0	100	0			100	0	0					
Total %	0	43.8	0		43.8	0	0	0		0	0	50	0		50	6.2	0	0		6.2	0	100	

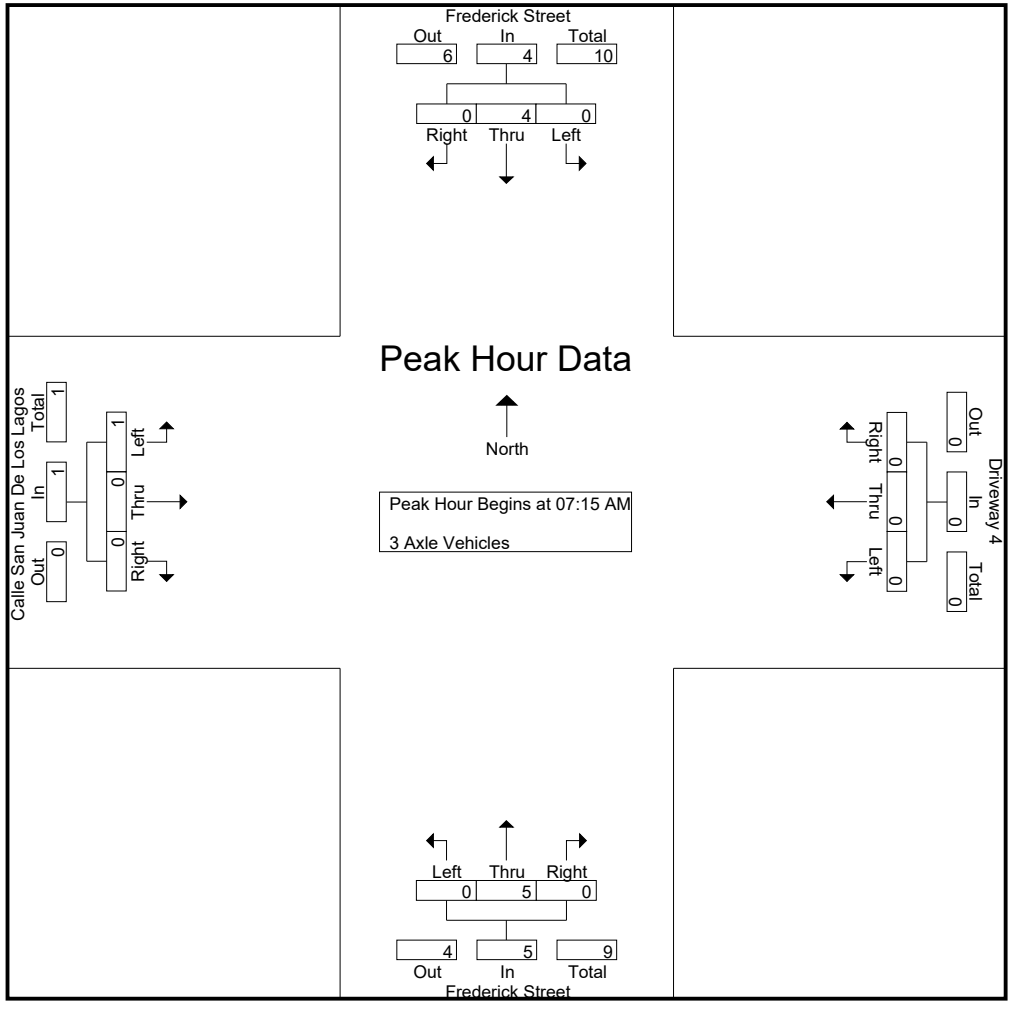
	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	**2**	0	**2**	0	0	0	0	0	1	0	1	0	0	0	0	
07:30 AM	0	0	0	0	0	0	0	0	0	**2**	0	**2**	0	0	0	0	
07:45 AM	0	0	0	0	0	0	0	0	0	2	0	2	**1**	0	0	**1**	
08:00 AM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	
Total Volume	0	4	0	4	0	0	0	0	0	5	0	5	1	0	0	1	
% App. Total	0	100	0		0	0	0		0	100	0		100	0	0		
PHF	.000	.500	.000	.500	.000	.000	.000	.000	.000	.625	.000	.625	.250	.000	.000	.250	.8

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:15 AM				07:15 AM				07:15 AM				07:15 AM				
+0 mins.	0	**2**	0	**2**	0	0	0	0	0	1	0	1	0	0	0	0	
+15 mins.	0	0	0	0	0	0	0	0	0	**2**	0	**2**	0	0	0	0	
+30 mins.	0	0	0	0	0	0	0	0	0	2	0	2	**1**	0	0	**1**	
+45 mins.	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	
Total Volume	0	4	0	4	0	0	0	0	0	5	0	5	1	0	0	1	
% App. Total	0	100	0		0	0	0		0	100	0		100	0	0		
PHF	.000	.500	.000	.500	.000	.000	.000	.000	.000	.625	.000	.625	.250	.000	.000	.250	

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City of Moreno Valley
N/S: Frederick Street
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Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 4+ Axle Trucks

	Frederick Street Southbound					Driveway 4 Westbound					Frederick Street Northbound					Calle San Juan De Los Lagos Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	4	
07:30 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	
07:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Total	0	2	0	0	2	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	8	
08:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
08:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	
Total	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	0	6	
Grand Total	0	4	0	0	4	0	0	0	0	0	0	9	0	0	9	0	0	1	0	1	0	14	1
Apprch %	0	100	0			0	0	0			0	100	0			0	0	100					
Total %	0	28.6	0		28.6	0	0	0		0	0	64.3	0		64.3	0	0	7.1		7.1	0	100	

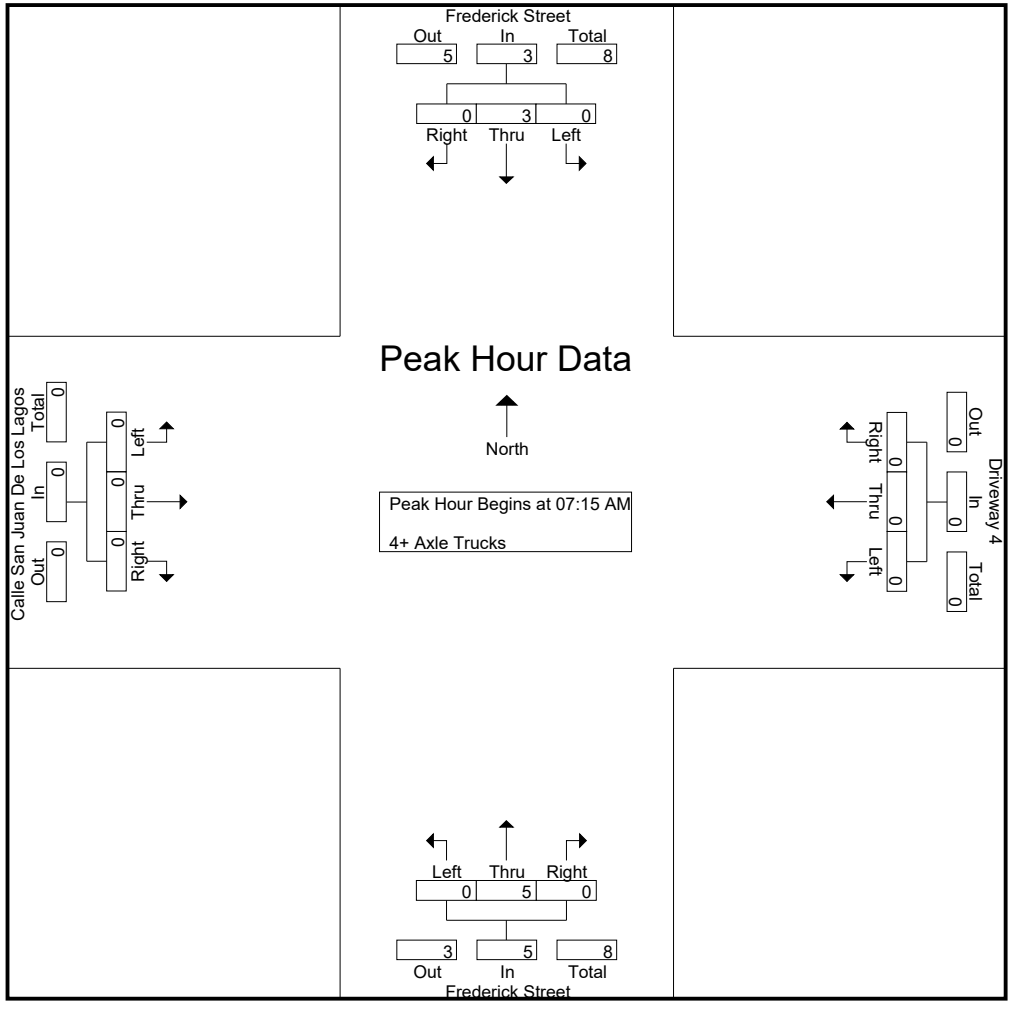
	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	0	0	0	0	**4**	0	**4**	0	0	0	0	
07:30 AM	0	**1**	0	**1**	0	0	0	0	0	1	0	1	0	0	0	0	
07:45 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
08:00 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
Total Volume	0	3	0	3	0	0	0	0	0	5	0	5	0	0	0	0	
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.750	.000	.750	.000	.000	.000	.000	.000	.313	.000	.313	.000	.000	.000	.000	.5

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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City of Moreno Valley
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File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:15 AM				07:15 AM				07:15 AM				07:15 AM				
+0 mins.	0	0	0	0	0	0	0	0	0	**4**	0	**4**	0	0	0	0	
+15 mins.	0	**1**	0	**1**	0	0	0	0	0	1	0	1	0	0	0	0	
+30 mins.	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
+45 mins.	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
Total Volume	0	3	0	3	0	0	0	0	0	5	0	5	0	0	0	0	
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.750	.000	.750	.000	.000	.000	.000	.000	.313	.000	.313	.000	.000	.000	.000	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

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N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Frederick Street Southbound					Driveway 4 Westbound					Frederick Street Northbound					Calle San Juan De Los Lagos Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
04:00 PM	0	111	17	1	128	0	0	0	0	0	6	79	0	0	85	47	0	1	0	48	1	261	26
04:15 PM	0	115	18	3	133	0	0	0	0	0	7	73	0	0	80	41	0	10	1	51	4	264	26
04:30 PM	0	86	8	0	94	0	0	0	0	0	4	80	0	0	84	30	0	7	3	37	3	215	21
04:45 PM	0	93	12	2	105	0	0	0	0	0	4	65	0	0	69	17	0	5	1	22	3	196	19
Total	0	405	55	6	460	0	0	0	0	0	21	297	0	0	318	135	0	23	5	158	11	936	94
05:00 PM	0	126	6	2	132	0	0	0	0	0	3	68	0	0	71	25	0	5	0	30	2	233	23
05:15 PM	0	124	8	1	132	0	0	0	0	0	5	67	0	0	72	18	0	6	2	24	3	228	23
05:30 PM	0	117	4	0	121	0	0	0	0	0	1	62	0	0	63	22	0	9	1	31	1	215	21
05:45 PM	0	99	9	1	108	0	0	0	0	0	2	53	0	0	55	15	0	6	0	21	1	184	18
Total	0	466	27	4	493	0	0	0	0	0	11	250	0	0	261	80	0	26	3	106	7	860	86
Grand Total	0	871	82	10	953	0	0	0	0	0	32	547	0	0	579	215	0	49	8	264	18	1796	181
Apprch %	0	91.4	8.6			0	0	0			5.5	94.5	0			81.4	0	18.6					
Total %	0	48.5	4.6		53.1	0	0	0		0	1.8	30.5	0		32.2	12	0	2.7		14.7	1	99	
Passenger Vehicles	0	857	82		949	0	0	0		0	31	536	0		567	213	0	47		268	0	0	178
% Passenger Vehicles	0	98.4	100	100	98.5	0	0	0	0	0	96.9	98	0	0	97.9	99.1	0	95.9	100	98.5	0	0	98
Large 2 Axle Vehicles	0	10	0		10	0	0	0		0	1	4	0		5	2	0	2		4	0	0	1
% Large 2 Axle Vehicles	0	1.1	0	0	1	0	0	0	0	0	3.1	0.7	0	0	0.9	0.9	0	4.1	0	1.5	0	0	
3 Axle Vehicles	0	1	0		1	0	0	0		0	0	3	0		3	0	0	0		0	0	0	
% 3 Axle Vehicles	0	0.1	0	0	0.1	0	0	0	0	0	0	0.5	0	0	0.5	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	3	0		3	0	0	0		0	0	4	0		4	0	0	0		0	0	0	
% 4+ Axle Trucks	0	0.3	0	0	0.3	0	0	0	0	0	0	0.7	0	0	0.7	0	0	0	0	0	0	0	0

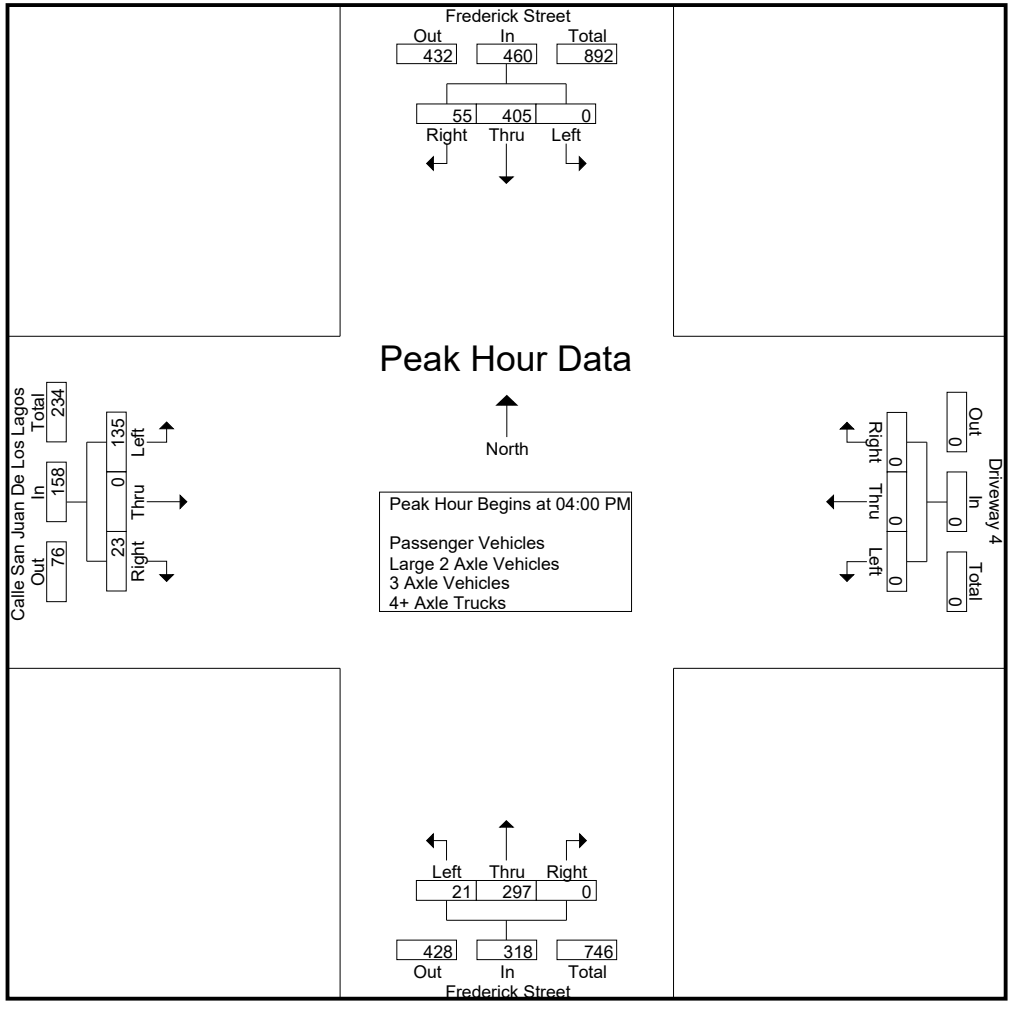
	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	111	17	128	0	0	0	0	6	79	0	**85**	**47**	0	1	48	2
04:15 PM	0	**115**	**18**	**133**	0	0	0	0	**7**	73	0	80	41	0	**10**	**51**	**2**
04:30 PM	0	86	8	94	0	0	0	0	4	**80**	0	84	30	0	7	37	2
04:45 PM	0	93	12	105	0	0	0	0	4	65	0	69	17	0	5	22	1
Total Volume	0	405	55	460	0	0	0	0	21	297	0	318	135	0	23	158	9
% App. Total	0	88	12		0	0	0		6.6	93.4	0		85.4	0	14.6		
PHF	.000	.880	.764	.865	.000	.000	.000	.000	.750	.928	.000	.935	.718	.000	.575	.775	.8

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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City of Moreno Valley
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File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	05:00 PM				04:00 PM				04:00 PM				04:00 PM				
+0 mins.	0	**126**	6	**132**	0	0	0	0	6	79	0	**85**	**47**	0	1	48	
+15 mins.	0	124	8	132	0	0	0	0	**7**	73	0	80	41	0	**10**	**51**	
+30 mins.	0	117	4	121	0	0	0	0	4	**80**	0	84	30	0	7	37	
+45 mins.	0	99	**9**	108	0	0	0	0	4	65	0	69	17	0	5	22	
Total Volume	0	466	27	493	0	0	0	0	21	297	0	318	135	0	23	158	
% App. Total	0	94.5	5.5		0	0	0		6.6	93.4	0		85.4	0	14.6		
PHF	.000	.925	.750	.934	.000	.000	.000	.000	.750	.928	.000	.935	.718	.000	.575	.775	

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City of Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Frederick Street Southbound					Driveway 4 Westbound					Frederick Street Northbound					Calle San Juan De Los Lagos Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
04:00 PM	0	111	17	1	128	0	0	0	0	0	6	77	0	0	83	46	0	1	0	47	1	258	25
04:15 PM	0	109	18	3	127	0	0	0	0	0	7	71	0	0	78	41	0	10	1	51	4	256	26
04:30 PM	0	85	8	0	93	0	0	0	0	0	4	80	0	0	84	30	0	7	3	37	3	214	21
04:45 PM	0	90	12	2	102	0	0	0	0	0	3	64	0	0	67	16	0	3	1	19	3	188	19
Total	0	395	55	6	450	0	0	0	0	0	20	292	0	0	312	133	0	21	5	154	11	916	92
05:00 PM	0	126	6	2	132	0	0	0	0	0	3	67	0	0	70	25	0	5	0	30	2	232	23
05:15 PM	0	121	8	1	129	0	0	0	0	0	5	66	0	0	71	18	0	6	2	24	3	224	22
05:30 PM	0	116	4	0	120	0	0	0	0	0	1	61	0	0	62	22	0	9	1	31	1	213	21
05:45 PM	0	99	9	1	108	0	0	0	0	0	2	50	0	0	52	15	0	6	0	21	1	181	18
Total	0	462	27	4	489	0	0	0	0	0	11	244	0	0	255	80	0	26	3	106	7	850	85
Grand Total	0	857	82	10	939	0	0	0	0	0	31	536	0	0	567	213	0	47	8	260	18	1766	178
Apprch %	0	91.3	8.7			0	0	0			5.5	94.5	0			81.9	0	18.1					
Total %	0	48.5	4.6		53.2	0	0	0		0	1.8	30.4	0		32.1	12.1	0	2.7		14.7	1	99	

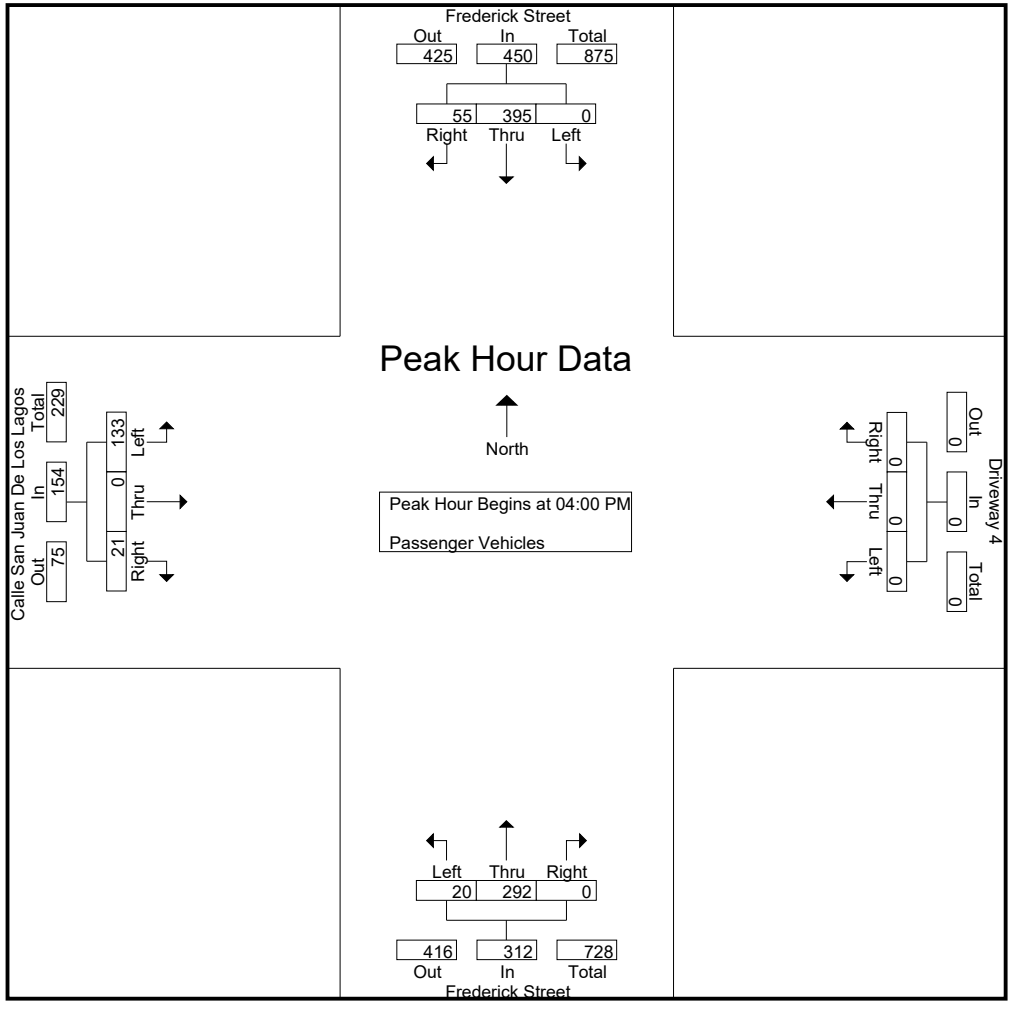
	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	**111**	17	**128**	0	0	0	0	6	77	0	83	**46**	0	1	47	**2**
04:15 PM	0	109	**18**	127	0	0	0	0	**7**	71	0	78	41	0	**10**	**51**	2
04:30 PM	0	85	8	93	0	0	0	0	4	**80**	0	**84**	30	0	7	37	2
04:45 PM	0	90	12	102	0	0	0	0	3	64	0	67	16	0	3	19	1
Total Volume	0	395	55	450	0	0	0	0	20	292	0	312	133	0	21	154	9
% App. Total	0	87.8	12.2		0	0	0		6.4	93.6	0		86.4	0	13.6		
PHF	.000	.890	.764	.879	.000	.000	.000	.000	.714	.913	.000	.929	.723	.000	.525	.755	.8

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:00 PM				04:00 PM				04:00 PM				04:00 PM				
+0 mins.	0	**111**	17	**128**	0	0	0	0	6	77	0	83	**46**	0	1	47	
+15 mins.	0	109	**18**	127	0	0	0	0	**7**	71	0	78	41	0	**10**	**51**	
+30 mins.	0	85	8	93	0	0	0	0	4	**80**	0	**84**	30	0	7	37	
+45 mins.	0	90	12	102	0	0	0	0	3	64	0	67	16	0	3	19	
Total Volume	0	395	55	450	0	0	0	0	20	292	0	312	133	0	21	154	
% App. Total	0	87.8	12.2		0	0	0		6.4	93.6	0		86.4	0	13.6		
PHF	.000	.890	.764	.879	.000	.000	.000	.000	.714	.913	.000	.929	.723	.000	.525	.755	

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PO Box 1178
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City of Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Frederick Street Southbound					Driveway 4 Westbound					Frederick Street Northbound					Calle San Juan De Los Lagos Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	0	3	
04:15 PM	0	4	0	0	4	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	5	
04:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
04:45 PM	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	1	0	2	0	3	0	6	
Total	0	7	0	0	7	0	0	0	0	0	1	3	0	0	4	2	0	2	0	4	0	15	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
05:15 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	
05:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	4	
Grand Total	0	10	0	0	10	0	0	0	0	0	1	4	0	0	5	2	0	2	0	4	0	19	1
Apprch %	0	100	0			0	0	0			20	80	0			50	0	50					
Total %	0	52.6	0		52.6	0	0	0		0	5.3	21.1	0		26.3	10.5	0	10.5		21.1	0	100	

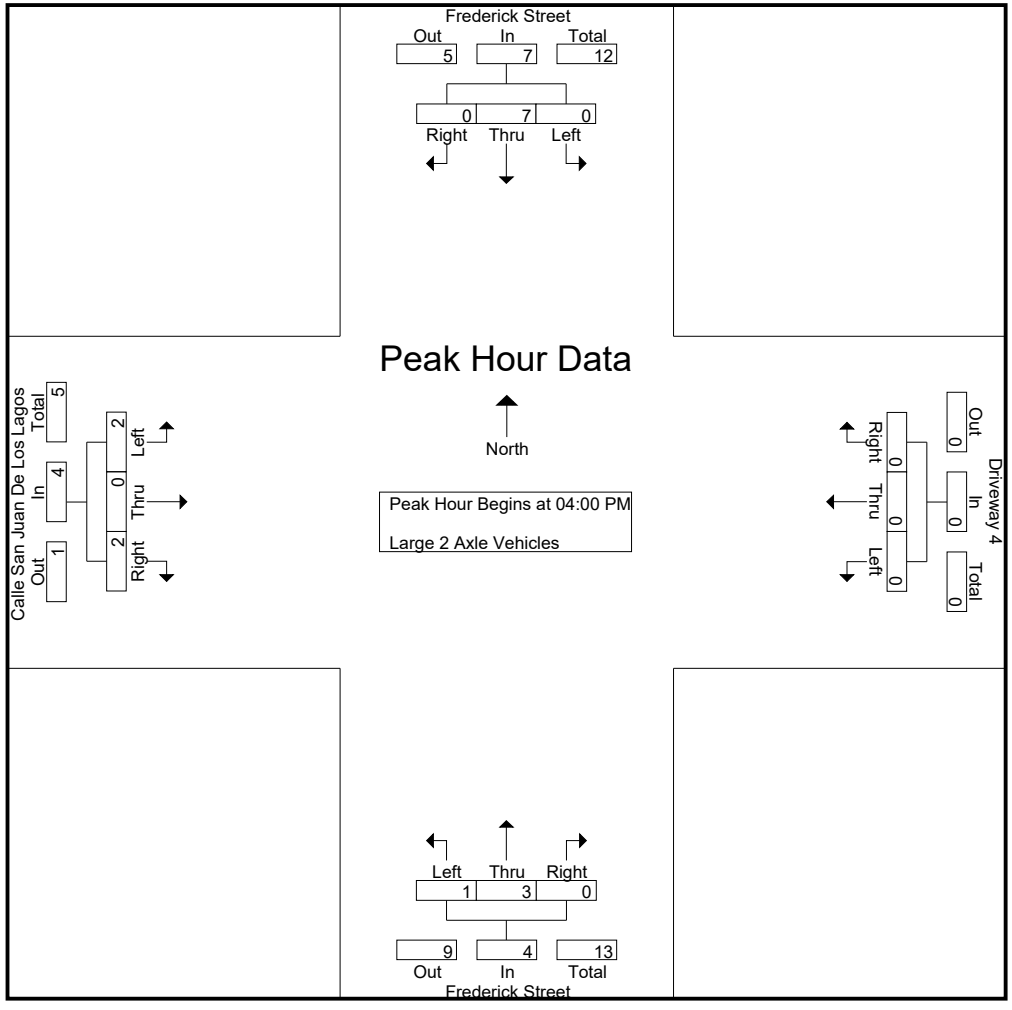
	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	**2**	0	**2**	**1**	0	0	1	
04:15 PM	0	**4**	0	**4**	0	0	0	0	0	1	0	1	0	0	0	0	
04:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
04:45 PM	0	2	0	2	0	0	0	0	**1**	0	0	1	1	0	**2**	**3**	
Total Volume	0	7	0	7	0	0	0	0	1	3	0	4	2	0	2	4	
% App. Total	0	100	0		0	0	0		25	75	0		50	0	50		
PHF	.000	.438	.000	.438	.000	.000	.000	.000	.250	.375	.000	.500	.500	.000	.250	.333	.6

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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File Name : 04_MRV_Frederick_DW4_Calle SJDLL
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Start Date : 4/3/2018
Page No : 3

	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:00 PM				04:00 PM				04:00 PM				04:00 PM				
+0 mins.	0	0	0	0	0	0	0	0	0	**2**	0	**2**	**1**	0	0	1	
+15 mins.	0	**4**	0	**4**	0	0	0	0	0	1	0	1	0	0	0	0	
+30 mins.	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
+45 mins.	0	2	0	2	0	0	0	0	**1**	0	0	1	1	0	**2**	**3**	
Total Volume	0	7	0	7	0	0	0	0	1	3	0	4	2	0	2	4	
% App. Total	0	100	0		0	0	0		25	75	0		50	0	50		
PHF	.000	.438	.000	.438	.000	.000	.000	.000	.250	.375	.000	.500	.500	.000	.250	.333	

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City of Moreno Valley
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Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 3 Axle Vehicles

	Frederick Street Southbound					Driveway 4 Westbound					Frederick Street Northbound					Calle San Juan De Los Lagos Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04:15 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	
Total	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	
Grand Total	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	4	
Apprch %	0	100	0			0	0	0			0	100	0			0	0	0					
Total %	0	25	0		25	0	0	0		0	0	75	0		75	0	0	0		0	0	100	

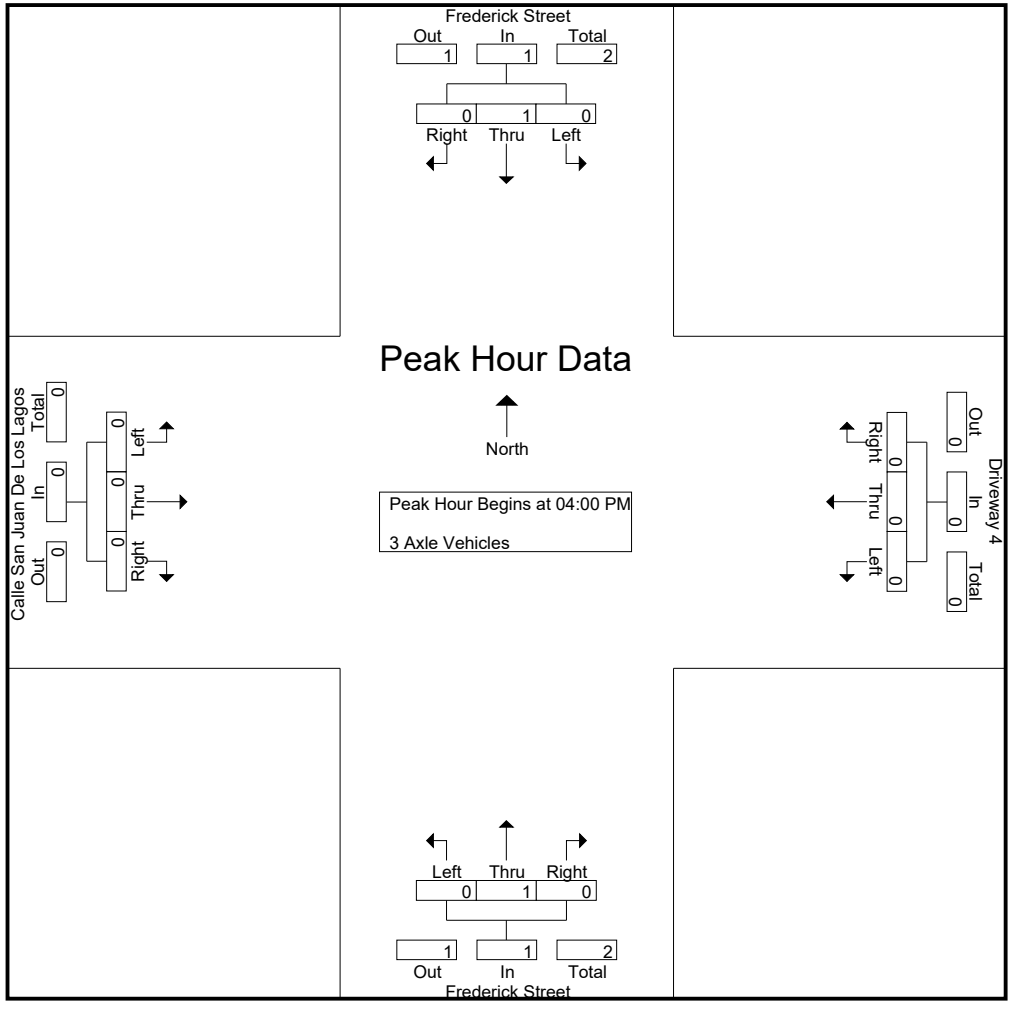
	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04:15 PM	0	**1**	0	**1**	0	0	0	0	0	**1**	0	**1**	0	0	0	0	
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total Volume	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.2

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

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(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:00 PM				04:00 PM				04:00 PM				04:00 PM				
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
+15 mins.	0	**1**	0	**1**	0	0	0	0	0	**1**	0	**1**	0	0	0	0	
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total Volume	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	

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City of Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 4+ Axle Trucks

	Frederick Street Southbound					Driveway 4 Westbound					Frederick Street Northbound					Calle San Juan De Los Lagos Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04:45 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	
Total	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	
05:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	
Total	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	4	
Grand Total	0	3	0	0	3	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	7	
Apprch %	0	100	0			0	0	0			0	100	0			0	0	0					
Total %	0	42.9	0		42.9	0	0	0		0	0	57.1	0		57.1	0	0	0		0	0	100	

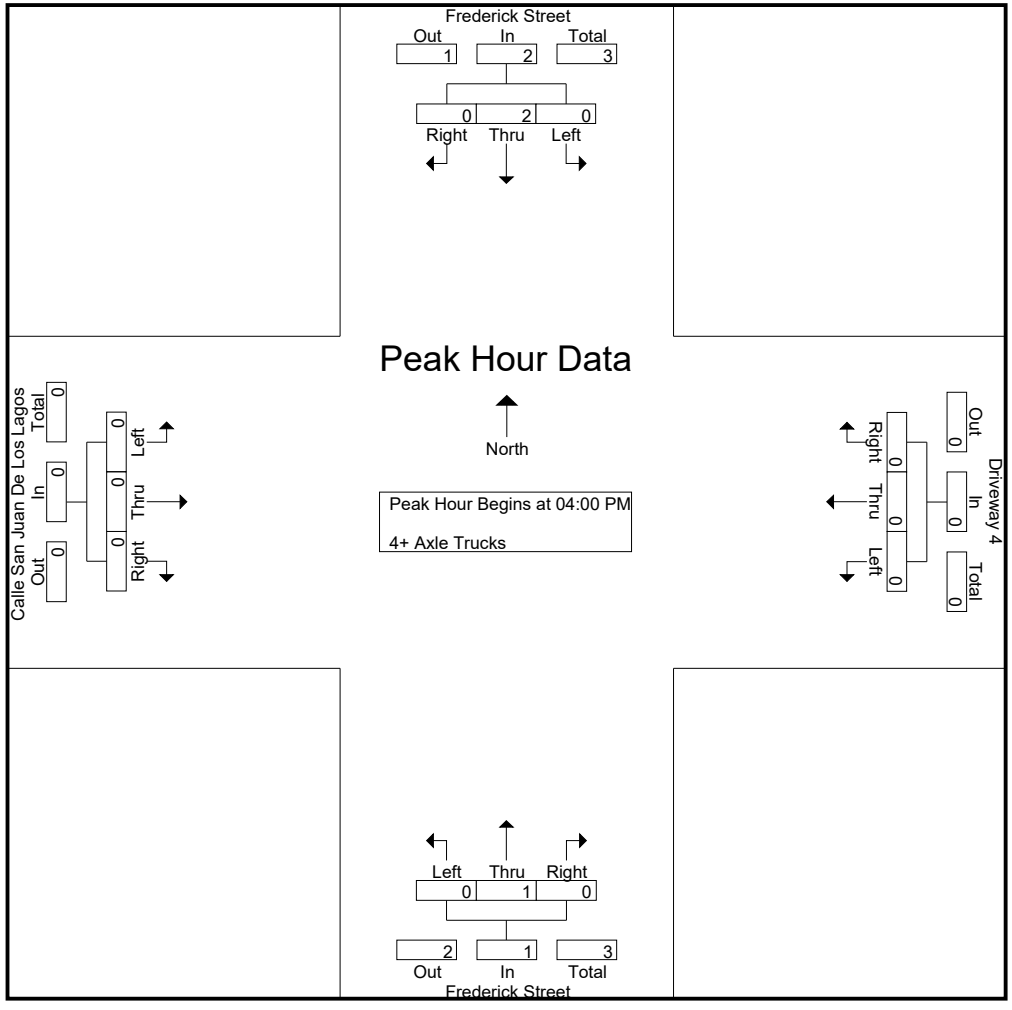
	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04:15 PM	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04:45 PM	0	1	0	1	0	0	0	0	0	**1**	0	**1**	0	0	0	0	
Total Volume	0	2	0	2	0	0	0	0	0	1	0	1	0	0	0	0	
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.500	.000	.500	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.3

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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City of Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 4
Weather: Clear

File Name : 04_MRV_Frederick_DW4_Calle SJDLL
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Frederick Street Southbound				Driveway 4 Westbound				Frederick Street Northbound				Calle San Juan De Los Lagos Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:00 PM				04:00 PM				04:00 PM				04:00 PM				
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
+15 mins.	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
+45 mins.	0	1	0	1	0	0	0	0	0	**1**	0	**1**	0	0	0	0	
Total Volume	0	2	0	2	0	0	0	0	0	1	0	1	0	0	0	0	
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.500	.000	.500	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Location: Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW 3

Date: 4/3/2018
Date: Tuesday

PEDESTRIANS

	North Leg Frederick Street	East Leg Driveway 4	South Leg Frederick Street	West Leg Calle San Juan De Los Lagos	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	1	0	1
7:45 AM	0	0	3	0	3
8:00 AM	0	0	0	1	1
8:15 AM	0	0	0	0	0
8:30 AM	0	0	1	1	2
8:45 AM	0	0	0	5	5
TOTAL VOLUMES:	0	0	5	7	12

	North Leg Frederick Street	East Leg Driveway 4	South Leg Frederick Street	West Leg Calle San Juan De Los Lagos	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	3	3
4:15 PM	0	0	0	2	2
4:30 PM	0	0	0	4	4
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	1	1
5:30 PM	0	0	1	0	1
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	1	10	11

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
951-268-6268

Location: Moreno Valley
N/S: Frederick Street
E/W: Calle San Juan De Los Lagos/DW

Date: 4/3/2018
Date: Tuesday

BICYCLES

	Southbound Frederick Street			Westbound Driveway 4			Northbound Frederick Street			Eastbound Calle San Juan De Los Lagos			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	1	0	0	0	0	0	1	0	0	0	0	2

	Southbound Frederick Street			Westbound Driveway 4			Northbound Frederick Street			Eastbound Calle San Juan De Los Lagos			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	1	0	0	1

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
951-268-6268

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue
Weather: Clear

File Name : 05_MRV_Frederick_Brodiea AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	49	4	53	0	0	12	12	0	37	0	37	0	0	0	0	102
07:15 AM	0	58	4	62	0	0	18	18	0	68	0	68	0	0	1	1	149
07:30 AM	0	66	4	70	0	0	12	12	0	67	2	69	0	0	2	2	153
07:45 AM	0	70	2	72	0	0	17	17	0	73	1	74	0	0	1	1	164
Total	0	243	14	257	0	0	59	59	0	245	3	248	0	0	4	4	568
08:00 AM	0	48	3	51	0	0	16	16	0	58	2	60	0	0	1	1	128
08:15 AM	0	67	2	69	0	0	12	12	0	57	3	60	0	0	2	2	143
08:30 AM	0	36	3	39	0	0	8	8	0	55	0	55	0	0	2	2	104
08:45 AM	0	38	3	41	0	0	13	13	0	64	0	64	0	0	4	4	122
Total	0	189	11	200	0	0	49	49	0	234	5	239	0	0	9	9	497
Grand Total	0	432	25	457	0	0	108	108	0	479	8	487	0	0	13	13	1065
Apprch %	0	94.5	5.5		0	0	100		0	98.4	1.6		0	0	100		
Total %	0	40.6	2.3	42.9	0	0	10.1	10.1	0	45	0.8	45.7	0	0	1.2	1.2	
Passenger Vehicles	0	408	24	432	0	0	101	101	0	450	6	456	0	0	10	10	999
% Passenger Vehicles	0	94.4	96	94.5	0	0	93.5	93.5	0	93.9	75	93.6	0	0	76.9	76.9	93.8
Large 2 Axle Vehicles	0	12	1	13	0	0	5	5	0	13	1	14	0	0	3	3	35
% Large 2 Axle Vehicles	0	2.8	4	2.8	0	0	4.6	4.6	0	2.7	12.5	2.9	0	0	23.1	23.1	3.3
3 Axle Vehicles	0	7	0	7	0	0	2	2	0	7	0	7	0	0	0	0	16
% 3 Axle Vehicles	0	1.6	0	1.5	0	0	1.9	1.9	0	1.5	0	1.4	0	0	0	0	1.5
4+ Axle Trucks	0	5	0	5	0	0	0	0	0	9	1	10	0	0	0	0	15
% 4+ Axle Trucks	0	1.2	0	1.1	0	0	0	0	0	1.9	12.5	2.1	0	0	0	0	1.4

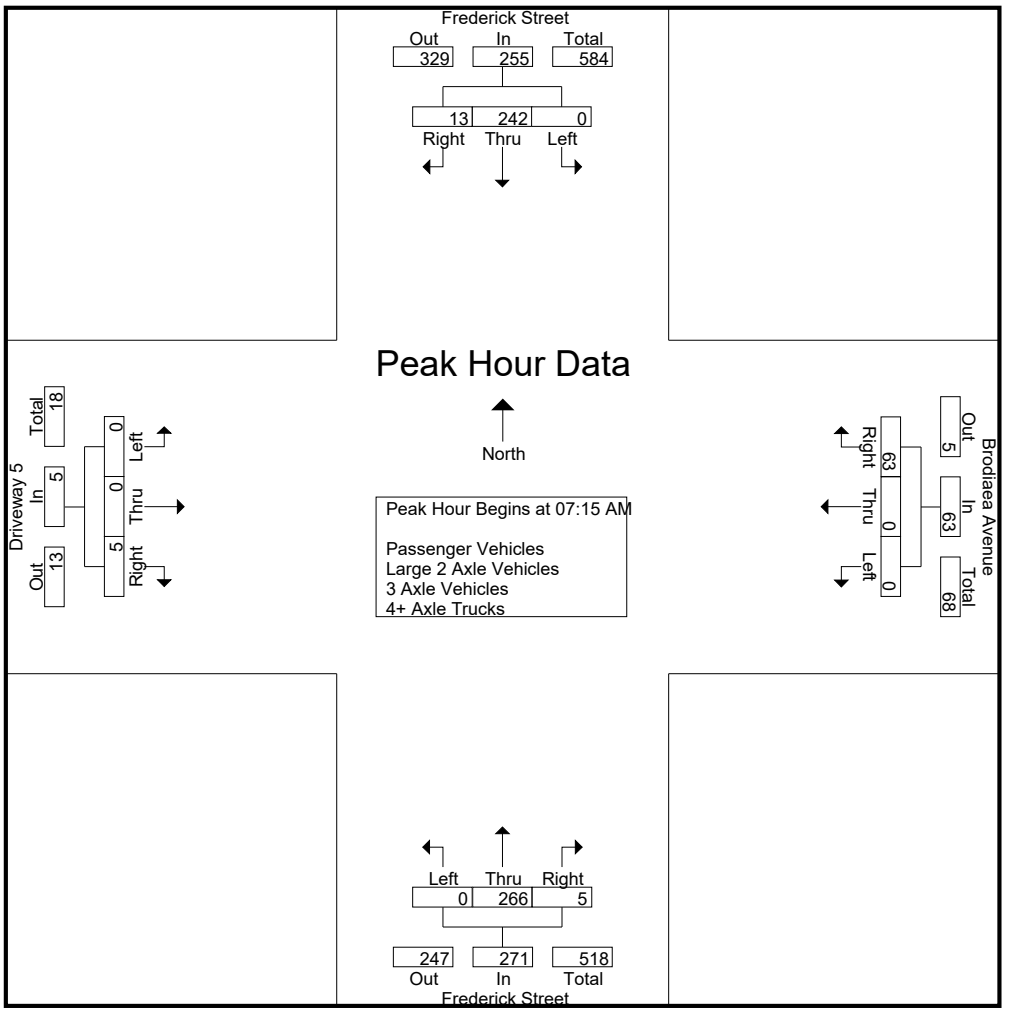
	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	58	**4**	62	0	0	**18**	**18**	0	68	0	68	0	0	1	1	149
07:30 AM	0	66	4	70	0	0	12	12	0	67	**2**	69	0	0	**2**	**2**	153
07:45 AM	0	**70**	2	**72**	0	0	17	17	0	**73**	1	**74**	0	0	1	1	**164**
08:00 AM	0	48	3	51	0	0	16	16	0	58	2	60	0	0	1	1	128
Total Volume	0	242	13	255	0	0	63	63	0	266	5	271	0	0	5	5	594
% App. Total	0	94.9	5.1		0	0	100		0	98.2	1.8		0	0	100		
PHF	.000	.864	.813	.885	.000	.000	.875	.875	.000	.911	.625	.916	.000	.000	.625	.625	.905

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue
Weather: Clear

File Name : 05_MRV_Frederick_Brodiea AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:15 AM				07:15 AM				08:00 AM			
+0 mins.	0	66	**4**	70	0	0	**18**	**18**	0	68	0	68	0	0	1	1
+15 mins.	0	**70**	2	**72**	0	0	12	12	0	67	**2**	69	0	0	2	2
+30 mins.	0	48	3	51	0	0	17	17	0	**73**	1	**74**	0	0	2	2
+45 mins.	0	67	2	69	0	0	16	16	0	58	2	60	0	0	**4**	**4**
Total Volume	0	251	11	262	0	0	63	63	0	266	5	271	0	0	9	9
% App. Total	0	95.8	4.2		0	0	100		0	98.2	1.8		0	0	100	
PHF	.000	.896	.688	.910	.000	.000	.875	.875	.000	.911	.625	.916	.000	.000	.563	.563

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City of Moreno Valley
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File Name : 05_MRV_Frederick_Brodiea AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	47	4	51	0	0	12	12	0	34	0	34	0	0	0	0	97
07:15 AM	0	56	4	60	0	0	15	15	0	62	0	62	0	0	1	1	138
07:30 AM	0	65	4	69	0	0	12	12	0	63	1	64	0	0	2	2	147
07:45 AM	0	68	2	70	0	0	16	16	0	68	0	68	0	0	1	1	155
Total	0	236	14	250	0	0	55	55	0	227	1	228	0	0	4	4	537
08:00 AM	0	45	3	48	0	0	14	14	0	56	2	58	0	0	1	1	121
08:15 AM	0	60	2	62	0	0	12	12	0	55	3	58	0	0	2	2	134
08:30 AM	0	31	2	33	0	0	8	8	0	52	0	52	0	0	2	2	95
08:45 AM	0	36	3	39	0	0	12	12	0	60	0	60	0	0	1	1	112
Total	0	172	10	182	0	0	46	46	0	223	5	228	0	0	6	6	462
Grand Total	0	408	24	432	0	0	101	101	0	450	6	456	0	0	10	10	999
Apprch %	0	94.4	5.6		0	0	100		0	98.7	1.3		0	0	100		
Total %	0	40.8	2.4	43.2	0	0	10.1	10.1	0	45	0.6	45.6	0	0	1	1	

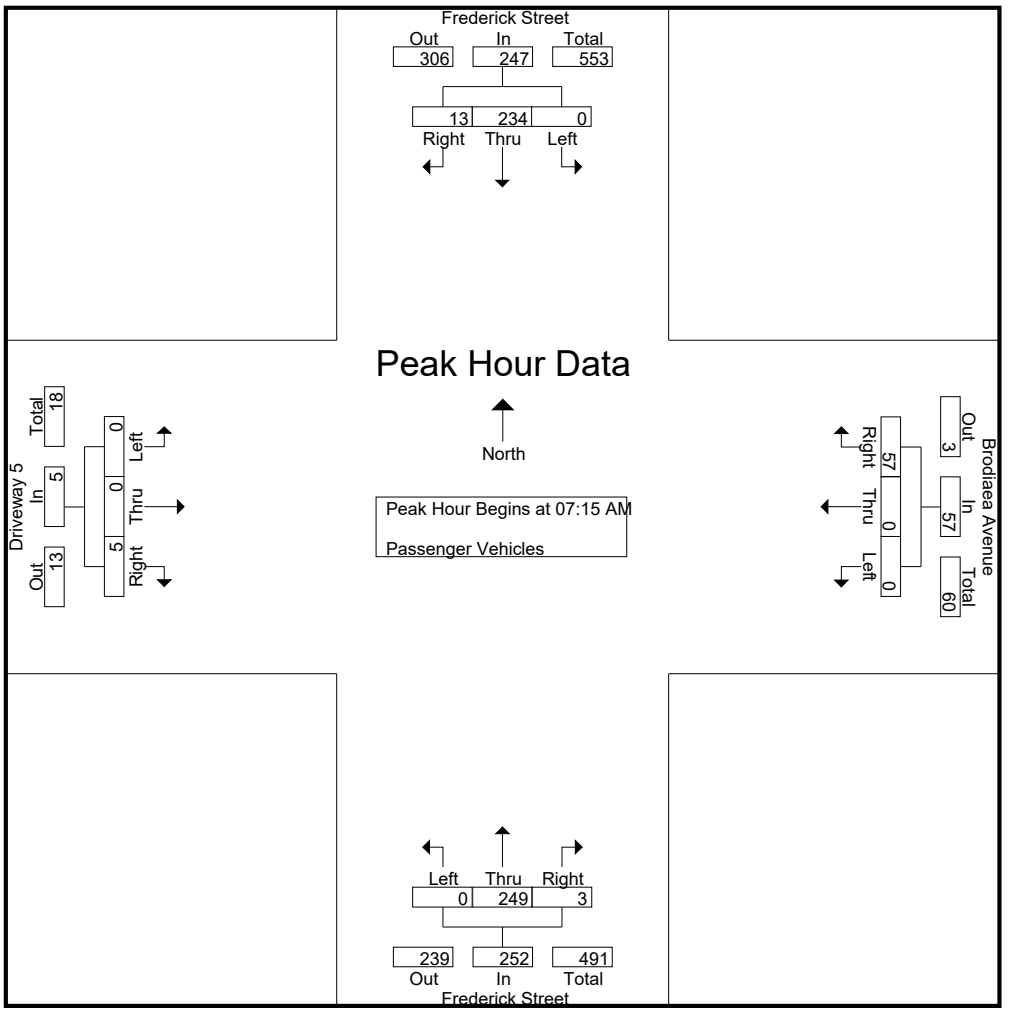
	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	56	**4**	60	0	0	15	15	0	62	0	62	0	0	1	1	138
07:30 AM	0	65	4	69	0	0	12	12	0	63	1	64	0	0	**2**	**2**	147
07:45 AM	0	**68**	2	**70**	0	0	**16**	**16**	0	**68**	0	**68**	0	0	1	1	**155**
08:00 AM	0	45	3	48	0	0	14	14	0	56	**2**	58	0	0	1	1	121
Total Volume	0	234	13	247	0	0	57	57	0	249	3	252	0	0	5	5	561
% App. Total	0	94.7	5.3		0	0	100		0	98.8	1.2		0	0	100		
PHF	.000	.860	.813	.882	.000	.000	.891	.891	.000	.915	.375	.926	.000	.000	.625	.625	.905

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue
Weather: Clear

File Name : 05_MRV_Frederick_Brodiea AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	56	**4**	60	0	0	15	15	0	62	0	62	0	0	1	1
+15 mins.	0	65	4	69	0	0	12	12	0	63	1	64	0	0	**2**	**2**
+30 mins.	0	**68**	2	**70**	0	0	**16**	**16**	0	**68**	0	**68**	0	0	1	1
+45 mins.	0	45	3	48	0	0	14	14	0	56	**2**	58	0	0	1	1
Total Volume	0	234	13	247	0	0	57	57	0	249	3	252	0	0	5	5
% App. Total	0	94.7	5.3		0	0	100		0	98.8	1.2		0	0	100	
PHF	.000	.860	.813	.882	.000	.000	.891	.891	.000	.915	.375	.926	.000	.000	.625	.625

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue
Weather: Clear

File Name : 05_MRV_Frederick_Brodiea AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	2	0	2	0	0	0	0	0	2	0	2	0	0	0	0	4
07:15 AM	0	0	0	0	0	0	2	2	0	2	0	2	0	0	0	0	4
07:30 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
07:45 AM	0	1	0	1	0	0	1	1	0	3	1	4	0	0	0	0	6
Total	0	3	0	3	0	0	3	3	0	9	1	10	0	0	0	0	16
08:00 AM	0	2	0	2	0	0	1	1	0	1	0	1	0	0	0	0	4
08:15 AM	0	3	0	3	0	0	0	0	0	2	0	2	0	0	0	0	5
08:30 AM	0	4	1	5	0	0	0	0	0	0	0	0	0	0	0	0	5
08:45 AM	0	0	0	0	0	0	1	1	0	1	0	1	0	0	3	3	5
Total	0	9	1	10	0	0	2	2	0	4	0	4	0	0	3	3	19
Grand Total	0	12	1	13	0	0	5	5	0	13	1	14	0	0	3	3	35
Apprch %	0	92.3	7.7		0	0	100		0	92.9	7.1		0	0	100		
Total %	0	34.3	2.9	37.1	0	0	14.3	14.3	0	37.1	2.9	40	0	0	8.6	8.6	

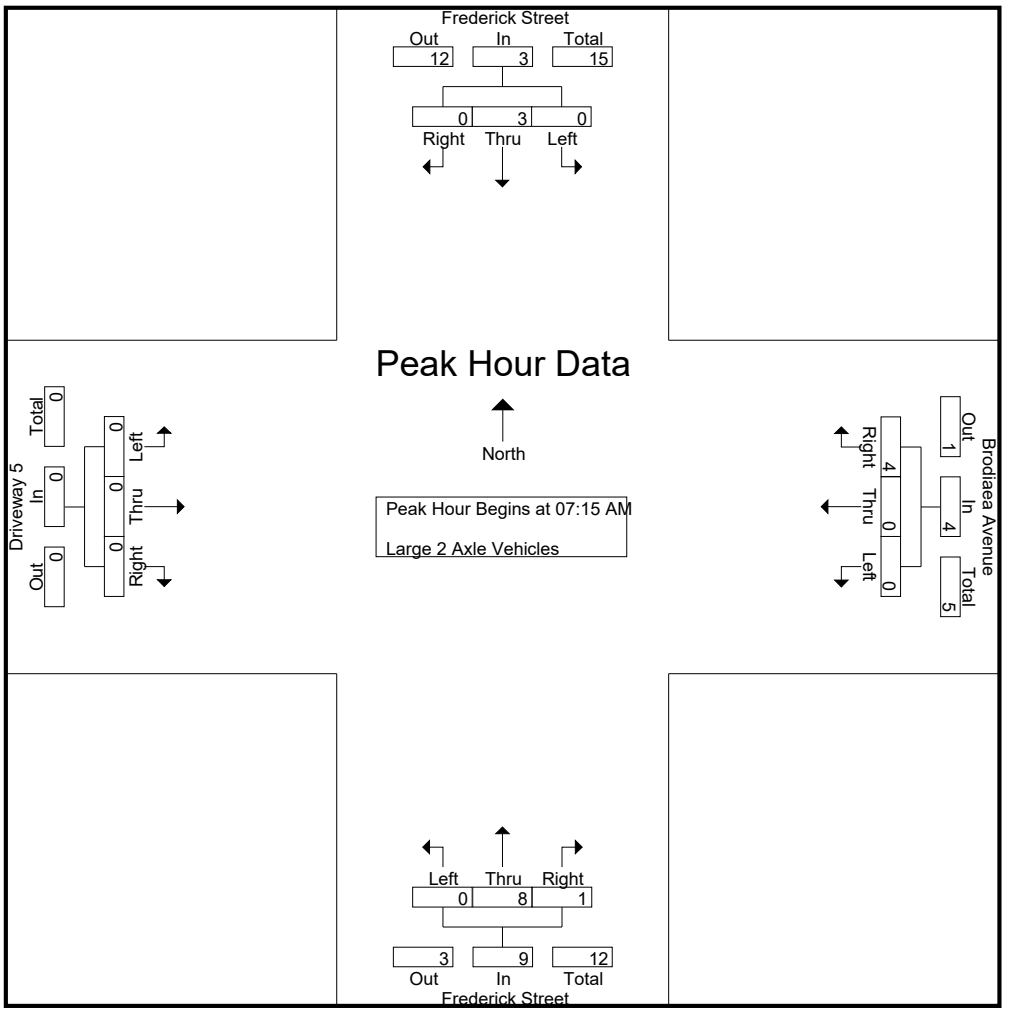
	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	0	**2**	**2**	0	2	0	2	0	0	0	0	4
07:30 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
07:45 AM	0	1	0	1	0	0	1	1	0	**3**	**1**	**4**	0	0	0	0	**6**
08:00 AM	0	**2**	0	**2**	0	0	1	1	0	1	0	1	0	0	0	0	4
Total Volume	0	3	0	3	0	0	4	4	0	8	1	9	0	0	0	0	16
% App. Total	0	100	0		0	0	100		0	88.9	11.1		0	0	0		
PHF	.000	.375	.000	.375	.000	.000	.500	.500	.000	.667	.250	.563	.000	.000	.000	.000	.667

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue
Weather: Clear

File Name : 05_MRV_Frederick_Brodiea AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	0	0	0	0	**2**	**2**	0	2	0	2	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0
+30 mins.	0	1	0	1	0	0	1	1	0	**3**	**1**	**4**	0	0	0	0
+45 mins.	0	**2**	0	**2**	0	0	1	1	0	1	0	1	0	0	0	0
Total Volume	0	3	0	3	0	0	4	4	0	8	1	9	0	0	0	0
% App. Total	0	100	0		0	0	100		0	88.9	11.1		0	0	0	
PHF	.000	.375	.000	.375	.000	.000	.500	.500	.000	.667	.250	.563	.000	.000	.000	.000

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue
Weather: Clear

File Name : 05_MRV_Frederick_Brodiea AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 3 Axle Vehicles

	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	2	0	2	0	0	1	1	0	0	0	0	0	0	0	0	3
07:30 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
Total	0	2	0	2	0	0	1	1	0	3	0	3	0	0	0	0	6
08:00 AM	0	0	0	0	0	0	1	1	0	1	0	1	0	0	0	0	2
08:15 AM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
08:30 AM	0	1	0	1	0	0	0	0	0	2	0	2	0	0	0	0	3
08:45 AM	0	2	0	2	0	0	0	0	0	1	0	1	0	0	0	0	3
Total	0	5	0	5	0	0	1	1	0	4	0	4	0	0	0	0	10
Grand Total	0	7	0	7	0	0	2	2	0	7	0	7	0	0	0	0	16
Apprch %	0	100	0		0	0	100		0	100	0		0	0	0		
Total %	0	43.8	0	43.8	0	0	12.5	12.5	0	43.8	0	43.8	0	0	0	0	

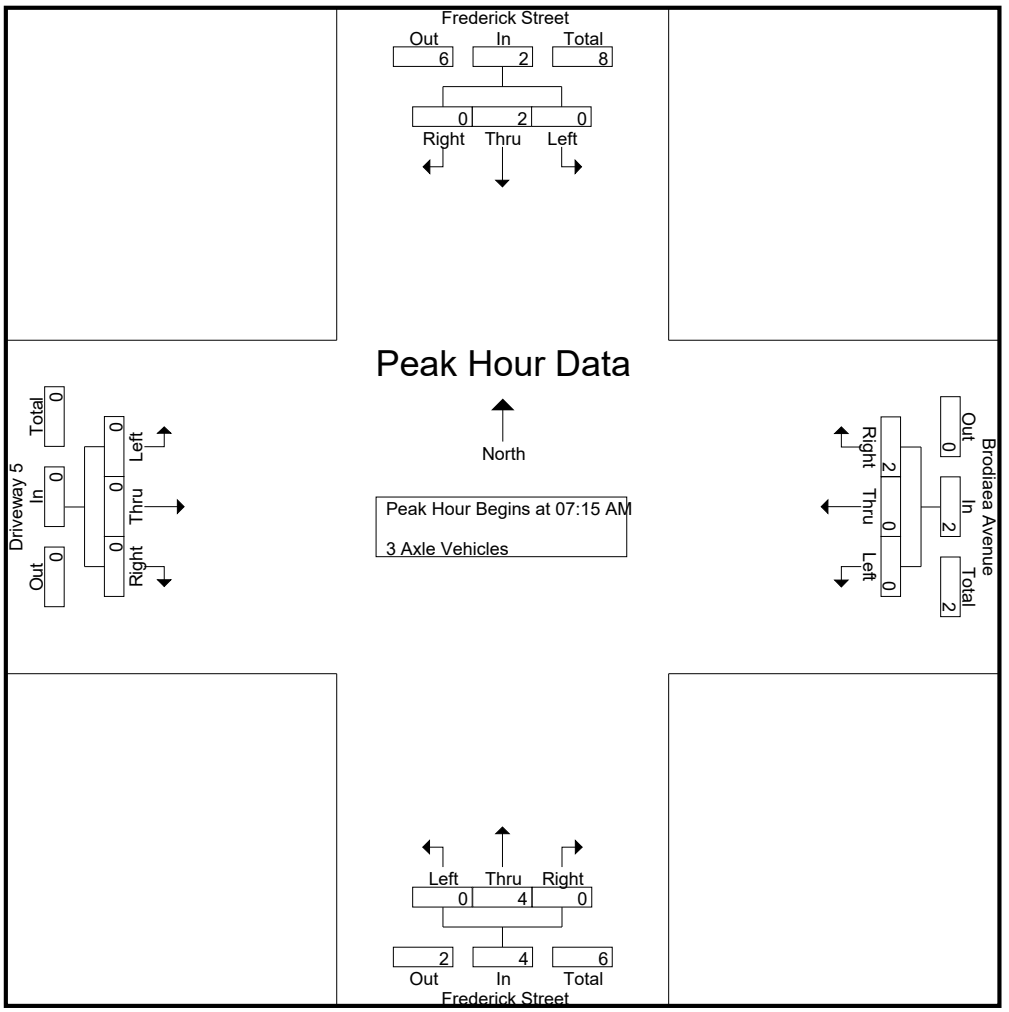
	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	**2**	0	**2**	0	0	**1**	**1**	0	0	0	0	0	0	0	0	**3**
07:30 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	**2**	0	**2**	0	0	0	0	2
08:00 AM	0	0	0	0	0	0	1	1	0	1	0	1	0	0	0	0	2
Total Volume	0	2	0	2	0	0	2	2	0	4	0	4	0	0	0	0	8
% App. Total	0	100	0		0	0	100		0	100	0		0	0	0		
PHF	.000	.250	.000	.250	.000	.000	.500	.500	.000	.500	.000	.500	.000	.000	.000	.000	.667

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue
Weather: Clear

File Name : 05_MRV_Frederick_Brodiea AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	**2**	0	**2**	0	0	**1**	**1**	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	**2**	0	**2**	0	0	0	0
+45 mins.	0	0	0	0	0	0	1	1	0	1	0	1	0	0	0	0
Total Volume	0	2	0	2	0	0	2	2	0	4	0	4	0	0	0	0
% App. Total	0	100	0		0	0	100		0	100	0		0	0	0	
PHF	.000	.250	.000	.250	.000	.000	.500	.500	.000	.500	.000	.500	.000	.000	.000	.000

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue
Weather: Clear

File Name : 05_MRV_Frederick_Brodiea AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 4+ Axle Trucks

	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	0	4
07:30 AM	0	1	0	1	0	0	0	0	0	1	1	2	0	0	0	0	3
07:45 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	2	0	2	0	0	0	0	0	6	1	7	0	0	0	0	9
08:00 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15 AM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
08:30 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
Total	0	3	0	3	0	0	0	0	0	3	0	3	0	0	0	0	6
Grand Total	0	5	0	5	0	0	0	0	0	9	1	10	0	0	0	0	15
Apprch %	0	100	0		0	0	0		0	90	10		0	0	0		
Total %	0	33.3	0	33.3	0	0	0	0	0	60	6.7	66.7	0	0	0	0	

	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	0	0	0	0	**4**	0	**4**	0	0	0	0	**4**
07:30 AM	0	**1**	0	**1**	0	0	0	0	0	1	**1**	2	0	0	0	0	3
07:45 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:00 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	3	0	3	0	0	0	0	0	5	1	6	0	0	0	0	9
% App. Total	0	100	0		0	0	0		0	83.3	16.7		0	0	0		
PHF	.000	.750	.000	.750	.000	.000	.000	.000	.000	.313	.250	.375	.000	.000	.000	.000	.563

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
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City of Moreno Valley
N/S: Frederick Street
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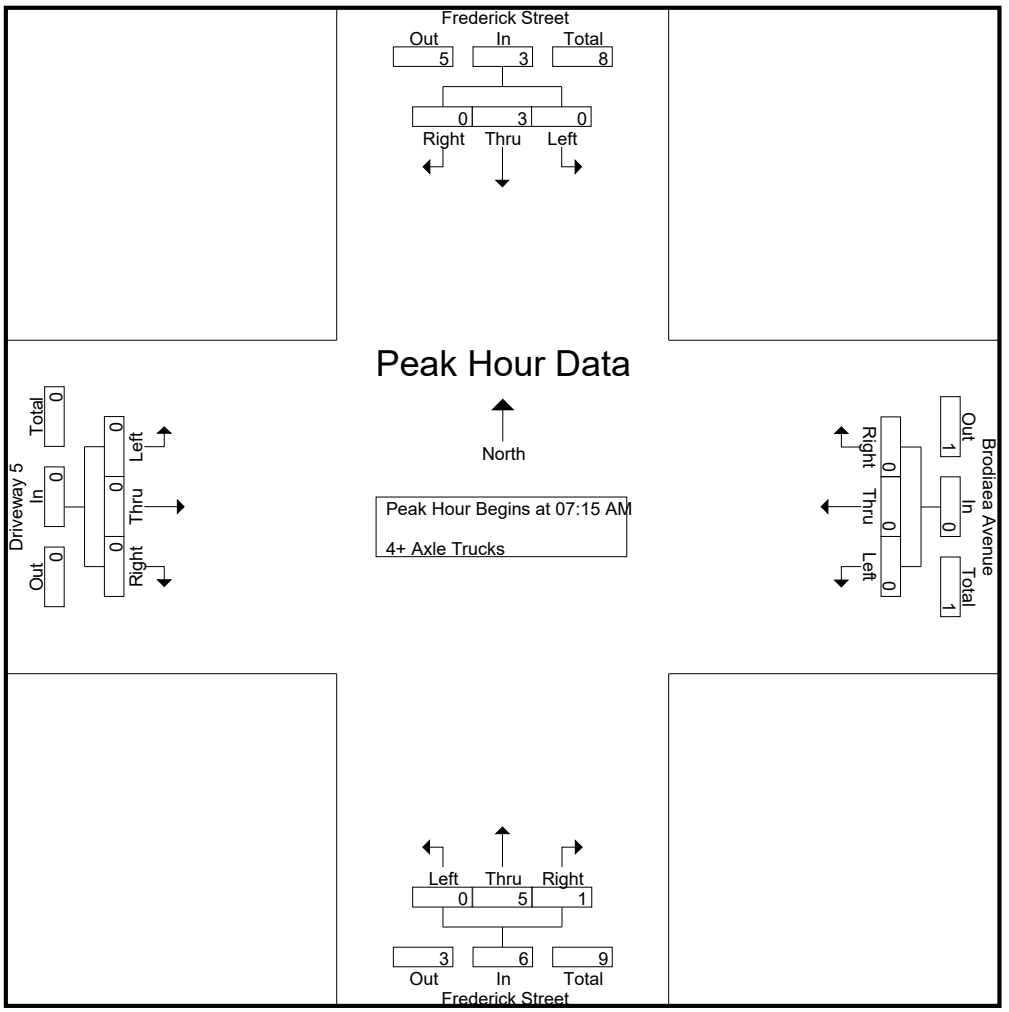
Weather: Clear

File Name : 05_MRV_Frederick_Brodiea AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	**4**	0	**4**	0	0	0	0
+15 mins.	0	**1**	0	**1**	0	0	0	0	0	1	**1**	2	0	0	0	0
+30 mins.	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	3	0	3	0	0	0	0	0	5	1	6	0	0	0	0
% App. Total	0	100	0		0	0	0		0	83.3	16.7		0	0	0	
PHF	.000	.750	.000	.750	.000	.000	.000	.000	.000	.313	.250	.375	.000	.000	.000	.000

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Counts Unlimited
PO Box 1178
Corona, CA 92878
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City of Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue
Weather: Clear

File Name : 05_MRV_Frederick_Brodiea PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	110	1	111	0	0	13	13	0	75	0	75	0	0	5	5	204
04:15 PM	0	119	2	121	0	0	15	15	0	62	5	67	0	0	15	15	218
04:30 PM	0	94	3	97	0	0	11	11	0	75	6	81	0	0	1	1	190
04:45 PM	0	97	2	99	0	0	11	11	0	58	2	60	0	0	3	3	173
Total	0	420	8	428	0	0	50	50	0	270	13	283	0	0	24	24	785
05:00 PM	0	127	3	130	0	0	8	8	0	66	3	69	0	0	9	9	216
05:15 PM	0	131	1	132	0	0	10	10	0	59	7	66	0	0	2	2	210
05:30 PM	0	128	0	128	0	0	15	15	0	48	1	49	0	0	1	1	193
05:45 PM	0	102	1	103	0	0	12	12	0	41	6	47	0	0	1	1	163
Total	0	488	5	493	0	0	45	45	0	214	17	231	0	0	13	13	782
Grand Total	0	908	13	921	0	0	95	95	0	484	30	514	0	0	37	37	1567
Apprch %	0	98.6	1.4		0	0	100		0	94.2	5.8		0	0	100		
Total %	0	57.9	0.8	58.8	0	0	6.1	6.1	0	30.9	1.9	32.8	0	0	2.4	2.4	
Passenger Vehicles	0	890	13	903	0	0	93	93	0	474	28	502	0	0	37	37	1535
% Passenger Vehicles	0	98	100	98	0	0	97.9	97.9	0	97.9	93.3	97.7	0	0	100	100	98
Large 2 Axle Vehicles	0	14	0	14	0	0	0	0	0	5	0	5	0	0	0	0	19
% Large 2 Axle Vehicles	0	1.5	0	1.5	0	0	0	0	0	1	0	1	0	0	0	0	1.2
3 Axle Vehicles	0	1	0	1	0	0	1	1	0	2	0	2	0	0	0	0	4
% 3 Axle Vehicles	0	0.1	0	0.1	0	0	1.1	1.1	0	0.4	0	0.4	0	0	0	0	0.3
4+ Axle Trucks	0	3	0	3	0	0	1	1	0	3	2	5	0	0	0	0	9
% 4+ Axle Trucks	0	0.3	0	0.3	0	0	1.1	1.1	0	0.6	6.7	1	0	0	0	0	0.6

	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	119	2	121	0	0	**15**	**15**	0	62	5	67	0	0	**15**	**15**	**218**
04:30 PM	0	94	**3**	97	0	0	11	11	0	**75**	**6**	**81**	0	0	1	1	190
04:45 PM	0	97	2	99	0	0	11	11	0	58	2	60	0	0	3	3	173
05:00 PM	0	**127**	3	**130**	0	0	8	8	0	66	3	69	0	0	9	9	216
Total Volume	0	437	10	447	0	0	45	45	0	261	16	277	0	0	28	28	797
% App. Total	0	97.8	2.2		0	0	100		0	94.2	5.8		0	0	100		
PHF	.000	.860	.833	.860	.000	.000	.750	.750	.000	.870	.667	.855	.000	.000	.467	.467	.914

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
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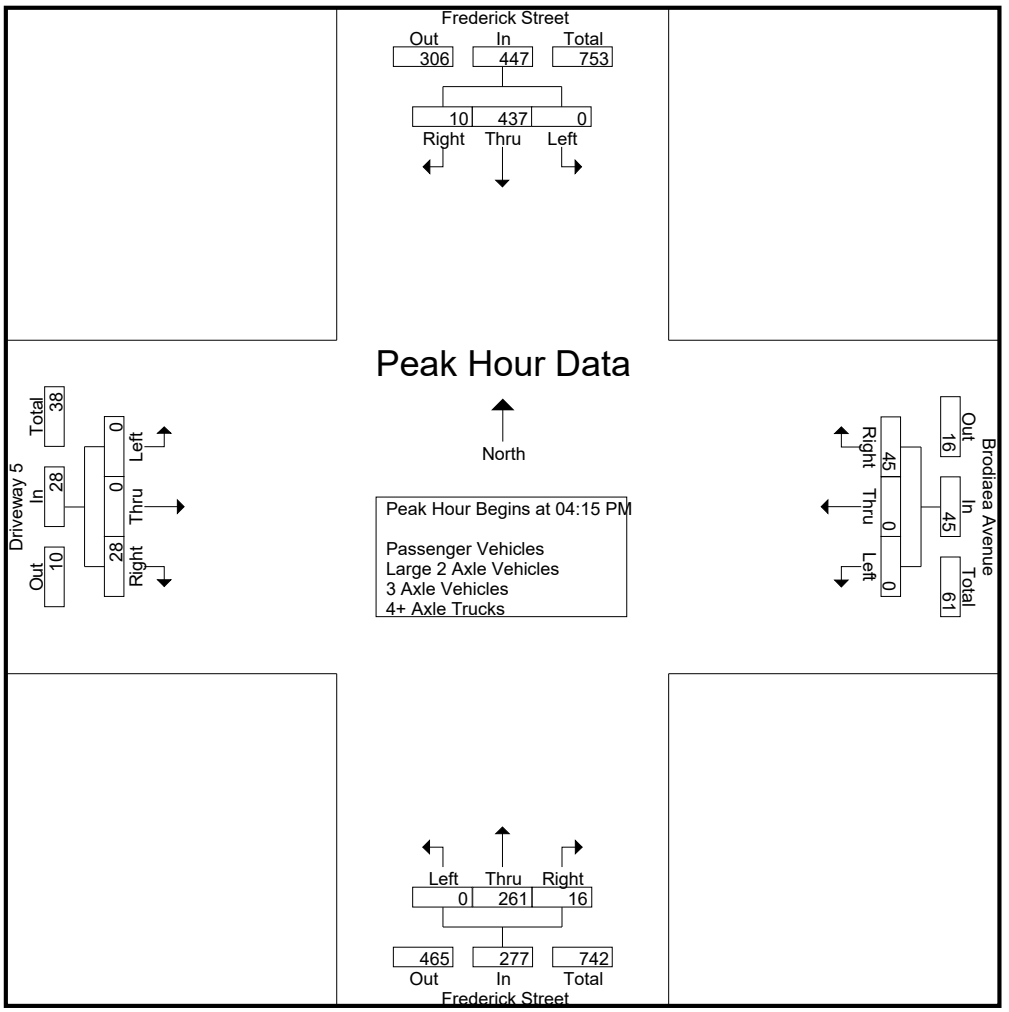
City of Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue
Weather: Clear

File Name : 05_MRV_Frederick_Brodiea PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:00 PM				04:00 PM				04:15 PM			
+0 mins.	0	127	**3**	130	0	0	13	13	0	**75**	0	75	0	0	**15**	**15**
+15 mins.	0	**131**	1	**132**	0	0	**15**	**15**	0	62	5	67	0	0	1	1
+30 mins.	0	128	0	128	0	0	11	11	0	75	**6**	**81**	0	0	3	3
+45 mins.	0	102	1	103	0	0	11	11	0	58	2	60	0	0	9	9
Total Volume	0	488	5	493	0	0	50	50	0	270	13	283	0	0	28	28
% App. Total	0	99	1		0	0	100		0	95.4	4.6		0	0	100	
PHF	.000	.931	.417	.934	.000	.000	.833	.833	.000	.900	.542	.873	.000	.000	.467	.467

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue
Weather: Clear

File Name : 05_MRV_Frederick_Brodiea PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	110	1	111	0	0	13	13	0	73	0	73	0	0	5	5	202
04:15 PM	0	112	2	114	0	0	14	14	0	61	4	65	0	0	15	15	208
04:30 PM	0	93	3	96	0	0	11	11	0	75	6	81	0	0	1	1	189
04:45 PM	0	92	2	94	0	0	11	11	0	56	2	58	0	0	3	3	166
Total	0	407	8	415	0	0	49	49	0	265	12	277	0	0	24	24	765
05:00 PM	0	127	3	130	0	0	8	8	0	65	3	68	0	0	9	9	215
05:15 PM	0	127	1	128	0	0	10	10	0	58	6	64	0	0	2	2	204
05:30 PM	0	127	0	127	0	0	14	14	0	48	1	49	0	0	1	1	191
05:45 PM	0	102	1	103	0	0	12	12	0	38	6	44	0	0	1	1	160
Total	0	483	5	488	0	0	44	44	0	209	16	225	0	0	13	13	770
Grand Total	0	890	13	903	0	0	93	93	0	474	28	502	0	0	37	37	1535
Apprch %	0	98.6	1.4		0	0	100		0	94.4	5.6		0	0	100		
Total %	0	58	0.8	58.8	0	0	6.1	6.1	0	30.9	1.8	32.7	0	0	2.4	2.4	

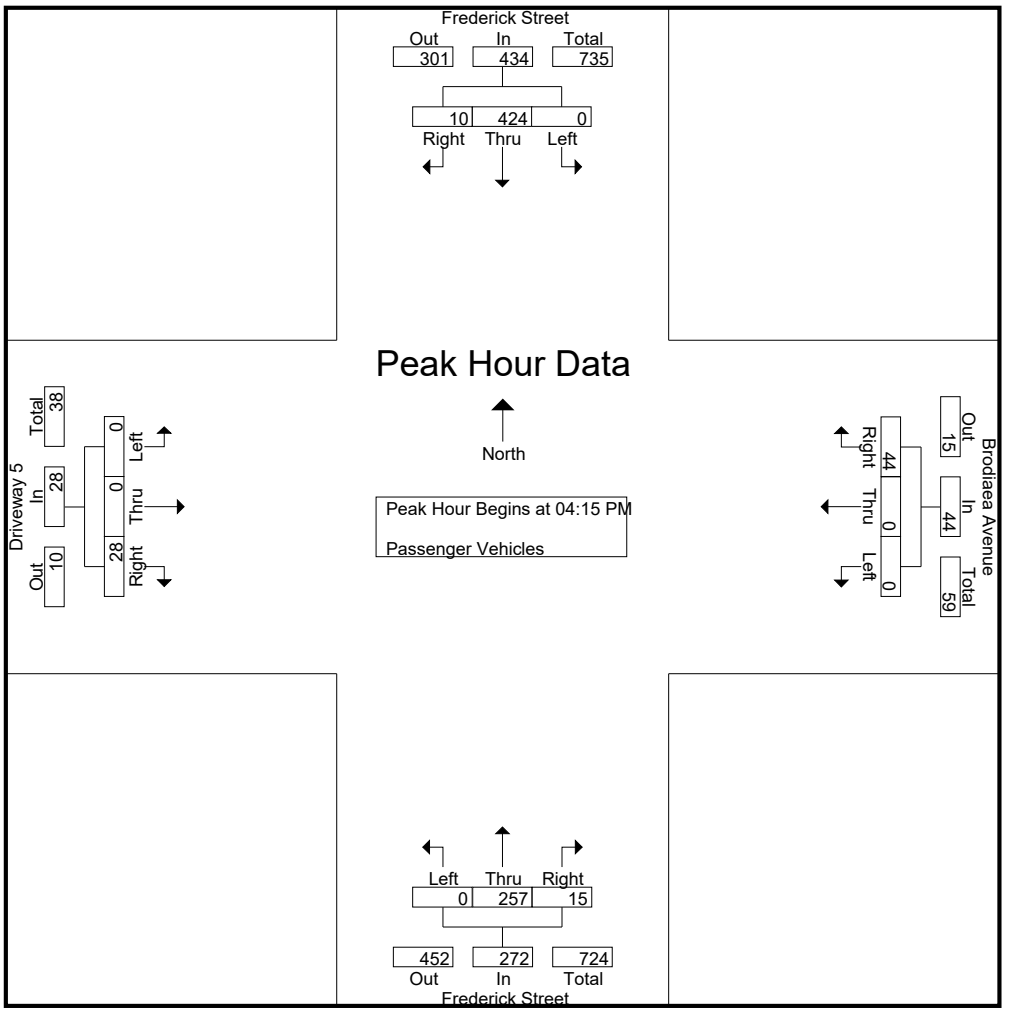
	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	112	2	114	0	0	**14**	**14**	0	61	4	65	0	0	**15**	**15**	208
04:30 PM	0	93	**3**	96	0	0	11	11	0	**75**	**6**	**81**	0	0	1	1	189
04:45 PM	0	92	2	94	0	0	11	11	0	56	2	58	0	0	3	3	166
05:00 PM	0	**127**	3	**130**	0	0	8	8	0	65	3	68	0	0	9	9	**215**
Total Volume	0	424	10	434	0	0	44	44	0	257	15	272	0	0	28	28	778
% App. Total	0	97.7	2.3		0	0	100		0	94.5	5.5		0	0	100		
PHF	.000	.835	.833	.835	.000	.000	.786	.786	.000	.857	.625	.840	.000	.000	.467	.467	.905

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue
Weather: Clear

File Name : 05_MRV_Frederick_Brodiea PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	112	2	114	0	0	**14**	**14**	0	61	4	65	0	0	**15**	**15**
+15 mins.	0	93	**3**	96	0	0	11	11	0	**75**	**6**	**81**	0	0	1	1
+30 mins.	0	92	2	94	0	0	11	11	0	56	2	58	0	0	3	3
+45 mins.	0	**127**	3	**130**	0	0	8	8	0	65	3	68	0	0	9	9
Total Volume	0	424	10	434	0	0	44	44	0	257	15	272	0	0	28	28
% App. Total	0	97.7	2.3		0	0	100		0	94.5	5.5		0	0	100	
PHF	.000	.835	.833	.835	.000	.000	.786	.786	.000	.857	.625	.840	.000	.000	.467	.467

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue
Weather: Clear

File Name : 05_MRV_Frederick_Brodiea PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
04:15 PM	0	5	0	5	0	0	0	0	0	1	0	1	0	0	0	0	6
04:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	4	0	4	0	0	0	0	0	1	0	1	0	0	0	0	5
Total	0	10	0	10	0	0	0	0	0	4	0	4	0	0	0	0	14
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	3	0	3	0	0	0	0	0	1	0	1	0	0	0	0	4
05:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	4	0	4	0	0	0	0	0	1	0	1	0	0	0	0	5
Grand Total	0	14	0	14	0	0	0	0	0	5	0	5	0	0	0	0	19
Apprch %	0	100	0		0	0	0		0	100	0		0	0	0		
Total %	0	73.7	0	73.7	0	0	0	0	0	26.3	0	26.3	0	0	0	0	

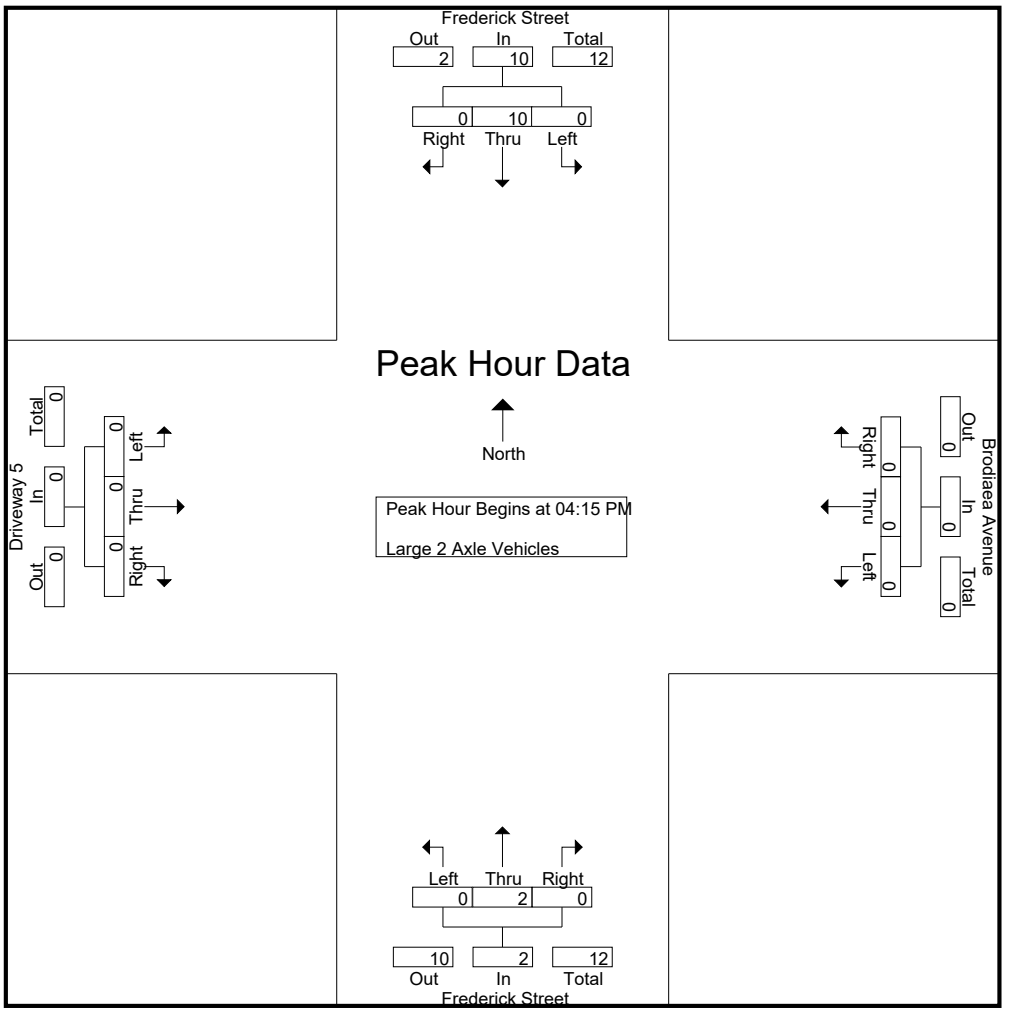
	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	**5**	0	**5**	0	0	0	0	0	**1**	0	**1**	0	0	0	0	**6**
04:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	4	0	4	0	0	0	0	0	1	0	1	0	0	0	0	5
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	10	0	10	0	0	0	0	0	2	0	2	0	0	0	0	12
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.500	.000	.500	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.500

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue
Weather: Clear

File Name : 05_MRV_Frederick_Brodiea PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	**5**	0	**5**	0	0	0	0	0	**1**	0	**1**	0	0	0	0
+15 mins.	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	4	0	4	0	0	0	0	0	1	0	1	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	10	0	10	0	0	0	0	0	2	0	2	0	0	0	0
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0	
PHF	.000	.500	.000	.500	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue
Weather: Clear

File Name : 05_MRV_Frederick_Brodiea PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 3 Axle Vehicles

	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	2
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
Total	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
Grand Total	0	1	0	1	0	0	1	1	0	2	0	2	0	0	0	0	4
Apprch %	0	100	0		0	0	100		0	100	0		0	0	0		
Total %	0	25	0	25	0	0	25	25	0	50	0	50	0	0	0	0	

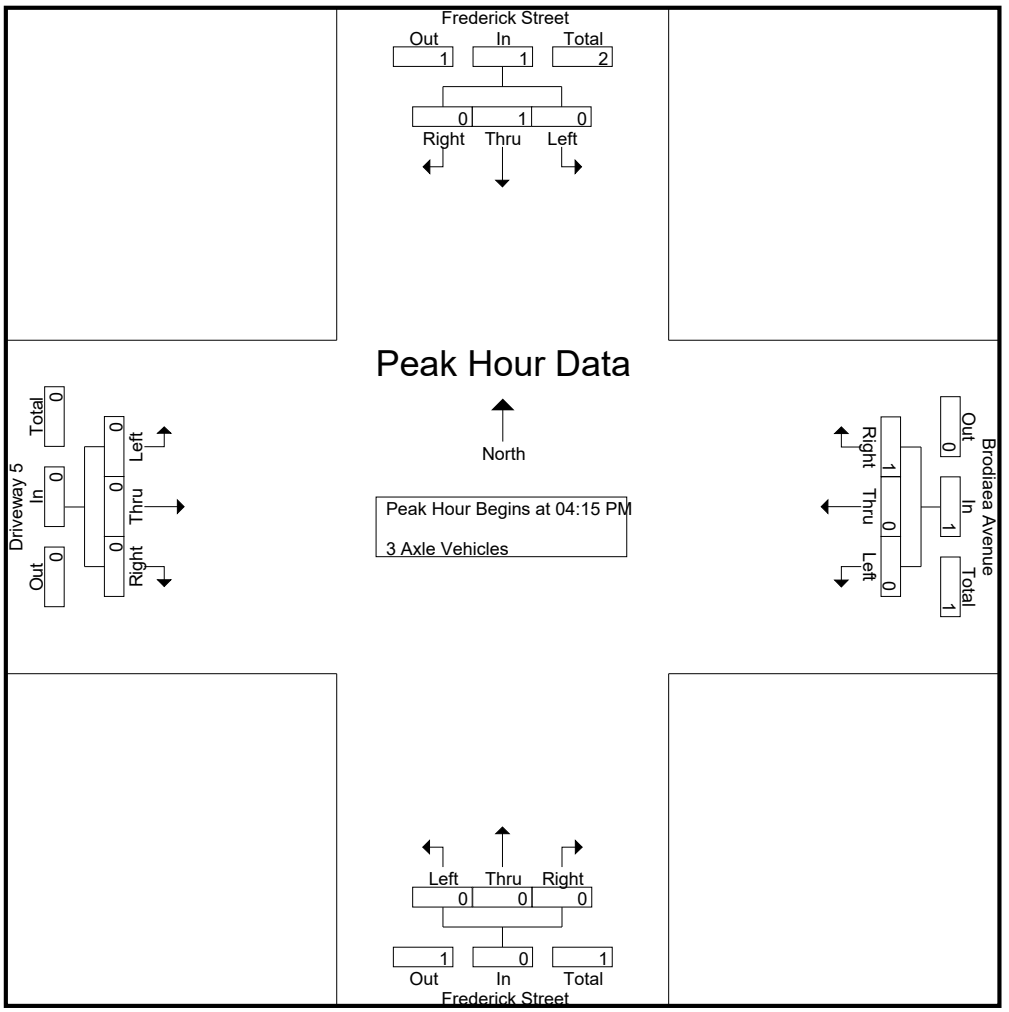
	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	**1**	0	**1**	0	0	**1**	**1**	0	0	0	0	0	0	0	0	**2**
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	2
% App. Total	0	100	0		0	0	100		0	0	0		0	0	0		
PHF	.000	.250	.000	.250	.000	.000	.250	.250	.000	.000	.000	.000	.000	.000	.000	.000	.250

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue
Weather: Clear

File Name : 05_MRV_Frederick_Brodiea PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	**1**	0	**1**	0	0	**1**	**1**	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0
% App. Total	0	100	0		0	0	100		0	0	0		0	0	0	
PHF	.000	.250	.000	.250	.000	.000	.250	.250	.000	.000	.000	.000	.000	.000	.000	.000

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue
Weather: Clear

File Name : 05_MRV_Frederick_Brodiea PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 4+ Axle Trucks

	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	1	0	1	0	0	0	0	0	0	1	1	0	0	0	0	2
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
Total	0	2	0	2	0	0	0	0	0	1	1	2	0	0	0	0	4
05:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
05:15 PM	0	1	0	1	0	0	0	0	0	0	1	1	0	0	0	0	2
05:30 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Total	0	1	0	1	0	0	1	1	0	2	1	3	0	0	0	0	5
Grand Total	0	3	0	3	0	0	1	1	0	3	2	5	0	0	0	0	9
Apprch %	0	100	0		0	0	100		0	60	40		0	0	0		
Total %	0	33.3	0	33.3	0	0	11.1	11.1	0	33.3	22.2	55.6	0	0	0	0	

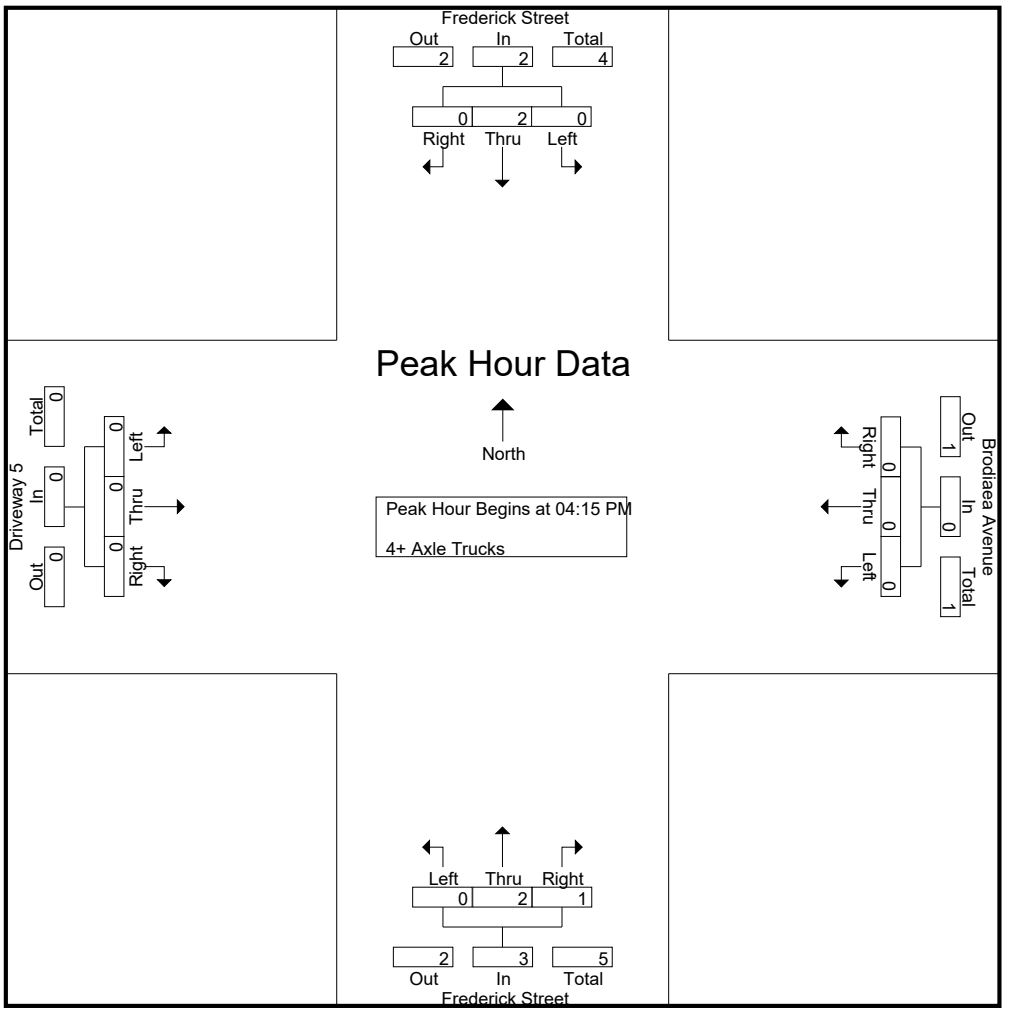
	Frederick Street Southbound				Brodiaea Avenue Westbound				Frederick Street Northbound				Driveway 5 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	**1**	0	**1**	0	0	0	0	0	0	**1**	**1**	0	0	0	0	**2**
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	1	0	1	0	0	0	0	0	**1**	0	1	0	0	0	0	2
05:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Total Volume	0	2	0	2	0	0	0	0	0	2	1	3	0	0	0	0	5
% App. Total	0	100	0		0	0	0		0	66.7	33.3		0	0	0		
PHF	.000	.500	.000	.500	.000	.000	.000	.000	.000	.500	.250	.750	.000	.000	.000	.000	.625

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue
Weather: Clear

File Name : 05_MRV_Frederick_Brodiea PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	**1**	0	**1**	0	0	0	0	0	0	**1**	**1**	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	1	0	1	0	0	0	0	0	**1**	0	1	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
Total Volume	0	2	0	2	0	0	0	0	0	2	1	3	0	0	0	0
% App. Total	0	100	0		0	0	0		0	66.7	33.3		0	0	0	
PHF	.000	.500	.000	.500	.000	.000	.000	.000	.000	.500	.250	.750	.000	.000	.000	.000

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Location: Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue

Date: 4/3/2018
Date: Tuesday

PEDESTRIANS

	North Leg Frederick Street	East Leg Brodiaea Avenue	South Leg Frederick Street	West Leg Driveway 5	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	1	1
8:00 AM	0	1	0	0	1
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	1	1
8:45 AM	0	0	0	5	5
TOTAL VOLUMES:	0	1	0	7	8

	North Leg Frederick Street	East Leg Brodiaea Avenue	South Leg Frederick Street	West Leg Driveway 5	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	2	2
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	2	2

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
951-268-6268

Location: Moreno Valley
N/S: Frederick Street
E/W: Driveway 5/Brodiaea Avenue

Date: 4/3/2018
Date: Tuesday

BICYCLES

	Southbound Frederick Street			Westbound Brodiaea Avenue			Northbound Frederick Street			Eastbound Driveway 5			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	1	0	0	0	0	1	0	0	0	0	2

	Southbound Frederick Street			Westbound Brodiaea Avenue			Northbound Frederick Street			Eastbound Driveway 5			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Cactus Avenue
Weather: Clear

File Name : 06_MRV_Frederick_Cactus AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Frederick Street Southbound				Cactus Avenue Westbound				Cactus Avenue Eastbound						
Start Time	Left	Right	RTOR	App. Total	Thru	Right	RTOR	App. Total	Left	Thru	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	21	16	6	37	391	20	0	411	29	211	0	240	6	688	694
07:15 AM	32	14	10	46	382	34	0	416	44	246	0	290	10	752	762
07:30 AM	44	16	12	60	437	40	2	477	40	230	0	270	14	807	821
07:45 AM	31	32	10	63	422	45	4	467	42	220	0	262	14	792	806
Total	128	78	38	206	1632	139	6	1771	155	907	0	1062	44	3039	3083
08:00 AM	24	17	13	41	352	36	2	388	35	204	0	239	15	668	683
08:15 AM	34	32	22	66	365	36	2	401	28	199	0	227	24	694	718
08:30 AM	15	18	18	33	245	36	1	281	34	213	0	247	19	561	580
08:45 AM	31	17	13	48	270	43	2	313	24	187	0	211	15	572	587
Total	104	84	66	188	1232	151	7	1383	121	803	0	924	73	2495	2568
Grand Total	232	162	104	394	2864	290	13	3154	276	1710	0	1986	117	5534	5651
Apprch %	58.9	41.1			90.8	9.2			13.9	86.1					
Total %	4.2	2.9		7.1	51.8	5.2		57	5	30.9		35.9	2.1	97.9	
Passenger Vehicles	215	145		456	2777	270		3059	253	1597		1850	0	0	5365
% Passenger Vehicles	92.7	89.5	92.3	91.6	97	93.1	92.3	96.6	91.7	93.4	0	93.2	0	0	94.9
Large 2 Axle Vehicles	7	7		17	36	8		44	7	41		48	0	0	109
% Large 2 Axle Vehicles	3	4.3	2.9	3.4	1.3	2.8	0	1.4	2.5	2.4	0	2.4	0	0	1.9
3 Axle Vehicles	6	2		10	9	6		16	4	6		10	0	0	36
% 3 Axle Vehicles	2.6	1.2	1.9	2	0.3	2.1	7.7	0.5	1.4	0.4	0	0.5	0	0	0.6
4+ Axle Trucks	4	8		15	42	6		48	12	66		78	0	0	141
% 4+ Axle Trucks	1.7	4.9	2.9	3	1.5	2.1	0	1.5	4.3	3.9	0	3.9	0	0	2.5

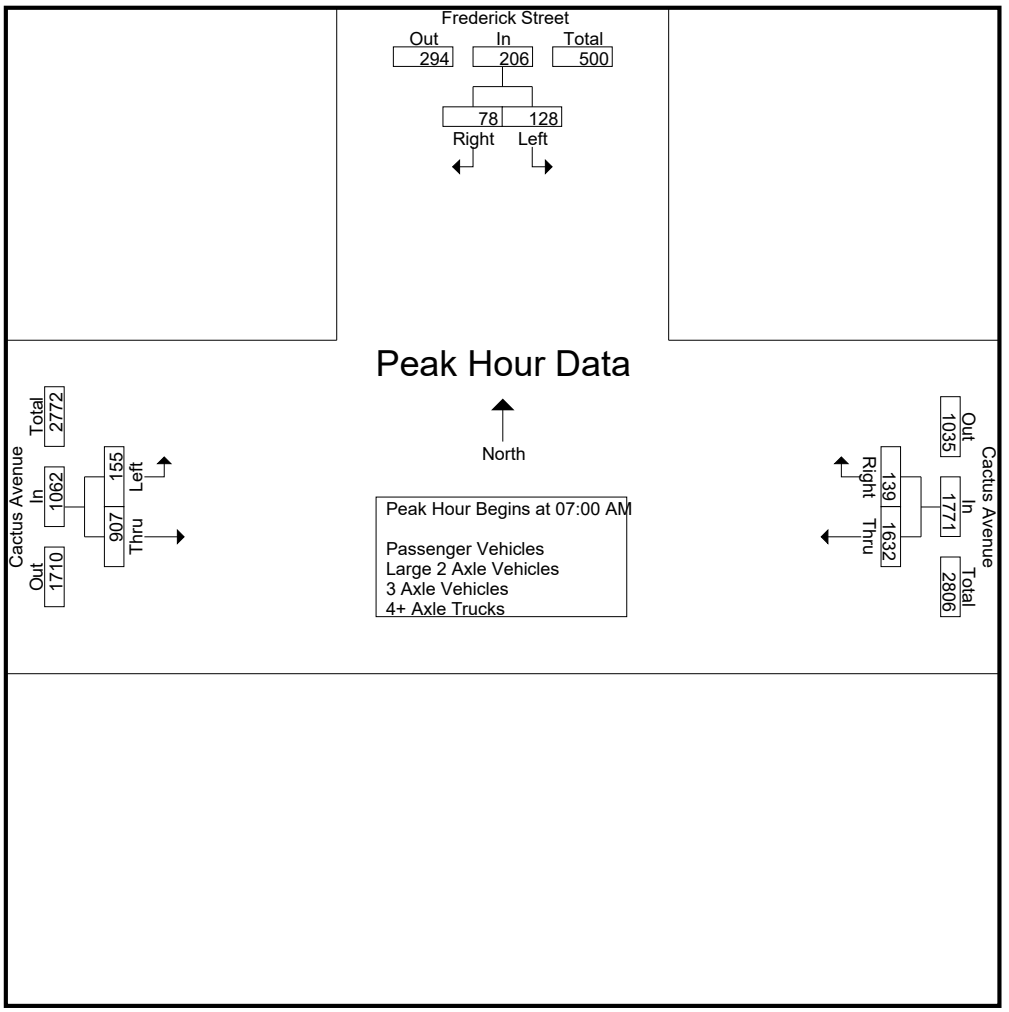
	Frederick Street Southbound			Cactus Avenue Westbound			Cactus Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	21	16	37	391	20	411	29	211	240	688
07:15 AM	32	14	46	382	34	416	**44**	**246**	**290**	752
07:30 AM	**44**	16	60	**437**	40	**477**	40	230	270	**807**
07:45 AM	31	**32**	**63**	422	**45**	467	42	220	262	792
Total Volume	128	78	206	1632	139	1771	155	907	1062	3039
% App. Total	62.1	37.9		92.2	7.8		14.6	85.4		
PHF	.727	.609	.817	.934	.772	.928	.881	.922	.916	.941

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Cactus Avenue
Weather: Clear

File Name : 06_MRV_Frederick_Cactus AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:00 AM			07:00 AM		
+0 mins.	**44**	16	60	391	20	411	29	211	240
+15 mins.	31	**32**	63	382	34	416	**44**	**246**	**290**
+30 mins.	24	17	41	**437**	40	**477**	40	230	270
+45 mins.	34	32	**66**	422	**45**	467	42	220	262
Total Volume	133	97	230	1632	139	1771	155	907	1062
% App. Total	57.8	42.2		92.2	7.8		14.6	85.4	
PHF	.756	.758	.871	.934	.772	.928	.881	.922	.916

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
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(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Cactus Avenue
Weather: Clear

File Name : 06_MRV_Frederick_Cactus AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Frederick Street Southbound				Cactus Avenue Westbound				Cactus Avenue Eastbound						
Start Time	Left	Right	RTOR	App. Total	Thru	Right	RTOR	App. Total	Left	Thru	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	19	16	6	35	381	19	0	400	28	197	0	225	6	660	666
07:15 AM	32	13	10	45	376	32	0	408	43	234	0	277	10	730	740
07:30 AM	42	14	11	56	428	40	2	468	36	222	0	258	13	782	795
07:45 AM	31	31	10	62	410	39	4	449	39	206	0	245	14	756	770
Total	124	74	37	198	1595	130	6	1725	146	859	0	1005	43	2928	2971
08:00 AM	21	16	12	37	343	35	2	378	31	188	0	219	14	634	648
08:15 AM	30	28	21	58	345	32	2	377	25	185	0	210	23	645	668
08:30 AM	13	16	16	29	235	33	0	268	28	191	0	219	16	516	532
08:45 AM	27	11	10	38	259	40	2	299	23	174	0	197	12	534	546
Total	91	71	59	162	1182	140	6	1322	107	738	0	845	65	2329	2394
Grand Total	215	145	96	360	2777	270	12	3047	253	1597	0	1850	108	5257	5365
Apprch %	59.7	40.3			91.1	8.9			13.7	86.3					
Total %	4.1	2.8		6.8	52.8	5.1		58	4.8	30.4		35.2	2	98	

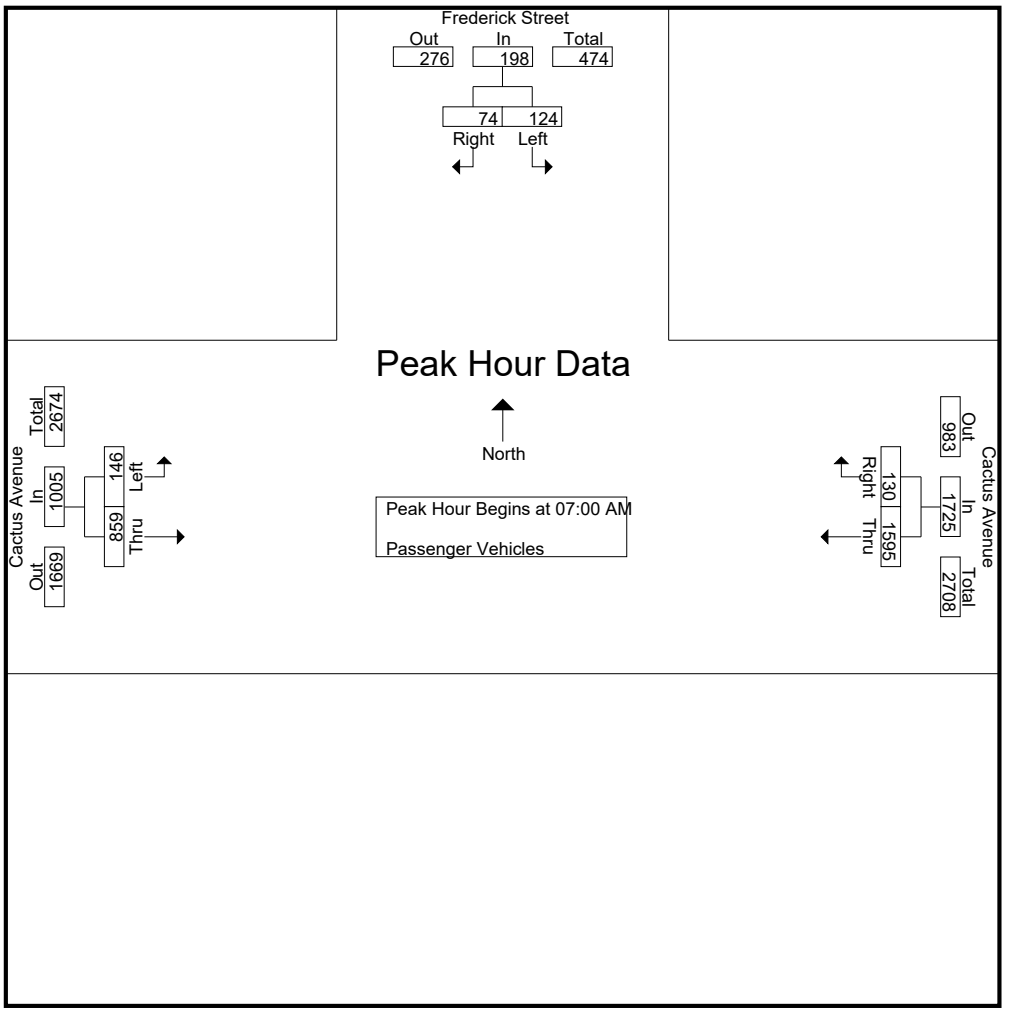
	Frederick Street Southbound			Cactus Avenue Westbound			Cactus Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	19	16	35	381	19	400	28	197	225	660
07:15 AM	32	13	45	376	32	408	**43**	**234**	**277**	730
07:30 AM	**42**	14	56	**428**	**40**	**468**	36	222	258	**782**
07:45 AM	31	**31**	**62**	410	39	449	39	206	245	756
Total Volume	124	74	198	1595	130	1725	146	859	1005	2928
% App. Total	62.6	37.4		92.5	7.5		14.5	85.5		
PHF	.738	.597	.798	.932	.813	.921	.849	.918	.907	.936

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Cactus Avenue
Weather: Clear

File Name : 06_MRV_Frederick_Cactus AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	19	16	35	381	19	400	28	197	225
+15 mins.	32	13	45	376	32	408	**43**	**234**	**277**
+30 mins.	**42**	14	56	**428**	**40**	**468**	36	222	258
+45 mins.	31	**31**	**62**	410	39	449	39	206	245
Total Volume	124	74	198	1595	130	1725	146	859	1005
% App. Total	62.6	37.4		92.5	7.5		14.5	85.5	
PHF	.738	.597	.798	.932	.813	.921	.849	.918	.907

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Cactus Avenue
Weather: Clear

File Name : 06_MRV_Frederick_Cactus AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Frederick Street Southbound				Cactus Avenue Westbound				Cactus Avenue Eastbound						
Start Time	Left	Right	RTOR	App. Total	Thru	Right	RTOR	App. Total	Left	Thru	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	2	0	0	2	4	1	0	5	1	4	0	5	0	12	12
07:15 AM	0	0	0	0	2	2	0	4	0	7	0	7	0	11	11
07:30 AM	0	1	1	1	1	0	0	1	3	3	0	6	1	8	9
07:45 AM	0	1	0	1	7	2	0	9	1	6	0	7	0	17	17
Total	2	2	1	4	14	5	0	19	5	20	0	25	1	48	49
08:00 AM	1	0	0	1	5	1	0	6	1	3	0	4	0	11	11
08:15 AM	2	3	0	5	9	1	0	10	0	4	0	4	0	19	19
08:30 AM	1	0	0	1	4	0	0	4	1	9	0	10	0	15	15
08:45 AM	1	2	2	3	4	1	0	5	0	5	0	5	2	13	15
Total	5	5	2	10	22	3	0	25	2	21	0	23	2	58	60
Grand Total	7	7	3	14	36	8	0	44	7	41	0	48	3	106	109
Apprch %	50	50			81.8	18.2			14.6	85.4					
Total %	6.6	6.6		13.2	34	7.5		41.5	6.6	38.7		45.3	2.8	97.2	

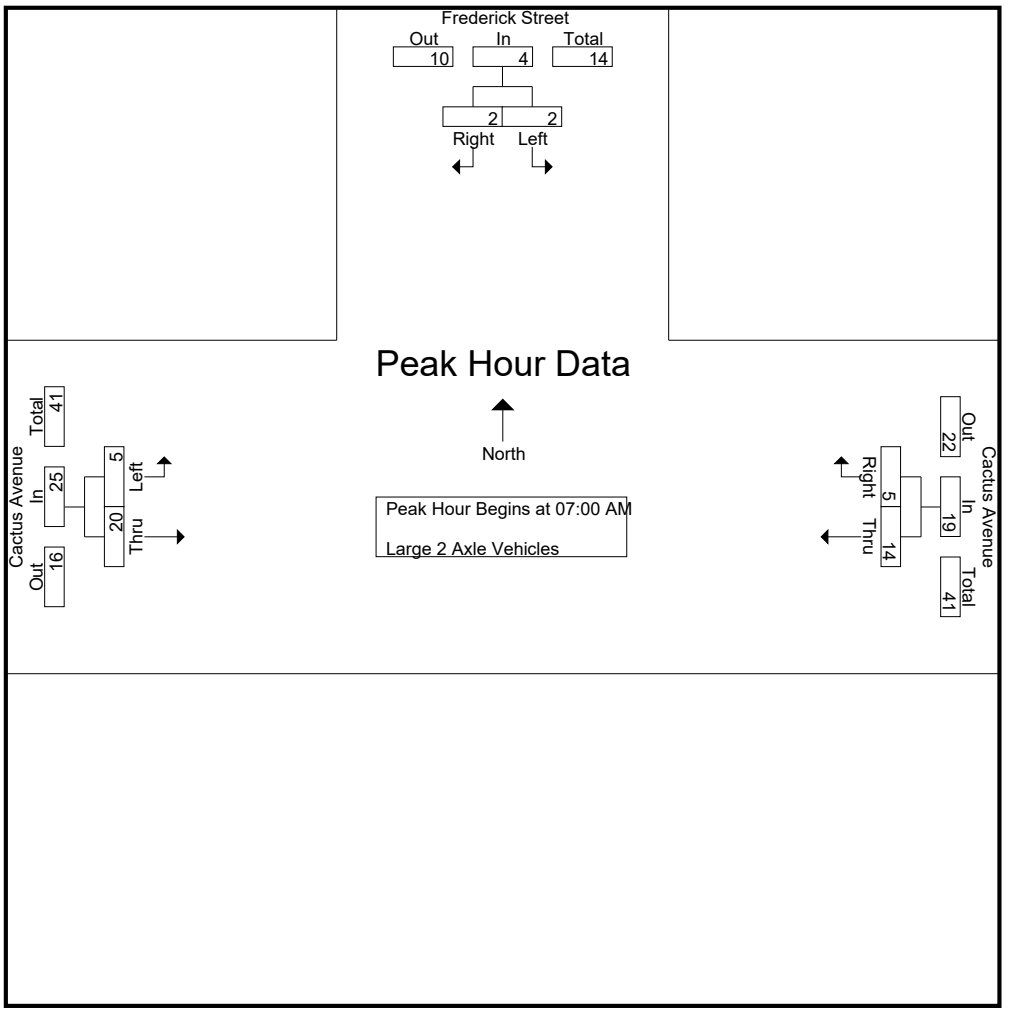
	Frederick Street Southbound			Cactus Avenue Westbound			Cactus Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	**2**	0	**2**	4	1	5	1	4	5	12
07:15 AM	0	0	0	2	**2**	4	0	**7**	**7**	11
07:30 AM	0	**1**	1	1	0	1	**3**	3	6	8
07:45 AM	0	1	1	**7**	2	**9**	1	6	7	**17**
Total Volume	2	2	4	14	5	19	5	20	25	48
% App. Total	50	50		73.7	26.3		20	80		
PHF	.250	.500	.500	.500	.625	.528	.417	.714	.893	.706

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Cactus Avenue
Weather: Clear

File Name : 06_MRV_Frederick_Cactus AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	**2**	0	**2**	4	1	5	1	4	5
+15 mins.	0	0	0	2	**2**	4	0	**7**	**7**
+30 mins.	0	**1**	1	1	0	1	**3**	3	6
+45 mins.	0	1	1	**7**	2	**9**	1	6	7
Total Volume	2	2	4	14	5	19	5	20	25
% App. Total	50	50		73.7	26.3		20	80	
PHF	.250	.500	.500	.500	.625	.528	.417	.714	.893

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Cactus Avenue
Weather: Clear

File Name : 06_MRV_Frederick_Cactus AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 3 Axle Vehicles

	Frederick Street Southbound				Cactus Avenue Westbound				Cactus Avenue Eastbound						
Start Time	Left	Right	RTOR	App. Total	Thru	Right	RTOR	App. Total	Left	Thru	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	1	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	2	0	0	2	2	0	0	2	1	0	0	1	0	5	5
07:45 AM	0	0	0	0	1	3	0	4	1	1	0	2	0	6	6
Total	2	0	0	2	4	3	0	7	2	1	0	3	0	12	12
08:00 AM	0	1	1	1	2	0	0	2	1	3	0	4	1	7	8
08:15 AM	2	0	0	2	1	0	0	1	0	1	0	1	0	4	4
08:30 AM	1	0	0	1	1	2	1	3	1	1	0	2	1	6	7
08:45 AM	1	1	1	2	1	1	0	2	0	0	0	0	1	4	5
Total	4	2	2	6	5	3	1	8	2	5	0	7	3	21	24
Grand Total	6	2	2	8	9	6	1	15	4	6	0	10	3	33	36
Apprch %	75	25			60	40			40	60					
Total %	18.2	6.1		24.2	27.3	18.2		45.5	12.1	18.2		30.3	8.3	91.7	

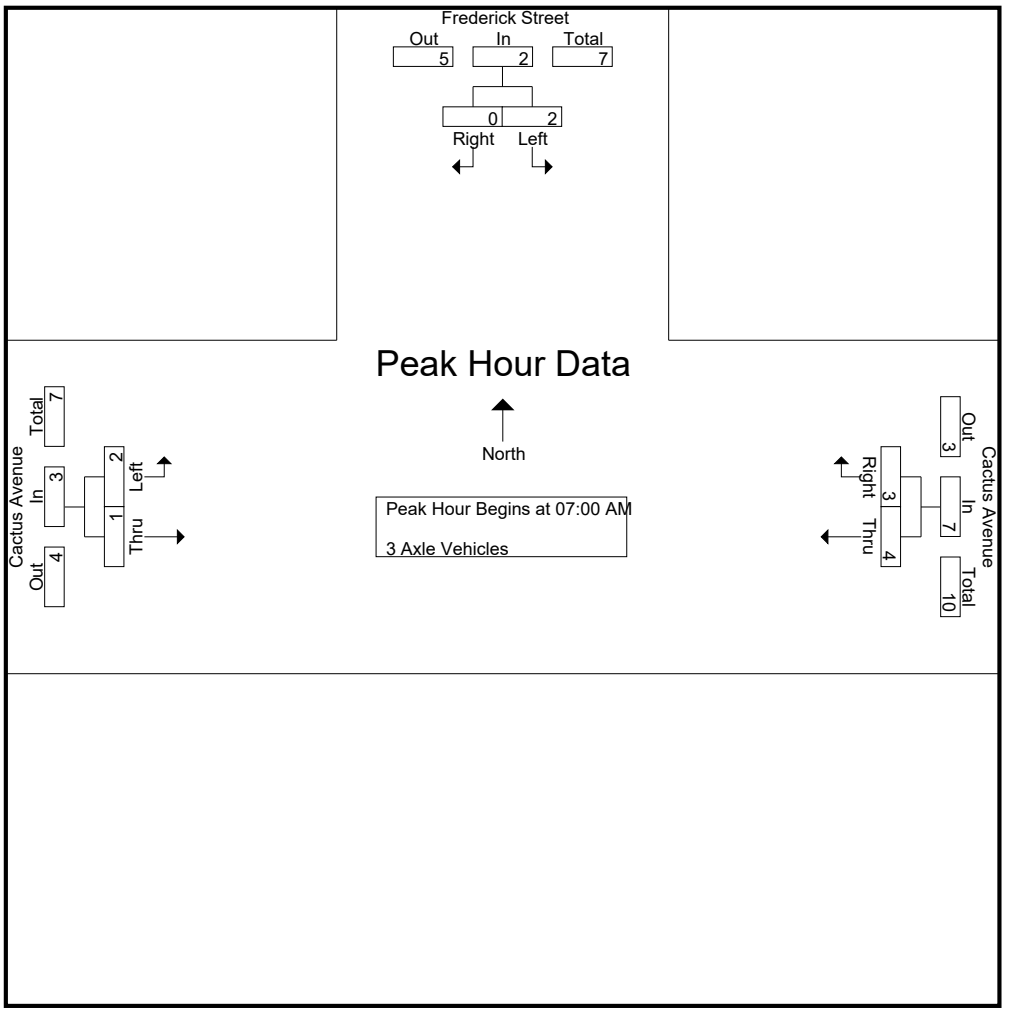
	Frederick Street Southbound			Cactus Avenue Westbound			Cactus Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	1	0	1	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	**2**	0	**2**	**2**	0	2	**1**	0	1	5
07:45 AM	0	0	0	1	**3**	**4**	1	**1**	**2**	**6**
Total Volume	2	0	2	4	3	7	2	1	3	12
% App. Total	100	0		57.1	42.9		66.7	33.3		
PHF	.250	.000	.250	.500	.250	.438	.500	.250	.375	.500

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Cactus Avenue
Weather: Clear

File Name : 06_MRV_Frederick_Cactus AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	0	0	1	0	1	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	**2**	0	**2**	**2**	0	2	**1**	0	1
+45 mins.	0	0	0	1	**3**	**4**	1	**1**	**2**
Total Volume	2	0	2	4	3	7	2	1	3
% App. Total	100	0		57.1	42.9		66.7	33.3	
PHF	.250	.000	.250	.500	.250	.438	.500	.250	.375

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
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City of Moreno Valley
N/S: Frederick Street
E/W: Cactus Avenue
Weather: Clear

File Name : 06_MRV_Frederick_Cactus AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 4+ Axle Trucks

	Frederick Street Southbound				Cactus Avenue Westbound				Cactus Avenue Eastbound						
Start Time	Left	Right	RTOR	App. Total	Thru	Right	RTOR	App. Total	Left	Thru	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	5	0	0	5	0	10	0	10	0	15	15
07:15 AM	0	1	0	1	4	0	0	4	1	5	0	6	0	11	11
07:30 AM	0	1	0	1	6	0	0	6	0	5	0	5	0	12	12
07:45 AM	0	0	0	0	4	1	0	5	1	7	0	8	0	13	13
Total	0	2	0	2	19	1	0	20	2	27	0	29	0	51	51
08:00 AM	2	0	0	2	2	0	0	2	2	10	0	12	0	16	16
08:15 AM	0	1	1	1	10	3	0	13	3	9	0	12	1	26	27
08:30 AM	0	2	2	2	5	1	0	6	4	12	0	16	2	24	26
08:45 AM	2	3	0	5	6	1	0	7	1	8	0	9	0	21	21
Total	4	6	3	10	23	5	0	28	10	39	0	49	3	87	90
Grand Total	4	8	3	12	42	6	0	48	12	66	0	78	3	138	141
Apprch %	33.3	66.7			87.5	12.5			15.4	84.6					
Total %	2.9	5.8		8.7	30.4	4.3		34.8	8.7	47.8		56.5	2.1	97.9	

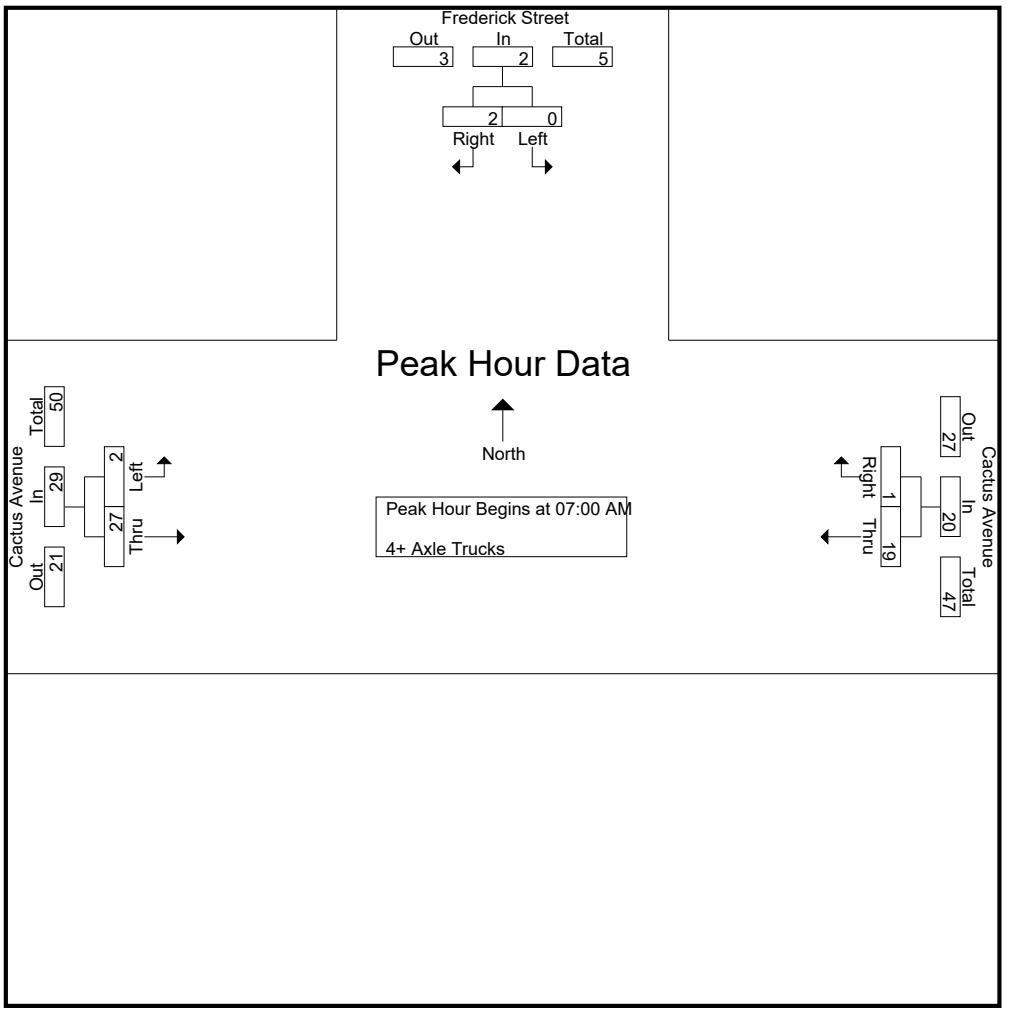
	Frederick Street Southbound			Cactus Avenue Westbound			Cactus Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	5	0	5	0	**10**	**10**	**15**
07:15 AM	0	**1**	**1**	4	0	4	**1**	5	6	11
07:30 AM	0	1	1	**6**	0	**6**	0	5	5	12
07:45 AM	0	0	0	4	**1**	5	1	7	8	13
Total Volume	0	2	2	19	1	20	2	27	29	51
% App. Total	0	100		95	5		6.9	93.1		
PHF	.000	.500	.500	.792	.250	.833	.500	.675	.725	.850

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Cactus Avenue
Weather: Clear

File Name : 06_MRV_Frederick_Cactus AM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	0	0	5	0	5	0	**10**	**10**
+15 mins.	0	**1**	**1**	4	0	4	**1**	5	6
+30 mins.	0	1	1	**6**	0	**6**	0	5	5
+45 mins.	0	0	0	4	**1**	5	1	7	8
Total Volume	0	2	2	19	1	20	2	27	29
% App. Total	0	100		95	5		6.9	93.1	
PHF	.000	.500	.500	.792	.250	.833	.500	.675	.725

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City of Moreno Valley
N/S: Frederick Street
E/W: Cactus Avenue
Weather: Clear

File Name : 06_MRV_Frederick_Cactus PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Frederick Street Southbound				Cactus Avenue Westbound				Cactus Avenue Eastbound						
Start Time	Left	Right	RTOR	App. Total	Thru	Right	RTOR	App. Total	Left	Thru	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	94	26	13	120	298	42	10	340	33	435	0	468	23	928	951
04:15 PM	100	37	20	137	228	31	9	259	28	415	0	443	29	839	868
04:30 PM	74	35	20	109	249	43	17	292	22	522	0	544	37	945	982
04:45 PM	96	18	11	114	245	36	6	281	22	414	0	436	17	831	848
Total	364	116	64	480	1020	152	42	1172	105	1786	0	1891	106	3543	3649
05:00 PM	94	44	33	138	255	38	7	293	17	469	0	486	40	917	957
05:15 PM	109	36	24	145	225	33	10	258	16	447	0	463	34	866	900
05:30 PM	115	24	15	139	243	30	11	273	23	481	0	504	26	916	942
05:45 PM	79	30	22	109	205	34	15	239	9	505	0	514	37	862	899
Total	397	134	94	531	928	135	43	1063	65	1902	0	1967	137	3561	3698
Grand Total	761	250	158	1011	1948	287	85	2235	170	3688	0	3858	243	7104	7347
Apprch %	75.3	24.7			87.2	12.8			4.4	95.6					
Total %	10.7	3.5		14.2	27.4	4		31.5	2.4	51.9		54.3	3.3	96.7	
Passenger Vehicles	744	237		1134	1875	273		2230	157	3581		3738	0	0	7102
% Passenger Vehicles	97.8	94.8	96.8	97	96.3	95.1	96.5	96.1	92.4	97.1	0	96.9	0	0	96.7
Large 2 Axle Vehicles	7	4		14	22	3		25	3	34		37	0	0	76
% Large 2 Axle Vehicles	0.9	1.6	1.9	1.2	1.1	1	0	1.1	1.8	0.9	0	1	0	0	1
3 Axle Vehicles	0	4		6	5	8		16	0	12		12	0	0	34
% 3 Axle Vehicles	0	1.6	1.3	0.5	0.3	2.8	3.5	0.7	0	0.3	0	0.3	0	0	0.5
4+ Axle Trucks	10	5		15	46	3		49	10	61		71	0	0	135
% 4+ Axle Trucks	1.3	2	0	1.3	2.4	1	0	2.1	5.9	1.7	0	1.8	0	0	1.8

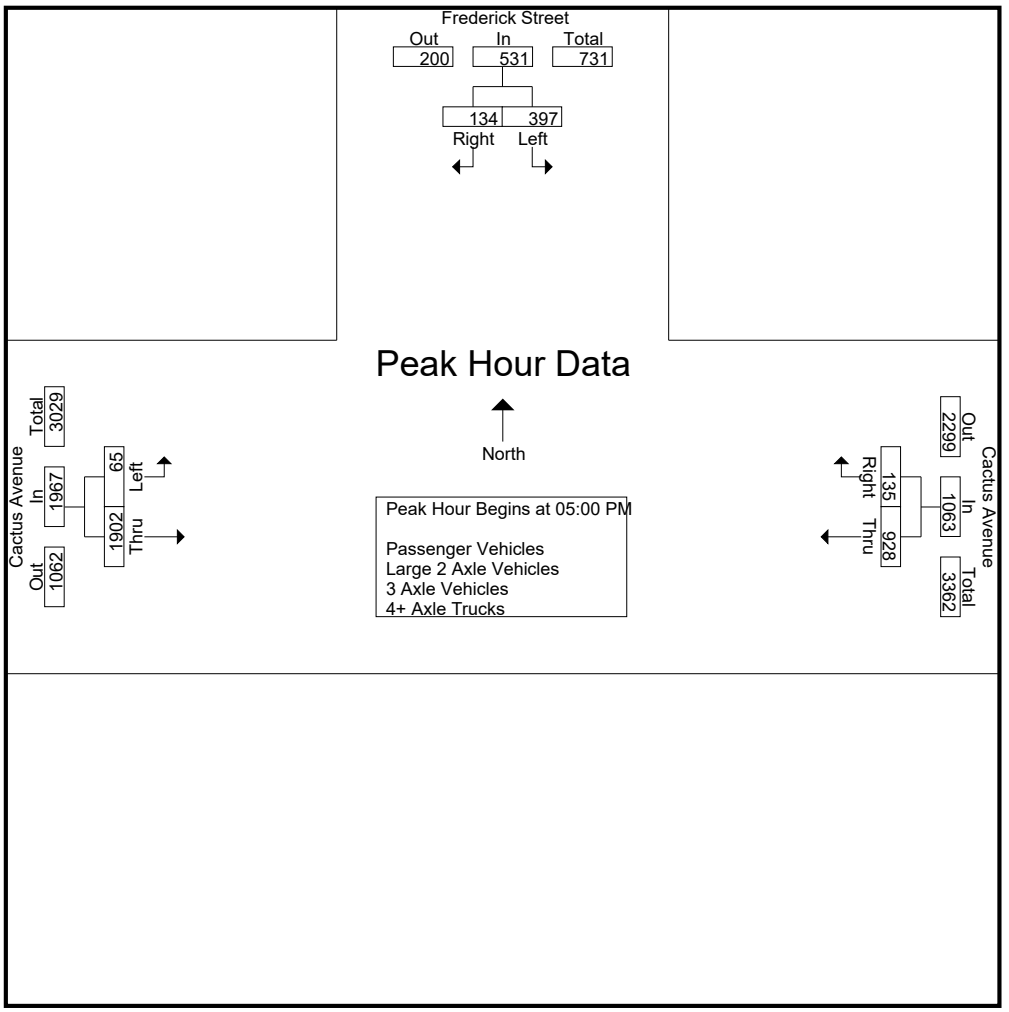
	Frederick Street Southbound			Cactus Avenue Westbound			Cactus Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	94	**44**	138	**255**	**38**	**293**	17	469	486	**917**
05:15 PM	109	36	**145**	225	33	258	16	447	463	866
05:30 PM	**115**	24	139	243	30	273	**23**	481	504	916
05:45 PM	79	30	109	205	34	239	9	**505**	**514**	862
Total Volume	397	134	531	928	135	1063	65	1902	1967	3561
% App. Total	74.8	25.2		87.3	12.7		3.3	96.7		
PHF	.863	.761	.916	.910	.888	.907	.707	.942	.957	.971

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Cactus Avenue
Weather: Clear

File Name : 06_MRV_Frederick_Cactus PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:00 PM			05:00 PM		
+0 mins.	96	18	114	**298**	42	**340**	17	469	486
+15 mins.	94	**44**	138	228	31	259	16	447	463
+30 mins.	109	36	**145**	249	**43**	292	**23**	481	504
+45 mins.	**115**	24	139	245	36	281	9	**505**	**514**
Total Volume	414	122	536	1020	152	1172	65	1902	1967
% App. Total	77.2	22.8		87	13		3.3	96.7	
PHF	.900	.693	.924	.856	.884	.862	.707	.942	.957

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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E/W: Cactus Avenue
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File Name : 06_MRV_Frederick_Cactus PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Frederick Street Southbound				Cactus Avenue Westbound				Cactus Avenue Eastbound						
Start Time	Left	Right	RTOR	App. Total	Thru	Right	RTOR	App. Total	Left	Thru	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	92	25	13	117	285	39	10	324	30	419	0	449	23	890	913
04:15 PM	96	33	19	129	218	29	9	247	25	406	0	431	28	807	835
04:30 PM	73	32	18	105	237	42	17	279	21	509	0	530	35	914	949
04:45 PM	93	17	11	110	234	34	6	268	22	397	0	419	17	797	814
Total	354	107	61	461	974	144	42	1118	98	1731	0	1829	103	3408	3511
05:00 PM	93	44	33	137	242	37	7	279	17	454	0	471	40	887	927
05:15 PM	106	33	22	139	222	31	9	253	14	440	0	454	31	846	877
05:30 PM	114	24	15	138	236	29	11	265	19	462	0	481	26	884	910
05:45 PM	77	29	22	106	201	32	13	233	9	494	0	503	35	842	877
Total	390	130	92	520	901	129	40	1030	59	1850	0	1909	132	3459	3591
Grand Total	744	237	153	981	1875	273	82	2148	157	3581	0	3738	235	6867	7102
Apprch %	75.8	24.2			87.3	12.7			4.2	95.8					
Total %	10.8	3.5		14.3	27.3	4		31.3	2.3	52.1		54.4	3.3	96.7	

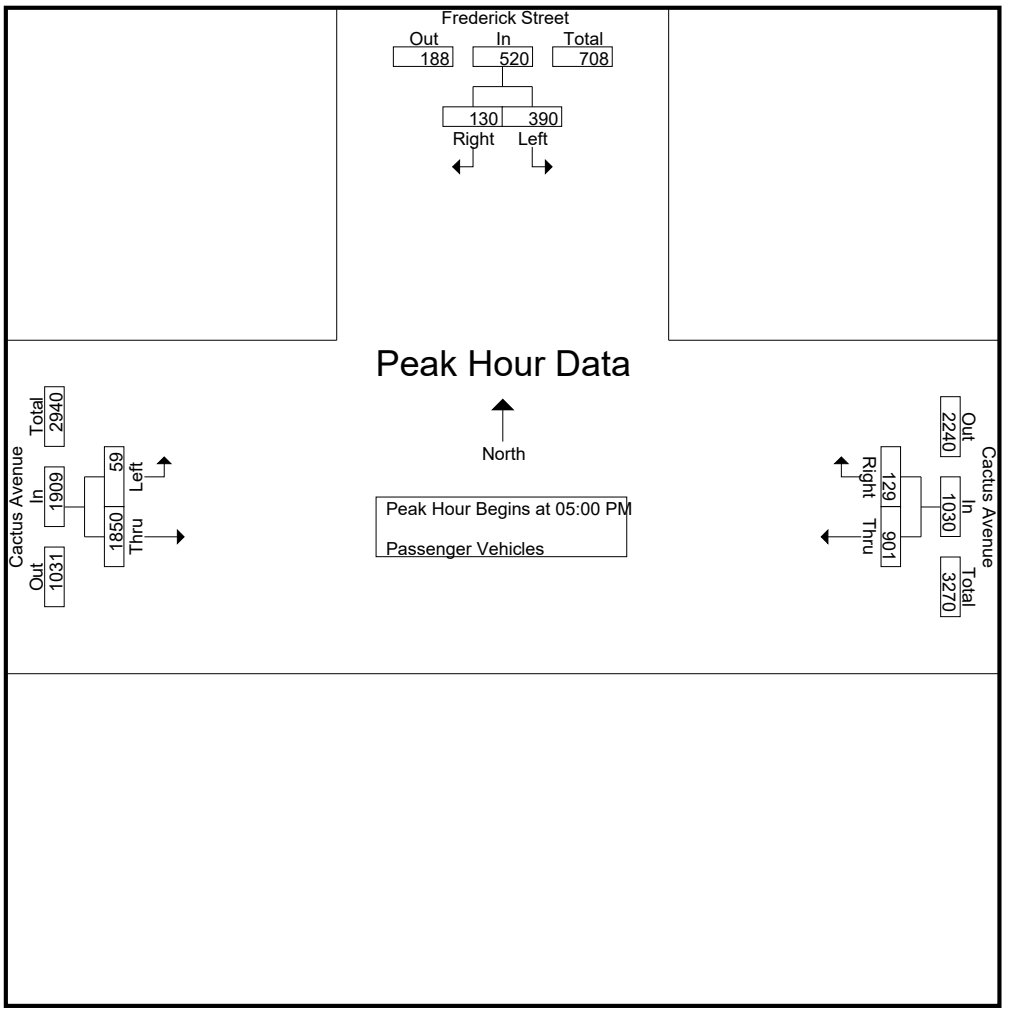
	Frederick Street Southbound			Cactus Avenue Westbound			Cactus Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	93	**44**	137	**242**	**37**	**279**	17	454	471	**887**
05:15 PM	106	33	**139**	222	31	253	14	440	454	846
05:30 PM	**114**	24	138	236	29	265	**19**	462	481	884
05:45 PM	77	29	106	201	32	233	9	**494**	**503**	842
Total Volume	390	130	520	901	129	1030	59	1850	1909	3459
% App. Total	75	25		87.5	12.5		3.1	96.9		
PHF	.855	.739	.935	.931	.872	.923	.776	.936	.949	.975

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Cactus Avenue
Weather: Clear

File Name : 06_MRV_Frederick_Cactus PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	93	**44**	137	**242**	**37**	**279**	17	454	471
+15 mins.	106	33	**139**	222	31	253	14	440	454
+30 mins.	**114**	24	138	236	29	265	**19**	462	481
+45 mins.	77	29	106	201	32	233	9	**494**	**503**
Total Volume	390	130	520	901	129	1030	59	1850	1909
% App. Total	75	25		87.5	12.5		3.1	96.9	
PHF	.855	.739	.935	.931	.872	.923	.776	.936	.949

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Corona, CA 92878
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City of Moreno Valley
N/S: Frederick Street
E/W: Cactus Avenue
Weather: Clear

File Name : 06_MRV_Frederick_Cactus PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Frederick Street Southbound				Cactus Avenue Westbound				Cactus Avenue Eastbound						
Start Time	Left	Right	RTOR	App. Total	Thru	Right	RTOR	App. Total	Left	Thru	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	1	0	0	1	3	1	0	4	0	6	0	6	0	11	11
04:15 PM	2	2	1	4	3	0	0	3	3	1	0	4	1	11	12
04:30 PM	0	1	1	1	6	0	0	6	0	6	0	6	1	13	14
04:45 PM	2	0	0	2	3	1	0	4	0	3	0	3	0	9	9
Total	5	3	2	8	15	2	0	17	3	16	0	19	2	44	46
05:00 PM	0	0	0	0	3	0	0	3	0	3	0	3	0	6	6
05:15 PM	1	1	1	2	1	1	0	2	0	2	0	2	1	6	7
05:30 PM	1	0	0	1	2	0	0	2	0	8	0	8	0	11	11
05:45 PM	0	0	0	0	1	0	0	1	0	5	0	5	0	6	6
Total	2	1	1	3	7	1	0	8	0	18	0	18	1	29	30
Grand Total	7	4	3	11	22	3	0	25	3	34	0	37	3	73	76
Apprch %	63.6	36.4			88	12			8.1	91.9					
Total %	9.6	5.5		15.1	30.1	4.1		34.2	4.1	46.6		50.7	3.9	96.1	

	Frederick Street Southbound			Cactus Avenue Westbound			Cactus Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	0	0	**3**	0	**3**	0	3	3	6
05:15 PM	**1**	**1**	**2**	1	**1**	2	0	2	2	6
05:30 PM	1	0	1	2	0	2	0	**8**	**8**	**11**
05:45 PM	0	0	0	1	0	1	0	5	5	6
Total Volume	2	1	3	7	1	8	0	18	18	29
% App. Total	66.7	33.3		87.5	12.5		0	100		
PHF	.500	.250	.375	.583	.250	.667	.000	.563	.563	.659

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
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City of Moreno Valley
N/S: Frederick Street
E/W: Cactus Avenue
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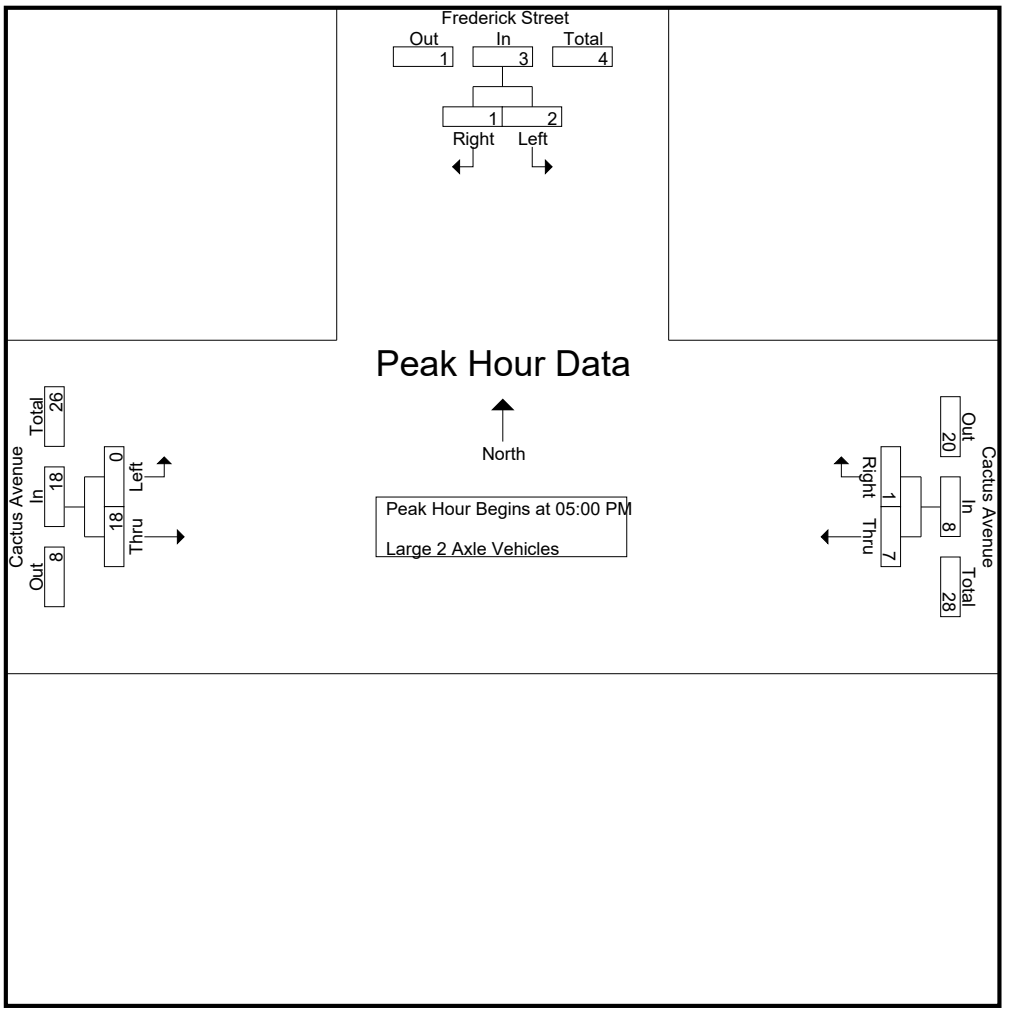
File Name : 06_MRV_Frederick_Cactus PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	0	0	0	**3**	0	**3**	0	3	3
+15 mins.	**1**	**1**	**2**	1	**1**	2	0	2	2
+30 mins.	1	0	1	2	0	2	0	**8**	**8**
+45 mins.	0	0	0	1	0	1	0	5	5
Total Volume	2	1	3	7	1	8	0	18	18
% App. Total	66.7	33.3		87.5	12.5		0	100	
PHF	.500	.250	.375	.583	.250	.667	.000	.563	.563

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Weather: Clear

File Name : 06_MRV_Frederick_Cactus PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 3 Axle Vehicles

	Frederick Street Southbound				Cactus Avenue Westbound				Cactus Avenue Eastbound						
Start Time	Left	Right	RTOR	App. Total	Thru	Right	RTOR	App. Total	Left	Thru	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	2	0	0	2	0	1	0	1	0	3	3
04:15 PM	0	1	0	1	0	1	0	1	0	3	0	3	0	5	5
04:30 PM	0	1	1	1	0	1	0	1	0	3	0	3	1	5	6
04:45 PM	0	0	0	0	0	1	0	1	0	2	0	2	0	3	3
Total	0	2	1	2	2	3	0	5	0	9	0	9	1	16	17
05:00 PM	0	0	0	0	3	1	0	4	0	2	0	2	0	6	6
05:15 PM	0	2	1	2	0	1	1	1	0	0	0	0	2	3	5
05:30 PM	0	0	0	0	0	1	0	1	0	1	0	1	0	2	2
05:45 PM	0	0	0	0	0	2	2	2	0	0	0	0	2	2	4
Total	0	2	1	2	3	5	3	8	0	3	0	3	4	13	17
Grand Total	0	4	2	4	5	8	3	13	0	12	0	12	5	29	34
Apprch %	0	100			38.5	61.5			0	100					
Total %	0	13.8		13.8	17.2	27.6		44.8	0	41.4		41.4	14.7	85.3	

	Frederick Street Southbound			Cactus Avenue Westbound			Cactus Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	0	0	**3**	1	**4**	0	**2**	**2**	**6**
05:15 PM	0	**2**	**2**	0	1	1	0	0	0	3
05:30 PM	0	0	0	0	1	1	0	1	1	2
05:45 PM	0	0	0	0	**2**	2	0	0	0	2
Total Volume	0	2	2	3	5	8	0	3	3	13
% App. Total	0	100		37.5	62.5		0	100		
PHF	.000	.250	.250	.250	.625	.500	.000	.375	.375	.542

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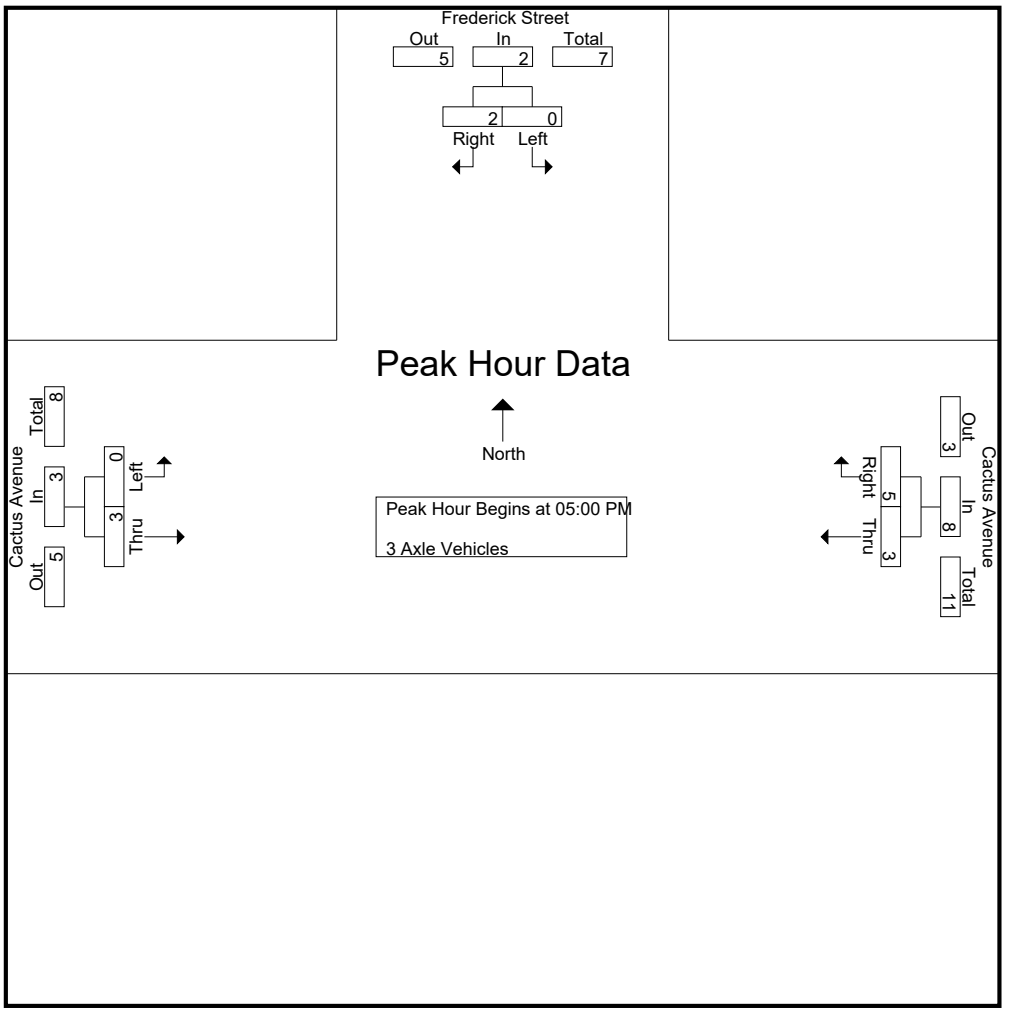

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	0	0	0	**3**	1	**4**	0	**2**	**2**
+15 mins.	0	**2**	**2**	0	1	1	0	0	0
+30 mins.	0	0	0	0	1	1	0	1	1
+45 mins.	0	0	0	0	**2**	2	0	0	0
Total Volume	0	2	2	3	5	8	0	3	3
% App. Total	0	100		37.5	62.5		0	100	
PHF	.000	.250	.250	.250	.625	.500	.000	.375	.375

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File Name : 06_MRV_Frederick_Cactus PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 4+ Axle Trucks

	Frederick Street Southbound				Cactus Avenue Westbound				Cactus Avenue Eastbound						
Start Time	Left	Right	RTOR	App. Total	Thru	Right	RTOR	App. Total	Left	Thru	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	1	1	0	2	8	2	0	10	3	9	0	12	0	24	24
04:15 PM	2	1	0	3	7	1	0	8	0	5	0	5	0	16	16
04:30 PM	1	1	0	2	6	0	0	6	1	4	0	5	0	13	13
04:45 PM	1	1	0	2	8	0	0	8	0	12	0	12	0	22	22
Total	5	4	0	9	29	3	0	32	4	30	0	34	0	75	75
05:00 PM	1	0	0	1	7	0	0	7	0	10	0	10	0	18	18
05:15 PM	2	0	0	2	2	0	0	2	2	5	0	7	0	11	11
05:30 PM	0	0	0	0	5	0	0	5	4	10	0	14	0	19	19
05:45 PM	2	1	0	3	3	0	0	3	0	6	0	6	0	12	12
Total	5	1	0	6	17	0	0	17	6	31	0	37	0	60	60
Grand Total	10	5	0	15	46	3	0	49	10	61	0	71	0	135	135
Apprch %	66.7	33.3			93.9	6.1			14.1	85.9					
Total %	7.4	3.7		11.1	34.1	2.2		36.3	7.4	45.2		52.6	0	100	

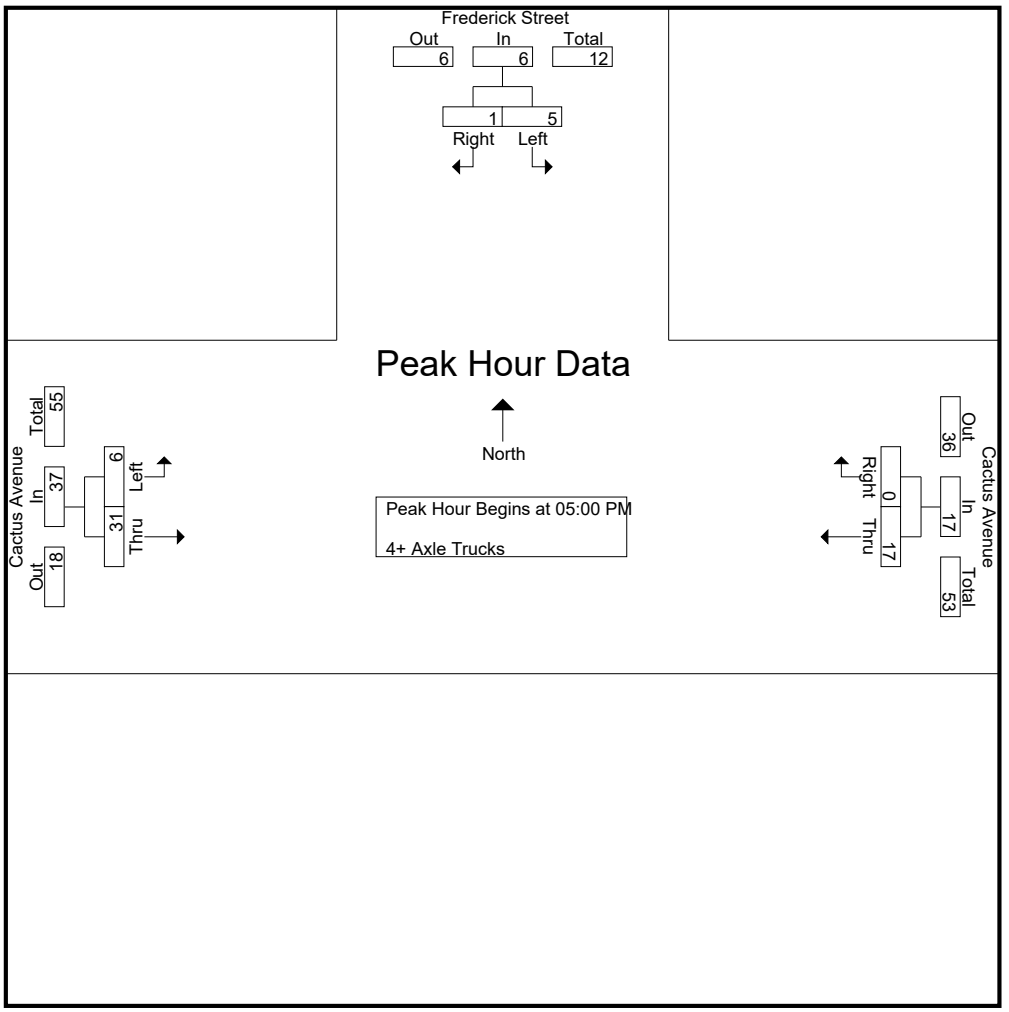
	Frederick Street Southbound			Cactus Avenue Westbound			Cactus Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	1	0	1	**7**	0	**7**	0	**10**	10	18
05:15 PM	**2**	0	2	2	0	2	2	5	7	11
05:30 PM	0	0	0	5	0	5	**4**	10	**14**	**19**
05:45 PM	2	**1**	**3**	3	0	3	0	6	6	12
Total Volume	5	1	6	17	0	17	6	31	37	60
% App. Total	83.3	16.7		100	0		16.2	83.8		
PHF	.625	.250	.500	.607	.000	.607	.375	.775	.661	.789

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Frederick Street
E/W: Cactus Avenue
Weather: Clear

File Name : 06_MRV_Frederick_Cactus PM
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	1	0	1	**7**	0	**7**	0	**10**	10
+15 mins.	**2**	0	2	2	0	2	2	5	7
+30 mins.	0	0	0	5	0	5	**4**	10	**14**
+45 mins.	2	**1**	**3**	3	0	3	0	6	6
Total Volume	5	1	6	17	0	17	6	31	37
% App. Total	83.3	16.7		100	0		16.2	83.8	
PHF	.625	.250	.500	.607	.000	.607	.375	.775	.661

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Location: Moreno Valley
N/S: Frederick Street
E/W: Cactus Avenue

Date: 4/3/2018
Date: Tuesday

PEDESTRIANS

	North Leg Frederick Street	East Leg Cactus Avenue	South Leg Dead End	West Leg Cactus Avenue	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

	North Leg Frederick Street	East Leg Cactus Avenue	South Leg Dead End	West Leg Cactus Avenue	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
951-268-6268

Location: Moreno Valley
N/S: Frederick Street
E/W: Cactus Avenue

Date: 4/3/2018
Date: Tuesday

BICYCLES

	Southbound Frederick Street			Westbound Cactus Avenue			Northbound Dead End			Eastbound Cactus Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

	Southbound Frederick Street			Westbound Cactus Avenue			Northbound Dead End			Eastbound Cactus Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	1	0	0	0	1	0	0	0	0	0	1	0	3

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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951-268-6268

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Graham Street Southbound					Brodiaea Avenue Westbound					Graham Street Northbound					Brodiaea Avenue Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
07:00 AM	8	33	2	0	43	0	10	12	4	22	0	27	3	0	30	1	0	1	0	2	4	97	10
07:15 AM	7	54	1	0	62	1	16	12	5	29	1	23	6	1	30	1	0	0	0	1	6	122	12
07:30 AM	6	69	0	0	75	4	12	20	6	36	1	51	4	1	56	0	1	0	0	1	7	168	17
07:45 AM	18	77	0	0	95	5	15	18	9	38	1	58	4	1	63	0	0	0	0	0	10	196	20
Total	39	233	3	0	275	10	53	62	24	125	3	159	17	3	179	2	1	1	0	4	27	583	61
08:00 AM	4	40	2	0	46	5	15	12	4	32	0	39	5	0	44	0	1	2	1	3	5	125	13
08:15 AM	8	53	2	0	63	3	9	16	9	28	1	43	2	0	46	1	2	0	0	3	9	140	14
08:30 AM	7	45	1	0	53	4	6	7	3	17	2	32	1	1	35	1	0	1	0	2	4	107	11
08:45 AM	3	36	1	0	40	0	11	5	0	16	1	36	2	0	39	0	2	0	0	2	0	97	9
Total	22	174	6	0	202	12	41	40	16	93	4	150	10	1	164	2	5	3	1	10	18	469	48
Grand Total	61	407	9	0	477	22	94	102	40	218	7	309	27	4	343	4	6	4	1	14	45	1052	109
Apprch %	12.8	85.3	1.9			10.1	43.1	46.8			2	90.1	7.9			28.6	42.9	28.6					
Total %	5.8	38.7	0.9		45.3	2.1	8.9	9.7		20.7	0.7	29.4	2.6		32.6	0.4	0.6	0.4		1.3	4.1	95.9	
Passenger Vehicles	54	396	7		457	19	91	86		235	5	301	23		332	1	4	1		7	0	0	103
% Passenger Vehicles	88.5	97.3	77.8	0	95.8	86.4	96.8	84.3	97.5	91.1	71.4	97.4	85.2	75	95.7	25	66.7	25	100	46.7	0	0	9
Large 2 Axle Vehicles	0	9	2		11	1	0	2		3	1	6	1		8	2	1	3		6	0	0	2
% Large 2 Axle Vehicles	0	2.2	22.2	0	2.3	4.5	0	2	0	1.2	14.3	1.9	3.7	0	2.3	50	16.7	75	0	40	0	0	2
3 Axle Vehicles	2	2	0		4	0	2	4		6	0	2	0		2	1	0	0		1	0	0	1
% 3 Axle Vehicles	3.3	0.5	0	0	0.8	0	2.1	3.9	0	2.3	0	0.6	0	0	0.6	25	0	0	0	6.7	0	0	1
4+ Axle Trucks	5	0	0		5	2	1	10		14	1	0	3		5	0	1	0		1	0	0	2
% 4+ Axle Trucks	8.2	0	0	0	1	9.1	1.1	9.8	2.5	5.4	14.3	0	11.1	25	1.4	0	16.7	0	0	6.7	0	0	2

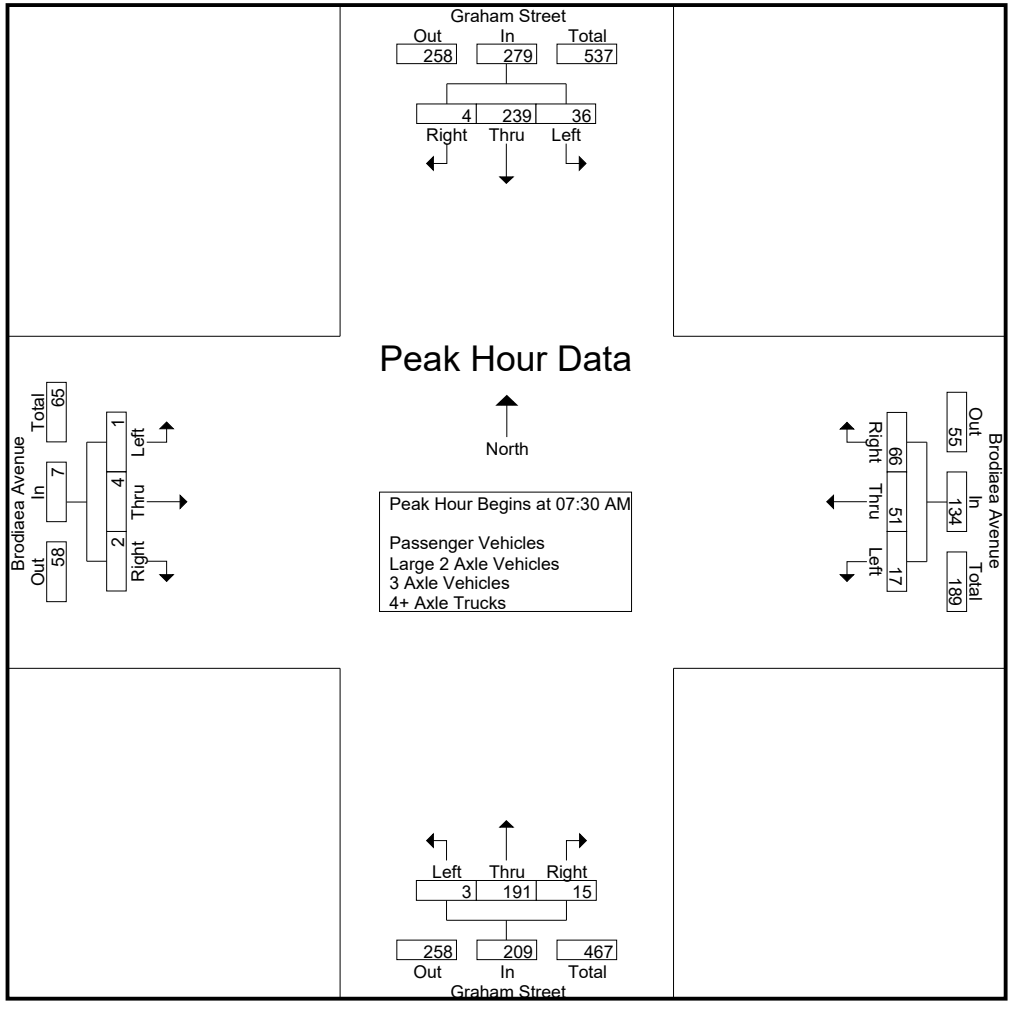
	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	6	69	0	75	4	12	**20**	36	**1**	51	4	56	0	1	0	1	1
07:45 AM	**18**	**77**	0	**95**	**5**	**15**	18	**38**	1	**58**	4	**63**	0	0	0	0	**1**
08:00 AM	4	40	**2**	46	5	15	12	32	0	39	**5**	44	0	1	**2**	**3**	1
08:15 AM	8	53	2	63	3	9	16	28	1	43	2	46	**1**	**2**	0	3	1
Total Volume	36	239	4	279	17	51	66	134	3	191	15	209	1	4	2	7	6
% App. Total	12.9	85.7	1.4		12.7	38.1	49.3		1.4	91.4	7.2		14.3	57.1	28.6		
PHF	.500	.776	.500	.734	.850	.850	.825	.882	.750	.823	.750	.829	.250	.500	.250	.583	.8

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:30 AM				07:15 AM				07:30 AM				08:00 AM				
+0 mins.	6	69	0	75	1	**16**	12	29	**1**	51	4	56	0	1	**2**	**3**	
+15 mins.	**18**	**77**	0	**95**	4	12	**20**	36	1	**58**	4	**63**	**1**	**2**	0	3	
+30 mins.	4	40	**2**	46	**5**	15	18	**38**	0	39	**5**	44	1	0	1	2	
+45 mins.	8	53	2	63	5	15	12	32	1	43	2	46	0	2	0	2	
Total Volume	36	239	4	279	15	58	62	135	3	191	15	209	2	5	3	10	
% App. Total	12.9	85.7	1.4		11.1	43	45.9		1.4	91.4	7.2		20	50	30		
PHF	.500	.776	.500	.734	.750	.906	.775	.888	.750	.823	.750	.829	.500	.625	.375	.833	

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City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Graham Street Southbound					Brodiaea Avenue Westbound					Graham Street Northbound					Brodiaea Avenue Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
07:00 AM	7	29	0	0	36	0	10	8	4	18	0	25	2	0	27	0	0	0	0	0	4	81	8
07:15 AM	5	52	1	0	58	1	15	8	4	24	0	23	6	1	29	0	0	0	0	0	5	111	11
07:30 AM	5	68	0	0	73	4	12	17	6	33	1	50	4	1	55	0	0	0	0	0	7	161	16
07:45 AM	15	77	0	0	92	5	15	18	9	38	1	58	3	1	62	0	0	0	0	0	10	192	20
Total	32	226	1	0	259	10	52	51	23	113	2	156	15	3	173	0	0	0	0	0	26	545	57
08:00 AM	4	40	2	0	46	3	14	12	4	29	0	36	4	0	40	0	1	1	1	2	5	117	12
08:15 AM	8	51	2	0	61	3	9	14	9	26	1	43	2	0	46	0	2	0	0	2	9	135	14
08:30 AM	7	44	1	0	52	3	6	6	3	15	2	30	0	0	32	1	0	0	0	1	3	100	10
08:45 AM	3	35	1	0	39	0	10	3	0	13	0	36	2	0	38	0	1	0	0	1	0	91	9
Total	22	170	6	0	198	9	39	35	16	83	3	145	8	0	156	1	4	1	1	6	17	443	46
Grand Total	54	396	7	0	457	19	91	86	39	196	5	301	23	3	329	1	4	1	1	6	43	988	103
Apprch %	11.8	86.7	1.5			9.7	46.4	43.9			1.5	91.5	7			16.7	66.7	16.7					
Total %	5.5	40.1	0.7		46.3	1.9	9.2	8.7		19.8	0.5	30.5	2.3		33.3	0.1	0.4	0.1		0.6	4.2	95.8	

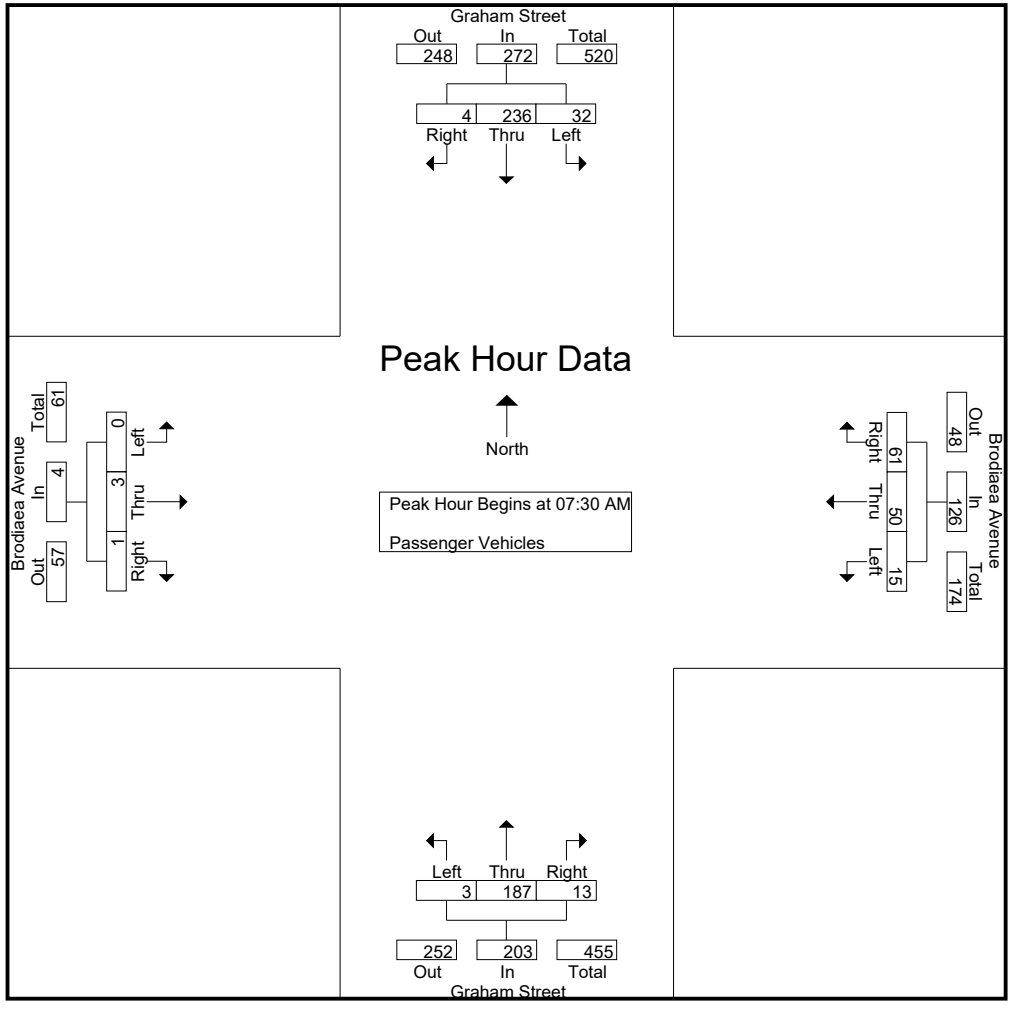
	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	5	68	0	73	4	12	17	33	**1**	50	**4**	55	0	0	0	0	1
07:45 AM	**15**	**77**	0	**92**	**5**	**15**	**18**	**38**	1	**58**	3	**62**	0	0	0	0	**1**
08:00 AM	4	40	**2**	46	3	14	12	29	0	36	4	40	0	1	**1**	**2**	1
08:15 AM	8	51	2	61	3	9	14	26	1	43	2	46	0	**2**	0	2	1
Total Volume	32	236	4	272	15	50	61	126	3	187	13	203	0	3	1	4	6
% App. Total	11.8	86.8	1.5		11.9	39.7	48.4		1.5	92.1	6.4		0	75	25		
PHF	.533	.766	.500	.739	.750	.833	.847	.829	.750	.806	.813	.819	.000	.375	.250	.500	.7

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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City of Moreno Valley
N/S: Graham Street
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Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:30 AM				07:30 AM				07:30 AM				07:30 AM				
+0 mins.	5	68	0	73	4	12	17	33	**1**	50	**4**	55	0	0	0	0	
+15 mins.	**15**	**77**	0	**92**	**5**	**15**	**18**	**38**	1	**58**	3	**62**	0	0	0	0	
+30 mins.	4	40	**2**	46	3	14	12	29	0	36	4	40	0	1	**1**	**2**	
+45 mins.	8	51	2	61	3	9	14	26	1	43	2	46	0	**2**	0	2	
Total Volume	32	236	4	272	15	50	61	126	3	187	13	203	0	3	1	4	
% App. Total	11.8	86.8	1.5		11.9	39.7	48.4		1.5	92.1	6.4		0	75	25		
PHF	.533	.766	.500	.739	.750	.833	.847	.829	.750	.806	.813	.819	.000	.375	.250	.500	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

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PO Box 1178
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City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Graham Street Southbound					Brodiaea Avenue Westbound					Graham Street Northbound					Brodiaea Avenue Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
07:00 AM	0	4	2	0	6	0	0	2	0	2	0	2	0	0	2	0	0	1	0	1	0	11	1
07:15 AM	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	0	3	
07:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	
Total	0	6	2	0	8	0	0	2	0	2	1	2	1	0	4	1	0	1	0	2	0	16	1
08:00 AM	0	0	0	0	0	1	0	0	0	1	0	3	0	0	3	0	0	1	0	1	0	5	
08:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	
08:30 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	3	
08:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	
Total	0	3	0	0	3	1	0	0	0	1	0	4	0	0	4	1	1	2	0	4	0	12	1
Grand Total	0	9	2	0	11	1	0	2	0	3	1	6	1	0	8	2	1	3	0	6	0	28	2
Apprch %	0	81.8	18.2			33.3	0	66.7			12.5	75	12.5			33.3	16.7	50					
Total %	0	32.1	7.1		39.3	3.6	0	7.1		10.7	3.6	21.4	3.6		28.6	7.1	3.6	10.7		21.4	0	100	

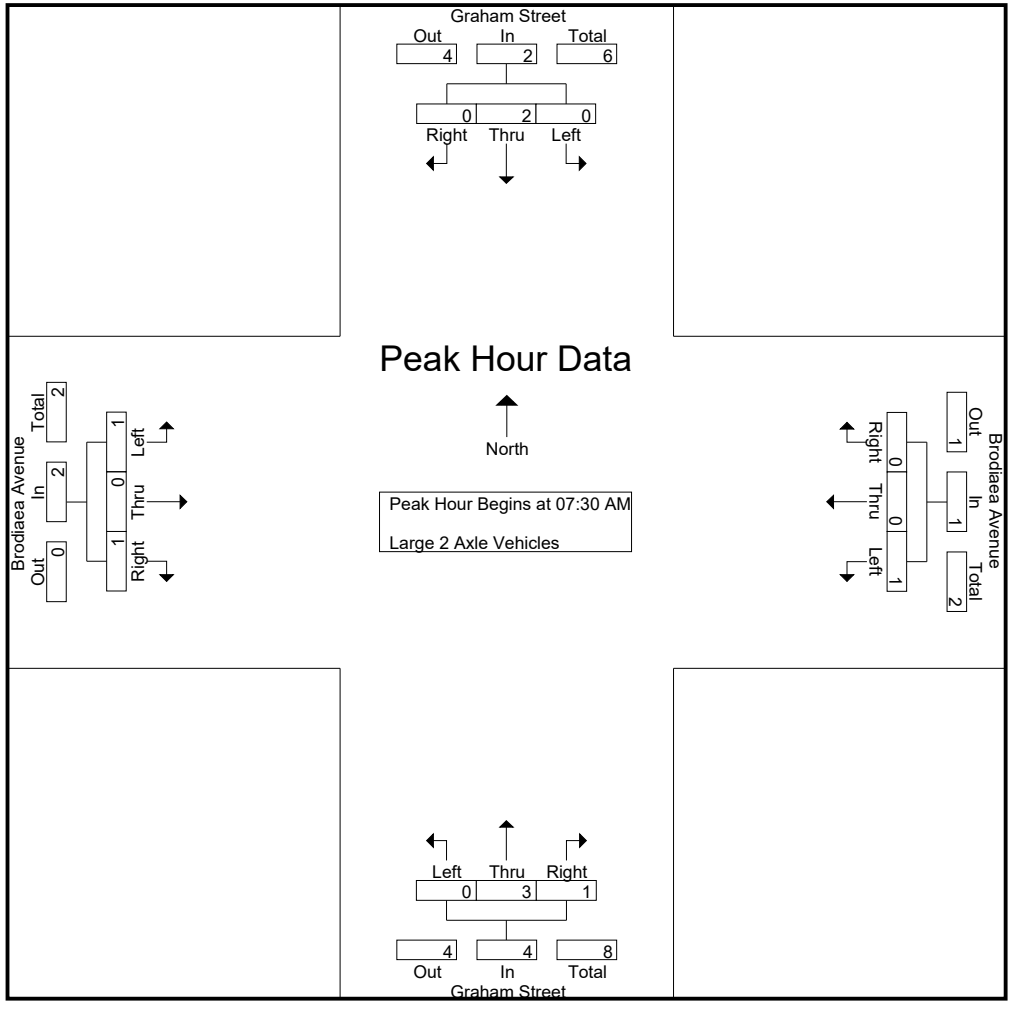
	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	
07:45 AM	0	0	0	0	0	0	0	0	0	0	**1**	1	0	0	0	0	
08:00 AM	0	0	0	0	**1**	0	0	**1**	0	**3**	0	**3**	0	0	**1**	**1**	
08:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	**1**	0	0	1	
Total Volume	0	2	0	2	1	0	0	1	0	3	1	4	1	0	1	2	
% App. Total	0	100	0		100	0	0		0	75	25		50	0	50		
PHF	.000	.500	.000	.500	.250	.000	.000	.250	.000	.250	.250	.333	.250	.000	.250	.500	.4

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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Counts Unlimited
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Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:30 AM				07:30 AM				07:30 AM				07:30 AM				
+0 mins.	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	
+15 mins.	0	0	0	0	0	0	0	0	0	0	**1**	1	0	0	0	0	
+30 mins.	0	0	0	0	**1**	0	0	**1**	0	**3**	0	**3**	0	0	**1**	**1**	
+45 mins.	0	1	0	1	0	0	0	0	0	0	0	0	**1**	0	0	1	
Total Volume	0	2	0	2	1	0	0	1	0	3	1	4	1	0	1	2	
% App. Total	0	100	0		100	0	0		0	75	25		50	0	50		
PHF	.000	.500	.000	.500	.250	.000	.000	.250	.000	.250	.250	.333	.250	.000	.250	.500	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 3 Axle Vehicles

	Graham Street Southbound					Brodiaea Avenue Westbound					Graham Street Northbound					Brodiaea Avenue Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
07:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	0	2	
07:15 AM	1	1	0	0	2	0	1	2	0	3	0	0	0	0	0	0	0	0	0	0	0	5	
07:30 AM	1	0	0	0	1	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0	3	
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	2	1	0	0	3	0	1	4	0	5	0	1	0	0	1	1	0	0	0	1	0	10	1
08:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
08:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	3	
Grand Total	2	2	0	0	4	0	2	4	0	6	0	2	0	0	2	1	0	0	0	1	0	13	1
Apprch %	50	50	0			0	33.3	66.7			0	100	0			100	0	0					
Total %	15.4	15.4	0		30.8	0	15.4	30.8		46.2	0	15.4	0		15.4	7.7	0	0		7.7	0	100	

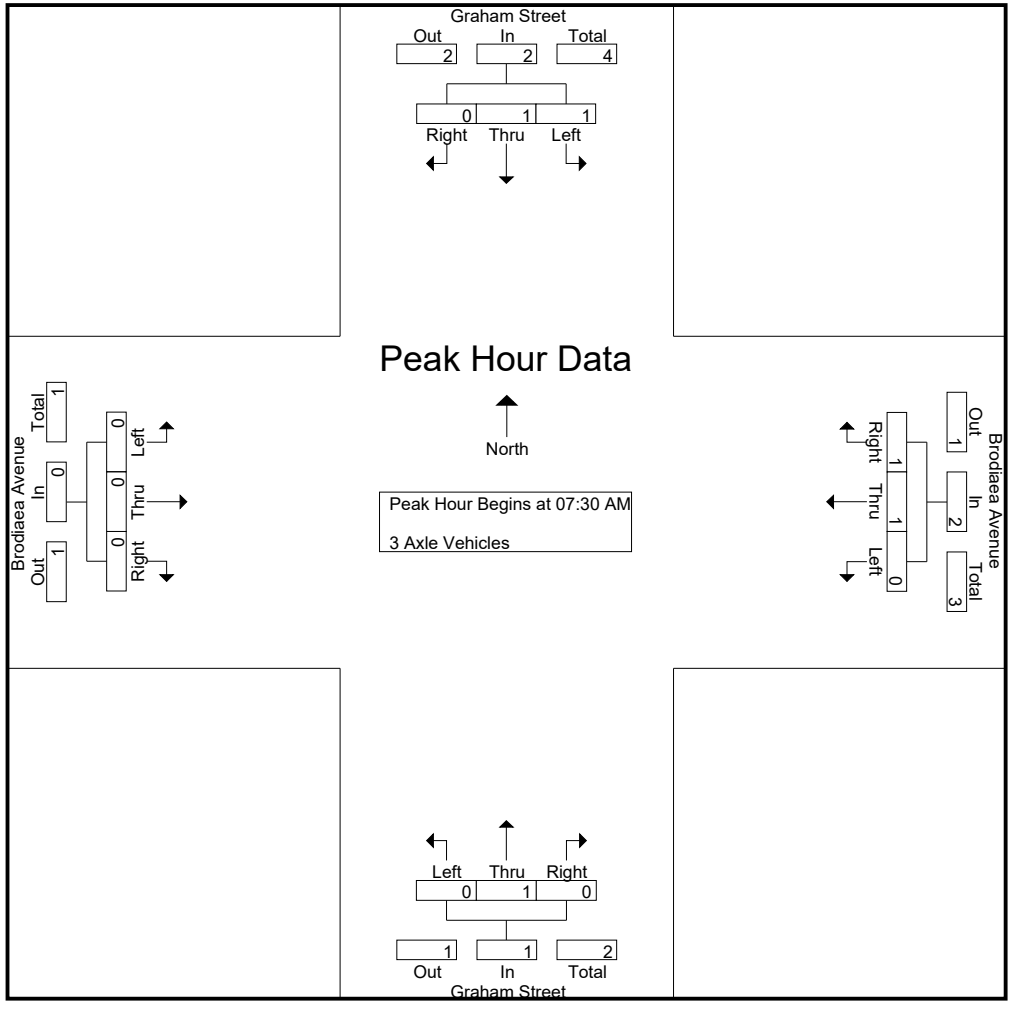
	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**1**	0	0	**1**	0	0	**1**	**1**	0	**1**	0	**1**	0	0	0	0	
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
08:00 AM	0	0	0	0	0	**1**	0	1	0	0	0	0	0	0	0	0	
08:15 AM	0	**1**	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
Total Volume	1	1	0	2	0	1	1	2	0	1	0	1	0	0	0	0	
% App. Total	50	50	0		0	50	50		0	100	0		0	0	0		
PHF	.250	.250	.000	.500	.000	.250	.250	.500	.000	.250	.000	.250	.000	.000	.000	.000	.4

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:30 AM				07:30 AM				07:30 AM				07:30 AM				
+0 mins.	**1**	0	0	**1**	0	0	**1**	**1**	0	**1**	0	**1**	0	0	0	0	
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
+30 mins.	0	0	0	0	0	**1**	0	1	0	0	0	0	0	0	0	0	
+45 mins.	0	**1**	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
Total Volume	1	1	0	2	0	1	1	2	0	1	0	1	0	0	0	0	
% App. Total	50	50	0		0	50	50		0	100	0		0	0	0		
PHF	.250	.250	.000	.500	.000	.250	.250	.500	.000	.250	.000	.250	.000	.000	.000	.000	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 4+ Axle Trucks

	Graham Street Southbound					Brodiaea Avenue Westbound					Graham Street Northbound					Brodiaea Avenue Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
07:00 AM	1	0	0	0	1	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0	3	
07:15 AM	1	0	0	0	1	0	0	2	1	2	0	0	0	0	0	0	0	0	0	0	1	3	
07:30 AM	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	1	0	0	1	0	3	
07:45 AM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
Total	5	0	0	0	5	0	0	5	1	5	0	0	1	0	1	0	1	0	0	1	1	12	1
08:00 AM	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	2	
08:15 AM	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	2	
08:30 AM	0	0	0	0	0	1	0	1	0	2	0	0	1	1	1	0	0	0	0	0	1	3	
08:45 AM	0	0	0	0	0	0	1	2	0	3	1	0	0	0	1	0	0	0	0	0	0	4	
Total	0	0	0	0	0	2	1	5	0	8	1	0	2	1	3	0	0	0	0	0	1	11	1
Grand Total	5	0	0	0	5	2	1	10	1	13	1	0	3	1	4	0	1	0	0	1	2	23	2
Apprch %	100	0	0			15.4	7.7	76.9			25	0	75			0	100	0					
Total %	21.7	0	0		21.7	8.7	4.3	43.5		56.5	4.3	0	13		17.4	0	4.3	0		4.3	8	92	

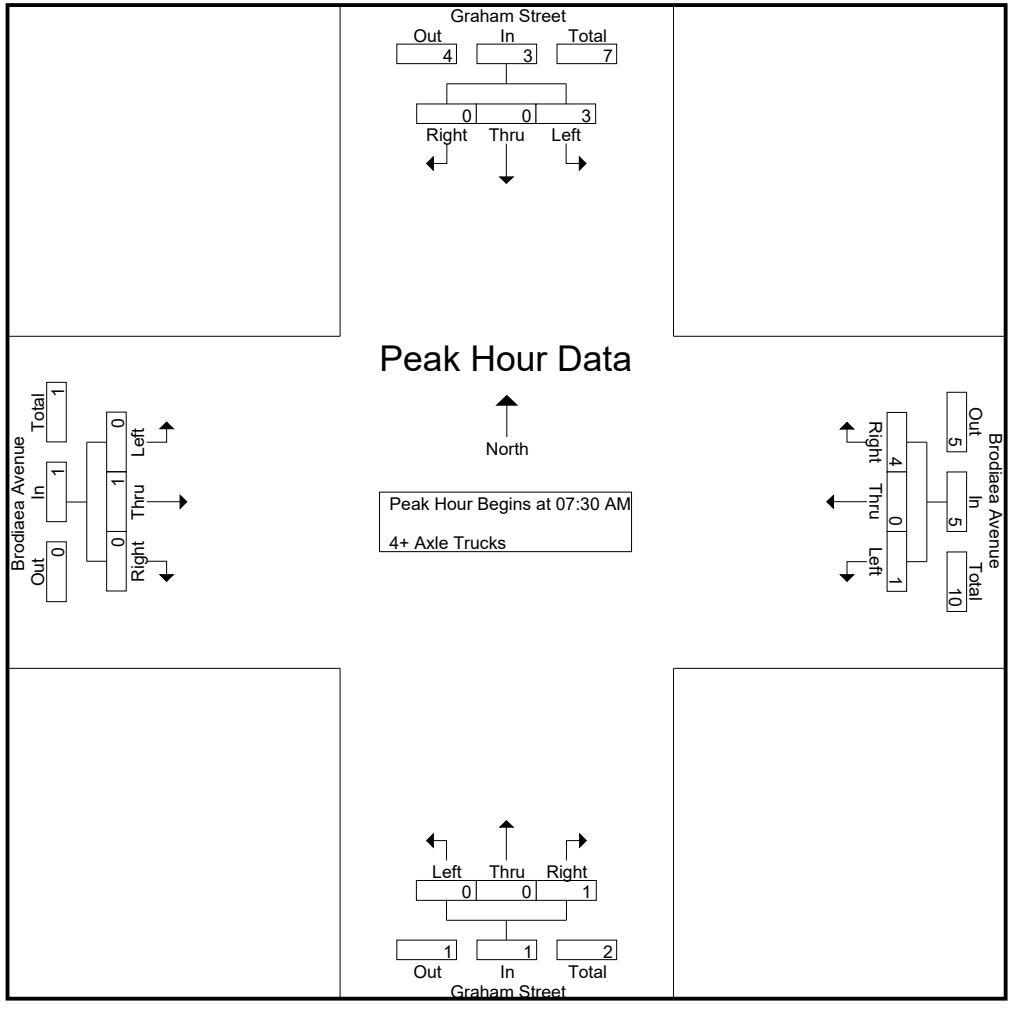
	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	0	**2**	**2**	0	0	0	0	0	**1**	0	**1**	
07:45 AM	**3**	0	0	**3**	0	0	0	0	0	0	0	0	0	0	0	0	
08:00 AM	0	0	0	0	**1**	0	0	1	0	0	**1**	**1**	0	0	0	0	
08:15 AM	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	
Total Volume	3	0	0	3	1	0	4	5	0	0	1	1	0	1	0	1	
% App. Total	100	0	0		20	0	80		0	0	100		0	100	0		
PHF	.250	.000	.000	.250	.250	.000	.500	.625	.000	.000	.250	.250	.000	.250	.000	.250	.8

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:30 AM				07:30 AM				07:30 AM				07:30 AM				
+0 mins.	0	0	0	0	0	0	**2**	**2**	0	0	0	0	0	**1**	0	**1**	
+15 mins.	**3**	0	0	**3**	0	0	0	0	0	0	0	0	0	0	0	0	
+30 mins.	0	0	0	0	**1**	0	0	1	0	0	**1**	**1**	0	0	0	0	
+45 mins.	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	
Total Volume	3	0	0	3	1	0	4	5	0	0	1	1	0	1	0	1	
% App. Total	100	0	0		20	0	80		0	0	100		0	100	0		
PHF	.250	.000	.000	.250	.250	.000	.500	.625	.000	.000	.250	.250	.000	.250	.000	.250	

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N/S: Graham Street
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File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Graham Street Southbound					Brodiaea Avenue Westbound					Graham Street Northbound					Brodiaea Avenue Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
04:00 PM	14	66	0	0	80	3	13	19	8	35	2	60	6	0	68	1	0	0	0	1	8	184	19
04:15 PM	21	72	2	0	95	1	14	13	6	28	0	63	3	1	66	1	3	1	1	5	8	194	20
04:30 PM	24	63	1	0	88	5	7	10	4	22	0	67	4	1	71	1	4	2	2	7	7	188	19
04:45 PM	13	63	0	0	76	7	11	18	10	36	1	75	4	1	80	0	2	0	0	2	11	194	20
Total	72	264	3	0	339	16	45	60	28	121	3	265	17	3	285	3	9	3	3	15	34	760	79
05:00 PM	21	61	1	0	83	11	5	6	5	22	1	63	6	0	70	2	4	2	1	8	6	183	18
05:15 PM	17	73	0	0	90	7	8	6	4	21	0	51	3	0	54	0	6	1	1	7	5	172	17
05:30 PM	13	75	2	0	90	7	14	9	1	30	0	53	2	0	55	0	2	0	0	2	1	177	17
05:45 PM	14	76	1	0	91	9	11	8	6	28	1	50	1	0	52	2	3	2	1	7	7	178	18
Total	65	285	4	0	354	34	38	29	16	101	2	217	12	0	231	4	15	5	3	24	19	710	72
Grand Total	137	549	7	0	693	50	83	89	44	222	5	482	29	3	516	7	24	8	6	39	53	1470	152
Apprch %	19.8	79.2	1			22.5	37.4	40.1			1	93.4	5.6			17.9	61.5	20.5					
Total %	9.3	37.3	0.5		47.1	3.4	5.6	6.1		15.1	0.3	32.8	2		35.1	0.5	1.6	0.5		2.7	3.5	96.5	
Passenger Vehicles	127	544	7		678	43	81	82		248	5	479	23		509	7	22	8		43	0	0	147
% Passenger Vehicles	92.7	99.1	100	0	97.8	86	97.6	92.1	95.5	93.2	100	99.4	79.3	66.7	98.1	100	91.7	100	100	95.6	0	0	9
Large 2 Axle Vehicles	7	5	0		12	1	0	4		7	0	3	3		6	0	0	0		0	0	0	2
% Large 2 Axle Vehicles	5.1	0.9	0	0	1.7	2	0	4.5	4.5	2.6	0	0.6	10.3	0	1.2	0	0	0	0	0	0	0	1
3 Axle Vehicles	1	0	0		1	1	1	0		2	0	0	0		0	0	0	0		0	0	0	
% 3 Axle Vehicles	0.7	0	0	0	0.1	2	1.2	0	0	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	2	0	0		2	5	1	3		9	0	0	3		4	0	2	0		2	0	0	1
% 4+ Axle Trucks	1.5	0	0	0	0.3	10	1.2	3.4	0	3.4	0	0	10.3	33.3	0.8	0	8.3	0	0	4.4	0	0	1

	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	14	66	0	80	3	13	**19**	35	**2**	60	**6**	68	**1**	0	0	1	1
04:15 PM	21	**72**	**2**	**95**	1	**14**	13	28	0	63	3	66	1	3	1	5	**1**
04:30 PM	**24**	63	1	88	5	7	10	22	0	67	4	71	1	**4**	**2**	**7**	1
04:45 PM	13	63	0	76	**7**	11	18	**36**	1	**75**	4	**80**	0	2	0	2	1
Total Volume	72	264	3	339	16	45	60	121	3	265	17	285	3	9	3	15	7
% App. Total	21.2	77.9	0.9		13.2	37.2	49.6		1.1	93	6		20	60	20		
PHF	.750	.917	.375	.892	.571	.804	.789	.840	.375	.883	.708	.891	.750	.563	.375	.536	.9

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

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PO Box 1178
Corona, CA 92878
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City of Moreno Valley
N/S: Graham Street
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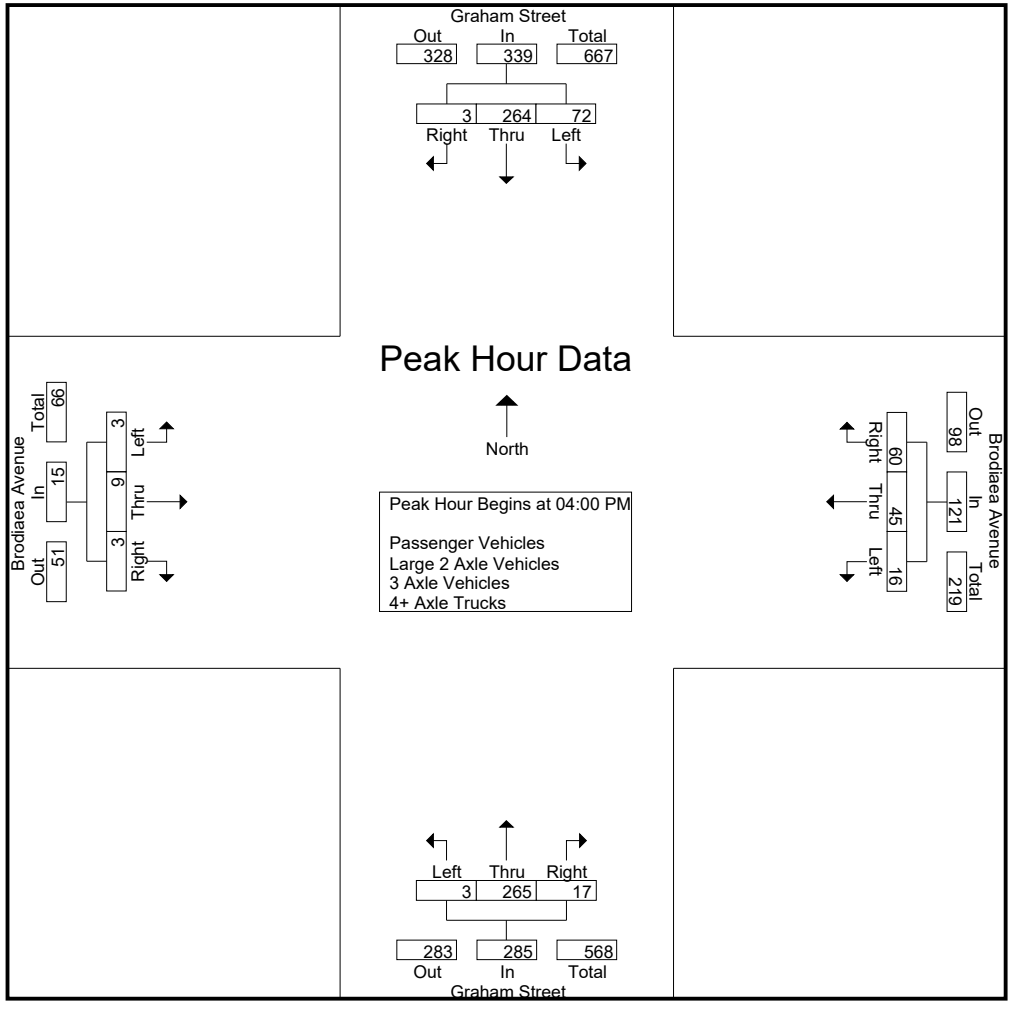
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	05:00 PM				04:00 PM				04:15 PM				04:30 PM				
+0 mins.	**21**	61	1	83	3	13	**19**	35	0	63	3	66	1	4	**2**	7	
+15 mins.	17	73	0	90	1	**14**	13	28	0	67	4	71	0	2	0	2	
+30 mins.	13	75	**2**	90	5	7	10	22	**1**	**75**	4	**80**	**2**	4	2	**8**	
+45 mins.	14	**76**	1	**91**	**7**	11	18	**36**	1	63	**6**	70	0	**6**	1	7	
Total Volume	65	285	4	354	16	45	60	121	2	268	17	287	3	16	5	24	
% App. Total	18.4	80.5	1.1		13.2	37.2	49.6		0.7	93.4	5.9		12.5	66.7	20.8		
PHF	.774	.938	.500	.973	.571	.804	.789	.840	.500	.893	.708	.897	.375	.667	.625	.750	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Graham Street Southbound					Brodiaea Avenue Westbound					Graham Street Northbound					Brodiaea Avenue Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
04:00 PM	14	66	0	0	80	1	13	18	8	32	2	60	5	0	67	1	0	0	0	1	8	180	18
04:15 PM	20	71	2	0	93	1	13	11	5	25	0	63	1	1	64	1	2	1	1	4	7	186	19
04:30 PM	22	62	1	0	85	5	7	8	4	20	0	67	3	0	70	1	4	2	2	7	6	182	18
04:45 PM	13	61	0	0	74	6	11	17	10	34	1	75	4	1	80	0	2	0	0	2	11	190	20
Total	69	260	3	0	332	13	44	54	27	111	3	265	13	2	281	3	8	3	3	14	32	738	77
05:00 PM	17	61	1	0	79	8	5	6	5	19	1	61	4	0	66	2	4	2	1	8	6	172	17
05:15 PM	16	72	0	0	88	7	8	5	3	20	0	50	3	0	53	0	5	1	1	6	4	167	17
05:30 PM	12	75	2	0	89	6	13	9	1	28	0	53	2	0	55	0	2	0	0	2	1	174	17
05:45 PM	13	76	1	0	90	9	11	8	6	28	1	50	1	0	52	2	3	2	1	7	7	177	18
Total	58	284	4	0	346	30	37	28	15	95	2	214	10	0	226	4	14	5	3	23	18	690	70
Grand Total	127	544	7	0	678	43	81	82	42	206	5	479	23	2	507	7	22	8	6	37	50	1428	147
Apprch %	18.7	80.2	1			20.9	39.3	39.8			1	94.5	4.5			18.9	59.5	21.6					
Total %	8.9	38.1	0.5		47.5	3	5.7	5.7		14.4	0.4	33.5	1.6		35.5	0.5	1.5	0.6		2.6	3.4	96.6	

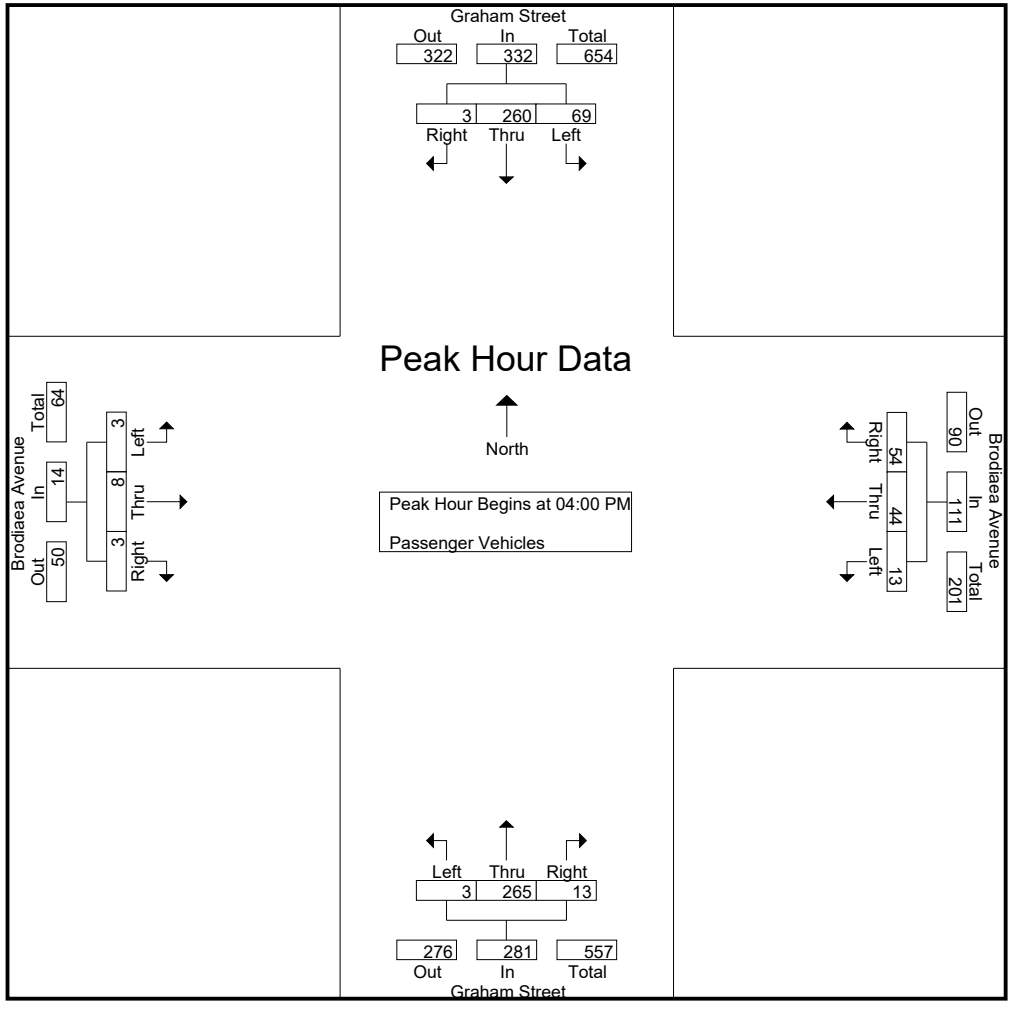
	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	14	66	0	80	1	**13**	**18**	32	**2**	60	**5**	67	**1**	0	0	1	1
04:15 PM	20	**71**	**2**	**93**	1	13	11	25	0	63	1	64	1	2	1	4	1
04:30 PM	**22**	62	1	85	5	7	8	20	0	67	3	70	1	**4**	**2**	**7**	1
04:45 PM	13	61	0	74	**6**	11	17	**34**	1	**75**	4	**80**	0	2	0	2	**1**
Total Volume	69	260	3	332	13	44	54	111	3	265	13	281	3	8	3	14	7
% App. Total	20.8	78.3	0.9		11.7	39.6	48.6		1.1	94.3	4.6		21.4	57.1	21.4		
PHF	.784	.915	.375	.892	.542	.846	.750	.816	.375	.883	.650	.878	.750	.500	.375	.500	.9

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:00 PM				04:00 PM				04:00 PM				04:00 PM				
+0 mins.	14	66	0	80	1	**13**	**18**	32	**2**	60	**5**	67	**1**	0	0	1	
+15 mins.	20	**71**	**2**	**93**	1	13	11	25	0	63	1	64	1	2	1	4	
+30 mins.	**22**	62	1	85	5	7	8	20	0	67	3	70	1	**4**	**2**	**7**	
+45 mins.	13	61	0	74	**6**	11	17	**34**	1	**75**	4	**80**	0	2	0	2	
Total Volume	69	260	3	332	13	44	54	111	3	265	13	281	3	8	3	14	
% App. Total	20.8	78.3	0.9		11.7	39.6	48.6		1.1	94.3	4.6		21.4	57.1	21.4		
PHF	.784	.915	.375	.892	.542	.846	.750	.816	.375	.883	.650	.878	.750	.500	.375	.500	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Graham Street Southbound					Brodiaea Avenue Westbound					Graham Street Northbound					Brodiaea Avenue Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	
04:15 PM	1	1	0	0	2	0	0	2	1	2	0	0	1	0	1	0	0	0	0	0	1	5	
04:30 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
04:45 PM	0	2	0	0	2	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	4	
Total	2	4	0	0	6	1	0	3	1	4	0	0	2	0	2	0	0	0	0	0	1	12	1
05:00 PM	3	0	0	0	3	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	0	6	
05:15 PM	0	1	0	0	1	0	0	1	1	1	0	1	0	0	1	0	0	0	0	0	1	3	
05:30 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
05:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Total	5	1	0	0	6	0	0	1	1	1	0	3	1	0	4	0	0	0	0	0	1	11	1
Grand Total	7	5	0	0	12	1	0	4	2	5	0	3	3	0	6	0	0	0	0	0	2	23	2
Apprch %	58.3	41.7	0			20	0	80			0	50	50			0	0	0					
Total %	30.4	21.7	0		52.2	4.3	0	17.4		21.7	0	13	13		26.1	0	0	0		0	8	92	

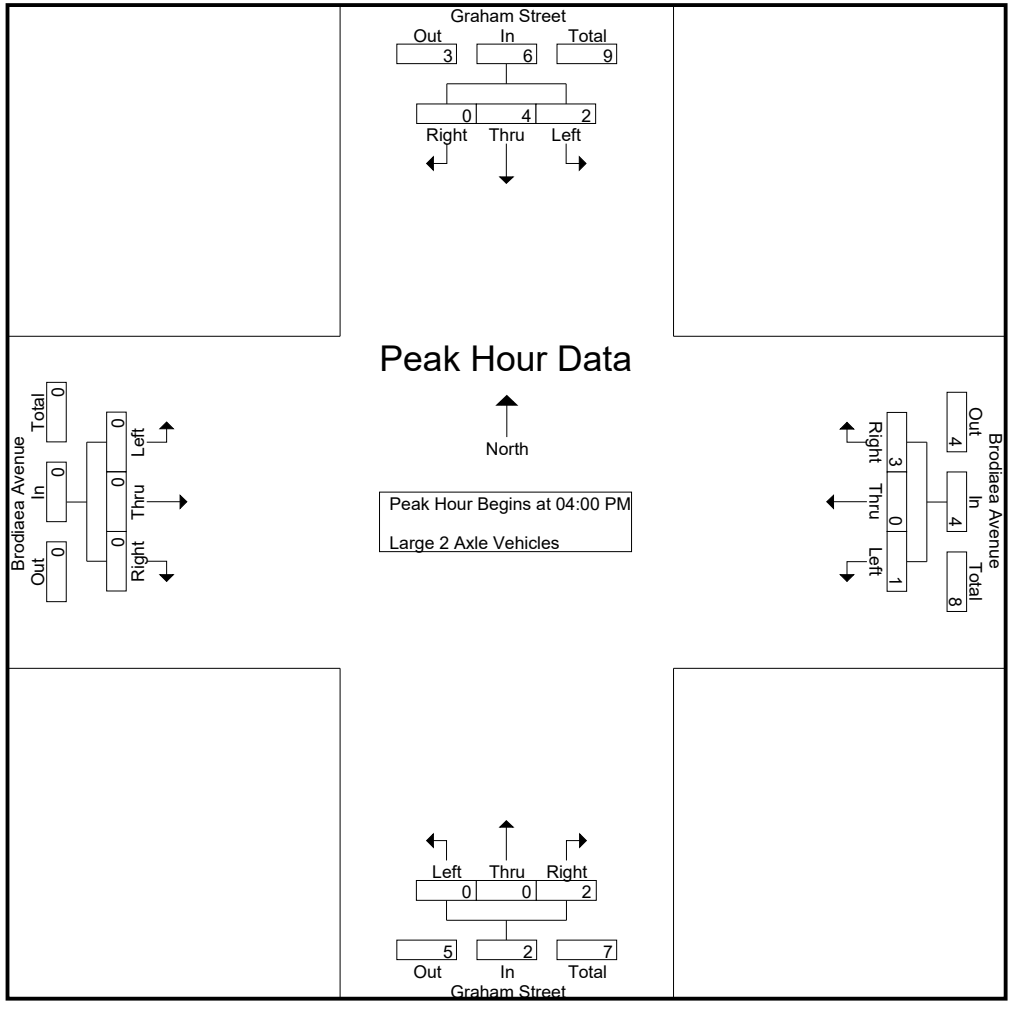
	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	0	0	0	
04:15 PM	**1**	1	0	**2**	0	0	**2**	**2**	0	0	1	1	0	0	0	0	
04:30 PM	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	
04:45 PM	0	**2**	0	2	**1**	0	1	2	0	0	0	0	0	0	0	0	
Total Volume	2	4	0	6	1	0	3	4	0	0	2	2	0	0	0	0	
% App. Total	33.3	66.7	0		25	0	75		0	0	100		0	0	0		
PHF	.500	.500	.000	.750	.250	.000	.375	.500	.000	.000	.500	.500	.000	.000	.000	.000	.6

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:00 PM				04:00 PM				04:00 PM				04:00 PM				
+0 mins.	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	0	0	0	
+15 mins.	**1**	1	0	**2**	0	0	**2**	**2**	0	0	1	1	0	0	0	0	
+30 mins.	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	
+45 mins.	0	**2**	0	2	**1**	0	1	2	0	0	0	0	0	0	0	0	
Total Volume	2	4	0	6	1	0	3	4	0	0	2	2	0	0	0	0	
% App. Total	33.3	66.7	0		25	0	75		0	0	100		0	0	0		
PHF	.500	.500	.000	.750	.250	.000	.375	.500	.000	.000	.500	.500	.000	.000	.000	.000	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 3 Axle Vehicles

	Graham Street Southbound					Brodiaea Avenue Westbound					Graham Street Northbound					Brodiaea Avenue Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
04:00 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
04:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	
05:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Grand Total	1	0	0	0	1	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	3	
Apprch %	100	0	0			50	50	0			0	0	0			0	0	0					
Total %	33.3	0	0		33.3	33.3	33.3	0		66.7	0	0	0		0	0	0	0		0	0	100	

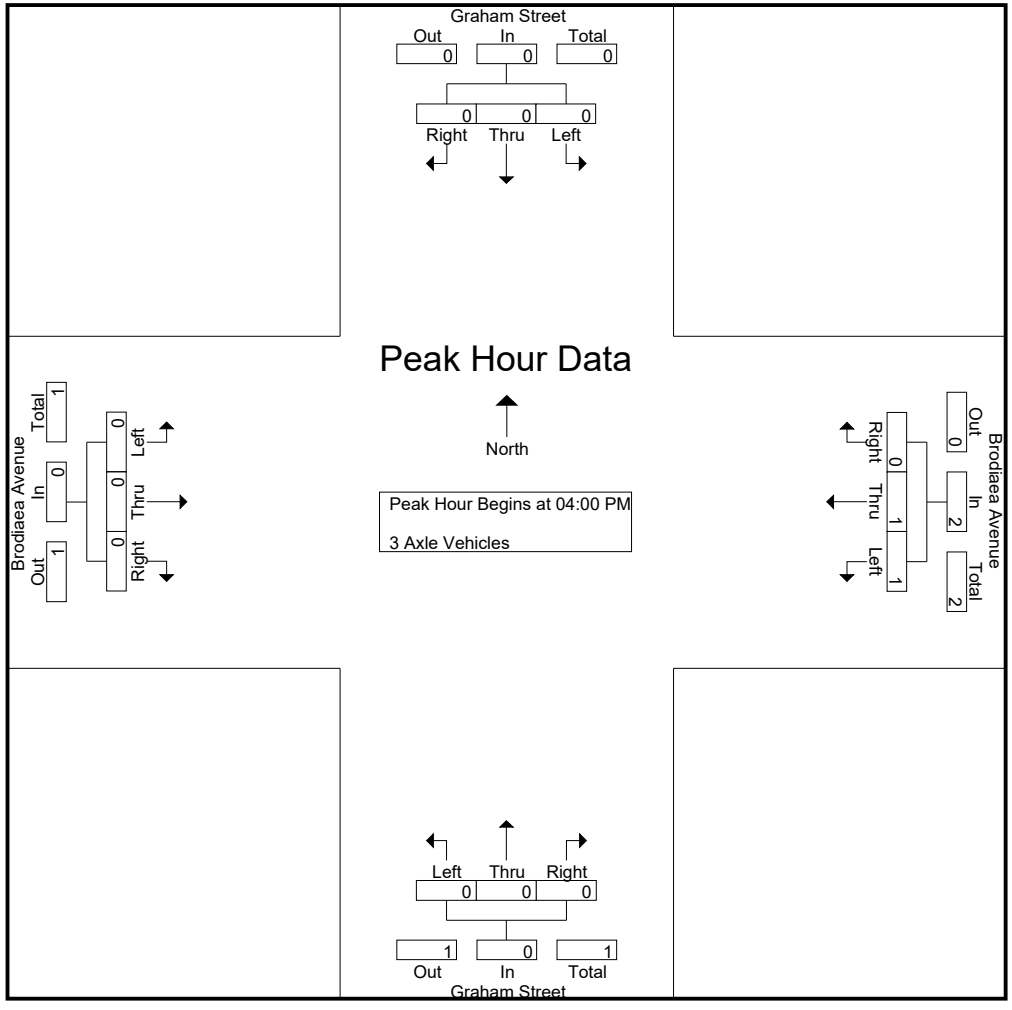
	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	**1**	0	0	**1**	0	0	0	0	0	0	0	0	
04:15 PM	0	0	0	0	0	**1**	0	1	0	0	0	0	0	0	0	0	
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total Volume	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	
% App. Total	0	0	0		50	50	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.250	.250	.000	.500	.000	.000	.000	.000	.000	.000	.000	.000	.5

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

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Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:00 PM				04:00 PM				04:00 PM				04:00 PM				
+0 mins.	0	0	0	0	**1**	0	0	**1**	0	0	0	0	0	0	0	0	
+15 mins.	0	0	0	0	0	**1**	0	1	0	0	0	0	0	0	0	0	
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total Volume	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	
% App. Total	0	0	0		50	50	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.250	.250	.000	.500	.000	.000	.000	.000	.000	.000	.000	.000	

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(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 1

Groups Printed- 4+ Axle Trucks

	Graham Street Southbound					Brodiaea Avenue Westbound					Graham Street Northbound					Brodiaea Avenue Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Tot
04:00 PM	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	2	
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	2	
04:30 PM	1	0	0	0	1	0	0	2	0	2	0	0	1	1	1	0	0	0	0	0	1	4	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	1	0	0	0	1	1	0	3	0	4	0	0	2	1	2	0	1	0	0	1	1	8	
05:00 PM	0	0	0	0	0	3	0	0	0	3	0	0	1	0	1	0	0	0	0	0	0	4	
05:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	
05:30 PM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	1	0	0	0	1	4	1	0	0	5	0	0	1	0	1	0	1	0	0	1	0	8	
Grand Total	2	0	0	0	2	5	1	3	0	9	0	0	3	1	3	0	2	0	0	2	1	16	1
Apprch %	100	0	0			55.6	11.1	33.3			0	0	100			0	100	0					
Total %	12.5	0	0		12.5	31.2	6.2	18.8		56.2	0	0	18.8		18.8	0	12.5	0		12.5	5.9	94.1	

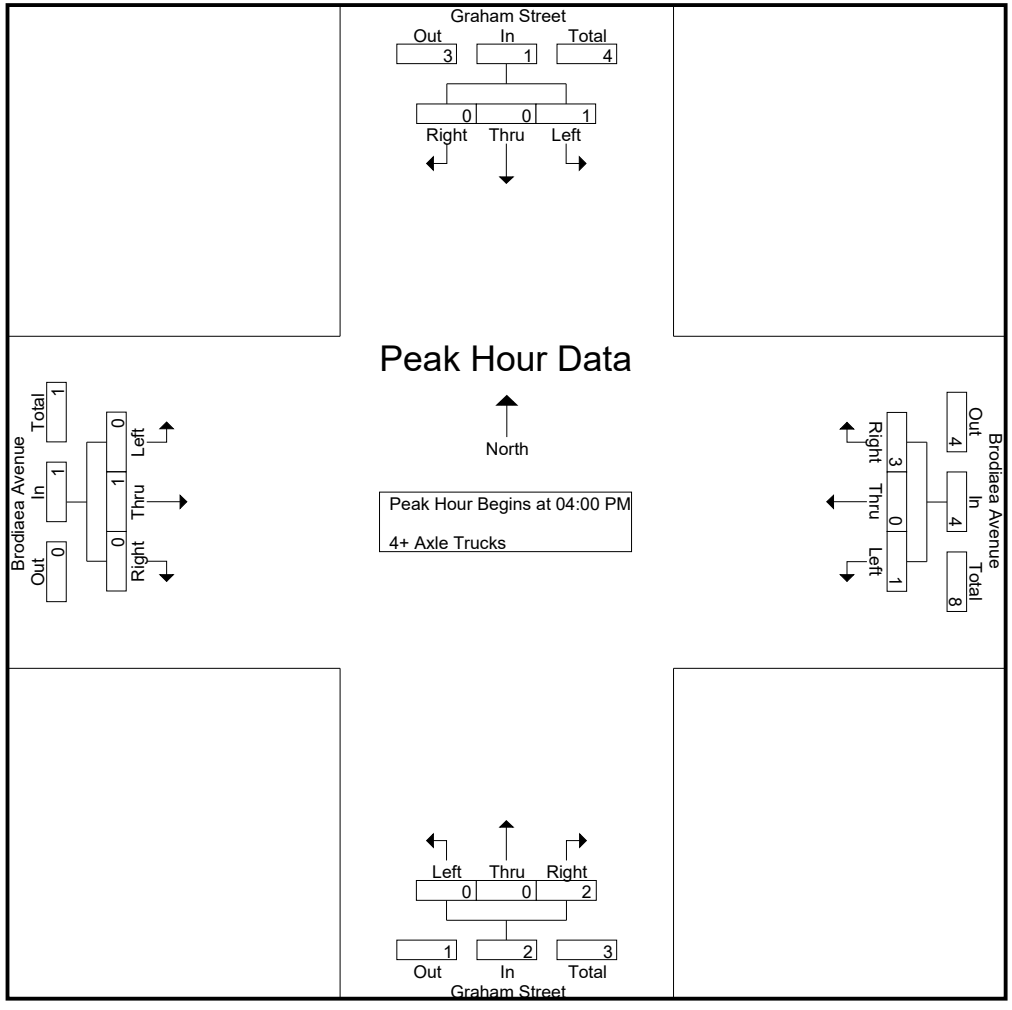
	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	**1**	0	1	**2**	0	0	0	0	0	0	0	0	
04:15 PM	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	**1**	0	**1**	
04:30 PM	**1**	0	0	**1**	0	0	**2**	2	0	0	1	1	0	0	0	0	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total Volume	1	0	0	1	1	0	3	4	0	0	2	2	0	1	0	1	
% App. Total	100	0	0		25	0	75		0	0	100		0	100	0		
PHF	.250	.000	.000	.250	.250	.000	.375	.500	.000	.000	.500	.500	.000	.250	.000	.250	.5

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue
Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 2



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City of Moreno Valley
N/S: Graham Street
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Weather: Clear

File Name : 08_MRV_Graham_Brodiea
Site Code : 05118259
Start Date : 4/3/2018
Page No : 3

	Graham Street Southbound				Brodiaea Avenue Westbound				Graham Street Northbound				Brodiaea Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. To
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:00 PM				04:00 PM				04:00 PM				04:00 PM				
+0 mins.	0	0	0	0	**1**	0	1	**2**	0	0	0	0	0	0	0	0	
+15 mins.	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	**1**	0	**1**	
+30 mins.	**1**	0	0	**1**	0	0	**2**	2	0	0	1	1	0	0	0	0	
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total Volume	1	0	0	1	1	0	3	4	0	0	2	2	0	1	0	1	
% App. Total	100	0	0		25	0	75		0	0	100		0	100	0		
PHF	.250	.000	.000	.250	.250	.000	.375	.500	.000	.000	.500	.500	.000	.250	.000	.250	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Location: Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue

Date: 4/3/2018
Date: Tuesday

PEDESTRIANS

	North Leg Graham Street	East Leg Brodiaea Avenue	South Leg Graham Street	West Leg Brodiaea Avenue	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	1	0	1	2
8:00 AM	1	2	0	0	3
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	1	3	0	1	5

	North Leg Graham Street	East Leg Brodiaea Avenue	South Leg Graham Street	West Leg Brodiaea Avenue	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	1	1	0	2
4:15 PM	0	1	0	0	1
4:30 PM	0	0	0	1	1
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	3	3
5:45 PM	0	0	0	1	1
TOTAL VOLUMES:	0	2	1	5	8

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
951-268-6268

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Location: Moreno Valley
N/S: Graham Street
E/W: Brodiaea Avenue

Date: 4/3/2018
Date: Tuesday

BICYCLES

	Southbound Graham Street			Westbound Brodiaea Avenue			Northbound Graham Street			Eastbound Brodiaea Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	1	0	0	0	0	0	0	0	0	0	0	0	1

	Southbound Graham Street			Westbound Brodiaea Avenue			Northbound Graham Street			Eastbound Brodiaea Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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email: counts@countsunlimited.com

City of Moreno Valley
Brodiaea Avenue
E/ Frederick Street
24 Hour Directional Classification Count

MRV002
Site Code: 051-18259

Eastbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
04/03/18	0	1	0	0	0	0	0	**1**	0	0	0	0	0	2
01:00	0	1	0	0	0	0	0	1	0	0	0	0	0	2
02:00	0	0	1	0	0	0	0	1	0	0	0	0	0	2
03:00	0	1	0	0	0	0	0	1	0	0	0	0	0	2
04:00	0	2	0	0	0	0	0	1	0	0	0	0	0	3
05:00	0	0	2	**2**	0	0	0	0	0	0	0	0	0	4
06:00	0	4	2	0	0	0	0	0	0	0	0	0	0	6
07:00	1	1	1	0	0	0	0	0	**1**	0	0	0	0	4
08:00	**2**	3	1	0	1	0	0	0	0	0	0	0	0	7
09:00	0	4	2	0	1	0	0	0	0	0	0	0	0	7
10:00	0	5	2	0	1	0	0	0	0	0	0	0	0	8
11:00	2	**11**	**5**	0	**3**	**1**	0	0	0	0	0	0	0	**22**
12 PM	0	4	3	0	0	0	0	0	0	0	0	0	0	7
13:00	0	11	3	0	**4**	0	0	0	0	0	0	0	0	**18**
14:00	0	8	2	0	0	**1**	0	0	0	0	0	0	0	11
15:00	0	5	**6**	0	3	0	0	0	0	0	0	0	0	14
16:00	**1**	10	1	0	1	1	0	0	0	0	0	0	0	14
17:00	1	**14**	2	0	0	1	0	0	0	0	0	0	0	18
18:00	1	3	2	0	0	1	0	0	0	0	0	0	0	7
19:00	0	3	2	0	1	0	0	0	0	0	0	0	0	6
20:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
21:00	1	3	0	0	0	0	0	0	0	0	0	0	0	4
22:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
23:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
Total	9	104	37	2	15	5	0	5	1	0	0	0	0	178
Percent	5.1%	58.4%	20.8%	1.1%	8.4%	2.8%	0.0%	2.8%	0.6%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	11:00	11:00	05:00	11:00	11:00		00:00	07:00					11:00
Vol.	2	11	5	2	3	1		1	1					22
PM Peak	16:00	17:00	15:00		13:00	14:00								13:00
Vol.	1	14	6		4	1								18
Grand Total	9	104	37	2	15	5	0	5	1	0	0	0	0	178
Percent	5.1%	58.4%	20.8%	1.1%	8.4%	2.8%	0.0%	2.8%	0.6%	0.0%	0.0%	0.0%	0.0%	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited, Inc.

PO Box 1178
Corona, CA 92878
Phone: (951) 268-6268
email: counts@countsunlimited.com

City of Moreno Valley
Brodiaea Avenue
E/ Frederick Street
24 Hour Directional Classification Count

MRV002
Site Code: 051-18259

Westbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
04/03/18	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	**1**	2	0	0	0	**1**	0	0	0	0	0	0	0	4
02:00	0	7	0	0	0	1	0	0	0	0	0	0	0	8
03:00	0	4	0	0	0	1	0	0	0	0	0	0	0	5
04:00	0	15	4	0	0	0	0	0	0	0	0	0	0	19
05:00	1	19	4	0	2	0	0	0	0	0	0	0	0	26
06:00	1	33	7	**1**	**4**	0	0	0	**1**	0	0	0	0	47
07:00	0	**43**	**14**	0	4	1	0	0	0	0	0	0	0	**62**
08:00	0	38	8	0	2	1	0	**1**	0	0	0	0	0	50
09:00	1	29	8	0	2	1	0	0	0	0	0	0	0	41
10:00	0	33	11	0	1	1	0	0	0	0	0	0	0	46
11:00	0	33	9	0	2	1	0	0	0	0	0	0	0	45
12 PM	2	34	10	0	1	**1**	0	0	**1**	0	0	0	0	49
13:00	0	29	7	1	**2**	0	0	0	0	0	0	0	0	39
14:00	**6**	32	6	0	2	0	0	**1**	0	0	0	0	0	47
15:00	1	**46**	**11**	**2**	2	0	0	0	0	0	0	0	0	**62**
16:00	1	42	7	1	0	0	0	0	0	0	0	0	0	51
17:00	1	40	4	0	1	0	0	0	0	0	0	0	0	46
18:00	0	27	3	0	0	0	0	0	0	0	0	0	0	30
19:00	0	22	4	0	0	0	0	0	0	0	0	0	0	26
20:00	1	20	3	0	0	1	0	0	0	0	0	0	0	25
21:00	0	7	0	0	0	0	0	0	0	0	0	0	0	7
22:00	0	5	1	0	0	0	0	0	0	0	0	0	0	6
23:00	1	2	1	0	0	1	0	0	0	0	0	0	0	5
Total	17	563	122	5	25	11	0	2	2	0	0	0	0	747
Percent	2.3%	75.4%	16.3%	0.7%	3.3%	1.5%	0.0%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	
AM Peak	01:00	07:00	07:00	06:00	06:00	01:00		08:00	06:00					07:00
Vol.	1	43	14	1	4	1		1	1					62
PM Peak	14:00	15:00	15:00	15:00	13:00	12:00		14:00	12:00					15:00
Vol.	6	46	11	2	2	1		1	1					62
Grand Total	17	563	122	5	25	11	0	2	2	0	0	0	0	747
Percent	2.3%	75.4%	16.3%	0.7%	3.3%	1.5%	0.0%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	

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City of Moreno Valley
Brodiaea Avenue
E/ Frederick Street
24 Hour Directional Classification Count

MRV002
Site Code: 051-18259

Eastbound, Westbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
04/03/18	0	2	0	0	0	0	0	**1**	0	0	0	0	0	3
01:00	1	3	0	0	0	1	0	1	0	0	0	0	0	6
02:00	0	7	1	0	0	1	0	1	0	0	0	0	0	10
03:00	0	5	0	0	0	1	0	1	0	0	0	0	0	7
04:00	0	17	4	0	0	0	0	1	0	0	0	0	0	22
05:00	1	19	6	**2**	2	0	0	0	0	0	0	0	0	30
06:00	1	37	9	1	4	0	0	0	**1**	0	0	0	0	53
07:00	1	**44**	**15**	0	4	1	0	0	1	0	0	0	0	66
08:00	**2**	41	9	0	3	1	0	1	0	0	0	0	0	57
09:00	1	33	10	0	3	1	0	0	0	0	0	0	0	48
10:00	0	38	13	0	2	1	0	0	0	0	0	0	0	54
11:00	2	44	14	0	**5**	**2**	0	0	0	0	0	0	0	**67**
12 PM	2	38	13	0	1	**1**	0	0	**1**	0	0	0	0	56
13:00	0	40	10	1	**6**	0	0	0	0	0	0	0	0	57
14:00	**6**	40	8	0	2	1	0	**1**	0	0	0	0	0	58
15:00	1	51	**17**	**2**	5	0	0	0	0	0	0	0	0	**76**
16:00	2	52	8	1	1	1	0	0	0	0	0	0	0	65
17:00	2	**54**	6	0	1	1	0	0	0	0	0	0	0	64
18:00	1	30	5	0	0	1	0	0	0	0	0	0	0	37
19:00	0	25	6	0	1	0	0	0	0	0	0	0	0	32
20:00	1	25	3	0	0	1	0	0	0	0	0	0	0	30
21:00	1	10	0	0	0	0	0	0	0	0	0	0	0	11
22:00	0	7	1	0	0	0	0	0	0	0	0	0	0	8
23:00	1	5	1	0	0	1	0	0	0	0	0	0	0	8
Total	26	667	159	7	40	16	0	7	3	0	0	0	0	925
Percent	2.8%	72.1%	17.2%	0.8%	4.3%	1.7%	0.0%	0.8%	0.3%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	07:00	07:00	05:00	11:00	11:00		00:00	06:00					11:00
Vol.	2	44	15	2	5	2		1	1					67
PM Peak	14:00	17:00	15:00	15:00	13:00	12:00		14:00	12:00					15:00
Vol.	6	54	17	2	6	1		1	1					76
Grand Total	26	667	159	7	40	16	0	7	3	0	0	0	0	925
Percent	2.8%	72.1%	17.2%	0.8%	4.3%	1.7%	0.0%	0.8%	0.3%	0.0%	0.0%	0.0%	0.0%	

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City of Moreno Valley
Frederick Drive
N/ Brodiaea Avenue
24 Hour Directional Classification Count

MRV001
Site Code: 051-18259

Northbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
04/03/18	0	21	2	0	0	0	0	0	0	0	0	0	0	23
01:00	2	11	1	0	0	0	0	0	0	0	0	0	0	14
02:00	1	14	2	0	0	2	0	0	0	0	0	0	0	19
03:00	1	17	2	0	0	0	0	0	0	0	0	0	0	20
04:00	2	33	9	0	1	1	0	0	0	0	0	0	0	46
05:00	3	65	15	1	7	1	0	0	0	0	0	0	0	92
06:00	9	104	26	1	10	**7**	0	0	3	0	0	0	0	160
07:00	7	**211**	**57**	**5**	**16**	0	0	0	**6**	0	0	0	0	**302**
08:00	7	211	55	3	14	3	0	**2**	1	0	0	0	0	296
09:00	**10**	152	45	1	13	4	0	0	0	0	0	0	0	225
10:00	4	169	44	4	9	4	0	1	0	0	0	0	0	235
11:00	6	193	48	2	11	6	0	0	2	0	0	0	0	268
12 PM	**11**	186	52	0	5	1	0	**2**	**2**	0	0	0	0	259
13:00	6	203	47	**3**	12	1	0	0	0	0	0	0	0	272
14:00	6	229	54	0	**13**	**3**	0	1	0	0	0	0	0	306
15:00	7	235	**71**	2	8	1	0	0	0	0	0	0	0	324
16:00	6	**245**	60	1	11	3	0	1	0	0	0	0	0	**327**
17:00	6	203	49	0	4	3	0	0	0	0	0	0	0	265
18:00	4	132	38	1	8	0	0	1	0	0	0	0	0	184
19:00	2	150	26	1	4	1	0	0	1	0	0	0	0	185
20:00	7	97	18	1	0	2	0	0	0	0	0	0	0	125
21:00	3	65	11	1	1	0	0	0	0	0	0	0	0	81
22:00	0	51	7	0	1	0	0	0	0	0	0	0	0	59
23:00	0	31	5	0	2	1	0	0	0	0	0	0	0	39
Total	110	3028	744	27	150	44	0	8	15	0	0	0	0	4126
Percent	2.7%	73.4%	18.0%	0.7%	3.6%	1.1%	0.0%	0.2%	0.4%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	07:00	07:00	07:00	07:00	06:00		08:00	07:00					07:00
Vol.	10	211	57	5	16	7		2	6					302
PM Peak	12:00	16:00	15:00	13:00	14:00	14:00		12:00	12:00					16:00
Vol.	11	245	71	3	13	3		2	2					327
Grand Total	110	3028	744	27	150	44	0	8	15	0	0	0	0	4126
Percent	2.7%	73.4%	18.0%	0.7%	3.6%	1.1%	0.0%	0.2%	0.4%	0.0%	0.0%	0.0%	0.0%	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Counts Unlimited, Inc.

PO Box 1178
Corona, CA 92878
Phone: (951) 268-6268
email: counts@countsunlimited.com

City of Moreno Valley
Frederick Drive
N/ Brodiaea Avenue
24 Hour Directional Classification Count

MRV001
Site Code: 051-18259

Southbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
04/03/18	0	31	8	0	0	0	0	0	0	0	0	0	0	39
01:00	1	17	2	0	0	0	0	0	0	0	0	0	0	20
02:00	0	6	2	0	0	0	0	0	0	0	0	0	0	8
03:00	0	25	3	0	0	0	0	0	0	0	0	0	0	28
04:00	0	39	12	0	2	0	0	0	0	0	0	0	0	53
05:00	1	99	27	0	2	1	0	0	1	0	0	0	0	131
06:00	4	109	25	**2**	6	2	0	1	2	0	0	0	0	151
07:00	**6**	**192**	36	1	6	1	2	3	1	**1**	0	0	0	**249**
08:00	1	134	35	1	**18**	1	4	2	2	0	0	0	0	198
09:00	1	132	33	1	11	0	**8**	3	**3**	0	0	0	0	192
10:00	0	131	36	2	4	0	4	4	1	0	0	0	0	182
11:00	1	185	**39**	2	9	**4**	1	**5**	1	0	0	0	0	247
12 PM	4	236	51	1	5	2	1	2	0	0	0	0	0	302
13:00	1	250	71	2	12	2	**2**	3	**2**	1	0	0	0	346
14:00	**7**	224	58	0	8	2	2	**6**	0	0	0	0	0	307
15:00	6	285	60	1	**20**	2	0	2	1	0	0	**1**	0	378
16:00	5	299	**74**	**4**	16	0	1	5	1	**2**	0	0	**1**	408
17:00	6	**382**	63	1	8	0	0	1	1	0	0	1	0	**463**
18:00	0	277	39	2	9	1	0	0	0	0	0	0	1	329
19:00	1	171	36	1	11	**3**	0	1	1	0	0	0	0	225
20:00	1	187	33	1	2	0	0	0	0	0	0	0	0	224
21:00	0	124	18	1	0	0	1	1	0	0	0	0	0	145
22:00	0	97	14	0	1	0	0	0	0	0	0	0	0	112
23:00	1	54	11	0	1	0	0	0	0	0	0	0	0	67
Total	47	3686	786	23	151	21	26	39	17	4	0	2	2	4804
Percent	1.0%	76.7%	16.4%	0.5%	3.1%	0.4%	0.5%	0.8%	0.4%	0.1%	0.0%	0.0%	0.0%	
AM Peak	07:00	07:00	11:00	06:00	08:00	11:00	09:00	11:00	09:00	07:00				07:00
Vol.	6	192	39	2	18	4	8	5	3	1				249
PM Peak	14:00	17:00	16:00	16:00	15:00	19:00	13:00	14:00	13:00	16:00		15:00	16:00	17:00
Vol.	7	382	74	4	20	3	2	6	2	2		1	1	463
Grand Total	47	3686	786	23	151	21	26	39	17	4	0	2	2	4804
Percent	1.0%	76.7%	16.4%	0.5%	3.1%	0.4%	0.5%	0.8%	0.4%	0.1%	0.0%	0.0%	0.0%	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

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City of Moreno Valley
Frederick Drive
N/ Brodiaea Avenue
24 Hour Directional Classification Count

MRV001
Site Code: 051-18259

Northbound, Southbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
04/03/18	0	52	10	0	0	0	0	0	0	0	0	0	0	62
01:00	3	28	3	0	0	0	0	0	0	0	0	0	0	34
02:00	1	20	4	0	0	2	0	0	0	0	0	0	0	27
03:00	1	42	5	0	0	0	0	0	0	0	0	0	0	48
04:00	2	72	21	0	3	1	0	0	0	0	0	0	0	99
05:00	4	164	42	1	9	2	0	0	1	0	0	0	0	223
06:00	**13**	213	51	3	16	9	0	1	5	0	0	0	0	311
07:00	13	**403**	**93**	**6**	22	1	2	3	**7**	**1**	0	0	0	**551**
08:00	8	345	90	4	**32**	4	4	4	3	0	0	0	0	494
09:00	11	284	78	2	24	4	**8**	3	3	0	0	0	0	417
10:00	4	300	80	6	13	4	4	**5**	1	0	0	0	0	417
11:00	7	378	87	4	20	**10**	1	5	3	0	0	0	0	515
12 PM	**15**	422	103	1	10	3	1	4	**2**	0	0	0	0	561
13:00	7	453	118	**5**	24	3	**2**	3	2	1	0	0	0	618
14:00	13	453	112	0	21	**5**	2	**7**	0	0	0	0	0	613
15:00	13	520	131	3	**28**	3	0	2	1	0	0	**1**	0	702
16:00	11	544	**134**	5	27	3	1	6	1	**2**	0	0	**1**	**735**
17:00	12	**585**	112	1	12	3	0	1	1	0	0	1	0	728
18:00	4	409	77	3	17	1	0	1	0	0	0	0	1	513
19:00	3	321	62	2	15	4	0	1	2	0	0	0	0	410
20:00	8	284	51	2	2	2	0	0	0	0	0	0	0	349
21:00	3	189	29	2	1	0	1	1	0	0	0	0	0	226
22:00	0	148	21	0	2	0	0	0	0	0	0	0	0	171
23:00	1	85	16	0	3	1	0	0	0	0	0	0	0	106
Total	157	6714	1530	50	301	65	26	47	32	4	0	2	2	8930
Percent	1.8%	75.2%	17.1%	0.6%	3.4%	0.7%	0.3%	0.5%	0.4%	0.0%	0.0%	0.0%	0.0%	
AM Peak	06:00	07:00	07:00	07:00	08:00	11:00	09:00	10:00	07:00	07:00				07:00
Vol.	13	403	93	6	32	10	8	5	7	1				551
PM Peak	12:00	17:00	16:00	13:00	15:00	14:00	13:00	14:00	12:00	16:00		15:00	16:00	16:00
Vol.	15	585	134	5	28	5	2	7	2	2		1	1	735
Grand Total	157	6714	1530	50	301	65	26	47	32	4	0	2	2	8930
Percent	1.8%	75.2%	17.1%	0.6%	3.4%	0.7%	0.3%	0.5%	0.4%	0.0%	0.0%	0.0%	0.0%	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 3.2:

EXISTING (2018) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	33	22	50	61	40	31
Future Vol, veh/h	33	22	50	61	40	31
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	0	115	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	38	25	57	70	46	36

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	185	58	0	0	127	0
Stage 1	57	-	-	-	-	-
Stage 2	128	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	809	1014	-	-	1472	-
Stage 1	971	-	-	-	-	-
Stage 2	903	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	784	1013	-	-	1472	-
Mov Cap-2 Maneuver	804	-	-	-	-	-
Stage 1	941	-	-	-	-	-
Stage 2	903	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	4.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	804	1013	1472	-
HCM Lane V/C Ratio	-	-	0.047	0.025	0.031	-
HCM Control Delay (s)	-	-	9.7	8.6	7.5	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0.1	0.1	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

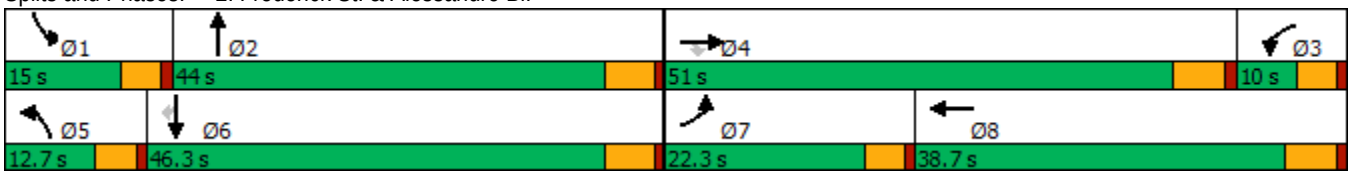
Timings
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
04/19/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	110	436	35	75	1315	85	218	99	248	186
Future Volume (vph)	110	436	35	75	1315	85	218	99	248	186
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	4	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.8	33.8	9.6	36.8	9.6	42.4	9.6	43.4	43.4
Total Split (s)	22.3	51.0	51.0	10.0	38.7	12.7	44.0	15.0	46.3	46.3
Total Split (%)	18.6%	42.5%	42.5%	8.3%	32.3%	10.6%	36.7%	12.5%	38.6%	38.6%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.4	4.6	5.4	5.4
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	None	Max	None	Max	Max
Act Effct Green (s)	11.9	45.2	45.2	5.4	38.7	7.1	40.1	7.9	40.9	40.9
Actuated g/C Ratio	0.10	0.38	0.38	0.05	0.33	0.06	0.34	0.07	0.34	0.34
v/c Ratio	0.64	0.33	0.05	0.95	0.88	0.43	0.20	0.44	0.21	0.29
Control Delay	66.9	27.1	0.1	145.3	45.9	60.5	28.1	59.3	28.3	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.9	27.1	0.1	145.3	45.9	60.5	28.1	59.3	28.3	5.0
LOS	E	C	A	F	D	E	C	E	C	A
Approach Delay		33.1			50.8		36.8		25.9	
Approach LOS		C			D		D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 119	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 41.2	Intersection LOS: D
Intersection Capacity Utilization 86.7%	ICU Level of Service E
Analysis Period (min) 15	

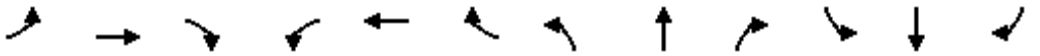
Splits and Phases: 2: Frederick St. & Alessandro Bl.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
04/19/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	436	35	75	1315	105	85	218	17	99	248	186
Future Volume (veh/h)	110	436	35	75	1315	105	85	218	17	99	248	186
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	115	454	15	78	1370	85	89	227	10	103	258	136
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	142	1385	610	83	1802	112	141	1206	53	157	1253	551
Arrive On Green	0.08	0.38	0.38	0.05	0.36	0.36	0.04	0.34	0.34	0.04	0.35	0.35
Sat Flow, veh/h	1810	3610	1590	1810	4987	309	3510	3520	154	3510	3610	1587
Grp Volume(v), veh/h	115	454	15	78	950	505	89	116	121	103	258	136
Grp Sat Flow(s),veh/h/ln	1810	1805	1590	1810	1729	1838	1755	1805	1870	1755	1805	1587
Q Serve(g_s), s	7.4	10.4	0.5	5.1	28.5	28.5	2.9	5.3	5.4	3.4	5.9	7.2
Cycle Q Clear(g_c), s	7.4	10.4	0.5	5.1	28.5	28.5	2.9	5.3	5.4	3.4	5.9	7.2
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	142	1385	610	83	1249	664	141	618	640	157	1253	551
V/C Ratio(X)	0.81	0.33	0.02	0.94	0.76	0.76	0.63	0.19	0.19	0.66	0.21	0.25
Avail Cap(c_a), veh/h	272	1385	610	83	1249	664	241	618	640	310	1253	551
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.4	25.6	14.2	56.1	33.1	33.1	55.7	27.2	27.2	55.4	27.0	27.5
Incr Delay (d2), s/veh	4.2	0.6	0.1	78.1	4.4	8.0	1.7	0.7	0.7	1.7	0.4	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	4.4	0.3	4.1	12.1	13.5	1.3	2.4	2.5	1.5	2.6	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.6	26.2	14.2	134.1	37.5	41.1	57.4	27.9	27.9	57.1	27.4	28.5
LnGrp LOS	E	C	B	F	D	D	E	C	C	E	C	C
Approach Vol, veh/h		584			1533			326			497	
Approach Delay, s/veh		32.1			43.6			36.0			33.9	
Approach LOS		C			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	45.8	11.2	51.0	9.3	46.3	13.8	48.4
Change Period (Y+Rc), s	4.6	5.4	5.8	* 5.8	4.6	5.4	4.6	5.8
Max Green Setting (Gmax), s	10.4	38.6	5.4	* 45	8.1	40.9	17.7	32.9
Max Q Clear Time (g_c+I1), s	5.4	7.4	7.1	12.4	4.9	9.2	9.4	30.5
Green Ext Time (p_c), s	0.1	1.8	0.0	4.3	0.0	2.0	0.1	1.8

Intersection Summary	
HCM 6th Ctrl Delay	38.8
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

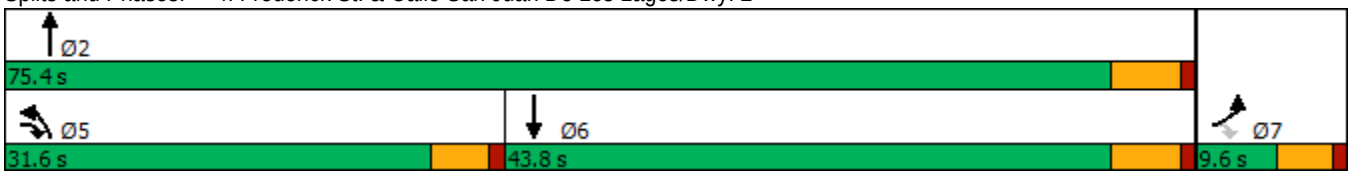
Timings
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Centerpointe (JN: 11410)
04/17/2018

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	24	12	45	306	256
Future Volume (vph)	24	12	45	306	256
Turn Type	Prot	pm+ov	Prot	NA	NA
Protected Phases	7	5	5	2	6
Permitted Phases		7			
Detector Phase	7	5	5	2	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	10.0	10.0
Minimum Split (s)	9.6	9.6	9.6	15.4	28.4
Total Split (s)	9.6	31.6	31.6	75.4	43.8
Total Split (%)	11.3%	37.2%	37.2%	88.7%	51.5%
Yellow Time (s)	3.6	3.6	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	5.4	5.4
Lead/Lag		Lead	Lead		Lag
Lead-Lag Optimize?		Yes	Yes		Yes
Recall Mode	None	None	None	Max	Max
Act Effct Green (s)	5.0	8.8	6.9	76.6	67.9
Actuated g/C Ratio	0.06	0.11	0.08	0.93	0.82
v/c Ratio	0.24	0.07	0.33	0.10	0.13
Control Delay	42.6	4.5	40.8	0.9	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	42.6	4.5	40.8	0.9	2.9
LOS	D	A	D	A	A
Approach Delay				6.0	2.9
Approach LOS				A	A

Intersection Summary			
Cycle Length: 85			
Actuated Cycle Length: 82.4			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.33			
Intersection Signal Delay: 5.7		Intersection LOS: A	
Intersection Capacity Utilization 39.6%		ICU Level of Service A	
Analysis Period (min) 15			

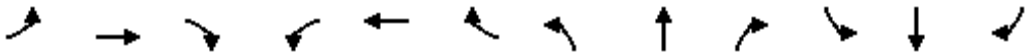
Splits and Phases: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Centerpointe (JN: 11410)
04/17/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	0	12	0	0	0	45	306	0	0	256	77
Future Volume (veh/h)	24	0	12	0	0	0	45	306	0	0	256	77
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	0	1900				1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h	26	0	6				49	333	0	0	278	79
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	57	0	116				74	3059	0	0	2093	583
Arrive On Green	0.03	0.00	0.03				0.04	0.85	0.00	0.00	0.75	0.75
Sat Flow, veh/h	1810	0	1610				1810	3705	0	0	2883	777
Grp Volume(v), veh/h	26	0	6				49	333	0	0	178	179
Grp Sat Flow(s),veh/h/ln	1810	0	1610				1810	1805	0	0	1805	1760
Q Serve(g_s), s	1.2	0.0	0.3				2.2	1.3	0.0	0.0	2.3	2.3
Cycle Q Clear(g_c), s	1.2	0.0	0.3				2.2	1.3	0.0	0.0	2.3	2.3
Prop In Lane	1.00		1.00				1.00		0.00	0.00		0.44
Lane Grp Cap(c), veh/h	57	0	116				74	3059	0	0	1355	1321
V/C Ratio(X)	0.46	0.00	0.05				0.66	0.11	0.00	0.00	0.13	0.14
Avail Cap(c_a), veh/h	110	0	163				591	3059	0	0	1355	1321
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	39.3	0.0	35.7				39.1	1.1	0.0	0.0	2.8	2.9
Incr Delay (d2), s/veh	5.6	0.0	0.2				3.7	0.1	0.0	0.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0				1.0	0.1	0.0	0.0	0.5	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.9	0.0	35.9				42.8	1.1	0.0	0.0	3.0	3.1
LnGrp LOS	D	A	D				D	A	A	A	A	A
Approach Vol, veh/h		32						382			357	
Approach Delay, s/veh		43.2						6.5			3.1	
Approach LOS		D						A			A	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		75.4		7.2	8.0	67.4						
Change Period (Y+Rc), s		5.4		4.6	4.6	5.4						
Max Green Setting (Gmax), s		70.0		5.0	27.0	38.4						
Max Q Clear Time (g_c+I1), s		3.3		3.2	4.2	4.3						
Green Ext Time (p_c), s		2.2		0.0	0.0	2.1						

Intersection Summary												
HCM 6th Ctrl Delay			6.4									
HCM 6th LOS			A									

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	5	0	0	67	0	284	8	0	255	13
Future Vol, veh/h	0	0	5	0	0	67	0	284	8	0	255	13
Conflicting Peds, #/hr	0	0	0	0	0	1	0	0	1	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	5	0	0	74	0	312	9	0	280	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	147	-	-	163	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	6.9	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	880	0	0	859	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	880	-	-	857	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	9.6	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	880	857	-	-
HCM Lane V/C Ratio	-	-	0.006	0.086	-	-
HCM Control Delay (s)	-	-	9.1	9.6	-	-
HCM Lane LOS	-	-	A	A	-	-
HCM 95th %tile Q(veh)	-	-	0	0.3	-	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

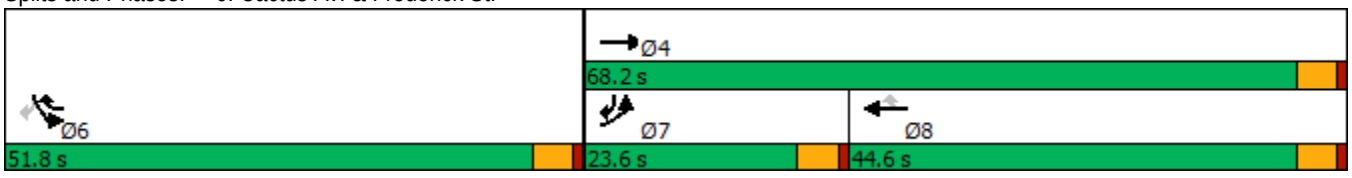
Timings
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
04/17/2018

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	164	972	1681	147	131	83
Future Volume (vph)	164	972	1681	147	131	83
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	7	4	8	6	6	7
Permitted Phases				8		6
Detector Phase	7	4	8	6	6	7
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0
Minimum Split (s)	9.6	14.6	30.6	37.6	37.6	9.6
Total Split (s)	23.6	68.2	44.6	51.8	51.8	23.6
Total Split (%)	19.7%	56.8%	37.2%	43.2%	43.2%	19.7%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	4.6	4.6	4.6
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	Max	Max	None	Min	Min	Max
Act Effct Green (s)	19.2	64.2	40.4	58.9	13.9	37.7
Actuated g/C Ratio	0.22	0.73	0.46	0.67	0.16	0.43
v/c Ratio	0.44	0.27	0.75	0.14	0.25	0.13
Control Delay	35.4	5.0	23.0	1.0	32.2	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.4	5.0	23.0	1.0	32.2	14.7
LOS	D	A	C	A	C	B
Approach Delay		9.4	21.3		25.4	
Approach LOS		A	C		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 87.4	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 17.3	Intersection LOS: B
Intersection Capacity Utilization 61.4%	ICU Level of Service B
Analysis Period (min) 15	

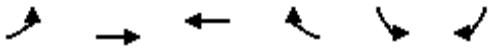
Splits and Phases: 6: Cactus Av. & Frederick St.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
04/17/2018



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	164	972	1681	147	131	83
Future Volume (veh/h)	164	972	1681	147	131	83
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	174	1034	1788	150	139	48
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	415	3984	2506	972	424	564
Arrive On Green	0.23	0.77	0.48	0.48	0.12	0.12
Sat Flow, veh/h	1810	5358	5358	1610	3510	1610
Grp Volume(v), veh/h	174	1034	1788	150	139	48
Grp Sat Flow(s),veh/h/ln	1810	1729	1729	1610	1755	1610
Q Serve(g_s), s	6.8	4.8	22.5	3.4	3.0	1.7
Cycle Q Clear(g_c), s	6.8	4.8	22.5	3.4	3.0	1.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	415	3984	2506	972	424	564
V/C Ratio(X)	0.42	0.26	0.71	0.15	0.33	0.09
Avail Cap(c_a), veh/h	415	3984	2506	972	2001	1287
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.2	2.8	16.9	7.2	33.3	18.0
Incr Delay (d2), s/veh	3.1	0.2	1.1	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.7	7.6	1.4	1.2	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	30.3	2.9	18.0	7.3	33.5	18.0
LnGrp LOS	C	A	B	A	C	B
Approach Vol, veh/h		1208	1938		187	
Approach Delay, s/veh		6.9	17.1		29.5	
Approach LOS		A	B		C	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	68.2	14.6	23.6	44.6
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6
Max Green Setting (Gmax), s	63.6	47.2	19.0	40.0
Max Q Clear Time (g_c+I1), s	6.8	5.0	8.8	24.5
Green Ext Time (p_c), s	12.3	0.3	0.1	12.4

Intersection Summary	
HCM 6th Ctrl Delay	14.1
HCM 6th LOS	B

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

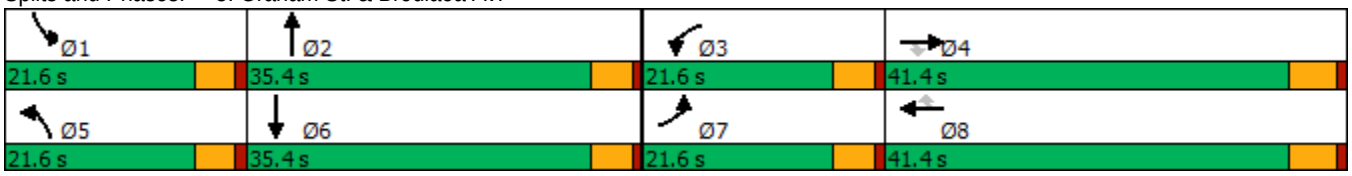
Timings
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
04/17/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	2	6	3	20	52	75	3	194	42	241
Future Volume (vph)	2	6	3	20	52	75	3	194	42	241
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	28.4	28.4	9.6	29.4	29.4	9.6	24.7	9.6	25.7
Total Split (s)	21.6	41.4	41.4	21.6	41.4	41.4	21.6	35.4	21.6	35.4
Total Split (%)	18.0%	34.5%	34.5%	18.0%	34.5%	34.5%	18.0%	29.5%	18.0%	29.5%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	4.4	3.6	3.7	3.6	3.7
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	5.4	4.6	4.7	4.6	4.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	5.7	12.9	12.9	6.1	13.1	13.1	5.8	18.3	6.7	21.0
Actuated g/C Ratio	0.14	0.31	0.31	0.14	0.31	0.31	0.14	0.43	0.16	0.50
v/c Ratio	0.01	0.01	0.01	0.10	0.11	0.17	0.02	0.17	0.18	0.17
Control Delay	26.0	15.5	0.0	24.1	14.3	5.1	25.7	13.8	22.8	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	15.5	0.0	24.1	14.3	5.1	25.7	13.8	22.8	11.0
LOS	C	B	A	C	B	A	C	B	C	B
Approach Delay		13.5			10.9			14.0		12.7
Approach LOS		B			B			B		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 42.1	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.18	
Intersection Signal Delay: 12.7	Intersection LOS: B
Intersection Capacity Utilization 34.3%	ICU Level of Service A
Analysis Period (min) 15	

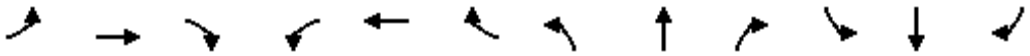
Splits and Phases: 8: Graham St. & Brodiaea Av.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
04/17/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	6	3	20	52	75	3	194	18	42	241	5
Future Volume (veh/h)	2	6	3	20	52	75	3	194	18	42	241	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	2	8	3	25	65	59	4	242	20	52	301	6
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	5	370	314	55	422	358	10	843	69	99	1081	21
Arrive On Green	0.00	0.19	0.19	0.03	0.22	0.22	0.01	0.25	0.25	0.05	0.30	0.30
Sat Flow, veh/h	1810	1900	1610	1810	1900	1608	1810	3376	277	1810	3618	72
Grp Volume(v), veh/h	2	8	3	25	65	59	4	128	134	52	150	157
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1810	1900	1608	1810	1805	1848	1810	1805	1885
Q Serve(g_s), s	0.0	0.1	0.1	0.6	1.1	1.2	0.1	2.4	2.4	1.1	2.6	2.6
Cycle Q Clear(g_c), s	0.0	0.1	0.1	0.6	1.1	1.2	0.1	2.4	2.4	1.1	2.6	2.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.15	1.00		0.04
Lane Grp Cap(c), veh/h	5	370	314	55	422	358	10	450	461	99	539	563
V/C Ratio(X)	0.40	0.02	0.01	0.46	0.15	0.17	0.41	0.29	0.29	0.53	0.28	0.28
Avail Cap(c_a), veh/h	751	1669	1414	751	1669	1412	751	1352	1384	751	1352	1412
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.4	13.3	13.3	19.5	12.8	12.9	20.3	12.4	12.4	18.9	11.0	11.0
Incr Delay (d2), s/veh	18.3	0.0	0.0	2.2	0.2	0.2	9.7	0.3	0.3	1.6	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.2	0.4	0.4	0.1	0.8	0.9	0.5	0.9	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.7	13.4	13.3	21.7	13.0	13.1	30.0	12.8	12.8	20.5	11.3	11.3
LnGrp LOS	D	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		13			149			266			359	
Approach Delay, s/veh		17.3			14.5			13.0			12.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	14.9	5.8	13.4	4.8	16.9	4.7	14.5
Change Period (Y+Rc), s	4.6	* 4.7	4.6	5.4	4.6	* 4.7	4.6	5.4
Max Green Setting (Gmax), s	17.0	* 31	17.0	36.0	17.0	* 31	17.0	36.0
Max Q Clear Time (g_c+I1), s	3.1	4.4	2.6	2.1	2.1	4.6	2.0	3.2
Green Ext Time (p_c), s	0.0	1.5	0.0	0.0	0.0	1.8	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	13.2
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	3.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	42	42	78	28	27	45
Future Vol, veh/h	42	42	78	28	27	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	0	115	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	47	47	88	31	30	51

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	199	88	0	0	119	0
Stage 1	88	-	-	-	-	-
Stage 2	111	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	794	976	-	-	1482	-
Stage 1	940	-	-	-	-	-
Stage 2	919	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	778	976	-	-	1482	-
Mov Cap-2 Maneuver	817	-	-	-	-	-
Stage 1	921	-	-	-	-	-
Stage 2	919	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	2.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	817	976	1482	-
HCM Lane V/C Ratio	-	-	0.058	0.048	0.02	-
HCM Control Delay (s)	-	-	9.7	8.9	7.5	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.2	0.1	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

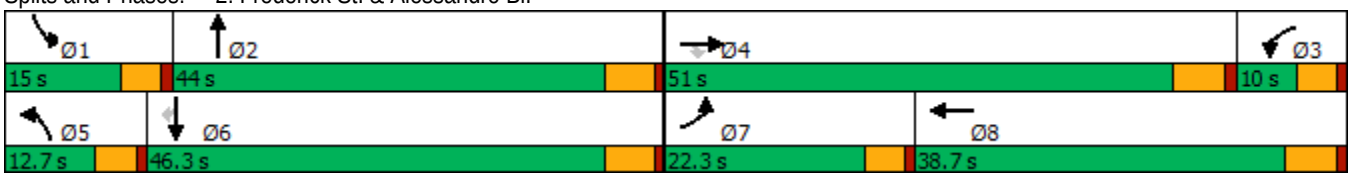
Timings
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
04/19/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	196	1224	136	59	804	97	267	262	267	118
Future Volume (vph)	196	1224	136	59	804	97	267	262	267	118
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	4	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.8	33.8	9.6	36.8	9.6	42.4	9.6	43.4	43.4
Total Split (s)	22.3	51.0	51.0	10.0	38.7	12.7	44.0	15.0	46.3	46.3
Total Split (%)	18.6%	42.5%	42.5%	8.3%	32.3%	10.6%	36.7%	12.5%	38.6%	38.6%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.4	4.6	5.4	5.4
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	None	Max	None	Max	Max
Act Effct Green (s)	16.1	46.0	46.0	5.4	33.3	7.3	38.6	10.4	41.8	41.8
Actuated g/C Ratio	0.14	0.39	0.39	0.05	0.28	0.06	0.32	0.09	0.35	0.35
v/c Ratio	0.84	0.92	0.21	0.76	0.71	0.48	0.31	0.90	0.22	0.19
Control Delay	78.9	46.9	7.6	105.1	40.4	61.7	28.6	85.7	28.2	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.9	46.9	7.6	105.1	40.4	61.7	28.6	85.7	28.2	2.4
LOS	E	D	A	F	D	E	C	F	C	A
Approach Delay		47.5			44.2		36.0		46.8	
Approach LOS		D			D		D		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 118.8	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 45.1	Intersection LOS: D
Intersection Capacity Utilization 93.3%	ICU Level of Service F
Analysis Period (min) 15	

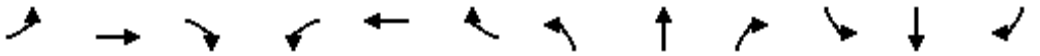
Splits and Phases: 2: Frederick St. & Alessandro Bl.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
04/19/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	196	1224	136	59	804	162	97	267	70	262	267	118
Future Volume (veh/h)	196	1224	136	59	804	162	97	267	70	262	267	118
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	206	1288	118	62	846	100	102	281	54	276	281	75
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	233	1347	600	80	1400	165	154	962	182	301	1302	578
Arrive On Green	0.13	0.37	0.37	0.04	0.30	0.30	0.04	0.32	0.32	0.09	0.36	0.36
Sat Flow, veh/h	1810	3610	1608	1810	4692	551	3510	3019	571	3510	3610	1602
Grp Volume(v), veh/h	206	1288	118	62	622	324	102	166	169	276	281	75
Grp Sat Flow(s),veh/h/ln	1810	1805	1608	1810	1729	1785	1755	1805	1785	1755	1805	1602
Q Serve(g_s), s	13.6	42.1	4.8	4.1	18.7	18.8	3.5	8.4	8.6	9.5	6.5	3.8
Cycle Q Clear(g_c), s	13.6	42.1	4.8	4.1	18.7	18.8	3.5	8.4	8.6	9.5	6.5	3.8
Prop In Lane	1.00		1.00	1.00		0.31	1.00		0.32	1.00		1.00
Lane Grp Cap(c), veh/h	233	1347	600	80	1032	533	154	575	569	301	1302	578
V/C Ratio(X)	0.88	0.96	0.20	0.78	0.60	0.61	0.66	0.29	0.30	0.92	0.22	0.13
Avail Cap(c_a), veh/h	264	1347	600	81	1032	533	235	575	569	301	1302	578
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.9	37.0	16.2	57.3	36.4	36.4	57.0	31.0	31.1	54.9	26.9	26.0
Incr Delay (d2), s/veh	23.9	16.1	0.7	33.6	2.6	5.1	1.8	1.3	1.3	30.5	0.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	20.6	2.3	2.6	8.0	8.7	1.6	3.8	3.9	5.4	2.8	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.8	53.1	16.9	90.9	39.0	41.5	58.8	32.2	32.4	85.4	27.2	26.5
LnGrp LOS	E	D	B	F	D	D	E	C	C	F	C	C
Approach Vol, veh/h		1612			1008			437			632	
Approach Delay, s/veh		53.4			43.0			38.5			52.5	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	44.0	11.2	51.0	9.9	49.1	20.2	41.9
Change Period (Y+Rc), s	4.6	5.4	5.8	* 5.8	4.6	5.4	4.6	5.8
Max Green Setting (Gmax), s	10.4	38.6	5.4	* 45	8.1	40.9	17.7	32.9
Max Q Clear Time (g_c+I1), s	11.5	10.6	6.1	44.1	5.5	8.5	15.6	20.8
Green Ext Time (p_c), s	0.0	2.7	0.0	0.9	0.0	2.0	0.1	4.5

Intersection Summary	
HCM 6th Ctrl Delay	48.6
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

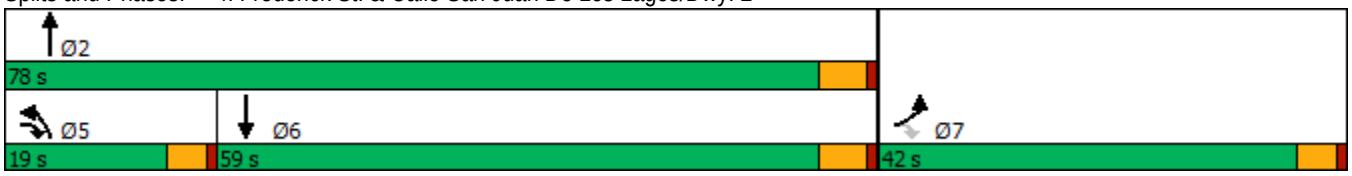
Timings
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Centerpointe (JN: 11410)
04/19/2018

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	136	25	22	304	432
Future Volume (vph)	136	25	22	304	432
Turn Type	Prot	pm+ov	Prot	NA	NA
Protected Phases	7	5	5	2	6
Permitted Phases		7			
Detector Phase	7	5	5	2	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	10.0	10.0
Minimum Split (s)	9.6	9.6	9.6	15.4	28.4
Total Split (s)	42.0	19.0	19.0	78.0	59.0
Total Split (%)	35.0%	15.8%	15.8%	65.0%	49.2%
Yellow Time (s)	3.6	3.6	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	5.4	5.4
Lead/Lag		Lead	Lead		Lag
Lead-Lag Optimize?		Yes	Yes		Yes
Recall Mode	None	None	None	Max	Max
Act Effct Green (s)	13.3	23.9	6.0	72.7	66.1
Actuated g/C Ratio	0.14	0.25	0.06	0.76	0.69
v/c Ratio	0.61	0.07	0.23	0.13	0.22
Control Delay	49.6	9.8	48.5	3.6	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	49.6	9.8	48.5	3.6	6.8
LOS	D	A	D	A	A
Approach Delay				6.6	6.8
Approach LOS				A	A

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 96	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 12.8	Intersection LOS: B
Intersection Capacity Utilization 34.5%	ICU Level of Service A
Analysis Period (min) 15	

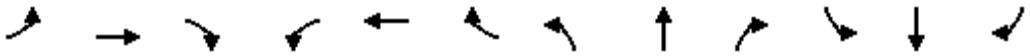
Splits and Phases: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Centerpointe (JN: 11410)
04/19/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	136	0	25	0	0	0	22	304	0	0	432	55
Future Volume (veh/h)	136	0	25	0	0	0	22	304	0	0	432	55
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	0	1900				1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h	153	0	22				25	342	0	0	485	55
Peak Hour Factor	0.89	0.89	0.89				0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	195	0	215				46	2831	0	0	2316	262
Arrive On Green	0.11	0.00	0.11				0.03	0.78	0.00	0.00	0.71	0.71
Sat Flow, veh/h	1810	0	1610				1810	3705	0	0	3362	369
Grp Volume(v), veh/h	153	0	22				25	342	0	0	267	273
Grp Sat Flow(s),veh/h/ln	1810	0	1610				1810	1805	0	0	1805	1831
Q Serve(g_s), s	7.6	0.0	1.1				1.3	2.1	0.0	0.0	4.7	4.7
Cycle Q Clear(g_c), s	7.6	0.0	1.1				1.3	2.1	0.0	0.0	4.7	4.7
Prop In Lane	1.00		1.00				1.00		0.00	0.00		0.20
Lane Grp Cap(c), veh/h	195	0	215				46	2831	0	0	1280	1298
V/C Ratio(X)	0.78	0.00	0.10				0.54	0.12	0.00	0.00	0.21	0.21
Avail Cap(c_a), veh/h	731	0	692				281	2831	0	0	1280	1298
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	40.3	0.0	35.2				44.6	2.4	0.0	0.0	4.6	4.6
Incr Delay (d2), s/veh	6.8	0.0	0.2				3.6	0.1	0.0	0.0	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	1.1				0.6	0.5	0.0	0.0	1.4	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.0	0.0	35.4				48.2	2.5	0.0	0.0	5.0	5.0
LnGrp LOS	D	A	D				D	A	A	A	A	A
Approach Vol, veh/h		175						367			540	
Approach Delay, s/veh		45.6						5.6			5.0	
Approach LOS		D						A			A	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		78.0		14.6	7.0	71.0						
Change Period (Y+Rc), s		5.4		4.6	4.6	5.4						
Max Green Setting (Gmax), s		72.6		37.4	14.4	53.6						
Max Q Clear Time (g_c+I1), s		4.1		9.6	3.3	6.7						
Green Ext Time (p_c), s		2.3		0.5	0.0	3.3						

Intersection Summary												
HCM 6th Ctrl Delay			11.7									
HCM 6th LOS			B									

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	28	0	0	48	0	277	18	0	447	10
Future Vol, veh/h	0	0	28	0	0	48	0	277	18	0	447	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	31	0	0	53	0	304	20	0	491	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	253	-	-	162	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	6.9	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	753	0	0	861	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	752	-	-	861	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	9.5	0	0
HCM LOS	B	A		

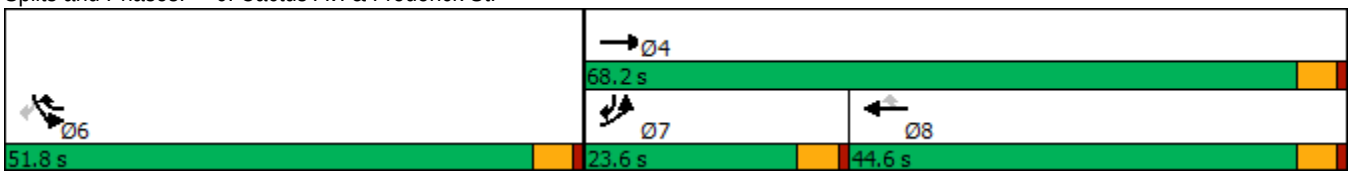
Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	752	861	-	-
HCM Lane V/C Ratio	-	-	0.041	0.061	-	-
HCM Control Delay (s)	-	-	10	9.5	-	-
HCM Lane LOS	-	-	B	A	-	-
HCM 95th %tile Q(veh)	-	-	0.1	0.2	-	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	77	1976	969	141	408	139
Future Volume (vph)	77	1976	969	141	408	139
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	7	4	8	6	6	7
Permitted Phases				8		6
Detector Phase	7	4	8	6	6	7
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0
Minimum Split (s)	9.6	14.6	30.6	37.6	37.6	9.6
Total Split (s)	23.6	68.2	44.6	51.8	51.8	23.6
Total Split (%)	19.7%	56.8%	37.2%	43.2%	43.2%	19.7%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	4.6	4.6	4.6
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	Max	Max	None	Min	Min	Max
Act Effct Green (s)	19.1	64.0	40.3	57.4	17.1	40.9
Actuated g/C Ratio	0.21	0.71	0.45	0.63	0.19	0.45
v/c Ratio	0.21	0.55	0.43	0.14	0.63	0.19
Control Delay	33.5	8.1	18.9	1.0	37.7	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	8.1	18.9	1.0	37.7	13.1
LOS	C	A	B	A	D	B
Approach Delay		9.1	16.7		31.5	
Approach LOS		A	B		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 90.4	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 14.6	Intersection LOS: B
Intersection Capacity Utilization 57.5%	ICU Level of Service B
Analysis Period (min) 15	

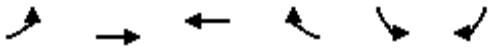
Splits and Phases: 6: Cactus Av. & Frederick St.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
04/18/2018



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	77	1976	969	141	408	139
Future Volume (veh/h)	77	1976	969	141	408	139
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.98	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	79	2037	999	101	421	46
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	402	3856	2425	977	523	598
Arrive On Green	0.22	0.74	0.47	0.47	0.15	0.15
Sat Flow, veh/h	1810	5358	5358	1577	3510	1610
Grp Volume(v), veh/h	79	2037	999	101	421	46
Grp Sat Flow(s),veh/h/ln	1810	1729	1729	1577	1755	1610
Q Serve(g_s), s	3.0	14.2	10.9	2.2	9.9	1.6
Cycle Q Clear(g_c), s	3.0	14.2	10.9	2.2	9.9	1.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	402	3856	2425	977	523	598
V/C Ratio(X)	0.20	0.53	0.41	0.10	0.80	0.08
Avail Cap(c_a), veh/h	402	3856	2425	977	1937	1246
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	4.6	15.0	6.7	35.2	17.4
Incr Delay (d2), s/veh	1.1	0.5	0.2	0.1	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	2.8	3.7	1.0	4.1	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	28.2	5.2	15.2	6.8	36.3	17.4
LnGrp LOS	C	A	B	A	D	B
Approach Vol, veh/h		2116	1100		467	
Approach Delay, s/veh		6.0	14.4		34.5	
Approach LOS		A	B		C	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	68.2	17.4	23.6	44.6
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6
Max Green Setting (Gmax), s	63.6	47.2	19.0	40.0
Max Q Clear Time (g_c+I1), s	16.2	11.9	5.0	12.9
Green Ext Time (p_c), s	31.7	0.8	0.1	10.4

Intersection Summary	
HCM 6th Ctrl Delay	12.1
HCM 6th LOS	B

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

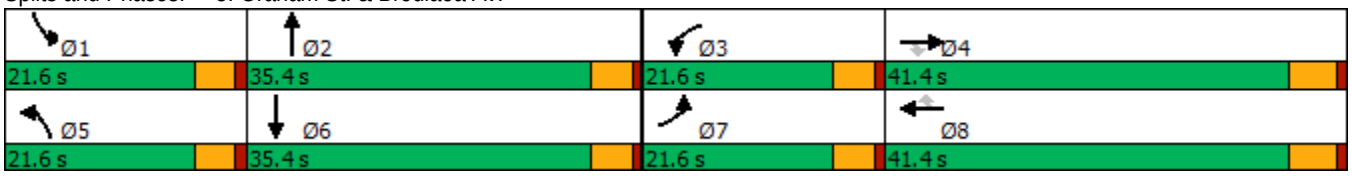
Timings
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
04/18/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	3	11	3	20	46	68	3	265	75	266
Future Volume (vph)	3	11	3	20	46	68	3	265	75	266
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	28.4	28.4	9.6	29.4	29.4	9.6	24.7	9.6	25.7
Total Split (s)	21.6	41.4	41.4	21.6	41.4	41.4	21.6	35.4	21.6	35.4
Total Split (%)	18.0%	34.5%	34.5%	18.0%	34.5%	34.5%	18.0%	29.5%	18.0%	29.5%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	4.4	3.6	3.7	3.6	3.7
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	5.4	4.6	4.7	4.6	4.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	5.7	12.8	12.8	6.0	13.0	13.0	5.7	19.3	7.4	25.0
Actuated g/C Ratio	0.13	0.28	0.28	0.13	0.29	0.29	0.13	0.43	0.16	0.55
v/c Ratio	0.01	0.02	0.01	0.09	0.09	0.14	0.01	0.21	0.28	0.15
Control Delay	27.3	16.9	0.0	26.1	16.1	3.7	27.3	15.4	24.3	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.3	16.9	0.0	26.1	16.1	3.7	27.3	15.4	24.3	10.2
LOS	C	B	A	C	B	A	C	B	C	B
Approach Delay		15.8			11.3			15.5		13.3
Approach LOS		B			B			B		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 45.4	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.28	
Intersection Signal Delay: 13.8	Intersection LOS: B
Intersection Capacity Utilization 34.0%	ICU Level of Service A
Analysis Period (min) 15	

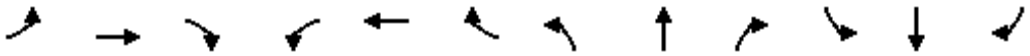
Splits and Phases: 8: Graham St. & Brodiaea Av.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
04/18/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	11	3	20	46	68	3	265	22	75	266	3
Future Volume (veh/h)	3	11	3	20	46	68	3	265	22	75	266	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	3	12	0	22	50	44	3	288	21	82	289	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	7	335	284	49	378	321	7	851	62	134	1169	12
Arrive On Green	0.00	0.18	0.00	0.03	0.20	0.20	0.00	0.25	0.25	0.07	0.32	0.32
Sat Flow, veh/h	1810	1900	1610	1810	1900	1610	1810	3412	247	1810	3660	38
Grp Volume(v), veh/h	3	12	0	22	50	44	3	152	157	82	142	150
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1810	1900	1610	1810	1805	1854	1810	1805	1893
Q Serve(g_s), s	0.1	0.2	0.0	0.5	0.9	0.9	0.1	2.8	2.8	1.8	2.4	2.4
Cycle Q Clear(g_c), s	0.1	0.2	0.0	0.5	0.9	0.9	0.1	2.8	2.8	1.8	2.4	2.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		0.02
Lane Grp Cap(c), veh/h	7	335	284	49	378	321	7	450	462	134	577	605
V/C Ratio(X)	0.40	0.04	0.00	0.45	0.13	0.14	0.40	0.34	0.34	0.61	0.25	0.25
Avail Cap(c_a), veh/h	754	1677	1421	754	1677	1421	754	1359	1396	754	1359	1425
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.3	13.9	0.0	19.5	13.4	13.4	20.3	12.5	12.6	18.3	10.3	10.3
Incr Delay (d2), s/veh	12.6	0.0	0.0	2.4	0.2	0.2	12.6	0.4	0.4	1.7	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.0	0.2	0.3	0.3	0.1	1.0	1.0	0.7	0.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.9	14.0	0.0	21.9	13.6	13.6	32.9	13.0	13.0	20.0	10.5	10.5
LnGrp LOS	C	B	A	C	B	B	C	B	B	B	B	B
Approach Vol, veh/h		15			116			312			374	
Approach Delay, s/veh		17.8			15.2			13.2			12.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.6	14.9	5.7	12.6	4.8	17.7	4.8	13.5
Change Period (Y+Rc), s	4.6	* 4.7	4.6	5.4	4.6	* 4.7	4.6	5.4
Max Green Setting (Gmax), s	17.0	* 31	17.0	36.0	17.0	* 31	17.0	36.0
Max Q Clear Time (g_c+I1), s	3.8	4.8	2.5	2.2	2.1	4.4	2.1	2.9
Green Ext Time (p_c), s	0.1	1.8	0.0	0.0	0.0	1.7	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	13.3
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 3.3:

EXISTING (2018) CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

California MUTCD 2014 Edition
(FHWA's MUTCD 2009, as amended for use in California)

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

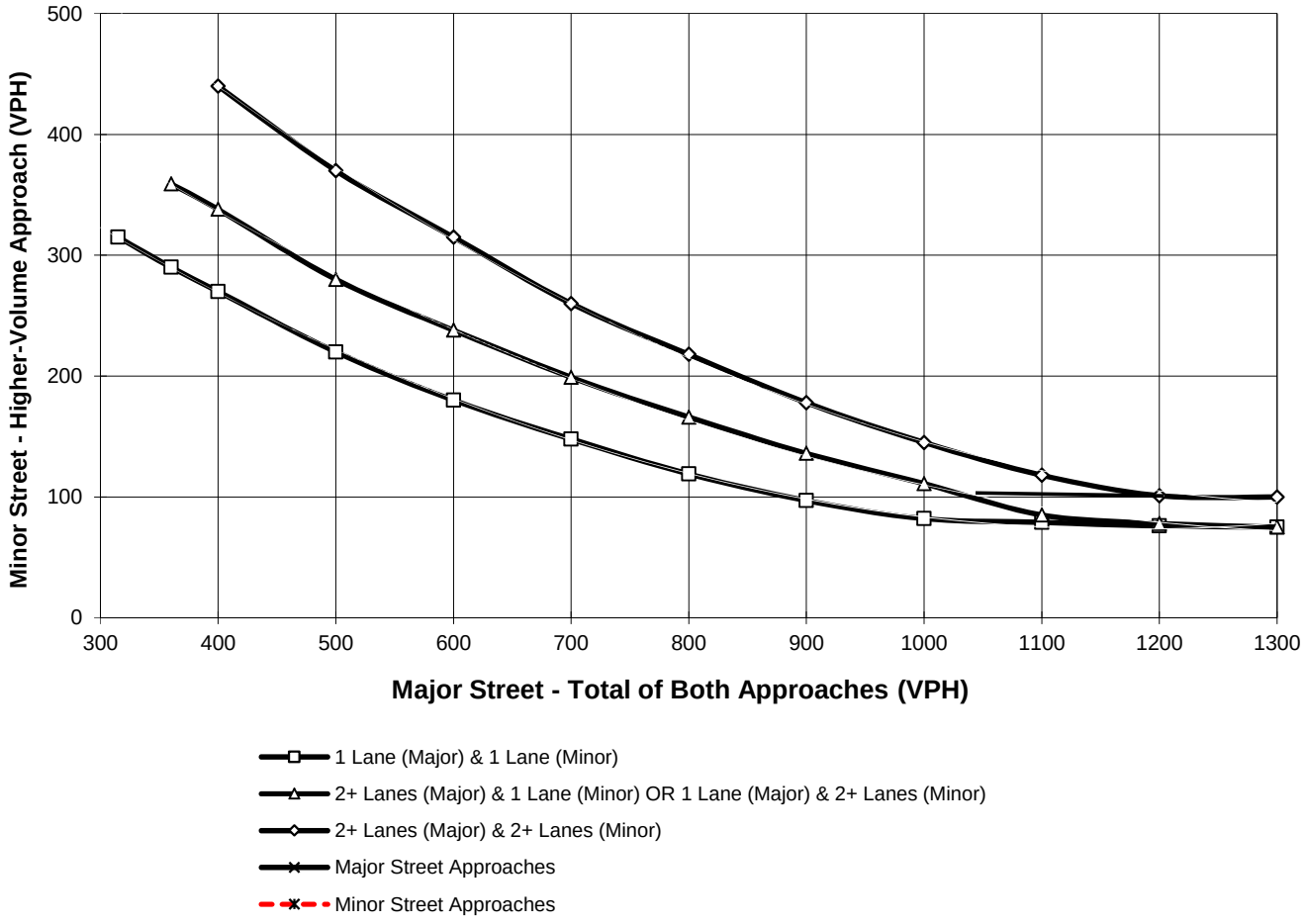
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing (2018) Conditions - Weekday PM Peak Hour**

Major Street Name = **Veterans Way** Total of Both Approaches (VPH) = **177**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Calle San Juan de Los Lagos** High Volume Approach (VPH) = **84**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 3.4:

EXISTING (2018) CONDITIONS QUEUING ANALYSIS WORKSHEETS

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 1: Veterans Wy. & Calle San Juan De Los Lagos

Movement	WB	WB	NB	SB
Directions Served	L	R	R	L
Maximum Queue (ft)	35	24	4	28
Average Queue (ft)	15	9	0	3
95th Queue (ft)	37	26	3	16
Link Distance (ft)		1530	1143	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	100			115
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	TR	L	L	T	TR
Maximum Queue (ft)	154	189	185	26	215	354	359	347	67	74	100	121
Average Queue (ft)	77	112	85	9	104	250	252	237	21	38	41	55
95th Queue (ft)	139	172	160	23	213	339	338	326	52	69	82	97
Link Distance (ft)		1582	1582	1582		2574	2574	2574			571	571
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250				130				135	135		
Storage Blk Time (%)		0			5	36					0	
Queuing Penalty (veh)		0			23	27					0	

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	R
Maximum Queue (ft)	102	140	136	137	145
Average Queue (ft)	22	72	64	63	56
95th Queue (ft)	73	123	119	120	107
Link Distance (ft)			1184	1184	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100	100			100
Storage Blk Time (%)	0	8	4	3	2
Queuing Penalty (veh)	0	10	4	5	2

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 3: Frederick St. & Dwy. 1

Movement							
Directions Served							
Maximum Queue (ft)							
Average Queue (ft)							
95th Queue (ft)							
Link Distance (ft)							
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	T	TR
Maximum Queue (ft)	59	28	76	39	53	54	80
Average Queue (ft)	19	7	30	5	9	11	21
95th Queue (ft)	45	27	63	25	35	38	63
Link Distance (ft)		1530		235	235	275	275
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	120		150				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 5: Frederick St. & Private Driveway/Brodiaea Av.

Movement	EB	WB	NB	NB	SB
Directions Served	R	R	T	TR	T
Maximum Queue (ft)	31	49	6	6	6
Average Queue (ft)	4	26	0	0	0
95th Queue (ft)	22	46	4	4	4
Link Distance (ft)	167	480	1156	1156	235
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 6: Cactus Av. & Frederick St.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	T	T	T	T	R	L	L	R
Maximum Queue (ft)	172	126	118	58	294	284	276	57	82	100	80
Average Queue (ft)	85	56	40	17	178	175	142	23	28	45	24
95th Queue (ft)	145	110	91	48	258	255	242	52	66	83	59
Link Distance (ft)		1599	1599	1599	2529	2529	2529			1156	1156
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	300							265	140		
Storage Blk Time (%)							0			0	
Queuing Penalty (veh)							0			0	

Intersection: 7: Brodiaea Av. & Dwy. 3

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 8: Graham St. & Brodiaea Av.

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	17	31	27	48	70	48	25	83	47	63	82	45
Average Queue (ft)	1	3	3	17	23	25	2	33	11	24	29	10
95th Queue (ft)	10	16	16	43	52	45	12	62	32	53	64	31
Link Distance (ft)		2009	2009		828	828		1200	1200		1170	1170
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210			150			160			150		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Network Summary

Network wide Queuing Penalty: 71

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 1: Veterans Wy. & Calle San Juan De Los Lagos

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	44	29	28
Average Queue (ft)	19	15	2
95th Queue (ft)	41	31	14
Link Distance (ft)		1530	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		115
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	TR	L	L	T	TR
Maximum Queue (ft)	330	517	500	66	214	258	259	259	74	87	147	168
Average Queue (ft)	221	329	321	25	64	170	171	150	22	42	70	85
95th Queue (ft)	373	474	452	52	138	226	229	231	56	76	126	149
Link Distance (ft)		1582	1582	1582		2574	2574	2574			571	571
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250				130				135	135		
Storage Blk Time (%)	1	20			1	21					1	
Queuing Penalty (veh)	6	40			4	12					1	

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	R
Maximum Queue (ft)	160	219	340	235	82
Average Queue (ft)	121	160	124	75	35
95th Queue (ft)	202	230	279	176	65
Link Distance (ft)			1184	1184	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100	100			100
Storage Blk Time (%)	16	56	5	3	0
Queuing Penalty (veh)	21	74	12	4	0

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 3: Frederick St. & Dwy. 1

Movement							
Directions Served							
Maximum Queue (ft)							
Average Queue (ft)							
95th Queue (ft)							
Link Distance (ft)							
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	T	TR
Maximum Queue (ft)	149	54	62	73	65	140	127
Average Queue (ft)	78	15	22	18	19	39	35
95th Queue (ft)	128	43	53	53	52	102	94
Link Distance (ft)		1530		235	235	275	275
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	120		150				
Storage Blk Time (%)	3	0					
Queuing Penalty (veh)	1	0					

Intersection: 5: Frederick St. & Private Driveway/Brodiaea Av.

Movement	EB	WB
Directions Served	R	R
Maximum Queue (ft)	36	53
Average Queue (ft)	19	22
95th Queue (ft)	44	45
Link Distance (ft)	167	480
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 6: Cactus Av. & Frederick St.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	T	T	T	T	R	L	L	R
Maximum Queue (ft)	114	229	221	196	195	202	193	54	176	200	95
Average Queue (ft)	44	107	95	59	127	118	71	23	92	111	29
95th Queue (ft)	90	187	174	136	176	174	151	49	149	172	67
Link Distance (ft)		1599	1599	1599	2529	2529	2529			1156	1156
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	300							265	140		
Storage Blk Time (%)									1	2	
Queuing Penalty (veh)									1	5	

Intersection: 7: Brodiaea Av. & Dwy. 3

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 8: Graham St. & Brodiaea Av.

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	30	35	27	52	61	56	25	100	59	71	82	46
Average Queue (ft)	3	8	2	14	23	26	2	45	18	34	34	13
95th Queue (ft)	17	30	13	42	52	45	13	82	47	61	66	36
Link Distance (ft)		2009	2009		828	828		1200	1200		1170	1170
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210			150			160			150		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Network Summary

Network wide Queuing Penalty: 181

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 4.1:

POST PROCESSING WORKSHEETS

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Project: Centerpointe TIA
Scenario: General Plan Buildout (Post 2040)

Job #: 11410
Analyst: CP
Date: 43209

LOCATION: Frederick St. & Alessandro Bl.
FORECAST YEAR: 2035

INDIVIDUAL TURN VOLUME GROWTH REVIEW

APPROACH	TURNING MOVEMENT	AM PEAK HOUR INPUT DATA EXISTING COUNT	AM FUTURE VOLUME	AM DIFF-ERENCE	AM % CHANGE	PM PEAK HOUR INPUT DATA EXISTING COUNT	PM FUTURE VOLUME	PM DIFF-ERENCE	PM % CHANGE
NORTH BOUND	Left	85	49	-36	-42%	97	70	-27	-28%
	Through	218	252	34	16%	267	264	-3	-1%
	Right	17	18	1	6%	70	95	25	36%
	NB Total	320	319	-1	0%	434	429	-5	-1%
SOUTH BOUND	Left	99	209	110	111%	262	635	373	142%
	Through	248	241	-7	-3%	267	335	68	25%
	Right	186	211	25	13%	118	153	35	30%
	SB Total	533	661	128	24%	647	1,123	476	74%
EAST BOUND	Left	110	192	82	75%	196	250	54	28%
	Through	436	711	275	63%	1,224	2,140	916	75%
	Right	35	26	-9	-26%	136	123	-13	-10%
	EB Total	581	929	348	60%	1,556	2,513	957	62%
WEST BOUND	Left	75	96	21	28%	59	88	29	49%
	Through	1,315	1,970	655	50%	804	1,237	433	54%
	Right	105	313	208	198%	162	340	178	110%
	WB Total	1,495	2,379	884	59%	1,025	1,665	640	62%
TOTAL ENTERING VOLUME		2,929	4,288	1359	46%	3,662	5,730	2068	56%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES AM	VOLUMES PM	PERCENT OF ADT AM	PERCENT OF ADT PM	ADT
North Leg	Inbound	661	1,123			
North Leg	Outbound	757	854			
North Leg	**TOTAL**	**1,418**	**1,977**	**7%**	**9%**	**21,000**
South Leg	Inbound	319	429			
South Leg	Outbound	363	546			
South Leg	**TOTAL**	**682**	**975**	**10%**	**14%**	**7,000**
East Leg	Inbound	2,379	1,665			
East Leg	Outbound	938	2,870			
East Leg	**TOTAL**	**3,317**	**4,535**	**7%**	**9%**	**49,000**
West Leg	Inbound	929	2,513			
West Leg	Outbound	2,230	1,460			
West Leg	**TOTAL**	**3,159**	**3,973**	**7%**	**9%**	**43,000**
OVERALL TOTAL		***8,576***	***11,460***	***7%***	***10%***	***120,000***

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Project: Centerpointe TIA
Scenario: General Plan Buildout (Post 2040)

Job #: 11410
Analyst: CP
Date: 43209

LOCATION: Frederick St. & Cactus Av.
FORECAST YEAR: 2035

INDIVIDUAL TURN VOLUME GROWTH REVIEW

APPROACH	TURNING MOVEMENT	AM PEAK HOUR INPUT DATA EXISTING COUNT	AM FUTURE VOLUME	AM DIFF-ERENCE	AM % CHANGE	PM PEAK HOUR INPUT DATA EXISTING COUNT	PM FUTURE VOLUME	PM DIFF-ERENCE	PM % CHANGE
NORTH BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	NB Total	0	0	0	#DIV/0!	0	0	0	#DIV/0!
SOUTH BOUND	Left	131	82	-49	-37%	408	355	-53	-13%
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	83	127	44	53%	139	250	111	80%
	SB Total	214	209	-5	-2%	547	605	58	11%
EAST BOUND	Left	164	215	51	31%	77	115	38	49%
	Through	972	1,128	156	16%	1,976	3,075	1,099	56%
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	EB Total	1,136	1,343	207	18%	2,053	3,190	1,137	55%
WEST BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	1,681	2,623	942	56%	969	1,570	601	62%
	Right	147	105	-42	-29%	141	105	-36	-26%
	WB Total	1,828	2,728	900	49%	1,110	1,675	565	51%
TOTAL ENTERING VOLUME		3,178	4,280	1102	35%	3,710	5,470	1760	47%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES AM	VOLUMES PM	PERCENT OF ADT AM	PERCENT OF ADT PM	ADT
North Leg	Inbound	209	605			
North Leg	Outbound	320	220			
North Leg	**TOTAL**	**529**	**825**	**18%**	**28%**	**3,000**
South Leg	Inbound	0	0			
South Leg	Outbound	0	0			
South Leg	**TOTAL**	**0**	**0**	**#DIV/0!**	**#DIV/0!**	**-**
East Leg	Inbound	2,728	1,675			
East Leg	Outbound	1,210	3,430			
East Leg	**TOTAL**	**3,938**	**5,105**	**11%**	**14%**	**37,000**
West Leg	Inbound	1,343	3,190			
West Leg	Outbound	2,750	1,820			
West Leg	**TOTAL**	**4,093**	**5,010**	**11%**	**14%**	**36,000**
OVERALL TOTAL		***8,560***	***10,940***	**11%**	***14%***	***76,000***

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 5.1:

E+P CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	23	50	65	44	31
Future Vol, veh/h	34	23	50	65	44	31
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	0	115	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	39	26	57	75	51	36

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	195	58	0	0	132	0
Stage 1	57	-	-	-	-	-
Stage 2	138	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	798	1014	-	-	1466	-
Stage 1	971	-	-	-	-	-
Stage 2	894	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	770	1013	-	-	1466	-
Mov Cap-2 Maneuver	792	-	-	-	-	-
Stage 1	937	-	-	-	-	-
Stage 2	894	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	4.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	792	1013	1466	-
HCM Lane V/C Ratio	-	-	0.049	0.026	0.034	-
HCM Control Delay (s)	-	-	9.8	8.6	7.5	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.1	0.1	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

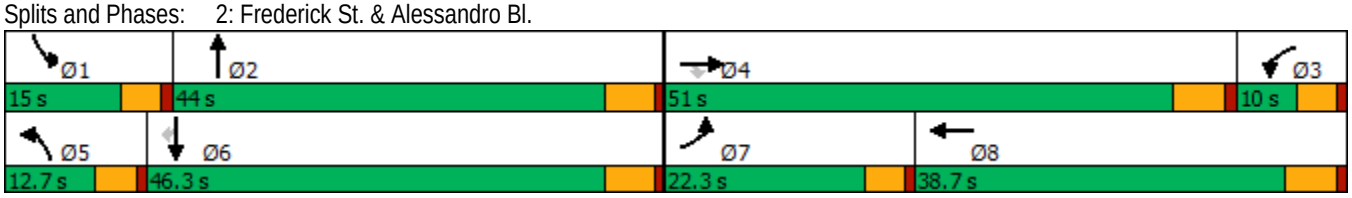
Timings
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	110	436	39	79	1315	88	219	99	252	186
Future Volume (vph)	110	436	39	79	1315	88	219	99	252	186
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	4	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.8	33.8	9.6	36.8	9.6	42.4	9.6	43.4	43.4
Total Split (s)	22.3	51.0	51.0	10.0	38.7	12.7	44.0	15.0	46.3	46.3
Total Split (%)	18.6%	42.5%	42.5%	8.3%	32.3%	10.6%	36.7%	12.5%	38.6%	38.6%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.4	4.6	5.4	5.4
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	None	Max	None	Max	Max
Act Effct Green (s)	11.9	45.2	45.2	5.4	38.7	7.1	40.1	7.9	40.9	40.9
Actuated g/C Ratio	0.10	0.38	0.38	0.05	0.33	0.06	0.34	0.07	0.34	0.34
v/c Ratio	0.64	0.33	0.06	1.00	0.89	0.44	0.20	0.45	0.21	0.29
Control Delay	66.9	27.2	0.2	158.2	46.0	60.8	28.0	59.4	28.4	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.9	27.2	0.2	158.2	46.0	60.8	28.0	59.4	28.4	5.0
LOS	E	C	A	F	D	E	C	E	C	A
Approach Delay		32.8			51.9		36.9		26.0	
Approach LOS		C			D		D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 119	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 41.7	Intersection LOS: D
Intersection Capacity Utilization 86.7%	ICU Level of Service E
Analysis Period (min) 15	

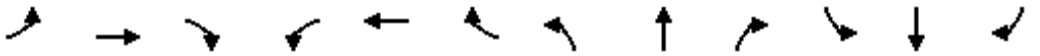
Splits and Phases: 2: Frederick St. & Alessandro Bl.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	436	39	79	1315	105	88	219	18	99	252	186
Future Volume (veh/h)	110	436	39	79	1315	105	88	219	18	99	252	186
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	115	454	20	82	1370	85	92	228	11	103	262	136
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	142	1384	609	83	1800	112	144	1202	58	157	1252	550
Arrive On Green	0.08	0.38	0.38	0.05	0.36	0.36	0.04	0.34	0.34	0.04	0.35	0.35
Sat Flow, veh/h	1810	3610	1590	1810	4987	309	3510	3504	168	3510	3610	1587
Grp Volume(v), veh/h	115	454	20	82	950	505	92	117	122	103	262	136
Grp Sat Flow(s),veh/h/ln	1810	1805	1590	1810	1729	1838	1755	1805	1867	1755	1805	1587
Q Serve(g_s), s	7.4	10.5	0.7	5.3	28.5	28.5	3.0	5.4	5.4	3.4	6.0	7.2
Cycle Q Clear(g_c), s	7.4	10.5	0.7	5.3	28.5	28.5	3.0	5.4	5.4	3.4	6.0	7.2
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	142	1384	609	83	1248	664	144	619	640	157	1252	550
V/C Ratio(X)	0.81	0.33	0.03	0.99	0.76	0.76	0.64	0.19	0.19	0.66	0.21	0.25
Avail Cap(c_a), veh/h	272	1384	609	83	1248	664	241	619	640	310	1252	550
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.5	25.7	14.2	56.2	33.2	33.2	55.7	27.2	27.2	55.4	27.1	27.5
Incr Delay (d2), s/veh	4.2	0.6	0.1	95.1	4.4	8.0	1.8	0.7	0.7	1.7	0.4	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	4.4	0.4	4.6	12.1	13.6	1.4	2.4	2.5	1.5	2.6	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.7	26.3	14.3	151.3	37.6	41.2	57.5	27.9	27.9	57.2	27.5	28.6
LnGrp LOS	E	C	B	F	D	D	E	C	C	E	C	C
Approach Vol, veh/h		589			1537			331			501	
Approach Delay, s/veh		32.0			44.9			36.1			33.9	
Approach LOS		C			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	45.9	11.2	51.0	9.4	46.3	13.8	48.4
Change Period (Y+Rc), s	4.6	5.4	5.8	* 5.8	4.6	5.4	4.6	5.8
Max Green Setting (Gmax), s	10.4	38.6	5.4	* 45	8.1	40.9	17.7	32.9
Max Q Clear Time (g_c+I1), s	5.4	7.4	7.3	12.5	5.0	9.2	9.4	30.5
Green Ext Time (p_c), s	0.1	1.9	0.0	4.3	0.0	2.1	0.1	1.8

Intersection Summary	
HCM 6th Ctrl Delay	39.5
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	2	333	0	0	343
Future Vol, veh/h	0	2	333	0	0	343
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	2	362	0	0	373

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	181	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	837	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	837	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	837	-
HCM Lane V/C Ratio	-	-	0.003	-
HCM Control Delay (s)	-	-	9.3	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	0	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

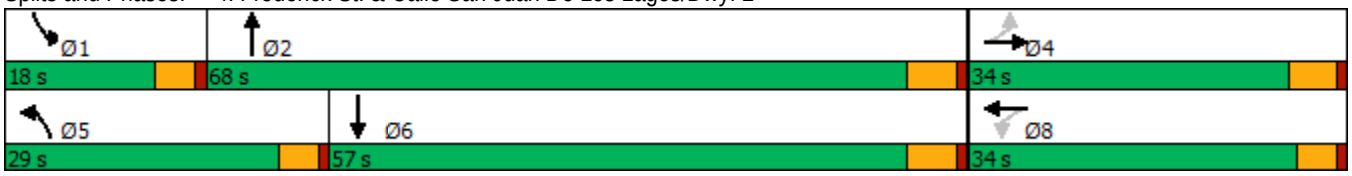
Timings
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	24	7	2	2	45	307	9	258
Future Volume (vph)	24	7	2	2	45	307	9	258
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	23.4	23.4	22.6	22.6	9.6	15.4	9.6	28.4
Total Split (s)	34.0	34.0	34.0	34.0	29.0	68.0	18.0	57.0
Total Split (%)	28.3%	28.3%	28.3%	28.3%	24.2%	56.7%	15.0%	47.5%
Yellow Time (s)	4.4	4.4	3.6	3.6	3.6	4.4	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4		4.6	4.6	5.4	4.6	5.4
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	11.5	11.5		11.9	6.9	69.4	5.3	64.1
Actuated g/C Ratio	0.14	0.14		0.14	0.08	0.82	0.06	0.76
v/c Ratio	0.13	0.09		0.03	0.33	0.12	0.09	0.14
Control Delay	35.8	22.8		29.3	45.0	3.8	43.4	5.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	35.8	22.8		29.3	45.0	3.8	43.4	5.7
LOS	D	C		C	D	A	D	A
Approach Delay		30.0		29.3		9.0		6.7
Approach LOS		C		C		A		A

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 84.3	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.33	
Intersection Signal Delay: 9.3	Intersection LOS: A
Intersection Capacity Utilization 45.3%	ICU Level of Service A
Analysis Period (min) 15	

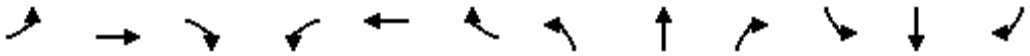
Splits and Phases: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	7	12	2	2	2	45	307	11	9	258	77
Future Volume (veh/h)	24	7	12	2	2	2	45	307	11	9	258	77
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	26	8	6	2	2	2	49	334	12	10	280	79
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	205	84	63	81	68	47	72	2577	92	22	1948	539
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.04	0.73	0.73	0.01	0.70	0.70
Sat Flow, veh/h	1435	1003	752	309	818	563	1810	3552	127	1810	2792	773
Grp Volume(v), veh/h	26	0	14	6	0	0	49	169	177	10	179	180
Grp Sat Flow(s),veh/h/ln	1435	0	1755	1689	0	0	1810	1805	1874	1810	1805	1760
Q Serve(g_s), s	1.1	0.0	0.6	0.0	0.0	0.0	2.3	2.5	2.5	0.5	2.9	3.0
Cycle Q Clear(g_c), s	1.4	0.0	0.6	0.3	0.0	0.0	2.3	2.5	2.5	0.5	2.9	3.0
Prop In Lane	1.00		0.43	0.33		0.33	1.00		0.07	1.00		0.44
Lane Grp Cap(c), veh/h	205	0	147	197	0	0	72	1310	1360	22	1260	1228
V/C Ratio(X)	0.13	0.00	0.10	0.03	0.00	0.00	0.68	0.13	0.13	0.45	0.14	0.15
Avail Cap(c_a), veh/h	560	0	582	612	0	0	512	1310	1360	281	1260	1228
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.8	0.0	36.5	36.3	0.0	0.0	40.9	3.6	3.6	42.3	4.4	4.4
Incr Delay (d2), s/veh	0.3	0.0	0.3	0.1	0.0	0.0	4.1	0.2	0.2	5.1	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.3	0.1	0.0	0.0	1.1	0.7	0.7	0.2	0.9	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.1	0.0	36.8	36.4	0.0	0.0	44.9	3.8	3.8	47.4	4.6	4.6
LnGrp LOS	D	A	D	D	A	A	D	A	A	D	A	A
Approach Vol, veh/h		40			6			395			369	
Approach Delay, s/veh		37.0			36.4			8.9			5.8	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	68.0		12.6	8.1	65.6		12.6				
Change Period (Y+Rc), s	4.6	5.4		5.4	4.6	5.4		* 5.4				
Max Green Setting (Gmax), s	13.4	62.6		28.6	24.4	51.6		* 29				
Max Q Clear Time (g_c+I1), s	2.5	4.5		3.4	4.3	5.0		2.3				
Green Ext Time (p_c), s	0.0	2.0		0.1	0.0	2.1		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	9.1	
HCM 6th LOS	A	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	5	0	0	68	0	295	8	2	257	13
Future Vol, veh/h	0	0	5	0	0	68	0	295	8	2	257	13
Conflicting Peds, #/hr	0	0	0	0	0	1	0	0	1	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	5	0	0	75	0	324	9	2	282	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	148	-	-	169	-	0	0	334	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	6.9	-	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	878	0	0	852	0	-	-	1237	-	-
Stage 1	0	0	-	0	0	-	0	-	-	-	-	-
Stage 2	0	0	-	0	0	-	0	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	878	-	-	850	-	-	-	1236	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	9.6	0	0.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	878	850	1236	-	-
HCM Lane V/C Ratio	-	-	0.006	0.088	0.002	-	-
HCM Control Delay (s)	-	-	9.1	9.6	7.9	-	-
HCM Lane LOS	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	-	-	0	0.3	0	-	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

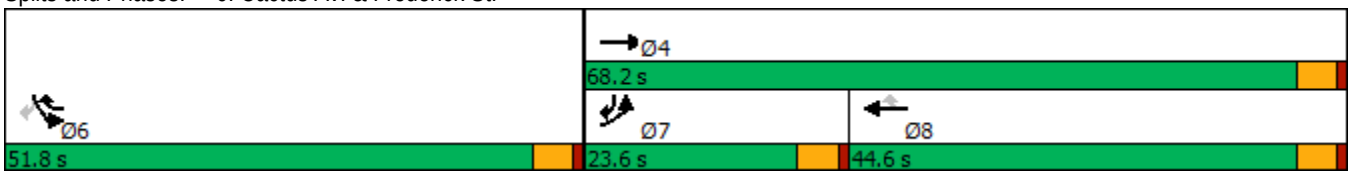
Timings
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	171	972	1681	151	132	85
Future Volume (vph)	171	972	1681	151	132	85
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	7	4	8	6	6	7
Permitted Phases				8		6
Detector Phase	7	4	8	6	6	7
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0
Minimum Split (s)	9.6	14.6	30.6	37.6	37.6	9.6
Total Split (s)	23.6	68.2	44.6	51.8	51.8	23.6
Total Split (%)	19.7%	56.8%	37.2%	43.2%	43.2%	19.7%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	4.6	4.6	4.6
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	Max	Max	None	Min	Min	Max
Act Effct Green (s)	19.2	64.2	40.4	58.9	13.9	37.7
Actuated g/C Ratio	0.22	0.73	0.46	0.67	0.16	0.43
v/c Ratio	0.46	0.27	0.75	0.14	0.25	0.13
Control Delay	35.8	5.0	23.0	1.0	32.2	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.8	5.0	23.0	1.0	32.2	14.7
LOS	D	A	C	A	C	B
Approach Delay		9.6	21.2		25.4	
Approach LOS		A	C		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 87.4	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 17.3	Intersection LOS: B
Intersection Capacity Utilization 61.8%	ICU Level of Service B
Analysis Period (min) 15	

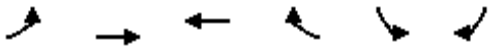
Splits and Phases: 6: Cactus Av. & Frederick St.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	171	972	1681	151	132	85
Future Volume (veh/h)	171	972	1681	151	132	85
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	182	1034	1788	155	140	50
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	415	3984	2506	972	424	564
Arrive On Green	0.23	0.77	0.48	0.48	0.12	0.12
Sat Flow, veh/h	1810	5358	5358	1610	3510	1610
Grp Volume(v), veh/h	182	1034	1788	155	140	50
Grp Sat Flow(s),veh/h/ln	1810	1729	1729	1610	1755	1610
Q Serve(g_s), s	7.1	4.8	22.5	3.5	3.0	1.7
Cycle Q Clear(g_c), s	7.1	4.8	22.5	3.5	3.0	1.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	415	3984	2506	972	424	564
V/C Ratio(X)	0.44	0.26	0.71	0.16	0.33	0.09
Avail Cap(c_a), veh/h	415	3984	2506	972	2001	1287
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.3	2.8	16.9	7.2	33.3	18.0
Incr Delay (d2), s/veh	3.3	0.2	1.1	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.7	7.6	1.4	1.2	1.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	30.7	2.9	18.0	7.3	33.5	18.1
LnGrp LOS	C	A	B	A	C	B
Approach Vol, veh/h		1216	1943		190	
Approach Delay, s/veh		7.1	17.1		29.4	
Approach LOS		A	B		C	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	68.2	14.6	23.6	44.6
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6
Max Green Setting (Gmax), s	63.6	47.2	19.0	40.0
Max Q Clear Time (g_c+I1), s	6.8	5.0	9.1	24.5
Green Ext Time (p_c), s	12.3	0.3	0.2	12.5

Intersection Summary	
HCM 6th Ctrl Delay	14.2
HCM 6th LOS	B

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	8	67	12	3	1
Future Vol, veh/h	2	8	67	12	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	9	73	13	3	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	86	0	-	0	93	80
Stage 1	-	-	-	-	80	-
Stage 2	-	-	-	-	13	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1523	-	-	-	912	986
Stage 1	-	-	-	-	948	-
Stage 2	-	-	-	-	1015	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1523	-	-	-	911	986
Mov Cap-2 Maneuver	-	-	-	-	856	-
Stage 1	-	-	-	-	947	-
Stage 2	-	-	-	-	1015	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1523	-	-	-	885
HCM Lane V/C Ratio	0.001	-	-	-	0.005
HCM Control Delay (s)	7.4	-	-	-	9.1
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

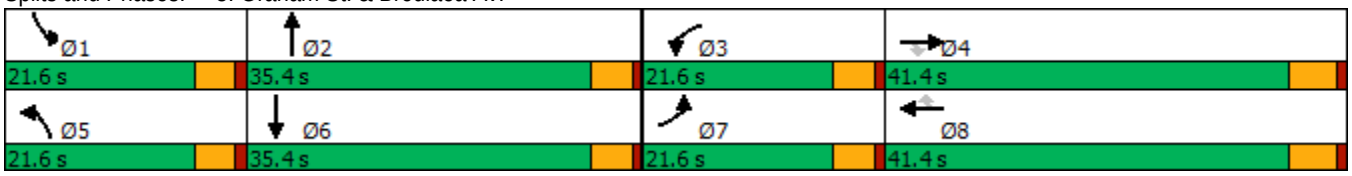
Timings
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	2	7	5	20	57	75	10	194	42	241
Future Volume (vph)	2	7	5	20	57	75	10	194	42	241
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	28.4	28.4	9.6	29.4	29.4	9.6	24.7	9.6	25.7
Total Split (s)	21.6	41.4	41.4	21.6	41.4	41.4	21.6	35.4	21.6	35.4
Total Split (%)	18.0%	34.5%	34.5%	18.0%	34.5%	34.5%	18.0%	29.5%	18.0%	29.5%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	4.4	3.6	3.7	3.6	3.7
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	5.4	4.6	4.7	4.6	4.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	5.8	12.9	12.9	6.1	13.1	13.1	5.9	18.1	6.7	20.7
Actuated g/C Ratio	0.14	0.31	0.31	0.15	0.31	0.31	0.14	0.43	0.16	0.49
v/c Ratio	0.01	0.02	0.01	0.10	0.12	0.17	0.05	0.17	0.18	0.17
Control Delay	26.0	15.4	0.0	24.1	14.3	5.0	24.7	13.9	22.8	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	15.4	0.0	24.1	14.3	5.0	24.7	13.9	22.8	11.2
LOS	C	B	A	C	B	A	C	B	C	B
Approach Delay		12.0			11.0			14.4		12.9
Approach LOS		B			B			B		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 41.9	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.18	
Intersection Signal Delay: 12.9	Intersection LOS: B
Intersection Capacity Utilization 34.3%	ICU Level of Service A
Analysis Period (min) 15	

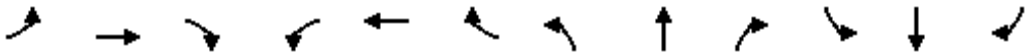
Splits and Phases: 8: Graham St. & Brodiaea Av.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	7	5	20	57	75	10	194	18	42	241	5
Future Volume (veh/h)	2	7	5	20	57	75	10	194	18	42	241	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	2	9	5	25	71	59	12	242	20	52	301	6
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	5	378	321	55	430	364	28	838	69	98	1038	21
Arrive On Green	0.00	0.20	0.20	0.03	0.23	0.23	0.02	0.25	0.25	0.05	0.29	0.29
Sat Flow, veh/h	1810	1900	1610	1810	1900	1608	1810	3376	277	1810	3618	72
Grp Volume(v), veh/h	2	9	5	25	71	59	12	128	134	52	150	157
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1810	1900	1608	1810	1805	1848	1810	1805	1885
Q Serve(g_s), s	0.0	0.2	0.1	0.6	1.2	1.2	0.3	2.4	2.4	1.2	2.7	2.7
Cycle Q Clear(g_c), s	0.0	0.2	0.1	0.6	1.2	1.2	0.3	2.4	2.4	1.2	2.7	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.15	1.00		0.04
Lane Grp Cap(c), veh/h	5	378	321	55	430	364	28	448	459	98	518	541
V/C Ratio(X)	0.40	0.02	0.02	0.46	0.16	0.16	0.43	0.29	0.29	0.53	0.29	0.29
Avail Cap(c_a), veh/h	746	1659	1406	746	1659	1404	746	1344	1376	746	1344	1404
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.5	13.3	13.3	19.7	12.8	12.8	20.1	12.5	12.6	19.0	11.4	11.4
Incr Delay (d2), s/veh	18.3	0.0	0.0	2.2	0.2	0.2	3.7	0.3	0.3	1.6	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.0	0.2	0.4	0.4	0.1	0.8	0.9	0.5	0.9	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.8	13.3	13.3	21.9	13.0	13.0	23.9	12.9	12.9	20.6	11.7	11.7
LnGrp LOS	D	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		16			155			274			359	
Approach Delay, s/veh		16.5			14.4			13.4			13.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	14.9	5.8	13.6	5.2	16.5	4.7	14.7
Change Period (Y+Rc), s	4.6	* 4.7	4.6	5.4	4.6	* 4.7	4.6	5.4
Max Green Setting (Gmax), s	17.0	* 31	17.0	36.0	17.0	* 31	17.0	36.0
Max Q Clear Time (g_c+I1), s	3.2	4.4	2.6	2.2	2.3	4.7	2.0	3.2
Green Ext Time (p_c), s	0.0	1.5	0.0	0.0	0.0	1.8	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	13.5
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	46	46	78	29	28	45
Future Vol, veh/h	46	46	78	29	28	45
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	0	115	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	53	53	90	33	32	52

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	206	91	0	0	123	0
Stage 1	90	-	-	-	-	-
Stage 2	116	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	787	972	-	-	1477	-
Stage 1	939	-	-	-	-	-
Stage 2	914	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	770	971	-	-	1477	-
Mov Cap-2 Maneuver	811	-	-	-	-	-
Stage 1	918	-	-	-	-	-
Stage 2	914	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	2.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	811	971	1477	-
HCM Lane V/C Ratio	-	-	0.065	0.054	0.022	-
HCM Control Delay (s)	-	-	9.7	8.9	7.5	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.2	0.1	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

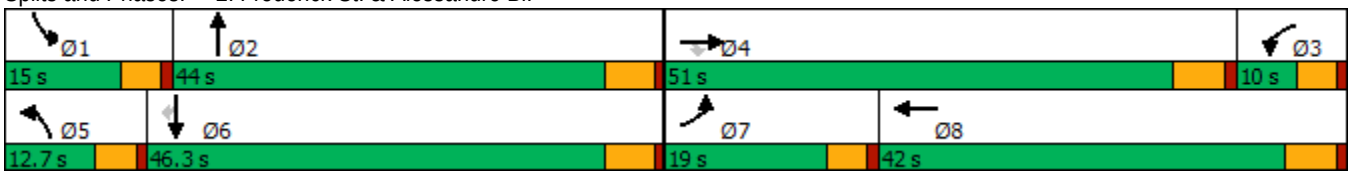
Timings
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	196	1224	137	60	804	112	273	262	268	118
Future Volume (vph)	196	1224	137	60	804	112	273	262	268	118
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	4	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.8	33.8	9.6	36.8	9.6	42.4	9.6	43.4	43.4
Total Split (s)	19.0	51.0	51.0	10.0	42.0	12.7	44.0	15.0	46.3	46.3
Total Split (%)	15.8%	42.5%	42.5%	8.3%	35.0%	10.6%	36.7%	12.5%	38.6%	38.6%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.4	4.6	5.4	5.4
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	None	Max	None	Max	Max
Act Effct Green (s)	14.4	45.2	45.2	5.4	36.2	7.5	38.6	10.4	41.5	41.5
Actuated g/C Ratio	0.12	0.38	0.38	0.04	0.30	0.06	0.32	0.09	0.35	0.35
v/c Ratio	0.94	0.94	0.21	0.78	0.65	0.54	0.32	0.90	0.22	0.19
Control Delay	101.2	50.0	7.6	108.7	37.4	63.7	29.0	86.2	28.6	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	101.2	50.0	7.6	108.7	37.4	63.7	29.0	86.2	28.6	2.3
LOS	F	D	A	F	D	E	C	F	C	A
Approach Delay		52.7			41.6		37.5		47.1	
Approach LOS		D			D		D		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 46.7	Intersection LOS: D
Intersection Capacity Utilization 93.3%	ICU Level of Service F
Analysis Period (min) 15	

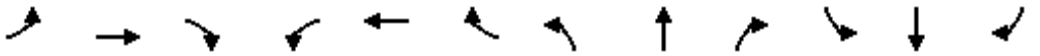
Splits and Phases: 2: Frederick St. & Alessandro Bl.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	196	1224	137	60	804	162	112	273	74	262	268	118
Future Volume (veh/h)	196	1224	137	60	804	162	112	273	74	262	268	118
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	204	1275	122	62	838	145	117	284	69	273	279	65
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	215	1347	593	80	1369	235	171	918	219	301	1285	565
Arrive On Green	0.12	0.37	0.37	0.04	0.31	0.31	0.05	0.32	0.32	0.09	0.36	0.36
Sat Flow, veh/h	1810	3610	1590	1810	4442	763	3510	2882	687	3510	3610	1587
Grp Volume(v), veh/h	204	1275	122	62	651	332	117	176	177	273	279	65
Grp Sat Flow(s),veh/h/ln	1810	1805	1590	1810	1729	1747	1755	1805	1764	1755	1805	1587
Q Serve(g_s), s	13.6	41.5	5.0	4.1	19.4	19.6	4.0	8.9	9.2	9.3	6.5	3.3
Cycle Q Clear(g_c), s	13.6	41.5	5.0	4.1	19.4	19.6	4.0	8.9	9.2	9.3	6.5	3.3
Prop In Lane	1.00		1.00	1.00		0.44	1.00		0.39	1.00		1.00
Lane Grp Cap(c), veh/h	215	1347	593	80	1066	539	171	575	562	301	1285	565
V/C Ratio(X)	0.95	0.95	0.21	0.78	0.61	0.62	0.69	0.31	0.32	0.91	0.22	0.12
Avail Cap(c_a), veh/h	215	1347	593	81	1066	539	235	575	562	301	1285	565
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	36.8	15.9	57.3	35.7	35.8	56.7	31.2	31.3	54.9	27.2	26.2
Incr Delay (d2), s/veh	46.4	14.7	0.8	33.6	2.6	5.2	1.8	1.4	1.5	28.4	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.8	20.0	2.4	2.6	8.3	8.8	1.8	4.0	4.1	5.2	2.8	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	99.4	51.5	16.7	90.9	38.3	41.0	58.5	32.5	32.7	83.3	27.6	26.6
LnGrp LOS	F	D	B	F	D	D	E	C	C	F	C	C
Approach Vol, veh/h		1601			1045			470			617	
Approach Delay, s/veh		55.0			42.3			39.1			52.2	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	44.0	11.2	51.0	10.5	48.5	19.0	43.2
Change Period (Y+Rc), s	4.6	5.4	5.8	* 5.8	4.6	5.4	4.6	5.8
Max Green Setting (Gmax), s	10.4	38.6	5.4	* 45	8.1	40.9	14.4	36.2
Max Q Clear Time (g_c+I1), s	11.3	11.2	6.1	43.5	6.0	8.5	15.6	21.6
Green Ext Time (p_c), s	0.0	2.9	0.0	1.4	0.0	1.9	0.0	5.2

Intersection Summary	
HCM 6th Ctrl Delay	49.0
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	12	453	0	0	490
Future Vol, veh/h	0	12	453	0	0	490
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	13	492	0	0	533

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	246	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	760	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	760	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	760	-
HCM Lane V/C Ratio	-	-	0.017	-
HCM Control Delay (s)	-	-	9.8	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	0.1	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

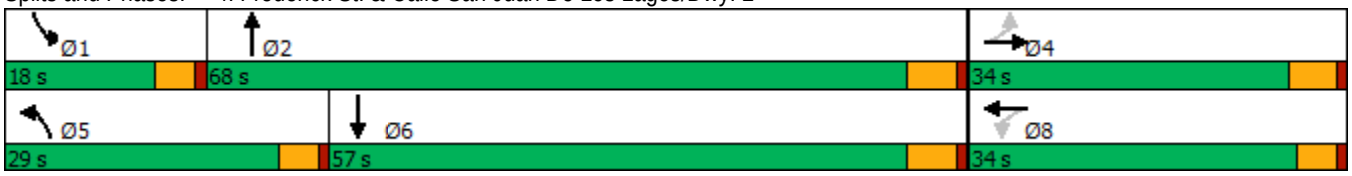
Timings
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	136	2	11	7	22	308	3	433
Future Volume (vph)	136	2	11	7	22	308	3	433
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	23.4	23.4	22.6	22.6	9.6	15.4	9.6	28.4
Total Split (s)	34.0	34.0	34.0	34.0	29.0	68.0	18.0	57.0
Total Split (%)	28.3%	28.3%	28.3%	28.3%	24.2%	56.7%	15.0%	47.5%
Yellow Time (s)	4.4	4.4	3.6	3.6	3.6	4.4	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4		4.6	4.6	5.4	4.6	5.4
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	14.9	14.9		15.7	5.9	63.1	5.1	60.4
Actuated g/C Ratio	0.16	0.16		0.17	0.07	0.70	0.06	0.67
v/c Ratio	0.64	0.10		0.10	0.20	0.13	0.03	0.22
Control Delay	49.0	14.0		24.5	46.7	5.7	45.3	7.4
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	14.0		24.5	46.7	5.7	45.3	7.4
LOS	D	B		C	D	A	D	A
Approach Delay		43.3		24.5		8.5		7.6
Approach LOS		D		C		A		A

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 90.5	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 14.1	Intersection LOS: B
Intersection Capacity Utilization 42.5%	ICU Level of Service A
Analysis Period (min) 15	

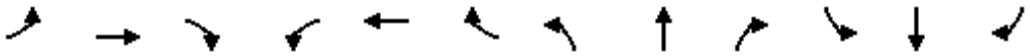
Splits and Phases: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	136	2	25	11	7	9	22	308	3	3	433	55
Future Volume (veh/h)	136	2	25	11	7	9	22	308	3	3	433	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	148	2	20	12	8	10	24	335	3	3	471	55
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	266	19	187	117	78	69	45	2556	23	7	2203	256
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.03	0.70	0.70	0.00	0.68	0.68
Sat Flow, veh/h	1417	147	1471	475	613	544	1810	3665	33	1810	3258	379
Grp Volume(v), veh/h	148	0	22	30	0	0	24	165	173	3	260	266
Grp Sat Flow(s),veh/h/ln	1417	0	1619	1632	0	0	1810	1805	1893	1810	1805	1831
Q Serve(g_s), s	7.4	0.0	1.1	0.0	0.0	0.0	1.2	2.7	2.7	0.1	4.9	4.9
Cycle Q Clear(g_c), s	8.7	0.0	1.1	1.3	0.0	0.0	1.2	2.7	2.7	0.1	4.9	4.9
Prop In Lane	1.00		0.91	0.40		0.33	1.00		0.02	1.00		0.21
Lane Grp Cap(c), veh/h	266	0	206	264	0	0	45	1259	1320	7	1221	1238
V/C Ratio(X)	0.56	0.00	0.11	0.11	0.00	0.00	0.53	0.13	0.13	0.41	0.21	0.21
Avail Cap(c_a), veh/h	537	0	516	580	0	0	492	1259	1320	270	1221	1238
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.9	0.0	34.7	34.8	0.0	0.0	43.2	4.5	4.5	44.6	5.5	5.5
Incr Delay (d2), s/veh	1.8	0.0	0.2	0.2	0.0	0.0	3.5	0.2	0.2	13.3	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	0.4	0.6	0.0	0.0	0.6	0.8	0.9	0.1	1.6	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.7	0.0	34.9	35.0	0.0	0.0	46.8	4.7	4.7	57.9	5.9	5.9
LnGrp LOS	D	A	C	C	A	A	D	A	A	E	A	A
Approach Vol, veh/h		170			30			362			529	
Approach Delay, s/veh		39.1			35.0			7.5			6.2	
Approach LOS		D			C			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.0	68.0		16.8	6.9	66.1		16.8				
Change Period (Y+Rc), s	4.6	5.4		5.4	4.6	5.4		* 5.4				
Max Green Setting (Gmax), s	13.4	62.6		28.6	24.4	51.6		* 29				
Max Q Clear Time (g_c+I1), s	2.1	4.7		10.7	3.2	6.9		3.3				
Green Ext Time (p_c), s	0.0	1.9		0.4	0.0	3.2		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		12.5
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	28	0	0	52	0	280	18	1	458	10
Future Vol, veh/h	0	0	28	0	0	52	0	280	18	1	458	10
Conflicting Peds, #/hr	0	0	0	0	0	1	0	0	1	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	31	0	0	57	0	308	20	1	503	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	257	-	-	166	-	0	0	329	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	6.9	-	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	748	0	0	856	0	-	-	1242	-	-
Stage 1	0	0	-	0	0	-	0	-	-	-	-	-
Stage 2	0	0	-	0	0	-	0	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	748	-	-	854	-	-	-	1241	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	9.5	0	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	748	854	1241	-	-
HCM Lane V/C Ratio	-	-	0.041	0.067	0.001	-	-
HCM Control Delay (s)	-	-	10	9.5	7.9	-	-
HCM Lane LOS	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	-	-	0.1	0.2	0	-	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

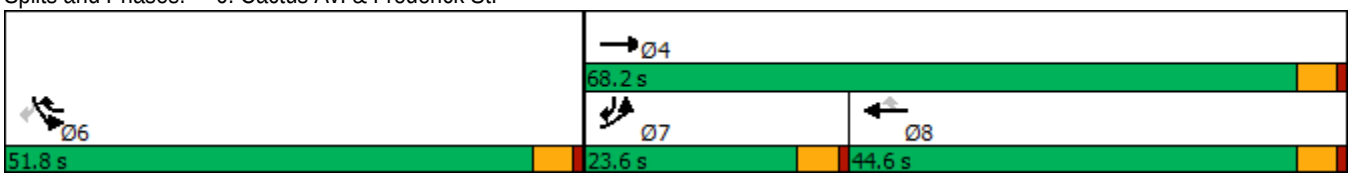
Timings
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	79	1976	969	142	412	146
Future Volume (vph)	79	1976	969	142	412	146
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	7	4	8	6	6	7
Permitted Phases				8		6
Detector Phase	7	4	8	6	6	7
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0
Minimum Split (s)	9.6	14.6	30.6	37.6	37.6	9.6
Total Split (s)	23.6	68.2	44.6	51.8	51.8	23.6
Total Split (%)	19.7%	56.8%	37.2%	43.2%	43.2%	19.7%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	4.6	4.6	4.6
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	Max	Max	None	Min	Min	Max
Act Effct Green (s)	19.1	64.0	40.3	62.4	17.5	41.3
Actuated g/C Ratio	0.21	0.70	0.44	0.69	0.19	0.45
v/c Ratio	0.22	0.57	0.45	0.13	0.65	0.21
Control Delay	33.8	8.5	19.3	1.0	38.0	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	8.5	19.3	1.0	38.0	13.6
LOS	C	A	B	A	D	B
Approach Delay		9.4	17.0		31.6	
Approach LOS		A	B		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 90.8	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 15.0	Intersection LOS: B
Intersection Capacity Utilization 57.6%	ICU Level of Service B
Analysis Period (min) 15	

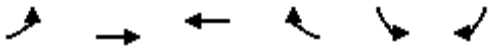
Splits and Phases: 6: Cactus Av. & Frederick St.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	79	1976	969	142	412	146
Future Volume (veh/h)	79	1976	969	142	412	146
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	84	2102	1031	145	438	115
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	399	3829	2408	997	544	605
Arrive On Green	0.22	0.74	0.46	0.46	0.16	0.16
Sat Flow, veh/h	1810	5358	5358	1610	3510	1610
Grp Volume(v), veh/h	84	2102	1031	145	438	115
Grp Sat Flow(s),veh/h/ln	1810	1729	1729	1610	1755	1610
Q Serve(g_s), s	3.3	15.4	11.5	3.2	10.4	4.1
Cycle Q Clear(g_c), s	3.3	15.4	11.5	3.2	10.4	4.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	399	3829	2408	997	544	605
V/C Ratio(X)	0.21	0.55	0.43	0.15	0.80	0.19
Avail Cap(c_a), veh/h	399	3829	2408	997	1923	1237
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.5	5.0	15.4	6.9	35.1	18.1
Incr Delay (d2), s/veh	1.2	0.6	0.2	0.1	1.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	3.1	3.9	1.5	4.3	4.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	28.6	5.5	15.6	7.0	36.2	18.1
LnGrp LOS	C	A	B	A	D	B
Approach Vol, veh/h		2186	1176		553	
Approach Delay, s/veh		6.4	14.5		32.5	
Approach LOS		A	B		C	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	68.2	18.0	23.6	44.6
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6
Max Green Setting (Gmax), s	63.6	47.2	19.0	40.0
Max Q Clear Time (g_c+I1), s	17.4	12.4	5.3	13.5
Green Ext Time (p_c), s	32.3	1.0	0.1	10.9

Intersection Summary	
HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	18	48	3	16	4
Future Vol, veh/h	1	18	48	3	16	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	20	52	3	17	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	55	0	-	0	76	54
Stage 1	-	-	-	-	54	-
Stage 2	-	-	-	-	22	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1563	-	-	-	932	1019
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	1006	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1563	-	-	-	931	1019
Mov Cap-2 Maneuver	-	-	-	-	874	-
Stage 1	-	-	-	-	973	-
Stage 2	-	-	-	-	1006	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1563	-	-	-	900
HCM Lane V/C Ratio	0.001	-	-	-	0.024
HCM Control Delay (s)	7.3	-	-	-	9.1
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

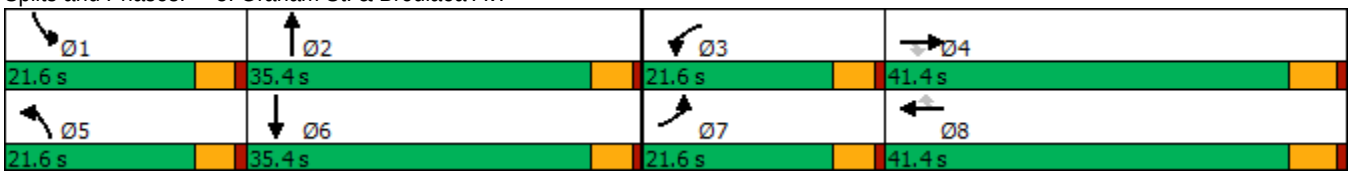
Timings
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	3	17	14	20	47	68	5	265	75	266
Future Volume (vph)	3	17	14	20	47	68	5	265	75	266
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	28.4	28.4	9.6	29.4	29.4	9.6	24.7	9.6	25.7
Total Split (s)	21.6	41.4	41.4	21.6	41.4	41.4	21.6	35.4	21.6	35.4
Total Split (%)	18.0%	34.5%	34.5%	18.0%	34.5%	34.5%	18.0%	29.5%	18.0%	29.5%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	4.4	3.6	3.7	3.6	3.7
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	5.4	4.6	4.7	4.6	4.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	5.6	12.7	12.7	6.1	12.9	12.9	5.6	19.2	7.9	27.9
Actuated g/C Ratio	0.12	0.27	0.27	0.13	0.27	0.27	0.12	0.40	0.16	0.58
v/c Ratio	0.02	0.04	0.04	0.11	0.12	0.17	0.03	0.25	0.32	0.16
Control Delay	28.0	17.6	0.1	26.8	17.1	4.9	27.8	16.6	25.2	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.0	17.6	0.1	26.8	17.1	4.9	27.8	16.6	25.2	10.0
LOS	C	B	A	C	B	A	C	B	C	A
Approach Delay		11.3			12.4			16.8		13.3
Approach LOS		B			B			B		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 47.9	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.32	
Intersection Signal Delay: 14.3	Intersection LOS: B
Intersection Capacity Utilization 34.3%	ICU Level of Service A
Analysis Period (min) 15	

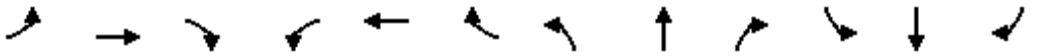
Splits and Phases: 8: Graham St. & Brodiaea Av.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	17	14	20	47	68	5	265	22	75	266	3
Future Volume (veh/h)	3	17	14	20	47	68	5	265	22	75	266	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	4	21	17	25	59	50	6	331	26	94	332	4
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	10	375	318	54	422	357	15	815	64	143	1136	14
Arrive On Green	0.01	0.20	0.20	0.03	0.22	0.22	0.01	0.24	0.24	0.08	0.31	0.31
Sat Flow, veh/h	1810	1900	1610	1810	1900	1608	1810	3391	265	1810	3652	44
Grp Volume(v), veh/h	4	21	17	25	59	50	6	175	182	94	164	172
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1810	1900	1608	1810	1805	1850	1810	1805	1891
Q Serve(g_s), s	0.1	0.4	0.4	0.6	1.1	1.1	0.1	3.5	3.5	2.1	2.9	2.9
Cycle Q Clear(g_c), s	0.1	0.4	0.4	0.6	1.1	1.1	0.1	3.5	3.5	2.1	2.9	2.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		0.02
Lane Grp Cap(c), veh/h	10	375	318	54	422	357	15	434	445	143	562	588
V/C Ratio(X)	0.41	0.06	0.05	0.46	0.14	0.14	0.41	0.40	0.41	0.66	0.29	0.29
Avail Cap(c_a), veh/h	722	1606	1361	722	1606	1359	722	1301	1334	722	1301	1363
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.1	13.9	13.9	20.3	13.3	13.3	21.0	13.6	13.6	19.1	11.1	11.1
Incr Delay (d2), s/veh	9.8	0.1	0.1	2.2	0.1	0.2	6.8	0.6	0.6	1.9	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.1	0.2	0.4	0.3	0.1	1.3	1.3	0.9	1.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.9	13.9	13.9	22.6	13.4	13.5	27.8	14.2	14.2	21.0	11.4	11.4
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		42			134			363			430	
Approach Delay, s/veh		15.5			15.2			14.4			13.5	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	14.9	5.9	13.8	4.9	18.0	4.8	14.9
Change Period (Y+Rc), s	4.6	* 4.7	4.6	5.4	4.6	* 4.7	4.6	5.4
Max Green Setting (Gmax), s	17.0	* 31	17.0	36.0	17.0	* 31	17.0	36.0
Max Q Clear Time (g_c+I1), s	4.1	5.5	2.6	2.4	2.1	4.9	2.1	3.1
Green Ext Time (p_c), s	0.1	2.1	0.0	0.1	0.0	2.0	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	14.2
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 5.2:

E+P CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

California MUTCD 2014 Edition
(FHWA's MUTCD 2009, as amended for use in California)

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

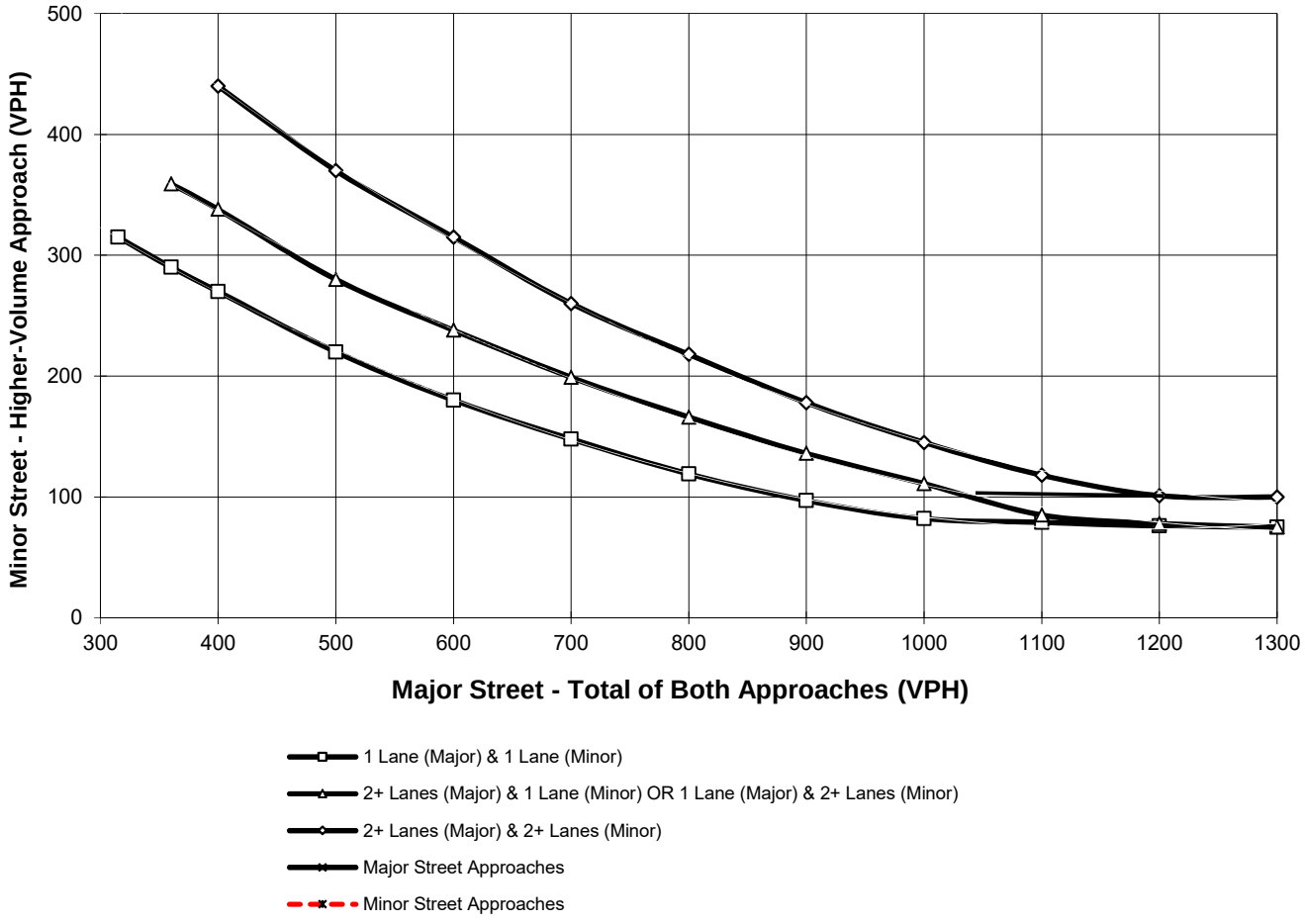
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **E+P Conditions - Weekday PM Peak Hour**

Major Street Name = **Veterans Way** Total of Both Approaches (VPH) = **180**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Calle San Juan de Los Lagos** High Volume Approach (VPH) = **92**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS	E+P
				CALC CHS DATE	05/15/18
Jurisdiction:	City of Moreno Valley			CHK CHS DATE	05/15/18
Major Street:	Brodiaea Av.			Critical Approach Speed (Major)	40 mph
Minor Street:	Driveway 3			Critical Approach Speed (Minor)	25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes **1** lane

Major Street Future ADT = **951** vpd Minor Street Future ADT = **91** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. [ ]

or **RURAL (R)**

In built up area of isolated community of < 10,000 population …….. [ ]

(Based on Estimated Average Daily Traffic - See Note)

URBAN	RURAL	Minimum Requirements EADT			
XX					
CONDITION A - Minimum Vehicular Volume		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied	Not Satisfied XX				
Number of lanes for moving traffic on each approach					
Major Street	Minor Street	Urban	Rural	Urban	Rural
1 **951**	1 **91**	8,000	5,600	2,400	1,680
2 +	1	9,600	6,720	2,400	1,680
2 +	2 +	9,600	6,720	3,200	2,240
1	2 +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied	Not Satisfied XX				
Number of lanes for moving traffic on each approach					
Major Street	Minor Street	Urban	Rural	Urban	Rural
1 **951**	1 **91**	12,000	8,400	1,200	850
2 +	1	14,400	10,080	1,200	850
2 +	2 +	14,400	10,080	1,600	1,120
1	2 +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B					
Satisfied	Not Satisfied XX	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more …..	**A** 4% **B** 8%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 5.3:

E+P CONDITIONS QUEUING ANALYSIS WORKSHEETS

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 1: Veterans Wy. & Calle San Juan De Los Lagos

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	40	32	29
Average Queue (ft)	16	10	3
95th Queue (ft)	37	27	18
Link Distance (ft)		1530	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		115
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	TR	L	L	T	TR
Maximum Queue (ft)	156	164	178	34	215	394	385	374	78	86	119	134
Average Queue (ft)	81	89	97	11	115	259	259	244	25	42	43	61
95th Queue (ft)	145	149	164	27	232	356	353	339	59	75	92	110
Link Distance (ft)		3252	3252	3252		2574	2574	2574			571	571
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250				130				135	135		
Storage Blk Time (%)					13	38					0	
Queuing Penalty (veh)					55	30					0	

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	R
Maximum Queue (ft)	84	130	146	127	112
Average Queue (ft)	15	69	67	63	53
95th Queue (ft)	50	116	122	114	93
Link Distance (ft)			1184	1184	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100	100			100
Storage Blk Time (%)		7	4	3	1
Queuing Penalty (veh)		9	3	5	1

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 3: Frederick St. & Dwy. 1

Movement	WB
Directions Served	R
Maximum Queue (ft)	24
Average Queue (ft)	2
95th Queue (ft)	13
Link Distance (ft)	345
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	54	51	44	90	83	70	45	103	131
Average Queue (ft)	20	12	6	33	16	25	11	23	33
95th Queue (ft)	48	37	26	70	54	63	36	74	95
Link Distance (ft)		1530	288		230	230		276	276
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	120			150			100		
Storage Blk Time (%)								0	
Queuing Penalty (veh)								0	

Intersection: 5: Frederick St. & Private Driveway/Brodiaea Av.

Movement	EB	WB	NB	SB	SB
Directions Served	R	R	TR	LT	TR
Maximum Queue (ft)	31	57	12	29	17
Average Queue (ft)	5	28	0	1	1
95th Queue (ft)	23	45	6	13	9
Link Distance (ft)	167	481	1150	230	230
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 6: Cactus Av. & Frederick St.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	T	T	T	T	R	L	L	R
Maximum Queue (ft)	177	125	134	85	274	270	245	58	82	101	72
Average Queue (ft)	84	51	41	15	179	176	144	26	27	45	24
95th Queue (ft)	150	103	91	51	250	247	224	52	65	86	58
Link Distance (ft)		1599	1599	1599	2529	2529	2529			1150	1150
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	300							265	140		
Storage Blk Time (%)							0			0	
Queuing Penalty (veh)							0			0	

Intersection: 7: Brodiaea Av. & Dwy. 3

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	12	31
Average Queue (ft)	0	3
95th Queue (ft)	6	19
Link Distance (ft)		326
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Graham St. & Brodiaea Av.

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	12	39	28	47	61	58	25	99	54	66	82	54
Average Queue (ft)	2	3	3	15	27	28	7	37	14	25	36	13
95th Queue (ft)	13	19	16	40	56	48	25	74	42	48	69	38
Link Distance (ft)		2009			828	828		1200	1200		1170	1170
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210		100	150			160			150		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Network Summary

Network wide Queuing Penalty: 104

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 1: Veterans Wy. & Calle San Juan De Los Lagos

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	34	36	24
Average Queue (ft)	21	17	2
95th Queue (ft)	37	32	14
Link Distance (ft)		1530	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		115
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	TR	L	L	T	TR
Maximum Queue (ft)	330	473	460	109	156	240	247	229	86	102	126	157
Average Queue (ft)	189	297	312	27	56	166	166	147	32	50	76	94
95th Queue (ft)	321	435	440	74	119	221	227	227	73	91	119	146
Link Distance (ft)		3695	3695	3695		2574	2574	2574			571	571
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250				130				135	135		
Storage Blk Time (%)	3	15			1	21					1	
Queuing Penalty (veh)	18	29			1	12					1	

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	R
Maximum Queue (ft)	160	213	292	203	76
Average Queue (ft)	115	152	110	69	34
95th Queue (ft)	193	214	221	149	61
Link Distance (ft)			1184	1184	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100	100			100
Storage Blk Time (%)	13	57	6	2	0
Queuing Penalty (veh)	17	76	15	2	0

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 3: Frederick St. & Dwy. 1

Movement	WB
Directions Served	R
Maximum Queue (ft)	31
Average Queue (ft)	10
95th Queue (ft)	33
Link Distance (ft)	345
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	159	105	65	56	61	65	34	197	172
Average Queue (ft)	82	21	20	20	22	27	3	63	48
95th Queue (ft)	134	66	51	47	55	60	18	142	117
Link Distance (ft)		1530	288		230	230		276	276
Upstream Blk Time (%)								0	0
Queuing Penalty (veh)								0	0
Storage Bay Dist (ft)	120			150			100		
Storage Blk Time (%)	4							3	
Queuing Penalty (veh)	1							0	

Intersection: 5: Frederick St. & Private Driveway/Brodiaea Av.

Movement	EB	WB	NB	SB
Directions Served	R	R	TR	LT
Maximum Queue (ft)	36	45	6	16
Average Queue (ft)	21	23	0	1
95th Queue (ft)	45	43	4	9
Link Distance (ft)	167	481	1150	230
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 6: Cactus Av. & Frederick St.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	T	T	T	T	R	L	L	R
Maximum Queue (ft)	108	226	218	194	197	191	158	54	186	232	77
Average Queue (ft)	46	109	100	64	130	117	69	24	96	117	30
95th Queue (ft)	91	192	179	147	179	173	141	51	162	192	61
Link Distance (ft)		1599	1599	1599	2529	2529	2529			1150	1150
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	300							265	140		
Storage Blk Time (%)									1	3	
Queuing Penalty (veh)									2	7	

Intersection: 7: Brodiaea Av. & Dwy. 3

Movement	SB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	14
95th Queue (ft)	39
Link Distance (ft)	326
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Graham St. & Brodiaea Av.

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	30	44	33	52	56	53	25	112	62	98	82	46
Average Queue (ft)	2	9	9	15	22	26	4	48	18	37	35	13
95th Queue (ft)	15	33	30	43	52	48	19	89	47	71	68	37
Link Distance (ft)		2009			828	828		1200	1200		1170	1170
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210		100	150			160			150		
Storage Blk Time (%)										0		
Queuing Penalty (veh)										0		

Network Summary

Network wide Queuing Penalty: 181

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 6.1:

OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	36	24	125	67	44	46
Future Vol, veh/h	36	24	125	67	44	46
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	0	115	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	41	28	144	77	51	53

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	299	145	0	0	221	0
Stage 1	144	-	-	-	-	-
Stage 2	155	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	697	908	-	-	1360	-
Stage 1	888	-	-	-	-	-
Stage 2	878	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	671	907	-	-	1360	-
Mov Cap-2 Maneuver	743	-	-	-	-	-
Stage 1	855	-	-	-	-	-
Stage 2	878	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	3.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	743	907	1360	-
HCM Lane V/C Ratio	-	-	0.056	0.03	0.037	-
HCM Control Delay (s)	-	-	10.1	9.1	7.7	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.1	0.1	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

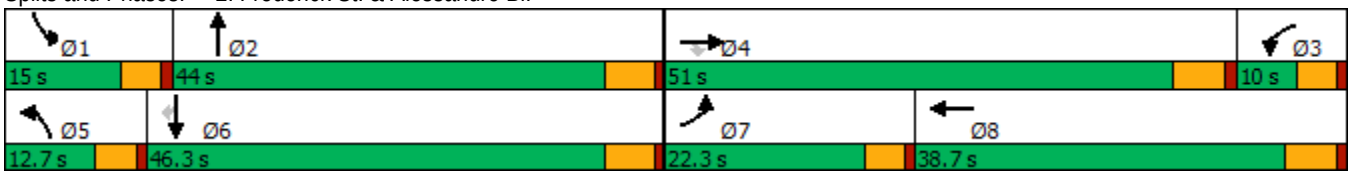
Timings
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/02/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	125	485	77	102	1475	135	263	110	293	228
Future Volume (vph)	125	485	77	102	1475	135	263	110	293	228
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	4	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.8	33.8	9.6	36.8	9.6	42.4	9.6	43.4	43.4
Total Split (s)	22.3	51.0	51.0	10.0	38.7	12.7	44.0	15.0	46.3	46.3
Total Split (%)	18.6%	42.5%	42.5%	8.3%	32.3%	10.6%	36.7%	12.5%	38.6%	38.6%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.4	4.6	5.4	5.4
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	None	Max	None	Max	Max
Act Effct Green (s)	12.8	45.2	45.2	5.4	37.8	7.8	40.4	8.2	40.9	40.9
Actuated g/C Ratio	0.11	0.38	0.38	0.05	0.32	0.07	0.34	0.07	0.34	0.34
v/c Ratio	0.67	0.37	0.12	1.31	1.02	0.62	0.26	0.48	0.25	0.34
Control Delay	67.9	28.0	2.0	246.4	68.4	67.0	28.5	60.1	29.1	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.9	28.0	2.0	246.4	68.4	67.0	28.5	60.1	29.1	4.9
LOS	E	C	A	F	E	E	C	E	C	A
Approach Delay		32.3			79.1		40.4		25.7	
Approach LOS		C			E		D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 119.7	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.31	
Intersection Signal Delay: 55.1	Intersection LOS: E
Intersection Capacity Utilization 90.9%	ICU Level of Service E
Analysis Period (min) 15	

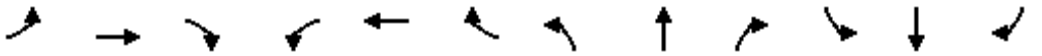
Splits and Phases: 2: Frederick St. & Alessandro Bl.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/02/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	485	77	102	1475	116	135	263	38	110	293	228
Future Volume (veh/h)	125	485	77	102	1475	116	135	263	38	110	293	228
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	130	505	59	106	1536	97	141	274	32	115	305	180
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	157	1362	600	82	1721	109	196	1136	131	170	1232	542
Arrive On Green	0.09	0.38	0.38	0.05	0.35	0.35	0.06	0.35	0.35	0.05	0.34	0.34
Sat Flow, veh/h	1810	3610	1590	1810	4981	314	3510	3255	376	3510	3610	1587
Grp Volume(v), veh/h	130	505	59	106	1066	567	141	151	155	115	305	180
Grp Sat Flow(s),veh/h/ln	1810	1805	1590	1810	1729	1837	1755	1805	1826	1755	1805	1587
Q Serve(g_s), s	8.5	12.1	2.2	5.4	35.0	35.0	4.7	7.1	7.3	3.9	7.3	10.1
Cycle Q Clear(g_c), s	8.5	12.1	2.2	5.4	35.0	35.0	4.7	7.1	7.3	3.9	7.3	10.1
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	157	1362	600	82	1195	635	196	630	637	170	1232	542
V/C Ratio(X)	0.83	0.37	0.10	1.30	0.89	0.89	0.72	0.24	0.24	0.68	0.25	0.33
Avail Cap(c_a), veh/h	267	1362	600	82	1195	635	237	630	637	305	1232	542
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.8	27.0	14.3	57.2	37.1	37.1	55.6	27.7	27.7	56.1	28.4	29.3
Incr Delay (d2), s/veh	4.2	0.8	0.3	199.5	10.3	17.4	5.7	0.9	0.9	1.8	0.5	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	5.2	1.1	6.9	15.8	18.0	2.2	3.2	3.3	1.7	3.2	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.0	27.8	14.7	256.7	47.4	54.5	61.3	28.6	28.7	57.8	28.9	30.9
LnGrp LOS	E	C	B	F	D	D	E	C	C	E	C	C
Approach Vol, veh/h		694			1739			447			600	
Approach Delay, s/veh		32.3			62.5			38.9			35.0	
Approach LOS		C			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	47.2	11.2	51.0	11.3	46.3	15.0	47.2
Change Period (Y+Rc), s	4.6	5.4	5.8	* 5.8	4.6	5.4	4.6	5.8
Max Green Setting (Gmax), s	10.4	38.6	5.4	* 45	8.1	40.9	17.7	32.9
Max Q Clear Time (g_c+I1), s	5.9	9.3	7.4	14.1	6.7	12.1	10.5	37.0
Green Ext Time (p_c), s	0.1	2.4	0.0	5.0	0.0	2.5	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	48.7
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

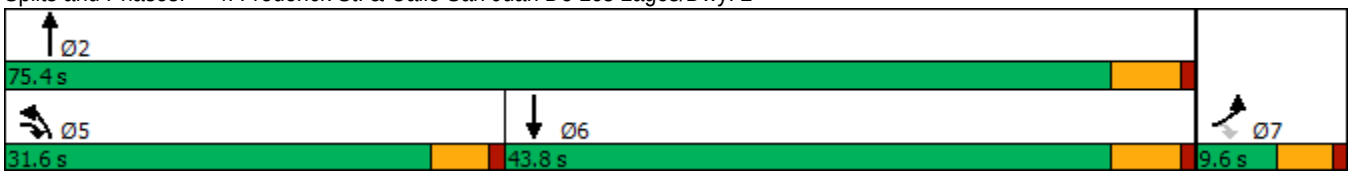
Timings
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Centerpointe (JN: 11410)
05/02/2018

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	26	19	85	422	359
Future Volume (vph)	26	19	85	422	359
Turn Type	Prot	pm+ov	Prot	NA	NA
Protected Phases	7	5	5	2	6
Permitted Phases		7			
Detector Phase	7	5	5	2	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	10.0	10.0
Minimum Split (s)	9.6	9.6	9.6	15.4	28.4
Total Split (s)	9.6	31.6	31.6	75.4	43.8
Total Split (%)	11.3%	37.2%	37.2%	88.7%	51.5%
Yellow Time (s)	3.6	3.6	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	5.4	5.4
Lead/Lag		Lead	Lead		Lag
Lead-Lag Optimize?		Yes	Yes		Yes
Recall Mode	None	None	None	Max	Max
Act Effct Green (s)	5.0	10.5	8.6	76.4	62.6
Actuated g/C Ratio	0.06	0.13	0.10	0.93	0.76
v/c Ratio	0.25	0.09	0.49	0.14	0.18
Control Delay	43.1	7.5	42.6	0.9	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	43.1	7.5	42.6	0.9	4.1
LOS	D	A	D	A	A
Approach Delay				7.9	4.1
Approach LOS				A	A

Intersection Summary			
Cycle Length: 85			
Actuated Cycle Length: 82.2			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 7.1		Intersection LOS: A	
Intersection Capacity Utilization 40.1%		ICU Level of Service A	
Analysis Period (min) 15			

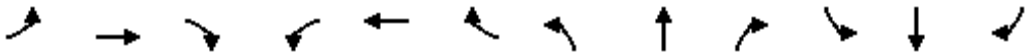
Splits and Phases: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Centerpointe (JN: 11410)
05/02/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	0	19	0	0	0	85	422	0	0	359	84
Future Volume (veh/h)	26	0	19	0	0	0	85	422	0	0	359	84
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	0	1900				1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h	28	0	14				92	459	0	0	390	86
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	68	0	167				120	3041	0	0	2123	464
Arrive On Green	0.04	0.00	0.04				0.07	0.84	0.00	0.00	0.72	0.72
Sat Flow, veh/h	1810	0	1610				1810	3705	0	0	3041	643
Grp Volume(v), veh/h	28	0	14				92	459	0	0	237	239
Grp Sat Flow(s),veh/h/ln	1810	0	1610				1810	1805	0	0	1805	1784
Q Serve(g_s), s	1.3	0.0	0.7				4.2	1.9	0.0	0.0	3.5	3.6
Cycle Q Clear(g_c), s	1.3	0.0	0.7				4.2	1.9	0.0	0.0	3.5	3.6
Prop In Lane	1.00		1.00				1.00		0.00	0.00		0.36
Lane Grp Cap(c), veh/h	68	0	167				120	3041	0	0	1301	1286
V/C Ratio(X)	0.41	0.00	0.08				0.77	0.15	0.00	0.00	0.18	0.19
Avail Cap(c_a), veh/h	109	0	203				588	3041	0	0	1301	1286
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	39.1	0.0	33.7				38.2	1.2	0.0	0.0	3.7	3.7
Incr Delay (d2), s/veh	4.0	0.0	0.2				3.8	0.1	0.0	0.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0				1.9	0.1	0.0	0.0	1.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.1	0.0	33.9				42.0	1.3	0.0	0.0	4.0	4.1
LnGrp LOS	D	A	C				D	A	A	A	A	A
Approach Vol, veh/h		42						551			476	
Approach Delay, s/veh		40.0						8.1			4.0	
Approach LOS		D						A			A	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		75.4		7.7	10.1	65.3						
Change Period (Y+Rc), s		5.4		4.6	4.6	5.4						
Max Green Setting (Gmax), s		70.0		5.0	27.0	38.4						
Max Q Clear Time (g_c+I1), s		3.9		3.3	6.2	5.6						
Green Ext Time (p_c), s		3.2		0.0	0.1	2.8						

Intersection Summary												
HCM 6th Ctrl Delay			7.5									
HCM 6th LOS			A									

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	6	0	0	75	0	432	8	0	364	14
Future Vol, veh/h	0	0	6	0	0	75	0	432	8	0	364	14
Conflicting Peds, #/hr	0	0	0	0	0	1	0	0	1	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	7	0	0	82	0	475	9	0	400	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	208	-	-	244	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	6.9	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	804	0	0	763	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	804	-	-	762	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.5	10.3	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	804	762	-	-
HCM Lane V/C Ratio	-	-	0.008	0.108	-	-
HCM Control Delay (s)	-	-	9.5	10.3	-	-
HCM Lane LOS	-	-	A	B	-	-
HCM 95th %tile Q(veh)	-	-	0	0.4	-	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

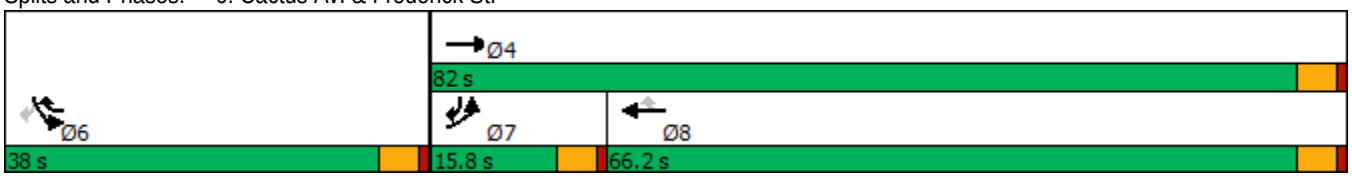
Timings
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/02/2018

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	209	1695	2880	252	209	111
Future Volume (vph)	209	1695	2880	252	209	111
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	7	4	8	6	6	7
Permitted Phases				8		6
Detector Phase	7	4	8	6	6	7
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0
Minimum Split (s)	9.6	14.6	30.6	37.6	37.6	9.6
Total Split (s)	15.8	82.0	66.2	38.0	38.0	15.8
Total Split (%)	13.2%	68.3%	55.2%	31.7%	31.7%	13.2%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	4.6	4.6	4.6
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	Max	Max	None	Min	Min	Max
Act Effct Green (s)	11.3	77.9	62.0	81.1	14.4	30.3
Actuated g/C Ratio	0.11	0.77	0.61	0.80	0.14	0.30
v/c Ratio	1.11	0.45	0.97	0.21	0.45	0.24
Control Delay	139.4	5.6	30.2	2.4	42.0	27.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	139.4	5.6	30.2	2.4	42.0	27.6
LOS	F	A	C	A	D	C
Approach Delay		20.3	28.0		37.0	
Approach LOS		C	C		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 101.6	
Natural Cycle: 120	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.11	
Intersection Signal Delay: 25.8	Intersection LOS: C
Intersection Capacity Utilization 87.1%	ICU Level of Service E
Analysis Period (min) 15	

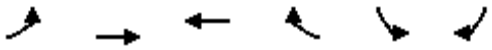
Splits and Phases: 6: Cactus Av. & Frederick St.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/02/2018



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	209	1695	2880	252	209	111
Future Volume (veh/h)	209	1695	2880	252	209	111
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	222	1803	3064	262	222	78
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	210	4156	3308	1193	363	353
Arrive On Green	0.12	0.80	0.64	0.64	0.10	0.10
Sat Flow, veh/h	1810	5358	5358	1610	3510	1610
Grp Volume(v), veh/h	222	1803	3064	262	222	78
Grp Sat Flow(s),veh/h/ln	1810	1729	1729	1610	1755	1610
Q Serve(g_s), s	11.2	10.2	50.5	4.9	5.8	3.8
Cycle Q Clear(g_c), s	11.2	10.2	50.5	4.9	5.8	3.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	210	4156	3308	1193	363	353
V/C Ratio(X)	1.06	0.43	0.93	0.22	0.61	0.22
Avail Cap(c_a), veh/h	210	4156	3308	1193	1214	743
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.7	2.9	15.5	3.9	41.4	30.9
Incr Delay (d2), s/veh	78.3	0.3	5.3	0.1	0.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.3	1.5	16.4	1.9	2.5	3.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	121.0	3.3	20.8	4.0	42.1	31.0
LnGrp LOS	F	A	C	A	D	C
Approach Vol, veh/h		2025	3326		300	
Approach Delay, s/veh		16.2	19.5		39.2	
Approach LOS		B	B		D	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	82.0	14.6	15.8	66.2
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6
Max Green Setting (Gmax), s	77.4	33.4	11.2	61.6
Max Q Clear Time (g_c+I1), s	12.2	7.8	13.2	52.5
Green Ext Time (p_c), s	31.5	0.5	0.0	9.0

Intersection Summary	
HCM 6th Ctrl Delay	19.3
HCM 6th LOS	B

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

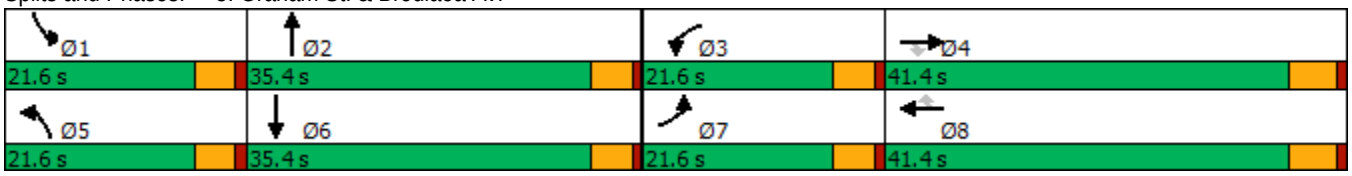
Timings
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
05/02/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	2	7	3	22	58	83	3	339	46	393
Future Volume (vph)	2	7	3	22	58	83	3	339	46	393
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	28.4	28.4	9.6	29.4	29.4	9.6	24.7	9.6	25.7
Total Split (s)	21.6	41.4	41.4	21.6	41.4	41.4	21.6	35.4	21.6	35.4
Total Split (%)	18.0%	34.5%	34.5%	18.0%	34.5%	34.5%	18.0%	29.5%	18.0%	29.5%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	4.4	3.6	3.7	3.6	3.7
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	5.4	4.6	4.7	4.6	4.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	5.7	12.8	12.8	7.1	13.1	13.1	5.7	19.5	6.9	24.6
Actuated g/C Ratio	0.13	0.28	0.28	0.16	0.29	0.29	0.13	0.43	0.15	0.54
v/c Ratio	0.01	0.02	0.01	0.10	0.13	0.19	0.02	0.29	0.21	0.26
Control Delay	27.5	17.3	0.0	24.5	16.3	5.6	27.3	15.4	24.8	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.5	17.3	0.0	24.5	16.3	5.6	27.3	15.4	24.8	10.8
LOS	C	B	A	C	B	A	C	B	C	B
Approach Delay		14.9			12.0			15.5		12.2
Approach LOS		B			B			B		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 45.3	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.29	
Intersection Signal Delay: 13.4	Intersection LOS: B
Intersection Capacity Utilization 36.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: Graham St. & Brodiaea Av.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
05/02/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	7	3	22	58	83	3	339	19	46	393	6
Future Volume (veh/h)	2	7	3	22	58	83	3	339	19	46	393	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	2	9	3	28	72	69	4	424	22	58	491	8
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	5	383	325	60	441	373	10	854	44	106	1083	18
Arrive On Green	0.00	0.20	0.20	0.03	0.23	0.23	0.01	0.24	0.24	0.06	0.30	0.30
Sat Flow, veh/h	1810	1900	1610	1810	1900	1608	1810	3491	181	1810	3634	59
Grp Volume(v), veh/h	2	9	3	28	72	69	4	219	227	58	244	255
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1810	1900	1608	1810	1805	1866	1810	1805	1888
Q Serve(g_s), s	0.0	0.2	0.1	0.6	1.3	1.4	0.1	4.4	4.4	1.3	4.6	4.6
Cycle Q Clear(g_c), s	0.0	0.2	0.1	0.6	1.3	1.4	0.1	4.4	4.4	1.3	4.6	4.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		0.03
Lane Grp Cap(c), veh/h	5	383	325	60	441	373	10	442	457	106	538	563
V/C Ratio(X)	0.40	0.02	0.01	0.47	0.16	0.18	0.41	0.49	0.50	0.55	0.45	0.45
Avail Cap(c_a), veh/h	736	1636	1387	736	1636	1385	736	1325	1370	736	1325	1386
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.8	13.4	13.3	19.8	12.8	12.9	20.7	13.6	13.6	19.1	11.9	11.9
Incr Delay (d2), s/veh	18.3	0.0	0.0	2.1	0.2	0.2	9.7	0.9	0.8	1.6	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.0	0.3	0.4	0.4	0.1	1.6	1.6	0.5	1.6	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.1	13.4	13.4	21.9	13.0	13.1	30.5	14.4	14.4	20.8	12.5	12.5
LnGrp LOS	D	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		14			169			450			557	
Approach Delay, s/veh		17.1			14.5			14.6			13.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.1	14.9	6.0	13.8	4.8	17.2	4.7	15.1
Change Period (Y+Rc), s	4.6	* 4.7	4.6	5.4	4.6	* 4.7	4.6	5.4
Max Green Setting (Gmax), s	17.0	* 31	17.0	36.0	17.0	* 31	17.0	36.0
Max Q Clear Time (g_c+I1), s	3.3	6.4	2.6	2.2	2.1	6.6	2.0	3.4
Green Ext Time (p_c), s	0.0	2.7	0.0	0.0	0.0	3.0	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	14.0
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	46	46	99	31	30	120
Future Vol, veh/h	46	46	99	31	30	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	0	115	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	52	52	111	35	34	135

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	314	111	0	0	146	0
Stage 1	111	-	-	-	-	-
Stage 2	203	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	683	948	-	-	1448	-
Stage 1	919	-	-	-	-	-
Stage 2	836	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	667	948	-	-	1448	-
Mov Cap-2 Maneuver	738	-	-	-	-	-
Stage 1	898	-	-	-	-	-
Stage 2	836	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	1.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	738	948	1448	-
HCM Lane V/C Ratio	-	-	0.07	0.055	0.023	-
HCM Control Delay (s)	-	-	10.2	9	7.5	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.2	0.1	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

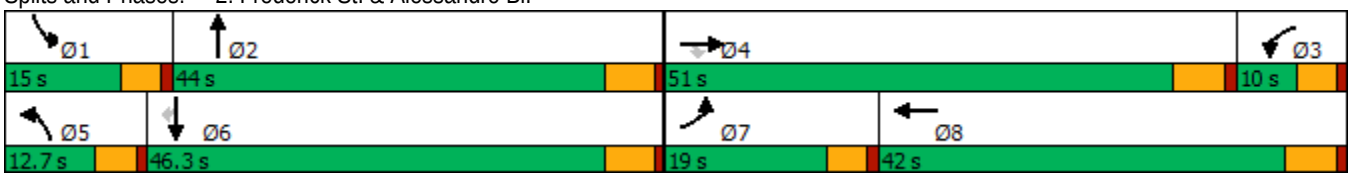
Timings
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/02/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	240	1375	237	108	892	151	317	290	337	134
Future Volume (vph)	240	1375	237	108	892	151	317	290	337	134
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	4	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.8	33.8	9.6	36.8	9.6	42.4	9.6	43.4	43.4
Total Split (s)	19.0	51.0	51.0	10.0	42.0	12.7	44.0	15.0	46.3	46.3
Total Split (%)	15.8%	42.5%	42.5%	8.3%	35.0%	10.6%	36.7%	12.5%	38.6%	38.6%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.4	4.6	5.4	5.4
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	None	Max	None	Max	Max
Act Effct Green (s)	14.4	45.2	45.2	5.4	36.2	7.9	38.6	10.4	41.1	41.1
Actuated g/C Ratio	0.12	0.38	0.38	0.04	0.30	0.07	0.32	0.09	0.34	0.34
v/c Ratio	1.17	1.06	0.35	1.41	0.73	0.69	0.38	1.01	0.29	0.22
Control Delay	161.3	80.2	10.0	282.9	39.6	71.1	29.9	108.0	29.6	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	161.3	80.2	10.0	282.9	39.6	71.1	29.9	108.0	29.6	3.6
LOS	F	F	A	F	D	E	C	F	C	A
Approach Delay		81.7			61.9		40.9		54.9	
Approach LOS		F			E		D		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 120	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.41	
Intersection Signal Delay: 66.4	Intersection LOS: E
Intersection Capacity Utilization 100.1%	ICU Level of Service G
Analysis Period (min) 15	

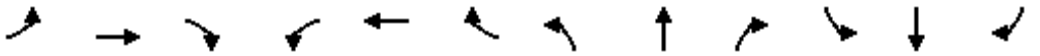
Splits and Phases: 2: Frederick St. & Alessandro Bl.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/02/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	240	1375	237	108	892	179	151	317	98	290	337	134
Future Volume (veh/h)	240	1375	237	108	892	179	151	317	98	290	337	134
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	253	1447	224	114	939	117	159	334	83	305	355	92
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	215	1346	600	81	1438	179	214	912	223	301	1240	550
Arrive On Green	0.12	0.37	0.37	0.04	0.31	0.31	0.06	0.32	0.32	0.09	0.34	0.34
Sat Flow, veh/h	1810	3610	1608	1810	4659	578	3510	2864	701	3510	3610	1602
Grp Volume(v), veh/h	253	1447	224	114	696	360	159	209	208	305	355	92
Grp Sat Flow(s),veh/h/ln	1810	1805	1608	1810	1729	1780	1755	1805	1759	1755	1805	1602
Q Serve(g_s), s	14.4	45.2	9.4	5.4	21.1	21.2	5.4	10.8	11.1	10.4	8.7	4.8
Cycle Q Clear(g_c), s	14.4	45.2	9.4	5.4	21.1	21.2	5.4	10.8	11.1	10.4	8.7	4.8
Prop In Lane	1.00		1.00	1.00		0.33	1.00		0.40	1.00		1.00
Lane Grp Cap(c), veh/h	215	1346	600	81	1067	549	214	575	560	301	1240	550
V/C Ratio(X)	1.18	1.07	0.37	1.41	0.65	0.66	0.74	0.36	0.37	1.01	0.29	0.17
Avail Cap(c_a), veh/h	215	1346	600	81	1067	549	235	575	560	301	1240	550
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.4	38.0	16.2	57.9	36.3	36.3	56.0	31.8	31.9	55.4	29.0	27.7
Incr Delay (d2), s/veh	117.3	47.3	1.8	244.4	3.1	6.0	9.2	1.8	1.9	55.1	0.6	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.4	27.7	3.6	7.9	9.0	9.8	2.6	4.9	4.9	6.8	3.8	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	170.7	85.3	18.0	302.3	39.4	42.3	65.2	33.6	33.8	110.5	29.6	28.4
LnGrp LOS	F	F	B	F	D	D	E	C	C	F	C	C
Approach Vol, veh/h		1924			1170			576			752	
Approach Delay, s/veh		88.7			65.9			42.4			62.2	
Approach LOS		F			E			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	44.0	11.2	51.0	12.0	47.0	19.0	43.2
Change Period (Y+Rc), s	4.6	5.4	5.8	* 5.8	4.6	5.4	4.6	5.8
Max Green Setting (Gmax), s	10.4	38.6	5.4	* 45	8.1	40.9	14.4	36.2
Max Q Clear Time (g_c+I1), s	12.4	13.1	7.4	47.2	7.4	10.7	16.4	23.2
Green Ext Time (p_c), s	0.0	3.4	0.0	0.0	0.0	2.5	0.0	5.2

Intersection Summary	
HCM 6th Ctrl Delay	72.1
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

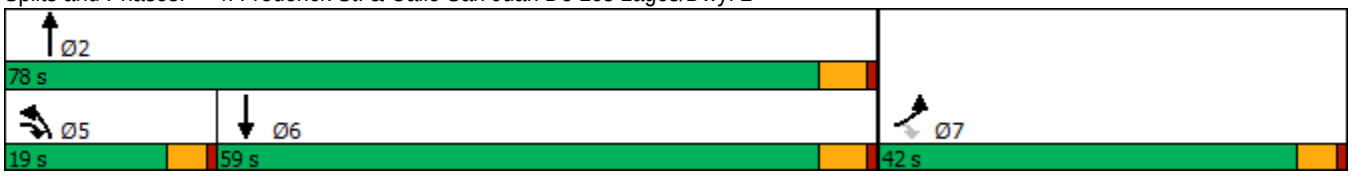
Timings
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Centerpointe (JN: 11410)
05/02/2018

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	150	63	31	423	650
Future Volume (vph)	150	63	31	423	650
Turn Type	Prot	pm+ov	Prot	NA	NA
Protected Phases	7	5	5	2	6
Permitted Phases		7			
Detector Phase	7	5	5	2	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	10.0	10.0
Minimum Split (s)	9.6	9.6	9.6	15.4	28.4
Total Split (s)	42.0	19.0	19.0	78.0	59.0
Total Split (%)	35.0%	15.8%	15.8%	65.0%	49.2%
Yellow Time (s)	3.6	3.6	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	5.4	5.4
Lead/Lag		Lead	Lead		Lag
Lead-Lag Optimize?		Yes	Yes		Yes
Recall Mode	None	None	None	Max	Max
Act Effct Green (s)	14.3	25.4	6.5	72.7	63.7
Actuated g/C Ratio	0.15	0.26	0.07	0.75	0.66
v/c Ratio	0.64	0.15	0.29	0.18	0.34
Control Delay	50.1	7.1	50.1	4.0	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	50.1	7.1	50.1	4.0	8.9
LOS	D	A	D	A	A
Approach Delay				7.2	8.9
Approach LOS				A	A

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 97	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 12.7	Intersection LOS: B
Intersection Capacity Utilization 41.9%	ICU Level of Service A
Analysis Period (min) 15	

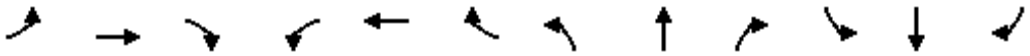
Splits and Phases: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Centerpointe (JN: 11410)
05/02/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	0	63	0	0	0	31	423	0	0	650	61
Future Volume (veh/h)	150	0	63	0	0	0	31	423	0	0	650	61
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	0	1900				1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h	169	0	65				35	475	0	0	730	62
Peak Hour Factor	0.89	0.89	0.89				0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	215	0	243				58	2796	0	0	2334	198
Arrive On Green	0.12	0.00	0.12				0.03	0.77	0.00	0.00	0.69	0.69
Sat Flow, veh/h	1810	0	1610				1810	3705	0	0	3461	286
Grp Volume(v), veh/h	169	0	65				35	475	0	0	391	401
Grp Sat Flow(s),veh/h/ln	1810	0	1610				1810	1805	0	0	1805	1846
Q Serve(g_s), s	8.5	0.0	3.3				1.8	3.2	0.0	0.0	8.0	8.0
Cycle Q Clear(g_c), s	8.5	0.0	3.3				1.8	3.2	0.0	0.0	8.0	8.0
Prop In Lane	1.00		1.00				1.00		0.00	0.00		0.15
Lane Grp Cap(c), veh/h	215	0	243				58	2796	0	0	1252	1281
V/C Ratio(X)	0.79	0.00	0.27				0.61	0.17	0.00	0.00	0.31	0.31
Avail Cap(c_a), veh/h	722	0	694				278	2796	0	0	1252	1281
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	40.1	0.0	35.2				44.8	2.7	0.0	0.0	5.6	5.6
Incr Delay (d2), s/veh	6.2	0.0	0.6				3.8	0.1	0.0	0.0	0.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	0.0				0.8	0.7	0.0	0.0	2.5	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.4	0.0	35.8				48.6	2.9	0.0	0.0	6.3	6.3
LnGrp LOS	D	A	D				D	A	A	A	A	A
Approach Vol, veh/h		234						510			792	
Approach Delay, s/veh		43.5						6.0			6.3	
Approach LOS		D						A			A	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		78.0		15.7	7.6	70.4						
Change Period (Y+Rc), s		5.4		4.6	4.6	5.4						
Max Green Setting (Gmax), s		72.6		37.4	14.4	53.6						
Max Q Clear Time (g_c+I1), s		5.2		10.5	3.8	10.0						
Green Ext Time (p_c), s		3.3		0.7	0.0	5.3						

Intersection Summary												
HCM 6th Ctrl Delay			11.8									
HCM 6th LOS			B									

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	31	0	0	54	0	400	20	0	702	11
Future Vol, veh/h	0	0	31	0	0	54	0	400	20	0	702	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	34	0	0	59	0	440	22	0	771	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	394	-	-	231	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	6.9	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	611	0	0	777	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	610	-	-	777	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.3	10	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	610	777	-	-
HCM Lane V/C Ratio	-	-	0.056	0.076	-	-
HCM Control Delay (s)	-	-	11.3	10	-	-
HCM Lane LOS	-	-	B	B	-	-
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

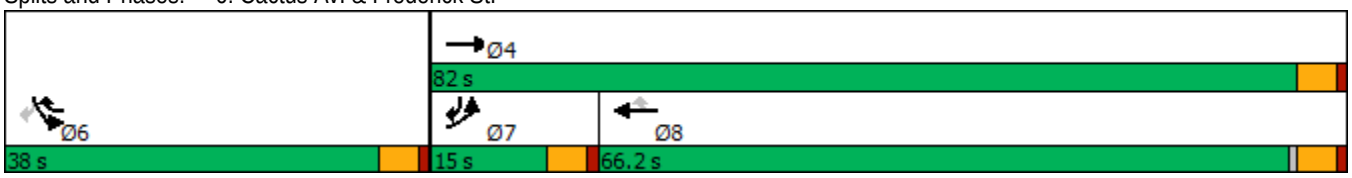
Timings
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/02/2018

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	103	3090	2011	231	618	193
Future Volume (vph)	103	3090	2011	231	618	193
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	7	4	8	6	6	7
Permitted Phases				8		6
Detector Phase	7	4	8	6	6	7
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0
Minimum Split (s)	9.6	14.6	30.6	37.6	37.6	9.6
Total Split (s)	15.0	82.0	66.2	38.0	38.0	15.0
Total Split (%)	12.5%	68.3%	55.2%	31.7%	31.7%	12.5%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	4.6	4.6	4.6
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	Max	Max	None	Min	Min	Max
Act Effct Green (s)	10.4	77.6	62.5	87.1	24.6	39.6
Actuated g/C Ratio	0.09	0.70	0.56	0.78	0.22	0.36
v/c Ratio	0.63	0.88	0.71	0.18	0.82	0.34
Control Delay	67.2	18.2	20.2	0.6	50.9	27.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.2	18.2	20.2	0.6	50.9	27.3
LOS	E	B	C	A	D	C
Approach Delay		19.8	18.2		45.3	
Approach LOS		B	B		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 111.4	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 22.5	Intersection LOS: C
Intersection Capacity Utilization 85.0%	ICU Level of Service E
Analysis Period (min) 15	

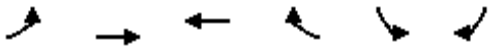
Splits and Phases: 6: Cactus Av. & Frederick St.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/02/2018



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	103	3090	2011	231	618	193
Future Volume (veh/h)	103	3090	2011	231	618	193
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.98	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	106	3186	2073	194	637	102
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	173	3682	2969	1234	722	485
Arrive On Green	0.10	0.71	0.57	0.57	0.21	0.21
Sat Flow, veh/h	1810	5358	5358	1577	3510	1610
Grp Volume(v), veh/h	106	3186	2073	194	637	102
Grp Sat Flow(s),veh/h/ln	1810	1729	1729	1577	1755	1610
Q Serve(g_s), s	6.1	50.4	31.0	3.4	19.2	5.2
Cycle Q Clear(g_c), s	6.1	50.4	31.0	3.4	19.2	5.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	173	3682	2969	1234	722	485
V/C Ratio(X)	0.61	0.87	0.70	0.16	0.88	0.21
Avail Cap(c_a), veh/h	173	3682	2969	1234	1075	647
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.4	11.9	16.6	3.1	42.0	28.4
Incr Delay (d2), s/veh	15.3	3.0	0.8	0.1	4.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	14.8	10.8	2.1	8.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	62.6	14.9	17.4	3.1	46.3	28.5
LnGrp LOS	E	B	B	A	D	C
Approach Vol, veh/h		3292	2267		739	
Approach Delay, s/veh		16.4	16.2		43.9	
Approach LOS		B	B		D	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	82.0	27.0	15.0	67.0
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6
Max Green Setting (Gmax), s	77.4	33.4	10.4	61.6
Max Q Clear Time (g_c+I1), s	52.4	21.2	8.1	33.0
Green Ext Time (p_c), s	24.5	1.2	0.0	23.1

Intersection Summary	
HCM 6th Ctrl Delay	19.6
HCM 6th LOS	B

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

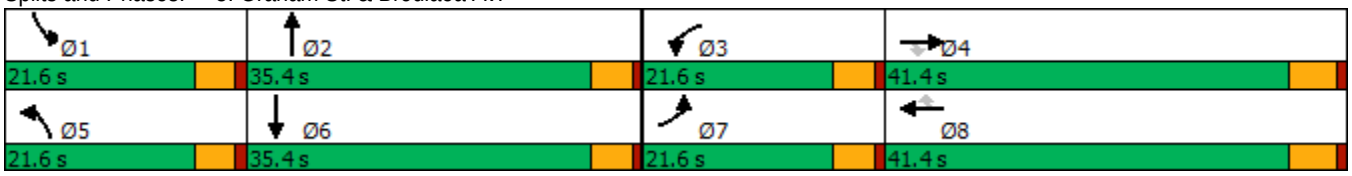
Timings
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
05/02/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	3	12	3	22	52	75	3	504	83	532
Future Volume (vph)	3	12	3	22	52	75	3	504	83	532
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	28.4	28.4	9.6	29.4	29.4	9.6	24.7	9.6	25.7
Total Split (s)	21.6	41.4	41.4	21.6	41.4	41.4	21.6	35.4	21.6	35.4
Total Split (%)	18.0%	34.5%	34.5%	18.0%	34.5%	34.5%	18.0%	29.5%	18.0%	29.5%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	4.4	3.6	3.7	3.6	3.7
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	5.4	4.6	4.7	4.6	4.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	5.7	13.0	13.0	6.2	15.1	15.1	5.7	23.2	8.1	31.8
Actuated g/C Ratio	0.11	0.24	0.24	0.12	0.28	0.28	0.11	0.43	0.15	0.59
v/c Ratio	0.02	0.03	0.01	0.11	0.11	0.16	0.02	0.37	0.33	0.27
Control Delay	32.7	22.0	0.0	31.5	18.5	4.7	32.7	18.0	29.6	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.7	22.0	0.0	31.5	18.5	4.7	32.7	18.0	29.6	10.7
LOS	C	C	A	C	B	A	C	B	C	B
Approach Delay		20.2			13.5			18.1		13.2
Approach LOS		C			B			B		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 53.6	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.37	
Intersection Signal Delay: 15.3	Intersection LOS: B
Intersection Capacity Utilization 40.4%	ICU Level of Service A
Analysis Period (min) 15	

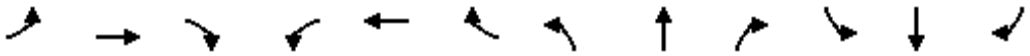
Splits and Phases: 8: Graham St. & Brodiaea Av.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
05/02/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	12	3	22	52	75	3	504	24	83	532	3
Future Volume (veh/h)	3	12	3	22	52	75	3	504	24	83	532	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	3	13	0	24	57	52	3	548	23	90	578	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	7	346	293	52	393	333	7	940	39	138	1247	6
Arrive On Green	0.00	0.18	0.00	0.03	0.21	0.21	0.00	0.27	0.27	0.08	0.34	0.34
Sat Flow, veh/h	1810	1900	1610	1810	1900	1610	1810	3530	148	1810	3682	19
Grp Volume(v), veh/h	3	13	0	24	57	52	3	280	291	90	283	298
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1810	1900	1610	1810	1805	1873	1810	1805	1897
Q Serve(g_s), s	0.1	0.2	0.0	0.6	1.1	1.1	0.1	5.8	5.8	2.1	5.3	5.3
Cycle Q Clear(g_c), s	0.1	0.2	0.0	0.6	1.1	1.1	0.1	5.8	5.8	2.1	5.3	5.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		0.01
Lane Grp Cap(c), veh/h	7	346	293	52	393	333	7	481	499	138	611	642
V/C Ratio(X)	0.41	0.04	0.00	0.46	0.15	0.16	0.41	0.58	0.58	0.65	0.46	0.46
Avail Cap(c_a), veh/h	711	1582	1341	711	1582	1341	711	1282	1330	711	1282	1347
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	14.6	0.0	20.7	14.0	14.1	21.5	13.8	13.8	19.4	11.2	11.2
Incr Delay (d2), s/veh	12.7	0.0	0.0	2.3	0.2	0.2	12.7	1.1	1.1	1.9	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.0	0.2	0.4	0.4	0.1	2.1	2.2	0.9	1.8	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.2	14.6	0.0	23.0	14.2	14.3	34.2	14.9	14.9	21.3	11.8	11.7
LnGrp LOS	C	B	A	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		16			133			574			671	
Approach Delay, s/veh		18.3			15.8			15.0			13.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	16.2	5.9	13.3	4.8	19.3	4.8	14.3
Change Period (Y+Rc), s	4.6	* 4.7	4.6	5.4	4.6	* 4.7	4.6	5.4
Max Green Setting (Gmax), s	17.0	* 31	17.0	36.0	17.0	* 31	17.0	36.0
Max Q Clear Time (g_c+I1), s	4.1	7.8	2.6	2.2	2.1	7.3	2.1	3.1
Green Ext Time (p_c), s	0.1	3.5	0.0	0.0	0.0	3.6	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	14.2
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 6.2:

OPENING YEAR CUMULATIVE (2023) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	37	25	125	71	48	46
Future Vol, veh/h	37	25	125	71	48	46
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	0	115	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	43	29	144	82	55	53

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	307	145	0	0	226	0
Stage 1	144	-	-	-	-	-
Stage 2	163	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	689	908	-	-	1354	-
Stage 1	888	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	661	907	-	-	1354	-
Mov Cap-2 Maneuver	735	-	-	-	-	-
Stage 1	852	-	-	-	-	-
Stage 2	871	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	735	907	1354	-
HCM Lane V/C Ratio	-	-	0.058	0.032	0.041	-
HCM Control Delay (s)	-	-	10.2	9.1	7.8	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.1	0.1	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

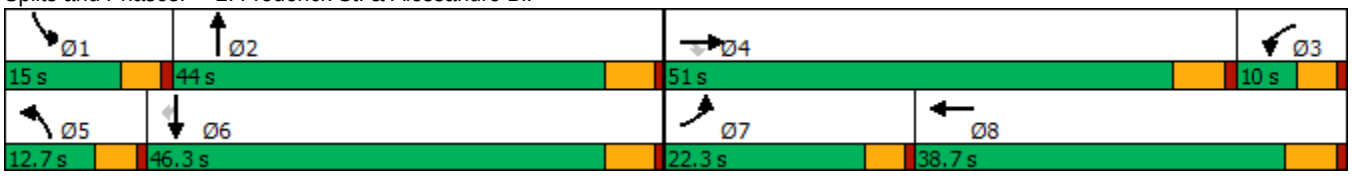
Timings
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	125	485	81	106	1475	138	264	110	297	228
Future Volume (vph)	125	485	81	106	1475	138	264	110	297	228
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	4	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.8	33.8	9.6	36.8	9.6	42.4	9.6	43.4	43.4
Total Split (s)	22.3	51.0	51.0	10.0	38.7	12.7	44.0	15.0	46.3	46.3
Total Split (%)	18.6%	42.5%	42.5%	8.3%	32.3%	10.6%	36.7%	12.5%	38.6%	38.6%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.4	4.6	5.4	5.4
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	None	Max	None	Max	Max
Act Effct Green (s)	12.8	45.2	45.2	5.4	37.8	7.8	40.4	8.2	40.9	40.9
Actuated g/C Ratio	0.11	0.38	0.38	0.05	0.32	0.07	0.34	0.07	0.34	0.34
v/c Ratio	0.67	0.37	0.12	1.36	1.02	0.63	0.26	0.48	0.25	0.34
Control Delay	67.9	28.0	2.2	263.7	68.4	67.7	28.4	60.1	29.1	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.9	28.0	2.2	263.7	68.4	67.7	28.4	60.1	29.1	4.9
LOS	E	C	A	F	E	E	C	E	C	A
Approach Delay		32.2			80.6		40.7		25.8	
Approach LOS		C			F		D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 119.7	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.36	
Intersection Signal Delay: 55.8	Intersection LOS: E
Intersection Capacity Utilization 90.9%	ICU Level of Service E
Analysis Period (min) 15	

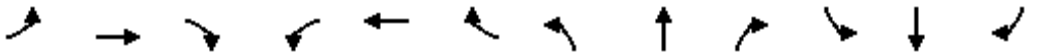
Splits and Phases: 2: Frederick St. & Alessandro Bl.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	485	81	106	1475	116	138	264	39	110	297	228
Future Volume (veh/h)	125	485	81	106	1475	116	138	264	39	110	297	228
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	130	505	63	110	1536	97	144	275	33	115	309	180
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	157	1361	599	81	1719	109	199	1134	135	170	1231	541
Arrive On Green	0.09	0.38	0.38	0.05	0.35	0.35	0.06	0.35	0.35	0.05	0.34	0.34
Sat Flow, veh/h	1810	3610	1590	1810	4981	314	3510	3244	385	3510	3610	1587
Grp Volume(v), veh/h	130	505	63	110	1066	567	144	152	156	115	309	180
Grp Sat Flow(s),veh/h/ln	1810	1805	1590	1810	1729	1837	1755	1805	1824	1755	1805	1587
Q Serve(g_s), s	8.5	12.2	2.4	5.4	35.0	35.0	4.8	7.2	7.3	3.9	7.4	10.1
Cycle Q Clear(g_c), s	8.5	12.2	2.4	5.4	35.0	35.0	4.8	7.2	7.3	3.9	7.4	10.1
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	157	1361	599	81	1193	634	199	631	638	170	1231	541
V/C Ratio(X)	0.83	0.37	0.11	1.35	0.89	0.89	0.72	0.24	0.25	0.68	0.25	0.33
Avail Cap(c_a), veh/h	267	1361	599	81	1193	634	237	631	638	304	1231	541
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.9	27.1	14.4	57.3	37.2	37.2	55.6	27.7	27.7	56.1	28.5	29.4
Incr Delay (d2), s/veh	4.2	0.8	0.4	218.8	10.4	17.5	6.2	0.9	0.9	1.8	0.5	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	5.2	1.2	7.4	15.8	18.0	2.3	3.2	3.3	1.7	3.2	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.0	27.8	14.7	276.0	47.6	54.7	61.8	28.6	28.7	57.9	29.0	31.0
LnGrp LOS	E	C	B	F	D	D	E	C	C	E	C	C
Approach Vol, veh/h		698			1743			452			604	
Approach Delay, s/veh		32.3			64.3			39.2			35.1	
Approach LOS		C			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	47.3	11.2	51.0	11.4	46.3	15.0	47.2
Change Period (Y+Rc), s	4.6	5.4	5.8	* 5.8	4.6	5.4	4.6	5.8
Max Green Setting (Gmax), s	10.4	38.6	5.4	* 45	8.1	40.9	17.7	32.9
Max Q Clear Time (g_c+I1), s	5.9	9.3	7.4	14.2	6.8	12.1	10.5	37.0
Green Ext Time (p_c), s	0.1	2.5	0.0	5.0	0.0	2.5	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	49.6
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	2	451	0	0	455
Future Vol, veh/h	0	2	451	0	0	455
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	2	490	0	0	495

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	245	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	762	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	762	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	762	-
HCM Lane V/C Ratio	-	-	0.003	-
HCM Control Delay (s)	-	-	9.7	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	0	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

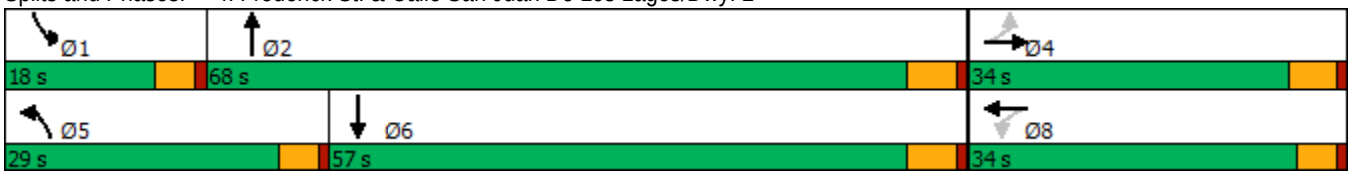
Timings
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	26	7	2	2	85	423	9	361
Future Volume (vph)	26	7	2	2	85	423	9	361
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	23.4	23.4	22.6	22.6	9.6	15.4	9.6	28.4
Total Split (s)	34.0	34.0	34.0	34.0	29.0	68.0	18.0	57.0
Total Split (%)	28.3%	28.3%	28.3%	28.3%	24.2%	56.7%	15.0%	47.5%
Yellow Time (s)	4.4	4.4	3.6	3.6	3.6	4.4	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4		4.6	4.6	5.4	4.6	5.4
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	11.5	11.5		11.9	8.9	70.6	5.4	59.5
Actuated g/C Ratio	0.13	0.13		0.14	0.10	0.83	0.06	0.70
v/c Ratio	0.15	0.12		0.03	0.49	0.16	0.09	0.20
Control Delay	36.6	19.9		29.7	46.6	3.9	44.0	7.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	36.6	19.9		29.7	46.6	3.9	44.0	7.3
LOS	D	B		C	D	A	D	A
Approach Delay		28.1		29.7		10.9		8.0
Approach LOS		C		C		B		A

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 85.4	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.49	
Intersection Signal Delay: 10.6	Intersection LOS: B
Intersection Capacity Utilization 45.9%	ICU Level of Service A
Analysis Period (min) 15	

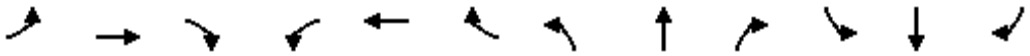
Splits and Phases: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	7	19	2	2	2	85	423	11	9	361	84
Future Volume (veh/h)	26	7	19	2	2	2	85	423	11	9	361	84
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	28	8	14	2	2	2	92	460	12	10	392	86
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	215	56	98	84	73	51	119	2585	67	22	1963	427
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.07	0.72	0.72	0.01	0.67	0.67
Sat Flow, veh/h	1435	616	1077	320	802	561	1810	3592	94	1810	2949	641
Grp Volume(v), veh/h	28	0	22	6	0	0	92	231	241	10	238	240
Grp Sat Flow(s),veh/h/ln	1435	0	1693	1683	0	0	1810	1805	1881	1810	1805	1784
Q Serve(g_s), s	1.2	0.0	1.0	0.0	0.0	0.0	4.4	3.6	3.6	0.5	4.4	4.5
Cycle Q Clear(g_c), s	1.5	0.0	1.0	0.3	0.0	0.0	4.4	3.6	3.6	0.5	4.4	4.5
Prop In Lane	1.00		0.64	0.33		0.33	1.00		0.05	1.00		0.36
Lane Grp Cap(c), veh/h	215	0	154	209	0	0	119	1299	1353	22	1202	1188
V/C Ratio(X)	0.13	0.00	0.14	0.03	0.00	0.00	0.77	0.18	0.18	0.45	0.20	0.20
Avail Cap(c_a), veh/h	556	0	556	606	0	0	508	1299	1353	279	1202	1188
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.6	0.0	36.4	36.1	0.0	0.0	40.0	3.9	3.9	42.7	5.6	5.6
Incr Delay (d2), s/veh	0.3	0.0	0.4	0.1	0.0	0.0	3.9	0.3	0.3	5.1	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.4	0.1	0.0	0.0	2.0	1.0	1.1	0.2	1.4	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.9	0.0	36.8	36.1	0.0	0.0	43.9	4.2	4.2	47.8	6.0	6.0
LnGrp LOS	D	A	D	D	A	A	D	A	A	D	A	A
Approach Vol, veh/h		50			6			564			488	
Approach Delay, s/veh		36.8			36.1			10.7			6.8	
Approach LOS		D			D			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	68.0		13.3	10.3	63.3		13.3				
Change Period (Y+Rc), s	4.6	5.4		5.4	4.6	5.4		* 5.4				
Max Green Setting (Gmax), s	13.4	62.6		28.6	24.4	51.6		* 29				
Max Q Clear Time (g_c+I1), s	2.5	5.6		3.5	6.4	6.5		2.3				
Green Ext Time (p_c), s	0.0	2.8		0.1	0.1	2.9		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		10.3	
HCM 6th LOS		B	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	6	0	0	76	0	443	8	2	366	14
Future Vol, veh/h	0	0	6	0	0	76	0	443	8	2	366	14
Conflicting Peds, #/hr	0	0	0	0	0	1	0	0	1	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	7	0	0	84	0	487	9	2	402	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	209	-	-	250	-	0	0	497	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	6.9	-	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	803	0	0	756	0	-	-	1077	-	-
Stage 1	0	0	-	0	0	-	0	-	-	-	-	-
Stage 2	0	0	-	0	0	-	0	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	803	-	-	755	-	-	-	1076	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.5	10.4	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	803	755	1076	-	-
HCM Lane V/C Ratio	-	-	0.008	0.111	0.002	-	-
HCM Control Delay (s)	-	-	9.5	10.4	8.4	-	-
HCM Lane LOS	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	-	-	0	0.4	0	-	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

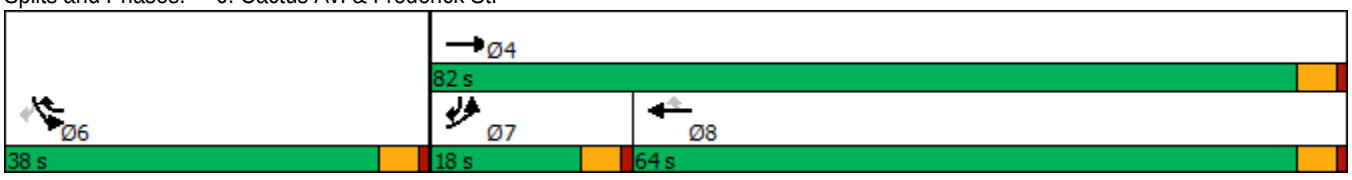
Timings
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	216	1695	2880	256	210	113
Future Volume (vph)	216	1695	2880	256	210	113
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	7	4	8	6	6	7
Permitted Phases				8		6
Detector Phase	7	4	8	6	6	7
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0
Minimum Split (s)	9.6	14.6	30.6	37.6	37.6	9.6
Total Split (s)	18.0	82.0	64.0	38.0	38.0	18.0
Total Split (%)	15.0%	68.3%	53.3%	31.7%	31.7%	15.0%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	4.6	4.6	4.6
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	Max	Max	None	Min	Min	Max
Act Effct Green (s)	13.5	78.0	59.8	78.9	14.5	32.6
Actuated g/C Ratio	0.13	0.77	0.59	0.78	0.14	0.32
v/c Ratio	0.96	0.45	1.00	0.21	0.45	0.23
Control Delay	94.9	5.6	39.3	2.5	42.0	25.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.9	5.6	39.3	2.5	42.0	25.9
LOS	F	A	D	A	D	C
Approach Delay		15.7	36.3		36.4	
Approach LOS		B	D		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 101.7	
Natural Cycle: 120	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 29.0	Intersection LOS: C
Intersection Capacity Utilization 87.4%	ICU Level of Service E
Analysis Period (min) 15	

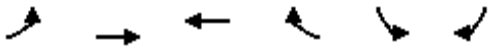
Splits and Phases: 6: Cactus Av. & Frederick St.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	216	1695	2880	256	210	113
Future Volume (veh/h)	216	1695	2880	256	210	113
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	230	1803	3064	266	223	80
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	251	4156	3190	1157	363	390
Arrive On Green	0.14	0.80	0.61	0.61	0.10	0.10
Sat Flow, veh/h	1810	5358	5358	1610	3510	1610
Grp Volume(v), veh/h	230	1803	3064	266	223	80
Grp Sat Flow(s),veh/h/ln	1810	1729	1729	1610	1755	1610
Q Serve(g_s), s	12.1	10.2	53.7	5.4	5.9	3.8
Cycle Q Clear(g_c), s	12.1	10.2	53.7	5.4	5.9	3.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	251	4156	3190	1157	363	390
V/C Ratio(X)	0.92	0.43	0.96	0.23	0.61	0.21
Avail Cap(c_a), veh/h	251	4156	3190	1157	1214	780
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.0	2.9	17.5	4.6	41.5	29.2
Incr Delay (d2), s/veh	38.7	0.3	8.7	0.1	0.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	1.5	18.9	2.1	2.5	3.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	79.8	3.3	26.2	4.7	42.1	29.3
LnGrp LOS	E	A	C	A	D	C
Approach Vol, veh/h		2033	3330		303	
Approach Delay, s/veh		11.9	24.5		38.7	
Approach LOS		B	C		D	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	82.0	14.6	18.0	64.0
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6
Max Green Setting (Gmax), s	77.4	33.4	13.4	59.4
Max Q Clear Time (g_c+I1), s	12.2	7.9	14.1	55.7
Green Ext Time (p_c), s	31.5	0.5	0.0	3.7

Intersection Summary	
HCM 6th Ctrl Delay	20.7
HCM 6th LOS	C

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	8	75	12	3	1
Future Vol, veh/h	2	8	75	12	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	9	82	13	3	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	95	0	-	0	102	89
Stage 1	-	-	-	-	89	-
Stage 2	-	-	-	-	13	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1512	-	-	-	901	975
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	1015	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1512	-	-	-	900	975
Mov Cap-2 Maneuver	-	-	-	-	848	-
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	1015	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	9.1
HCM LOS			A

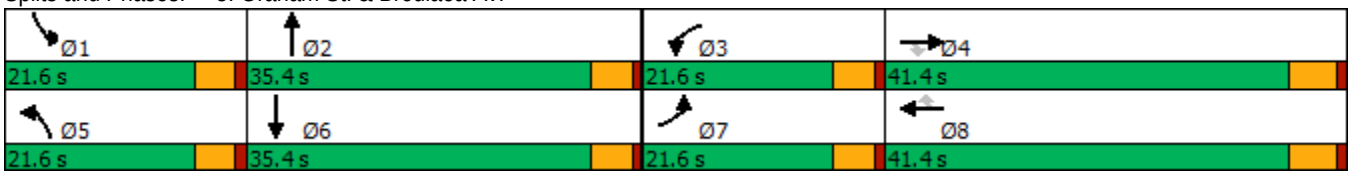
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1512	-	-	-	877
HCM Lane V/C Ratio	0.001	-	-	-	0.005
HCM Control Delay (s)	7.4	-	-	-	9.1
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	2	8	5	22	63	83	10	339	46	393
Future Volume (vph)	2	8	5	22	63	83	10	339	46	393
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	28.4	28.4	9.6	29.4	29.4	9.6	24.7	9.6	25.7
Total Split (s)	21.6	41.4	41.4	21.6	41.4	41.4	21.6	35.4	21.6	35.4
Total Split (%)	18.0%	34.5%	34.5%	18.0%	34.5%	34.5%	18.0%	29.5%	18.0%	29.5%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	4.4	3.6	3.7	3.6	3.7
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	5.4	4.6	4.7	4.6	4.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	5.8	13.1	13.1	6.2	15.1	15.1	5.9	19.8	7.0	24.6
Actuated g/C Ratio	0.12	0.28	0.28	0.13	0.32	0.32	0.12	0.42	0.15	0.52
v/c Ratio	0.01	0.02	0.01	0.12	0.13	0.18	0.06	0.30	0.22	0.27
Control Delay	29.5	19.0	0.0	28.0	15.4	5.2	28.6	16.8	26.7	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	19.0	0.0	28.0	15.4	5.2	28.6	16.8	26.7	12.2
LOS	C	B	A	C	B	A	C	B	C	B
Approach Delay		14.7			12.0			17.2		13.7
Approach LOS		B			B			B		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 47.4	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.30	
Intersection Signal Delay: 14.7	Intersection LOS: B
Intersection Capacity Utilization 36.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: Graham St. & Brodiaea Av.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
05/15/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	8	5	22	63	83	10	339	19	46	393	6
Future Volume (veh/h)	2	8	5	22	63	83	10	339	19	46	393	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	2	10	5	28	79	69	12	424	22	58	491	8
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	5	390	331	60	448	379	28	850	44	106	1041	17
Arrive On Green	0.00	0.21	0.21	0.03	0.24	0.24	0.02	0.24	0.24	0.06	0.29	0.29
Sat Flow, veh/h	1810	1900	1610	1810	1900	1608	1810	3491	181	1810	3634	59
Grp Volume(v), veh/h	2	10	5	28	79	69	12	219	227	58	244	255
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1810	1900	1608	1810	1805	1866	1810	1805	1888
Q Serve(g_s), s	0.0	0.2	0.1	0.6	1.4	1.4	0.3	4.4	4.4	1.3	4.7	4.7
Cycle Q Clear(g_c), s	0.0	0.2	0.1	0.6	1.4	1.4	0.3	4.4	4.4	1.3	4.7	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		0.03
Lane Grp Cap(c), veh/h	5	390	331	60	448	379	28	440	455	106	517	541
V/C Ratio(X)	0.40	0.03	0.02	0.47	0.18	0.18	0.43	0.50	0.50	0.55	0.47	0.47
Avail Cap(c_a), veh/h	732	1628	1380	732	1628	1378	732	1319	1364	732	1319	1379
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.9	13.3	13.3	19.9	12.8	12.8	20.5	13.7	13.7	19.2	12.4	12.4
Incr Delay (d2), s/veh	18.3	0.0	0.0	2.1	0.2	0.2	3.8	0.9	0.9	1.6	0.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.0	0.3	0.5	0.4	0.1	1.6	1.6	0.5	1.6	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.3	13.4	13.3	22.0	13.0	13.0	24.3	14.5	14.5	20.9	13.0	13.0
LnGrp LOS	D	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		17			176			458			557	
Approach Delay, s/veh		16.4			14.4			14.8			13.8	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.1	14.9	6.0	14.0	5.3	16.7	4.7	15.3
Change Period (Y+Rc), s	4.6	* 4.7	4.6	5.4	4.6	* 4.7	4.6	5.4
Max Green Setting (Gmax), s	17.0	* 31	17.0	36.0	17.0	* 31	17.0	36.0
Max Q Clear Time (g_c+I1), s	3.3	6.4	2.6	2.2	2.3	6.7	2.0	3.4
Green Ext Time (p_c), s	0.0	2.7	0.0	0.0	0.0	3.0	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	14.3
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	50	50	99	32	31	120
Future Vol, veh/h	50	50	99	32	31	120
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	0	115	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	57	57	114	37	36	138

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	324	115	0	0	151	0
Stage 1	114	-	-	-	-	-
Stage 2	210	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	674	943	-	-	1442	-
Stage 1	916	-	-	-	-	-
Stage 2	830	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	657	942	-	-	1442	-
Mov Cap-2 Maneuver	731	-	-	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	830	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	1.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	731	942	1442	-
HCM Lane V/C Ratio	-	-	0.079	0.061	0.025	-
HCM Control Delay (s)	-	-	10.3	9.1	7.6	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.2	0.1	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

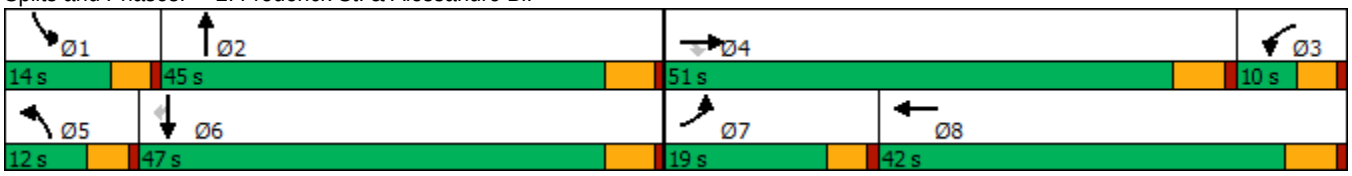
Timings
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	240	1375	238	109	892	166	323	290	338	134
Future Volume (vph)	240	1375	238	109	892	166	323	290	338	134
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	4	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.8	33.8	9.6	36.8	9.6	42.4	9.6	43.4	43.4
Total Split (s)	19.0	51.0	51.0	10.0	42.0	12.0	45.0	14.0	47.0	47.0
Total Split (%)	15.8%	42.5%	42.5%	8.3%	35.0%	10.0%	37.5%	11.7%	39.2%	39.2%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.4	4.6	5.4	5.4
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	None	Max	None	Max	Max
Act Effct Green (s)	14.4	45.2	45.2	5.4	36.2	7.4	39.6	9.4	41.6	41.6
Actuated g/C Ratio	0.12	0.38	0.38	0.04	0.30	0.06	0.33	0.08	0.35	0.35
v/c Ratio	1.16	1.05	0.35	1.41	0.72	0.80	0.38	1.10	0.28	0.21
Control Delay	156.8	76.6	9.8	282.9	39.3	82.4	29.2	135.2	29.1	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	156.8	76.6	9.8	282.9	39.3	82.4	29.2	135.2	29.1	3.5
LOS	F	E	A	F	D	F	C	F	C	A
Approach Delay		78.4			61.9		44.1		65.0	
Approach LOS		E			E		D		E	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 120	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.41	
Intersection Signal Delay: 67.0	Intersection LOS: E
Intersection Capacity Utilization 100.2%	ICU Level of Service G
Analysis Period (min) 15	

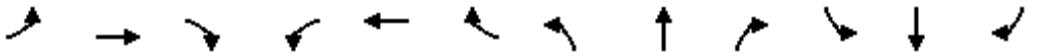
Splits and Phases: 2: Frederick St. & Alessandro Bl.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	240	1375	238	109	892	179	166	323	102	290	338	134
Future Volume (veh/h)	240	1375	238	109	892	179	166	323	102	290	338	134
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	250	1432	227	114	929	162	173	336	98	302	352	82
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	215	1346	593	81	1368	238	214	901	258	272	1239	545
Arrive On Green	0.12	0.37	0.37	0.04	0.31	0.31	0.06	0.33	0.33	0.08	0.34	0.34
Sat Flow, veh/h	1810	3610	1590	1810	4434	770	3510	2758	791	3510	3610	1587
Grp Volume(v), veh/h	250	1432	227	114	724	367	173	218	216	302	352	82
Grp Sat Flow(s),veh/h/ln	1810	1805	1590	1810	1729	1746	1755	1805	1744	1755	1805	1587
Q Serve(g_s), s	14.4	45.2	9.7	5.4	22.2	22.3	5.9	11.2	11.5	9.4	8.6	4.3
Cycle Q Clear(g_c), s	14.4	45.2	9.7	5.4	22.2	22.3	5.9	11.2	11.5	9.4	8.6	4.3
Prop In Lane	1.00		1.00	1.00		0.44	1.00		0.45	1.00		1.00
Lane Grp Cap(c), veh/h	215	1346	593	81	1067	539	214	590	570	272	1239	545
V/C Ratio(X)	1.16	1.06	0.38	1.41	0.68	0.68	0.81	0.37	0.38	1.11	0.28	0.15
Avail Cap(c_a), veh/h	215	1346	593	81	1067	539	214	590	570	272	1239	545
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.4	38.0	16.3	57.9	36.6	36.7	56.2	31.2	31.4	55.9	29.0	27.6
Incr Delay (d2), s/veh	112.3	43.4	1.9	244.4	3.5	6.8	18.7	1.8	1.9	87.1	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.1	26.9	3.6	7.9	9.5	10.2	3.1	5.1	5.1	7.4	3.8	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	165.7	81.4	18.2	302.3	40.1	43.5	74.9	33.0	33.3	143.0	29.5	28.1
LnGrp LOS	F	F	B	F	D	D	E	C	C	F	C	C
Approach Vol, veh/h		1909			1205			607			736	
Approach Delay, s/veh		84.9			66.0			45.0			75.9	
Approach LOS		F			E			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	45.0	11.2	51.0	12.0	47.0	19.0	43.2
Change Period (Y+Rc), s	4.6	5.4	5.8	* 5.8	4.6	5.4	4.6	5.8
Max Green Setting (Gmax), s	9.4	39.6	5.4	* 45	7.4	41.6	14.4	36.2
Max Q Clear Time (g_c+I1), s	11.4	13.5	7.4	47.2	7.9	10.6	16.4	24.3
Green Ext Time (p_c), s	0.0	3.6	0.0	0.0	0.0	2.5	0.0	5.2

Intersection Summary	
HCM 6th Ctrl Delay	72.9
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	12	586	0	0	714
Future Vol, veh/h	0	12	586	0	0	714
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	13	637	0	0	776

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	319	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	683	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	683	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	0
HCM LOS	B		

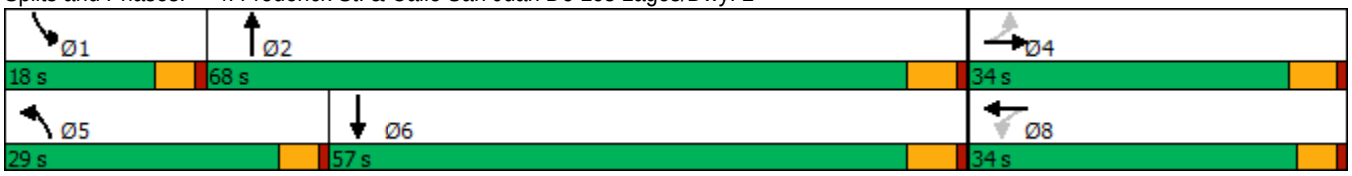
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	683	-
HCM Lane V/C Ratio	-	-	0.019	-
HCM Control Delay (s)	-	-	10.4	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.1	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	150	2	11	7	31	427	3	651
Future Volume (vph)	150	2	11	7	31	427	3	651
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	23.4	23.4	22.6	22.6	9.6	15.4	9.6	28.4
Total Split (s)	34.0	34.0	34.0	34.0	29.0	68.0	18.0	57.0
Total Split (%)	28.3%	28.3%	28.3%	28.3%	24.2%	56.7%	15.0%	47.5%
Yellow Time (s)	4.4	4.4	3.6	3.6	3.6	4.4	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4		4.6	4.6	5.4	4.6	5.4
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	15.8	15.8		16.6	6.4	63.2	5.1	58.1
Actuated g/C Ratio	0.17	0.17		0.18	0.07	0.69	0.06	0.63
v/c Ratio	0.67	0.21		0.10	0.27	0.19	0.03	0.34
Control Delay	50.1	10.5		24.2	48.2	6.3	46.0	9.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	50.1	10.5		24.2	48.2	6.3	46.0	9.9
LOS	D	B		C	D	A	D	A
Approach Delay		38.2		24.2		9.2		10.0
Approach LOS		D		C		A		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 91.6	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 14.3	Intersection LOS: B
Intersection Capacity Utilization 49.7%	ICU Level of Service A
Analysis Period (min) 15	

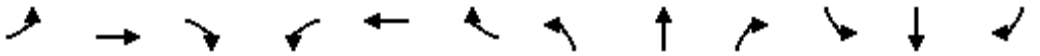
Splits and Phases: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	2	63	11	7	9	31	427	3	3	651	61
Future Volume (veh/h)	150	2	63	11	7	9	31	427	3	3	651	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	163	2	61	12	8	10	34	464	3	3	708	61
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	284	7	208	117	79	70	57	2543	16	7	2233	192
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.03	0.69	0.69	0.00	0.66	0.66
Sat Flow, veh/h	1417	51	1553	458	587	522	1810	3676	24	1810	3363	290
Grp Volume(v), veh/h	163	0	63	30	0	0	34	228	239	3	380	389
Grp Sat Flow(s),veh/h/ln	1417	0	1604	1567	0	0	1810	1805	1895	1810	1805	1848
Q Serve(g_s), s	6.0	0.0	3.2	0.0	0.0	0.0	1.7	4.0	4.0	0.1	8.1	8.1
Cycle Q Clear(g_c), s	9.2	0.0	3.2	3.2	0.0	0.0	1.7	4.0	4.0	0.1	8.1	8.1
Prop In Lane	1.00		0.97	0.40		0.33	1.00		0.01	1.00		0.16
Lane Grp Cap(c), veh/h	284	0	215	266	0	0	57	1248	1311	7	1198	1227
V/C Ratio(X)	0.57	0.00	0.29	0.11	0.00	0.00	0.59	0.18	0.18	0.41	0.32	0.32
Avail Cap(c_a), veh/h	541	0	507	562	0	0	488	1248	1311	268	1198	1227
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.6	0.0	35.3	34.5	0.0	0.0	43.2	4.9	4.9	45.0	6.5	6.5
Incr Delay (d2), s/veh	1.8	0.0	0.7	0.2	0.0	0.0	3.6	0.3	0.3	13.3	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	1.3	0.6	0.0	0.0	0.8	1.3	1.3	0.1	2.7	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.5	0.0	36.1	34.7	0.0	0.0	46.8	5.2	5.2	58.3	7.2	7.2
LnGrp LOS	D	A	D	C	A	A	D	A	A	E	A	A
Approach Vol, veh/h		226			30			501			772	
Approach Delay, s/veh		38.5			34.7			8.1			7.4	
Approach LOS		D			C			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.0	68.0		17.5	7.5	65.5		17.5				
Change Period (Y+Rc), s	4.6	5.4		5.4	4.6	5.4		* 5.4				
Max Green Setting (Gmax), s	13.4	62.6		28.6	24.4	51.6		* 29				
Max Q Clear Time (g_c+I1), s	2.1	6.0		11.2	3.7	10.1		5.2				
Green Ext Time (p_c), s	0.0	2.8		0.7	0.0	5.1		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		12.7	
HCM 6th LOS		B	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	31	0	0	58	0	403	20	1	713	11
Future Vol, veh/h	0	0	31	0	0	58	0	403	20	1	713	11
Conflicting Peds, #/hr	0	0	0	0	0	1	0	0	1	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	34	0	0	64	0	443	22	1	784	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	398	-	-	235	-	0	0	466	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	6.9	-	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	607	0	0	773	0	-	-	1106	-	-
Stage 1	0	0	-	0	0	-	0	-	-	-	-	-
Stage 2	0	0	-	0	0	-	0	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	607	-	-	772	-	-	-	1105	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.3	10.1	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	607	772	1105	-	-
HCM Lane V/C Ratio	-	-	0.056	0.083	0.001	-	-
HCM Control Delay (s)	-	-	11.3	10.1	8.3	-	-
HCM Lane LOS	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	-	-	0.2	0.3	0	-	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

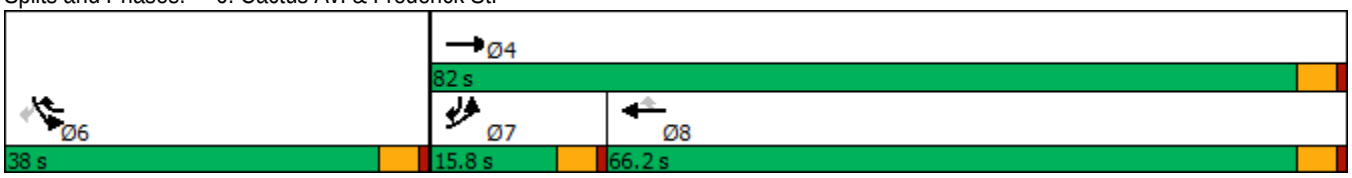
Timings
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	105	3090	2011	232	622	200
Future Volume (vph)	105	3090	2011	232	622	200
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	7	4	8	6	6	7
Permitted Phases				8		6
Detector Phase	7	4	8	6	6	7
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0
Minimum Split (s)	9.6	14.6	30.6	37.6	37.6	9.6
Total Split (s)	15.8	82.0	66.2	38.0	38.0	15.8
Total Split (%)	13.2%	68.3%	55.2%	31.7%	31.7%	13.2%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	4.6	4.6	4.6
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	Max	Max	None	Min	Min	Max
Act Effct Green (s)	11.2	77.6	61.7	91.8	25.4	41.2
Actuated g/C Ratio	0.10	0.69	0.55	0.82	0.23	0.37
v/c Ratio	0.62	0.92	0.75	0.18	0.84	0.36
Control Delay	65.5	20.8	22.1	0.6	51.4	27.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.5	20.8	22.1	0.6	51.4	27.1
LOS	E	C	C	A	D	C
Approach Delay		22.3	19.9		45.5	
Approach LOS		C	B		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 112.2	
Natural Cycle: 110	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 24.5	Intersection LOS: C
Intersection Capacity Utilization 85.1%	ICU Level of Service E
Analysis Period (min) 15	

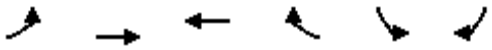
Splits and Phases: 6: Cactus Av. & Frederick St.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	105	3090	2011	232	622	200
Future Volume (veh/h)	105	3090	2011	232	622	200
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	112	3287	2139	241	662	173
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	184	3647	2902	1245	749	507
Arrive On Green	0.10	0.70	0.56	0.56	0.21	0.21
Sat Flow, veh/h	1810	5358	5358	1610	3510	1610
Grp Volume(v), veh/h	112	3287	2139	241	662	173
Grp Sat Flow(s),veh/h/ln	1810	1729	1729	1610	1755	1610
Q Serve(g_s), s	6.5	56.6	34.0	4.4	20.1	9.1
Cycle Q Clear(g_c), s	6.5	56.6	34.0	4.4	20.1	9.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	184	3647	2902	1245	749	507
V/C Ratio(X)	0.61	0.90	0.74	0.19	0.88	0.34
Avail Cap(c_a), veh/h	184	3647	2902	1245	1065	652
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.3	13.3	18.2	3.3	42.0	28.9
Incr Delay (d2), s/veh	14.1	4.1	1.1	0.1	5.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	17.2	12.0	2.8	9.0	8.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	61.4	17.4	19.3	3.4	47.0	29.1
LnGrp LOS	E	B	B	A	D	C
Approach Vol, veh/h		3399	2380		835	
Approach Delay, s/veh		18.8	17.7		43.3	
Approach LOS		B	B		D	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	82.0	28.1	15.8	66.2
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6
Max Green Setting (Gmax), s	77.4	33.4	11.2	61.6
Max Q Clear Time (g_c+I1), s	58.6	22.1	8.5	36.0
Green Ext Time (p_c), s	18.6	1.4	0.0	21.6

Intersection Summary	
HCM 6th Ctrl Delay	21.5
HCM 6th LOS	C

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	20	54	3	16	4
Future Vol, veh/h	1	20	54	3	16	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	22	59	3	17	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	62	0	-	0	85	61
Stage 1	-	-	-	-	61	-
Stage 2	-	-	-	-	24	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1554	-	-	-	921	1010
Stage 1	-	-	-	-	967	-
Stage 2	-	-	-	-	1004	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1554	-	-	-	920	1010
Mov Cap-2 Maneuver	-	-	-	-	867	-
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	1004	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1554	-	-	-	892
HCM Lane V/C Ratio	0.001	-	-	-	0.024
HCM Control Delay (s)	7.3	-	-	-	9.1
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

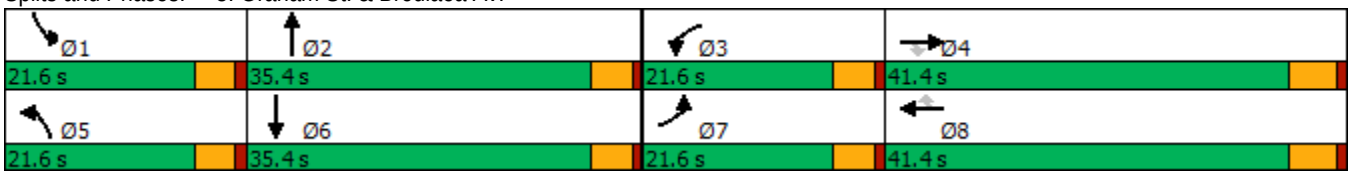
Timings
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	3	18	14	22	53	75	5	504	83	532
Future Volume (vph)	3	18	14	22	53	75	5	504	83	532
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	28.4	28.4	9.6	29.4	29.4	9.6	24.7	9.6	25.7
Total Split (s)	21.6	41.4	41.4	21.6	41.4	41.4	21.6	35.4	21.6	35.4
Total Split (%)	18.0%	34.5%	34.5%	18.0%	34.5%	34.5%	18.0%	29.5%	18.0%	29.5%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	4.4	3.6	3.7	3.6	3.7
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	5.4	4.6	4.7	4.6	4.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	5.8	13.0	13.0	6.4	15.2	15.2	5.8	26.3	9.1	35.6
Actuated g/C Ratio	0.10	0.23	0.23	0.11	0.26	0.26	0.10	0.46	0.16	0.62
v/c Ratio	0.02	0.05	0.04	0.14	0.13	0.19	0.03	0.40	0.37	0.30
Control Delay	35.3	24.7	0.1	33.8	21.0	6.2	35.2	18.1	31.6	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.3	24.7	0.1	33.8	21.0	6.2	35.2	18.1	31.6	10.5
LOS	D	C	A	C	C	A	D	B	C	B
Approach Delay		15.8			15.5			18.3		13.3
Approach LOS		B			B			B		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 57.5	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.40	
Intersection Signal Delay: 15.6	Intersection LOS: B
Intersection Capacity Utilization 40.5%	ICU Level of Service A
Analysis Period (min) 15	

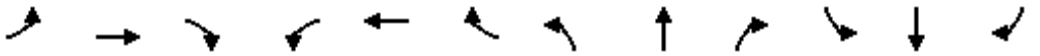
Splits and Phases: 8: Graham St. & Brodiaea Av.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	18	14	22	53	75	5	504	24	83	532	3
Future Volume (veh/h)	3	18	14	22	53	75	5	504	24	83	532	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	4	22	17	28	66	59	6	630	28	104	665	4
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	10	362	307	59	414	350	15	1014	45	143	1321	8
Arrive On Green	0.01	0.19	0.19	0.03	0.22	0.22	0.01	0.29	0.29	0.08	0.36	0.36
Sat Flow, veh/h	1810	1900	1610	1810	1900	1608	1810	3520	156	1810	3678	22
Grp Volume(v), veh/h	4	22	17	28	66	59	6	323	335	104	326	343
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1810	1900	1608	1810	1805	1871	1810	1805	1895
Q Serve(g_s), s	0.1	0.4	0.4	0.7	1.3	1.4	0.2	7.3	7.3	2.6	6.7	6.7
Cycle Q Clear(g_c), s	0.1	0.4	0.4	0.7	1.3	1.4	0.2	7.3	7.3	2.6	6.7	6.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		0.01
Lane Grp Cap(c), veh/h	10	362	307	59	414	350	15	520	539	143	648	681
V/C Ratio(X)	0.41	0.06	0.06	0.48	0.16	0.17	0.41	0.62	0.62	0.73	0.50	0.50
Avail Cap(c_a), veh/h	653	1452	1230	653	1452	1229	653	1176	1219	653	1176	1235
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.4	15.6	15.6	22.4	14.9	15.0	23.3	14.5	14.5	21.2	11.8	11.8
Incr Delay (d2), s/veh	9.8	0.1	0.1	2.2	0.2	0.2	6.8	1.2	1.2	2.7	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.2	0.1	0.3	0.5	0.4	0.1	2.7	2.8	1.1	2.3	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.2	15.7	15.7	24.6	15.1	15.2	30.1	15.7	15.7	23.9	12.4	12.4
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		43			153			664			773	
Approach Delay, s/veh		17.3			16.9			15.9			13.9	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	18.3	6.1	14.4	5.0	21.6	4.9	15.7
Change Period (Y+Rc), s	4.6	* 4.7	4.6	5.4	4.6	* 4.7	4.6	5.4
Max Green Setting (Gmax), s	17.0	* 31	17.0	36.0	17.0	* 31	17.0	36.0
Max Q Clear Time (g_c+I1), s	4.6	9.3	2.7	2.4	2.2	8.7	2.1	3.4
Green Ext Time (p_c), s	0.1	4.1	0.0	0.1	0.0	4.2	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	15.1
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 6.3:

OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

California MUTCD 2014 Edition
(FHWA's MUTCD 2009, as amended for use in California)

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

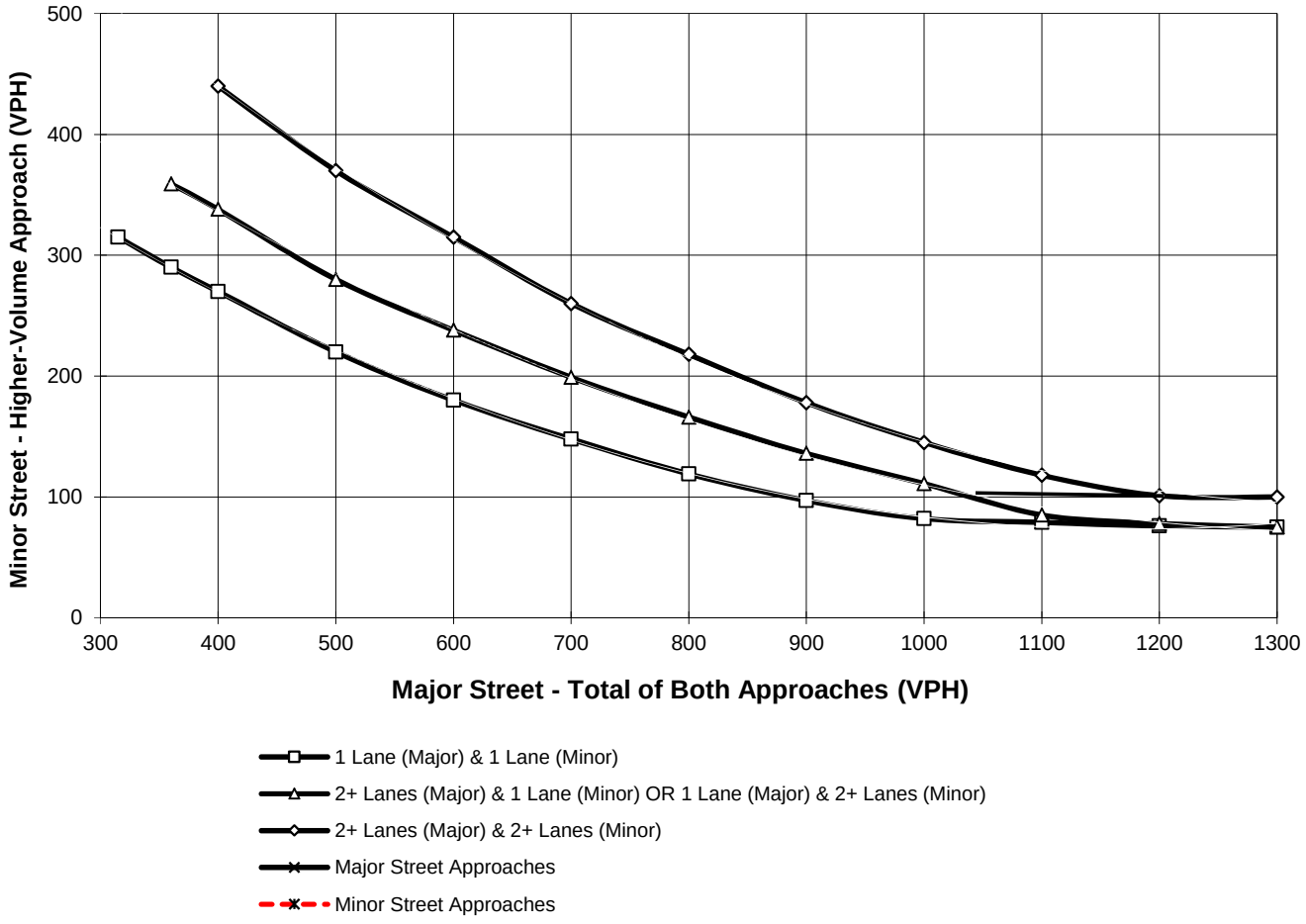
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Opening Year (2023) Without Project Conditions - Weekday PM Peak Hour**

Major Street Name = **Veterans Way** Total of Both Approaches (VPH) = **279**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Calle San Juan de Los Lagos** High Volume Approach (VPH) = **92**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 6.4:

OPENING YEAR CUMULATIVE (2023) WITH PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

California MUTCD 2014 Edition
(FHWA's MUTCD 2009, as amended for use in California)

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

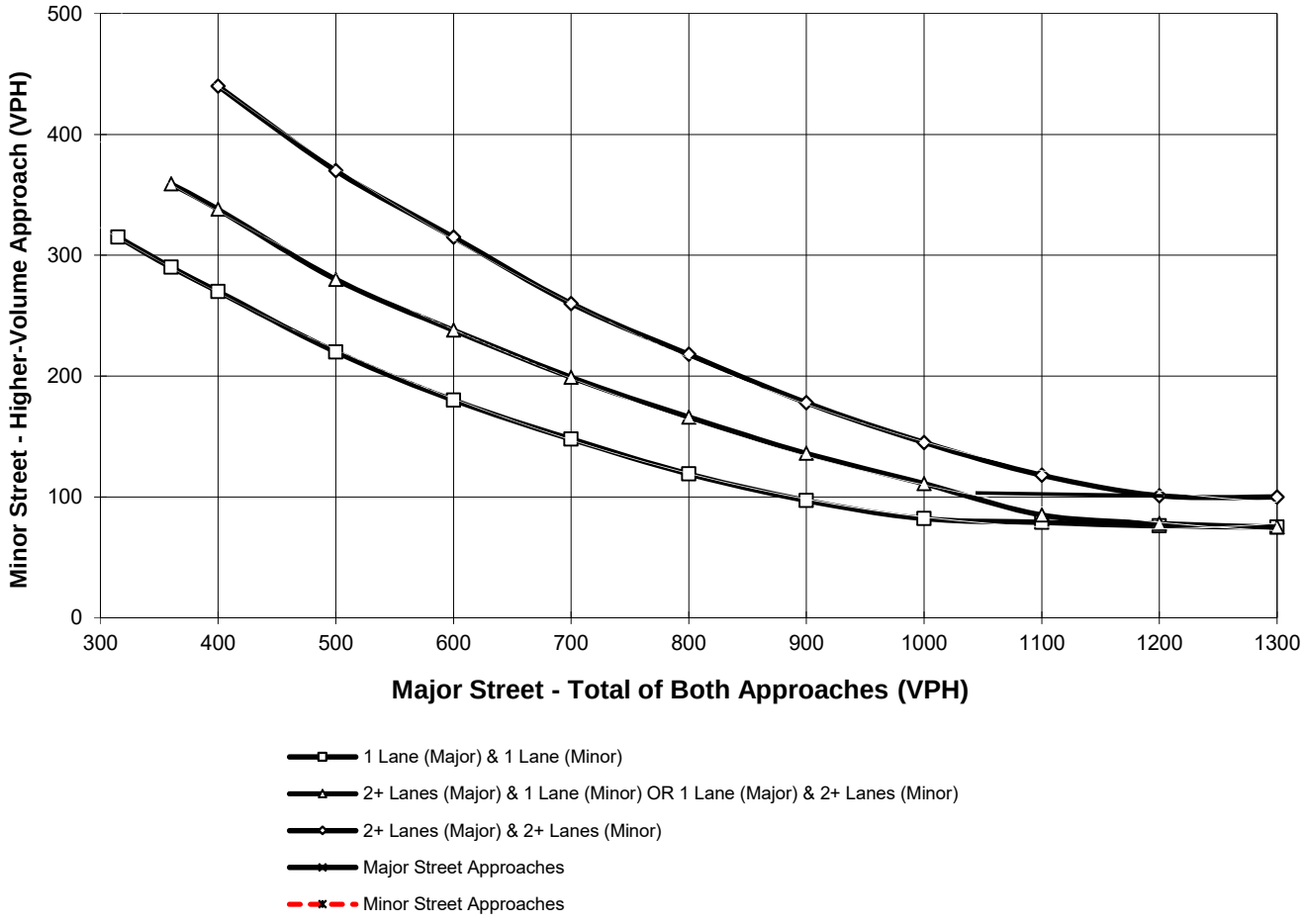
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Opening Year (2023) With Project Conditions - Weekday PM Peak Hour**

Major Street Name = **Veterans Way** Total of Both Approaches (VPH) = **282**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Calle San Juan de Los Lagos** High Volume Approach (VPH) = **100**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS	OYC (2023) WP
				CALC CHS	DATE 05/15/18
				CHK CHS	DATE 05/15/18

Jurisdiction: **City of Moreno Valley**

Major Street: **Brodiaea Av.**

Minor Street: **Driveway 3**

Critical Approach Speed (Major) 40 mph

Critical Approach Speed (Minor) 25 mph

Major Street Approach Lanes = **1** lane

Minor Street Approach Lanes **1** lane

Major Street Future ADT = **1,054** vpd

Minor Street Future ADT = **91** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ……..

or

In built up area of isolated community of < 10,000 population ……..

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT			
	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
CONDITION A - Minimum Vehicular Volume	Urban	Rural	Urban	Rural
Satisfied / Not Satisfied (XX)				
Number of lanes for moving traffic on each approach: Major Street / Minor Street				
1 **1,054** / 1 **91**	8,000	5,600	2,400	1,680
2 + / 1	9,600	6,720	2,400	1,680
2 + / 2 +	9,600	6,720	3,200	2,240
1 / 2 +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied / Not Satisfied (XX)				
Number of lanes for moving traffic on each approach: Major Street / Minor Street	Urban	Rural	Urban	Rural
1 **1,054** / 1 **91**	12,000	8,400	1,200	850
2 + / 1	14,400	10,080	1,200	850
2 + / 2 +	14,400	10,080	1,600	1,120
1 / 2 +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied (XX)				
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 4% B: 8%	2 CONDITIONS 80%		2 CONDITIONS 80%	

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 6.5:

OPENING YEAR CUMULATIVE (2023) WITH PROJECT CONDITIONS QUEUING ANALYSIS WORKSHEETS

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Queuing and Blocking Report
Opening Year (2023) With Project - AM Peak Hour

Centerpointe (JN: 11410)
05/15/2018

Intersection: 1: Veterans Wy. & Calle San Juan De Los Lagos

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	52	24	28
Average Queue (ft)	19	11	4
95th Queue (ft)	44	28	19
Link Distance (ft)		1530	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		115
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	TR	L	L	T	TR
Maximum Queue (ft)	190	190	197	44	215	1402	1391	1364	99	99	130	146
Average Queue (ft)	100	97	104	18	214	1080	1070	1028	42	52	59	78
95th Queue (ft)	167	154	163	40	216	1900	1877	1807	86	92	110	128
Link Distance (ft)		3252	3252	3252		2574	2574	2574			571	571
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250				130				135	135		
Storage Blk Time (%)					100	49			0		0	
Queuing Penalty (veh)					489	52			0		1	

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	R
Maximum Queue (ft)	120	138	150	168	174
Average Queue (ft)	21	67	79	74	78
95th Queue (ft)	70	120	131	137	153
Link Distance (ft)			1184	1184	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100	100			100
Storage Blk Time (%)	0	7	7	4	6
Queuing Penalty (veh)	0	10	7	10	10

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 3: Frederick St. & Dwy. 1

Movement	WB
Directions Served	R
Maximum Queue (ft)	31
Average Queue (ft)	2
95th Queue (ft)	15
Link Distance (ft)	345
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	60	56	39	113	98	101	45	137	164
Average Queue (ft)	21	15	7	59	27	32	10	43	47
95th Queue (ft)	55	42	29	106	74	82	34	100	108
Link Distance (ft)		1530	288		230	230		276	276
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	120			150			100		
Storage Blk Time (%)				0				1	
Queuing Penalty (veh)				0				0	

Intersection: 5: Frederick St. & Private Driveway/Brodiaea Av.

Movement	EB	WB	NB	SB
Directions Served	R	R	TR	LT
Maximum Queue (ft)	31	55	6	11
Average Queue (ft)	7	29	0	0
95th Queue (ft)	28	46	6	7
Link Distance (ft)	167	481	1150	230
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 6: Cactus Av. & Frederick St.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	T	T	T	T	R	L	L	R
Maximum Queue (ft)	304	277	196	170	538	559	548	340	104	125	128
Average Queue (ft)	156	80	65	41	320	322	307	116	50	65	45
95th Queue (ft)	266	184	136	104	501	511	500	335	91	106	99
Link Distance (ft)		1599	1599	1599	2529	2529	2529			1150	1150
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	300							265	140		
Storage Blk Time (%)	1	0					11			0	
Queuing Penalty (veh)	6	0					29			0	

Intersection: 7: Brodiaea Av. & Dwy. 3

Movement	SB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	5
95th Queue (ft)	23
Link Distance (ft)	326
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Graham St. & Brodiaea Av.

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	24	31	28	48	70	58	33	112	90	55	98	68
Average Queue (ft)	2	4	2	16	27	27	8	52	23	24	48	23
95th Queue (ft)	15	22	15	42	55	52	28	92	60	48	84	54
Link Distance (ft)		2009			828	828		1200	1200		1170	1170
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210		100	150			160			150		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Network Summary

Network wide Queuing Penalty: 613

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 1: Veterans Wy. & Calle San Juan De Los Lagos

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	61	28	28
Average Queue (ft)	21	16	3
95th Queue (ft)	44	31	16
Link Distance (ft)		1530	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		115
Storage Blk Time (%)	0		
Queuing Penalty (veh)	0		

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	TR	L	L	T	TR
Maximum Queue (ft)	330	1940	1910	1529	215	828	816	443	131	144	171	186
Average Queue (ft)	314	1628	1623	409	207	609	591	214	64	79	92	113
95th Queue (ft)	395	2273	2261	1296	253	1052	1023	341	127	131	152	167
Link Distance (ft)		3695	3695	3695		2574	2574	2574			571	571
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250				130				135	135		
Storage Blk Time (%)	53	50			95	10			1	2	1	
Queuing Penalty (veh)	365	121			284	11			1	3	2	

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	R
Maximum Queue (ft)	160	219	427	318	91
Average Queue (ft)	142	188	234	165	38
95th Queue (ft)	191	244	514	410	69
Link Distance (ft)			1184	1184	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100	100			100
Storage Blk Time (%)	42	73	7	9	0
Queuing Penalty (veh)	71	123	21	11	0

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 3: Frederick St. & Dwy. 1

Movement	WB
Directions Served	R
Maximum Queue (ft)	35
Average Queue (ft)	7
95th Queue (ft)	28
Link Distance (ft)	345
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	164	123	66	72	100	101	54	214	203
Average Queue (ft)	90	30	21	25	34	37	3	87	70
95th Queue (ft)	143	82	53	58	77	82	27	171	152
Link Distance (ft)		1530	288		230	230		276	276
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	120			150			100		
Storage Blk Time (%)	5							4	
Queuing Penalty (veh)	3							0	

Intersection: 5: Frederick St. & Private Driveway/Brodiaea Av.

Movement	EB	WB	SB	SB
Directions Served	R	R	LT	TR
Maximum Queue (ft)	53	61	21	9
Average Queue (ft)	22	25	1	0
95th Queue (ft)	48	47	11	7
Link Distance (ft)	167	481	230	230
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 6: Cactus Av. & Frederick St.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	T	T	T	T	R	L	L	R
Maximum Queue (ft)	320	401	395	364	315	315	288	75	200	362	184
Average Queue (ft)	92	247	244	216	225	219	196	26	160	205	70
95th Queue (ft)	193	375	372	348	303	301	286	62	224	328	145
Link Distance (ft)		1599	1599	1599	2529	2529	2529			1150	1150
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	300							265	140		
Storage Blk Time (%)		3					1		15	23	
Queuing Penalty (veh)		3					2		45	71	

Intersection: 7: Brodiaea Av. & Dwy. 3

Movement	SB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	16
95th Queue (ft)	41
Link Distance (ft)	326
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Graham St. & Brodiaea Av.

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	29	56	39	48	66	67	30	148	144	85	125	95
Average Queue (ft)	3	11	7	16	26	26	4	78	48	39	57	34
95th Queue (ft)	16	38	27	43	55	55	20	127	102	75	100	75
Link Distance (ft)		2009			828	828		1200	1200		1170	1170
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210		100	150			160			150		
Storage Blk Time (%)								0			0	
Queuing Penalty (veh)								0			0	

Network Summary

Network wide Queuing Penalty: 1138

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 7.1:

GENERAL PLAN BUILDOUT (POST-2040) WITHOUT PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	51	33	137	94	62	48
Future Vol, veh/h	51	33	137	94	62	48
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	0	115	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	55	36	149	102	67	52

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	335	150	0	0	251	0
Stage 1	149	-	-	-	-	-
Stage 2	186	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	664	902	-	-	1326	-
Stage 1	884	-	-	-	-	-
Stage 2	851	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	630	901	-	-	1326	-
Mov Cap-2 Maneuver	709	-	-	-	-	-
Stage 1	839	-	-	-	-	-
Stage 2	851	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	4.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	709	901	1326	-
HCM Lane V/C Ratio	-	-	0.078	0.04	0.051	-
HCM Control Delay (s)	-	-	10.5	9.2	7.9	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.1	0.2	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

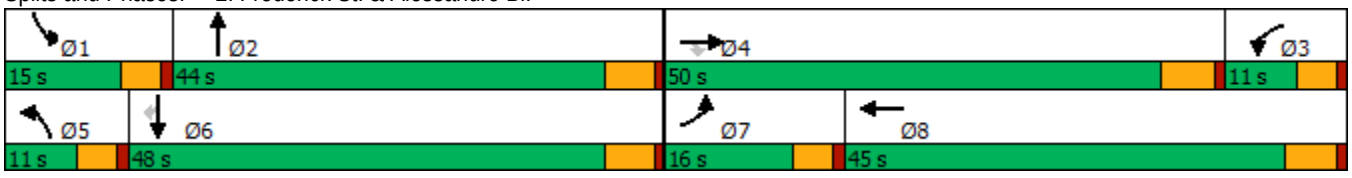
Timings
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/02/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	211	781	85	116	1970	149	337	230	383	288
Future Volume (vph)	211	781	85	116	1970	149	337	230	383	288
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	4	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.8	33.8	9.6	36.8	9.6	42.4	9.6	43.4	43.4
Total Split (s)	16.0	50.0	50.0	11.0	45.0	11.0	44.0	15.0	48.0	48.0
Total Split (%)	13.3%	41.7%	41.7%	9.2%	37.5%	9.2%	36.7%	12.5%	40.0%	40.0%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.4	4.6	5.4	5.4
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	None	Max	None	Max	Max
Act Effct Green (s)	11.4	44.2	44.2	6.4	39.2	6.4	38.8	10.2	42.6	42.6
Actuated g/C Ratio	0.10	0.37	0.37	0.05	0.33	0.05	0.32	0.08	0.36	0.36
v/c Ratio	1.29	0.61	0.13	1.26	1.42	0.83	0.34	0.81	0.31	0.41
Control Delay	209.0	33.3	2.6	222.9	225.4	90.0	31.0	74.9	28.9	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	209.0	33.3	2.6	222.9	225.4	90.0	31.0	74.9	28.9	8.0
LOS	F	C	A	F	F	F	C	E	C	A
Approach Delay		65.3			225.2		47.6		34.0	
Approach LOS		E			F		D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 120	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.42	
Intersection Signal Delay: 135.9	Intersection LOS: F
Intersection Capacity Utilization 111.2%	ICU Level of Service H
Analysis Period (min) 15	

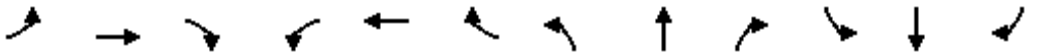
Splits and Phases: 2: Frederick St. & Alessandro Bl.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/02/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	211	781	85	116	1970	313	149	337	42	230	383	288
Future Volume (veh/h)	211	781	85	116	1970	313	149	337	42	230	383	288
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	220	814	43	121	2052	162	155	351	21	240	399	150
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	170	1317	580	96	1633	128	185	1108	66	294	1269	558
Arrive On Green	0.09	0.36	0.36	0.05	0.33	0.33	0.05	0.32	0.32	0.08	0.35	0.35
Sat Flow, veh/h	1810	3610	1590	1810	4898	384	3510	3458	206	3510	3610	1587
Grp Volume(v), veh/h	220	814	43	121	1444	770	155	182	190	240	399	150
Grp Sat Flow(s),veh/h/ln	1810	1805	1590	1810	1729	1823	1755	1805	1859	1755	1805	1587
Q Serve(g_s), s	11.4	22.4	1.7	6.4	40.4	40.4	5.3	9.3	9.3	8.1	9.8	8.2
Cycle Q Clear(g_c), s	11.4	22.4	1.7	6.4	40.4	40.4	5.3	9.3	9.3	8.1	9.8	8.2
Prop In Lane	1.00		1.00	1.00		0.21	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	170	1317	580	96	1153	608	185	578	596	294	1269	558
V/C Ratio(X)	1.29	0.62	0.07	1.27	1.25	1.27	0.84	0.32	0.32	0.82	0.31	0.27
Avail Cap(c_a), veh/h	170	1317	580	96	1153	608	185	578	596	301	1269	558
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.9	31.6	15.4	57.4	40.4	40.4	56.9	31.1	31.2	54.6	28.7	28.1
Incr Delay (d2), s/veh	168.2	2.2	0.2	179.6	121.1	132.7	25.7	1.4	1.4	14.4	0.6	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.0	9.8	0.8	7.6	35.7	39.6	3.0	4.2	4.3	4.1	4.3	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	223.1	33.8	15.6	237.0	161.5	173.1	82.6	32.6	32.6	69.0	29.3	29.3
LnGrp LOS	F	C	B	F	F	F	F	C	C	E	C	C
Approach Vol, veh/h		1077			2335			527			789	
Approach Delay, s/veh		71.7			169.2			47.3			41.4	
Approach LOS		E			F			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.8	44.2	12.2	50.0	11.0	48.0	16.0	46.2
Change Period (Y+Rc), s	4.6	5.4	5.8	* 5.8	4.6	5.4	4.6	5.8
Max Green Setting (Gmax), s	10.4	38.6	6.4	* 44	6.4	42.6	11.4	39.2
Max Q Clear Time (g_c+I1), s	10.1	11.3	8.4	24.4	7.3	11.8	13.4	42.4
Green Ext Time (p_c), s	0.0	3.0	0.0	7.2	0.0	3.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	112.1
HCM 6th LOS	F

Notes

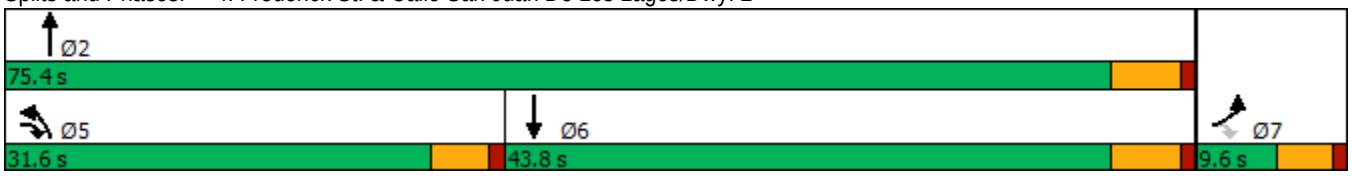
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	36	21	93	485	392
Future Volume (vph)	36	21	93	485	392
Turn Type	Prot	pm+ov	Prot	NA	NA
Protected Phases	7	5	5	2	6
Permitted Phases		7			
Detector Phase	7	5	5	2	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	10.0	10.0
Minimum Split (s)	9.6	9.6	9.6	15.4	28.4
Total Split (s)	9.6	31.6	31.6	75.4	43.8
Total Split (%)	11.3%	37.2%	37.2%	88.7%	51.5%
Yellow Time (s)	3.6	3.6	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	5.4	5.4
Lead/Lag		Lead	Lead		Lag
Lead-Lag Optimize?		Yes	Yes		Yes
Recall Mode	None	None	None	Max	Max
Act Effct Green (s)	5.0	12.1	9.2	75.3	62.2
Actuated g/C Ratio	0.06	0.14	0.11	0.89	0.74
v/c Ratio	0.36	0.09	0.52	0.16	0.22
Control Delay	48.0	7.9	43.9	1.2	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	48.0	7.9	43.9	1.2	4.9
LOS	D	A	D	A	A
Approach Delay				8.1	4.9
Approach LOS				A	A

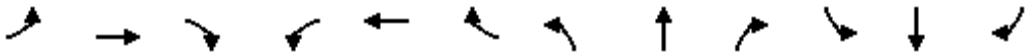
Intersection Summary			
Cycle Length: 85			
Actuated Cycle Length: 84.2			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 7.9		Intersection LOS: A	
Intersection Capacity Utilization 40.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary — Centerpointe (JN: 11410)
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2 — 05/01/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	0	21	0	0	0	93	485	0	0	392	118
Future Volume (veh/h)	36	0	21	0	0	0	93	485	0	0	392	118
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	0	1900				1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h	39	0	16				101	527	0	0	426	123
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	78	0	186				131	3023	0	0	1966	562
Arrive On Green	0.04	0.00	0.04				0.07	0.84	0.00	0.00	0.71	0.71
Sat Flow, veh/h	1810	0	1610				1810	3705	0	0	2865	792
Grp Volume(v), veh/h	39	0	16				101	527	0	0	276	273
Grp Sat Flow(s),veh/h/ln	1810	0	1610				1810	1805	0	0	1805	1757
Q Serve(g_s), s	1.8	0.0	0.7				4.6	2.3	0.0	0.0	4.4	4.5
Cycle Q Clear(g_c), s	1.8	0.0	0.7				4.6	2.3	0.0	0.0	4.4	4.5
Prop In Lane	1.00		1.00				1.00		0.00	0.00		0.45
Lane Grp Cap(c), veh/h	78	0	186				131	3023	0	0	1281	1247
V/C Ratio(X)	0.50	0.00	0.09				0.77	0.17	0.00	0.00	0.22	0.22
Avail Cap(c_a), veh/h	108	0	213				584	3023	0	0	1281	1247
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	39.1	0.0	33.0				38.1	1.3	0.0	0.0	4.2	4.2
Incr Delay (d2), s/veh	4.9	0.0	0.2				3.6	0.1	0.0	0.0	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0				2.1	0.2	0.0	0.0	1.2	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.0	0.0	33.2				41.7	1.4	0.0	0.0	4.5	4.6
LnGrp LOS	D	A	C				D	A	A	A	A	A
Approach Vol, veh/h		55						628			549	
Approach Delay, s/veh		40.9						7.9			4.6	
Approach LOS		D						A			A	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		75.4		8.2	10.6	64.8						
Change Period (Y+Rc), s		5.4		4.6	4.6	5.4						
Max Green Setting (Gmax), s		70.0		5.0	27.0	38.4						
Max Q Clear Time (g_c+I1), s		4.3		3.8	6.6	6.5						
Green Ext Time (p_c), s		3.7		0.0	0.1	3.3						

Intersection Summary												
HCM 6th Ctrl Delay			7.9									
HCM 6th LOS			A									

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	8	0	0	104	0	475	12	0	393	20
Future Vol, veh/h	0	0	8	0	0	104	0	475	12	0	393	20
Conflicting Peds, #/hr	0	0	0	0	0	1	0	0	1	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	9	0	0	113	0	516	13	0	427	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	225	-	-	267	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	6.9	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	784	0	0	737	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	784	-	-	736	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	10.8	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	784	736	-	-
HCM Lane V/C Ratio	-	-	0.011	0.154	-	-
HCM Control Delay (s)	-	-	9.6	10.8	-	-
HCM Lane LOS	-	-	A	B	-	-
HCM 95th %tile Q(veh)	-	-	0	0.5	-	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

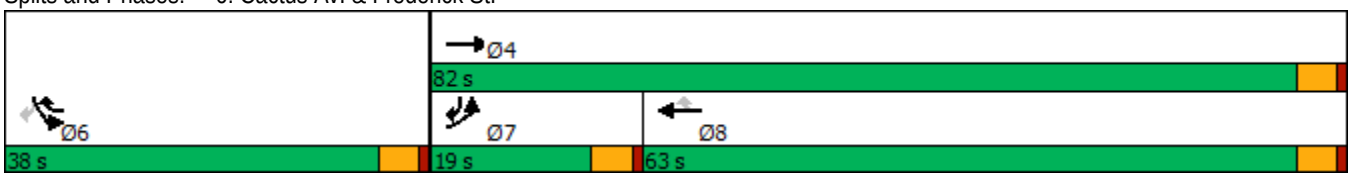
Timings
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/02/2018

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	253	1865	3168	277	229	140
Future Volume (vph)	253	1865	3168	277	229	140
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	7	4	8	6	6	7
Permitted Phases				8		6
Detector Phase	7	4	8	6	6	7
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0
Minimum Split (s)	9.6	14.6	30.6	37.6	37.6	9.6
Total Split (s)	19.0	82.0	63.0	38.0	38.0	19.0
Total Split (%)	15.8%	68.3%	52.5%	31.7%	31.7%	15.8%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	4.6	4.6	4.6
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	Max	Max	None	Min	Min	Max
Act Effct Green (s)	14.5	77.9	58.8	78.1	14.7	33.9
Actuated g/C Ratio	0.14	0.76	0.58	0.77	0.14	0.33
v/c Ratio	1.05	0.50	1.13	0.24	0.48	0.28
Control Delay	113.3	6.1	84.8	3.1	42.5	25.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	113.3	6.1	84.8	3.1	42.5	25.9
LOS	F	A	F	A	D	C
Approach Delay		18.9	78.2		36.2	
Approach LOS		B	E		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 101.9	
Natural Cycle: 120	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.13	
Intersection Signal Delay: 54.4	Intersection LOS: D
Intersection Capacity Utilization 95.1%	ICU Level of Service F
Analysis Period (min) 15	

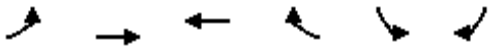
Splits and Phases: 6: Cactus Av. & Frederick St.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/02/2018



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	253	1865	3168	277	229	140
Future Volume (veh/h)	253	1865	3168	277	229	140
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	269	1984	3370	289	244	109
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	270	4156	3136	1140	363	407
Arrive On Green	0.15	0.80	0.60	0.60	0.10	0.10
Sat Flow, veh/h	1810	5358	5358	1610	3510	1610
Grp Volume(v), veh/h	269	1984	3370	289	244	109
Grp Sat Flow(s),veh/h/ln	1810	1729	1729	1610	1755	1610
Q Serve(g_s), s	14.4	11.9	58.4	6.2	6.5	5.2
Cycle Q Clear(g_c), s	14.4	11.9	58.4	6.2	6.5	5.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	270	4156	3136	1140	363	407
V/C Ratio(X)	1.00	0.48	1.07	0.25	0.67	0.27
Avail Cap(c_a), veh/h	270	4156	3136	1140	1214	797
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.1	3.1	19.1	5.0	41.7	28.9
Incr Delay (d2), s/veh	54.1	0.4	40.5	0.2	0.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	1.8	29.8	2.4	2.8	5.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	95.2	3.5	59.6	5.2	42.5	29.1
LnGrp LOS	F	A	F	A	D	C
Approach Vol, veh/h		2253	3659		353	
Approach Delay, s/veh		14.4	55.3		38.4	
Approach LOS		B	E		D	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	82.0	14.6	19.0	63.0
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6
Max Green Setting (Gmax), s	77.4	33.4	14.4	58.4
Max Q Clear Time (g_c+I1), s	13.9	8.5	16.4	60.4
Green Ext Time (p_c), s	36.4	0.6	0.0	0.0

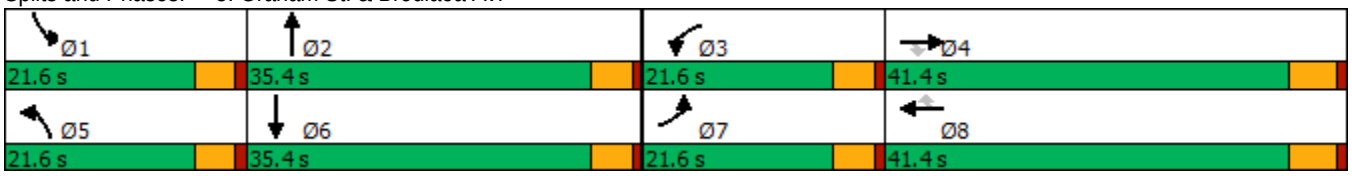
Intersection Summary	
HCM 6th Ctrl Delay	39.6
HCM 6th LOS	D

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	2	9	4	30	80	116	5	373	65	432
Future Volume (vph)	2	9	4	30	80	116	5	373	65	432
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	28.4	28.4	9.6	29.4	29.4	9.6	24.7	9.6	25.7
Total Split (s)	21.6	41.4	41.4	21.6	41.4	41.4	21.6	35.4	21.6	35.4
Total Split (%)	18.0%	34.5%	34.5%	18.0%	34.5%	34.5%	18.0%	29.5%	18.0%	29.5%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	4.4	3.6	3.7	3.6	3.7
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	5.4	4.6	4.7	4.6	4.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	5.6	12.8	12.8	6.2	15.1	15.1	5.6	16.7	7.3	22.2
Actuated g/C Ratio	0.11	0.25	0.25	0.12	0.30	0.30	0.11	0.33	0.14	0.44
v/c Ratio	0.01	0.02	0.01	0.15	0.16	0.23	0.03	0.37	0.28	0.31
Control Delay	30.5	19.4	0.0	28.3	15.7	5.1	29.8	17.8	27.2	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.5	19.4	0.0	28.3	15.7	5.1	29.8	17.8	27.2	12.5
LOS	C	B	A	C	B	A	C	B	C	B
Approach Delay		16.0			12.0			18.0		14.4
Approach LOS		B			B			B		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 51	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.37	
Intersection Signal Delay: 15.2	Intersection LOS: B
Intersection Capacity Utilization 37.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: Graham St. & Brodiaea Av.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
05/01/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	9	4	30	80	116	5	373	27	65	432	8
Future Volume (veh/h)	2	9	4	30	80	116	5	373	27	65	432	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	2	10	3	33	87	96	5	405	27	71	470	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	5	403	341	68	469	397	12	814	54	120	1074	21
Arrive On Green	0.00	0.21	0.21	0.04	0.25	0.25	0.01	0.24	0.24	0.07	0.30	0.30
Sat Flow, veh/h	1810	1900	1610	1810	1900	1608	1810	3434	228	1810	3621	69
Grp Volume(v), veh/h	2	10	3	33	87	96	5	212	220	71	234	245
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1810	1900	1608	1810	1805	1857	1810	1805	1886
Q Serve(g_s), s	0.0	0.2	0.1	0.8	1.6	2.1	0.1	4.4	4.4	1.6	4.5	4.5
Cycle Q Clear(g_c), s	0.0	0.2	0.1	0.8	1.6	2.1	0.1	4.4	4.4	1.6	4.5	4.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		0.04
Lane Grp Cap(c), veh/h	5	403	341	68	469	397	12	428	440	120	536	559
V/C Ratio(X)	0.40	0.02	0.01	0.48	0.19	0.24	0.41	0.50	0.50	0.59	0.44	0.44
Avail Cap(c_a), veh/h	712	1583	1342	712	1583	1340	712	1283	1320	712	1283	1340
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	13.5	13.4	20.4	12.8	13.0	21.4	14.2	14.3	19.6	12.3	12.3
Incr Delay (d2), s/veh	18.4	0.0	0.0	1.9	0.2	0.3	8.0	0.9	0.9	1.7	0.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.0	0.3	0.5	0.6	0.1	1.6	1.7	0.7	1.6	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.9	13.5	13.4	22.3	13.0	13.3	29.4	15.1	15.1	21.3	12.8	12.8
LnGrp LOS	D	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		15			216			437			550	
Approach Delay, s/veh		17.0			14.6			15.3			13.9	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	14.9	6.2	14.6	4.9	17.5	4.7	16.1
Change Period (Y+Rc), s	4.6	* 4.7	4.6	5.4	4.6	* 4.7	4.6	5.4
Max Green Setting (Gmax), s	17.0	* 31	17.0	36.0	17.0	* 31	17.0	36.0
Max Q Clear Time (g_c+I1), s	3.6	6.4	2.8	2.2	2.1	6.5	2.0	4.1
Green Ext Time (p_c), s	0.1	2.6	0.0	0.0	0.0	2.9	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	14.6
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	65	64	120	43	42	132
Future Vol, veh/h	65	64	120	43	42	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	0	115	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	71	70	130	47	46	143

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	365	130	0	0	177	0
Stage 1	130	-	-	-	-	-
Stage 2	235	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	639	925	-	-	1411	-
Stage 1	901	-	-	-	-	-
Stage 2	809	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	618	925	-	-	1411	-
Mov Cap-2 Maneuver	700	-	-	-	-	-
Stage 1	871	-	-	-	-	-
Stage 2	809	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	1.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	700	925	1411	-
HCM Lane V/C Ratio	-	-	0.101	0.075	0.032	-
HCM Control Delay (s)	-	-	10.7	9.2	7.6	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.2	0.1	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

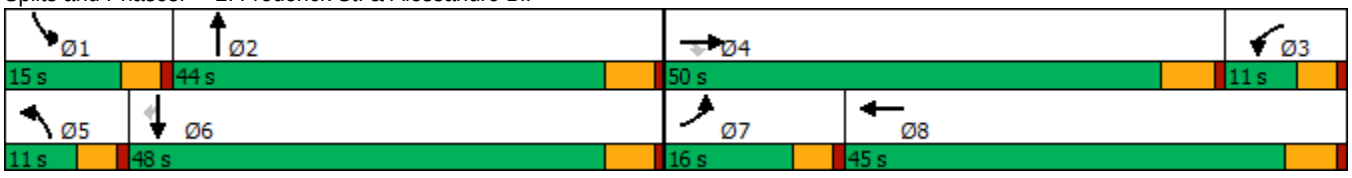
Timings
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/02/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	303	2140	260	119	1359	166	412	498	612	182
Future Volume (vph)	303	2140	260	119	1359	166	412	498	612	182
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	4	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.8	33.8	9.6	36.8	9.6	42.4	9.6	43.4	43.4
Total Split (s)	16.0	50.0	50.0	11.0	45.0	11.0	44.0	15.0	48.0	48.0
Total Split (%)	13.3%	41.7%	41.7%	9.2%	37.5%	9.2%	36.7%	12.5%	40.0%	40.0%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.4	4.6	5.4	5.4
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	None	Max	None	Max	Max
Act Effct Green (s)	11.4	44.2	44.2	6.4	39.2	6.4	38.6	10.4	42.6	42.6
Actuated g/C Ratio	0.10	0.37	0.37	0.05	0.33	0.05	0.32	0.09	0.36	0.36
v/c Ratio	1.87	1.70	0.41	1.30	1.09	0.94	0.48	1.73	0.50	0.29
Control Delay	441.5	343.8	17.3	237.2	88.7	108.9	32.5	374.7	32.1	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	441.5	343.8	17.3	237.2	88.7	108.9	32.5	374.7	32.1	7.4
LOS	F	F	B	F	F	F	C	F	C	A
Approach Delay		323.3			98.3		51.0		160.6	
Approach LOS		F			F		D		F	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 120	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.87	
Intersection Signal Delay: 198.8	Intersection LOS: F
Intersection Capacity Utilization 127.8%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 2: Frederick St. & Alessandro Bl.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/02/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	303	2140	260	119	1359	374	166	412	107	498	612	182
Future Volume (veh/h)	303	2140	260	119	1359	374	166	412	107	498	612	182
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	319	2253	137	125	1431	197	175	434	55	524	644	96
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	170	1317	586	96	1532	211	185	1025	129	301	1269	563
Arrive On Green	0.09	0.36	0.36	0.05	0.33	0.33	0.05	0.32	0.32	0.09	0.35	0.35
Sat Flow, veh/h	1810	3610	1608	1810	4595	632	3510	3218	405	3510	3610	1602
Grp Volume(v), veh/h	319	2253	137	125	1077	551	175	242	247	524	644	96
Grp Sat Flow(s),veh/h/ln	1810	1805	1608	1810	1729	1769	1755	1805	1819	1755	1805	1602
Q Serve(g_s), s	11.4	44.2	5.6	6.4	36.5	36.6	6.0	12.8	13.0	10.4	17.1	5.0
Cycle Q Clear(g_c), s	11.4	44.2	5.6	6.4	36.5	36.6	6.0	12.8	13.0	10.4	17.1	5.0
Prop In Lane	1.00		1.00	1.00		0.36	1.00		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	170	1317	586	96	1153	590	185	575	579	301	1269	563
V/C Ratio(X)	1.87	1.71	0.23	1.31	0.93	0.93	0.94	0.42	0.43	1.74	0.51	0.17
Avail Cap(c_a), veh/h	170	1317	586	96	1153	590	185	575	579	301	1269	563
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.9	38.5	16.3	57.4	39.1	39.1	57.2	32.5	32.6	55.4	31.0	27.1
Incr Delay (d2), s/veh	414.9	323.4	0.9	195.4	14.8	24.1	49.5	2.3	2.3	346.3	1.5	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.7	77.6	2.8	8.0	17.1	19.0	3.9	5.8	6.0	19.0	7.5	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	469.8	361.9	17.3	252.8	53.9	63.2	106.8	34.8	34.9	401.7	32.5	27.8
LnGrp LOS	F	F	B	F	D	E	F	C	C	F	C	C
Approach Vol, veh/h		2709			1753			664			1264	
Approach Delay, s/veh		357.1			71.0			53.8			185.2	
Approach LOS		F			E			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	44.0	12.2	50.0	11.0	48.0	16.0	46.2
Change Period (Y+Rc), s	4.6	5.4	5.8	* 5.8	4.6	5.4	4.6	5.8
Max Green Setting (Gmax), s	10.4	38.6	6.4	* 44	6.4	42.6	11.4	39.2
Max Q Clear Time (g_c+I1), s	12.4	15.0	8.4	46.2	8.0	19.1	13.4	38.6
Green Ext Time (p_c), s	0.0	3.9	0.0	0.0	0.0	4.5	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	213.1
HCM 6th LOS	F

Notes

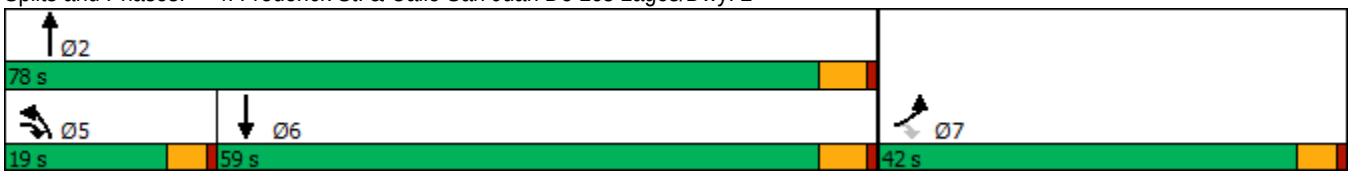
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	210	69	33	469	818
Future Volume (vph)	210	69	33	469	818
Turn Type	Prot	pm+ov	Prot	NA	NA
Protected Phases	7	5	5	2	6
Permitted Phases		7			
Detector Phase	7	5	5	2	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	10.0	10.0
Minimum Split (s)	9.6	9.6	9.6	15.4	28.4
Total Split (s)	42.0	19.0	19.0	78.0	59.0
Total Split (%)	35.0%	15.8%	15.8%	65.0%	49.2%
Yellow Time (s)	3.6	3.6	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	5.4	5.4
Lead/Lag		Lead	Lead		Lag
Lead-Lag Optimize?		Yes	Yes		Yes
Recall Mode	None	None	None	Max	Max
Act Effct Green (s)	17.8	29.0	6.6	72.8	63.6
Actuated g/C Ratio	0.18	0.29	0.07	0.72	0.63
v/c Ratio	0.71	0.14	0.31	0.20	0.44
Control Delay	51.7	6.8	52.6	5.1	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	51.7	6.8	52.6	5.1	11.4
LOS	D	A	D	A	B
Approach Delay				8.3	11.4
Approach LOS				A	B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 100.6	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 15.3	Intersection LOS: B
Intersection Capacity Utilization 46.9%	ICU Level of Service A
Analysis Period (min) 15	

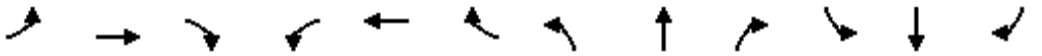
Splits and Phases: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Centerpointe (JN: 11410)
05/01/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	0	69	0	0	0	33	469	0	0	818	85
Future Volume (veh/h)	210	0	69	0	0	0	33	469	0	0	818	85
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	0	1900				1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h	228	0	70				36	510	0	0	889	85
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	274	0	295				58	2693	0	0	2218	212
Arrive On Green	0.15	0.00	0.15				0.03	0.75	0.00	0.00	0.67	0.67
Sat Flow, veh/h	1810	0	1610				1810	3705	0	0	3422	318
Grp Volume(v), veh/h	228	0	70				36	510	0	0	482	492
Grp Sat Flow(s),veh/h/ln	1810	0	1610				1810	1805	0	0	1805	1840
Q Serve(g_s), s	11.9	0.0	3.6				1.9	4.1	0.0	0.0	11.8	11.8
Cycle Q Clear(g_c), s	11.9	0.0	3.6				1.9	4.1	0.0	0.0	11.8	11.8
Prop In Lane	1.00		1.00				1.00		0.00	0.00		0.17
Lane Grp Cap(c), veh/h	274	0	295				58	2693	0	0	1203	1227
V/C Ratio(X)	0.83	0.00	0.24				0.62	0.19	0.00	0.00	0.40	0.40
Avail Cap(c_a), veh/h	695	0	670				268	2693	0	0	1203	1227
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	40.1	0.0	33.9				46.5	3.7	0.0	0.0	7.4	7.4
Incr Delay (d2), s/veh	6.5	0.0	0.4				4.0	0.2	0.0	0.0	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	0.0				0.9	1.1	0.0	0.0	4.1	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.6	0.0	34.3				50.6	3.8	0.0	0.0	8.4	8.4
LnGrp LOS	D	A	C				D	A	A	A	A	A
Approach Vol, veh/h		298						546			974	
Approach Delay, s/veh		43.7						6.9			8.4	
Approach LOS		D						A			A	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		78.0		19.3	7.7	70.3						
Change Period (Y+Rc), s		5.4		4.6	4.6	5.4						
Max Green Setting (Gmax), s		72.6		37.4	14.4	53.6						
Max Q Clear Time (g_c+I1), s		6.1		13.9	3.9	13.8						
Green Ext Time (p_c), s		3.6		0.8	0.0	7.0						

Intersection Summary												
HCM 6th Ctrl Delay			13.7									
HCM 6th LOS			B									

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	43	0	0	74	0	428	28	0	772	15
Future Vol, veh/h	0	0	43	0	0	74	0	428	28	0	772	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	47	0	0	80	0	465	30	0	839	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	430	-	-	248	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	6.9	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	579	0	0	758	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	578	-	-	758	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.8	10.3	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	578	758	-	-
HCM Lane V/C Ratio	-	-	0.081	0.106	-	-
HCM Control Delay (s)	-	-	11.8	10.3	-	-
HCM Lane LOS	-	-	B	B	-	-
HCM 95th %tile Q(veh)	-	-	0.3	0.4	-	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

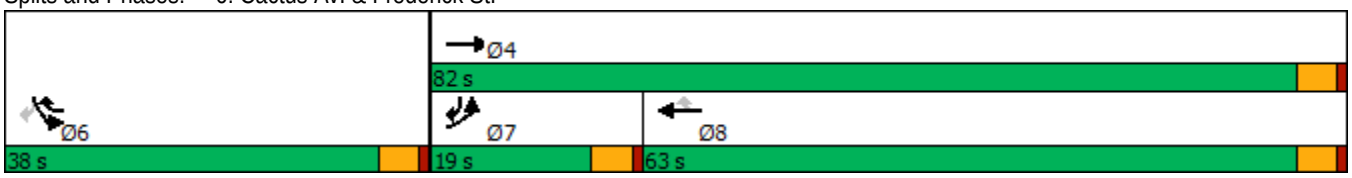
Timings
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/02/2018

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	126	3379	2212	254	631	275
Future Volume (vph)	126	3379	2212	254	631	275
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	7	4	8	6	6	7
Permitted Phases				8		6
Detector Phase	7	4	8	6	6	7
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0
Minimum Split (s)	9.6	14.6	30.6	37.6	37.6	9.6
Total Split (s)	19.0	82.0	63.0	38.0	38.0	19.0
Total Split (%)	15.8%	68.3%	52.5%	31.7%	31.7%	15.8%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	4.6	4.6	4.6
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	Max	Max	None	Min	Min	Max
Act Effct Green (s)	14.4	77.6	58.5	83.5	25.0	44.1
Actuated g/C Ratio	0.13	0.69	0.52	0.75	0.22	0.39
v/c Ratio	0.56	0.97	0.84	0.21	0.83	0.45
Control Delay	57.0	26.5	27.0	0.7	51.2	27.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.0	26.5	27.0	0.7	51.2	27.1
LOS	E	C	C	A	D	C
Approach Delay		27.6	24.3		43.9	
Approach LOS		C	C		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 111.8	
Natural Cycle: 120	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 28.6	Intersection LOS: C
Intersection Capacity Utilization 91.0%	ICU Level of Service E
Analysis Period (min) 15	

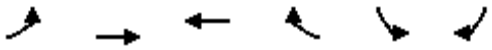
Splits and Phases: 6: Cactus Av. & Frederick St.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/02/2018



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	126	3379	2212	254	631	275
Future Volume (veh/h)	126	3379	2212	254	631	275
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.98	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	130	3484	2280	218	651	187
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	238	3660	2761	1179	739	550
Arrive On Green	0.13	0.71	0.53	0.53	0.21	0.21
Sat Flow, veh/h	1810	5358	5358	1577	3510	1610
Grp Volume(v), veh/h	130	3484	2280	218	651	187
Grp Sat Flow(s),veh/h/ln	1810	1729	1729	1577	1755	1610
Q Serve(g_s), s	7.4	66.1	40.2	4.5	19.7	9.5
Cycle Q Clear(g_c), s	7.4	66.1	40.2	4.5	19.7	9.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	238	3660	2761	1179	739	550
V/C Ratio(X)	0.55	0.95	0.83	0.18	0.88	0.34
Avail Cap(c_a), veh/h	238	3660	2761	1179	1069	702
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.6	14.5	21.4	4.2	42.0	26.9
Incr Delay (d2), s/veh	8.8	7.3	2.3	0.1	4.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	20.9	14.8	2.7	8.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	53.4	21.8	23.7	4.3	46.6	27.0
LnGrp LOS	D	C	C	A	D	C
Approach Vol, veh/h		3614	2498		838	
Approach Delay, s/veh		22.9	22.0		42.2	
Approach LOS		C	C		D	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	82.0	27.7	19.0	63.0
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6
Max Green Setting (Gmax), s	77.4	33.4	14.4	58.4
Max Q Clear Time (g_c+I1), s	68.1	21.7	9.4	42.2
Green Ext Time (p_c), s	9.3	1.4	0.1	14.7

Intersection Summary	
HCM 6th Ctrl Delay	24.9
HCM 6th LOS	C

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

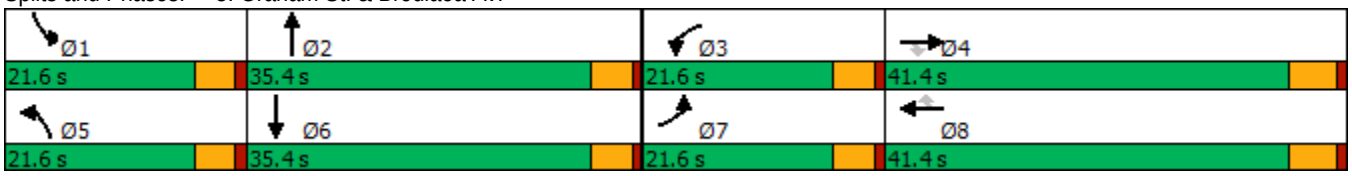
Timings
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
05/01/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	5	17	5	30	71	104	5	554	116	585
Future Volume (vph)	5	17	5	30	71	104	5	554	116	585
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	28.4	28.4	9.6	29.4	29.4	9.6	24.7	9.6	25.7
Total Split (s)	21.6	41.4	41.4	21.6	41.4	41.4	21.6	35.4	21.6	35.4
Total Split (%)	18.0%	34.5%	34.5%	18.0%	34.5%	34.5%	18.0%	29.5%	18.0%	29.5%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	4.4	3.6	3.7	3.6	3.7
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	5.4	4.6	4.7	4.6	4.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	5.9	13.2	13.2	6.6	15.5	15.5	5.9	25.7	9.8	35.5
Actuated g/C Ratio	0.10	0.23	0.23	0.11	0.27	0.27	0.10	0.45	0.17	0.62
v/c Ratio	0.03	0.04	0.01	0.16	0.15	0.22	0.03	0.40	0.41	0.29
Control Delay	35.8	25.1	0.0	33.9	21.3	6.5	35.8	18.7	31.6	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.8	25.1	0.0	33.9	21.3	6.5	35.8	18.7	31.6	10.3
LOS	D	C	A	C	C	A	D	B	C	B
Approach Delay		22.5			15.7			18.9		13.8
Approach LOS		C			B			B		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 57.4	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.41	
Intersection Signal Delay: 16.2	Intersection LOS: B
Intersection Capacity Utilization 43.8%	ICU Level of Service A
Analysis Period (min) 15	

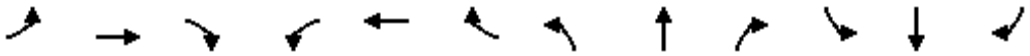
Splits and Phases: 8: Graham St. & Brodiaea Av.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
05/01/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	17	5	30	71	104	5	554	34	116	585	5
Future Volume (veh/h)	5	17	5	30	71	104	5	554	34	116	585	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	5	18	2	33	77	83	5	602	34	126	636	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	12	366	309	67	423	359	12	965	54	165	1330	10
Arrive On Green	0.01	0.19	0.19	0.04	0.22	0.22	0.01	0.28	0.28	0.09	0.36	0.36
Sat Flow, veh/h	1810	1900	1608	1810	1900	1610	1810	3473	196	1810	3671	29
Grp Volume(v), veh/h	5	18	2	33	77	83	5	313	323	126	313	328
Grp Sat Flow(s),veh/h/ln	1810	1900	1608	1810	1900	1610	1810	1805	1864	1810	1805	1895
Q Serve(g_s), s	0.1	0.4	0.0	0.9	1.6	2.0	0.1	7.3	7.3	3.3	6.4	6.4
Cycle Q Clear(g_c), s	0.1	0.4	0.0	0.9	1.6	2.0	0.1	7.3	7.3	3.3	6.4	6.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		0.02
Lane Grp Cap(c), veh/h	12	366	309	67	423	359	12	502	518	165	654	687
V/C Ratio(X)	0.41	0.05	0.01	0.49	0.18	0.23	0.41	0.62	0.62	0.76	0.48	0.48
Avail Cap(c_a), veh/h	640	1423	1204	640	1423	1206	640	1153	1190	640	1153	1210
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.8	15.8	15.7	22.7	15.1	15.3	23.8	15.2	15.2	21.3	11.8	11.8
Incr Delay (d2), s/veh	8.1	0.1	0.0	2.1	0.2	0.3	8.1	1.3	1.2	2.8	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.0	0.4	0.6	0.6	0.1	2.7	2.8	1.4	2.2	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.8	15.9	15.7	24.8	15.3	15.6	31.8	16.4	16.4	24.1	12.4	12.3
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		25			193			641			767	
Approach Delay, s/veh		19.1			17.1			16.5			14.3	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	18.1	6.4	14.6	4.9	22.1	4.9	16.1
Change Period (Y+Rc), s	4.6	* 4.7	4.6	5.4	4.6	* 4.7	4.6	5.4
Max Green Setting (Gmax), s	17.0	* 31	17.0	36.0	17.0	* 31	17.0	36.0
Max Q Clear Time (g_c+I1), s	5.3	9.3	2.9	2.4	2.1	8.4	2.1	4.0
Green Ext Time (p_c), s	0.1	3.9	0.0	0.1	0.0	4.0	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	15.6
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 7.2:

GENERAL PLAN BUILDOUT (POST-2040) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	52	34	137	98	66	48
Future Vol, veh/h	52	34	137	98	66	48
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	0	115	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	57	37	149	107	72	52

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	345	150	0	0	256	0
Stage 1	149	-	-	-	-	-
Stage 2	196	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	656	902	-	-	1321	-
Stage 1	884	-	-	-	-	-
Stage 2	842	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	620	901	-	-	1321	-
Mov Cap-2 Maneuver	699	-	-	-	-	-
Stage 1	835	-	-	-	-	-
Stage 2	842	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	4.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	699	901	1321	-
HCM Lane V/C Ratio	-	-	0.081	0.041	0.054	-
HCM Control Delay (s)	-	-	10.6	9.2	7.9	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.1	0.2	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

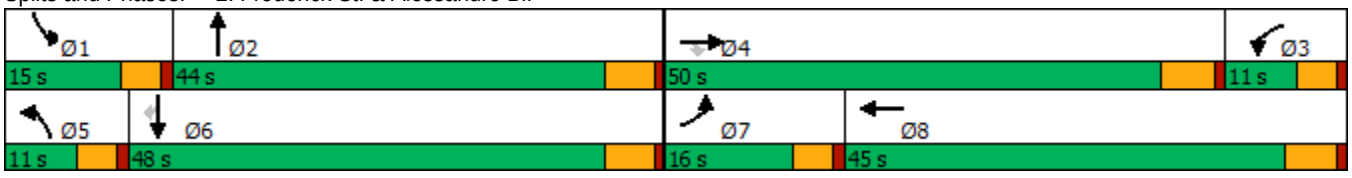
Timings
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	211	781	89	120	1970	152	338	230	387	288
Future Volume (vph)	211	781	89	120	1970	152	338	230	387	288
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	4	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.8	33.8	9.6	36.8	9.6	42.4	9.6	43.4	43.4
Total Split (s)	16.0	50.0	50.0	11.0	45.0	11.0	44.0	15.0	48.0	48.0
Total Split (%)	13.3%	41.7%	41.7%	9.2%	37.5%	9.2%	36.7%	12.5%	40.0%	40.0%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.4	4.6	5.4	5.4
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	None	Max	None	Max	Max
Act Effct Green (s)	11.4	44.2	44.2	6.4	39.2	6.4	38.8	10.2	42.6	42.6
Actuated g/C Ratio	0.10	0.37	0.37	0.05	0.33	0.05	0.32	0.08	0.36	0.36
v/c Ratio	1.29	0.61	0.14	1.30	1.42	0.85	0.34	0.81	0.31	0.41
Control Delay	209.0	33.3	3.1	237.2	225.4	92.4	31.0	74.9	29.0	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	209.0	33.3	3.1	237.2	225.4	92.4	31.0	74.9	29.0	8.1
LOS	F	C	A	F	F	F	C	E	C	A
Approach Delay		65.1			226.0		48.5		34.0	
Approach LOS		E			F		D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 120	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.42	
Intersection Signal Delay: 136.1	Intersection LOS: F
Intersection Capacity Utilization 111.2%	ICU Level of Service H
Analysis Period (min) 15	

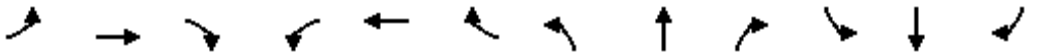
Splits and Phases: 2: Frederick St. & Alessandro Bl.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	211	781	89	120	1970	313	152	338	43	230	387	288
Future Volume (veh/h)	211	781	89	120	1970	313	152	338	43	230	387	288
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	220	814	47	125	2052	162	158	352	22	240	403	150
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	170	1317	580	96	1633	128	185	1105	69	294	1269	558
Arrive On Green	0.09	0.36	0.36	0.05	0.33	0.33	0.05	0.32	0.32	0.08	0.35	0.35
Sat Flow, veh/h	1810	3610	1590	1810	4898	384	3510	3448	215	3510	3610	1587
Grp Volume(v), veh/h	220	814	47	125	1444	770	158	184	190	240	403	150
Grp Sat Flow(s),veh/h/ln	1810	1805	1590	1810	1729	1823	1755	1805	1858	1755	1805	1587
Q Serve(g_s), s	11.4	22.4	1.8	6.4	40.4	40.4	5.4	9.3	9.4	8.1	9.9	8.2
Cycle Q Clear(g_c), s	11.4	22.4	1.8	6.4	40.4	40.4	5.4	9.3	9.4	8.1	9.9	8.2
Prop In Lane	1.00		1.00	1.00		0.21	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	170	1317	580	96	1153	608	185	578	595	294	1269	558
V/C Ratio(X)	1.29	0.62	0.08	1.31	1.25	1.27	0.85	0.32	0.32	0.82	0.32	0.27
Avail Cap(c_a), veh/h	170	1317	580	96	1153	608	185	578	595	301	1269	558
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.9	31.6	15.4	57.4	40.4	40.4	56.9	31.1	31.2	54.6	28.7	28.1
Incr Delay (d2), s/veh	168.2	2.2	0.3	195.4	121.1	132.7	28.6	1.4	1.4	14.4	0.7	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.0	9.8	0.9	8.0	35.7	39.6	3.1	4.2	4.4	4.1	4.3	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	223.1	33.8	15.7	252.8	161.5	173.1	85.5	32.6	32.6	69.0	29.3	29.3
LnGrp LOS	F	C	B	F	F	F	F	C	C	E	C	C
Approach Vol, veh/h		1081			2339			532			793	
Approach Delay, s/veh		71.5			170.2			48.3			41.4	
Approach LOS		E			F			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.8	44.2	12.2	50.0	11.0	48.0	16.0	46.2
Change Period (Y+Rc), s	4.6	5.4	5.8	* 5.8	4.6	5.4	4.6	5.8
Max Green Setting (Gmax), s	10.4	38.6	6.4	* 44	6.4	42.6	11.4	39.2
Max Q Clear Time (g_c+I1), s	10.1	11.4	8.4	24.4	7.4	11.9	13.4	42.4
Green Ext Time (p_c), s	0.0	3.0	0.0	7.2	0.0	3.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	112.5
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	2	524	0	0	521
Future Vol, veh/h	0	2	524	0	0	521
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	2	570	0	0	566

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	285	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	718	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	718	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	718	-
HCM Lane V/C Ratio	-	-	0.003	-
HCM Control Delay (s)	-	-	10	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

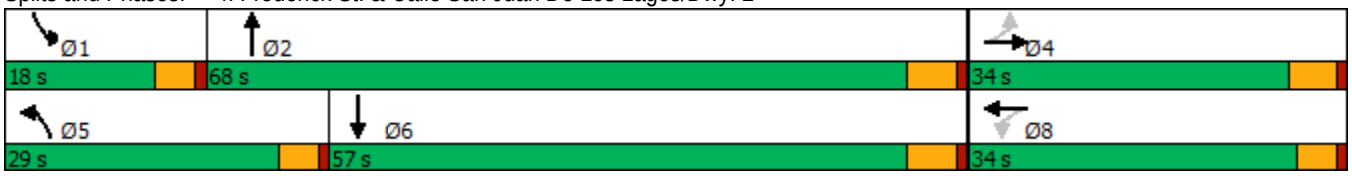
Timings
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	36	7	2	2	93	486	9	394
Future Volume (vph)	36	7	2	2	93	486	9	394
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	23.4	23.4	22.6	22.6	9.6	15.4	9.6	28.4
Total Split (s)	34.0	34.0	34.0	34.0	29.0	68.0	18.0	57.0
Total Split (%)	28.3%	28.3%	28.3%	28.3%	24.2%	56.7%	15.0%	47.5%
Yellow Time (s)	4.4	4.4	3.6	3.6	3.6	4.4	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4		4.6	4.6	5.4	4.6	5.4
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	11.5	11.5		12.1	10.3	69.7	6.1	59.3
Actuated g/C Ratio	0.13	0.13		0.14	0.11	0.78	0.07	0.66
v/c Ratio	0.21	0.13		0.03	0.49	0.19	0.08	0.24
Control Delay	39.0	19.5		30.2	46.0	4.6	43.4	8.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	39.0	19.5		30.2	46.0	4.6	43.4	8.6
LOS	D	B		C	D	A	D	A
Approach Delay		30.4		30.2		11.1		9.3
Approach LOS		C		C		B		A

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 89.6	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.49	
Intersection Signal Delay: 11.4	Intersection LOS: B
Intersection Capacity Utilization 46.3%	ICU Level of Service A
Analysis Period (min) 15	

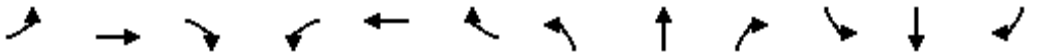
Splits and Phases: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	7	21	2	2	2	93	486	11	9	394	118
Future Volume (veh/h)	36	7	21	2	2	2	93	486	11	9	394	118
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	39	8	16	2	2	2	101	528	12	10	428	123
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	224	55	110	87	77	55	132	2574	58	22	1811	516
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.07	0.71	0.71	0.01	0.65	0.65
Sat Flow, veh/h	1435	561	1123	331	789	560	1810	3606	82	1810	2773	789
Grp Volume(v), veh/h	39	0	24	6	0	0	101	264	276	10	277	274
Grp Sat Flow(s),veh/h/ln	1435	0	1684	1679	0	0	1810	1805	1883	1810	1805	1757
Q Serve(g_s), s	1.9	0.0	1.1	0.0	0.0	0.0	4.8	4.3	4.3	0.5	5.5	5.6
Cycle Q Clear(g_c), s	2.1	0.0	1.1	0.3	0.0	0.0	4.8	4.3	4.3	0.5	5.5	5.6
Prop In Lane	1.00		0.67	0.33		0.33	1.00		0.04	1.00		0.45
Lane Grp Cap(c), veh/h	224	0	165	220	0	0	132	1288	1344	22	1179	1148
V/C Ratio(X)	0.17	0.00	0.15	0.03	0.00	0.00	0.76	0.20	0.21	0.45	0.24	0.24
Avail Cap(c_a), veh/h	551	0	549	601	0	0	503	1288	1344	276	1179	1148
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.6	0.0	36.2	35.8	0.0	0.0	39.9	4.2	4.2	43.0	6.2	6.3
Incr Delay (d2), s/veh	0.4	0.0	0.4	0.0	0.0	0.0	8.8	0.4	0.3	13.4	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.5	0.1	0.0	0.0	2.4	1.3	1.3	0.3	1.8	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.0	0.0	36.6	35.8	0.0	0.0	48.7	4.6	4.6	56.5	6.7	6.7
LnGrp LOS	D	A	D	D	A	A	D	A	A	E	A	A
Approach Vol, veh/h		63			6			641			561	
Approach Delay, s/veh		36.8			35.8			11.5			7.6	
Approach LOS		D			D			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	68.0		14.0	11.0	62.7		14.0				
Change Period (Y+Rc), s	4.6	5.4		5.4	4.6	5.4		* 5.4				
Max Green Setting (Gmax), s	13.4	62.6		28.6	24.4	51.6		* 29				
Max Q Clear Time (g_c+I1), s	2.5	6.3		4.1	6.8	7.6		2.3				
Green Ext Time (p_c), s	0.0	3.3		0.2	0.2	3.4		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		11.2
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	8	0	0	105	0	486	12	2	395	20
Future Vol, veh/h	0	0	8	0	0	105	0	486	12	2	395	20
Conflicting Peds, #/hr	0	0	0	0	0	1	0	0	1	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	9	0	0	114	0	528	13	2	429	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	226	-	-	273	-	0	0	542	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	6.9	-	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	783	0	0	731	0	-	-	1037	-	-
Stage 1	0	0	-	0	0	-	0	-	-	-	-	-
Stage 2	0	0	-	0	0	-	0	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	783	-	-	730	-	-	-	1036	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	10.8	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	783	730	1036	-	-
HCM Lane V/C Ratio	-	-	0.011	0.156	0.002	-	-
HCM Control Delay (s)	-	-	9.6	10.8	8.5	-	-
HCM Lane LOS	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	-	-	0	0.6	0	-	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

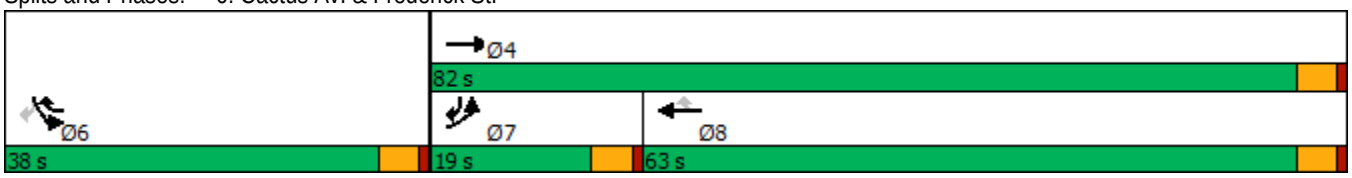
Timings
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	260	1865	3168	281	230	142
Future Volume (vph)	260	1865	3168	281	230	142
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	7	4	8	6	6	7
Permitted Phases				8		6
Detector Phase	7	4	8	6	6	7
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0
Minimum Split (s)	9.6	14.6	30.6	37.6	37.6	9.6
Total Split (s)	19.0	82.0	63.0	38.0	38.0	19.0
Total Split (%)	15.8%	68.3%	52.5%	31.7%	31.7%	15.8%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	4.6	4.6	4.6
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	Max	Max	None	Min	Min	Max
Act Effct Green (s)	14.5	77.9	58.8	78.1	14.7	33.9
Actuated g/C Ratio	0.14	0.76	0.58	0.77	0.14	0.33
v/c Ratio	1.08	0.50	1.13	0.24	0.48	0.28
Control Delay	122.1	6.1	84.9	3.2	42.5	25.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	122.1	6.1	84.9	3.2	42.5	25.9
LOS	F	A	F	A	D	C
Approach Delay		20.3	78.2		36.2	
Approach LOS		C	E		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 101.9	
Natural Cycle: 120	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.13	
Intersection Signal Delay: 54.9	Intersection LOS: D
Intersection Capacity Utilization 95.4%	ICU Level of Service F
Analysis Period (min) 15	

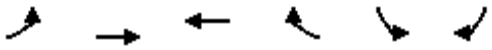
Splits and Phases: 6: Cactus Av. & Frederick St.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	260	1865	3168	281	230	142
Future Volume (veh/h)	260	1865	3168	281	230	142
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	277	1984	3370	293	245	111
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	270	4156	3136	1140	363	407
Arrive On Green	0.15	0.80	0.60	0.60	0.10	0.10
Sat Flow, veh/h	1810	5358	5358	1610	3510	1610
Grp Volume(v), veh/h	277	1984	3370	293	245	111
Grp Sat Flow(s),veh/h/ln	1810	1729	1729	1610	1755	1610
Q Serve(g_s), s	14.4	11.9	58.4	6.3	6.5	5.3
Cycle Q Clear(g_c), s	14.4	11.9	58.4	6.3	6.5	5.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	270	4156	3136	1140	363	407
V/C Ratio(X)	1.03	0.48	1.07	0.26	0.67	0.27
Avail Cap(c_a), veh/h	270	4156	3136	1140	1214	797
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.1	3.1	19.1	5.0	41.7	29.0
Incr Delay (d2), s/veh	61.9	0.4	40.5	0.2	0.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.7	1.8	29.8	2.5	2.8	5.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	103.0	3.5	59.6	5.2	42.5	29.1
LnGrp LOS	F	A	F	A	D	C
Approach Vol, veh/h		2261	3663		356	
Approach Delay, s/veh		15.7	55.2		38.4	
Approach LOS		B	E		D	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	82.0	14.6	19.0	63.0
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6
Max Green Setting (Gmax), s	77.4	33.4	14.4	58.4
Max Q Clear Time (g_c+I1), s	13.9	8.5	16.4	60.4
Green Ext Time (p_c), s	36.4	0.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	40.0
HCM 6th LOS	D

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	12	104	12	3	1
Future Vol, veh/h	2	12	104	12	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	13	113	13	3	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	126	0	-	0	137	120
Stage 1	-	-	-	-	120	-
Stage 2	-	-	-	-	17	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1473	-	-	-	861	937
Stage 1	-	-	-	-	910	-
Stage 2	-	-	-	-	1011	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1473	-	-	-	860	937
Mov Cap-2 Maneuver	-	-	-	-	819	-
Stage 1	-	-	-	-	909	-
Stage 2	-	-	-	-	1011	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1473	-	-	-	846
HCM Lane V/C Ratio	0.001	-	-	-	0.005
HCM Control Delay (s)	7.4	-	-	-	9.3
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

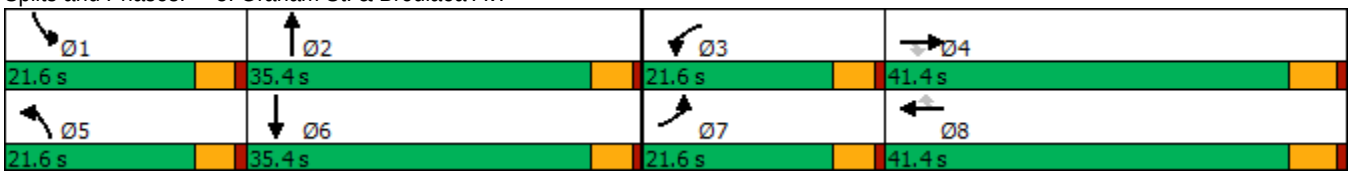
Timings
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	2	10	6	30	85	116	12	373	65	432
Future Volume (vph)	2	10	6	30	85	116	12	373	65	432
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	28.4	28.4	9.6	29.4	29.4	9.6	24.7	9.6	25.7
Total Split (s)	21.6	41.4	41.4	21.6	41.4	41.4	21.6	35.4	21.6	35.4
Total Split (%)	18.0%	34.5%	34.5%	18.0%	34.5%	34.5%	18.0%	29.5%	18.0%	29.5%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	4.4	3.6	3.7	3.6	3.7
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	5.4	4.6	4.7	4.6	4.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	5.6	12.8	12.8	6.2	15.1	15.1	5.8	16.5	7.3	21.9
Actuated g/C Ratio	0.11	0.25	0.25	0.12	0.30	0.30	0.11	0.32	0.14	0.43
v/c Ratio	0.01	0.02	0.01	0.15	0.16	0.23	0.06	0.37	0.28	0.31
Control Delay	30.5	19.4	0.0	28.3	15.7	5.1	29.2	17.8	27.1	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.5	19.4	0.0	28.3	15.7	5.1	29.2	17.8	27.1	12.7
LOS	C	B	A	C	B	A	C	B	C	B
Approach Delay		13.7			12.1			18.2		14.6
Approach LOS		B			B			B		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 50.8	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.37	
Intersection Signal Delay: 15.3	Intersection LOS: B
Intersection Capacity Utilization 37.5%	ICU Level of Service A
Analysis Period (min) 15	

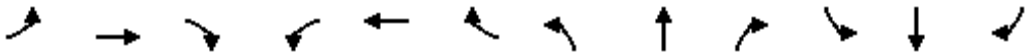
Splits and Phases: 8: Graham St. & Brodiaea Av.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	10	6	30	85	116	12	373	27	65	432	8
Future Volume (veh/h)	2	10	6	30	85	116	12	373	27	65	432	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	2	11	6	33	92	96	13	405	27	71	470	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	5	406	344	68	473	400	30	812	54	120	1036	20
Arrive On Green	0.00	0.21	0.21	0.04	0.25	0.25	0.02	0.24	0.24	0.07	0.29	0.29
Sat Flow, veh/h	1810	1900	1610	1810	1900	1608	1810	3434	228	1810	3621	69
Grp Volume(v), veh/h	2	11	6	33	92	96	13	212	220	71	234	245
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1810	1900	1608	1810	1805	1857	1810	1805	1886
Q Serve(g_s), s	0.0	0.2	0.1	0.8	1.7	2.1	0.3	4.4	4.4	1.7	4.6	4.6
Cycle Q Clear(g_c), s	0.0	0.2	0.1	0.8	1.7	2.1	0.3	4.4	4.4	1.7	4.6	4.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		0.04
Lane Grp Cap(c), veh/h	5	406	344	68	473	400	30	427	439	120	516	539
V/C Ratio(X)	0.40	0.03	0.02	0.48	0.19	0.24	0.43	0.50	0.50	0.59	0.45	0.45
Avail Cap(c_a), veh/h	710	1579	1338	710	1579	1337	710	1280	1317	710	1280	1337
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.6	13.5	13.4	20.4	12.8	13.0	21.1	14.3	14.3	19.6	12.7	12.7
Incr Delay (d2), s/veh	18.4	0.0	0.0	1.9	0.2	0.3	3.6	0.9	0.9	1.7	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.0	0.3	0.6	0.6	0.1	1.6	1.7	0.7	1.6	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.9	13.5	13.5	22.4	13.0	13.3	24.6	15.2	15.2	21.4	13.3	13.3
LnGrp LOS	D	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		19			221			445			550	
Approach Delay, s/veh		16.3			14.5			15.5			14.3	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	14.9	6.2	14.7	5.3	17.1	4.7	16.2
Change Period (Y+Rc), s	4.6	* 4.7	4.6	5.4	4.6	* 4.7	4.6	5.4
Max Green Setting (Gmax), s	17.0	* 31	17.0	36.0	17.0	* 31	17.0	36.0
Max Q Clear Time (g_c+I1), s	3.7	6.4	2.8	2.2	2.3	6.6	2.0	4.1
Green Ext Time (p_c), s	0.1	2.6	0.0	0.0	0.0	2.9	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	69	68	120	44	43	132
Future Vol, veh/h	69	68	120	44	43	132
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	0	115	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	75	74	130	48	47	143

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	367	131	0	0	178	0
Stage 1	130	-	-	-	-	-
Stage 2	237	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	637	924	-	-	1410	-
Stage 1	901	-	-	-	-	-
Stage 2	807	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	616	923	-	-	1410	-
Mov Cap-2 Maneuver	698	-	-	-	-	-
Stage 1	871	-	-	-	-	-
Stage 2	807	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	698	923	1410	-
HCM Lane V/C Ratio	-	-	0.107	0.08	0.033	-
HCM Control Delay (s)	-	-	10.8	9.2	7.6	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.3	0.1	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

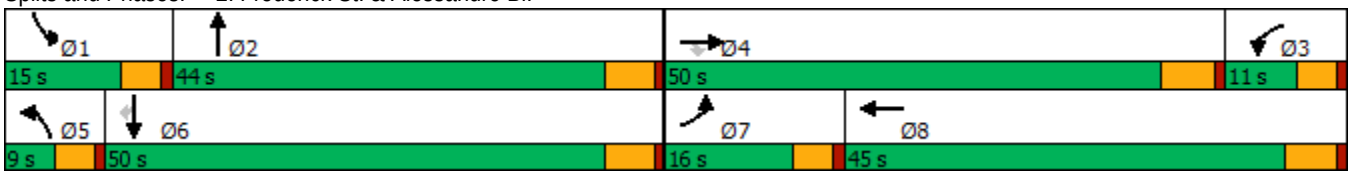
Timings
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	303	2140	261	120	1359	181	418	498	613	182
Future Volume (vph)	303	2140	261	120	1359	181	418	498	613	182
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	4	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	4.4	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.8	33.8	9.6	36.8	9.0	42.4	9.6	43.4	43.4
Total Split (s)	16.0	50.0	50.0	11.0	45.0	9.0	44.0	15.0	50.0	50.0
Total Split (%)	13.3%	41.7%	41.7%	9.2%	37.5%	7.5%	36.7%	12.5%	41.7%	41.7%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	3.6	4.4	3.6	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	4.6	5.4	4.6	5.4	5.4
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	None	Max	None	Max	Max
Act Effct Green (s)	11.4	44.2	44.2	6.4	39.2	4.4	38.6	10.4	44.6	44.6
Actuated g/C Ratio	0.10	0.37	0.37	0.05	0.33	0.04	0.32	0.09	0.37	0.37
v/c Ratio	1.85	1.68	0.40	1.30	1.08	1.48	0.48	1.71	0.48	0.27
Control Delay	434.1	336.0	13.1	237.2	84.7	291.2	32.6	367.7	30.3	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	434.1	336.0	13.1	237.2	84.7	291.2	32.6	367.7	30.3	6.9
LOS	F	F	B	F	F	F	C	F	C	A
Approach Delay		315.8			94.5		98.6		156.9	
Approach LOS		F			F		F		F	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 120	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.85	
Intersection Signal Delay: 198.5	Intersection LOS: F
Intersection Capacity Utilization 127.8%	ICU Level of Service H
Analysis Period (min) 15	

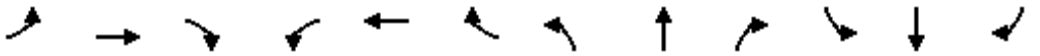
Splits and Phases: 2: Frederick St. & Alessandro Bl.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
2: Frederick St. & Alessandro Bl.

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	303	2140	261	120	1359	374	181	418	111	498	613	182
Future Volume (veh/h)	303	2140	261	120	1359	374	181	418	111	498	613	182
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	316	2229	137	125	1416	195	189	435	59	519	639	95
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	170	1317	586	96	1532	211	127	1016	137	301	1328	590
Arrive On Green	0.09	0.36	0.36	0.05	0.33	0.33	0.04	0.32	0.32	0.09	0.37	0.37
Sat Flow, veh/h	1810	3610	1608	1810	4595	632	3510	3189	430	3510	3610	1602
Grp Volume(v), veh/h	316	2229	137	125	1065	546	189	245	249	519	639	95
Grp Sat Flow(s),veh/h/ln	1810	1805	1608	1810	1729	1769	1755	1805	1814	1755	1805	1602
Q Serve(g_s), s	11.4	44.2	5.8	6.4	36.0	36.0	4.4	13.0	13.1	10.4	16.5	4.8
Cycle Q Clear(g_c), s	11.4	44.2	5.8	6.4	36.0	36.0	4.4	13.0	13.1	10.4	16.5	4.8
Prop In Lane	1.00		1.00	1.00		0.36	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	170	1317	586	96	1153	590	127	575	578	301	1328	590
V/C Ratio(X)	1.86	1.69	0.23	1.31	0.92	0.93	1.48	0.43	0.43	1.72	0.48	0.16
Avail Cap(c_a), veh/h	170	1317	586	96	1153	590	127	575	578	301	1328	590
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.9	38.5	17.4	57.4	38.9	38.9	58.4	32.6	32.6	55.4	29.4	25.7
Incr Delay (d2), s/veh	407.2	315.2	0.9	195.4	13.6	22.6	254.4	2.3	2.3	339.0	1.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.3	76.1	2.8	8.0	16.7	18.6	6.4	5.9	6.0	18.7	7.2	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	462.1	353.7	18.4	252.8	52.6	61.5	312.8	34.9	35.0	394.4	30.7	26.3
LnGrp LOS	F	F	B	F	D	E	F	C	C	F	C	C
Approach Vol, veh/h		2682			1736			683			1253	
Approach Delay, s/veh		349.3			69.8			111.8			181.0	
Approach LOS		F			E			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	44.0	12.2	50.0	9.0	50.0	16.0	46.2
Change Period (Y+Rc), s	4.6	5.4	5.8	* 5.8	4.6	5.4	4.6	5.8
Max Green Setting (Gmax), s	10.4	38.6	6.4	* 44	4.4	44.6	11.4	39.2
Max Q Clear Time (g_c+I1), s	12.4	15.1	8.4	46.2	6.4	18.5	13.4	38.0
Green Ext Time (p_c), s	0.0	4.0	0.0	0.0	0.0	4.6	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	214.2
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	12	692	0	0	906
Future Vol, veh/h	0	12	692	0	0	906
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	13	752	0	0	985

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	376	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	627	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	627	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.9	0	0
HCM LOS	B		

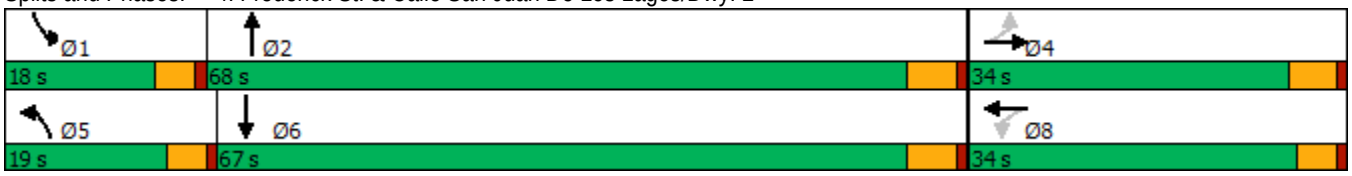
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	627	-
HCM Lane V/C Ratio	-	-	0.021	-
HCM Control Delay (s)	-	-	10.9	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.1	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	210	2	11	7	33	473	3	819
Future Volume (vph)	210	2	11	7	33	473	3	819
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	23.4	23.4	22.6	22.6	9.6	15.4	9.6	28.4
Total Split (s)	34.0	34.0	34.0	34.0	19.0	68.0	18.0	67.0
Total Split (%)	28.3%	28.3%	28.3%	28.3%	15.8%	56.7%	15.0%	55.8%
Yellow Time (s)	4.4	4.4	3.6	3.6	3.6	4.4	3.6	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4		4.6	4.6	5.4	4.6	5.4
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	20.8	20.8		21.7	6.7	67.9	5.1	62.9
Actuated g/C Ratio	0.20	0.20		0.21	0.07	0.67	0.05	0.62
v/c Ratio	0.79	0.20		0.08	0.30	0.21	0.03	0.45
Control Delay	59.0	9.7		24.9	55.3	7.8	52.3	12.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	59.0	9.7		24.9	55.3	7.8	52.3	12.7
LOS	E	A		C	E	A	D	B
Approach Delay		46.6		24.9		10.9		12.8
Approach LOS		D		C		B		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 101.5	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 18.0	Intersection LOS: B
Intersection Capacity Utilization 54.7%	ICU Level of Service A
Analysis Period (min) 15	

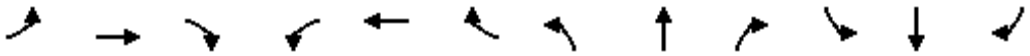
Splits and Phases: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	2	69	11	7	9	33	473	3	3	819	85
Future Volume (veh/h)	210	2	69	11	7	9	33	473	3	3	819	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	228	2	68	12	8	10	36	514	3	3	890	87
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	337	8	273	137	93	89	58	2437	14	7	2107	206
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.03	0.66	0.66	0.00	0.63	0.63
Sat Flow, veh/h	1417	46	1561	487	533	510	1810	3679	21	1810	3322	325
Grp Volume(v), veh/h	228	0	70	30	0	0	36	252	265	3	484	493
Grp Sat Flow(s),veh/h/ln	1417	0	1606	1530	0	0	1810	1805	1896	1810	1805	1841
Q Serve(g_s), s	10.5	0.0	3.6	0.0	0.0	0.0	1.9	5.3	5.3	0.2	13.0	13.0
Cycle Q Clear(g_c), s	14.2	0.0	3.6	3.7	0.0	0.0	1.9	5.3	5.3	0.2	13.0	13.0
Prop In Lane	1.00		0.97	0.40		0.33	1.00		0.01	1.00		0.18
Lane Grp Cap(c), veh/h	337	0	281	320	0	0	58	1196	1256	7	1145	1168
V/C Ratio(X)	0.68	0.00	0.25	0.09	0.00	0.00	0.62	0.21	0.21	0.41	0.42	0.42
Avail Cap(c_a), veh/h	506	0	473	518	0	0	268	1196	1256	250	1145	1168
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.5	0.0	34.5	33.6	0.0	0.0	46.4	6.4	6.4	48.2	8.9	8.9
Incr Delay (d2), s/veh	2.4	0.0	0.5	0.1	0.0	0.0	4.0	0.4	0.4	13.4	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	0.0	1.4	0.6	0.0	0.0	0.9	1.8	1.9	0.1	4.7	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.9	0.0	35.0	33.7	0.0	0.0	50.4	6.8	6.8	61.7	10.0	10.0
LnGrp LOS	D	A	D	C	A	A	D	A	A	E	B	A
Approach Vol, veh/h		298			30			553			980	
Approach Delay, s/veh		39.5			33.7			9.7			10.2	
Approach LOS		D			C			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.0	69.7		22.4	7.7	67.0		22.4				
Change Period (Y+Rc), s	4.6	5.4		5.4	4.6	5.4		* 5.4				
Max Green Setting (Gmax), s	13.4	62.6		28.6	14.4	61.6		* 29				
Max Q Clear Time (g_c+I1), s	2.2	7.3		16.2	3.9	15.0		5.7				
Green Ext Time (p_c), s	0.0	3.1		0.8	0.0	7.1		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		15.1	
HCM 6th LOS		B	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	43	0	0	78	0	431	28	1	783	15
Future Vol, veh/h	0	0	43	0	0	78	0	431	28	1	783	15
Conflicting Peds, #/hr	0	0	0	0	0	1	0	0	1	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	47	0	0	85	0	468	30	1	851	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	434	-	-	251	-	0	0	499	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	6.9	-	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	576	0	0	755	0	-	-	1075	-	-
Stage 1	0	0	-	0	0	-	0	-	-	-	-	-
Stage 2	0	0	-	0	0	-	0	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	576	-	-	754	-	-	-	1074	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.8	10.4	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	576	754	1074	-	-
HCM Lane V/C Ratio	-	-	0.081	0.112	0.001	-	-
HCM Control Delay (s)	-	-	11.8	10.4	8.4	-	-
HCM Lane LOS	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	-	-	0.3	0.4	0	-	-

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

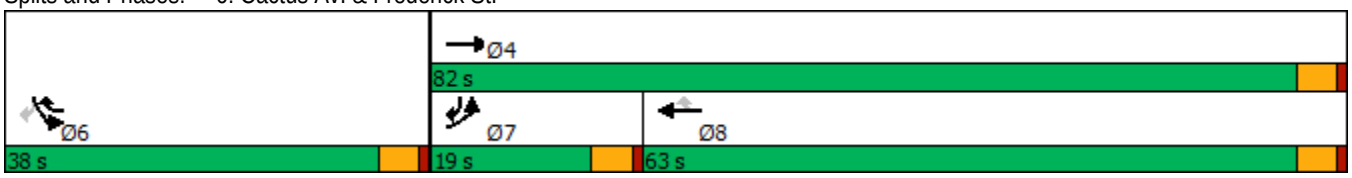
Timings
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/15/2018

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	128	3379	2212	255	635	282
Future Volume (vph)	128	3379	2212	255	635	282
Turn Type	Prot	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	7	4	8	6	6	7
Permitted Phases				8		6
Detector Phase	7	4	8	6	6	7
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	5.0
Minimum Split (s)	9.6	14.6	30.6	37.6	37.6	9.6
Total Split (s)	19.0	82.0	63.0	38.0	38.0	19.0
Total Split (%)	15.8%	68.3%	52.5%	31.7%	31.7%	15.8%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	4.6	4.6	4.6
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	Max	Max	None	Min	Min	Max
Act Effct Green (s)	14.4	77.6	58.5	89.0	25.8	44.9
Actuated g/C Ratio	0.13	0.69	0.52	0.79	0.23	0.40
v/c Ratio	0.59	1.01	0.87	0.20	0.84	0.47
Control Delay	58.8	35.2	29.1	0.8	51.8	27.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.8	35.2	29.1	0.8	51.8	27.4
LOS	E	D	C	A	D	C
Approach Delay		36.1	26.2		44.3	
Approach LOS		D	C		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 112.6	
Natural Cycle: 120	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.01	
Intersection Signal Delay: 33.6	Intersection LOS: C
Intersection Capacity Utilization 91.1%	ICU Level of Service F
Analysis Period (min) 15	

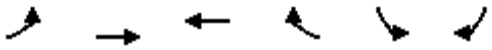
Splits and Phases: 6: Cactus Av. & Frederick St.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
6: Cactus Av. & Frederick St.

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	128	3379	2212	255	635	282
Future Volume (veh/h)	128	3379	2212	255	635	282
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	136	3595	2353	265	676	260
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	235	3624	2734	1200	766	561
Arrive On Green	0.13	0.70	0.53	0.53	0.22	0.22
Sat Flow, veh/h	1810	5358	5358	1610	3510	1610
Grp Volume(v), veh/h	136	3595	2353	265	676	260
Grp Sat Flow(s),veh/h/ln	1810	1729	1729	1610	1755	1610
Q Serve(g_s), s	7.8	75.4	43.5	5.6	20.7	13.9
Cycle Q Clear(g_c), s	7.8	75.4	43.5	5.6	20.7	13.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	235	3624	2734	1200	766	561
V/C Ratio(X)	0.58	0.99	0.86	0.22	0.88	0.46
Avail Cap(c_a), veh/h	235	3624	2734	1200	1058	695
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.3	16.4	22.7	4.3	41.9	28.1
Incr Delay (d2), s/veh	10.0	13.2	3.1	0.1	5.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	25.9	16.3	3.5	9.2	13.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	55.3	29.6	25.8	4.4	47.3	28.3
LnGrp LOS	E	C	C	A	D	C
Approach Vol, veh/h		3731	2618		936	
Approach Delay, s/veh		30.5	23.6		42.0	
Approach LOS		C	C		D	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	82.0	28.8	19.0	63.0
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6
Max Green Setting (Gmax), s	77.4	33.4	14.4	58.4
Max Q Clear Time (g_c+I1), s	77.4	22.7	9.8	45.5
Green Ext Time (p_c), s	0.0	1.5	0.1	12.1

Intersection Summary	
HCM 6th Ctrl Delay	29.5
HCM 6th LOS	C

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	28	74	3	16	4
Future Vol, veh/h	1	28	74	3	16	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	30	80	3	17	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	83	0	-	0	114	82
Stage 1	-	-	-	-	82	-
Stage 2	-	-	-	-	32	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1527	-	-	-	887	983
Stage 1	-	-	-	-	946	-
Stage 2	-	-	-	-	996	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1527	-	-	-	886	983
Mov Cap-2 Maneuver	-	-	-	-	844	-
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	996	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	9.2
HCM LOS			A

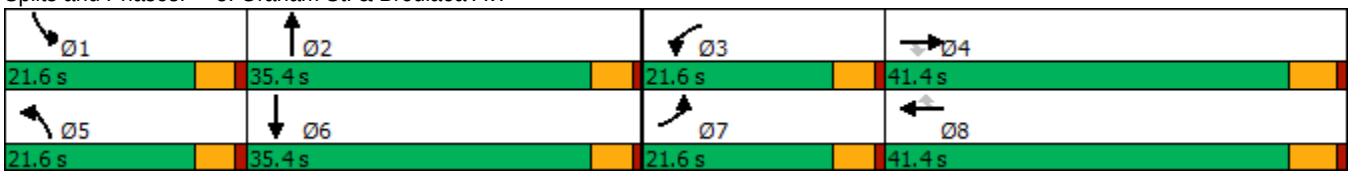
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1527	-	-	-	869
HCM Lane V/C Ratio	0.001	-	-	-	0.025
HCM Control Delay (s)	7.4	-	-	-	9.2
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	5	23	16	30	72	104	7	554	116	585
Future Volume (vph)	5	23	16	30	72	104	7	554	116	585
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases			4			8				
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	28.4	28.4	9.6	29.4	29.4	9.6	24.7	9.6	25.7
Total Split (s)	21.6	41.4	41.4	21.6	41.4	41.4	21.6	35.4	21.6	35.4
Total Split (%)	18.0%	34.5%	34.5%	18.0%	34.5%	34.5%	18.0%	29.5%	18.0%	29.5%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	4.4	3.6	3.7	3.6	3.7
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	5.4	4.6	4.7	4.6	4.7
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	5.9	13.3	13.3	6.7	15.5	15.5	6.0	26.2	10.0	36.2
Actuated g/C Ratio	0.10	0.23	0.23	0.12	0.27	0.27	0.10	0.45	0.17	0.62
v/c Ratio	0.03	0.06	0.04	0.16	0.15	0.22	0.04	0.39	0.41	0.29
Control Delay	36.0	25.3	0.2	34.2	21.7	6.6	35.6	18.7	31.7	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.0	25.3	0.2	34.2	21.7	6.6	35.6	18.7	31.7	10.3
LOS	D	C	A	C	C	A	D	B	C	B
Approach Delay		17.4			15.9			18.9		13.8
Approach LOS		B			B			B		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 58	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.41	
Intersection Signal Delay: 16.1	Intersection LOS: B
Intersection Capacity Utilization 43.8%	ICU Level of Service A
Analysis Period (min) 15	

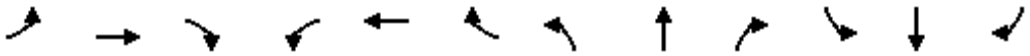
Splits and Phases: 8: Graham St. & Brodiaea Av.



Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

HCM 6th Signalized Intersection Summary
8: Graham St. & Brodiaea Av.

Centerpointe (JN: 11410)
05/15/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	23	16	30	72	104	7	554	34	116	585	5
Future Volume (veh/h)	5	23	16	30	72	104	7	554	34	116	585	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	5	25	16	33	78	83	8	602	35	126	636	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	12	371	315	67	429	363	19	964	56	165	1317	10
Arrive On Green	0.01	0.20	0.20	0.04	0.23	0.23	0.01	0.28	0.28	0.09	0.36	0.36
Sat Flow, veh/h	1810	1900	1610	1810	1900	1608	1810	3466	201	1810	3670	29
Grp Volume(v), veh/h	5	25	16	33	78	83	8	313	324	126	313	328
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1810	1900	1608	1810	1805	1862	1810	1805	1894
Q Serve(g_s), s	0.1	0.5	0.4	0.9	1.6	2.0	0.2	7.3	7.4	3.3	6.5	6.5
Cycle Q Clear(g_c), s	0.1	0.5	0.4	0.9	1.6	2.0	0.2	7.3	7.4	3.3	6.5	6.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		0.02
Lane Grp Cap(c), veh/h	12	371	315	67	429	363	19	502	518	165	648	680
V/C Ratio(X)	0.41	0.07	0.05	0.49	0.18	0.23	0.42	0.62	0.63	0.76	0.48	0.48
Avail Cap(c_a), veh/h	635	1411	1196	635	1411	1194	635	1143	1180	635	1143	1200
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.0	15.9	15.8	22.9	15.1	15.3	23.8	15.3	15.3	21.5	12.1	12.1
Incr Delay (d2), s/veh	8.1	0.1	0.1	2.1	0.2	0.3	5.4	1.3	1.2	2.8	0.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.2	0.1	0.4	0.6	0.6	0.1	2.8	2.9	1.4	2.3	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.0	16.0	15.9	25.0	15.4	15.6	29.2	16.6	16.5	24.3	12.6	12.6
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		46			194			645			767	
Approach Delay, s/veh		17.7			17.1			16.7			14.5	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	18.2	6.4	14.9	5.1	22.1	4.9	16.3
Change Period (Y+Rc), s	4.6	* 4.7	4.6	5.4	4.6	* 4.7	4.6	5.4
Max Green Setting (Gmax), s	17.0	* 31	17.0	36.0	17.0	* 31	17.0	36.0
Max Q Clear Time (g_c+I1), s	5.3	9.4	2.9	2.5	2.2	8.5	2.1	4.0
Green Ext Time (p_c), s	0.1	3.9	0.0	0.1	0.0	4.0	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	15.8
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 7.3:

GENERAL PLAN BUILDOUT (POST-2040) WITHOUT PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

California MUTCD 2014 Edition
(FHWA's MUTCD 2009, as amended for use in California)

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

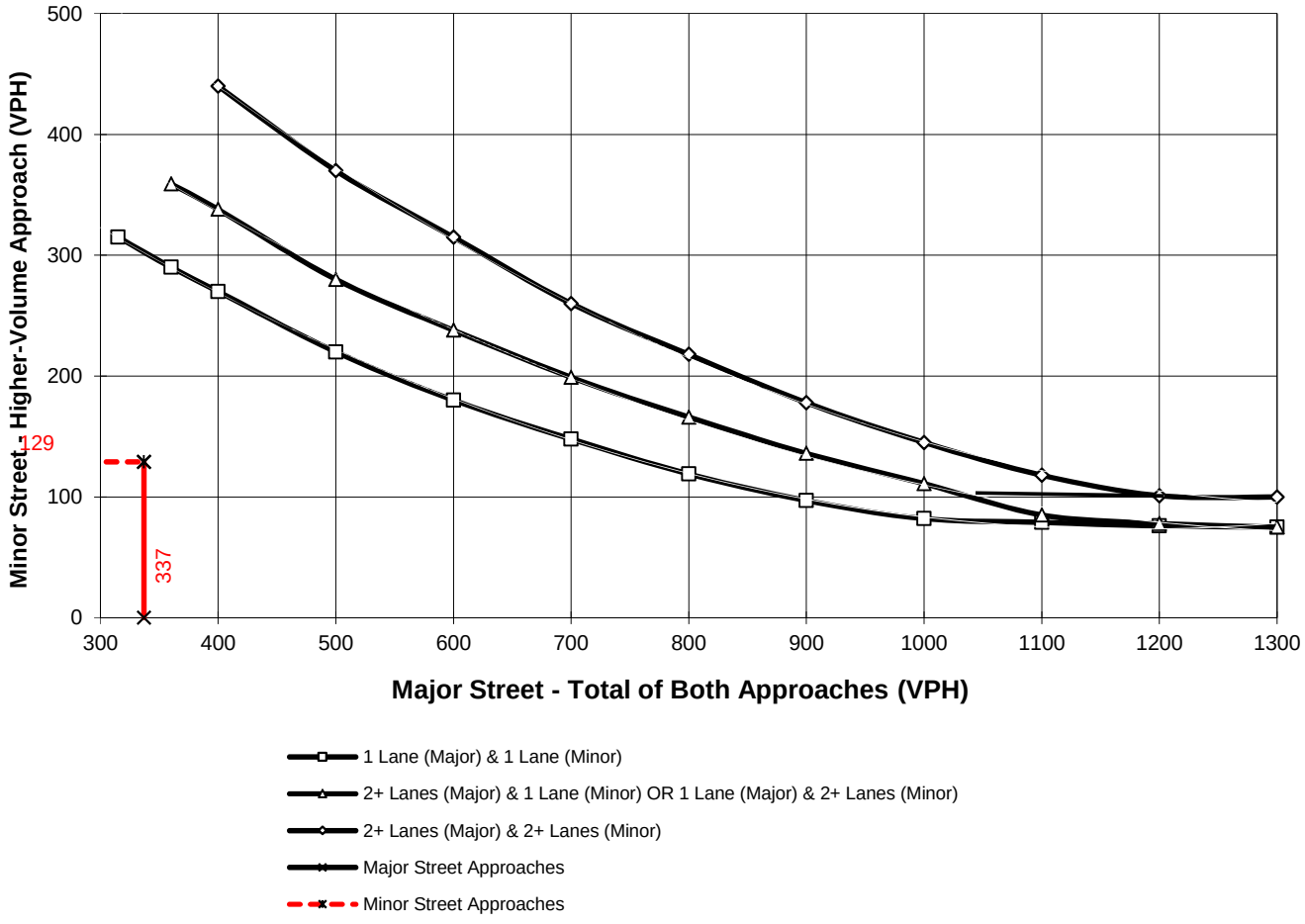
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **General Plan Buildout (Post 2040) Without Project Conditions - Weekday PM Peak Ho**

Major Street Name = **Veterans Way** Total of Both Approaches (VPH) = **337**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Calle San Juan de Los Lagos** High Volume Approach (VPH) = **129**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 7.4:

GENERAL PLAN BUILDOUT (POST-2040) WITH PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

California MUTCD 2014 Edition
(FHWA's MUTCD 2009, as amended for use in California)

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

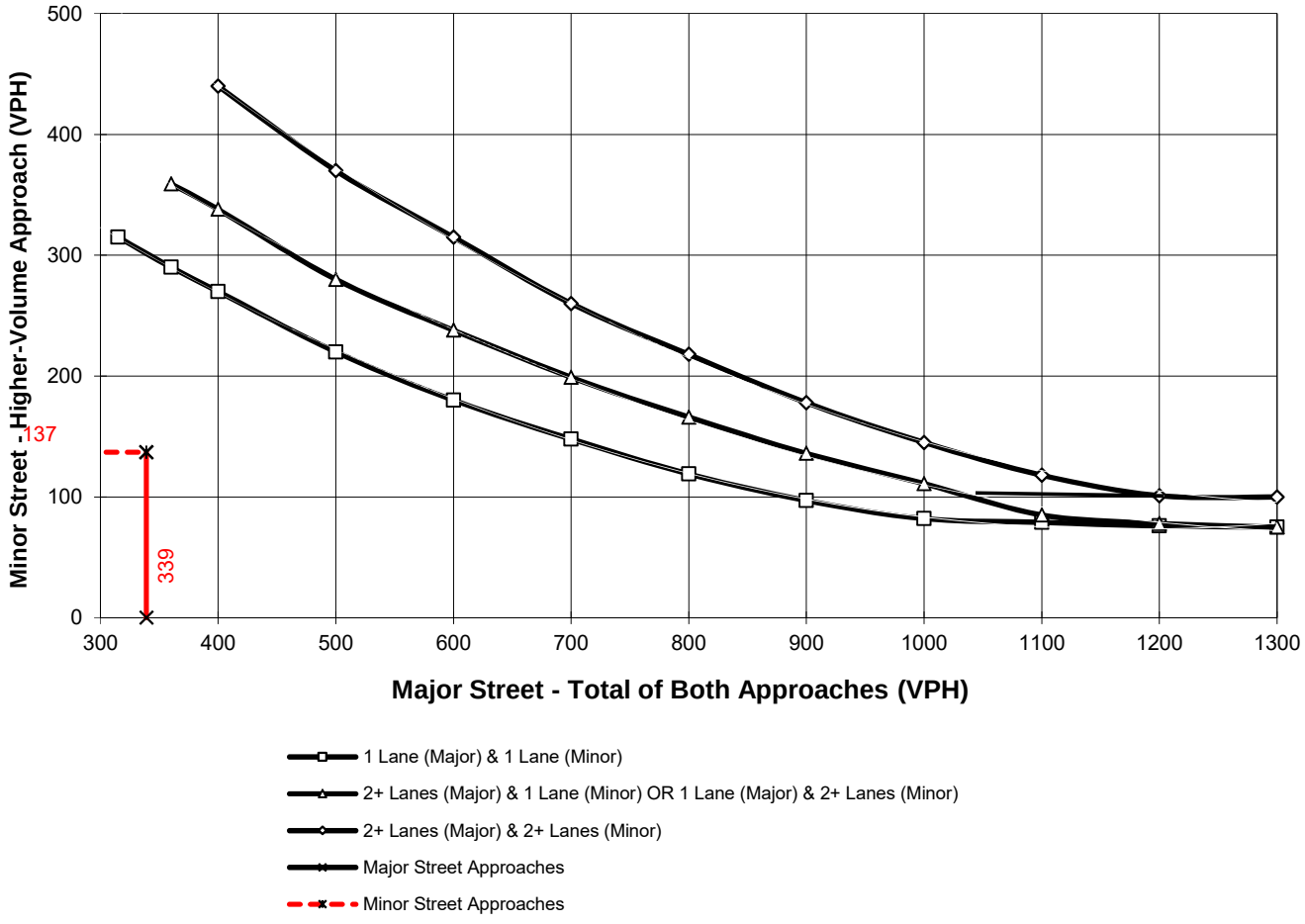
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **General Plan Buildout (Post 2040) With Project Conditions - Weekday PM Peak Hour**

Major Street Name = **Veterans Way** Total of Both Approaches (VPH) = **339**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Calle San Juan de Los Lagos** High Volume Approach (VPH) = **137**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS	Post 2040 WP
				CALC CHS	DATE 05/15/18
Jurisdiction: City of Moreno Valley				CHK CHS	DATE 05/15/18
Major Street: Brodiaea Av.				Critical Approach Speed (Major)	40 mph
Minor Street: Driveway 3				Critical Approach Speed (Minor)	25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes **1** lane

Major Street Future ADT = **1,573** vpd Minor Street Future ADT = **91** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. [ ]

or **RURAL (R)**

In built up area of isolated community of < 10,000 population …….. [ ]

(Based on Estimated Average Daily Traffic - See Note)

URBAN	RURAL	Minimum Requirements EADT			
XX					
CONDITION A - Minimum Vehicular Volume		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied	Not Satisfied				
	XX				
Number of lanes for moving traffic on each approach					
Major Street	Minor Street	Urban	Rural	Urban	Rural
1 **1,573**	1 **91**	8,000	5,600	2,400	1,680
2 +	1	9,600	6,720	2,400	1,680
2 +	2 +	9,600	6,720	3,200	2,240
1	2 +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied	Not Satisfied				
	XX				
Number of lanes for moving traffic on each approach					
Major Street	Minor Street	Urban	Rural	Urban	Rural
1 **1,573**	1 **91**	12,000	8,400	1,200	850
2 +	1	14,400	10,080	1,200	850
2 +	2 +	14,400	10,080	1,600	1,120
1	2 +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B					
Satisfied	Not Satisfied				
	XX	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more …..	A 4% B 8%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 7.5:

GENERAL PLAN BUILDOUT (POST-2040) WITH PROJECT CONDITIONS QUEUING ANALYSIS WORKSHEETS

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 1: Veterans Wy. & Calle San Juan De Los Lagos

Movement	WB	WB	NB	NB	SB
Directions Served	L	R	T	R	L
Maximum Queue (ft)	49	28	4	9	35
Average Queue (ft)	22	14	0	0	12
95th Queue (ft)	43	31	3	4	35
Link Distance (ft)		1530	1143	1143	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100				115
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	TR	L	L	T	TR
Maximum Queue (ft)	330	1066	1043	57	215	2589	2589	2589	119	124	144	168
Average Queue (ft)	322	764	728	19	134	2589	2589	2589	52	73	83	98
95th Queue (ft)	373	1222	1207	41	259	2589	2589	2589	99	112	136	148
Link Distance (ft)		3252	3252	3252		2574	2574	2574			571	571
Upstream Blk Time (%)						89	96	97				
Queuing Penalty (veh)						0	0	0				
Storage Bay Dist (ft)	250				130				135	135		
Storage Blk Time (%)	90	0			12	66			0	0	1	
Queuing Penalty (veh)	350	1			77	80			0	0	2	

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	R
Maximum Queue (ft)	160	197	192	186	167
Average Queue (ft)	92	135	116	111	85
95th Queue (ft)	180	194	179	169	142
Link Distance (ft)			1184	1184	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100	100			100
Storage Blk Time (%)	5	39	9	12	5
Queuing Penalty (veh)	9	76	20	36	10

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 3: Frederick St. & Dwy. 1

Movement	WB
Directions Served	R
Maximum Queue (ft)	31
Average Queue (ft)	2
95th Queue (ft)	16
Link Distance (ft)	345
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	72	52	31	128	112	108	34	142	188
Average Queue (ft)	28	19	6	58	27	35	7	47	61
95th Queue (ft)	61	47	25	104	78	83	28	114	134
Link Distance (ft)		1530	288		230	230		276	276
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	120			150			100		
Storage Blk Time (%)				0	0			2	
Queuing Penalty (veh)				0	0			0	

Intersection: 5: Frederick St. & Private Driveway/Brodiaea Av.

Movement	EB	WB	SB
Directions Served	R	R	LT
Maximum Queue (ft)	31	90	16
Average Queue (ft)	6	37	1
95th Queue (ft)	26	66	9
Link Distance (ft)	167	481	230
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 6: Cactus Av. & Frederick St.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	T	T	T	T	R	L	L	R
Maximum Queue (ft)	374	632	602	300	2544	2544	2544	340	126	139	161
Average Queue (ft)	266	209	156	68	2532	2535	2527	299	62	72	64
95th Queue (ft)	407	534	436	181	2664	2638	2696	470	111	124	135
Link Distance (ft)		1599	1599	1599	2529	2529	2529			1150	1150
Upstream Blk Time (%)					56	60	83				
Queuing Penalty (veh)					0	0	0				
Storage Bay Dist (ft)	300							265	140		
Storage Blk Time (%)	23	0					42		0	0	
Queuing Penalty (veh)	140	0					117		0	0	

Intersection: 7: Brodiaea Av. & Dwy. 3

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	6	31
Average Queue (ft)	0	4
95th Queue (ft)	4	20
Link Distance (ft)		326
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Graham St. & Brodiaea Av.

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	18	31	29	56	94	72	41	114	77	80	125	84
Average Queue (ft)	1	7	4	19	37	31	10	60	28	31	55	28
95th Queue (ft)	10	27	20	47	77	52	32	101	62	63	96	64
Link Distance (ft)		2009			828	828		1200	1200		1170	1170
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210		100	150			160			150		
Storage Blk Time (%)											0	
Queuing Penalty (veh)											0	

Network Summary

Network wide Queuing Penalty: 918

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 1: Veterans Wy. & Calle San Juan De Los Lagos

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	51	38	28
Average Queue (ft)	22	17	4
95th Queue (ft)	42	34	20
Link Distance (ft)		1530	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		115
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	TR	L	L	T	TR
Maximum Queue (ft)	330	3710	3710	3710	215	1084	1066	1109	180	224	484	462
Average Queue (ft)	286	3710	3710	3710	195	666	663	664	148	181	298	220
95th Queue (ft)	416	3710	3710	3710	264	1222	1205	1184	224	279	586	446
Link Distance (ft)		3695	3695	3695		2574	2574	2574			571	571
Upstream Blk Time (%)		99	98	94							7	0
Queuing Penalty (veh)		0	0	0							26	0
Storage Bay Dist (ft)	250				130				135	135		
Storage Blk Time (%)	25	57			67	56			49	68	4	
Queuing Penalty (veh)	265	173			301	67			102	141	8	

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	R
Maximum Queue (ft)	160	220	1199	1199	166
Average Queue (ft)	158	219	1199	1198	51
95th Queue (ft)	164	220	1199	1205	124
Link Distance (ft)			1184	1184	
Upstream Blk Time (%)			95	48	
Queuing Penalty (veh)			0	0	
Storage Bay Dist (ft)	100	100			100
Storage Blk Time (%)	85	90	12	18	0
Queuing Penalty (veh)	261	276	58	32	1

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 3: Frederick St. & Dwy. 1

Movement	WB	NB	NB
Directions Served	R	T	TR
Maximum Queue (ft)	39	78	55
Average Queue (ft)	12	16	7
95th Queue (ft)	37	100	74
Link Distance (ft)	345	276	276
Upstream Blk Time (%)		0	0
Queuing Penalty (veh)		1	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: Frederick St. & Calle San Juan De Los Lagos/Dwy. 2

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	172	210	66	72	124	107	30	227	233
Average Queue (ft)	116	44	20	28	45	46	3	81	75
95th Queue (ft)	171	126	53	63	95	97	17	183	181
Link Distance (ft)		1530	288		230	230		276	276
Upstream Blk Time (%)								0	0
Queuing Penalty (veh)								0	0
Storage Bay Dist (ft)	120			150			100		
Storage Blk Time (%)	14	0			0			5	
Queuing Penalty (veh)	10	0			0			0	

Intersection: 5: Frederick St. & Private Driveway/Brodiaea Av.

Movement	EB	WB	NB	SB
Directions Served	R	R	T	LT
Maximum Queue (ft)	50	55	11	6
Average Queue (ft)	23	28	0	0
95th Queue (ft)	48	49	8	4
Link Distance (ft)	167	481	1150	230
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 6: Cactus Av. & Frederick St.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	T	T	T	T	R	L	L	R
Maximum Queue (ft)	335	518	489	494	425	424	416	338	199	269	171
Average Queue (ft)	123	270	269	248	253	251	229	56	125	153	79
95th Queue (ft)	271	458	453	434	367	366	354	191	203	243	155
Link Distance (ft)		1599	1599	1599	2529	2529	2529			1150	1150
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	300							265	140		
Storage Blk Time (%)		5					4		7	13	
Queuing Penalty (veh)		6					10		21	42	

Intersection: 7: Brodiaea Av. & Dwy. 3

Movement	SB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	15
95th Queue (ft)	40
Link Distance (ft)	326
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Graham St. & Brodiaea Av.

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	30	44	39	60	85	73	25	162	160	110	124	112
Average Queue (ft)	4	16	11	22	30	30	6	89	60	49	64	42
95th Queue (ft)	19	43	34	52	65	57	24	144	123	88	108	89
Link Distance (ft)		2009			828	828		1200	1200		1170	1170
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210		100	150			160			150		
Storage Blk Time (%)								0		0	0	
Queuing Penalty (veh)								0		0	0	

Network Summary

Network wide Queuing Penalty: 1801

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX 7.6:

GENERAL PLAN BUILDOUT (POST-2040) WITH PROJECT CONDITIONS WITH IMPROVEMENTS QUEUING ANALYSIS WORKSHEETS

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Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Queuing and Blocking Report
General Plan Buildout (Post-2040) With Project - AM Peak Hour 09/06/2018

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	L	T	T	TR	L	L
Maximum Queue (ft)	325	654	582	400	109	27	178	2589	2589	2589	138	142
Average Queue (ft)	279	397	362	94	21	3	20	2589	2589	2589	62	80
95th Queue (ft)	392	973	927	260	57	18	99	2589	2589	2589	120	130
Link Distance (ft)		3252	3252	3252				2574	2574	2574		
Upstream Blk Time (%)								86	98	99		
Queuing Penalty (veh)								0	0	0		
Storage Bay Dist (ft)	250				100	130	130				135	135
Storage Blk Time (%)	55	0		4				65			1	1
Queuing Penalty (veh)	144	0		4				6			1	2

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	TR	L	L	T	T	R
Maximum Queue (ft)	150	159	160	220	1193	1193	215
Average Queue (ft)	75	90	157	219	1101	1082	112
95th Queue (ft)	131	148	164	220	1399	1416	217
Link Distance (ft)	887	887			1178	1178	
Upstream Blk Time (%)					70	37	
Queuing Penalty (veh)					0	0	
Storage Bay Dist (ft)			100	100			100
Storage Blk Time (%)	1		93	99	8	19	13
Queuing Penalty (veh)	1		179	191	19	55	25

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Queuing and Blocking Report
General Plan Buildout (Post-2040) With Project - AM Peak Hour

Centerpointe (JN: 11410)
09/06/2018

Intersection: 6: Cactus Av. & Frederick St.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	T	T	T	T	R	L	L	R
Maximum Queue (ft)	360	511	414	297	2544	2544	2545	340	142	145	148
Average Queue (ft)	255	208	152	85	2479	2480	2470	288	56	67	61
95th Queue (ft)	408	540	445	266	2792	2779	2801	477	117	125	128
Link Distance (ft)		1599	1599	1599	2529	2529	2529			1150	1150
Upstream Blk Time (%)					47	49	71				
Queuing Penalty (veh)					0	0	0				
Storage Bay Dist (ft)	300							265	140		
Storage Blk Time (%)	19	0					41		0	0	
Queuing Penalty (veh)	116	0					114		0	1	

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	L	T	T	TR	L	L
Maximum Queue (ft)	330	3710	3710	3710	150	53	214	920	926	941	176	206
Average Queue (ft)	328	3683	3676	3659	114	13	35	596	605	610	125	148
95th Queue (ft)	342	3892	3903	3934	200	40	145	980	987	1004	212	249
Link Distance (ft)		3695	3695	3695				2574	2574	2574		
Upstream Blk Time (%)		82	75	77								
Queuing Penalty (veh)		0	0	0								
Storage Bay Dist (ft)	250				100	130	130				135	135
Storage Blk Time (%)	83	40		56	0			64			31	44
Queuing Penalty (veh)	591	121		147	2			15			64	92

Intersection: 2: Frederick St. & Alessandro Bl.

Movement	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	TR	L	L	T	T	R
Maximum Queue (ft)	364	339	160	220	1193	1193	132
Average Queue (ft)	183	164	157	219	1193	1180	34
95th Queue (ft)	389	330	164	219	1196	1346	91
Link Distance (ft)	887	887			1178	1178	
Upstream Blk Time (%)					98	53	
Queuing Penalty (veh)					0	0	
Storage Bay Dist (ft)			100	100			100
Storage Blk Time (%)	5		93	99	5	11	0
Queuing Penalty (veh)	9		284	303	26	20	1

Intersection: 6: Cactus Av. & Frederick St.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	T	T	T	T	R	L	L	R
Maximum Queue (ft)	263	401	396	378	380	373	368	197	192	245	192
Average Queue (ft)	95	216	215	189	234	234	209	39	105	126	71
95th Queue (ft)	177	364	360	337	338	345	326	136	171	195	148
Link Distance (ft)		1599	1599	1599	2529	2529	2529			1150	1150
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	300							265	140		
Storage Blk Time (%)		2					2		3	5	
Queuing Penalty (veh)		3					6		9	16	

Zone Summary

Zone wide Queuing Penalty: 1710

Attachment: Project 1_TIA Appendices (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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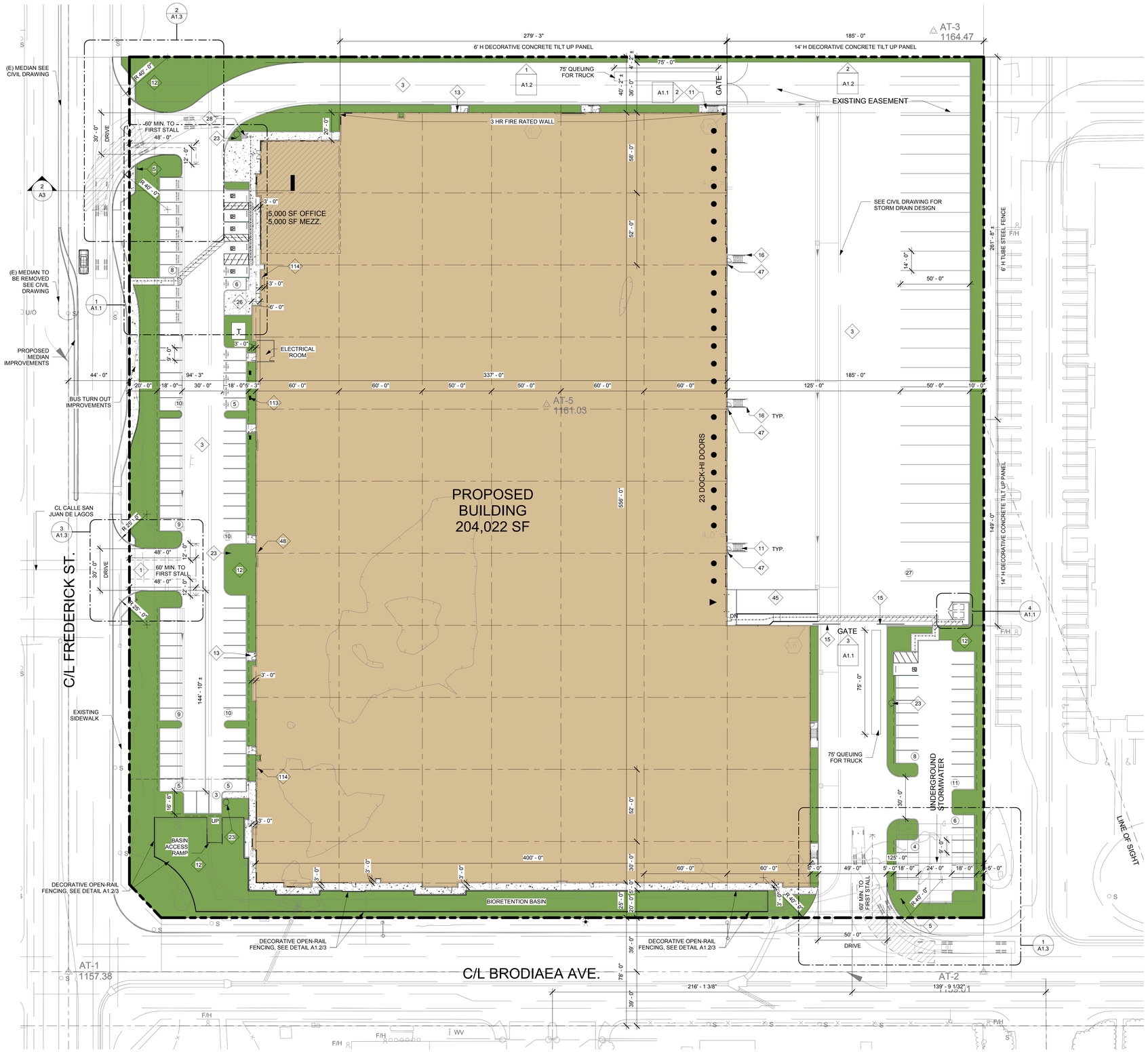


1 PROPOSED SITE PLAN
1" = 30'-0"

DEVELOPER/OWNER

NEWCASTLE PARTNERS, INC.
4740 GREEN RIVER ROAD, #118
CORONA, CA 92880

CONTACT: JACKSON SMITH
PHONE: 951.582.9800
EMAIL: JACKSON@NEWCASTLEPARTNERS.COM

APPLICANT'S REPRESENTATIVE/ARCHITECT

HERDMAN ARCHITECTURE & DESIGN, INC.
16201 SCIENTIFIC WAY
IRVINE, CA 92618
CONTACT: BRIDGET HERDMAN
PHONE: 714.389.2800
EMAIL: BRIDGET@HERDMAN-AD.COM

ACCESSOR PARCEL NUMBER

297170029

SCOPE OF WORK

NEW SPECULATIVE CONCRETE TILT-UP BUILDING FOR WAREHOUSE & OFFICE USE. INCLUDES SITE IMPROVEMENTS AS SHOWN.

PROJECT INFORMATION

CONSTRUCTION TYPE: III-B
NUMBER OF FLOORS: 1
OCCUPANCY: B, S-1, F-1
FIRE SPRINKLERS: YES (ESFR)

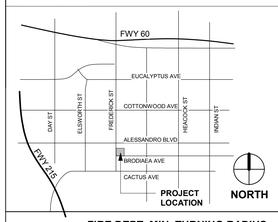
PROJECT INFORMATION - Scheme 3		06.13.2018
ZONING	O - OFFICE (CHANGE TO LI - LIGHT INDUSTRIAL)	
	CLEAR HEIGHT 32 ', 6" INSIDE OF FIRST COLUMN LINE	
GROSS SITE AREA	8.78 AC	382,428 SF
TOTAL BUILDING AREA		204,022 SF
FOOTPRINT		199,022 SF
WAREHOUSE		194,022
OFFICE		5,000
MEZZANINE		
OFFICE		5,000
NET COVERAGE		53.3%
LANDSCAPE PROVIDED		11.2% 42,759 SF
PARKING REQUIRED		
WAREHOUSE		
1/1000 FIRST 20K		20
1/2000 20K-40K		10
1/4000 OVER 40K		39
OFFICE @ 1/250		40
TOTAL REQUIRED		109 STANDARD STALLS
CLEAN AIR VEHICLES PARKING		11
EV CHARGING SPACE		7
PARKING PROVIDED		109
STANDARD		86
ADA		5
CLEAN AIR VEHICLES PARKING		11
EV CHARGING SPACE		7
TRAILERS		27

* CLEAN AIR VEHICLE PARKING SPACES PROVIDED BASED ON THE TABLE 5.106.5.2. OF 2016 GREEN BUILDING CODE.

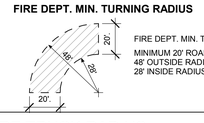
SITE LEGEND

- LANDSCAPE AREA
- CONCRETE PAVING
- STANDARD PARKING STALL
- TYP. HANDICAP PARKING STALL W/ 8' LOADING ZONE
- PROVIDE 12" HIGH WHITE HELVETIC LETTERING AT CARPOOL/ VANPOOL/ AND LOW-E/ FUEL EFFICIENT SPACE ONLY (NOTED EV ON SITE PLAN)
- PROVIDE 12" HIGH WHITE HELVETIC LETTERING AT CARPOOL/ VANPOOL/ AND LOW-E/ FUEL EFFICIENT CHARGING SPACE ONLY (NOTED EVC ON SITE PLAN)
- ADA PATH OF TRAVEL
- PROPERTY LINE
- DOCK HIGH DOOR
- DRIVE THRU. DOOR
- FIRE HYDRANT
- STREET LIGHT

VICINITY MAP



FIRE DEPT. MIN. TURNING RADIUS



FIRE DEPT. MIN. TURNING RADIUS
MINIMUM 20' ROADWAY
48' OUTSIDE RADIUS
28' INSIDE RADIUS

FIRE TRUCK RADIUS | SCALE: N.T.S.

SHEET INDEX

A1 SITE PLAN
A1.1 SITE DETAILS
A2 FLOOR PLAN
A3 ROOF PLAN
A4 EXTERIOR ELEVATIONS
L1 CONCEPTUAL LANDSCAPE PLAN
C1 PRELIMINARY GRADING PLAN
C2 PRELIMINARY GRADING PLAN
C3 DETAILS & SECTIONS

KEYNOTES

1 NEW DRIVE CUT, PER CITY OR COUNTY STANDARDS. REFER TO LANDSCAPE DRAWINGS FOR ENHANCED PAVING DESIGN IF APPLICABLE. REFER TO CIVIL DRAWINGS FOR ADDITIONAL INFO.
3 CONCRETE PAVING, REFER TO CIVIL DRAWINGS FOR SECTION AND DRAINAGE. G.C. TO COORDINATE WITH SOILS REPORT. REFER TO STRUCTURAL DRAWINGS FOR CONCRETE DESIGN AT TRUCK APRONS IF APPLICABLE.
5 ADA SITE ENTRY SIGN PER CODE, TYP.
11 EXTERIOR CONCRETE STAIR W/CONCRETE WALLS. WALLS & RAILINGS PAINTED PEREXTERIOR COLOR SCHEDULE. REFER TO CIVIL AND STRUCTURAL DRAWINGS
12 LANDSCAPE AREA - SEE LANDSCAPE PLANS FOR ADDITIONAL INFORMATION
13 CONCRETE LANDING PAD & STEP(S) AS SHOWN @ EXTERIOR MAN DOORS, TYP. REFER TO CIVIL DRAWINGS FOR ADDITIONAL INFORMATION
15 SLIDING METAL GATE, ELECTRONICALLY OR MANUALY OPERATED. PROVIDE CONDUIT TO GUARD SHACK AND OFFICE AREA FOR GATE CONTROL @ INTERCOM. PROVIDE KNOX PAD PER FIRE DEPT. STD.
16 PROTECTIVE METAL BOLLARDS, CONCRETE FILLED, PAINTED, TYP.
19 CONCRETE SCREEN WALL.
23 NEW FIRE HYDRANT, SEE FIRE PROTECTION DRAWINGS.
26 EMPLOYEE OUTDOOR BREAK AREA.
28 SECURE BICYCLE RACK.BY ANOVA FURNISHINGS, CIRBLEBRSZIG- CIRCLE STAINLESS STEEL BIKE RACK, INGROUND MOUNT PER MUNICIPAL CODE 9.11.060 . STAINLESS STEEL FINISH.SEE A1.2/5 FOR DETAIL.
33 CONCRETE TRASH ENCLOSURE PER CITY REQUIREMENTS.
45 CONCRETE TRUCK RAMP WITH 42" HIGH CONC. TILT UP GUARD WALLS PAINTED TO MATCH BUILDING, SEE ELEVATIONS.
47 EXTERIOR METAL DOWNSPOUT AND OVERFLOW SCUPPERS PAINTED TO MATCH BUILDING. REFER TO PLUMBING PLANS FOR MINIMUM SCUPPER OPENINGS ALLOWABLE PER CODE.
48 INTERIOR ROOF DRAIN AND INTERIOR OVERFLOW DRAIN.
113 EV CHARGERS - CONDUIT FOR FUTURE ONLY
114 INTERIOR ROOF DRAIN WITH DECORATIVE EXTERIOR SCUPPER

SITE PLAN GENERAL NOTES

1. SITE PLAN SHALL MEET ALL ENGINEERING & NPDES REQUIREMENTS.
2. GENERAL CONTRACTOR TO REVIEW SOILS REPORT PREPARED BY SOUTHERN CALIFORNIA GEOTECHNICAL DATED _____ AND ANY SUBSEQUENT AMENDMENTS. G.C. TO CONFIRM COMPLIANCE.
3. REFER TO CIVIL DRAWINGS FOR ADDITIONAL UTILITY INFORMATION INCLUDING POINTS OF CONNECTION TO OFFSITE UTILITIES AND BUILDING POINTS OF CONNECTION.
4. GENERAL CONTRACTOR TO COORDINATE ALL POINTS OF CONNECTION BETWEEN OFFSITES, CIVIL, M,E,P, & FP DRAWINGS.
5. GRADES SURROUNDING BUILDING TO PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDING.
6. REFER TO CIVIL DRAWINGS FOR FINISH GRADE ELEVATIONS AND PERCENTAGE SLOPES.
7. GENERAL CONTRACTOR TO CONFIRM AND COMPLY WITH ALL BUILDING, FIRE, AND ENGINEERING DEPARTMENT REGULATIONS DURING CONSTRUCTION INCLUDING ANY TEMPORARY FACILITIES REQUIRED.
8. ALL PAVED AND LANDSCAPED AREAS TO BE BOUND BY 6" MIN. CONCRETE CURB TYPICAL UNLESS SPECIFICALLY NOTED OTHERWISE.
9. ALL ADA PATHS OF TRAVEL NOTED ON PLANS TO MEET THE FOLLOWING MINIMUM REQUIREMENTS: NO ABRUPT CHANGES IN ELEVATION ALLOWABLE ALONG THE PATH OF TRAVEL. THE SLOPE AND CROSS-SLOPE SHALL NOT EXCEED 5% AND 2% RESPECTIVELY UNLESS AN ADA COMPLIANT RAMP OR CURB RAMP IS DESIGNED BY THE CIVIL ENGINEER. IF A WALK CROSSES OR ADJOINS A VEHICLE WAY, AND THE WALKING SURFACES ARE NOT SEPARATED BY CURBS, RAILING OR OTHER ELEMENTS BETWEEN THE PEDESTRIAN AREAS AND VEHICULAR AREAS, THE BOUNDARY BETWEEN THE AREAS SHALL BE DEFINED BY A 4' DEEP DETECTABLE WARNING WHICH IS 36" WIDE COMPLYING WITH CBC SECTION 11B-705.1.2.5
10. ALL SPECIFICATIONS ON DRAWINGS ARE MINIMUM REQUIREMENTS ONLY. GENERAL CONTRACTOR TO NOTIFY ARCHITECT IN WRITING OF ANY CONFLICTS IN DRAWINGS AND SPECIFICATIONS VIA "RFI".
11. GENERAL CONTRACTOR TO REFER TO ARCHITECTURAL DETAIL SHEETS FOR TYPICAL MINIMUM SITE IMPROVEMENT STANDARDS.
12. CONCRETE MOW STRIP PER ARCHITECTURAL DETAILS TO BE PROVIDED AT ALL GLAZING/STOREFRONT LOCATIONS WHERE ADJACENT TO LANDSCAPING.
13. CONCRETE SPLASH BLOCK PER ARCHITECTURAL DETAILS TO BE PROVIDED AT ALL ROOF DRAINDOWN SPOUT TERMINATIONS AT NON-CONCRETE AREAS.
14. BRASS LAMB'S TONGUE TO BE PROVIDED AT ALL ROOF DRAIN OVERFLOWS THAT DAYLIGHT AT FACE OF BUILDING WALL.
15. GATES, FENCES, AND WALLS MAY BE SUBJECT TO DEFERRED SUBMITTAL REQUIREMENTS. GENERAL CONTRACTOR TO CONFIRM WITH CITY AND MUST SUBMIT SHOP DRAWINGS TO THE ARCHITECT FOR APPROVAL.

PROJECT
NEWCASTLE FREDERICK ST.
MORENO VALLEY, CA
3RD PLANNING SUBMITTAL

HERDMAN
ARCHITECTURE + DESIGN

A17-2100
08/06/2018

NORTH

SITE PLAN

A1

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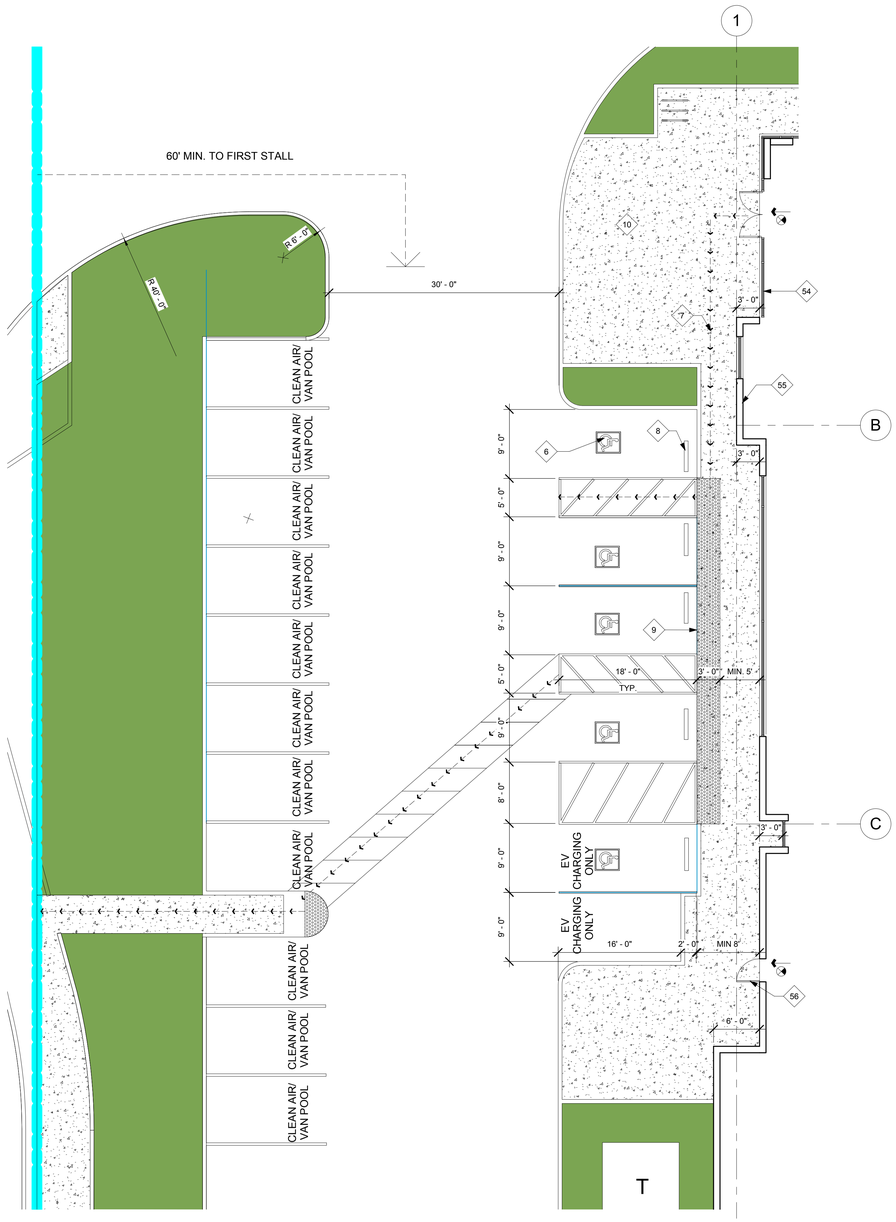
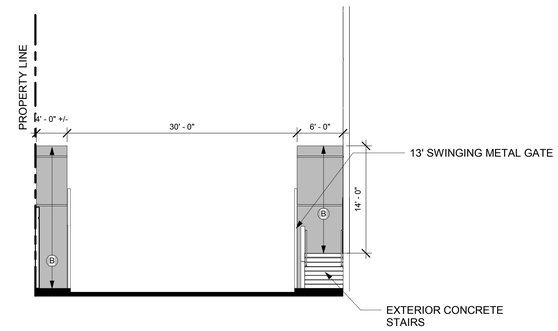
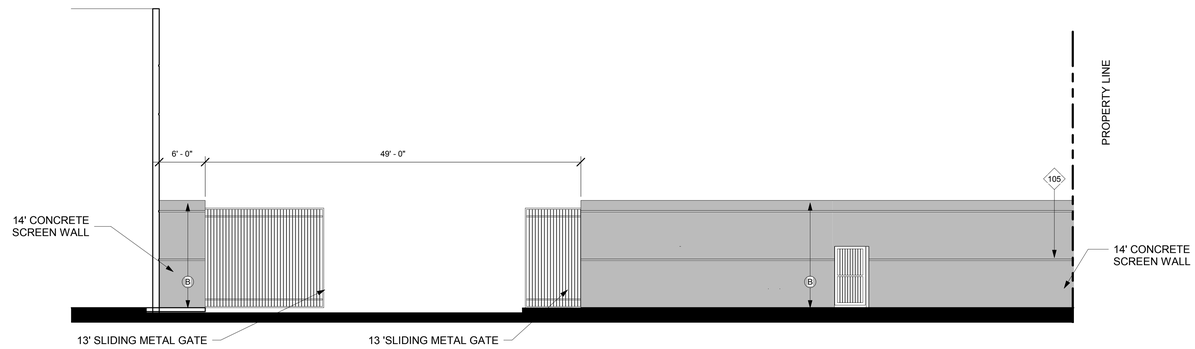
Attachment: Project 1, Site Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



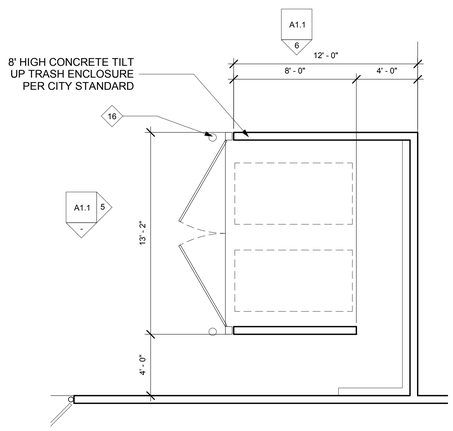
1 ENLARGED ACCESSIBLE PARKING PLAN
1/8" = 1'-0"



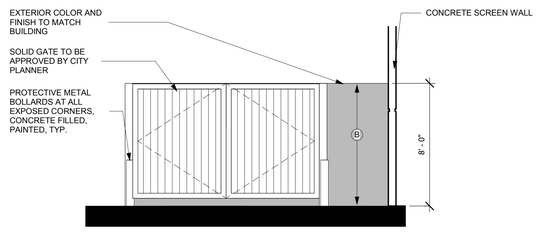
2 NORTH WEST GATE
1/8" = 1'-0"



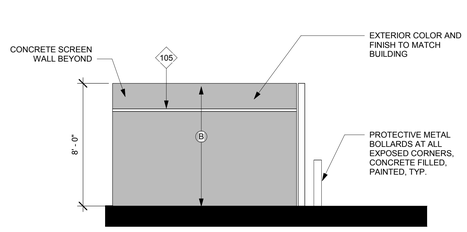
3 SOUTH EAST GATE
1/8" = 1'-0"



4 ENLARGED TRASH ENCLOSURE
1/4" = 1'-0"



5 TRASH ENCLOSURE ELEVATION A
1/4" = 1'-0"



6 TRASH ENCLOSURE B
1/4" = 1'-0"

KEYNOTES

6	ADA PARKING STALL SIGN PER CODE, TYP. PROVIDE AT ALL ADA STALLS.
7	ADA PATH OF TRAVEL
8	PRECAST CONCRETE WHEEL STOP
9	ZERO CURB FACE.
10	CONCRETE WALK. SEE SITE PLAN FOR ADA PATH OF TRAVEL. 4" MIN THICKNESS, SCORE CONCRETE @ 5' O.C., PROVIDE A LIGHT BROOM FINISH. REFER TO LANDSCAPE DRAWINGS FOR SPECIALTY CONCRETE FINISHING, TYP. REFER TO SOILS REPORT FOR ADDITIONAL MIN. REQ.
16	PROTECTIVE METAL BOLLARDS, CONCRETE FILLED, PAINTED, TYP.
54	STOREFRONT, SEE ELEVATIONS & EXTERIOR COLOR SCHEDULE. STORE FRONT TO BE DESIGNED TO RESIST WIND LOAD AS REQUIRED BY BUILDING CODES AND LOCAL JURISDICTION. DESIGN OF STOREFRONT FRAMING SYSTEM AND STRUCTURAL CALCULATIONS TO BE DESIGN BUILD BY G.C. AND UNDER DEFERRED SUBMITTAL.
55	CONCRETE TILT-UP PANEL, TYP. PAINTED, SEE EXTERIOR COLOR SCHEDULE. REFER TO ELEVATIONS AND "S" DRAWINGS FOR ADDITIONAL INFORMATION.
56	EXTERIOR MAN DOOR 3'X7', HOLLOW METAL, PAINTED, SEE EXTERIOR COLOR SCHEDULE & DOOR SCHEDULE FOR ADDITIONAL INFO.
105	2" DECORATIVE CONCRETE REVEAL WITH CHAMFERED EDGES, TYP.

PROJECT
NEWCASTLE FREDERICK ST.
MORENO VALLEY, CA

3RD PLANNING SUBMITTAL

HERDMAN
ARCHITECTURE + DESIGN

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08/06/2018

NORTH

SITE DETAILS

A1.1

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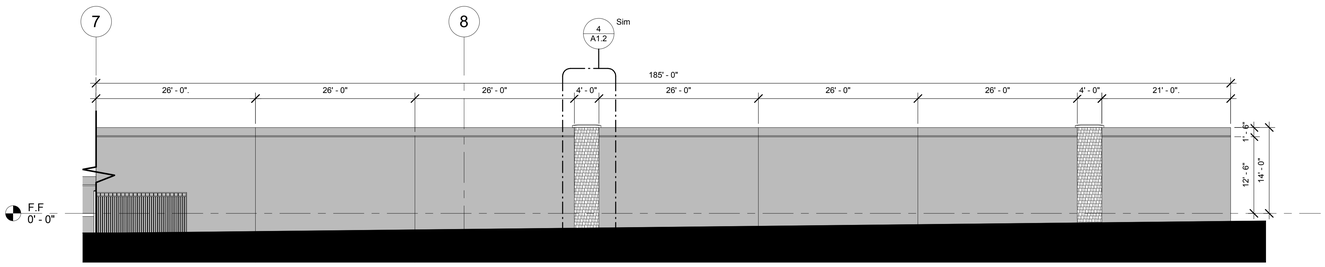
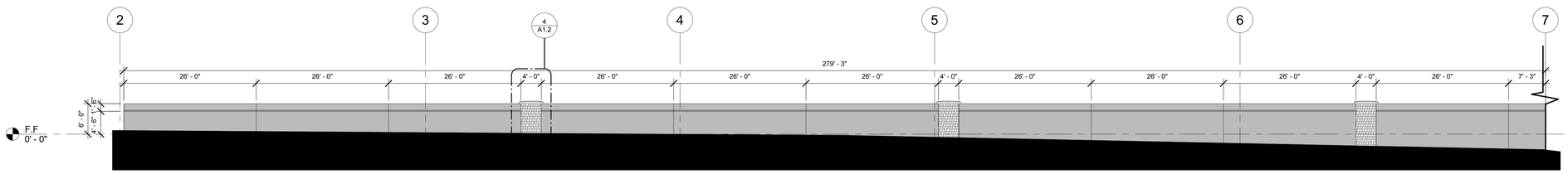
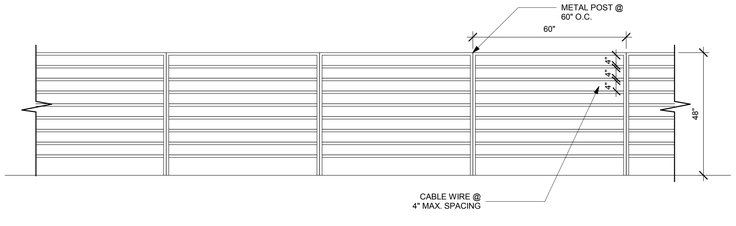
Attachment: Project 1_Site Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



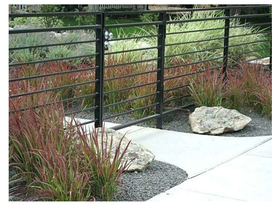
2 Elevation 5 - a
1" = 10'-0"



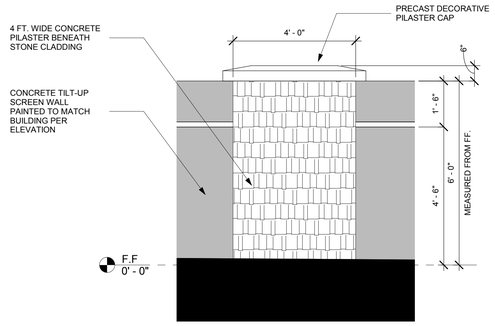
1 Elevation 3 - a
1" = 10'-0"



3 OPEN RAIL FENCING
1/2" = 1'-0"

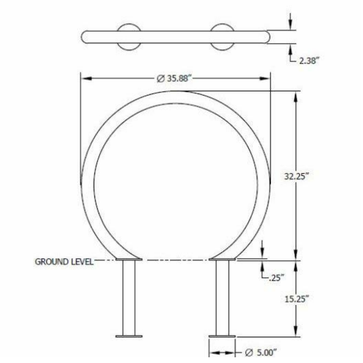


TYPICAL OPEN-RAIL FENCING



4 PILASTER AT NORTHERN SCREEN WALLS
1/2" = 1'-0"

PILASTER AT NORTHERN SCREEN WALL



5. BIKE RACK DETAIL

PROJECT
NEWCASTLE FREDERICK ST.
MORENO VALLEY, CA

3RD PLANNING SUBMITTAL

Attachment: Project 1_Site Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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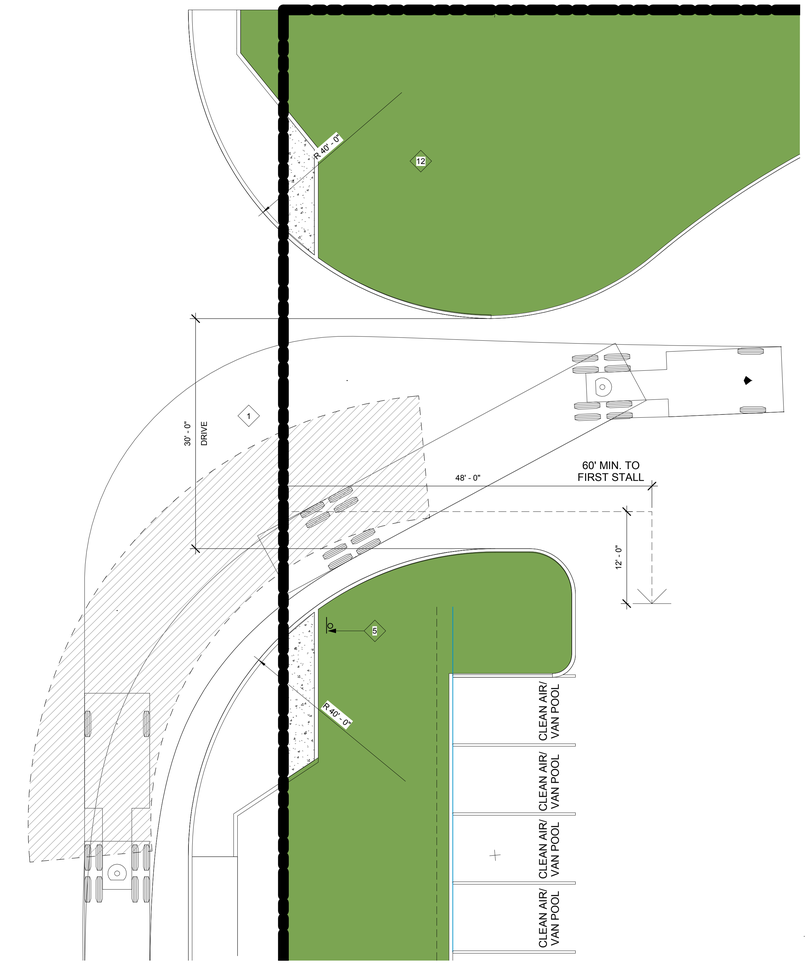
08/06/2018

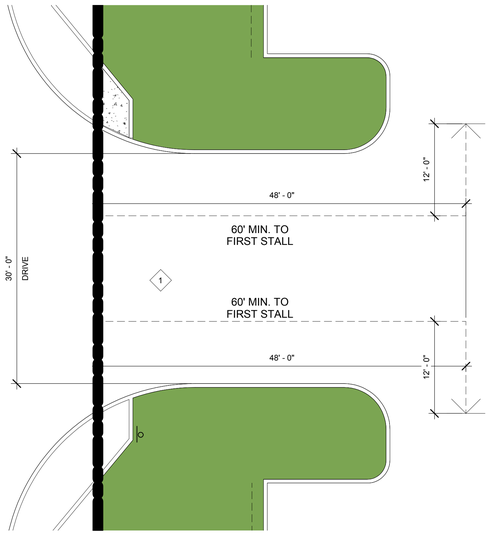
NORTH

SITE DETAILS

A1.2

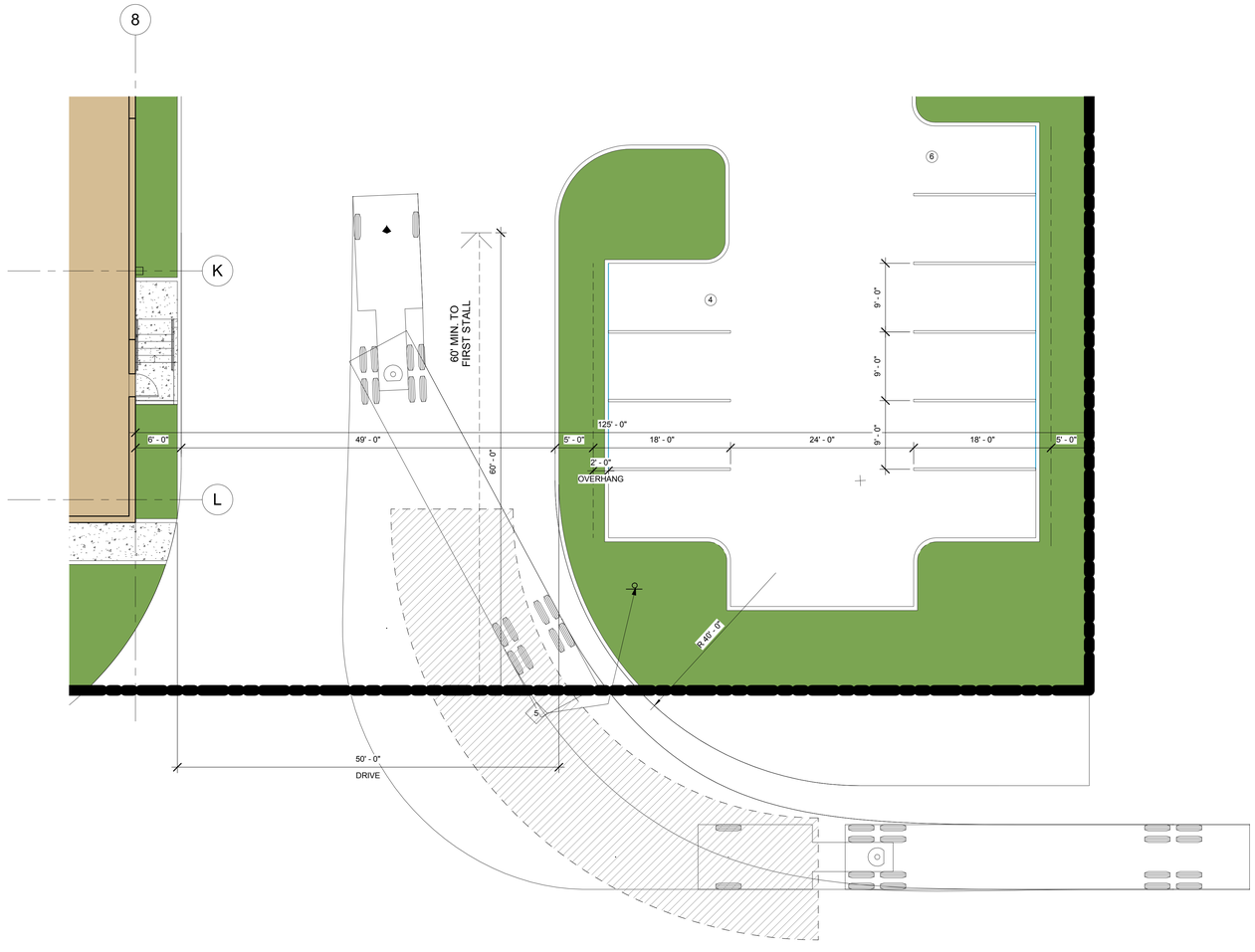


1 DRIVE ENLARGEMENT 2
1/8" = 1'-0"



3 DRIVE ENLARGEMENT 3
1/8" = 1'-0"

8



2 DRIVE ENLARGEMENT 1
1/8" = 1'-0"

PROJECT
NEWCASTLE FREDERICK ST.
MORENO VALLEY, CA
3RD PLANNING SUBMITTAL

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NORTH

SITE ENLARGEMENTS

A1.3

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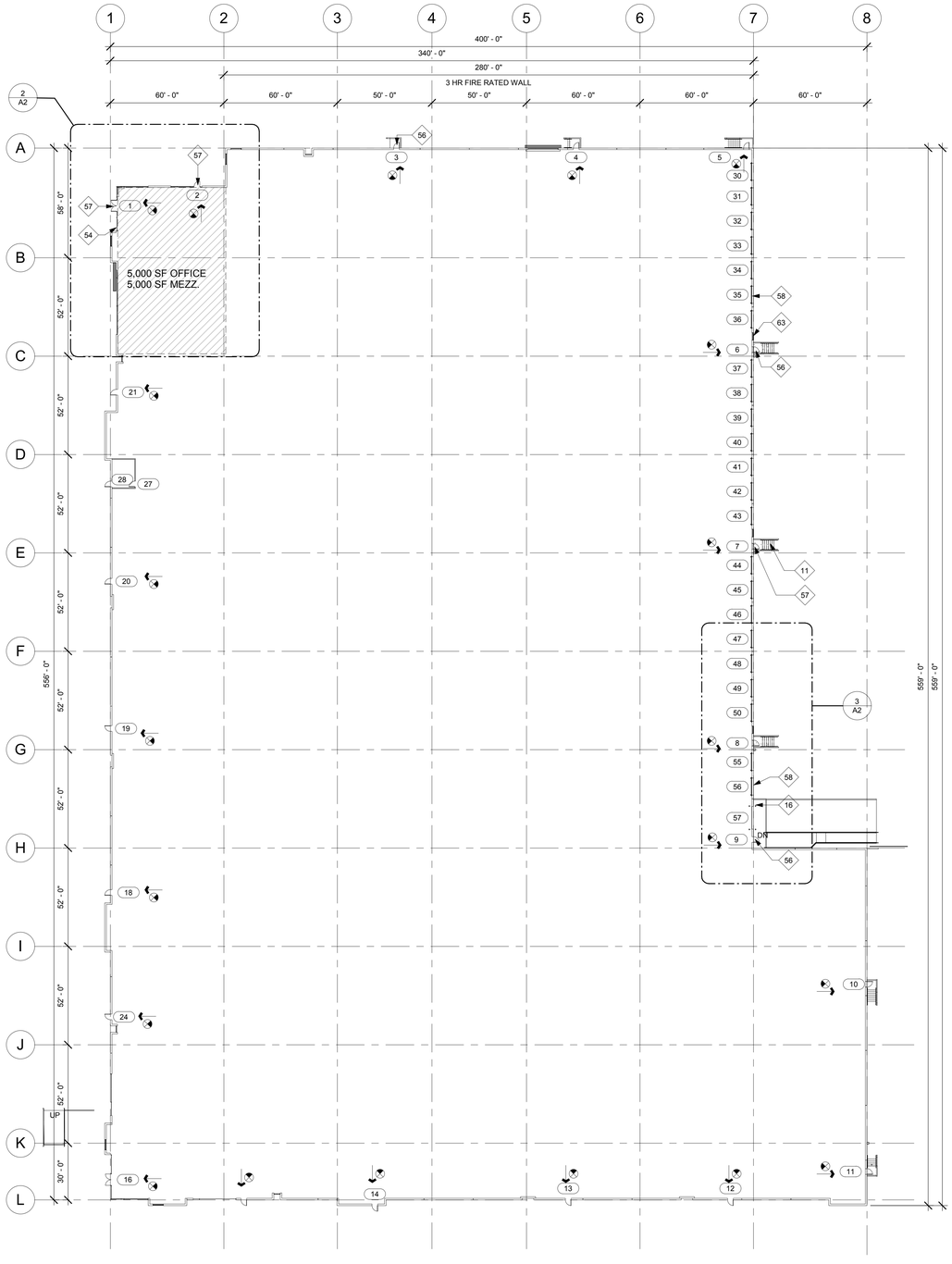
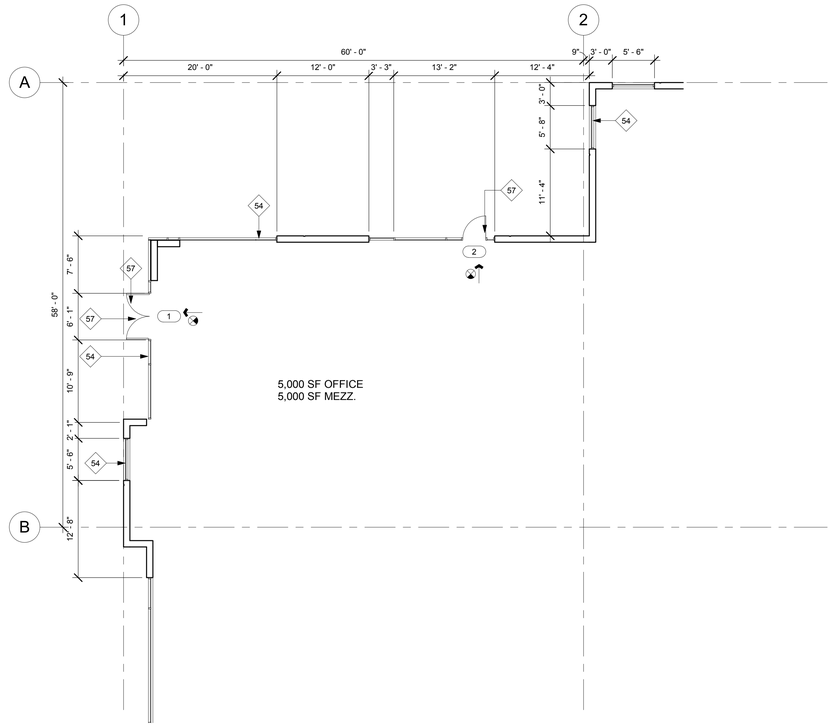
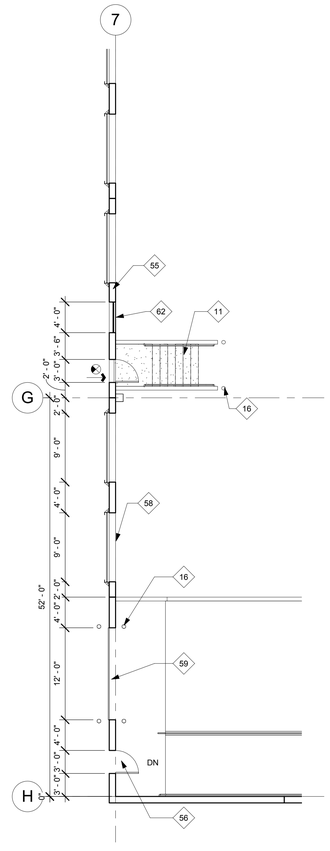
Attachment: Project 1_Site Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



1 PROPOSED BUILDING FLOOR PLAN
1" = 30'-0"



2 ENLARGED FLOOR PLAN
1/8" = 1'-0"



3 DOCK SPACING PLAN
1/8" = 1'-0"

KEYNOTES

11	EXTERIOR CONCRETE STAIR W/CONCRETE WALLS. WALLS & RAILINGS PAINTED PEREXTERIOR COLOR SCHEDULE. REFER TO CIVIL AND STRUCTURAL DRAWINGS
16	PROTECTIVE METAL BOLLARDS, CONCRETE FILLED, PAINTED, TYP.
54	STOREFRONT, SEE ELEVATIONS & EXTERIOR COLOR SCHEDULE. STORE FRONT TO BE DESIGNED TO RESIST WIND LOAD AS REQUIRED BY BUILDING CODES AND LOCAL JURISDICTION. DESIGN OF STOREFRONT FRAMING SYSTEM AND STRUCTURAL CALCULATIONS TO BE DESIGN BUILD BY G.C. AND UNDER DEFERRED SUBMITTAL.
55	CONCRETE TILT-UP PANEL, TYP. PAINTED, SEE EXTERIOR COLOR SCHEDULE. REFER TO ELEVATIONS AND "S" DRAWINGS FOR ADDITIONAL INFORMATION.
56	EXTERIOR MAN DOOR 3'X7', HOLLOW METAL, PAINTED, SEE EXTERIOR COLOR SCHEDULE & DOOR SCHEDULE FOR ADDITIONAL INFO.
57	EXTERIOR STOREFRONT DOOR, SEE EXTERIOR COLOR SCHEDULE & DOOR SCHEDULE FOR ADDITIONAL INFO.
58	DOCK-HI LOADING DOOR, 9'X10', WITH VISION GLAZING PRE FINISHED BY MANUFACTURER PER COLOR SCHEDULE.
59	DRIVE THRU LOADING DOOR 12'X14' WITH VISION GLAZING, PRE FINISHED BY MANUFACTURER PER COLOR SCHEDULE.
62	AIR INTAKE LOUVER. PAINT TO MATCH BUILDING WALL, TYP. SIZE HORIZONTAL 4'X 8', PROVIDE BIRD SCREEN, FILTER AND BURGLAR BARS.
63	AIR INTAKE LOUVER. PAINT TO MATCH BUILDING WALL, TYP. SIZE VERTICAL 4'X 8', PROVIDE BIRD SCREEN, FILTER AND BURGLAR BARS.

FLOOR PLAN WALL LEGEND

- CONCRETE TILT UP WALL. SEE "S" DRAWINGS FOR ADDITIONAL INFORMATION. PROVIDE METAL STUD FURRING (SEE STUD SCHEDULE AD.2) AND FULL HEIGHT BATT INSULATION PER TITLE 24 REQUIREMENTS. SEE 3/AD.2 FOR CONNECTION DETAIL.
- STOREFRONT SYSTEM, UNDER DEFERRED SUBMITTAL. SEE ELEVATIONS FOR ARCHITECTURAL DETAILS
- METAL STUD WALL, SEE 13/AD6 FOR STUD SIZE & DETALS
- METAL STUD FURRING. INSTALL INSULATION PER TITLE 24 REQUIREMENTS. PROVIDE 5/8" TYPE X GYP. BD. ON THE INTERIOR SIDE
- ONE HOUR FIRE RATED WALL. SEE WALL CALL OUTS AND STUD SCHEDULE FOR ADDITIONAL INFORMATION
- STRUCTURAL BUILDING COLUMNS
- ILLUMINATED EMERGENCY EXIT SIGN PER CBC AND FIRE DEPT. SEE "E" DRAWINGS FOR LOCATION. SIGN SHALL BE CONTINUOUSLY ILLUMINATED FOR DURATION OF 90 MIN. IN CASE OF PRIMARY POWER LOSS.

FLOOR PLAN GENERAL NOTES

1. FINISH FLOOR SLAB SLOPES. REFER TO CIVIL DRAWINGS FOR ELEVATIONS AND ADDITIONAL INFORMATION.
2. PROVIDE STEGO WRAP 15MIL BARRIER BELOW SLAB PER MANUFACTURERS INSTRUCTIONS AND PER SOILS REPORT IN LOCATIONS FOR PROPOSED OFFICE AREAS. SEE FLOOR PLAN LEGEND FOR HATCHED AREAS.
3. REFER TO STRUCTURAL DRAWINGS FOR DESIGN OF FOUNDATION.
4. POUR STRIP TO BE SLOPED TO EXTERIOR DOORS 1/2".
5. PROVIDE FIRE EXTINGUISHERS AS REQUIRED BY FIRE DEPARTMENT AND CBC/CFC.
6. PROVIDE ILLUMINATED EXIT SIGNS AT ALL EXTERIOR EXIT DOORS, DOORS EXITING FROM TENANT SPACES, DOORS INTO EXIT ENCLOSURES, AND ANY ADDITIONAL LOCATIONS NOTED ON PLANS. SEE "E" DRAWINGS FOR ADDITIONAL REQUIREMENTS.SIGN TO BE CONTINUOUSLY ILLUMINATED FOR DURATION OF 90 MIN IN CASE OF PRIMARY POWER LOSS.
7. ALL FIRE RATED PARTITIONS TO EXTEND TO DECK ABOVE, AND PENETRATIONS TO BE SEALED.
8. DO NOT USE CURING COMPOUND OR RELEASE AGENTS TO CURE SLAB.
9. CRANES, CONCRETE TRUCKS, AND SIMILAR HEAVY EQUIPMENT PROHIBITED ON SLAB.
10. FLY-ASH PROHIBITED IN CONCRETE SLAB MIX.
11. FLOOR SLAB TO BE CLASS V PER ACI 302-IR-89
12. FLOOR COMPACTION TO BE 95% MIN
13. TRENCH COMPACTION TO BE 90% MIN
14. SLAB FINISH TO BE STEEL FLOAT HARD TROWEL BURNISHED FINISH
15. DIMENSIONS ARE TO FACE OF CONCRETE PANEL, FINISH FACE OF DRYWALL, FINISH OPENING, TYPICAL UNLESS NOTED OTHERWISE.
16. PROVIDE EXIT SIGNS INCLUDING TACTILE SIGN REQUIRED BY SECTION 1011 OF 2013 CBC. SIGN TO BE CONTINUOUSLY ILLUMINATED FOR DURATION OF 90 MIN IN CASE OF PRIMARY POWER LOSS.
17. ALL MAN DOORS, OVERHEAD DOORS, AND ROLL-UP DOORS TO BE DESIGNED FOR WIND LOAD AND EXPOSURE DETERMINED BY BUILDING CODE AND LOCAL JURISDICTION.
18. ALL STOREFRONT SYSTEMS TO BE DESIGNED FOR WIND LOAD AND EXPOSURE DETERMINED BY THE BUILDING CODE AND LOCAL JURISDICTION.STOREFRONT SYSTEMS TO BE DESIGN BUILD.G.C. TO PROVIDE SHOP DRAWINGS FOR ARCHITECTS REVIEW
19. REFER TO CIVIL DRAWINGS FOR ALL POINT OF CONNECTIONS FOR UTILITIES.CONTRACTOR TO VERIFY LOCATIONS.
20. PROVIDE STEEL BOLLARDS FILLED WITH CONCRETE AND PAINTED PER FINISH SCHEDULE AT FIRE RISERS, PIVS, TRANSFORMERS, AND OTHER LOCATIONS AS REQUIRED.
21. CONTRACTOR TO MAINTAIN A CLEAN FLOOR SLAB, ALL TRUCKS AND EQUIPMENT TO BE DIAPERED.
22. NO ACCESS HARDWARE ON THE EXTERIOR SIDE OF THE NON-ENTRY DOORS
23. FOR TYPICAL DOOR LANDING CLEARANCES, REFER 2/A0.2.2 FOR MORE INFORMATION
24. NO SMOKING WITIHN 25' OF BUILDING ENTRIES, ACCORDING TO GREEN BUILDING STANDARD CODE DIVISION 5.504.7

PROJECT
3RD PLANNING SUBMITTAL

NEWCASTLE FREDERICK ST.
MORENO VALLEY, CA

HERDMAN
ARCHITECTURE + DESIGN

A17-2100
08/06/2018

NORTH

BUILDING FLOOR PLAN

A2

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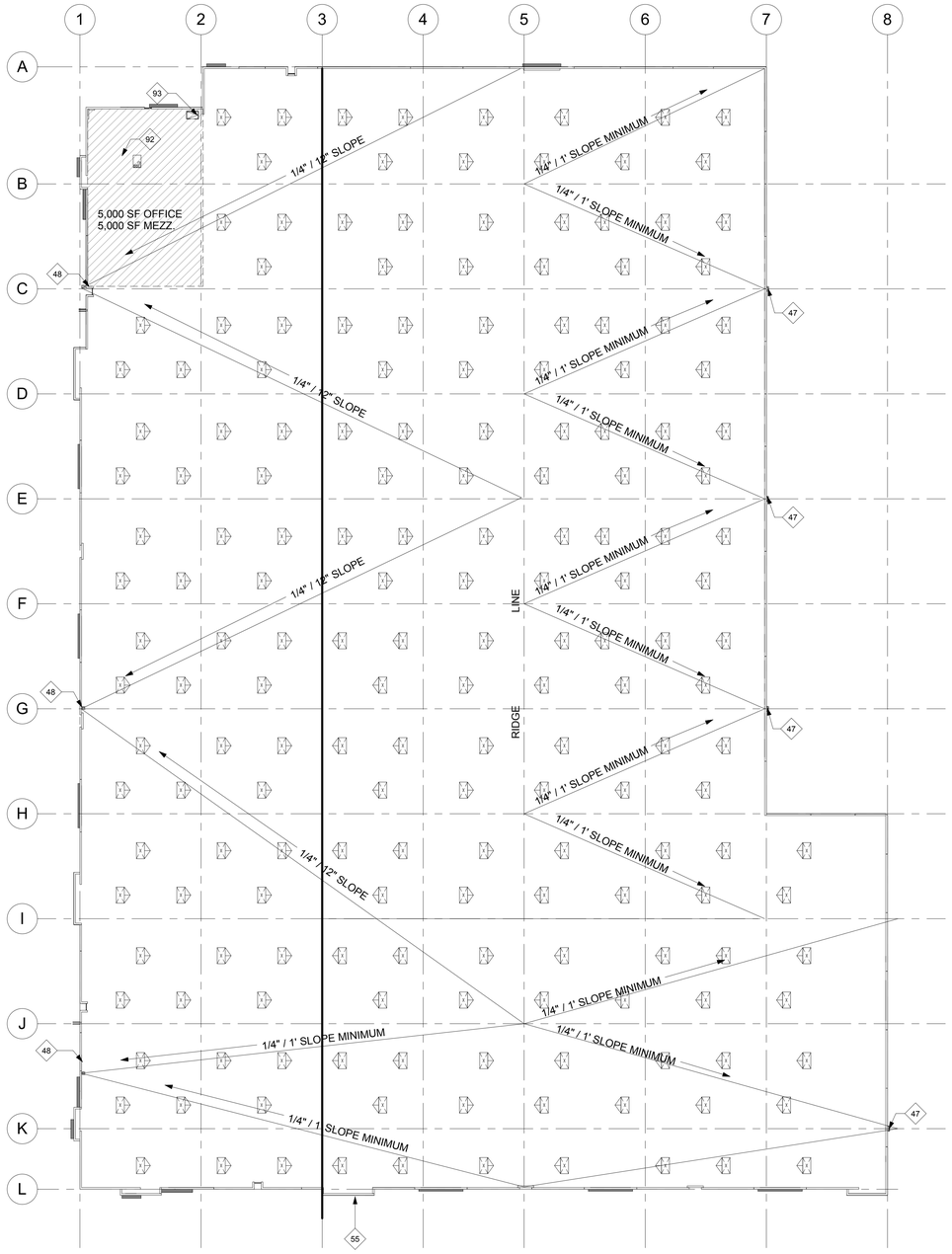
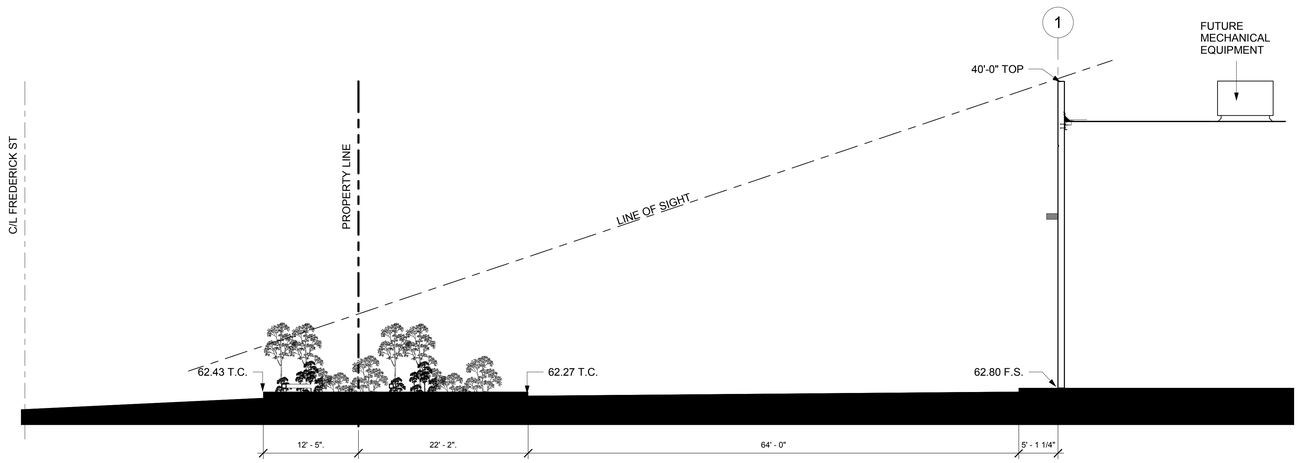
Attachment: Project 1 Site Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



1 ROOF PLAN
1" = 30'-0"



2 LINE OF SIGHT

SKYLIGHTS NOTES

PROPOSED BLDG:
ROOF AREA = 197,089 SF.
SKYLIGHTS : 3% OF ROOF AREA = 5,913 SF.
EACH UNIT: 32 SF (4'X8')
UNITS PROVIDED: 185 = 5,920 SF

SMOKE HATCHES NOTE TO BIDDING CONTRACTORS:
% OF SMOKE HATCHES TO BE DETERMINED BY D.B. FIRE PROTECTION CONSULTANT TO MEET CODE REQUIREMENT TO ALLOW FOR HIGH PILE STORAGE. COMBINED TOTAL OF SMOKE HATCH + SKYLIGHTS TO EQUAL 3% OF TOTAL ROOF AREA

MECHANICAL EXHAUST NOTE TO BIDDING CONTRACTORS:
QUANTITY & LOCATION OF ROOFTOP EXHAUST FANS & WALL MOUNTED LOUVERS TO BE DETERMINED BY DESIGN BUILD MECHANICAL ENGINEER TO PROVIDE MINIMUM 1 AIR CHANGE PER HOUR LOCATIONS TP BE COORDINATED WITH THE ARCHITECT, STRUCTURAL ENGINEER AND FIRE SPRINKLERS.

KEYNOTES

47	EXTERIOR METAL DOWNSPOUT AND OVERFLOW SCUPPERS PAINTED TO MATCH BUILDING. REFER TO PLUMBING PLANS FOR MINIMUM SCUPPER OPENINGS ALLOWABLE PER CODE.
48	INTERIOR ROOF DRAIN AND INTERIOR OVERFLOW DRAIN.
55	CONCRETE TILT-UP PANEL, TYP. PAINTED, SEE EXTERIOR COLOR SCHEDULE. REFER TO ELEVATIONS AND "S" DRAWINGS FOR ADDITIONAL INFORMATION.
92	FUTURE MECHANICAL EQUIPMENT
93	ROOF ACCESS HATCH.

ROOF PLAN GENERAL NOTES

1. CONTRACTOR TO VERIFY POSITIVE ROOF DRAINAGE. ROOFING CONTRACTOR TO VERIFY PRIOR TO INSTALLING RIGID INSULATION OR ROOFING. SEE "S" DRAWINGS FOR CRICKETS, ETC.
2. BUILT UP ROOFING TO BE CLASS 1 UL LISTED ROOFING ASSEMBLY DESIGNED TO RESIST 90MPH OR AS REQUIRED.
3. SEE STRUCTURAL DRAWINGS FOR ROOF ELEVATIONS, TYP.
4. REFER TO DETAIL 1/AD.1 FOR TYPICAL ROOF SECTION.
5. PROVIDE CRICKETS ON (HIGH SIDE) OF ALL MECHANICAL UNITS AND ROOF EQUIPMENT AT SKYLIGHTS & SMOKE HATCHES. PROVIDE POSITIVE DRAINAGE AROUND UNITS AT 1/2" PER SLOPE MINIMUM.
6. CONTRACTOR TO COORDINATE ALL ROOF PENETRATIONS. SEE ROOF DETAIL SHEET FOR PENETRATIONS.
7. ALL SKYLIGHTS AND SMOKEHATCHES TO BE DESIGNED TO MEET WINDLOAD AS DETERMINED BY THE BUILDING CODE AND LOCAL JURISDICTION.
8. ALL MECHANICAL CONDENSATE DRAINS TO BE BELOW ROOF.
9. G.C. TO CONFIRM REQUIREMENT FOR ROOF WALK PADS WITH OWNER.
10. ROOFING CAP SHEET TO HAVE MINIMUM AGED SOLAR REFLECTANCE EQUAL TO OR GREATER THAN 0.63, AND AN SRI EQUAL TO OR GREATER THAN 72 PER 2014 COUNTY OF LOS ANGELES GREEN BUILDING STANDARDS CODE
11. ROOF ELEVATIONS TO BE VERIFIED WITH TABLE A5.106.11.2.2 STRUCTURAL DRAWINGS.
12. FOR ALL PIPE AND DUCT PENETRATIONS THRU ROOF, SEE DETAILS ON AD SHEETS
13. ALL CONDESATE LINES FROM HVAC UNITS MUST BE INSTALLED BELOW ROOF
14. ALL MECHANICAL EQUIPMENT WEIGHTS ARE OPERATING WEIGHTS.
15. PROVIDE A FULL TIME OSB MOISTURE INSPECTION AND GAP DISTANCE, BY A QUALIFIED ROOFING INSPECTION FIRM APPROVED BY THE OWNER AND THE OSB MANUFACTURER. INSPECTION FIRM TO BE ON SITE PRIOR TO THE START OF ANY BUILT UP ROOFING WORK.
16. ALL WOOD CURBS TO BE P.T.D.F.
17. ROOF EXHAUST FANS SHALL BE CENTERED DIRECTLY ABOVE A SPRINKLER HEAD. VERIFY WITH FIRE PROTECTION PLANS PRIOR TO INSTALLATION.
18. ALL SUB-PURLIN HANGERS HALL BE "Z-MAX" TRIPLE ZINC COATED AS MANUF. BY SIMPSON OR APPROVED EQUAL.
19. AUTOMATIC SPRINKLER SYSTEMS SERVING MORE THAN 100 SPRINKLER HEADS SHALL BE SUPERVISED BY AN APPROVED CENTRAL PROPRIETARY, OR REMOTE STATION SERVICE, OR A LOCAL ALARM WHICH WILL GIVE AN AUDIBLE SIGNAL AT CONSTANTLY ATTENDED LOCATION.

PROJECT
NEWCASTLE FREDERICK ST.
MORENO VALLEY, CA

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NORTH

ROOF PLAN

A3

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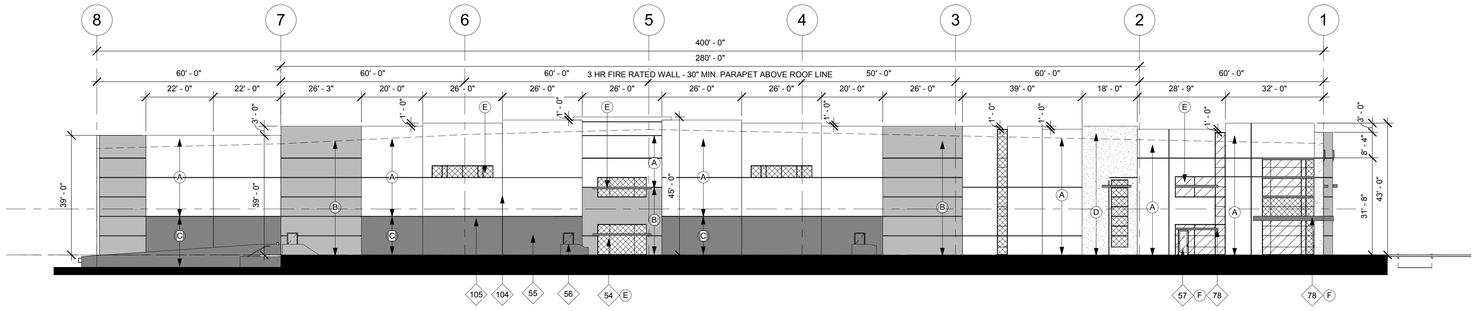
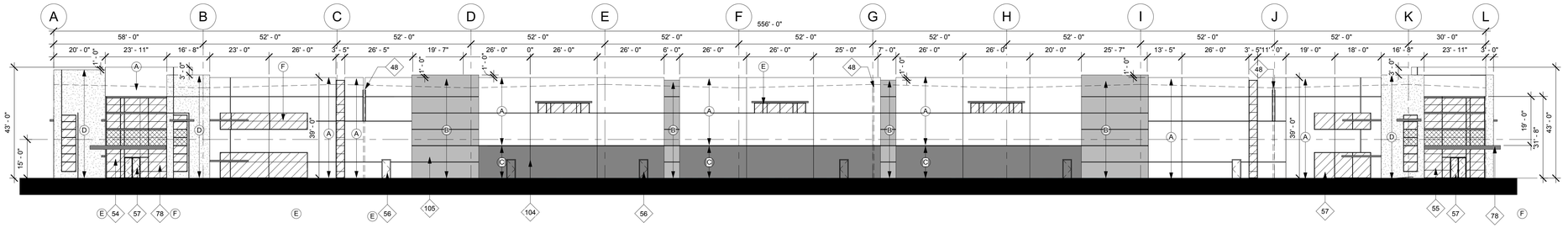
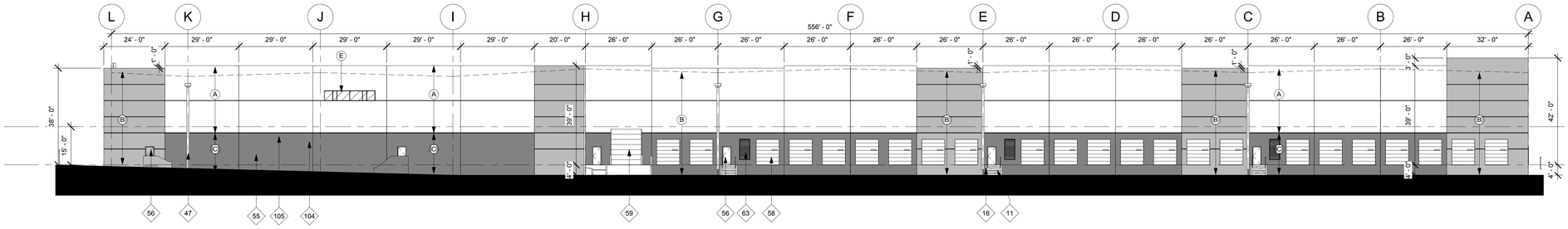
Attachment: Project 1. Site Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



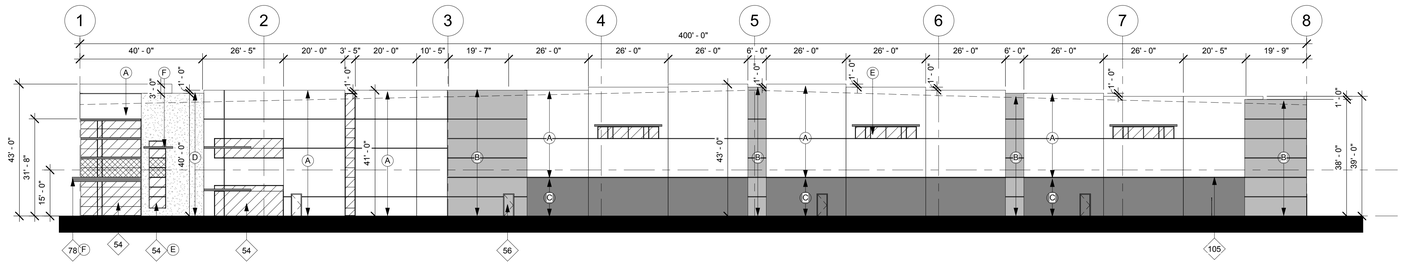
1 PROPOSED NORTH ELEVATION
1" = 20'-0"



2 PROPOSED WEST ELEVATION - FREDERICK AVE.
1" = 20'-0"



3 PROPOSED EAST ELEVATION
1" = 20'-0"



4 PROPOSED SOUTH ELEVATION
1" = 20'-0"

KEYNOTES	
11	EXTERIOR CONCRETE STAIR W/CONCRETE WALLS. WALLS & RAILINGS PAINTED PEREXTERIOR COLOR SCHEDULE. REFER TO CIVIL AND STRUCTURAL DRAWINGS
16	PROTECTIVE METAL BOLLARDS, CONCRETE FILLED, PAINTED, TYP.
47	EXTERIOR METAL DOWNSPOUT AND OVERFLOW SCUPPERS PAINTED TO MATCH BUILDING. REFER TO PLUMBING PLANS FOR MINIMUM SCUPPER OPENINGS ALLOWABLE PER CODE.
48	INTERIOR ROOF DRAIN AND INTERIOR OVERFLOW DRAIN.
54	STOREFRONT, SEE ELEVATIONS & EXTERIOR COLOR SCHEDULE. STORE FRONT TO BE DESIGNED TO RESIST WIND LOAD AS REQUIRED BY BUILDING CODES AND LOCAL JURISDICTION. DESIGN OF STOREFRONT FRAMING SYSTEM AND STRUCTURAL CALCULATIONS TO BE DESIGN BUILD BY G.C. AND UNDER DEFERRED SUBMITTAL.
55	CONCRETE TILT-UP PANEL, TYP. PAINTED, SEE EXTERIOR COLOR SCHEDULE. REFER TO ELEVATIONS AND "S" DRAWINGS FOR ADDITIONAL INFORMATION.
56	EXTERIOR MAN DOOR 3'X7', HOLLOW METAL, PAINTED, SEE EXTERIOR COLOR SCHEDULE & DOOR SCHEDULE FOR ADDITIONAL INFO.
57	EXTERIOR STOREFRONT DOOR, SEE EXTERIOR COLOR SCHEDULE & DOOR SCHEDULE FOR ADDITIONAL INFO.
58	DOCK-HI LOADING DOOR, 9'X10', WITH VISION GLAZING PRE FINISHED BY MANUFACTURER PER COLOR SCHEDULE.
59	DRIVE THRU LOADING DOOR 12'X14' WITH VISION GLAZING, PRE FINISHED BY MANUFACTURER PER COLOR SCHEDULE.
63	AIR INTAKE LOUVER. PAINT TO MATCH BUILDING WALL. TYP. SIZE VERTICAL 4'X 8', PROVIDE BIRD SCREEN, FILTER AND BURGLAR BARS.
78	DECORATIVE METAL BROW. REFER TO ARCHITECTURAL-STRUCTURAL DETAILS.
104	PANEL JOINT, TYP.
105	2" DECORATIVE CONCRETE REVEAL WITH CHAMFERED EDGES, TYP.

GLAZING LEGEND

VISION GLAZING:

NON VISION GLAZING:

TEMPERED: T

NOTE:
REFER TO ELEVATIONS FOR TEMPERED GLAZING LOCATIONS.

NON VISION GLAZING NOTES:
1. SINGLE PANE GLAZING PAINT FACE OF CONCRETE PANEL BEHIND BLACK. NO COATING REQUIRED.
2. PROVIDE BREATHABLE MULLION SYSTEM @ NON-VISION GLAZING SECTIONS, NO HOLES REQUIRED IN CONCRETE.
3. PROVIDE SHADE CLOTH BEHIND GLASS IN AREAS INTENDED TO BE NON-VISION WHEN THERE IS NO SPANDREL CONCRETE: TENCATE MIRAFI 140N 12.5' X 360' FILTER FABRIC

TEMPERED GLAZING NOTES:
1. IN OPERABLE DOORS, WINDOWS AND WITHIN 18" OF WALKING SURFACE TO BE TEMPERED.

EXTERIOR COLOR SCHEDULE

- (A) WHITE EXTERIOR PAINT
  COLOR: SW7014 EIDER WHITE
- (B) EXTERIOR PAINT
  COLOR: SW9170 ACIER
- (C) EXTERIOR PAINT
  COLOR: SW7669 SUMMIT GRAY
- (D) STONE VENEER
  COLOR: CORONADO STONE 6" SPLIT LIMESTONE - CREAM
- (E) STOREFRONT
  MEDIUM PERFORMANCE BLUE REFLECTIVE GLAZING & CLEAR ANODIZED MULLIONS
- (F) ANODIZED BRONZE DECORATIVE METAL BROW

TYP PAINT NOTES:
PAINT MAN DOORS, GUARD WALLS, RAMP WALLS, STAIR WALLS, GUARD RAILS, ROOF DRAINS, AND LOUVERS TO MATCH ADJACENT BUILDING WALL U.N.O.

TRUCK DOORS TO BE PRE-FINISHED BY MANUFACTURER IN WHITE FINISH

PROJECT
NEWCASTLE FREDERICK ST.
MORENO VALLEY, CA

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EXTERIOR ELEVATIONS

A4

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Attachment: Project 1. Site Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

NORTH ELEVATION

FREDERICK AVE - WEST ELEVATION

EAST ELEVATION

SOUTH ELEVATION

ENLARGED VIEW @ MAIN OFFICE ENTRY

HERDMAN
ARCHITECTURE + DESIGN

NEWCASTLE
FREDERICK ST - MORENO VALLEY, CA
02.06.2018_SCHEME 3
H-A+D JOB NO: A17-2100

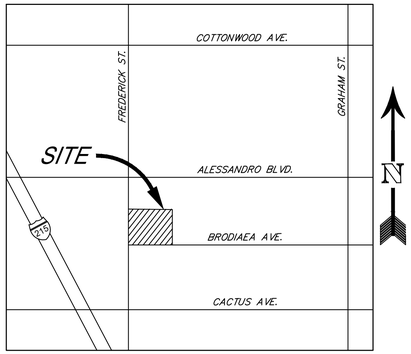
Attachment: Project 1_Color Elevations (3321 : Centerpointe Commerce Center, and Brodiaea Residential

IN THE CITY MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.

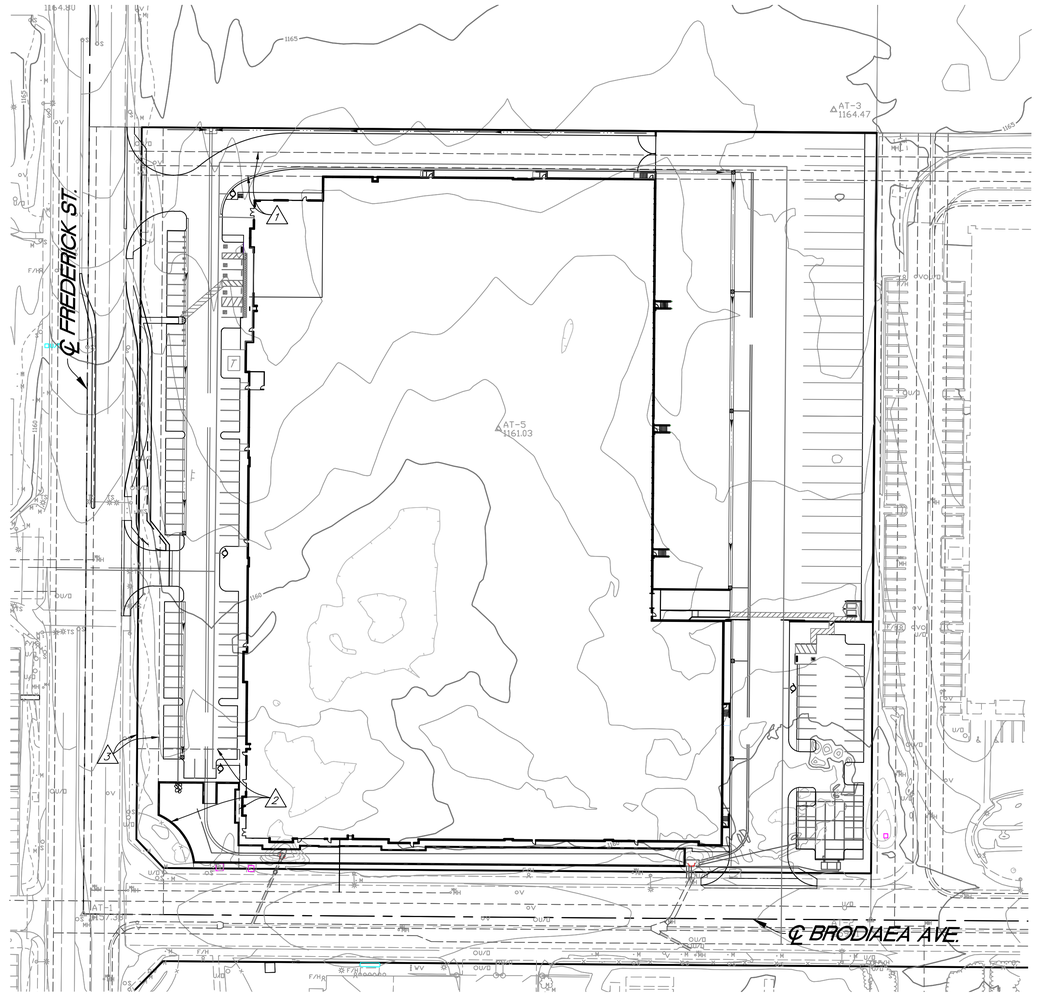
CENTERPOINTE INDUSTRIAL PRELIMINARY GRADING PLAN

LOT 5, BLOCK 242 OF MAP 1
BEAR VALLEY & ALESSANDRO DEVELOPMENTS

PREPARED AUGUST 2, 2018



VICINITY MAP
NOT TO SCALE



INDEX MAP
1"=60'

CONSTRUCTION NOTES

1. CONSTRUCT P.C.C. DRIVE ISLE & PARKING AREAS
2. CONSTRUCT 6" CURB ONLY
3. CONSTRUCT 6" CURB AND GUTTER
4. CONSTRUCT P.C.C. SIDEWALK (FINISHED SURFACE MATERIALS PER ARCH. PLANS)
5. CONSTRUCT A.D.A. COMPLIANT HANDICAP RAMP
6. CONSTRUCT 3' WIDE CONC. RIBBON GUTTER
7. CONSTRUCT MODULAR WETLAND MWS-L-8-12 (SEE DETAIL ON SHEET 4)
8. CONSTRUCT 1/2 GROUTED ANGULAR RIP-RAP, 6"-12" DIAMETER
9. CONSTRUCT 12" HDPE DRAIN PIPE
10. CONSTRUCT OUTLET STRUCTURE (SEE DETAIL ON SHEET 4)
11. CONSTRUCT COMMERCIAL DRIVEWAY APPROACH
12. CONSTRUCT 6" PERFORATED UNDERDRAIN
13. CONSTRUCT 18" HDPE STORM DRAIN
14. PROPOSED FIRE HYDRANT
15. CONSTRUCT 24" RCP STORM DRAIN
16. CONSTRUCT 8" CURB AND GUTTER PER CITY OF MORENO VALLEY STDS.
17. CONSTRUCT 8" CURB ONLY PER CITY OF MORENO VALLEY STDS.
18. CONSTRUCT 36" X 36" TRAFFIC-RATED CATCH BASIN
19. CONSTRUCT 30" RCP STORM DRAIN
20. CONSTRUCT 8" HDPE DRAIN PIPE
21. CONSTRUCT 2" PVC PIPE
22. EXISTING DRY UTILITY APPURTENANCES SHALL BE COORDINATED WITH DRY UTILITY PURVEYORS TO ALLOW FOR APPROPRIATE CLEARANCE TO PROPOSED ONSITE CONSTRUCTION AT TIME OF FINAL GRADING/ UTILITY DESIGN AND PROCESSING.
23. CONSTRUCT MANHOLE FOR EX. STORM DRAIN IN PARKWAY

LEGEND

L.P.	-	LOW POINT
H.P.	-	HIGH POINT
F.S.	-	FINISHED GRADE
F.G.	-	FINISHED GRADE
F.L.	-	FLOW LINE
O.G.	-	ORIGINAL GROUND
EXIST.	-	EXISTING
P.E.	-	PAD ELEVATION
G.B.	-	GRADE BREAK
T.G.	-	TOP OF GRATE
T.A.D.	-	TOP OF AREA DRAIN
○	-	CONSTRUCTION NOTE
⬡	-	STEM WALL HEIGHT

TRACT BOUNDARY
CENTERLINE
CURB AND GUTTER
1280 EXISTING CONTOUR
LOT LINE
SLOPE

OWNER/APPLICANT

NEWCASLE PARTNERS, INC.
470 GREEN RIVER, STE 118
CORONA, CA 92880
TEL: (951) 582-9800
ATTN: JACKSON SMITH

ENGINEER

SDH & ASSOCIATES, INC
5225 CANYON CREST DRIVE 71439
RIVERSIDE, CA. 92507
VOICE: (951) 683-3691
FAX: (951) 788-2314

ARCHITECT

HERDMAN ARCHITECTURE + DESIGN
16201 SCIENTIFIC WAY
IRVINE, CA 92618
VOICE: (714) 389-2800

SOURCE OF TOPO

AERIAL PHOTOGRAMMETRY BY ARROWHEAD MAPPING
431 W MACKAY DR
SAN BERNARDINO, CA 92408
VOICE: (909) 889-2420
PREPARED: NOVEMBER 2017

PROJECT INFO

AREA OF SITE = 382,428 S.F. (8.78 AC.)
LANDSCAPE AREA = 51,184 S.F. (13.4%)

TOTAL BUILDING AREA = 198,925 S.F. (4.6 AC)
- OFFICES = 5,000 S.F.
- WAREHOUSE = 193,925 S.F.

UTILITY PURVEYORS

WATER.....EMWD
GAS.....SO. CALIF. GAS
ELECTRICAL.....MVU
SEWER.....EMWD

SHEET INDEX

SHEET 1: TITLE SHEET
SHEET 2: PRELIMINARY GRADING
SHEET 3: STORM DRAIN PLAN
SHEET 4: SECTIONS AND DETAILS

PROJECT NOTES

IF ANY SUSPECTED ARCHEOLOGICAL RESOURCES ARE DISCOVERED DURING GROUND DISTURBING ACTIVITIES AND THE PROJECT ARCHEOLOGIST OR NATIVE AMERICAN TRIBAL REPRESENTATIVES ARE NOT PRESENT, THE CONSTRUCTION SUPERVISOR IS OBLIGATED TO HALT WORK IN A 100-FOOT RADIUS AROUND THE FIND AND CALL THE PROJECT ARCHEOLOGIST AND THE TRIBAL REPRESENTATIVES TOT THE SITE TO ASSESS THE SIGNIFICANCE OF THE FIND.

EARTHWORK

RAW CUT= 15,000 C.Y.
RAW FILL= 15,000 C.Y.

ZONING AND LAND USE

EXISTING ZONING - O OFFICE
PROPOSED ZONING - LI LIGHT INDUSTRIAL

SURROUNDING ZONING

NORTH..... CC COMMUNITY COMMERCIAL
EAST..... LI LIGHT INDUSTRIAL
SOUTH..... LI LIGHT INDUSTRIAL
WEST..... O OFFICE/ BP BUSINESS PARK

SURROUNDING LAND USE

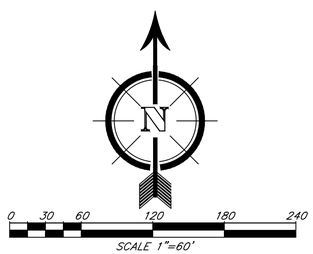
NORTH..... VACANT
EAST..... INDUSTRIAL
SOUTH..... INDUSTRIAL
WEST..... BUSINESS PARK/ CITY HALL

SCHOOL DISTRICT

MORENO VALLEY UNIFIED
SCHOOL DISTRICT

APN

297-170-029



EASEMENTS

AN EASEMENT GRANTED TO SOUTHERN CALIFORNIA GAS COMPANY AND SOUTHERN COUNTIES GAS COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JUNE 05, 1948 AS BOOK 911, PAGE 345 OF OFFICIAL RECORDS.
DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED DECEMBER 10, 1987 AS INSTRUMENT NO. 350003, DECEMBER 5, 1988 AS INSTRUMENT NO. 355360, AND JUNE 29, 2001 AS INSTRUMENT NO. 2001-299177 ALL OF OFFICIAL RECORDS. (FALLS OUTSIDE OF SURVEY PROPERTY) (PLOTTED HEREON)

AN EASEMENT GRANTED TO CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 12, 1952 AS BOOK 1399, PAGE 471 OF OFFICIAL RECORDS. (PLOTTED HEREON).

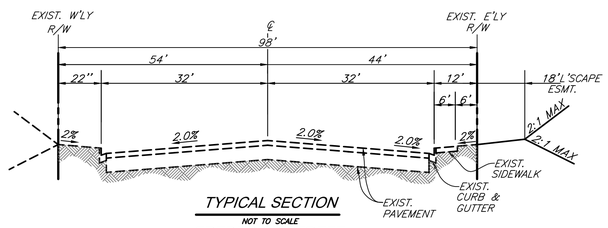
1. AN EASEMENT GRANTED TO FOUR CORNERS PIPELINE COMPANY FOR PIPELINES AND INCIDENTAL PURPOSES, RECORDED JANUARY 10, 1958 AS BOOK 2205, PAGE 147 AND FEBRUARY 11, 1958 IN BOOK 2221, PAGE 126, BOTH OF OFFICIAL RECORDS. (FALLS OUTSIDE OF SURVEY PROPERTY) (PLOTTED HEREON)

2. AN EASEMENT FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED MAY 16, 1988 AS INSTRUMENT NO. 129273 OF OFFICIAL RECORDS.
IN FAVOR OF EASTERN MUNICIPAL WATER DISTRICT. (PLOTTED HEREON)

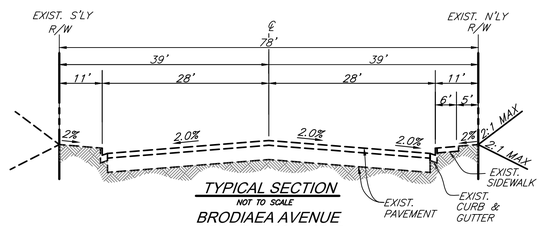
AN OFFER OF DEDICATION FOR PUBLIC ROAD AND DRAINAGE, INCLUDING PUBLIC UTILITY AND PUBLIC SERVICES AND INCIDENTAL PURPOSES, RECORDED AUGUST 11, 1988 AS INSTRUMENT NO. 227048 OF OFFICIAL RECORDS. TO: CITY OF MORENO VALLEY. (PLOTTED HEREON)

3. AN EASEMENT FOR LANDSCAPE, CONSTRUCTION AND MAINTENANCE AND INCIDENTAL PURPOSES, RECORDED JANUARY 25, 1991 AS INSTRUMENT NO. 27208 OF OFFICIAL RECORDS.
IN FAVOR OF MORENO VALLEY COMMUNITY SERVICES DISTRICT (PLOTTED HEREON)

△ - DENOTES PLOTTABLE EASEMENT WITHIN THE PROJECT'S BOUNDARY (SEE INDEX MAP HEREON)



TYPICAL SECTION
NOT TO SCALE
FREDERICK STREET
MINOR ARTERIAL (MODIFIED)



TYPICAL SECTION
NOT TO SCALE
BRODIAEA AVENUE
INDUSTRIAL COLLECTOR

PEN18-0023

DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

ENGINEER SEAL
REGISTERED PROFESSIONAL ENGINEER
ROBERT C. VAN ZANTEN
No. 62325
Exp. 9-30-19
CIVIL
STATE OF CALIFORNIA

SDH ASSOCIATES INCORPORATED
SDH AND ASSOCIATES INC.
5225 CANYON CREST DRIVE 71439
Riverside, California 92507
TEL: (951) 683-3691 FAX (951) 788-2314

UNDER THE SUPERVISION OF:
DATE

CITY OF MORENO VALLEY

CENTERPOINTE INDUSTRIAL
PRELIMINARY GRADING PLAN
LOT 5, BLOCK 242 OF MAP 1
BEAR VALLEY & ALESSANDRO DEVELOPMENTS

ACCT. NO.

SHEET 1 OF 4

CITY I.D. NO.

Attachment: Project 1. Preliminary Grading Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

CONSTRUCTION NOTES

1. CONSTRUCT P.C.C. DRIVE ISLE & PARKING AREAS
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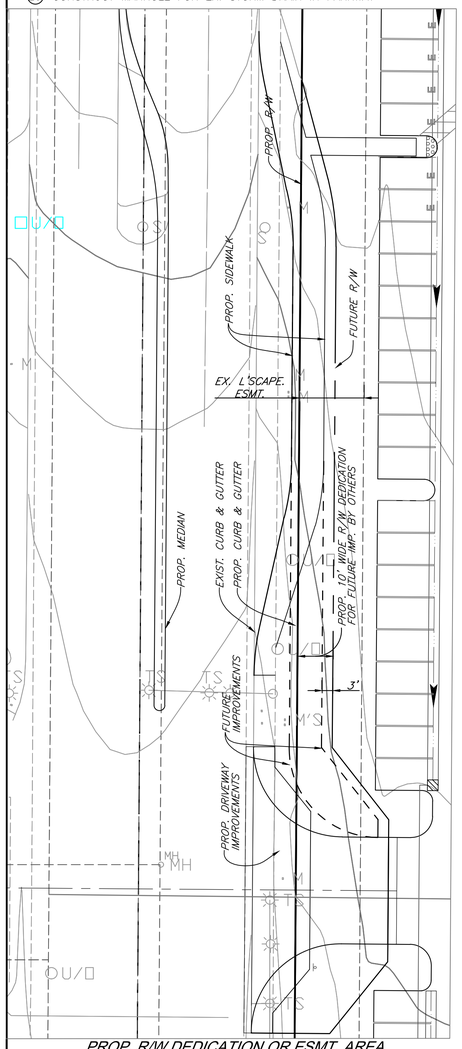
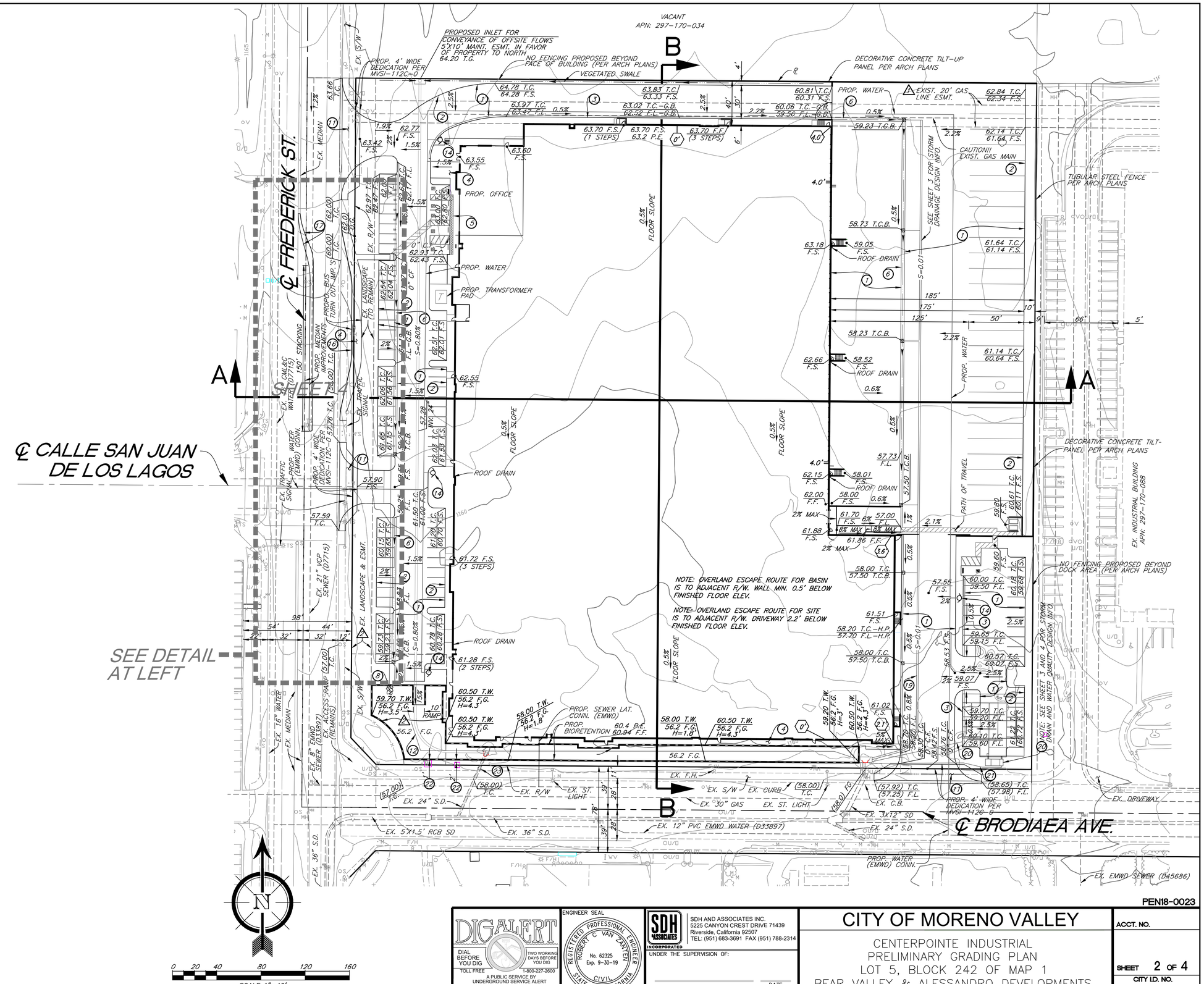


PROP. R/W DEDICATION OR ESMT. AREA
SCALE:1"=20'



0 20 40 80 120 160
SCALE 1"=40'

PEN18-0023

DIGALERT — DIAL BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — TWO WORKING DAYS BEFORE YOU DIG — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

ENGINEER SEAL
REGISTERED PROFESSIONAL ENGINEER — ROBERT C. VAN DAYTEN — No. 62325 Exp. 9-30-19 — CIVIL — STATE OF CALIFORNIA

SDH & ASSOCIATES INCORPORATED
SDH AND ASSOCIATES INC.
5225 CANYON CREST DRIVE 71439
Riverside, California 92507
TEL: (951) 683-3691 FAX (951) 788-2314

UNDER THE SUPERVISION OF: _____ DATE

CITY OF MORENO VALLEY

CENTERPOINTE INDUSTRIAL
PRELIMINARY GRADING PLAN
LOT 5, BLOCK 242 OF MAP 1
BEAR VALLEY & ALESSANDRO DEVELOPMENTS

ACCT. NO.

SHEET 2 OF 4

CITY I.D. NO.

Attachment: Project 1_Preliminary Grading Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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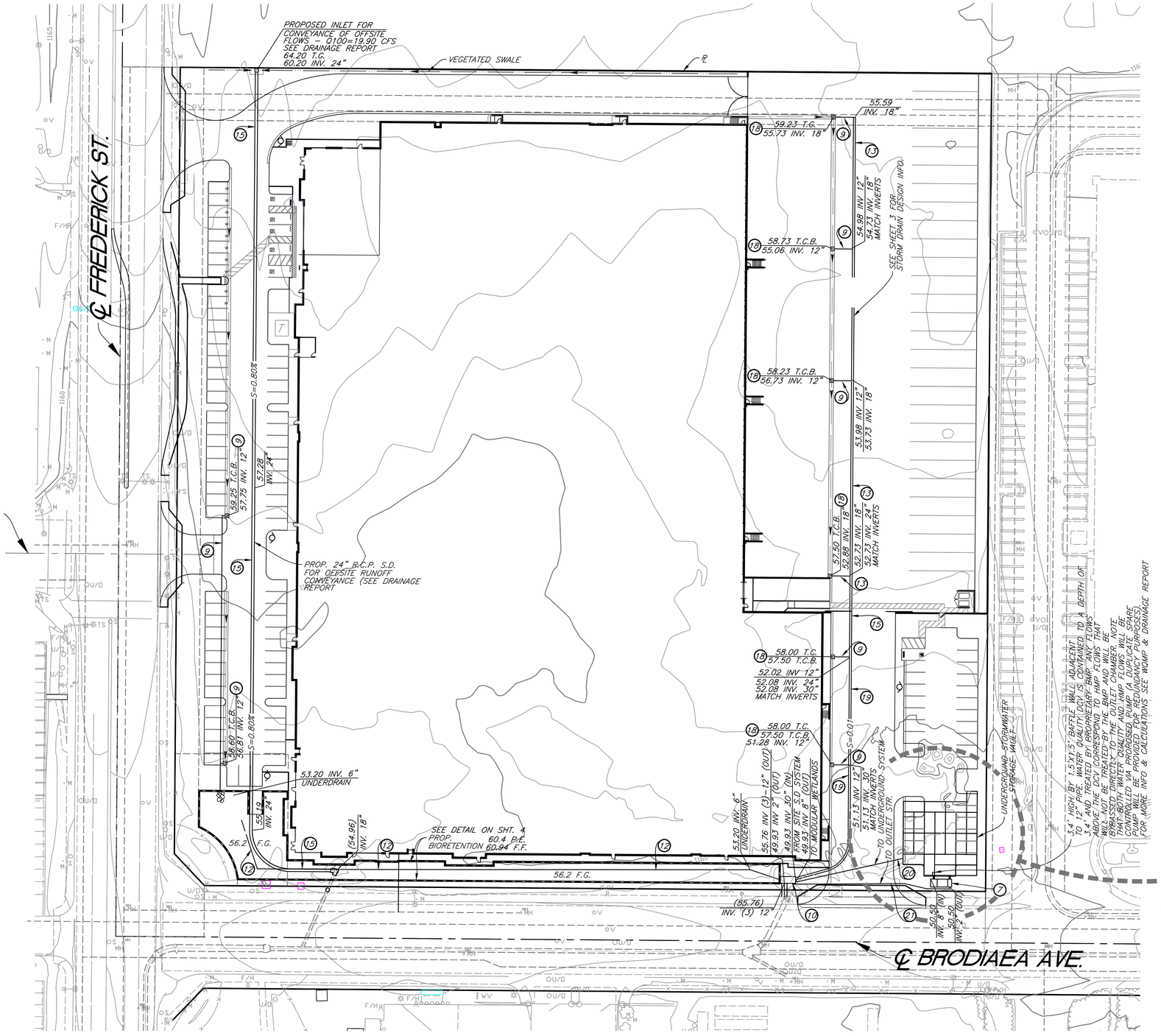

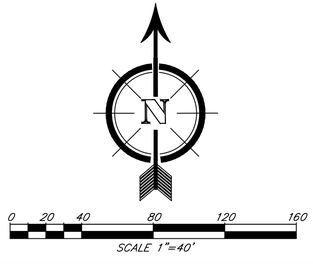

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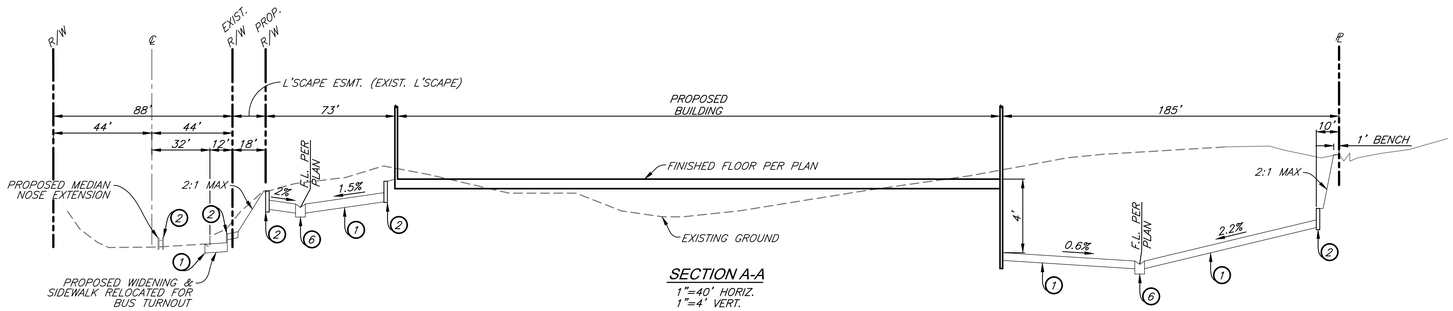
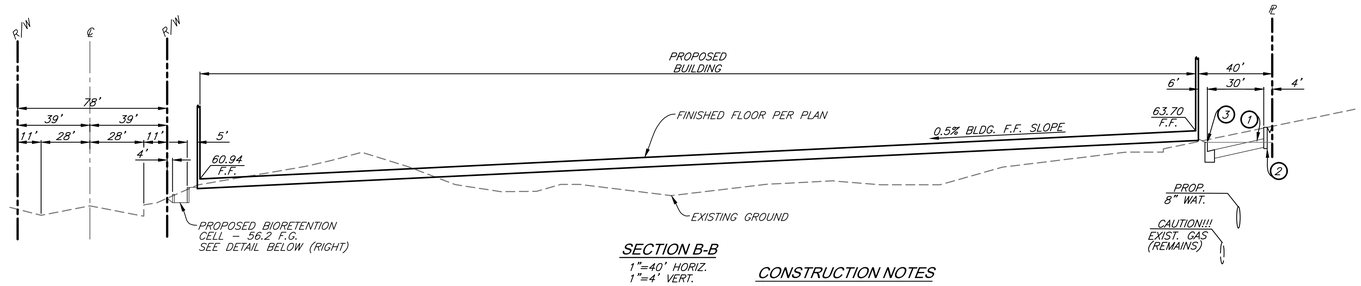


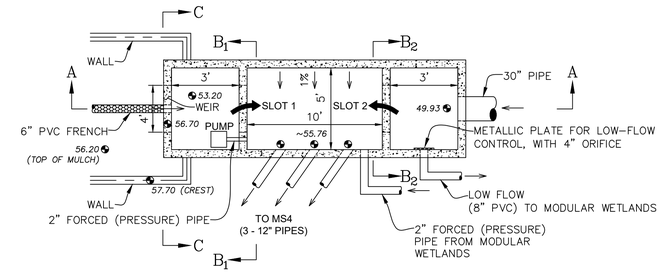
SECTION A-A

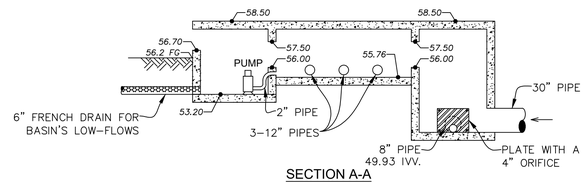
1"=40' HORIZ.
1"=4' VERT.



SECTION B-B

1"=40' HORIZ.
1"=4' VERT.

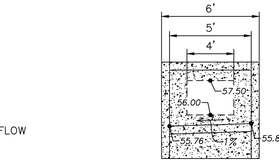




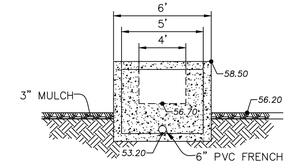
SECTION A-A

10 OUTLET STRUCTURE (DETAIL 1)

NOT TO SCALE

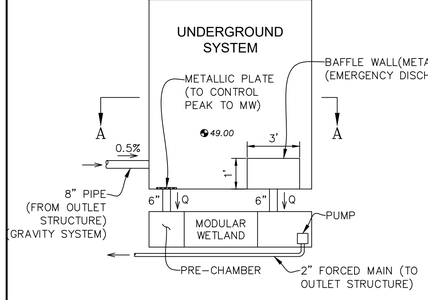


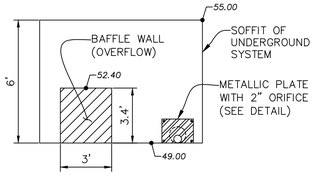
SECTION B1-B1 SLOT DETAILS (SLOT 1 = SLOT 2) = SECTION B2-B2



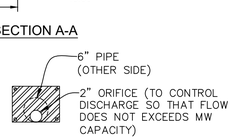
SECTION C-C

NOTE:
FOR MODULAR WETLAND, UNDERGROUND SYSTEM & PRESSURE SYSTEM FOR EAST SIDE, SEE DETAIL 2. @ LEFT





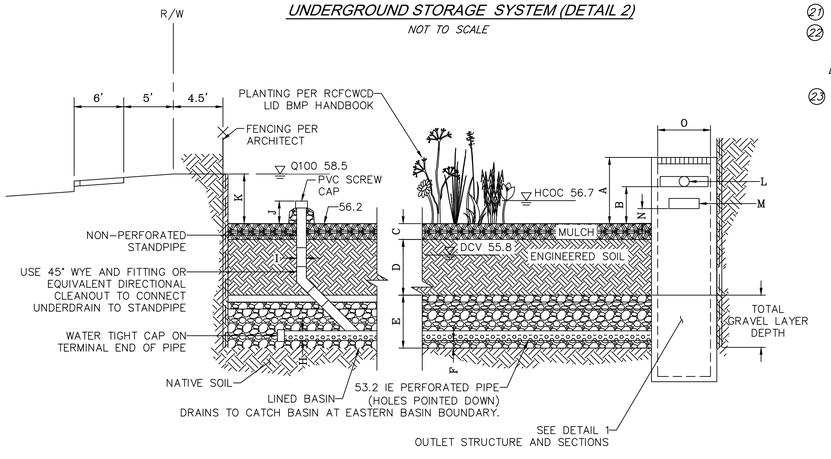
SECTION A-A



ORIFICE DETAIL

UNDERGROUND STORAGE SYSTEM (DETAIL 2)

NOT TO SCALE



BIORETENTION CELL

NOT TO SCALE

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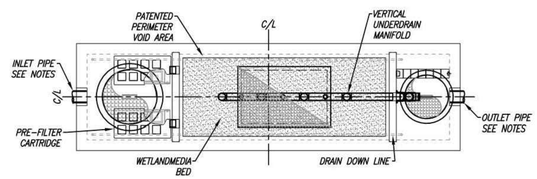
TABULATED DATA
BASIN WEST

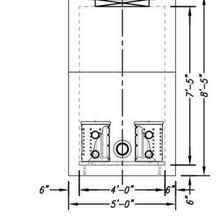
A	9"
B	N/A"
C	3"
D	24"
E	12"
F	3"
G	N/A
H	6"
I	6"
J	6"
K	2.8'
L	SEE DETAIL 1
M	N/A
N	N/A
O	SEE DETAIL 1
P	N/A

NOTE: ALL SPECIFICATIONS PER LID BMP MANUAL FACT SHEET FOR BIORETENTION BMP

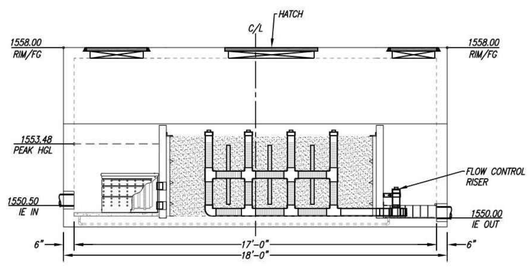
SITE SPECIFIC DATA			
PROJECT NUMBER	7211		
PROJECT NAME	MORENO VALLEY INDUSTRIAL		
PROJECT LOCATION	MORENO VALLEY, CA		
STRUCTURE ID	BASIN B		
TREATMENT REQUIRED			
VOLUME BASED (CF)	FLOW BASED (CFS)		
8,575	N/A		
TREATMENT HGL AVAILABLE (FT)		N/A	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE		OFFLINE	
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	1550.50	PVC	6"
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE	1550.00	PVC	6"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	1558.00	1558.00	1558.00
SURFACE LOAD	H20 IN-DIRECT	H20 IN-DIRECT	H20 IN-DIRECT
FRAME & COVER	ø30"	30" X 48"	ø24"
WETLANDMEDIA VOLUME (CY)			5.58
WETLANDMEDIA DELIVERY METHOD			PER CONTRACT
ORIFICE SIZE (DIA. INCHES)			ø1.03"
NOTES: PRELIMINARY, NOT FOR CONSTRUCTION. ENGINEER TO SET UPSTREAM BYPASS AT 1553.48.			



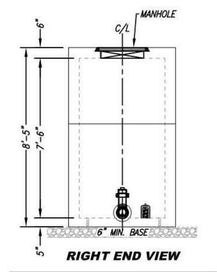
PLAN VIEW



LEFT END VIEW



ELEVATION VIEW



RIGHT END VIEW

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
3. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. DRIP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING MODULAR WETLANDS FOR ACTIVATION OF UNIT. MANUFACTURES WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A MODULAR WETLANDS REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT MANUFACTURER.

REQUIRED TREATMENT VOLUME (CF)	8575
DRAINDOWN DURATION (HOURS)	46
AVERAGE DISCHARGE RATE PER MWS UNIT(GPM)	23.34
OPERATING HEAD (FT)	3.4
WETLANDMEDIA INFILTRATION RATE (IN/HR)	26
WETLANDMEDIA LOADING RATE (GPM/SF) OR	0.26

THE PRODUCT DESCRIBED MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,425,262; 7,470,362; 7,674,378; 8,303,816; RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

PROPRIETARY AND CONFIDENTIAL:
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF MODULAR WETLANDS SYSTEMS. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF MODULAR WETLANDS SYSTEMS IS PROHIBITED.

Bio Clean — A Forterra Company

MWS-L-4-17-V-UG
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

PEN18-0023

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UNDER THE SUPERVISION OF:

DATE

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CENTERPOINTE INDUSTRIAL
DETAILS & SECTIONS
LOT 5, BLOCK 242 OF MAP 1
BEAR VALLEY & ALESSANDRO DEVELOPMENTS

ACCT. NO.

SHEET 4 OF 4

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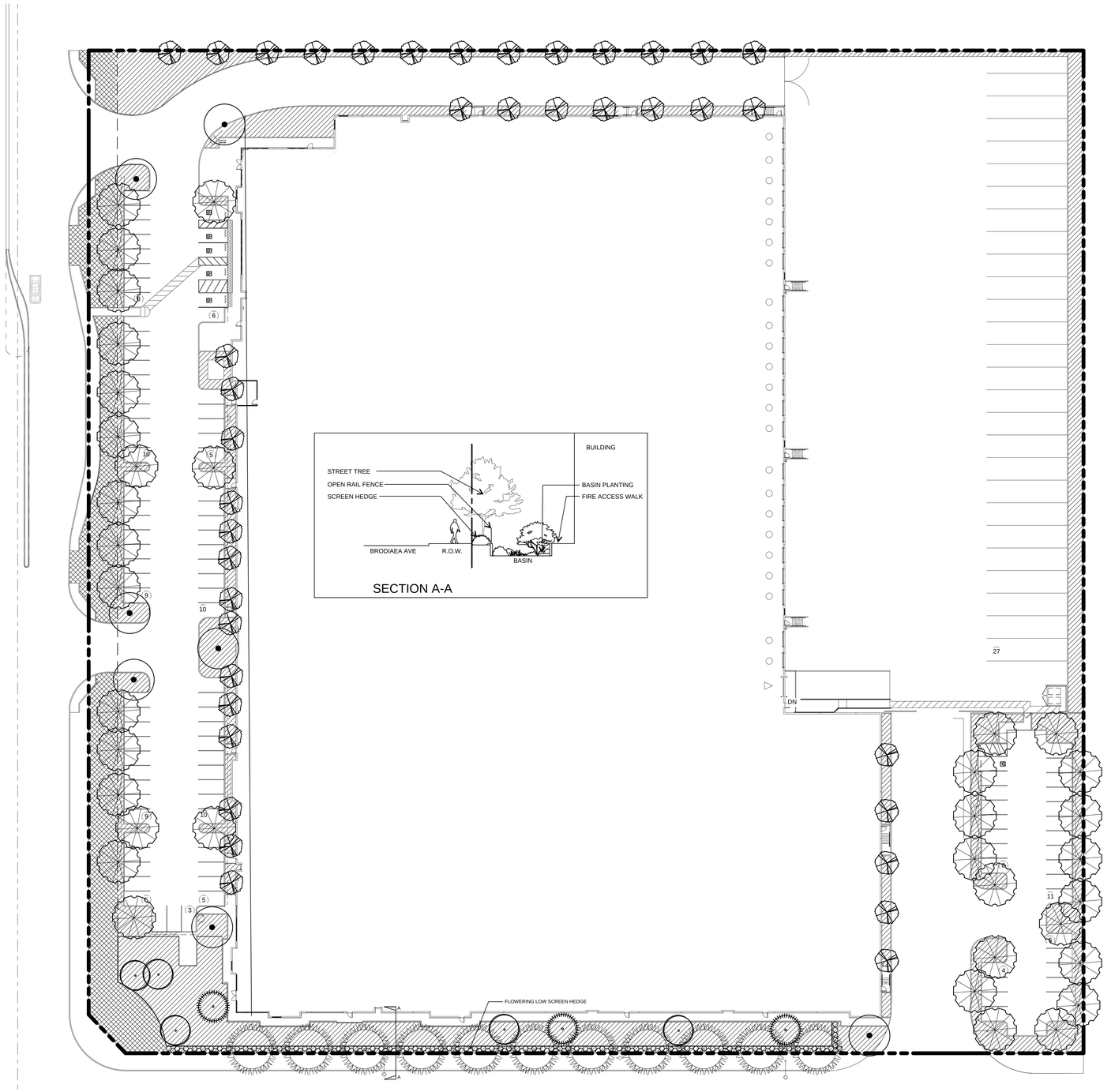


PLANTING LEGEND

TREES

SYMBOL	BOTANICAL/COMMON NAME	SIZE	QTY	WUCOLS	REMARKS
	Cercidium 'Desert Museum' Blue Palo Verde	24" Box	9	L	Multi
	Chilopsis linearis Desert Willow	24" Box	3	L	Multi
	Chitalpa tashkentensis Chitalpa	24" Box	36	L	Standard
	Heteromeles arbutifolia Toyon	15 Gal	5	L	Multi
	Pinus eldrica Afghan Pine	24" Box	7	M	Standard
	Platanus acerifolia London Plane	24" Box	15	M	Standard
	Tristania conferta Brisbane Box	15 Gal	39	M	Standard

SHRUBS

SYMBOL	BOTANICAL/COMMON NAME	SIZE	QTY	WUCOLS	REMARKS
	Acca sellowiana Pineapple Gauva	5 Gal	0	M	
	Artemisia 'Powis Castle' Artemisia	5 Gal	0	L	
	Callistemon 'Little John' Dwarf Bottle Brush	5 Gal	0	M	
	Cistus 'Sunset Pink' Sunset Pink Rockrose	5 Gal	0	M	
	Elaeagnus pungens Silverberry	5 Gal	0	L	
	Leucophyllum f. 'Green Cloud' Texas Ranger	5 Gal	0	L	
	Ligustrum j. Texanum Texas Privet	5 Gal	0	M	
	Rosmarinus o. 'Tuscan Blue' Rosemary	5 Gal	0	L	
	Salvia c. 'Allen Chickering' Allen Chickering Sage	5 Gal	0	L	
	Salvia greggii Autumn Sage	5 Gal	0	L	
	Salvia leucantha Mexican Sage	5 Gal	0	L	
	Senna artemisioides Feathery Cassia	5 Gal	0	L	
	Westringia fruticosa Coast Rosemary	5 Gal	0	L	

ACCENTS

SYMBOL	BOTANICAL/COMMON NAME	SIZE	QTY	WUCOLS	REMARKS
	Agave spp. Agave	5 Gal	0	L	
	Aloe spp. Aloe	5 Gal	0	L	
	Dasylerion wheeleri Desert Spoon	5 Gal	0	L	
	Echeveria 'Ruffles' Ruffles Echeveria	5 Gal	0	L	
	Hesperaloe parviflora Red Yucca	5 Gal	0	L	
	Lantana 'Gold Mound' Yellow Lantana	5 Gal	0	L	

GROUNDCOVER

SYMBOL	BOTANICAL/COMMON NAME	SIZE	SPACING	WUCOLS	REMARKS
	Acacia redolens 'Low Boy' Dwarf Acacia	1 Gal	8' O.C.	L	
	Festuca mairei Atlas Fescue	1 Gal	24" O.C.	M	Grass
	Lonicera j. 'Halliana' Hall's Honeysuckle	1 Gal	48" O.C.	L	
	Muhlenbergia capillaris Pink Muhly	1 Gal	36" O.C.	L	Grass
	Myoporum parvifolium Myoporum	1 Gal	36" O.C.	L	
	Nassella tenuissima Mexican Feather Grass	1 Gal	24" O.C.	VL	Grass
	Pennisetum messiacum Red Bunny Tails Fountain Grass	1 Gal	30" O.C.	L	Grass
	Pennisetum a. Little Bunny Little Bunny Fountain Grass	1 Gal	12" O.C.	L	Grass
	Pennisetum orientale Oriental Fountain Grass	1 Gal	30" O.C.	L	Grass
	Rosa 'Flower Carpet' -Red Red Flower Carpet Rose	1 Gal	30" O.C.	L	
	Rosmarinus o. 'Huntington Carpet' Prostrate Rosemary	1 Gal	48" O.C.	L	
	Salvia 'Bee's Bliss' Bee's Bliss Sage	1 Gal	48" O.C.	L	
	Senecio mandraliscae Blue Fingers	4" Pots	12" O.C.	M	
	Sesleria autumnalis Moor Grass	1 Gal	18" O.C.	M	Grass

Existing Landscape to Remain

Bioretention seed mix

2000 lbs/ac	Wood cellulose fiber	
800 lbs/ac	7-2-1 Biosol organic fertilizer	
150 lbs/ac	Stabilizing binder	
20 lbs/ac	Endo net mycorrhizal inoculum	
1 lbs/ac	Achillea millefolium	
1 lbs/ac	Eschsholtzia caespitosa	
1 lbs/ac	Juncus bufonius	
6 lbs/ac	Leymus tricoides Rio	
4 lbs/ac	Descampsia cespitosa	
20 lbs/ac	Festuca rubra 'Molate'	
6 lbs/ac	Hordium brachyantherum	
1 lbs/ac	Muhlenbergia rigens	
3 lbs/ac	Muhlenbergia microsperma	
3 lbs/ac	Hordium depressum	

N

0 15' 30' 60'

Centerpointe

Newcastle Partners

Moreno Valley, California

18-001
02.05.18
03.23.18
08.2.18

HUNTER LANDSCAPE
711 FEE ANA STREET PLACENTIA, CA 92870
714.986.2400 FAX 714.986.2408

Attachment: Project 1. Preliminary Landscape Plan (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

This may affect your property

Notice of PUBLIC HEARING

Notice is hereby given that a Public Hearing will be held by the City Council of the City of Moreno Valley on the following item(s):

Project: PEN18-0023 Plot Plan
PEN18-0024 General Plan Amendment
PEN18-0025 Change of Zone
Applicant: Newcastle Partners, Inc.
Owner: Moreno Valley Centerpointe
Representative: Jackson Smith
APN: 297-170-029

Location: Northeast corner of Brodiaea Avenue and Frederick Street

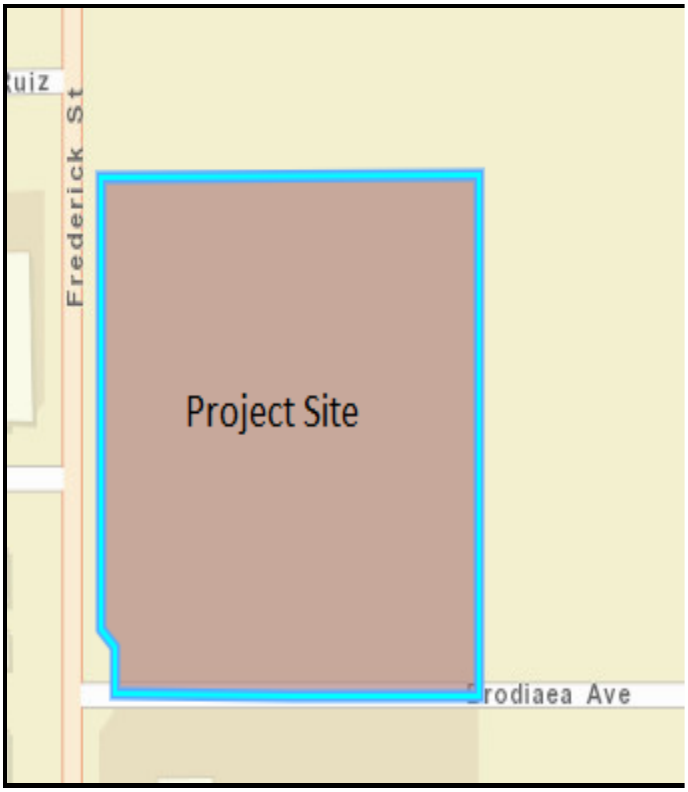
Proposal: The Project includes a Plot Plan (PEN18-0023) for the construction of a 204,022 square-foot warehouse building including 10,000 square feet of office and mezzanine space on an 8.8-acre site located east of Frederick Street and north of Brodiaea Avenue. A General Plan Amendment (PEN18-0024) and a Change of Zone (PEN18-0025) are required to change the General Plan Land Use Designation from Office to Business Park, and the Zoning Designation of the property from Office (O) to Light Industrial (LI). Approval of this Project will require adoption of a Mitigated Negative Declaration (MND).

Environmental Determination: Mitigated Negative Declaration (Circulated September 18, 2018 through October 8, 2018)

Council District: 1

Any person interested in any listed proposal can contact the Community Development Department, Planning Division, at 14177 Frederick St., Moreno Valley, California, during normal business hours (7:30 a.m. to 5:30 p.m., Monday through Thursday and Fridays from 7:30 a.m. to 4:30 p.m.), or may telephone (951) 413-3206 for further information. The associated documents will be available for public inspection at the above address. In the case of Public Hearing items, any person may also appear and be heard in support of or opposition to the project or recommendation of adoption of the Environmental Determination at the time of the Hearing. The City Council, at the Hearing or during deliberations, could approve changes or alternatives to the proposal.

If you challenge these items in court, you may be limited to raising only those items you or someone else raised at the Public Hearing described in this notice, or in written correspondence delivered to the City Council at, or prior to, the Public Hearing.



LOCATION N

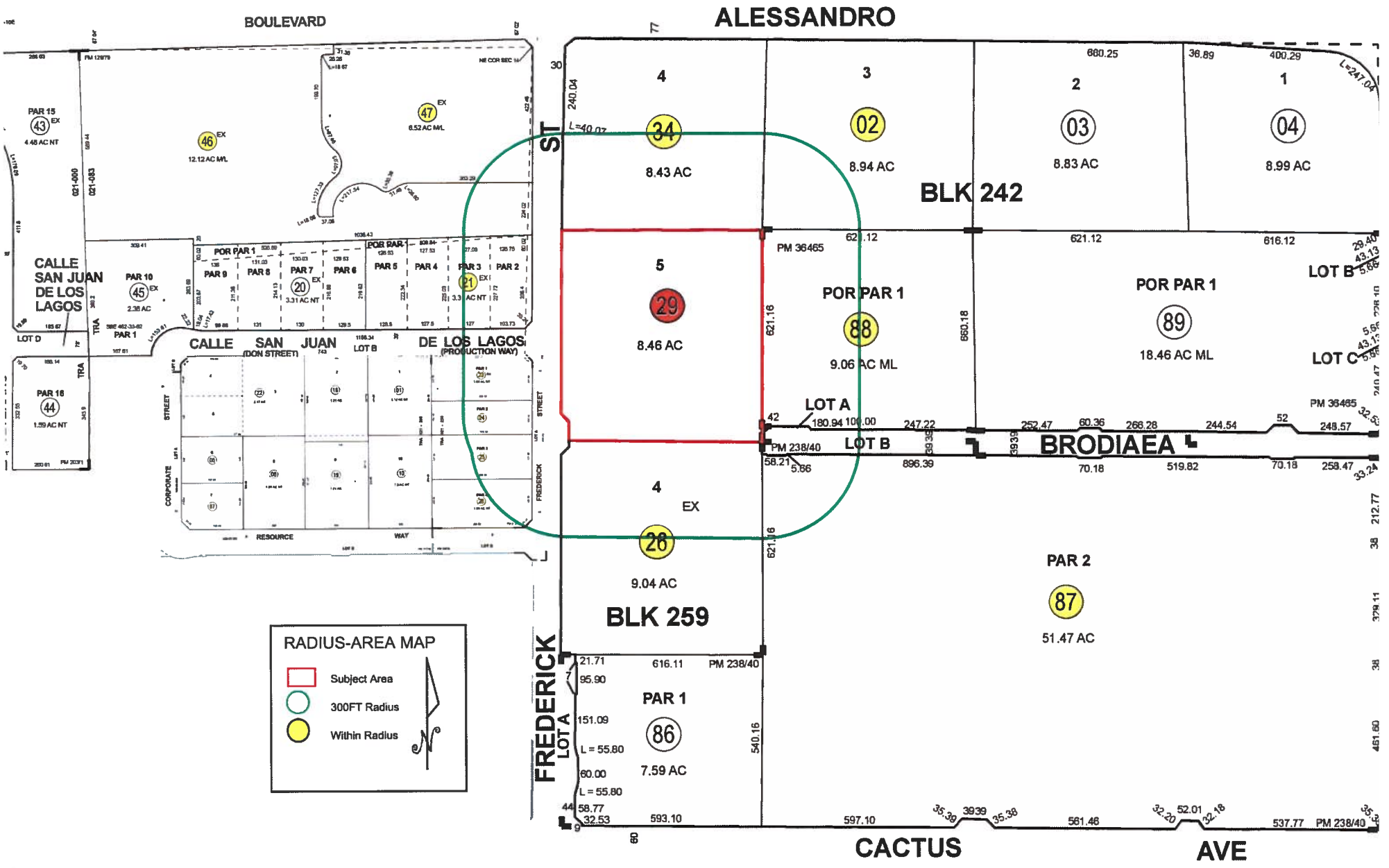
CITY COUNCIL HEARING

City Council Chamber, City Hall
14177 Frederick Street
Moreno Valley, Calif. 92553

DATE AND TIME: December 11, 2018 at 6:00 p.m.
CONTACT PLANNER: Chris Ormsby
PHONE: (951) 413-3229

Upon request and in compliance with the Americans with Disabilities Ac of 1990, any person with a disability who requires a modification o accommodation in order to participate in a meeting should direct such request to Guy Pegan, ADA Coordinator, at 951.413.3120 at least 4 hours before the meeting. The 48-hour notification will enable the City t make reasonable arrangements to ensure accessibility to this meeting.

Attachment: Project 1_Public Hearing Notice (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



Attachment: Project 1_Radius Map for Noticing (3321 : Centerpointe Commerce Center, and Brodiaea

RESOLUTION NO. 2018- XX

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY CERTIFYING THE FINAL INITIAL STUDY AND MITIGATED NEGATIVE DECLARATION (PEN18-0055) AND MITIGATION MONITORING AND REPORTING PROGRAM FOR THE BRODIAEA RESIDENTIAL PROJECT LOCATED AT THE NORTHWEST CORNER OF BRODIAEA AVENUE AND QUINCY STREET

WHEREAS, the applicant, FH II LLC., submitted applications for the Brodiaea Residential Project including General Plan Amendment (PEN18-0053), Change of Zone (PEN18-0054) and Tentative Tract Map 37544 (PEN18-0092) ("Project"), for the subdivision of a 8.85-acre property into forty-five (45) residential lots and four (4) lettered lots for water quality/open space purposes (Assessor Parcel No. (APN) 478-080-014). The above applications shall not be approved unless the Initial Study/Mitigated Negative Declaration (IS/MND) PEN18-0055 and the Mitigation Monitoring and Reporting Program is certified and adopted; and

WHEREAS, with respect to concurrently filed applications, Section 9.02.030D of the City Municipal Code establishes that applications which are dependent on approval of other enabling application(s), of which the General Plan Amendment and Change of Zone serve; the final approval authority for such dependent application(s) shall be vested with the body authorized to approve the enabling application(s), which in this case is the City Council; and

WHEREAS, the applications for the Project have been evaluated in accordance with established City of Moreno Valley (City) procedures, and with consideration of the General Plan and other applicable regulations; and

WHEREAS, an Initial Study, supporting studies, and Mitigated Negative Declaration for the Project were prepared consistent with the California Environmental Quality Act (CEQA). The California Environmental Quality Act (CEQA) is a statewide environmental law contained in Public Resources Code §§21000-21177. CEQA applies to most public agencies to carry out, authorize, or approve actions that have the potential to affect the environment. CEQA requires that public agencies analyze and acknowledge the environmental consequences of their discretionary actions and consider alternatives and mitigation measures that could avoid or reduce significant adverse impacts to the environment when avoidance or reduction is feasible. The CEQA compliance process provides public agencies and the general public an opportunity to comment on a proposed project's environmental effects; and

WHEREAS, a 30-day public review period of the Initial Study and Mitigated Negative Declaration commenced on September 25, 2018 and concluded on October 24, 2018. The public notice of Intent to adopt the Mitigated Negative Declaration was mailed

Attachment: Project 2_Resolution No 2018-XX Initial Study & Mitigated Negative Declaration [Revision 2] (3321 : Centerpointe Commerce

to interested parties, public agencies, as well as published in the local newspaper on September 25, 2018 and filed with the Riverside County Clerk; and

WHEREAS, the City, in conducting its own independent analysis of the Final Mitigated Negative Declaration, determined that a Mitigated Negative Declaration is an appropriate environmental determination for the Project as there is substantial evidence that demonstrates the Project with mitigation would not result in any significant environmental impacts; and

WHEREAS, a Mitigation Monitoring and Reporting Program (MMRP) has been prepared in accordance with CEQA Guidelines, and is designed to ensure compliance with the identified mitigation measures outlined in the Final Mitigated Negative Declaration through Project implementation; and

WHEREAS, the City of Moreno Valley, Community Development Department, located at 14177 Frederick Street, Moreno Valley, California 92552 is the custodian of documents and other materials that constitute the record of proceedings upon which the decision to adopt the Mitigated Negative Declaration is based; and

WHEREAS, the Planning Commission reviewed all environmental documentation for the Project and recommended that the City Council certify the Mitigated Negative Declaration and adopt the Mitigation Monitoring and Reporting Program for the Project; and

WHEREAS, the City Council considered the Initial Study prepared for the Project for the purpose of compliance with the California Environmental Quality Act (CEQA), and based on the Initial Study including all supporting technical evidence, it was determined that the project impacts are expected to be less than significant with mitigation, and approval of a Mitigated Negative Declaration is an appropriate environmental determination for the Project; and

WHEREAS, all legal prerequisites to the adoption of this Resolution have occurred; and

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

A. This City Council specifically finds that all of the facts set forth above in the Resolution are true and correct.

B. Based upon substantial evidence presented to this City Council during the above-referenced meeting on December 4, 2018, including written and oral staff reports, and the record from the public hearing, this City Council finds as follows:

Attachment: Project 2_Resolution No 2018-XX Initial Study & Mitigated Negative Declaration [Revision 2] (3321 : Centerpointe Commerce

1. Independent Judgment and Analysis – City staff coordinated the preparation of the Initial Study/Mitigated Negative Declaration and related technical studies with Kent Norton, Environmental Consultant for the Brodiaea Residential Project. The documents were properly circulated for public review in accordance with the California Environmental Quality Act Guidelines. The Initial Study/Mitigated Negative Declaration has been completed along with the Mitigation Monitoring and Reporting Program (MMRP) to ensure compliance with all mitigation through project implementation. All environmental documents that comprise the Mitigated Negative Declaration, including all technical studies, were independently reviewed by the City. On the basis of the whole record, there is no substantial evidence that the Project as designed, conditioned and mitigated, will have a significant effect on the environment. The Mitigated Negative Declaration prepared and completed, in accordance with the CEQA Guidelines, reflects the independent judgment and analysis of the City.

BE IT FURTHER RESOLVED that the City Council HEREBY APPROVES Resolution No. 2018-XX, and:

1. CERTIFIES that the Mitigated Negative Declaration prepared for General Plan Amendment (PEN18-0053), Change of Zone (PEN18-0054) and Tentative Tract Map 37544 (PEN18-0092) on file with the Community Development Department, incorporated herein by this reference, has been completed in compliance with the California Environmental Quality Act, that the City Council reviewed and considered the information contained in the Mitigated Negative Declaration and that the document reflects the City's independent judgment and analysis, attached hereto as Exhibit A; and

2. ADOPTS the Mitigation Monitoring and Reporting Program for Tentative Tract Map PEN18-0092, attached hereto as Exhibit B.

APPROVED AND ADOPTED this 11th day of December, 2018.

_____
Mayor of the City of Moreno Valley

ATTEST:

_____
City Clerk

APPROVED AS TO FORM:

_____
City Attorney

Attachment: Project 2_Resolution No 2018-XX Initial Study & Mitigated Negative Declaration [Revision 2] (3321 : Centerpointe Commerce

RESOLUTION JURAT

STATE OF CALIFORNIA)

COUNTY OF RIVERSIDE) ss.

CITY OF MORENO VALLEY)

I, Pat Jacquez-Nares, City Clerk of the City of Moreno Valley, California, do hereby certify that Resolution No. 2018-XX was duly and regularly adopted by the City Council of the City of Moreno Valley at a special meeting thereof held on the 11th day of December, 2018 by the following vote.

AYES:

NOES:

ABSENT:

ABSTAIN:

(Council Members, Mayor Tem and Mayor)

_____
City Clerk

(SEAL)

ATTACHED:

Exhibit A - Initial Study
Exhibit B - Mitigation Monitoring and Reporting Program for Tentative Tract Map PEN18-0092

Attachment: Project 2_Resolution No 2018-XX Initial Study & Mitigated Negative Declaration [Revision 2] (3321 : Centerpointe Commerce

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION ENVIRONMENTAL CHECKLIST FORM CITY OF MORENO VALLEY

Brodiaea Residential Project by Frontier Communities

(GPA PEN18-0053, CZ PEN18-0054, and TTM 37544)

City of Moreno Valley
14177 Frederick Street
Moreno Valley, CA 92552

Contact Seda Yaghoubian, Planning Consultant/Case Planner

September 18, 2018

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Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

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* *The City has determined the materials in the Tribal Consultation Appendix are confidential and so they are not physically included in the appendices for this document*

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

INITIAL STUDY/ ENVIRONMENTAL CHECKLIST FORM CITY OF MORENO VALLEY

September 18, 2018

1. Project Title: Brodiaea Residential Project by Frontier Communities (GPA PEN18-0053, CZ PEN18-0054, and TTM 37544)

2. Lead Agency Name and Address: City of Moreno Valley, 14177 Frederick Street, Moreno Valley, CA 92552

3. Contact Person and Phone Number: Seda Yaghoubian, Planning Consultant/Case Planner, 714-401-9514

4. Project Location: The project site occupies approximately 8.85 acres on the north side of Brodiaea Avenue and on the west side of Quincy Street (a paper street) in the eastern portion of the City of Moreno Valley (City), western Riverside County. The project site consists of Assessor's Parcel Number (APN) 478-080-014. The site is approximately 1.65 miles south of State Route 60 (SR-60), and Interstate 215 (I-215) is approximately 6.5 miles west of the project site (Figure 1 depicts the regional and project location). The Moreno Valley Ranch Golf Club is located approximately 0.35 mile south of the project site, and the unimproved Quincy Channel is located just east of the project site. The latitude of the site is 33° 54' 57" North and its longitude is 117° 10' 09" West. According to the U.S. Geological Survey (USGS) Sunnymead Quadrangle topographic map (7.5-minute series, 1980), the site is located in Section 14, Township 3 South, Range 3 West based on the San Bernardino Baseline and Meridian (SBBM). See Figures 1 and 2.

5. Project Sponsor's Name and Address: Melissa Vallone (909) 354-8014, Frontier Communities, 2151 E. Convention Center Way, Ontario, CA 91764

6. General Plan Designation: Residential: Max. 3 dwelling units/acre (per General Plan Figure 2-2, Land Use Map)

7. Zoning: Residential (R3) with up to 3 units per acre

8. Description of the Project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary)(see Appendix A). Photographs of the project site are provided in Figure 3.

   The Project proposes the creation of 45 residential lots and three (3) lettered lots for the construction of 45 single family residential units on 8.85 gross acres and 5.81 net acres, with a gross density of 5.09 units per acre and a net density of 7.75 units/acre. The project will require a General Plan Amendment (PEN18-0053), Change of Zone (CZ PEN18-0054), and a Tentative Tract Map (TTM 37544). The General Plan land use designation for the site is Residential 3 (R3); Max. 3 units/acre and is proposed to be changed to Residential 10 (R10): Max. 10 units/acre. The existing zoning is R3 (max. 3 units/acre) and is proposed to be changed to RS10 (single-family, max. 10 units per acre). The proposed arrangement of lots is depicted in Tentative Tract Map 37544 and as shown in Figure 4. The project would generate approximately 176 residents based on current U.S. Census data for the City (3.91 persons per household). Appendix A contains project information. TTM 37544 shows lot sizes range from 4,843 square feet (50' x 95') up to 11,939 square feet, with an average lot size of 5,624 square feet (see Appendix A). One lot in the southwest

corner of the site will be utilized as a water quality/detention basin (Lot A designated for Open Space with 6,105 square feet). An underground water quality basin is proposed near the southeast corner of the site. Improvements to the Quincy Channel (Moreno Master Plan Drainage Line G) just east of the site are anticipated as part of this project (i.e. from Brodiaea Avenue to a point approximately 430 feet north of Brodiaea Avenue per TTM 37544). Figure 5 shows the possible channel design cross sections that may be employed for improving the channel, subject to approval by the City and various regulatory agencies. Although the channel is not within the project boundary, these improvements are proposed to address indirect biological and hydrological impacts to the channel from project development.

The existing ground gradually slopes gently down to the south (1.2% slope). Elevations onsite range from 1,600 feet above mean sea level (AMSL) along the northern boundary down to 1,592 feet AMSL along the southern boundary and are generally consistent with the surrounding topography. Grading activities include 15,900 cubic yards of cut and 17,200 cubic yards of fill (net is 1,300 cubic yards of imported fill but largely balanced onsite). The project grading plan is shown in Figure 6. Existing utility lines in Brodiaea Avenue include a 6-inch domestic gas line, a 30-inch high pressure gas line, an 8- to 12-inch domestic water line, as well a storm drain line and sanitary sewer line.

Ingress/egress to the project site would be from two (2) local streets off Brodiaea Avenue: Quincy Street to the east, which will be improved to approximately 650 feet north of Brodiaea Avenue as part of project construction, and a proposed Street "A" to the west, designed per City standards. Both streets will also provide access for emergency vehicles, and, will connect to the proposed streets "B" and "C" providing internal access within the Project. The Project will provide a linear park incorporating a variety of improvements in conjunction with a trail along the west side of the Quincy Channel adjacent to the project site. The final design of the linear park and related trail improvements will be subject to review and approval by the City of Moreno Valley.

The applicant has requested a General Plan Amendment (GPA) to change the existing land use designation on the site from Residential Maximum 3 units/acre to Residential Maximum 10 units/acre. The applicant has similarly requested a Change of Zone (CZ) to change the existing onsite zoning from R3 (maximum 3 units/acre) to RS10 (single-family maximum 10 units per acre). The applicant is proposing a more intense land use designation and zoning to provide more housing opportunities for a wider segment of the home-buying market. The applicant believes this higher density is also consistent with regional housing and demographic trends and to help provide a wider range of housing opportunities than are currently available in this portion of the City. The special amenity required by the Municipal Code for RS10 zone housing is the linear park and trail improvements along the portion of the Quincy Channel adjacent to the project site.

9. Surrounding Land Uses and Setting: (Briefly describe the project's surroundings)

   Surrounding land uses include: one and two-story single-family residential housing to the south across Brodiaea Avenue (zoned RS10), vacant land to the north (zoned R3), vacant land and a single residence with an associated light industrial yard further to the west (zoned R3), the Quincy Channel to the east, and vacant land and rural residences further to the east (zoned R3). The land east and west of the existing RS10 residences is zoned R5. A new residential subdivision is being constructed southeast of the site (zoned R5). Refer to Figure 2 for surrounding zoning.

10. Other public agencies whose approval is required (e.g. permits, financing approval, or participation agreement).

    Regulatory permitting through the California Department of Fish and Wildlife, U.S. Army Corps of Engineers, Regional Water Quality Control Board, Riverside County Flood Control and Water Conservation District may be required for improvements to the Quincy Channel.

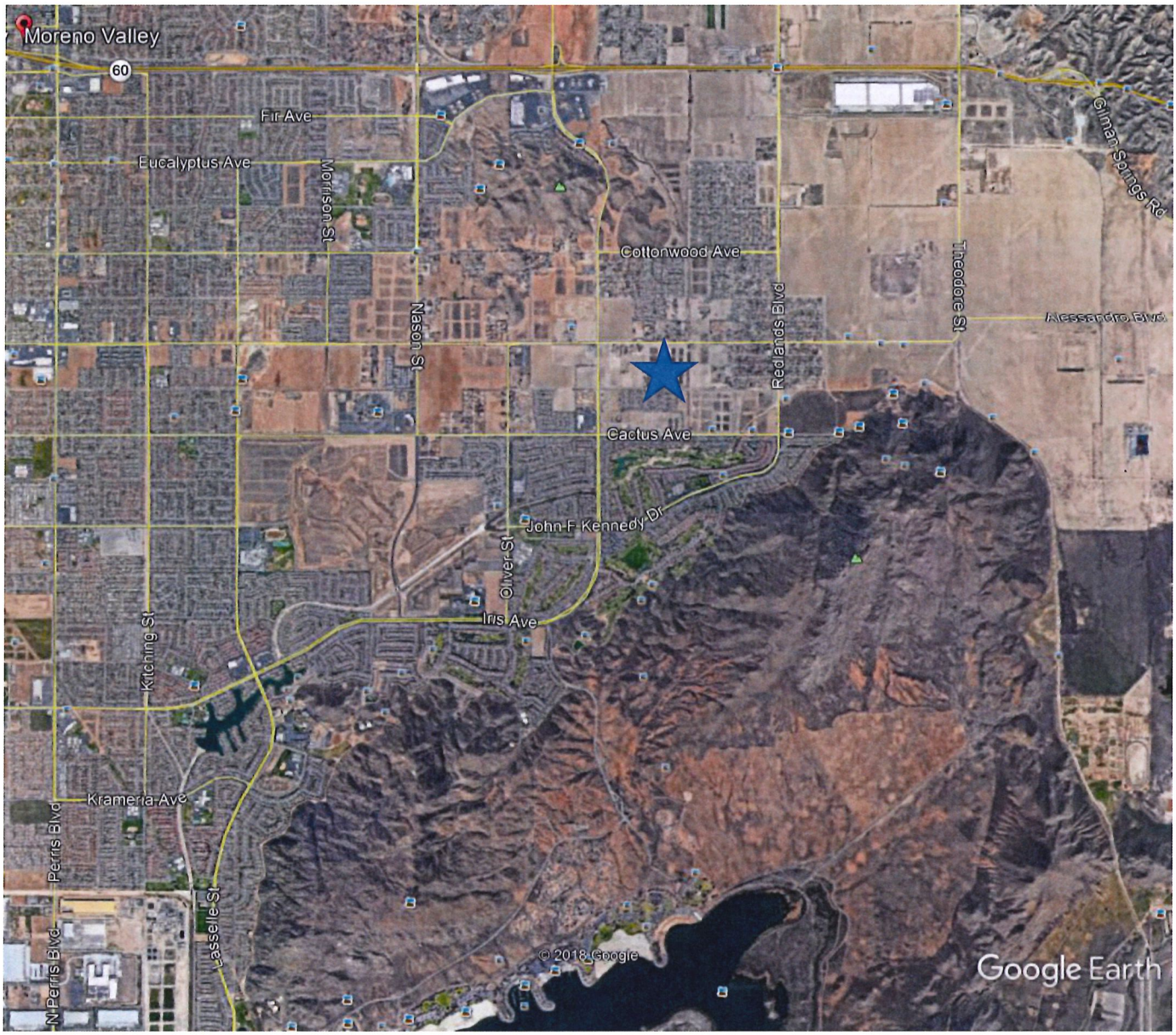
11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun?

    The City sent out SB 18 and AB 52 letters/emails to local tribal representatives on March 29, 2018 and received the following replies regarding government to government consultation on this project:

- San Manuel Band of Mission Indians- letter dated March 29, 2018 requesting consultation.
- Agua Caliente Band of Cahuilla Indians – 2 letters dated April 2, 2018 deferring consultation to the Morongo and Soboba tribes.
- Soboba Tribe – letter dated April 27, 2018 requesting consultation.
- Pechanga Tribe (Temecula Band of Luiseno Mission Indians) two letters dated April 5, 2018 requesting consultation under both SB 18 and AB 52.

NOTE: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21083.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3 (c) contains provisions specific to confidentiality.

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

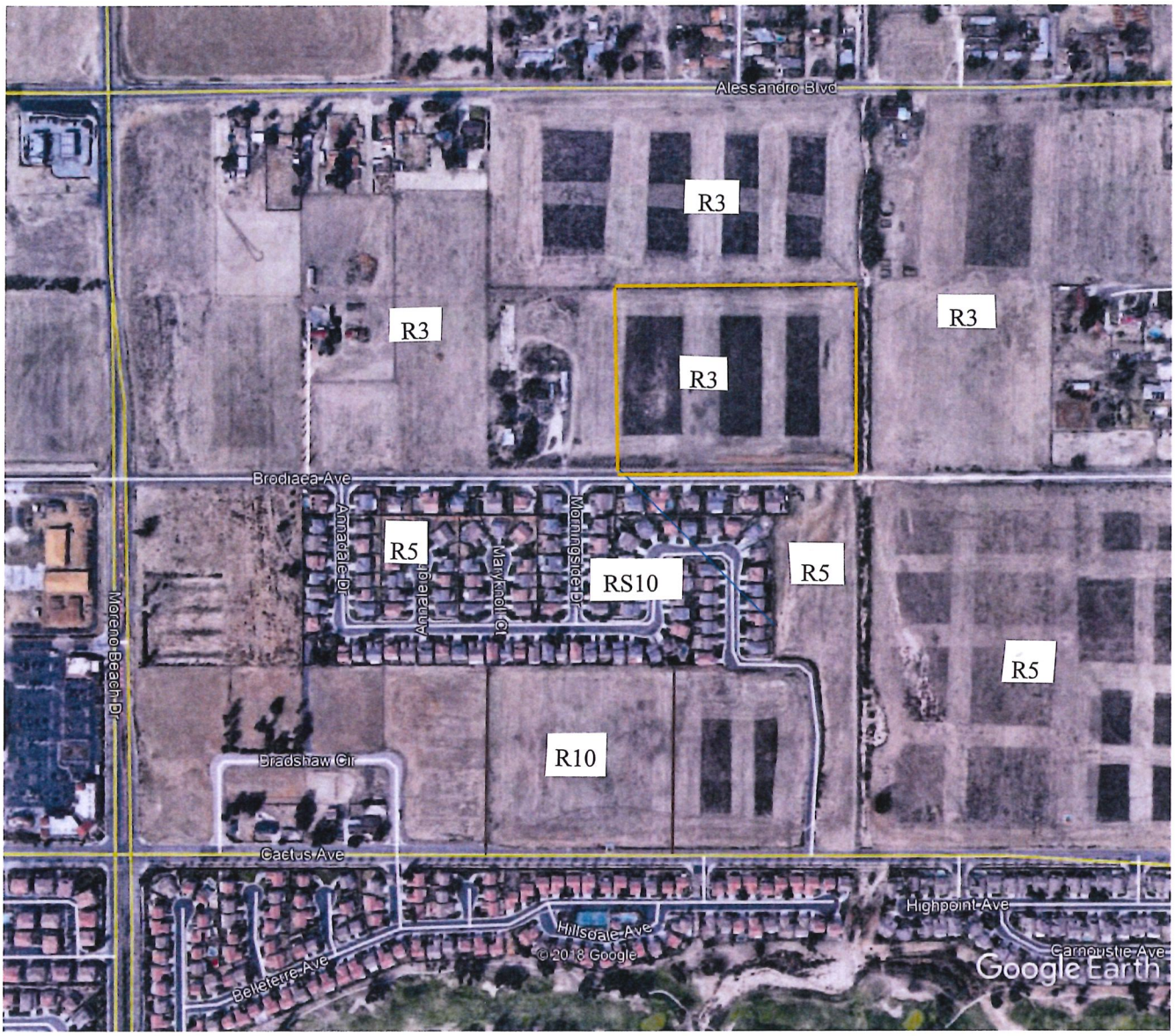


Project Site

FIGURE 1: REGIONAL LOCATION

Brodiaea Residential Project by Frontier Communities

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM



Site Boundary

FIGURE 2: PROJECT AREA

Brodiaea Residential Project by Frontier Communities

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Figure 3 Site Photographs

(a) Looking north across eastern end of site from Brodiaea Avenue (from southeast corner of site)

(b) Looking northwest across center of site from Brodiaea Avenue (from southeast corner of site)

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Figure 3 Site Photographs (cont'd)

(c) Looking northwest across western portion of site from Brodiaea Avenue (from southeast corner of site)

(d) Looking west along Brodiaea Avenue from southeast corner of project site

Figure 3: Site Photographs (cont'd)

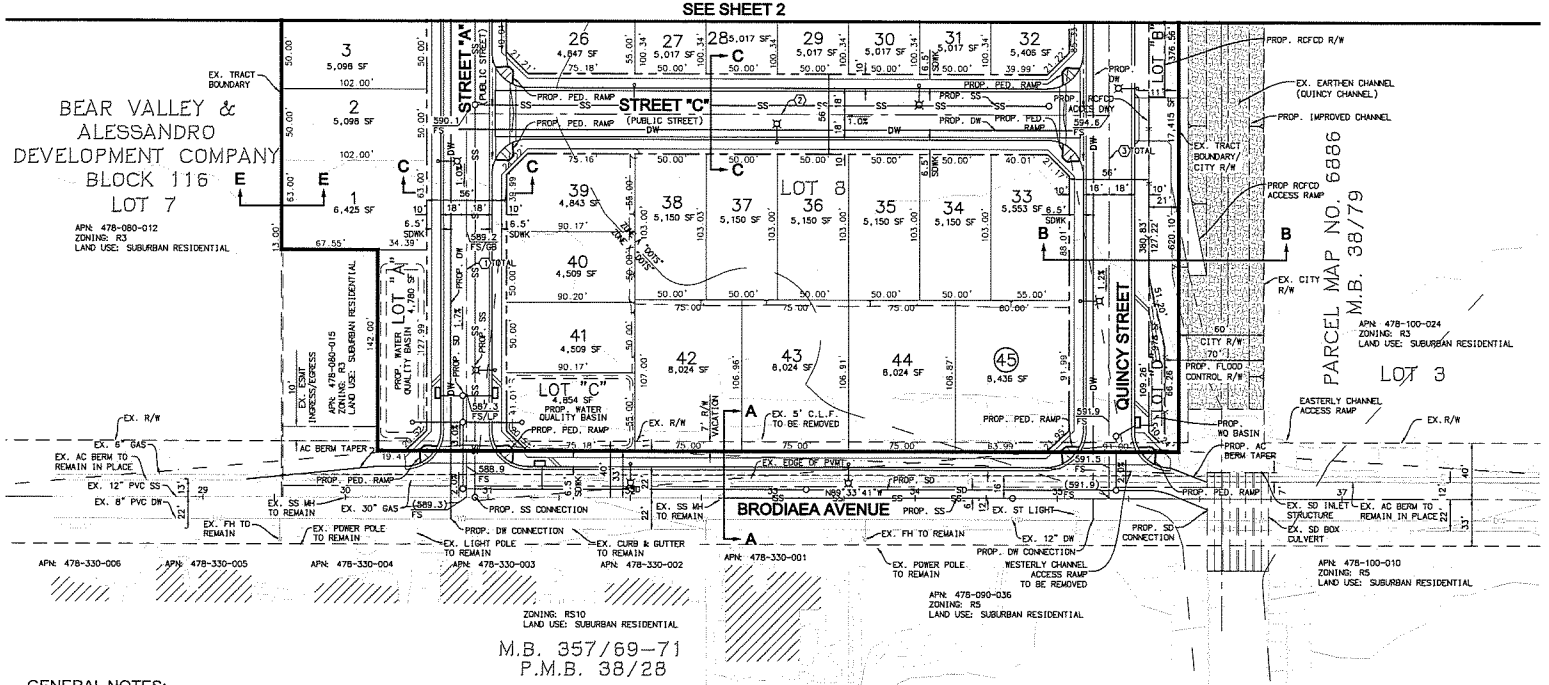
(e) Looking east along Brodiaea Avenue (new housing construction at right)(from southeast corner of site)

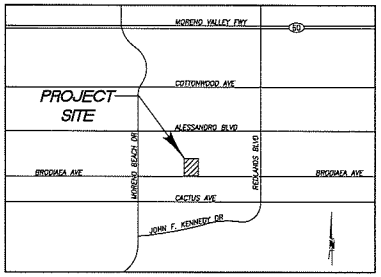
(f) Looking north along Quincy Channel from Brodiaea Avenue just east of the project site

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

TENTATIVE TRACT MAP 37544

APN: 478-080-014





VICINITY MAP

NOT TO SCALE

LOT SUMMARY:

SUBAREA LOT NUMBER	CONCEPT PLAN LAND USE	AREA ACREAGE
LOT 1	RESIDENTIAL	0.147
LOT 2	RESIDENTIAL	0.117
LOT 3	RESIDENTIAL	0.117
LOT 4	RESIDENTIAL	0.117
LOT 5	RESIDENTIAL	0.118
LOT 6	RESIDENTIAL	0.116
LOT 7	RESIDENTIAL	0.204
LOT 8	RESIDENTIAL	0.274
LOT 9	RESIDENTIAL	0.141
LOT 10	RESIDENTIAL	0.115
LOT 11	RESIDENTIAL	0.112
LOT 12	RESIDENTIAL	0.111
LOT 13	RESIDENTIAL	0.111
LOT 14	RESIDENTIAL	0.111
LOT 15	RESIDENTIAL	0.113
LOT 16	RESIDENTIAL	0.108
LOT 17	RESIDENTIAL	0.109
LOT 18	RESIDENTIAL	0.118
LOT 19	RESIDENTIAL	0.115
LOT 20	RESIDENTIAL	0.117
LOT 21	RESIDENTIAL	0.117
LOT 22	RESIDENTIAL	0.117
LOT 23	RESIDENTIAL	0.116
LOT 24	RESIDENTIAL	0.176
LOT 25	RESIDENTIAL	0.103
LOT 26	RESIDENTIAL	0.111
LOT 27	RESIDENTIAL	0.115
LOT 28	RESIDENTIAL	0.115
LOT 29	RESIDENTIAL	0.115
LOT 30	RESIDENTIAL	0.115
LOT 31	RESIDENTIAL	0.115
LOT 32	RESIDENTIAL	0.124
LOT 33	RESIDENTIAL	0.127
LOT 34	RESIDENTIAL	0.118
LOT 35	RESIDENTIAL	0.118
LOT 36	RESIDENTIAL	0.118
LOT 37	RESIDENTIAL	0.118
LOT 38	RESIDENTIAL	0.118
LOT 39	RESIDENTIAL	0.111
LOT 40	RESIDENTIAL	0.104
LOT 41	RESIDENTIAL	0.104
LOT 42	RESIDENTIAL	0.184
LOT 43	RESIDENTIAL	0.184
LOT 44	RESIDENTIAL	0.184
LOT 45	RESIDENTIAL	0.194
LOT A	OPEN SPACE	0.110
LOT B	OPEN SPACE	0.195
LOT C	OPEN SPACE	0.111
LOT D	OPEN SPACE	0.023
---	PROPOSED PUBLIC STREET	2.412
---	PROPOSED COUNTY CHANNEL	0.182
TOTAL		8.846

GENERAL NOTES:

1. SITE ADDRESS: NORTHWEST CORNER OF BRODIAEA AVE AND QUNICY CHANNEL (STREET), MORENO VALLEY, CA
2. SITE ACREAGE:
   GROSS: 8.846 ACRES
   NET: 5.811 ACRES
3. EXISTING ZONING: R3
4. PROPOSED ZONING: RS10
5. GENERAL LAND USE: SUBURBAN RESIDENTIAL
6. EARTHWORK: 15,900 CY CUT
   17,200 CY FILL
   1,300 CY IMPORT
7. TOPOGRAPHY SOURCE:
8. TOTAL STREET LENGTH: 2,081 L.F.
9. SCHOOL DISTRICT: MORENO VALLEY UNIFIED

FLOOD ZONE NOTE

THE SUBJECT PROPERTY IS DESIGNATED AS FEMA ZONE A "DOTS": SPECIAL FLOOD ZONE HAZARD AREA (SFHA) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD. NO BASE FLOOD ELEVATION DETERMINED.

AND FEMA FLOOD ZONE X "DOTS": OTHER FLOOD AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD.

AS SHOWN ON:
FLOOD INSURANCE RATE MAP NO. 06065C0770G
COMMUNITY: CITY OF MORENO VALLEY
NUMBER: 065074
PANEL: 0770 OF 3805
DATE: AUGUST 28, 2008.

(SOURCE: https://msc.fema.gov)

AMENITY NOTE

THE PROJECT PROPOSES A LINEAR PARK AND WALKING TRAIL THAT WILL RUN THE ENTIRE LENGTH OF THE PROJECT ALONG QUINCY CHANNEL WITH AMENITIES TO INCLUDE: MEANDERING TRAIL, BENCHES, EXERCISE STATIONS, AND LANDSCAPE. TRAIL SHALL BE MAINTAINED BY THE CITY. AMENITIES AND LANDSCAPING WITHIN LOT "B" SHALL BE MAINTAINED BY THE HOA.

LEGAL DESCRIPTION

PARCEL 1:

LOT 8 IN BLOCK 116 OF MAP NO. 1 OF BEAR VALLEY AND ALESSANDRO DEVELOPMENT COMPANY, AS SHOWN BY MAP ON FILE IN BOOK 11 PAGE(S) 10 OF MAPS, RECORDS OF SAN BERNARDINO COUNTY, CALIFORNIA.

EXCEPT THAT PORTION DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF SAID LOT 8, SAID POINT BEING ON THE NORTHERLY LINE OF BRODIAEA STREET, AS SHOWN ON SAID MAP; THENCE EASTERLY ALONG THE SOUTHERLY LINE OF SAID LOT, 67.6 FEET; THENCE NORTHERLY AND PARALLEL WITH THE WESTERLY LINE OS SAID LOT, 135 FEET; THENCE WESTERLY AND PARALLEL WITH THE SOUTHERLY LINE OF SAID LOT, 67.6 FEET; THENCE SOUTHERLY ALONG THE WESTERLY LINE OF SAID LOT, 135 FEET TO THE POINT OF BEGINNING.

APN: 478-080-014

SYMBOLS LEGEND

- TOP/TOE OF SLOPE
- TRACT BOUNDARY
- EASEMENT
- CENTERLINE
- RETAINING WALL
- LINE OF SIGHT
- FLOOD ZONE LINE
- PROPOSED PROPERTY LINE
- RIGHT OF WAY
- EXISTING RIGHT OF WAY
- SLOPE
- SANITARY SEWER
- STORM DRAIN
- DOMESTIC WATER
- EXISTING STREET LIGHT
- CATCH BASIN
- FIRE HYDRANT
- SCE TRANSFORMER LOCATION.
- DOUBLE DETECTOR CHECK
- AC CONDENSER
- PROPOSED ST LIGHT

ABBREVIATIONS

AC	ASPHALT CONCRETE
℄	CENTER LINE
C.L.F.	CHAIN LINK FENCE
CONC.	CONCRETE
CY	CUBIC YARD
DW	DOMESTIC WATER
ESMT.	EASEMENT
EX.	EXISTING
FH	FIRE HYDRANT
MH	MANHOLE
MWS	MODULAR WETLAND SYSTEM
RCFCD	RIVERSIDE COUNTY FLOOD CONTROL DISTRICT
PED.	PEDESTRIAN
PVC	POLYVINYL CHLORIDE
PROP.	PROPOSED
PVMT.	PAVEMENT
R/W	RIGHT OF WAY
SCE	SOUTHERN CALIFORNIA EDISON
SD	STORM DRAIN
SDWK	SIDEWALK
SF	SQUARE FEET
SS	SANITARY SEWER
WQ	WATER QUALITY

LINE/CURVE DATA TABLE

		BEARING/DELTA	RADIUS	LENGTH	TANGENT
TOTAL	1	N00°24'18"E	--	398.03'	--
	2	N89°33'41"W	--	456.00'	--
TOTAL	3	N00°24'18"E	--	525.07'	--

40 20 0 40 80 120

SCALE: 1"=40'

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UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER JARED BERNARD No. 77740 CIVIL STATE OF CALIFORNIA

Michael Baker INTERNATIONAL
5 Hutton Centre Drive, Suite 500, Santa Ana, CA 92707
Phone: (949) 472-3505 · MBAKERINTL.COM

REVISIONS			
N°	DATE	BY	DESCRIPTION

DEVELOPER:
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2151 E. CONVENTION CENTER WAY
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951-354-8040
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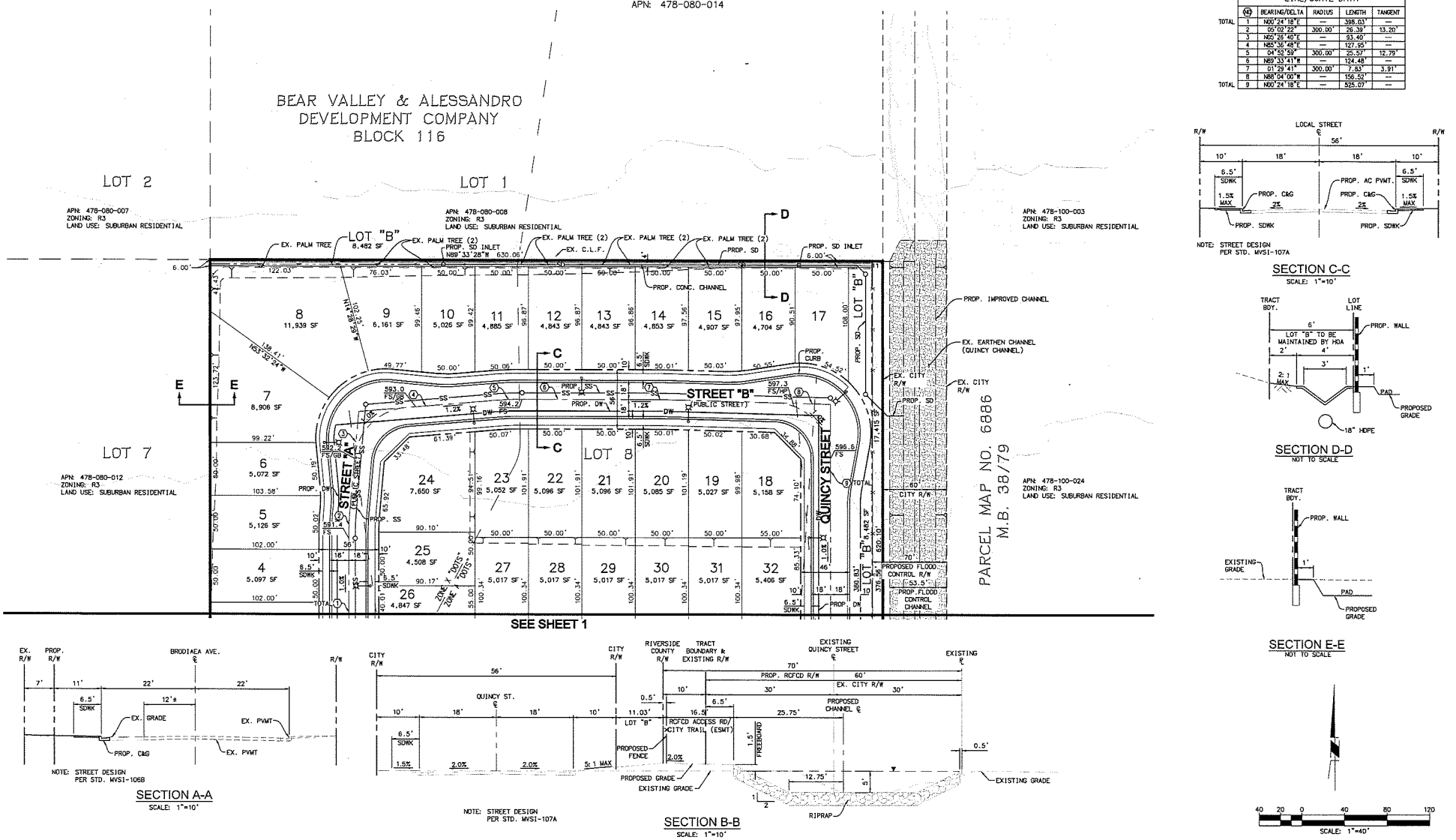
TENTATIVE TRACT MAP 37544

TRACT NO.
CITY CASE NO.
DATE: 09/12/18
SHEET 1 of 2

DATA\161595\CADD\LAND\XLVTM\161595-TTM-01.DWG JARED.BERNARD 9/13/18 7:26 am

TENTATIVE TRACT MAP 37544

APN: 478-080-014



LINE/CURVE DATA					
	NO.	BEARING/DELTA	RADIUS	LENGTH	TANGENT
TOTAL	1	N00°24'18"E	—	398.03'	—
	2	05°02'22"	300.00'	26.39'	13.20'
	3	N05°26'40"E	—	93.40'	—
	4	N85°30'48"E	—	127.95'	—
	5	04°52'59"	300.00'	25.57'	12.79'
	6	N89°33'41"E	—	124.48'	—
	7	01°29'41"	300.00'	7.83'	3.91'
	8	N89°04'00"W	—	156.52'	—
TOTAL	9	N00°24'18"E	—	525.07'	—

NOTE: STREET DESIGN PER STD. MVSI-107A

SECTION C-C

SCALE: 1"=10'

SECTION D-D

NOT TO SCALE

SECTION E-E

NOT TO SCALE

NOTE: STREET DESIGN PER STD. MVSI-106B

SECTION A-A

SCALE: 1"=10'

NOTE: STREET DESIGN PER STD. MVSI-107A

SECTION B-B

SCALE: 1"=10'

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TENTATIVE TRACT MAP 37544

TRACT NO.
CITY CASE NO.
DATE: 04/24/18
SHEET 2 of 2

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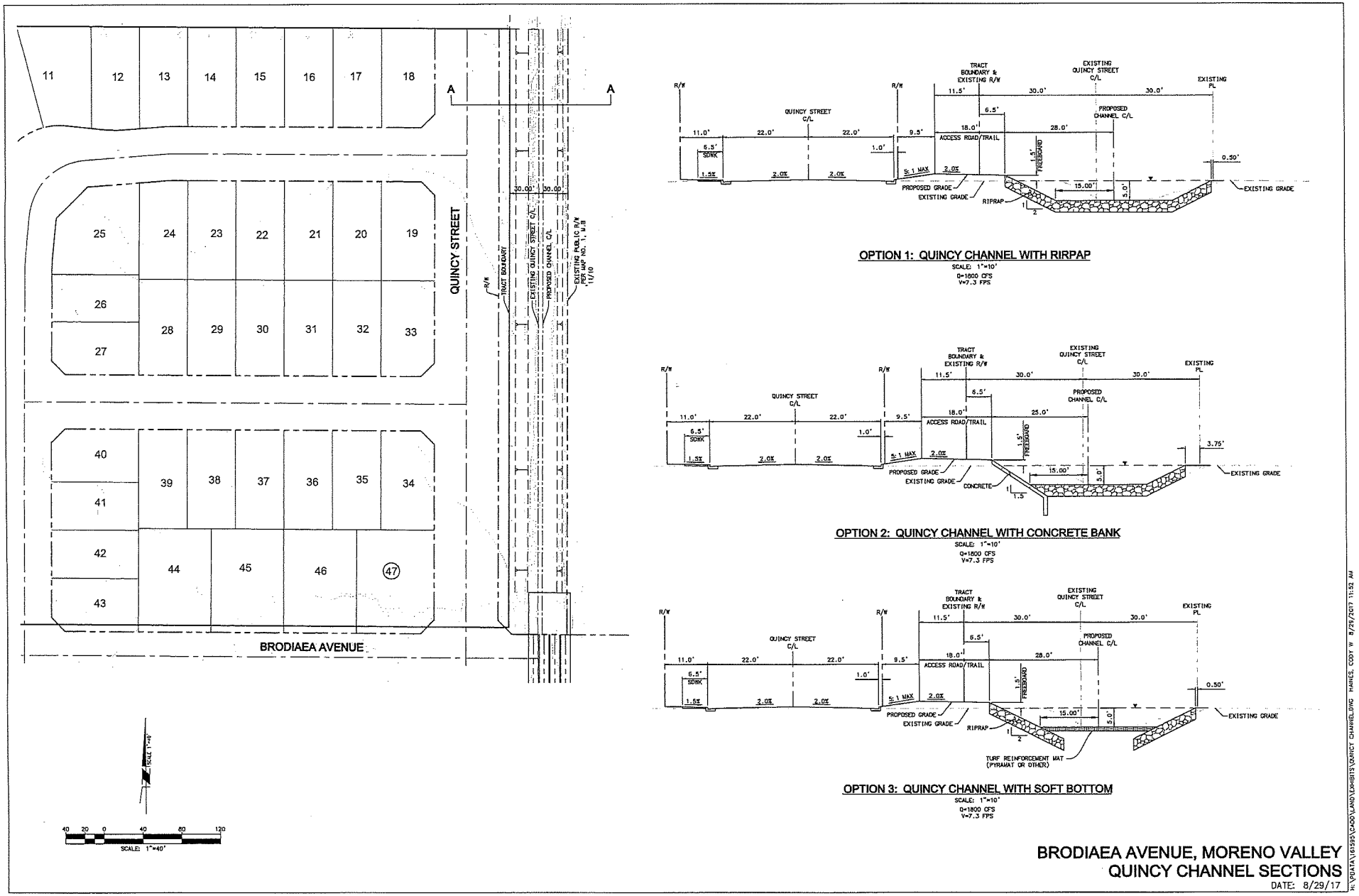
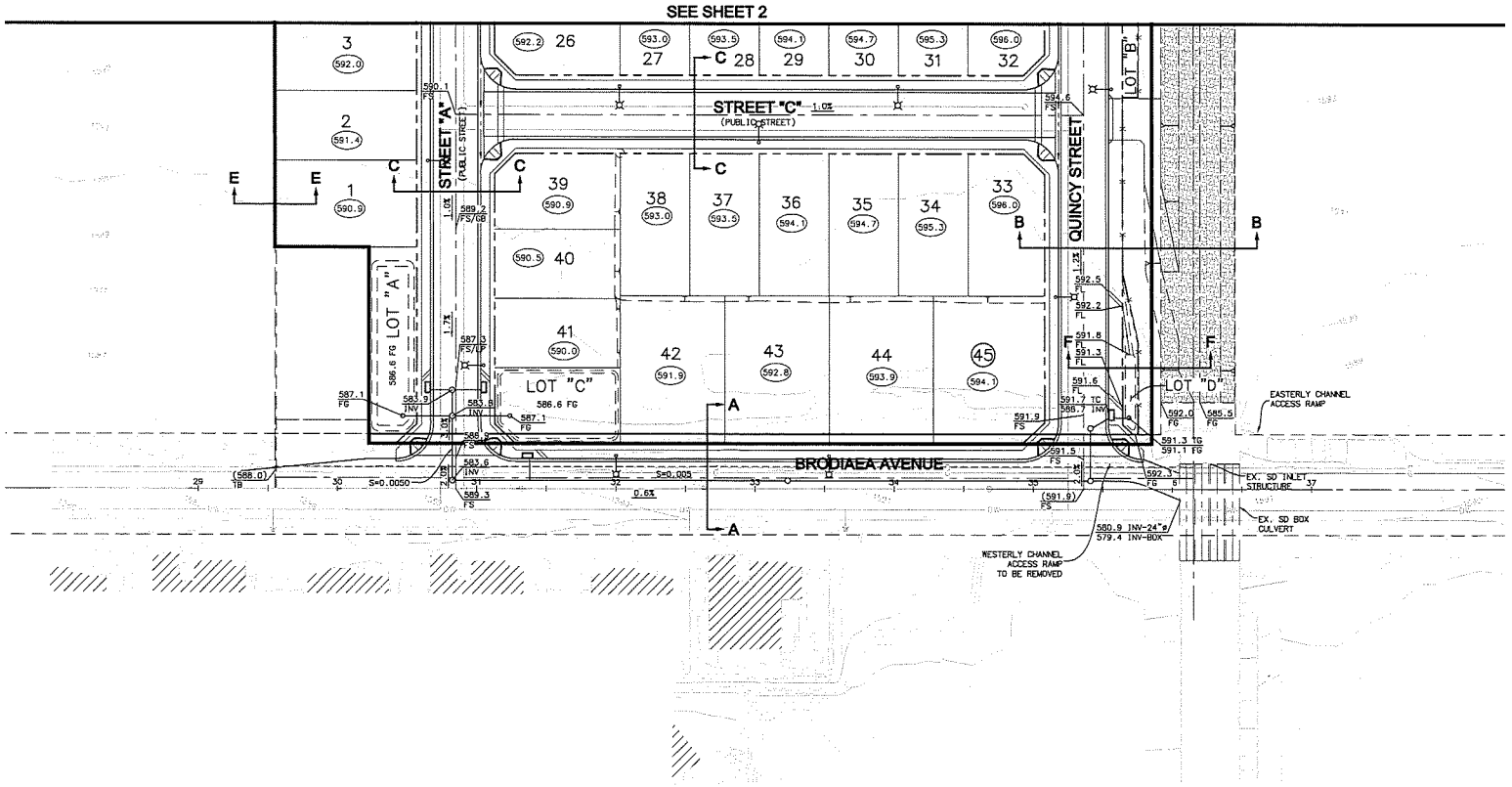
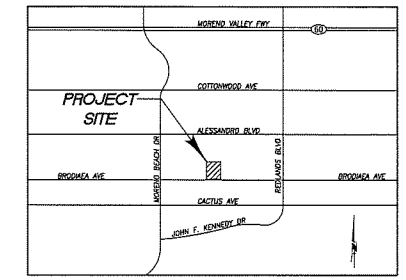


Figure 5: Quincy Channel Design Options





VICINITY MAP
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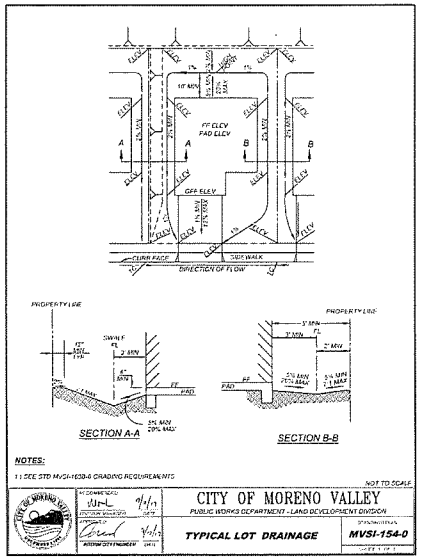
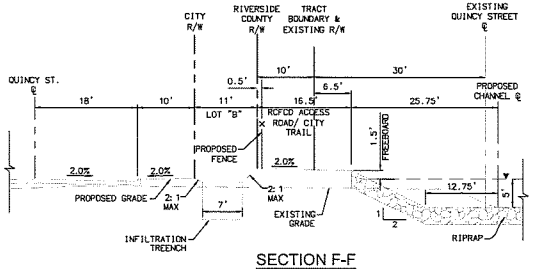
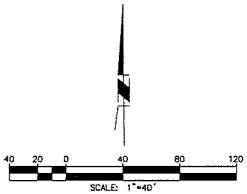




SECTION F-F
SCALE: 1"=10'



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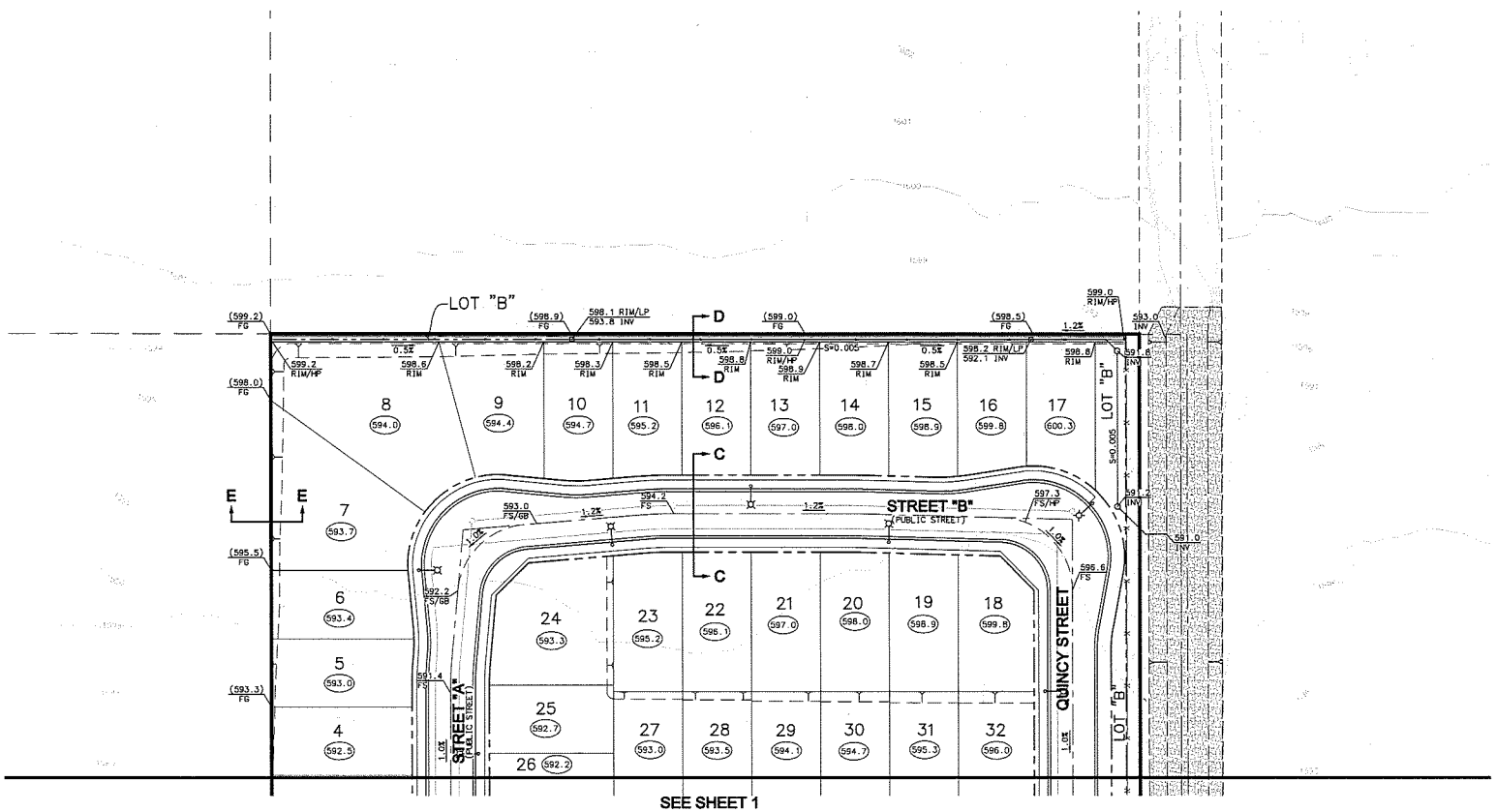
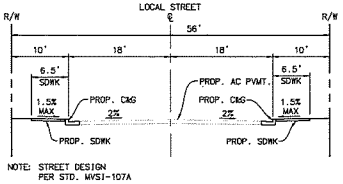
TTM 37544
PRELIMINARY GRADING PLAN

TRACT NO.
CITY CASE NO.
DATE: 09/12/18
SHEET 1 of 2

DATA\161995\CADD\LAND\LV\GRADING\PRELIM\161995-GR-01.DWG JARED.BERNARD 9/12/18 1:20 pm





SECTION C-C
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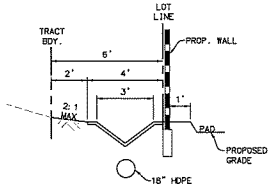

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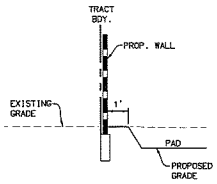

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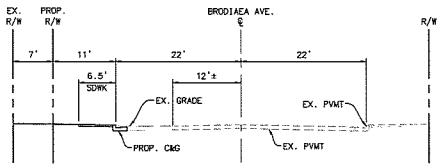
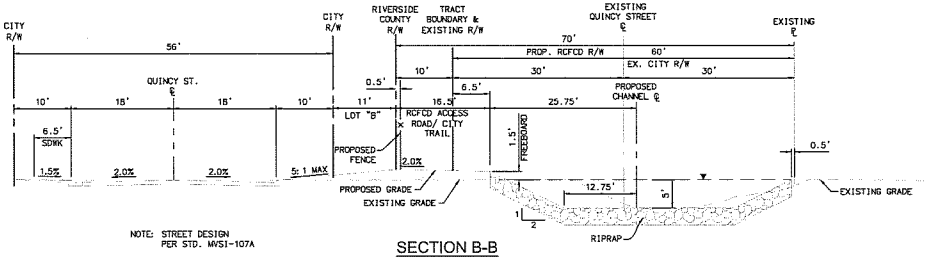
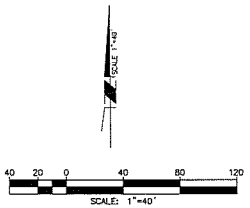


SECTION A-A
SCALE: 1"=10'



SECTION B-B
SCALE: 1"=10'



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TTM 37544
PRELIMINARY GRADING PLAN

TRACT NO.
CITY CASE NO.
DATE: 09/12/18
SHEET 2 of 2

DATA\161595\CADD\LAND\DL-V\GRADING\PRELIM\161595-GR-02.DWG JARED BERNARD 9/12/18 1:11 pm

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below(■) would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

	Aesthetics		Greenhouse Gas Emissions		Public Services
	Agricultural Resources		Hazards & Hazardous Materials		Recreation
	Air Quality		Hydrology/Water Quality		Transportation/Traffic
	Biological Resources		Land Use/Planning		Utilities/Service Systems
	Cultural Resources		Mineral Resources		Tribal Cultural Resources
	Geology/Soils		Noise		Mandatory Findings of Significance
			Population/Housing		

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	
I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.	**X**
I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.	
I find that the proposed project MAY have a "potential significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.	
I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.	

Signature 9/20/2018 Date

SEDA YAGHOUBIAN, CITY OF MORENO VALLEY CASE PLANNER
Printed Name For

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

EVALUATION OF ENVIRONMENTAL IMPACTS

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g. the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g. the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Potentially Significant Unless Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analysis," as described in (5) below, may be cross-referenced).

5) Earlier analysis may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063 (c) (3) (d). In this case, a brief discussion should identify the following:

   (a) Earlier Analysis Used. Identify and state where they are available for review.

   (b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   (c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g. general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The analysis of each issue should identify: (a) the significance criteria or threshold used to evaluate each question; and (b) the mitigation measure identified, if any, to reduce the impact to less than significance.

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

I. **AESTHETICS.** Would the project:

a) Have a substantial adverse effect on a scenic vista?			X	

Less than Significant Impact. Scenic vistas are publicly accessible viewpoints that provide views of areas that exemplify a community's environment. Impacts to private views (e.g., individual homes, backyards, etc.) are not generally considered environmental impacts under CEQA. Scenic vistas within the eastern portion of the City (i.e., the general project area) include Box Springs Mountains and the Reche Canyon area to the northwest across the SR-60 Freeway, the "Badlands" to the east, and the Mount Russell area to the southeast.[1]

The project site is located at the northwest corner of Brodiaea Avenue and Quincy Street (a paper street) in the eastern portion of the City. Elevations in the area topography are generally flat but rise gently away to the north toward the SR-60 Freeway and the Mt. Russell area to the south. The proposed residential development will have a mixture of one- and two-story homes which would be similar in scale and appearance to the existing homes south of the site across Brodiaea Avenue and future homes being constructed to the southeast off Cactus Avenue. The project proposes five lots (#41-45, see TTM 37544) along the north side of Brodiaea Avenue with dimensions approaching those of typical RS10 lots to be more visually consistent with the existing housing zoned RS10 just south of the project site across Brodiaea Avenue. For example, the depth of the proposed detention basin and Lot #41 is 90 feet, the widths of proposed Lots 42-44 are 75 feet, and the width of Lot #45 is 65 feet compared to approximately 100 feet for the widths of the existing lots south of the project site.

Public views in the project vicinity are available to pedestrians and passengers in vehicles traveling east and west along Brodiaea Avenue. The proposed development will result in new houses along this portion of Brodiaea Avenue temporarily blocking views to the northwest (Box Spring Mountains) and the northeast (the Badlands). Views to the north for passengers in vehicles traveling along Brodiaea Avenue may be blocked for a maximum of 17.5 seconds based on the width of the project (640 feet) and assuming a vehicle speed of 25 miles per hour (36.6 feet per second). In addition, the project proposes RS10 lots that are smaller than R3 lots under existing zoning, so new houses would be closer to each other than if the houses were on larger R3 lots. This increased density would incrementally degrade public views, however, the project site and surrounding areas are planned for residential uses in general, and the blockage of identified public views to the northwest and northeast would be temporary for travelers. Additionally, potential impacts to public views would have more to do with the bulk and massing of the proposed residential units, including height and architecture, than with the lot sizes. The General Plan land use designation for the site is residential the impacts of which were analyzed in the General Plan EIR. Building massing and height would not be substantially different under the proposed RS10 as opposed to the existing R3 designation.

Due to the location of the project, no views to the east (the Badlands) or to the south (Mt. Russell area) will be blocked by the proposed residences. Although not considered an environmental impact, private views for residents living immediately south of the project will not be substantially affected because the main views are to the northwest and northeast, and the project proposes lots with dimensions along the north side of Brodiaea Avenue that approach those of the existing larger lots along the south side of Brodiaea Avenue. The proposed streets and lot layout will create gaps between buildings and reduce the blockage of public views.

Based on its location and design, development of the proposed residential project would have a less than significant impact on scenic vistas, and no mitigation is required.

b) Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?			X	

Less than Significant Impact. The proposed project site is currently vacant. Surrounding land uses include single-family residential to the east and south, and vacant land to the north and west. Two scenic highways are located within the City

[1] Chapter 7 – Conservation, City of Moreno Valley General Plan, July 11, 2006.

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

which include State Route 60 (SR-60) and Moreno Beach Drive.[1] State Route 60 is located approximately 1.65 miles north of the project site while Moreno Beach Drive is located approximately 0.35 mile west of the project site. Development of the project site will not substantially change views to the east from Moreno Beach Drive as the overall appearance will still be residential although the proposed lots are smaller than the existing zoning (R3) so views of the project would be of incrementally higher density housing under the RS10 zoning compared to the less dense R3 zoning. The project would not be visible to travelers along the SR-60 Freeway due to the two large warehouse buildings that are currently being constructed just south of the freeway west of Redlands Boulevard (i.e., Aldi and Eucalyptus Industrial Park). The proposed project would not block views to the south from the freeway toward the Mt. Russell area due to the lower elevations of the project site and the proposed buildings and those views are already blocked by the new warehouse buildings. Therefore, the development of the proposed project will have a less than significant impact related to scenic resources and no mitigation is required.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?			X	

Less than Significant Impact. The proposed project would convert existing vacant land to suburban residential development similar to existing uses south of the site and planned uses southeast of the site. It would not be fully consistent visually with more rural residences further to the east, west, and north. This area appears to be slowly converting to more suburban-style residential development. The construction phase of the project would introduce the use of machinery such as excavators and bulldozers. The presence of the construction equipment, as well as the construction activities, would temporarily alter the visual character of the project site. Construction staging areas, including earth stockpiling, storage of equipment and supplies, and related activities would contribute to a disturbed site, which would be a short-term visual impact.

The project site and surrounding areas to the north and west are currently vacant. Single-family residential units, similar to those of the proposed project, are located just south of the site, and similar residences are planned and under construction southeast of the site. There is existing vacant undeveloped land located to the north, west, and east, and the unimproved Quincy Channel is just east of the site (refer to Figures 2 and 3). The proposed project would introduce homes into the project area that would have smaller lots and be more dense with smaller lots (RS10) than existing houses to the southwest (R3). The proposed project would therefore result in slightly degraded views of the area than if the site was developed with larger lots. The proposed project would comply with the City of Moreno Valley General Plan policies and regulations regarding the design and appearance of the proposed residential buildings and related improvements. Therefore, the minor degradation in visual character that would result from implementation of the project (i.e., at the higher RS10 density compared to the existing R3 zoning) would be less than significant. No mitigation is required.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			X	

Less than Significant Impact. The project site presently does not contain any source of light. Sources of light in the area include street lighting and nighttime housing lights along Brodiaea Avenue southwest of the site. There are no street lights along the more rural portion of Brodiaea Avenue southeast of the site. Streetlights are also found along Moreno Beach Drive west of the site and along Alessandro Boulevard north of the site. The development of the project site with suburban residences would create new sources of light and glare. At night, additional streets lights and residential building or landscaping lights would be visible from the adjacent single-family residential uses to the south, and to a lesser extent, from the surrounding public streets, especially Brodiaea Avenue. However, these light sources are not expected to significantly increase ambient nighttime lighting levels in the surrounding area. In addition, new construction shall comply with the City of Moreno Valley's General Plan and Municipal Code requirements in terms of night lighting. Therefore, lighting impacts would be less than significant. No mitigation is required.

Glare is daytime occurrence resulting from light reflecting off polished surfaces and affecting viewers in nearby moving vehicles. The project site is currently vacant with no sources of glare. Sources of glare that could result from project

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implementation include windows and reflective window tinting materials, as well as vehicles parked within and traveling to and from the property. The amount of glare would depend on the location of the reflective surfaces and the direction of the sun. For residential uses, the main source of glare would be from windows. Any glare produced by the reflective surfaces would be temporary, as the location of the sun would be changing throughout the day and would be similar to those impacts experienced in other residential areas of the City. Therefore, impacts from glare would be less than significant. No mitigation is required.

II. **AGRICULTURE RESOURCES**: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project?

a) Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?			X	

Less than Significant Impact. The California Department of Conservation, Farmland Mapping and Monitoring Program (FMMP) compiles important farmland maps pursuant to the provisions of Section 65570 of the California Government Code. The maps are updated every two years using computer mapping system, aerial imagery, public review and field reconnaissance. According to the FMMP, the project site and surrounding area are classified as "Farmland of Local Importance"[2] although it is bounded by "Urban and Built-Up Land" and is in a portion of the City that has been slowly developing with suburban and rural residential uses in recent years. This general area once supported agricultural uses, but much of the surrounding land has already been developed or is planned to be developed into various suburban uses. The City's General Plan acknowledges agriculture was an important part of the City's history, but there is no zoning in the City that would preserve agricultural uses or soils suitable for agriculture over the long-term. The closest area that is designated Prime Farmland under the FMMP is located over a mile north of the project site (i.e., north of the SR-60 freeway). It should be noted that the project site is also underlain by two soil types that are considered "prime" agricultural soils[3] by the Natural Resources Conservation Service (NRCS). However, no lands designated as Prime, Unique, or Statewide Important Farmland are located within the project limits. Therefore, impacts to state designated farmland that would result from development of the proposed project would be less than significant, and no mitigation is required.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X

No Impact. The California Land Conservation Act of 1965 –commonly known as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space uses. In return, landowners are given a lower property tax assessment. The project site does not contain land that is enrolled in a Williamson Act contract.[4] Additionally, according to the City of Moreno Valley's Zoning Map, the project site is currently zoned for "Suburban Residential" uses. In addition, the surrounding area contained existing or planned suburban development, and the City has no agricultural land use designations in its General Plan or zoning. Since the project site is not under a Williamson Act contract or within an area zoned for agricultural uses, no impact associated with this issue would occur. No mitigation is required.

c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or				X

[2] Department of Conservation, Farmland Mapping and Monitoring Program, http://maps.conservation.ca.gov/ciff/ciff.html (Accessed September 19, 2017).
[3] https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx website accessed April 18, 2018
[4] California Department of Conservation, Division of Land Resource Protection, Riverside County Williamson Act FY 2015/2016, Sheet 1 of 3, website: ftp://ftp.consrv.ca.gov/pub/dlrp/wa/Riverside_w_15_16_WA.pdf (Accessed April 2, 2018).

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timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?				

No Impact. The proposed project site is currently vacant and undeveloped. The site does not contain any forest land, Timberland Production, nor is it zoned for such uses. Therefore, the project will have no impact on forest land, timberland, or timberland zoned Timberland Production. No mitigation is warranted.

d) Would the project result in loss of forest land or conversion of forest land to non-forest use?				X

No Impact. Please refer to Checklist Response IIc.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				X

No Impact. As noted above, the project site is currently vacant and is not utilized for agricultural production or timberland. Neither the project site nor adjacent properties are being used or zoned for farmland or forest land. Please refer to Checklist Responses IIa and IIc. Therefore, the development of the proposed project will not result in the conversion of farmland to non-agricultural use or forest land to non-forest uses and no impact in this regard will occur. No mitigation is required.

III. **AIR QUALITY:** Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan?			X	

Less than Significant Impact. The project site is located in the South Coast Air Basin (Basin), which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The Basin includes all of Orange County and portions of Los Angeles, Riverside, and San Bernardino Counties. The SCAQMD adopted an Air Quality Management Plan (AQMP), the main purpose of which is to describe air pollution control strategies to be taken by a city, county, or region classified as a nonattainment area in order to bring the area into compliance with federal and state air quality standards. A nonattainment area is considered to have air quality worse than the National Ambient Air Quality Standards (NAAQS) as defined in the Federal Clean Air Act. The Basin is in nonattainment for the federal and state standards for ozone (O3) and particulate matter less than 2.5 microns in diameter (PM2.5) and in nonattainment for the state standards for particulate matter less than 10 microns in diameter (PM10) and nitrogen dioxide (NO2). The Basin is in attainment/maintenance/unclassified status for all other federal and state criteria pollutant standards.

Consistency with the Final 2016 AQMP for the Basin means that a project will be consistent with the goals, objectives, and assumptions in the respective plan to achieve the federal and state air quality standards. Pursuant to the methodology provided in Chapter 12 of the 1993 SCAQMD Air Quality Handbook[5], consistency with the Basin 2016 AQMP is affirmed when a project (1) does not increase the frequency or severity of an air quality standards violation or cause a new violation; and (2) is consistent with the growth assumptions in the AQMP. For the proposed project to be consistent with the AQMP adopted by the SCAQMD, the pollutants emitted from the project should not exceed the SCAQMD daily threshold or cause a significant impact on air quality, or the project must already have been included in the AQMP projections. Additionally, if feasible mitigation measures are implemented and shown to reduce the impact level from significant to less than significant, a project may be deemed consistent with the AQMP.

[5] Air Quality Handbook, South Coast Air Quality Management District, 1993 http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook

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According to the SCAQMD's Air Quality Handbook, consistency with AQMP growth assumptions must be analyzed for new or amended General Plan elements, Specific Plans, and significant projects. The project is relatively small and proposes uses generally consistent with the General Plan land use designation (i.e. suburban residential) although its density would be slightly higher than the existing zoning. The air quality assessment for the project determined project emissions would be well below SCAQMD daily standards (see checklist response 3b below). In addition, the proposed project is not considered a significant project (e.g., large-scale projects such as airports, electrical generating facilities, petroleum and gas refineries, designation of oil drilling districts, water ports, solid waste disposal sites, and offshore drilling facilities). As discussed in checklist response 3b below, the proposed project's short-term construction and long-term pollutant emissions will not exceed the emissions thresholds established in the SCAQMD's CEQA Air Quality Handbook; therefore, the project would not result in an increase in the frequency or severity of any air quality standards violation and will not cause a new air quality standard violation. For these reasons, the proposed project is consistent with the growth projections in the City's General Plan and the regional AQMP. Therefore, impacts related to implementation of the AQMP would be less than significant.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.		X		

Less than Significant Impact. The following analysis analyzes both short-term impacts caused by construction activities and long-term impacts caused by occupancy and operation of the project as proposed.[6]

Short-Term Impacts

Grading and other construction activities would result in combustion emissions from heavy-duty construction vehicles, haul trucks, and vehicles transporting construction crews. Exhaust emissions during these construction activities will vary daily as construction activity levels change. The grading phase of construction represents the most intense construction period during which daily emissions would be at their greatest level, based on the potential amount of equipment and duration of use. Construction equipment estimates are based on default values in CalEEMod (Version 2016.3.1). The project grading would largely be balanced onsite with only a small amount (1,300 cubic yards) of soil that would need to be transported offsite for disposal or transported onsite for use in construction activities. Table A below provides a "worst-case" estimate of the short-term construction emissions for the project as prepared by Urban Crossroads in April/September of 2018. Table A indicates that the construction pollutant emissions from the proposed project would not exceed the corresponding SCAQMD daily emissions threshold for criteria pollutants. Appendix C contains air quality calculations for the proposed project.

Currently, the Basin is designated as a nonattainment area for ozone, PM_{10}, and $PM_{2.5}$. Project construction will be required to comply with regional fugitive dust reduction practices (SCAQMD Rule 403) that assist in reducing short-term air pollutant emissions. The purpose of SCAQMD Rule 403 is to reduce the amount of particulate matter in the atmosphere resulting from man-made fugitive dust sources. Among the requirements under this rule, fugitive dust must be controlled so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. This is achieved by requiring actions to prevent, reduce, or mitigate dust emissions. Adherence to Rule 403 is a standard requirement for any construction activity occurring within the Basin. As depicted in Table A, construction emissions would not exceed daily SCAQMD thresholds, so impacts are less than significant. However, to assure that project emissions remain at less than significant levels, Mitigation Measure AIR-1 is recommended.

6 Air Quality and Greenhouse Gas Emissions Analysis and Screening Health Risk Assessment Technical Memorandum, October 27, 2017.

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Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Table A: Estimated Construction Emissions

Construction Phase	Peak Daily Pollutant Emissions (lbs/day)					
	ROG	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Max. Daily Emissions	26.8	59.6	36.0	<0.1	9.8	6.3
SCAQMD Thresholds	75	100	550	150	150	55
Significant Emissions?	No	No	No	No	No	No

Source: Worst Case Emissions for 2018 or 2019, whichever is higher, rounded to one decimal, Urban Crossroads, September 2018 (Appendix C).

CO = carbon monoxide
lbs/day = pounds per day
NOx = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
SCAQMD = South Coast Air Quality Management District
SOx = sulfur oxides
ROG = reactive organic gases (similar to volatile organic compounds or VOC)

AIR-1 **Construction Emissions.** The following actions shall be implemented to help reduce project construction-related emissions to the greatest extent feasible. The project shall comply with the requirements of SCAQMD Rules 402 and 403, Fugitive Dust, which require the implementation of Reasonable Available Control Measures (RACM) for all fugitive dust sources, and the AQMP, which identifies Best Available Control Measures (BACM) and Best Available Control Technologies (BACT) for area sources and point sources, respectively. This includes the following actions:

1. The project proponent shall ensure that construction equipment is properly maintained and serviced to minimize exhaust emissions.
2. The project proponent shall ensure that existing power sources are utilized where feasible via temporary power lines to avoid on-site power generation.
3. The project proponent shall ensure that construction employees be informed of ride-sharing and transit opportunities.
4. The project proponent shall ensure that any portion of the site to be graded shall be pre-watered to a depth of three (3) feet prior to the onset of grading activities.
5. The project proponent shall ensure that twice daily watering of the site or other soil stabilization methods shall be employed on an ongoing basis after the initiation of any on-site grading activity. Portions of the site that are actively being graded shall be watered regularly to ensure that a crust is formed on the ground surface, and shall be watered at the end of each workday.
6. The project proponent shall ensure that all disturbed areas are treated to prevent erosion until the site is constructed.
7. To reduce the potential for wind erosion, the project proponent shall ensure that landscaped areas are installed as soon as possible.
8. The project proponent shall ensure that SCAQMD Rule 403 is adhered to, ensuring the cleanup of construction-related dirt on approach routes to the project site.
9. The project proponent shall ensure that all grading activities are suspended during first and second stage ozone episodes or when wind speeds exceed 25 miles per hour.
10. Cover all trucks hauling dirt, sand, soil, or other loose materials, or maintain at least 0.6 m (2 feet) of freeboard (vertical space between the top of the load and top of the trailer) in accordance with the requirements of California Vehicle Code (CVC) Section 23114.
11. Limit all onsite traffic speeds to 15 mph or less.

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Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

12. The construction contractor shall use construction equipment that have Tier 4 compliant engines and Level 3 diesel particulate filters (DPF) with oxidations catalyst that impart a 20% reduction.

Long-Term Impacts

Operational emissions from area sources include vehicular exhaust, the combustion of natural gas for heating and hot water, engine emissions from landscape maintenance equipment, and the use of appliances. Mobile source emissions are associated with project-related vehicle trip generation. Based on the CalEEMod (Version 2016.3.1) default mode at full buildout, the project would generate approximately 444 average daily trips (ADT). The long-term operational emissions associated with the proposed project, calculated using the CalEEMod 2016.3.1 model, are shown in Table B which demonstrates operational activities associated with the project would be below SCAQMD thresholds (Appendix C). The table includes the highest unmitigated emissions for either summer or winter, whichever is higher. Therefore, project-related long-term air quality impacts would be less than significant, and no mitigation is required.

Table B: Operational Emissions

Source	Pollutant Emissions (lbs/day)					
	ROG	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Area Sources	14.3	1.0	27.8	<0.1	3.6	3.6
Energy Sources	<0.1	0.4	0.1	0.0	<0.1	<0.1
Mobile Sources	1.0	5.3	13.9	<0.1	3.4	1.0
Total Project Emissions	**15.3**	**6.7**	**41.8**	**0.1**	**7.1**	**4.6**
SCAQMD Thresholds	55	55	550	150	150	55
Significant Emissions?	No	No	No	No	No	No

Source: Worst Case Summer or Winter Emissions (Unmitigated), whichever is higher, rounded to one decimal, Urban Crossroads, September 2018 (Appendix C).

CO = carbon monoxide
lbs/day = pounds per day
NOx = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
SCAQMD = South Coast Air Quality Management District
SOx = sulfur oxides
ROG = reactive organic gases (similar to volatile organic compounds or VOC)

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			X	

Less Than Significant Impact. The majority of the project-related operational emissions would be due to resident vehicle trips to and from the project, as well as natural gas for space and hot water heating. Tables A and B indicate that all emissions of criteria pollutants from the proposed project would not exceed the applicable SCAQMD thresholds over both the short and long term, therefore, project- and cumulative air quality impacts are considered to be less than significant and no mitigation is required.

d) Expose sensitive receptors to substantial pollutant concentrations?			X	

Less Than Significant Impact. Localized Significance Thresholds (LSTs) represent the maximum emissions from a project that would not result in an exceedance of the national or state ambient air quality standards. LSTs are based on the ambient concentrations of that pollutant within the project source receptor area (SRA) and the distance to the nearest sensitive receptor. For this project, the appropriate SRA is the Perris Valley Area (SRA 24)(Appendix C).

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Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Short-Term LST Impacts

As previously described, it is expected that construction would occur in one phase and it is expected that less than 5 acres would be actively worked on during any given day. The closest sensitive receptors to the site are existing residences south of the project site, the closest of which would be approximately 100 feet from the construction area. Table C shows that emissions are well below LST thresholds and thus would be less than significant and not require mitigation.

Table C: Construction Localized Impacts Analysis

Emissions Sources	NOx	CO	PM_{10}	$PM_{2.5}$
Onsite Emissions (lbs/day)	21.0	14.0	3.2	2.0
Local Significance Thresholds (lbs/day)	**125.0**	**670.0**	**5.9**	**3.2**
Significant Emissions?	**No**	**No**	**No**	**No**

Source: Urban Crossroads, September 2018 (Appendix C).

Note: Source Receptor Area 24 – Perris Valley, 1 acre, 31 meter distance

CO = carbon monoxide
lbs/day = pounds per day
NOx = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size

Long-Term LST Analysis

The potential long-term daily air pollutant emissions from the operational activities of the proposed residential uses were calculated and compared with the appropriate LSTs from the SCAQMD based on CalEEMod 2016.3.1 model data from the project air quality assessment (Appendix C). As shown in Table D, the calculations determined that the operational emission rates would not exceed the LST thresholds for the closest sensitive receptors. Therefore, the proposed operational activity would not result in a localized significant air quality impact and no mitigation is required.

Table D: Long-Term Operational Localized Impacts Analysis

Emissions Sources	NOx	CO	PM_{10}	$PM_{2.5}$
Onsite Emissions (lbs/day)	0.3	1.4	0.07	0.04
Local Significance Thresholds (lbs/day)	**125.0**	**670.0**	**1.50**	**1.00**
Significant Emissions?	**No**	**No**	**No**	**No**

Source: Urban Crossroads, September 2018 (Appendix C).

Note: Source Receptor Area 24 – Perris Valley, 1 acre, 31 meter distance.

CO = carbon monoxide
NOx = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size

e) Create objectionable odors affecting a substantial number of people?			X	

Less Than Significant Impact. Project construction will generate limited odors over the short-term, mainly fumes from gasoline- and diesel-powered construction equipment. These odors would be temporary and not likely to be noticeable beyond the project limits. The painting of buildings or the installation of concrete paving may also create temporary odors. SCAQMD Rule 1113 outlines standards for paint applications, while Rule 1108 identifies standards regarding the application of asphalt. Adherence to the standards identified in these SCAQMD Rules would reduce temporary odor impacts to a less than significant level, and no mitigation is required.

Land uses generally associated with long-term objectionable odors include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting operations, refineries, landfills, dairies, and fiberglass molding facilities. The proposed project is residential in nature and would not be expected to result in significant odor impacts. Because the project would not involve any substantial short-term or long-term sources of strong negative odors, impacts are considered to be less than significant and no mitigation is required.

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Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. **BIOLOGICAL RESOURCES**. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U. S. Fish and Wildlife Service?		X		

Less Than Significant With Mitigation. A Biological Resource Assessment was prepared in March of 2018 by RCA Associates, Inc.[7] (see Appendix D). The survey determined the site had been repeatedly disked for weed abatement and presently contained mainly isolated non-native weedy plant species, including California buckwheat (native), fiddlenecks, brome grasses, annual bursage, and erodium. A number of California fan palm trees also border the site and may be remnants of former agricultural windrows. The site may support a variety of wildlife species but only a few were actually observed, including jackrabbit, cottontail, and California ground squirrel. Birds observed onsite include raven, red-tailed hawk, Anna's hummingbird, and a variety of songbirds tolerant of human activity. Reptiles not observed but expected to occur onsite include the desert spiny lizard, side blotched lizard, western whiptail lizard, and rattlesnake.

The biology report indicated that 31 special status species had been documented in the surrounding region, but only two listed species, the Stephen's kangaroo rat (SKR) and San Bernardino kangaroo rat (SBKR) had any potential to occur in the immediate project area. The report concluded the site contained marginal habitat for SKR but it was not observed onsite, and SBKR has little or no potential to occur on the project site itself (pages 6, 8-9, RCA 2018a). In addition, the report concluded it was possible that a number of special status plants or animals could also be present in the project area (see Table 4-1 in the project biological survey). Sensitive species included tricolored blackbird, burrowing owl, Cooper's hawk, coast horned lizard, red-diamond rattlesnake, short-joint beavertail cactus, and the smooth tarplant (pages 9-10, RCA 2018), but the report concluded these species had little or no potential to actually occur onsite due to repeated disturbance of the site. Because the site is highly disturbed and lacking appropriate vegetation, there is only a low potential for any of these species to actually occur onsite (see Appendix D). The site is within the established Stephen's kangaroo rat (SKR) Habitat Conservation Plan (HCP) area and so the project will be required to pay the established SKR habitat mitigation fee.

The project site lies within the County's Multiple Species Habitat Conservation Plan (MSHCP) but does not contain any Criteria Cells, Constrained Linkages, Public or Quasi-Public Land, or other identified resources or resource areas. However, the site is within the MSHCP survey area for burrowing owl. The project site has been recently plowed for weed abatement and is largely un-vegetated. Because the project site lies within the MSHCP survey area for burrowing owl, a burrowing owl habitat assessment was conducted in March of 2018 by RCA Associates, Inc. which found no evidence of owls or owl sign, and no evidence of usable burrows (page 6, RCA 2018b). However, burrowing owls are mobile and seasonally migratory birds, Mitigation Measure BIO-1 is incorporated which will reduce impacts to a less than significant level. No additional mitigation measures are required in regard to listed or otherwise sensitive species.

BIO-1 **Burrowing Owl Survey.** Prior to the issuance of a grading permit, a pre-construction survey for burrowing owl shall be conducted by a qualified biologist no more than 30 days before the commencement of vegetation removal or ground disturbing activities to confirm the absence of burrowing owl onsite. If burrowing owl(s) are detected during the focused surveys, a Burrowing Owl Mitigation and Monitoring Plan ("Plan") shall be prepared by a qualified biologist and submitted to the California Department of Fish and Wildlife for review and approval prior to commencement of project activities. The Plan shall describe appropriate avoidance, minimization, and mitigation measures to reduce impacts to burrowing owls and ensure the implementation of appropriate and commensurate compensatory mitigation for the loss of burrowing owl nesting and foraging habitat. No further action is required if the 30-day pre-construction survey does not result in burrowing owl sign or observations.

[7] Biological Resources Assessment, Frontier Communities Brodiaea Avenue Residential Project, RCA Associates, Inc. March 14, 2018 (Appendix C).

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Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Have a substantially adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U. S. Wildlife Service?		X		

Less Than Significant With Mitigation. No riparian or riverine habitats were identified within the project site, but the unimproved Quincy (flood control) Channel lies offsite adjacent to the eastern boundary of the project site.[8] The project site has been repeatedly disked for weed abatement and is largely unvegetated except for remnant perimeter windrows of California fan palm trees (see Figures 2 and 3). The site supports a limited amount of weedy non-native mainly invasive plants with isolated California buckwheat as the main native plant present.

The adjacent Quincy Channel supports riparian habitat which includes tree tobacco (non-native), California buckwheat, arroyo willow, and coyote brush. Although the channel is offsite, the project may have indirect impacts on that waterway which could fall under the jurisdiction of one or more resource agencies (e.g., U.S. Army Corps of Engineers, California Department of Fish and Wildlife, etc.). The project plans show a low berm is to be constructed just east of Quincy Street, on what is the west bank of the Quincy Flood Control Channel. A final design for this portion of the channel has not been selected, but whatever design is selected it will require coordination by the City of Moreno Valley, the Riverside County Flood Control and Water Conservation District, the California Department of Fish and Wildlife, and possibly the U.S. Army Corps of Engineers during related and subsequent permitting processes. Figure 5 shows three options for the channel design; riprap bank, concrete bank, and soft bottom. While development of the project site is not physically dependent on improvements to this portion of the Quincy Channel, improvements to the channel are proposed to address indirect project impacts prior to occupancy of the project[9]. Mitigation Measure BIO-2 addresses potential impacts to the channel. With mitigation, potential impacts to riparian resources will be reduced to less than significant levels.

BIO-2 **Quincy Channel Improvements.** Prior to issuance of the first occupancy permit, the applicant shall demonstrate to the City of Moreno Valley Planning Division that a final improvement plan has been approved for that portion of the Quincy Channel adjacent to the project site by the City Public Works Division, the Riverside County Flood Control and Water Conservation District, the California Department of Fish and Wildlife, and possibly the U.S. Army Corps of Engineers (if federal jurisdiction is determined to apply to the project or channel). The applicant shall make appropriate improvements to the channel to the satisfaction of the City Engineer per the approved improvement plan and prior to the issuance of the first occupancy permit.

Regarding natural communities, the project site lies within the County's Multiple Species Habitat Conservation Plan (MSHCP) for western Riverside County but does not contain any Criteria Cells, Constrained Linkages, Public or Quasi-Public, or other identified habitat resources. No MSHCP Narrow Endemic Plant Species (NEPS) are known to occur within the project area, and the site is not within an MSHCP survey area for NEPS. As a result, a focused NEPS survey is not required. There would be no impact in this regard and no mitigation is required.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?		X		

Less Than Significant with Mitigation. The project site itself does not contain any federal wetlands or water resources under federal jurisdiction. However, the nearby Quincy Channel may fall under the jurisdiction of the U.S. Army Corps of Engineers (USACE). To err on the side of caution, it is concluded the channel may be under federal jurisdiction. If the USACE exercises jurisdiction over this channel, implementation of Mitigation Measure BIO-3 requires coordination of

[8] IBID.

[9] May 9, 2014 Project Review Staff Committee meeting minutes, attached memo dated April 22, 2014 from Vince, Assoc. Engineer regarding future improvements to the Quincy Channel

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Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

channel design and improvements with USACE prior to project occupancy due to indirect impacts on the channel from project development. Therefore, potential impacts in this regard are less than significant with mitigation.

d) Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established native resident migratory wildlife corridors, or impede the use of native wildlife nursery sites?		X		

Less Than Significant with Mitigation. The project is currently vacant and is surrounded by residential uses. The project will not affect wildlife movement since the parcel is surrounded by urban development and species associated with urban environments are able to navigate these areas. The Quincy Channel may provide for some movement of birds or mammals tolerant of human activity (e.g., coyote). Due to ongoing disturbance, the project site does not provide suitable foraging ground or localized movement for wildlife. However, nesting habitat may be indirectly affected by proposed project activities. Palm trees and low shrubs on the site or in the adjacent Quincy Channel may provide nesting habitat for birds using the site and surrounding areas. Increased noise and human presence as a result of construction activities may cause birds to abandon nests or negatively affect nestlings. Typically, the CDFW requires construction activities within 300 feet of trees and shrubs be scheduled outside of the avian nesting season. If construction activities are planned during the avian nesting season (February 1 through September 15), a pre-construction nesting bird survey should be conducted within three days prior to commencement to avoid impacts to birds protected under the Migratory Bird Treaty Act (MBTA). Mitigation Measure BIO-3 will ensure that potential impacts are less than significant.

BIO-3 **Nesting Bird Survey.** If project activities are planned during the avian nesting season (approximately February 1 through September 15), a nesting bird survey shall be conducted onsite within ten days prior to disturbance to ensure birds protected under the MBTA are not disturbed by construction-related activities such as noise and increased human presence. Any active nests detected in the area shall be flagged and an appropriate buffer around the nest location will be established, as determined by the CDFW. The buffer area is to be avoided until the nesting cycle is complete or it is determined by the biologist that the nest has failed. This measure shall be implemented to the satisfaction of the City Planning Division.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			X	
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan?		X		

Less Than Significant Impact. The site contains no native vegetation, drainages, or other biological resources and is not subject to the City's tree protection ordinance 9.16.210. The project site is located within the County's Multiple Species Habitat Conservation Plan (MSHCP) but is not located in a Criteria Cell and is not adjacent to Public-Quasi-Public or Conservation Land. Therefore, it is not subject to possible land conservation requirement under the MSHCP. However, the project will be required to pay the established MSHCP impact fee and will implement Mitigation Measures BIO-1 through BIO-3 which will also help address potential impacts to listed or sensitive species. For these reasons, the project will have less than significant impacts related to local biological ordinances and policies, and any Habitat Conservation Plans. No mitigation is required (see Appendix D).

V. **CULTURAL RESOURCES**. Would the project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?		X		

Less than Significant Impact with Mitigation. There are no sites within Moreno Valley study area listed as a state landmark, nor are there any sites on the National Register of Historic Places, although the old Moreno Schoolhouse was designated a

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City landmark[10] in 1988 - it is located two miles northeast of the project site. According to the Cultural Resource Assessment[11] prepared for the Project one cultural resource was noted within a half mile radius of the project site, and six cultural resource reports have been previously completed within the half mile buffer surrounding the Project site. During the field reconnaissance, no "historical resources" as defined under CEQA were discovered onsite. However, numerous prehistoric resources lie in the uplands to the south and southwest. To assure there will be no significant impacts to any potential buried cultural resources, Mitigation Measures CUL-1 through CUL-6 shall be implemented to reduce impacts related to historical resources to less than significant with mitigation. These measures are consistent with the recommendations of the project cultural report and standard measures required by the City of Moreno Valley based on input from various Native American tribes.

CUL-1 **Project Archaeologist.** Prior to the issuance of a grading permit, the Developer shall retain a professional archaeologist to conduct monitoring of all mass grading and trenching activities. The Project Archaeologist shall have the authority to temporarily redirect earthmoving activities in the event that suspected archaeological resources are unearthed during Project construction. The Project Archaeologist, in consultation with the Consulting Tribe(s), the contractor, and the City, shall develop a Cultural Resources Management Plan (CRMP) in consultation pursuant to the definition in AB52 to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the project site. A consulting tribe is defined as a tribe that initiated the AB 52 tribal consultation process for the Project, has not opted out of the AB52 consultation process, and has completed AB 52 consultation with the City as provided for in Cal Pub Res Code Section 21080.3.2(b)(1) of AB52. Details in the Plan shall include:

a. Project grading and development scheduling;

b. The Project archeologist and the Consulting Tribes(s) as defined in CUL-1 shall attend the pre-grading meeting with the City, the construction manager and any contractors and will conduct a mandatory Cultural Resources Worker Sensitivity Training to those in attendance. The Training will include a brief review of the cultural sensitivity of the Project and the surrounding area; what resources could potentially be identified during earthmoving activities; the requirements of the monitoring program; the protocols that apply in the event inadvertent discoveries of cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated; and any other appropriate protocols. All new construction personnel that will conduct earthwork or grading activities that begin work on the Project following the initial Training must take the Cultural Sensitivity Training prior to beginning work and the Project archaeologist and Consulting Tribe(s) shall make themselves available to provide the training on an as-needed basis;

c. The protocols and stipulations that the contractor, City, Consulting Tribe(s) and Project archaeologist will follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits that shall be subject to a cultural resources evaluation.

CUL-2 **Tribal Monitoring.** Prior to the issuance of a grading permit, the City of Moreno Valley shall secure agreements with the Pechanga Band of Luiseño Indians and Soboba Band of Luiseño Indians for tribal monitoring. The Developer is also required to provide a minimum of 30 days advance notice to the tribes of all mass grading and trenching activities. The Native American Tribal Representatives shall have the authority to temporarily halt and redirect earth moving activities in the affected area in the event that suspected archaeological resources are unearthed. If the Native American Tribal Representatives suspect that an archaeological resource may have been unearthed, the Project Archaeologist or the Tribal Representatives shall immediately redirect grading operations in a 100-foot radius around the find to allow identification and evaluation of the suspected resource. In consultation with the Native American Tribal Representatives, the Project Archaeologist shall evaluate the suspected resource and make a determination of significance pursuant to California Public Resources Code Section 21083.2. (only applicable if tribes require monitoring)

[10] Chapter 7 – Conservation, City of Moreno Valley General Plan, July 11, 2006.
[11] Cultural Resource Assessment, Frontier Communities Brodiaea Avenue Residential Project, RCA Associates, Inc. September 6, 2018.

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CUL-3 **Finds During Grading.** In the event that Native American cultural resources are discovered during the course of grading (inadvertent discoveries), the following procedures shall be carried out for final disposition of the discoveries:

a) One or more of the following treatments, in order of preference, shall be employed with the tribes. Evidence of such shall be provided to the City of Moreno Valley Planning Division:

i. Preservation-In-Place of the cultural resources, if feasible. Preservation in place means avoiding the resources, leaving them in the place they were found with no development affecting the integrity of the resources.

ii. Onsite reburial of the discovered items as detailed in the treatment plan required pursuant to Mitigation Measure CUL-1. This shall include measures and provisions to protect the future reburial area from any future impacts in perpetuity. Reburial shall not occur until all legally required cataloging and basic recordation have been completed. No recordation of sacred items is permitted without the written consent of all Consulting Native American Tribal Governments as defined in CUL-1. The location for the future reburial area shall be identified on a confidential exhibit on file with the City and concurred to by the Consulting Native American Tribal Governments prior to certification of the environmental document.

CUL-4 **Grading Plan Note.** The City shall verify that the following note is included on the Grading Plan:

"If any suspected archaeological resources are discovered during ground-disturbing activities and the Project Archaeologist or Native American Tribal Representatives are not present, the construction supervisor is obligated to halt work in a 100-foot radius around the find and call the Project Archaeologist and the Tribal Representatives to the site to assess the significance of the find."

CUL-5 **Accidental Finds.** If potential historic or cultural resources are uncovered during excavation or construction activities at the project site, work in the affected area must cease immediately and a qualified person meeting the Secretary of the Interior's standards (36 CFR 61), Tribal Representatives, and all site monitors per the Mitigation Measures, shall be consulted by the City to evaluate the find, and as appropriate recommend alternative measures to avoid, minimize or mitigate negative effects on the historic, or prehistoric resource. Determinations and recommendations by the consultant shall be immediately submitted to the Planning Division for consideration and implemented as deemed appropriate by the Community Development Director, in consultation with the State Historic Preservation Officer (SHPO) and any and all Consulting Native American Tribes as defined in CUL-1 before any further work commences in the affected area.

CUL-6 **Human Remains.** If human remains are discovered, no further disturbance shall occur in the affected area until the County Coroner has made necessary findings as to origin. If the County Coroner determines that the remains are potentially Native American, the California Native American Heritage Commission shall be notified within 24 hours of the published finding to be given a reasonable opportunity to identify the "most likely descendant". The "most likely descendant" shall then make recommendations and engage in consultations concerning the treatment of the remains (California Public Resources Code 5097.98). (GP Objective 23.3, CEQA).

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?		X		

Less than Significant with Mitigation. According to the Eastern Information Center, there have been thirty (30) reported cultural resource areas within 1-mile of the project, one prehistoric site within the project's boundary. With Mitigation Measures CUL-1 through CUL-6 noted in CEQA Checklist V(a) discussion above would reduce the impact to less than significant levels. No additional mitigation measures are required (see Appendix E).

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c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		X		

Less than Significant with Mitigation. The project site contains Alluvial Fan Deposits which consist of unconsolidated gravel, sand, and silt. Cobble- and boulder-sized clasts are also present and become more abundant closer to the hills and mountains. These sediments were eroded from higher elevations, carried by flooding streams and debris flows, and deposited in a fan or lobe shape at the base of the nearby hills. Based on the geology of the site, construction of the project would not impact, either directly or indirectly, any known unique paleontological resource or site of unique geologic features. Given the site's history of disturbance, the potential for undiscovered paleontological or geological resources is considered low. However, ground-disturbing activities at the project site still have the potential to disturb previously unknown resources. With implementation of Mitigation Measures CUL-7 through CUL-10, a less than significant impact to paleontological resources would occur.

CUL-7 **Paleontological Resources.** Prior to the issuance of a grading permit, the Project Applicant shall provide evidence to the City of Moreno Valley that a qualified paleontologist has been retained by the Project Applicant to conduct monitoring of excavation activities and has the authority to halt and redirect earthmoving activities in the event that suspected paleontological resources are unearthed.

CUL-8 **Paleo Monitor.** The paleontological monitor shall conduct full-time monitoring during grading and excavation operations in undisturbed, very old alluvial fan sediments at or below four (4) feet below ground surface and shall be equipped to salvage fossils if they are unearthed to avoid construction delays and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. The paleontological monitor shall be empowered to temporarily halt or divert equipment to allow of removal of abundant and large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface, or if present, are determined upon exposure and examination by qualified paleontological personnel to have a low potential to contain or yield fossil resources.

CUL-9 **Paleo Curation.** Recovered specimens shall be properly prepared to a point of identification and permanent preservation, including screen washing sediments to recover small invertebrates and vertebrates, if necessary. Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage, such as the Western Science Museum in Hemet, California, is required for significant discoveries.

CUL-10 **Paleo Report.** A final paleontological monitoring and mitigation report of findings and significance shall be prepared, including lists of all fossils recovered and written repository agreements, if any, and necessary maps and graphics to accurately record the original location of the specimens. The report shall be submitted to the City of Moreno Valley prior to building final.

d) Disturb any human remains, including those interred outside of formal cemeteries?		X		

Less than Significant with Mitigation. California Health and Safety Code §7050.5, Public Resources Code § 5097.98, and § 15064.5 of the California Code of Regulations (CEQA Guidelines) mandate procedures to be followed, including that, if human remains are encountered during excavation, all work must halt, and the County Coroner must be notified (Section 7050.5 of the California Health and Safety Code). The coroner will determine whether the remains are of forensic interest. If the coroner, with the aid of the supervising archaeologist, determines that the remains are prehistoric, the coroner will contact the Native American Heritage Commission (NAHC).

The NAHC will be responsible for designating the most likely descendant (MLD) responsible for the ultimate disposition of the remains, as required by Section 5097.98 of the Public Resources Code. The MLD should make his/her recommendations within 48 hours of their notification by the NAHC. This recommendation may include A) the non-

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destructive removal and analysis of human remains and items associated with Native American human remains; (B) preservation of Native American human remains and associated items in place; (C) relinquishment of Native American human remains and associated items to the descendants for treatment; or (D) other culturally appropriate treatment. Section 7052 of the Health & Safety Code also states that disturbance of Native American cemeteries is a felony. With adherence to these existing regulation and Mitigation Measure CUL-6 impacts would be less than significant.

VI. **GEOLOGY AND SOILS**. Would the project:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving:

(i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			X	

Less Than Significant Impact. The project site is located within the Peninsular Range Geomorphic Province, an area characterized by active northeast trending strike slip faults, including the San Jacinto Fault and the Elsinore Fault (see Appendix F).[12] The project site is not located within the boundaries of an Earthquake Fault Zone as defined by the Alquist-Priolo Earthquake Fault Zoning Act of 1972 (California Geological Survey 2005). There are no known active or potentially active faults that traverse the project site and the risk of ground rupture due to a fault displacement beneath the site is low. The closest known fault is the San Jacinto-Claremont Fault zone approximately 3.1 miles east of the project site.[13] Therefore, impacts related to earthquake faults would be less than significant. No mitigation is required (see Appendix F).

(ii) Strong seismic ground shaking?			X	

Less than Significant Impact. Like all of Southern California, the project site will continue to be subject to ground shaking generated from activity on local and regional faults. In addition, the site lies in relative close proximity to an active fault. Therefore, during the life of the proposed improvements, the property will probably experience moderate to occasionally high ground shaking from these fault zones, as well as some background shaking from other seismically active areas of the Southern California region. However, the design and construction in accordance with the current California Building Code (CBC) requirements is anticipated to address the issues related to potential ground shaking. In addition, the site specific geotechnical report evaluated potential ground shaking from a variety of potential sources. With the implementation of California Building Code (CBC) requirements and those outlined in the project geotechnical report[12], seismic-related impacts would be less than significant. No mitigation is required.

(iii) Seismic-related ground failure, including liquefaction?		X		

Less than Significant with Mitigation. Liquefaction describes the phenomenon where ground shaking works cohesionless soil particles into a tighter packing, which induces excess pore pressure. There are three basic factors that must exist concurrently in order for liquefaction to occur. These factors include:

- A source of ground shaking, such as an earthquake, capable of generating soil mass distortions;
- A relatively loose silty and/or sandy soil; and
- A relatively shallow groundwater table (within approximately 50 feet below ground surface) or completely saturated soil conditions that will allow positive pore pressure generation.

According to County data, the site has a moderate potential for liquefaction[13,14] and is considered susceptible to subsidence The proposed project would be required to adhere to applicable regulations ensuring building safety, and a less than

[12] Geotechnical Investigation and Infiltration Study, Geotek, Inc. February 12, 2014.
[13] Figure 6-3: Geologic Faults and Liquefaction, City of Moreno Valley General Plan, July 11, 2006.

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significant impact would result from the construction and operation of the proposed onsite uses with implementation of all applicable regulations and Mitigation Measure GEO-1 (see Appendix F) relative to liquefaction and subsidence.

GEO-1 **Geotech Report.** Prior to issuance of building permits, the project applicant or its designee shall demonstrate all recommendations contained in project-specific geotechnical and/or soils and foundation evaluation report by Geotek, Inc. dated February 12, 2014 are implemented. This measure shall be implemented to the satisfaction of the City Engineer.

(iv) Landslides?			X	

Less than Significant. The geologic and topographic characteristics of an area, often determine its potential for landslides. Steep slopes, the extent of erosion, and the rock composition of a hillside all contribute to the potential for slope failure and landslide events. In order to fail, unstable slopes typically need to be disturbed, and the most common triggering mechanisms of slope failure include undercutting of slopes by erosion or grading, saturation of marginally stable slopes by rainfall or irrigation, and shaking of marginally stable slopes during earthquakes. Although there are uplands further to the south, the project site and surrounding areas are not generally susceptible to landslides[13] based on soils data from the federal government. Therefore, impacts related to landslides would be less than significant. No mitigation is required.

(b) Result in substantial soil erosion or the loss of topsoil?		X		

Less than Significant with Mitigation. The project site is mostly underlain by San Emigdio loam (SgC) with 2-8% slopes, although the southeast corner of the site has Metz loamy find sand (MhB) with 0-5% slopes[15] which is most likely associated with past overflow of the adjacent Quincy Channel. These soils are considered suitable for urban and suburban development but are subject to moderate erosion by wind and water, as supported by the project geotechnical report. Prior to the issuance of grading permits, the project proponent would be required to prepare and submit detailed grading plans for the project site. These plans must be prepared in conformance with applicable standards of the City's Grading Ordinance.

Construction activities associated with the development of the proposed project would expose underlying soils, thus increasing their susceptibility to erosion until the project is fully developed. Development of the site would involve more than one acre of ground disturbance, therefore, the proposed project is required to obtain a National Pollutant Discharge Elimination System (NPDES) permit. A Storm Water Pollution Prevention Plan (SWPPP) would also be required to address erosion and discharge impacts associated with the proposed onsite grading by implementing appropriate best management practices (BMPs). Adherence to the BMPs contained in the SWPPP and Mitigation Measures HYD-1 through HYD-3 would ensure that the potential for soil erosion impacts would be reduced to less than significant levels by implementation of existing water quality regulations and the proposed mitigation measures.

(c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?		X		

Less than Significant with Mitigation. Subsidence is the sudden sinking or gradual downward settling of the earth's surface with little or no horizontal movement. Subsidence is caused by a variety of activities, which include, but are not limited to, withdrawal of groundwater, pumping of oil and gas from underground, the collapse of underground mines, liquefaction, and hydrocompaction. The project site is generally flat and slopes gently down to the south. Onsite soils primarily consist of upper 3 to 4 feet of dry, loose and compressible loamy sand and fine sand, overlying gravelly fine to medium coarse sand of moderate consistency with scattered rock fragments and rocks at depth. Due to the absence of groundwater within

[15] Web Soil Survey for Western Riverside County, United States Department of Agriculture, Natural Resources Conservation Service. https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx (Website accessed April 18, 2018).

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50 feet and the relatively flat site topography, the potential susceptibility for onsite liquefaction and lateral spreading of soils due to groundshaking from earthquakes is considered low.[16]

No structural fills and/or load bearing foundations and concrete slabs should be constructed bearing directly on the surface soils currently existing on the project site.[16] Therefore, implementation of Mitigation Measure GEO-1 will ensure a less than significant impact with development of the proposed project. The project site is also not located within an area that is susceptible to landslides.[10] The proposed project would be required to adhere to applicable regulations ensuring building safety; a less than significant impact would result from the construction and operation of the proposed onsite uses with implementation of all applicable regulations and Mitigation Measure GEO-1 (see Appendix F).

(d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?		X		

Less Than Significant with Mitigation. Expansive soils are fine-grained silts and clays which are subject to swelling and contracting. The swelling and contracting is due to the amount of fine-grained clay materials present in the soils and the amount of moisture either introduced or extracted from the soils. According to the project geotechnical study,[16] onsite soils are considered non-expansive, however, there is a potential for corrosion for metal pipes buried onsite. The project geotechnical study recommended consulting a soils engineer prior to installation of underground pipes. Implementation of Mitigation Measure GEO-2 will ensure that impacts related to corrosive or other soil limitations are reduced to less than significant levels (see Appendix F).

GEO-2 **Soil Limitations.** Prior to the issuance of a grading permit, the project applicant shall provide proof to the City that a soils engineer has evaluated onsite soils and recommended appropriate construction techniques to adequately protect buried metal pipes or other onsite improvement from onsite soil conditions. This measure shall be implemented to the satisfaction of the City Engineer.

(e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X

No Impact. The proposed project is expected to connect to existing sewer main lines and service lines. The project would not use septic tanks or other alternative wastewater disposal system. Therefore, the development of the project would have no impact related to this issue. No mitigation measures are required.

VII. **GREENHOUSE GAS EMISSIONS.** Would this project?

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?		X		

This section provides an analysis of greenhouse gas (GHG) emissions associated with the proposed project. This analysis examines the short-term construction and long-term operational impacts of the proposed project as it relates to greenhouse gases. A detailed assessment of project-related GHG emissions is included in Appendix C. Gases that trap heat in the atmosphere are called greenhouse gases and include carbon dioxide, methane, nitrous oxide, and water vapor. Carbon dioxide (CO_2) is mainly produced by burning fossil fuels (coal, natural gas, and oil), solid waste, trees and wood products, and also as a result of certain chemical reactions (e.g., manufacture of cement). CO_2 is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle. Methane (CH_4) results from the production and transport of coal, natural gas, and oil as well as from livestock, other agricultural practices, and the decay

[16] Geotechnical Investigation and Infiltration Study, Geotek, Inc. February 12, 2014.

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Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

of organic waste in municipal solid waste landfills. Nitrous oxide (N_2O) is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.

Since the mid 1990's California has encouraged and mandated a variety of programs, plans, and requirements to reduce GHG emissions from various sources. Similarly, the City of Moreno Valley has prepared an "Energy Efficiency and Climate Action Strategy" for its residents and businesses to help reduce GHG emissions within the City.

Calculation of Greenhouse Gas Emissions

The project's GHG emissions during construction and mobile sources during project operation were estimated by Urban Crossroads (Appendix C) using the CalEEMod 2016.3.1 computer model developed and maintained by the South Coast Air Quality Management District (SCAQMD). The project's GHG emissions from onsite equipment were estimated using the emission factors found on the SCAQMD website. The proposed project would generate a total of 975 metric tons (MT) of CO2e GHGs during operation (i.e., max. project occupancy) including 18.7 metric tons of CO2e each year for construction, amortized over a 30-year period consistent with SCAQMD methodologies. It should be noted that the long-term GHG emissions if the site were to be built at its present General Plan/zoning density would be 565 metric tons of CO2e per year (Appendix C). For comparison, the existing emissions from the entire SCAG region are estimated to be approximately 176.79 MMT/year of CO2e, and the existing emissions for the entire State are estimated at approximately 496.95 MMT/year of CO2e. The carbon dioxide, methane, and nitrous oxide emissions that would be associated with the proposed project is less than a thousandth of one percent of California's total emissions for carbon dioxide, methane, and nitrous oxide.

According to the Air Quality Analysis, the project's long-term (annual) operational GHG emissions would be 974.56 MT of CO2E which is lower than the SCAQMD's interim Tier 3 GHG emissions "small projects" screening threshold of 3,000 MT/year of CO_2E for residential projects even assuming worst-case conditions, as shown in Table E.

Table E: Annual Greenhouse Gas Emissions from Project Operation

Source	CO_2	CH_4	N_2O	Total CO^2E
Annual construction-related emissions amortized over 30 years	18.56	0.00	0.00	18.68
Area	15.38	0.02	0.00	15.87
Energy	207.27	0.01	0.00	208.19
Mobile	679.50	0.04	0.00	680.41
Waste	11.15	0.66	0.00	27.63
Water Usage	20.51	0.10	0.00	23.78
Total CO_2E (all sources)	**974.56**			
SCAQMD Residential Screening Threshold (CO_2E)	3,000			
Exceeds Threshold?	No			

Source: Urban Crossroads, September 12, 2018 (Appendix C)

Since projected short- and long-term GHG emissions are below the SCAQMD's residential screening threshold, cumulative GHG impacts are less than significant and no mitigation measures are required.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	

Less Than Significant Impact. The City of Moreno Valley has adopted the following goals and policies under the City's General Plan to reduce greenhouse gas emissions relative to the proposed project:

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Community Development Element

Policy 2.10.4 Landscaping and open spaces should be provided as an integral part of project design to enhance building design, public views, and interior spaces; provide buffers and transitions as needed; and facilitate energy and resource conservation.

Safety Element

Policy 6.7.6 Require building construction to comply with the energy conservation requirements of Title 24 of the California Administrative Code.

Conservation Element

Policy 7.5.1 Encourage building, site design, and landscaping techniques that provide passive heating and cooling to reduce energy demand.

Policy 7.5.4 Encourage the use of solar power and other renewable energy systems.

In addition, the City adopted a "Final Energy Efficiency and Climate Action Strategy" (EECAS), along with a related greenhouse gas analysis, on October 9, 2012. The EECAS requires the following GHG reduction measures within the City:

R2-T1: Land Use Based Trips and VMT Reduction Policies. Encourage the development of Transit Priority Projects along High Quality Transit Corridors identified in the SCAG Sustainable Communities Plan, to allow a reduction in vehicle miles traveled.
R2-T3: Employment-Based Trip Reductions. Require a Transportation Demand Management (TDM) program for new development to reduce automobile travel by encouraging ride-sharing, carpooling, and alternative modes of transportation.
R2-E1: New Construction Residential Energy Efficiency Requirements. Require energy efficient design for all new residential buildings to be 10% beyond the current Title 24 standards. (Reach Code)
R2-E2: New Construction Residential Renewable Energy. Facilitate the use of renewable energy (such as solar (photovoltaic) panels or small wind turbines) for new residential developments. Alternative approach would be the purchase of renewable energy resources offsite.
R2-E5: New Construction Commercial Energy Efficiency Requirements. Require energy efficient design for all new commercial buildings to be 10% beyond the current Title 24 standards. (Reach Code)
R3-E1: Energy Efficient Development, and Renewable Energy Deployment Facilitation and Streamlining. Updating of codes and zoning requirements and guidelines to further implement green building practices. This could include incentives for energy efficient projects.
R3-L2: Heat Island Plan. Develop measures that address "heat islands." Potential measures include using strategically placed shade trees, using paving materials with a Solar Reflective Index of at least 29, an open grid pavement system, or covered parking. _
R2-W1: Water Use Reduction Initiative. Consider adopting a per capita water use reduction goal which mandates the reduction of water use of 20 percent per capita with requirements applicable to new development and with cooperative support of the water agencies.
R3-W1: Water Efficiency Training and Education. Work with EMWD and local water companies to implement a public information and education program that promotes water conservation.
R2-S1: City Diversion Program. For Solid Waste, consider a target of increasing the waste diverted from the landfill to a total of 75% by 2020.

With the implementation of GHG reduction measures in the EECAS, "Moreno Valley is projected to reduce its community-wide emissions to a total of 798,137 MT CO2e, which is 556 MT CO2e below the 2020 reduction target. This is a decrease of 38.5 percent from the City's 2020 BAU emissions inventory and 13 percent from the 2010 emissions. The reduction

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measures reduce GHG emissions from all sources of community-wide GHG emissions including transportation, energy, area sources, water, and solid waste." (pages 6-7, EECAS 2012).

At a minimum, state law requires the project to meet Title 24 energy conservation requirements and all applicable Green Building Code requirements regarding energy and water conservation. As outlined above, project-related GHG emissions are considered to be less than significant compared to the SCAQMD's GHG thresholds. Compliance with the EECAS and the SCAQMD GHG thresholds also helps assure the project will be consistent with the SCAG Regional Transportation Plan (RTP) and its Sustainable Community Strategy (SCS). Therefore, the project will not conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. However, the proposed project includes a General Plan Amendment and Change of Zone, so the following mitigation is recommended to help this higher density residential project achieve the identified goals of the City's Energy Efficiency and Climate Action Strategy (EECAS). Since the project is under the SCAQMD threshold and consistent with the City's EECAS, it is considered to be consistent with the requirements of AB 32, SB 32, and the CARB Scoping Plan. With implementation of Mitigation Measure GHG-1, potential GHG impacts of the project relative to an adopted plan, policy, or regulation will be less than significant.

GHG-1 **GHG Emissions.** To ensure that the proposed project complies with and would not conflict with or impede the implementation of state and local greenhouse gas (GHG) reduction goals, the project will implement the following measures to help reduce its GHG emissions to the extent feasible. Prior to issuance of any occupancy permits, these measures shall be incorporated into the design and construction of the project to the satisfaction of the City:

Construction and Building Materials

(a) Divert at least 50 percent of the demolished and/or grubbed construction materials (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard).

Energy Efficiency

(a) Design all project buildings to exceed the current California Building Code Title 24 energy standard by ten (10) percent, such as by installing energy-efficient heating and cooling systems, appliances and equipment, and control systems.

(b) Install electrical to allow for future installation of roof-mounted photovoltaic solar equipment and electric vehicle charging equipment in garages.

Water Conservation and Efficiency

(a) Install water-efficient landscaping within parkways and common areas of the development.

(b) Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls, within parkways and common areas of the development.

(c) Restrict watering methods (e.g., prohibit systems that apply water to non-vegetated surfaces) and control runoff from parkways and common areas within the development.

VIII. **HAZARDS AND HAZARDOUS MATERIALS.** Would the project?				
a) Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?			X	

Less than Significant Impact. There is an existing 30-inch high pressure gas line in Brodiaea Avenue that will be protected in place as part of project construction. This gas line represents an existing potential hazard for this portion of the City (i.e., accidental explosion or fire). The line is within the existing right-of-way for Brodiaea Avenue and no occupied structures will be constructed over the pipeline alignment. The proposed project would not increase the inherent risk of this facility, but it would introduce additional residents into the area which would then be subject to this potential hazard. No houses

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would be built on top of the pipeline and it would represent a potential safety risk to any residential project that were to be built in this location. The requested higher density project would only incrementally increase this risk by introducing more residents into the area than if the project were built to R3 standards. Potentially hazardous materials such as fuels, lubricants, and solvents would be used during project construction. The transport, use, and storage of hazardous materials during construction of the project would be conducted in accordance with all applicable State and federal laws, such as the Hazardous Materials Transportation Act, Resource Conservation and Recovery Act, the California Hazardous Material Management Act, and the California Code of Regulations, Title 22. Compliance with all applicable laws and regulations during project construction would reduce the potential impact associated with the routine transport, use, storage, or disposal of hazardous materials to a less than significant level. No mitigation is required.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	

Less Than Significant Impact. A Phase I Environmental Site Assessment (ESA)[17] was completed for the project site by Geotek in March of 2014 (see Appendix G). There are indications the project site was once used for agricultural purposes. The site has been vacant and undeveloped[18] since 1953. According to the EnviroStor website[19] and the Phase I ESA, no hazardous material sites or recognized environmental conditions were identified on or adjacent to the proposed project site[15]. Based on available information, the site is expected to have a less than significant impact on the release of hazardous materials and no mitigation is required.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			X	

Less Than Significant Impact. The closest school is the Landmark Middle School located at 15261 Legendary Drive approximately 0.2 mile north of the project site. The City does not have jurisdiction with respect to the location, design, or construction of school facilities. However, the City works with the Moreno Valley Unified School District concerning the design of roads and other public improvements in and around school sites, and is responsible for fire, police, and public safety concerns involving all facilities within the City, including schools. The handling of hazardous materials or emission of hazardous substances, if present, will be in accordance with a Hazardous Materials Business Emergency Plan administered by the City Fire Prevention Bureau, as applicable, in accordance with California Health and Safety Code Section 25507 and other local, state, and federal standards, ordinances, and regulations.

Compliance with Health and Safety Code Section 25507 will ensure that impacts associated with environmental and health hazards related to an accidental release of hazardous materials or emissions of hazardous substance near existing or proposed schools are less than significant. No mitigation is required.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result would it create a significant hazard to the public or the environment?				X

No Impact. According to the Phase I ESA,[17] the proposed project site is not located on a list of hazardous material sites pursuant to Government Code Section 65962.5. Additionally, the project site is not located on the EnviroStor website.[19] Therefore, no impact related to this issue will occur and no mitigation is required.

[17] Phase I Environmental Site Assessment, APN 478-080-013, Moreno Valley, Riverside County, CA. Geotek, March 3, 2014.
[18] Cultural Resource Assessment, Frontier Communities Brodiaea Avenue, City of Moreno Valley, RCA Associates Inc., April 2018.
[19] EnviroStor, Department of Toxic Substances Control, www.dtsc.ca.gov, site accessed April 2018.

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e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?			X	

Less Than Significant Impact. The closest airport is the March Air Reserve Base located approximately 5.5 miles southwest of the project site. The project site is not located within a Compatibility Zone of the March Air Reserve Base.[20] Because the project site lies outside the Compatibility Zones, no impact would occur related to the safety of people within an airport land use plan. No mitigation is required.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X

No Impact. The project does not lie within the vicinity of a private airstrip. Therefore, the project will have no impact related to the safety of people near a private airstrip. No mitigation is required.

g) Impair implementation of, or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	

Less Than Significant Impact. The Project site is currently vacant and unoccupied. Police, fire, and paramedic services are currently provided by the City to the entire area, including the project site. The project site will be accessible via Brodiaea Avenue to the east and west, although a short portion of the roadway to the east currently has a gravel surface. Emergency access to the project site would be available via Brodiaea Avenue from the west and eventually from the east when it is improved to Redlands Boulevard. Since the project site has adequate existing and future access for emergency vehicles, and would allow project residents to evacuate efficiency, the project will have a less than significant impact related to emergency plans and access.

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?			X	

Less Than Significant Impact. The project in and of itself is not located within a wildfire susceptibility area and it not adjacent to any wildland areas which would increase the project's susceptibility to wildland fires. In the event of a fire emergency within the proposed project, the Moreno Valley Fire Department would provide initial fire protection services. The closest stations to the project site are the Fire Station at 28040 Eucalyptus Avenue (2.5 miles north of the site) and Fire Station 99 located at 13400 Morrison Street approximately 2.75 miles northwest of the project site. Response time from either station to the project site is estimated at under 5 minutes based on a travel speed of 35 miles per hour. Due to the proximity of the Moreno Valley Fire Department stations, a less than significant impact would occur related to wildland fire. The project would use building materials required by the Fire Department appropriate for the fire risk of this specific area, therefore, no mitigation is required.

IX. **HYDROLOGY AND WATER QUALITY**. Would the project: a) Violate any water quality standards or waste discharge requirements?		X		

Less Than Significant with Mitigation. The proposed project site is vacant and located within the Santa Ana River Watershed. The surface of the site is currently 100 percent pervious and has been routinely disked for weed abatement. The Preliminary Hydrology Study prepared for the project by Michael Baker International in April 2018 indicates the site has 2 watershed sub-areas with a total of 18.1 acres that would have a 10-year flood (Q_{10}) runoff of 13.1 cubic feet per

[20] Map MA-1: Compatibility Map, March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan, Riverside County Airport Land Use Commission, November 13, 2017.

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second (cfs) and a 100-year flood (Q_{100}) runoff of 22.1 cfs under developed conditions (see Appendix H). Construction of the project will involve site clearing, rough grading and compaction, pouring of concrete and asphalt, and construction of the various residential structures. The project site clearing/grubbing and grading phases will disturb vegetation and surface soils, potentially resulting in erosion and sedimentation. If left exposed and with no vegetative cover, the project site's bare soil could be subject to additional wind and water erosion. Since the proposed project involves over one acre of ground disturbance, it is subject to National Pollution Discharge Elimination System (NPDES) requirements and must implement a Storm Water Pollution Prevention Plan (SWPPP). Implementation of site-specific best management practices (BMPs), as established by the SWPPP, will ensure all impacts related to erosion and sedimentation from ground disturbance are less than significant (see Appendix G).

Under existing conditions, the project site drains in a southerly direction toward Brodiaea Avenue. The proposed project includes one lot in the southwest corner of the property (Lot A with 6,105 square feet) to be used for runoff retention and bio-filtration for water quality purposes. The project hydrology study determined the size and depth of this basin was sufficient to retain expected runoff during Q_{10} and Q_{100} events without increasing offsite (i.e., downstream) runoff.

A project specific Water Quality Management Plan (WQMP) was prepared by Michael Baker International (MBI) on April 24, 2018 (see Appendix H). To address potential water contaminants, the project is required to comply with applicable federal, state, and local water quality regulations in accordance with the project-specific NPDES and SWPPP. Given compliance with all applicable federal, state, and local laws regulating surface water quality, and with implementation of Mitigation Measures HYD-1 through HYD-3, the proposed project as designed will result in less than significant impacts to water quality standards or waste discharge.

HYD-1 **File NOI.** Prior to the issuance of a grading permit, the project applicant shall file and obtain a Notice of Intent (NOI) with the Regional Water Quality Control Board (RWQCB) in order to be in compliance with the State NPDES General Construction Storm Water Permit for discharge of surface runoff associated with construction activities. Evidence that this has been obtained (i.e., a copy of the Waste Discharger's Identification Number) shall be submitted to the City for coverage under the NPDES General Construction Permit. The NOI shall address the potential for an extended and discontinuous construction period based on funding availability.

HYD-2 **Prepare SWPPP.** Prior to the issuance of a grading permit, the project applicant shall prepare a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP shall include a surface water control plan and erosion control plan citing specific measures to control on-site and off-site erosion during the entire grading and construction period. In addition, the SWPPP shall emphasize structural and nonstructural Best Management Practices (BMPs) to control sediment and non-visible discharges from the site. The SWPPP will include inspection forms for routine monitoring of the site during construction phase to ensure NPDES compliance and additional BMPs and erosion control measures will be documented in the SWPPP and utilized if necessary. The SWPPP shall address the potential for an extended and discontinuous construction period based on funding availability. The SWPPP will be kept on site for the entire duration of project construction and will be available to the local RWQCB for inspection at any time. BMPs included in the SWPPP may include the following:

- Sediment discharges from the site may be controlled by the following: sandbags, silt fences, straw wattles and temporary basins (if deemed necessary), and other discharge control devices. The construction and condition of the BMPs will be periodically inspected during construction and repairs will be made when necessary as required by the SWPPP.
- Materials that have the potential to contribute to non-visible pollutants to storm water must not be placed in drainage ways and must be contained, elevated, and placed in temporary storage containment areas.
- All loose piles of soil, silt, clay, sand, debris, and other earthen material shall be protected in a reasonable manner to eliminate any discharge from the site. Stockpiles will be surrounded by silt fences and covered with plastic tarps.

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- In addition, the construction contractor shall be responsible for performing and documenting the application of BMPs identified in the SWPPP. Weekly inspections shall be performed on sandbag barriers and other sediment control measures called for in the SWPPP. Monthly reports and inspection logs shall be maintained by the Contractor and reviewed by the City and the representatives of the State Water Resources Control Board. In the event that it is not feasible to implement specific BMPs, the City can make a determination that other BMPs will provide equivalent or superior treatment either on or off site.

HYD-3 **Prepare WQMP.** Prior to the issuance of a grading permit, the applicant shall submit a Water Quality Management Plan (WQMP) to the City for review and approval. The project shall implement project design features identified in the Water Quality Management Plan (draft by MBI submitted April 24. 2018). This measure shall be implemented to the satisfaction of the City Public Works Department.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			X	

Less Than Significant Impact. Groundwater in the project area is managed and distributed by the Eastern Municipal Water District (EMWD). The EMWD is required by state law (Urban Water Planning Management Act or AB 797 in 1983) to prepare an Urban Water Management Plan (UWMP) to identify its sources/supplies of potable water, its historical and projected consumption by its customers, and evaluate various mandated scenarios for water shortages (e.g., single dry year, and multiple dry years) to assure its customers and the state that it will have adequate water supplies now and in the future, even under expected drought conditions.

The 2015 UWMP concluded EMWD could supply water to its customers until at least 2040 under single dry and multiple drought year scenarios. The project does involve a General Plan Amendment and Zone Change, but the unit increase for this project is incremental and the EMWD UWMP has accounted for future water consumption of existing and planned land uses including residential uses such as the proposed project which is within the overall growth anticipated in the City's General Plan.

The project is also subject to NPDES requirements and will be designed and constructed to ensure compliance with the water quality standards and waste discharge requirements. Surface runoff from the project site will be directed toward the onsite detention basin in the southwest corner of the site and the underground water quality basin near the southeast corner of the site, then into the storm drain in Brodiaea Avenue and west away from the Quincy Channel. This will prevent onsite runoff, which would have some level of urban contaminants, from reaching the local groundwater. Compliance with state and local regulations, along with all City water supply requirements, will ensure there will be no significant impacts related to groundwater supply or recharge resulting from the proposed project. A less than significant impact would occur related to this issue and no mitigation is required.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?		X		

Less Than Significant with Mitigation. As outlined in Section IX.a above, the project hydrology study indicates the site covers two sub-area watersheds with a total of 18.1 acres. The project hydrology study determined the proposed detention/water quality basin in the southwest corner of the site (Lot A with 6,105 square feet) as shown on the tract map and is of sufficient size and depth to accommodate bio-retention and infiltration needs of the project (see Appendix H).

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The following mitigation is proposed to help assure there will be no significant flooding-related impacts from implementation of the proposed project:

HYD-4 **Drainage Improvements.** Prior to issuance of grading and building permits, as appropriate, the developer and project engineer shall demonstrate the project has installed the various drainage and flood control improvements outlined in Tentative Tract Map 37544, the project hydrology report (MBI April 2014), and the project Water Quality Management Plan (MBI April 24, 2018) to the satisfaction of the City Engineer.

Development of the proposed project (homes, landscaping, and pavement) will alter the amount of existing impervious surface area and the amount of generated runoff. Currently, runoff generally drains toward the southwest along Brodiaea Avenue. No streams, rivers, or other drainage features are located onsite, although the Quincy Channel is immediately east of the site. The proposed project would implement structures and impervious surfaces that could potentially alter the current drainage pattern. Pursuant to the requirements of the NPDES permit, as discussed previously, excess flows and sediment would be captured by BMPs identified in the SWPPP and WQMP. With implementation of required BMPs and Mitigation Measures HYD-1 through HYD-3 and BIO-2 (regarding improvements to the Quincy Channel), the proposed project is not expected to result in substantial erosion or siltation or local drainages. Impacts would be less than significant with the proposed mitigation.

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or surface runoff in a manner which would result in flooding on- or off site?		X		

Less Than Significant with Mitigation. No streams, rivers, or other drainage features are located onsite, although the Quincy Channel is immediately east of the site. Pursuant to the requirements of the NPDES permit, as discussed previously, excess flows and sediment would be captured by BMPs identified in the SWPPP and WQMP. With implementation of required BMPs and Mitigation Measures HYD-1 through HYD-4 and BIO-2 (regarding improvements to the Quincy Channel), the project would not result in a significant increase in offsite stormwater flows, so a less than significant impact related to flooding would occur. As a regulatory note, the project will be required to obtain a Conditional Letter of Map Revision (CLMR) or a Letter of Map Revision (LMR), and future residents will have to comply with federal flood insurance requirements.

e) Create or contribute runoff which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?		X		

Less Than Significant with Mitigation. Runoff from the currently vacant site flows generally south and flows west along Brodiaea Avenue via curb and gutter at the southwest corner of the site. The project hydrology study determined that the proposed detention/water quality basin in the southwest corner of the site was of sufficient size and depth to prevent offsite (downstream) flows under developed conditions to exceed those under current (undeveloped) conditions (see Appendix H). The project will not contribute any increased runoff directly into the nearby Quincy Channel. The project will incorporate BMPs that will moderate flows into the existing City storm drain system, connecting at the southwest corner of the site into the existing line in Brodiaea Avenue. In addition, Mitigation Measure HYD-4 will assure all project-related drainage and flood control improvements are installed as proposed. As the project would maintain drainage patterns and flow rates comparable to the existing condition, a less than significant impact would occur with the development of the proposed project.

f) Otherwise substantially degrade water quality?		X		

Less Than Significant Impact. The proposed project is in a developed urban setting and through adherence to City water quality regulations and Mitigation Measures HYD-1 through HYD-3 would not substantially degrade water quality. A

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less than significant impact would occur with implementation of the recommended mitigation measures. No additional mitigation measures are required.

g) Place housing within a 100-year floodplain, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?		X		
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?		X		

Less Than Significant with Mitigation. The Project will introduce additional housing into an area with identified flooding issues. As shown in FEMA Flood Insurance Rate Map (FIRM) 06065C0770G (#065074, panel 0770 of 3805 dated 8-28-08), the site is in FEMA Flood Zone A which means…"areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply" (FEMA)[21]. The project hydrology study, and the proposed site plan and grading plan indicate the site will be raised at least one foot above the 100-year flood elevation to remove the planned housing from the identified flood zone. As a regulatory note, the project will be required to obtain a Conditional Letter of Map Revision (CLMR) or a Letter of Map Revision (LMR), and future residents will have to comply with federal flood insurance requirements. In addition, Mitigation Measure HYD-4 requires the project to install the proposed onsite drainage improvements, while Mitigation Measure BIO-2 requires the project to make appropriate improvements to the adjacent Quincy Channel which will incrementally improve overall flood protection for this area. With implementation of these project characteristics and mitigation, the proposed project will have less than significant impacts related to flooding and no additional mitigation is required.

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X

No Impact. Two locations of concern exist within the City of Moreno Valley: Poorman Reservoir (Pigeon Pass Reservoir) and Lake Perris. Dam failure at Portman's Reservoir could result in extensive flooding along the downstream watercourse in the western portion of the City. Dam failure at Lake Perris would only affect a very small area south of Nandina Avenue along the Perris Valley Storm Drain and the Mystic Lake area in the southeast corner of the City.[22] According to the City's General Plan,[20] the project site will not expose people or structures to a risk of loss, injury or death involving the failure of a levee or dam. No impact would occur and no mitigation is required.

j) Inundation by seiche, tsunami, or mudflow?				X

No Impact. The Project site is located approximately 2 miles north of Lake Perris. At this distance, the Project site is not considered susceptible to seiche-related hazards originating at Lake Perris. The reservoir has an approximate water surface elevation of 1,566 feet above mean sea level (amsl) while the Project site is at an elevation of approximately 1,592 feet amsl. The site is at a higher elevation with intervening slopes of the Mt. Russell area, so the potential for seiche-related flooding or mudflows down the slopes north of the lake (i.e. toward the project site) are very low. In addition, the site is 43 miles from the Pacific Ocean and is at an elevation of approximately 1,592 feet amsl (versus sea level), therefore, the project is not subject to tsunami hazards and no impact would occur.

21 https://www.fema.gov/zone FEMA website accessed April 24, 2018.
22 Chapter 6-Safety, City of Moreno Valley General Plan, July 11, 2006.

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X. **LAND USE AND PLANNING**. Would the project:				
a) Physically divide an established community?				X

No Impact. The project proposes development of 45 single family residences on 8.55 gross acres under the proposed zoning (change from R3 to RS10). To the north and west is vacant land while residential communities are located to the south and east. The project would not introduce features such as highways or transit lines that would divide an established community. In addition, the project will construct the southern portion of Quincy Street, and the northern segment will be constructed when the property north of the project site is developed. Once Quincy Street is completed (between Brodiaea Avenue and Alessandro Boulevard), the surrounding area will have improved accessibility and will be less divided physically. Therefore, **no impact** regarding dividing an established neighborhood would occur and no mitigation is required.

b) Conflict with an applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?			X	

Less Than Significant Impact. The Project proposes the development of 45 single-family residences which would be expected to generate approximately 176 residents[23], although it is likely not all of them would be new residents to the City (i.e., some portion would be expected to relocate within the City, but the exact proportion is not known at this time). The existing General Plan and zoning (R3) allows up to 3 units/acre or approximately 25 units (estimated 98 residents), so the proposed project would represent an increase of 20 units or 78 residents over existing designations. The developer has indicated the additional density will be consistent with regional housing and demographic trends and will provide a wider range of housing opportunities than are currently available in this portion of the City, as well as help to fund the required improvements to the adjacent Quincy Channel. The proposed zoning (RS10) would allow up to 10 units per acre while the tentative tract map/site plan proposes 45 units (5.3 units/acre). The existing residential neighborhood just south of the project site has a General Plan land use designation of Residential: Max. 10 units/acre and is zoned RS10 (max. 10 units/acre) and the lands west and east of the existing residences are zoned R5 (5 units/acre). The surrounding vacant land to the east, north, and west is zoned R3, although it should also be noted the property southeast of the site is zoned R5 and is being developed with 159 units on 35 acres (4.5 units/acre) versus up to 175 units that could be built under the existing zoning (5 units/acre).

The project will require a General Plan Amendment (PEN18-0053) from Residential: Max. 3 units/acre to RS10: Max. 10 units/acre to accommodate the proposed 5.09 units/acre (gross) and 7.75 units/acre (net) under TTM37544. The project will also require a Change of Zone (CZ PEN18-0054) from R3 to RS10 for similar reasons. The vacant land east, west, and north of the site is designated R3, while the land south of the site (i.e., south of Brodiaea Avenue) is designated RS10 (including the existing residences) and R5 to the west of the existing residential neighborhood. The proposed changes are consistent with the General Plan and zoning designations south of the site but would not be consistent with existing designations to the east, west, and north. Therefore, it is possible this project, by changing the existing zoning from R3 to RS10, may indirectly induce some additional growth into the area in the future because the surrounding vacant properties (approximately 130 acres between Alessandro Blvd. on the north, Moreno Beach Drive on the west, Brodiaea Ave. on the south, and Wilmot St. on the east) are currently zoned at a lower density. If the entire 130 acres of vacant land were to be changed to RS10 zoning, the vacant land would generate up to 1,300 units (max. 10 units/acre) versus 390 units under the existing R3 zoning (3 units/acre). If the remaining vacant land in the area were to be developed at the density of the proposed project (5.09 units/acre gross and 7.75 units/acre net), it would only generate 684 units (versus 390 units under the existing R3 zoning). However, although the proposed Project would be inconsistent with the subject property's existing General Plan land use and Zoning designations, such inconsistency would only be significant if it were to result in significant, adverse effects to the environment that would not otherwise occur with the implementation of the R3 designation. As disclosed in this MND, implementation of the Project would result in the development of a residential project that could result in several adverse effects to the environment. This MND provides mitigation measures that would

[23] 45 units times the average household size in the City (3.91 persons per household per U.S. Census data) equals 176 new residents.

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

reduce all of the Project's effects on the environment to less than significant levels. Therefore, after mitigation, the Project's conflict with the site's existing General Plan land use and Zoning designations would be less than significant. The Project would not conflict with any goals, objectives, policies or regulations of land use and planning documents applicable to the Project area, including SCAQMD AQMP, SCAG RTP/SCS, and SCAG Regional Comprehensive Plan. Since the project involves a General Plan Amendment and Change of Zone, Table F demonstrates that the proposed project is generally consistent with applicable goals and objectives of the City's General Plan. Due to the presence of RS10 and R5 zoning immediately south of the site, the proposed change in land use designations/intensity would result in less than significant land use impacts. It should be noted the special amenity required by the Municipal Code for RS10 housing is the linear park and trail improvements along the portion of the Quincy Channel adjacent to the project site.

Table F: General Plan Consistency Analysis

General Plan Goals and Objectives[1]	Consistency Analysis
2. COMMUNITY DEVELOPMENT ELEMENT	
Goal 2.1: A pattern of land uses, which organizes future growth, minimizes conflicts between land uses, and which promotes the rational utilization of presently underdeveloped and undeveloped parcels.	**Consistent.** The proposed project is residential and consistent with surrounding residential uses, although it proposes a higher density than currently allowed under the GP and zoning.
Objective 2.1: Balance the provision of urban and rural lands within Moreno Valley by providing adequate land for present and future urban and economic development needs, while retaining the significant natural features and the rural character and lifestyle of the northeastern portion of the community.	**Consistent.** The proposed project is suburban residential and consistent with existing residential uses to the south and southeast. Surrounding land contains scattered and more rural (i.e., larger lot) residential uses.
Goal 2.2: An organized, well-designed, high quality, and functional balance of urban and rural land uses that will meet the needs of a diverse population, and promote the optimum degree of health, safety, well-being, and beauty for all areas of the community, while maintaining a sound economic base.	**Consistent.** The project proposes higher density than currently allowed under the GP or zoning consistent with regional housing and demographic trends and will provide a wider range of housing opportunities than are currently available in this portion of the City, as well as help to fund improvements to the nearby Quincy Channel so the City does not have to construct or fund construction of these improvements.
Objective 2.2: Provide a wide range of residential opportunities and dwelling types to meet the demands of present and future residents of all socioeconomic groups.	**Consistent.** The project will provide smaller lots and more opportunities for a larger portion of the home-buying community.
Policy 2.2.1: In determining allowable density for residential parcels an "adjusted net acreage" shall be used. Adjusted net acres shall mean the land area that would remain after dedication of ultimate rights-of-ways for arterial streets, freeways and park dedications.	**Consistent.** The proposed project has a density of 5.26 units/acre gross and 7.75 units/acre (net). This is consistent with the RS10 zone being requested under the GPA and CZ.
Policy 2.2.6: The primary purpose of areas designated Residential 3 is to provide a transition between rural and urban density development areas, and to provide for a suburban lifestyle on residential lots larger than those commonly found in suburban subdivisions. The maximum allowable density shall be 3.0 dwelling units per acre.	**Generally Consistent.** The site is currently designated R3 but there are existing RS10 uses immediately south of the site and a new residential project zoned R5 southeast of the site The surrounding vacant land north of Brodiaea Ave. is vacant and zoned R3 while the vacant land south of Brodiaea and just east of Moreno Beach Drive is zoned R5. The project is consistent with the RS10 lot size limitations but proposes lots with widths that are similar to but still smaller than the existing residences south of Brodiaea Ave. (just south of the site).
Policy 2.2.7: The primary purpose of areas designated Residential 5 is to provide for single-family detached housing on standard sized suburban lots. The maximum allowable density shall be 5.0 dwelling units per acre.	
Policy 2.2.8: The primary purpose of areas designated Residential 10 is to provide for a variety of residential products and to encourage innovation in housing types. Developments within Residential 10 areas are typically expected to provide amenities not generally found in suburban subdivisions, such as common open space and recreational areas. The maximum allowable density shall be 10.0 dwelling units per acre.	
Policy 2.2.13: Discourage costly "leap-frog" development patterns by encouraging in-fill development wherever feasible, thereby reducing overall housing costs…	**Consistent.** Although there is vacant land in the surrounding area, the project is just north of an existing residential neighborhood and a new residential development (Bella Cortina by KB Homes) is being built just southeast of the site.
Objective 2.3: Promote a sense of community and pride within residential areas through increased neighborhood interaction and enhanced project design.	**Consistent.** Residents of the proposed project will be able to interact with existing residents in the homes just south of the project across Brodiaea Avenue.

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Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Policy 2.3.1: Within individual residential projects, a variety of floor plans and elevations should be offered.	**Consistent.** The project offers a variety of floor plans and elevations.
Policy 2.3.2: Encourage building placement variations, roofline variations, architectural projections, and other embellishments to enhance the visual interest along residential streets.	**Consistent.** The project will have a variety of styles and architectural variety to add visual interest within the new neighborhood.
Policy 2.3.3: Discourage the development of single-family residences with a bulk (building mass) that is out of scale with the size of the parcels on which they are located.	**Consistent.** The units of the proposed project will be consistent with City Municipal Code, Table 9.03.040-6, Residential Site Development Standards, which allows up to 50% lot coverage in the RS10 zone. Note that the average lot size in the project is 5,624 square feet.
Objective 2.13: Coordinate development activity with the provision of public infrastructure and services to eliminate possible gaps in service provision.	**Consistent.** The project will improve the adjacent half-width of Brodiaea Avenue, the portion of the Quincy Channel adjacent to the site, and various utility lines within Brodiaea Avenue to connect to the new housing.
Policy 2.13.1: Limit the amount of development to that which can be adequately served by public services and facilities, based upon current information concerning the capability of public services and facilities.	**Consistent.** According to available information, the project as proposed can be adequately served by local fire, police, and other public services.
Policy 2.13.2: Unless otherwise approved by the City, public water, sewer, drainage and other backbone facilities needed for a project phase shall be constructed prior to or concurrent with initial development within that phase.	**Consistent.** The project plans indicate connections to various existing utility lines within Brodiaea Avenue which will be made prior to occupancy of the project. The project has obtained or will obtain appropriate "will serve" letters from the local utility agencies.
5. CIRCULATION ELEMENT	
Goal 5.1: Develop a safe, efficient, environmentally and financially sound, integrated vehicular circulation system consistent with the City General Plan Circulation Element Map, Figure 9-1, which provides access to development and supports mobility requirements of the system's users.	**Consistent.** The project site has access to major arterial streets in all directions and can access the SR-60 Freeway via Moreno Beach Drive to the west and Redlands Boulevard to the east. In addition, the project will improve the adjacent half-width of Brodiaea Ave.
Goal 5.2: Maintain safe and adequate pedestrian, bicycle, and public transportation systems to provide alternatives to single occupant vehicular travel and to support planned land uses.	**Generally Consistent.** The project will make roadway improvements to this portion of Brodiaea Avenue but full pedestrian access will not be available to project residents until the properties east and west of the site are developed.
Policy 5.2.1: Locate residential units with access from local streets. Minimize direct residential access from collectors. Prohibit direct single-family driveway access on arterials and higher classification roadways.	**Consistent.** The project will limit access to its lots from local streets and will not create any lots that front on arterial or higher classified roadways.
Policy 5.2.2: Feed short local streets into collectors.	**Consistent.** The project will have two short north-south and one short east-west residential streets, all connecting directly to Brodiaea Avenue on the south. None of the internal streets are close to half a mile long and will have a curb-to-curb width of 36 feet according to TTM 37544.
Policy 5.2.4: Design new subdivisions to minimize the disruptive impact of motor vehicles on local streets. Long, broad and linear streets should be avoided. Residential streets should be no wider than 40 feet, and should have an uninterrupted length of less than one half mile. Curvilinear streets and cul-de-sacs are preferred. Streets within the subdivision should be designed to facilitate access to residences and to discourage through traffic.	
Objective 5.3: Maintain Level of Service (LOS) "C" on roadway links, wherever possible, and LOS "D" in the vicinity of SR 60 and high employment centers. Figure 9-2 depicts the LOS standards that are applicable to all segments of the General Plan Circulation Element Map.	**Consistent.** The City determined the project would not generate traffic in volumes that would exceed the requirements of the County Congestion Management Plan (CMP)(i.e, more than 50 peak hour trips at any intersection covered by the CMP). Therefore, the project does not need to prepare a detailed Traffic Impact Assessment (TIA) and its traffic generation is anticipated to be within City standards since the project area is bounded by major arterials in all directions.
Objective 5.7: Design roads to meet the needs of the residents of the community without detracting from the "rural" atmosphere in designated portions of Moreno Valley. (Designated "rural" areas include those encompassed by the Residential Agriculture 2, Residential 1, Rural Residential and Hillside Residential zoning districts. "Urban" areas encompass all other zoning districts.)	**Consistent.** The project and surrounding area are considered "urban" under this objective and the local roadways are located and sized to accommodate suburban level traffic, including the proposed higher density of the project (R3 changed to RS10).
Objective 5.9: Support and encourage development of safe, efficient and aesthetic pedestrian facilities.	**Consistent.** The project will construct internal sidewalks to accommodate project residents and will eventually connect to sidewalks both east and west of the site on the north side of Brodiaea Ave. (i.e., when current vacant land is developed).
Policy 5.9.1: Encourage walking as an alternative to single occupancy vehicle travel, and help ensure the safety of the pedestrian as follows: (a) All new developments shall provide sidewalks in conformance with the City's streets cross section standards, and applicable policies for designated urban and rural areas…	

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Objective 5.11: Eliminate obstructions that impede safe movement of vehicles, bicyclists, and pedestrians.	**Consistent.** The project will improve the adjacent half-width of Brodiaea Avenue and construct sidewalks internal to the project. These will eventually connect to sidewalks both east and west of the site on the north side of Brodiaea Ave. (i.e., when current vacant land is developed).
6. SAFETY ELEMENT	
Goal 6.1 To achieve acceptable levels of protection from natural and man-made hazards to life, health, and property	**Consistent.** Section VIII of the Initial Study concludes project residents will be protected from existing and future hazards, although the 30-inch high pressure gas line in Brodiaea Ave. will remain in place.
Objective 6.1: Minimize the potential for loss of life and protect residents, workers, and visitors to the City from physical injury and property damage due to seismic ground shaking and secondary effects.	**Consistent.** A geotechnical constraints report has been prepared specifically for this project, and design and construction will be consistent with the recommendations of that report. Section VI of the Initial Study concludes project residents will be protected from anticipated geologic and soil constraints in the area.
Objective 6.2: Minimize the potential for loss of life and protect residents, workers, and visitors to the City from physical injury and property damage, and to minimize nuisances due to flooding.	**Consistent.** Section IX of the Initial Study concludes project residents will be protected from existing and future flood hazards.
Policy 6.2.2: Permit only that development in 100- year floodplain that represents an acceptable use of the land in relation to the hazards involved and the costs of providing flood control facilities…	**Consistent.** The project will make improvements to the adjacent Quincy Channel to improve overall flood protection in this portion of the City. Prior to occupancy, the site will be raised by grading at least one foot above the 100-year flood limit, per applicable federal standards.
Objective 6.3: Provide noise compatible land use relationships by establishing noise standards utilized for design and siting purposes.	**Consistent.** Section XII of the Initial Study concludes project and area residents will be protected from expected noise impacts, including during construction.
Objective 6.4: Review noise issues during the planning process and require noise attenuation measures to minimize acoustic impacts to existing and future surrounding land uses.	
Objective 6.6: Promote land use patterns that reduce daily automotive trips and reduce trip distance for work, shopping, school, and recreation.	**Consistent.** The project site is a half mile from commercial uses along the west side of Moreno Beach Drive at Brodiaea Ave. which will help minimize shopping trip lengths. Eventually when the pedestrian network in the surrounding area is completed, local residents will be able to better access work, shopping, schools, and recreational facilities.
Objective 6.8: As feasible given budget constraints, strive to maintain a police force with a ratio of one sworn officer for each 1,000 residents.	**Generally Consistent.** The City maintains a police force of 160 sworn and 45 civilian workers to serve the 205,499 current (2016) City residents. This equals an existing ratio of 0.78 sworn officer per 1,000 residents which below the City service goal. However, the project will not substantially degrade this existing level of service.
Objective 6.10: Protect life and property from the potential short-term and long-term deleterious effects of the necessary transportation, use, storage treatment and disposal and hazardous materials and waste within the City of Moreno Valley.	**Consistent.** Section VIII of the Initial Study concludes residents will be protected from existing and future hazards, including transport of chemicals into and out of the project with compliance with federal, state, and local laws regarding hazardous materials.
Objective 6.16: Ensure that uses within urbanized areas are planned and designed consistent with accepted safety.	**Consistent.** Section VIII of the Initial Study concludes residents will be adequately protected from existing and future hazards.
7. CONSERVATION ELEMENT	
Goal 7.1: To achieve the wise use of natural resources within the City of Moreno Valley, its sphere of influence and planning area.	**Consistent.** The project is in an area with a mixture of rural and suburban land uses intermixed with vacant land. The Quincy Channel is adjacent to the site and will be improved consistent with direction from various resource agencies.
Objective 7.1: Minimize erosion problems resulting from development activities.	**Consistent.** Section IX of the Initial Study concludes the project will not cause significant erosion as long as appropriate mitigation and "best management practices" for water quality are implemented.
Objective 7.2: Maintain surface water quality and the supply and quality of groundwater.	**Consistent.** The project will protect water quality by implementing mitigation and "best management practices" as outlined in the project Water Quality Management Plan. The project is too small to require a Water Supply Assessment but it generally consistent with the Urban Water Management Plan of the Eastern Municipal Water District.
Objective 7.3: Minimize the consumption of water through a combination of water conservation and reuse.	**Consistent.** Section IX of the Initial Study estimates the water to be consumed by the project, and it will be consistent with the current state Green Building Code regarding water conservation.
Objective 7.4: Maintain, protect, and preserve biologically significant habitats where practical, including the San Jacinto Wildlife Area, riparian areas, habitats of rare and endangered species, and other areas of natural significance.	**Consistent.** The Quincy Channel is adjacent to the site and will be improved consistent with direction from various resource agencies.

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Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Objective 7.5: Encourage efficient use of energy resources.	**Consistent.** Section VII of the Initial Study estimates the energy to be consumed by the project which will generate greenhouse gas emissions. The project will be consistent with the current state Green Building Code regarding energy conservation (Title 24) and will implement Mitigation Measure GHG-1 to further reduce energy consumption of the project.

Source: City of Moreno Valley General Plan, City Website accessed April 25, 2018

[1] Only those applicable to the proposed residential project

The proposed arrangement of lots is depicted in Tentative Tract Map 37544 as shown previously in Figure 4. The average lot size of the proposed project (estimated at 5,624 square feet) is about half the size of the average lot of the residential neighborhood to the south (approx. 10,500 square feet or a quarter-acre with lot dimensions of 95' x 110'). The project proposes larger lots and to keep the R3 zoning designation in the southeast portion of the site adjacent to Brodiaea Avenue so the lot dimensions will be consistent with those of the existing housing zoned R3 just south of the project across Brodiaea Avenue. TTM 37544 shows lot sizes range from 4,843 square feet (50' x 95') up to 11,939 square feet with an average of 5,624 square feet. The four lots along Brodiaea Avenue just west of the Quincy Channel are proposed to be 8,458 square feet (Lot 45) and 8,024 square feet (Lots 42-44) as these are directly adjacent to the existing housing to the south. Lot 41 which accesses off of Street "A" within the project also has a lot depth of 75 feet which is consistent with the widths of Lots 42-45 within the project and the existing residential lots across Brodiaea Avenue to the south. The proposed project design will therefore reduce potential land use conflicts by providing similar sized lots to the existing residential lots to the south. Based on its proposed design, the General Plan Amendment and Change of Zone proposed by this project would have a less than significant impact on any applicable land use plan, policy, or regulation, and no mitigation is required.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?		X		

Less Than Significant Impact. The proposed project is located within the Multiple Species Habitat Conservation Plan (MSHCP), City of Moreno Valley Area Plan. However, the site is not located in a Criteria Cell, designated as to adjacent to any land designated as Public or Quasi-Public Land or Conservation Land. The Project is located within the MSHCP survey area for burrowing owl. Because the project is not located within a Criteria Cell, it is not subject to possible land conservation requirement under the MSHCP. Refer to the analysis provided for Response IV(f) and related mitigation measures. Therefore, development of the Project would have a less than significant impact related to a habitat conservation plan.

XI. **MINERAL RESOURCES.** Would the project:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X

No Impact. The Project site is vacant and undeveloped. The mineral resources known to occur within the City of Moreno Valley include sand, gravel and rock which is used to make concrete and as road base.[24] According to the City's General Plan, one recently active sand and gravel quarry is known to occur within the City's sphere of influence: the Jack Rabbit Canyon Quarry.[24] The Jack Rabbit Canyon Quarry was inactive as of 2001 and is located in a drainage course at the northeast corner of Jack Rabbit Trail and Gilman Springs Road approximately 6.5 miles west of the Project site. No regionally or statewide significant mineral resources are located within the planning area.[25] Due to the absence of mineral resources, no impact would occur related to the project and no mitigation measures are required.

[24] Chapter 7 – Conservation, 7.8 Mineral Resources, City of Moreno Valley General Plan, July 11, 2006.

[25] Chapter 5.14 – Mineral Resources, City of Moreno Valley General Plan Final Program EIR, July 2006. Fix Font

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. **NOISE.** Would the project result in: a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?		X		

Short-Term Noise

Short-term noise impacts would result from grading and erecting of buildings onsite during construction of the proposed project. Noise associated with the use of construction equipment is estimated to be between 55 and 85 dBA L_{max} at a distance of 50 feet[26] from the active construction area for the site preparation phase. The maximum noise level generated by each scraper and dozer is typically assumed to be approximately 85 dBA L_{max} at 50 feet from heavy equipment. Each doubling of the sound sources with equal strength increases the noise level by 3dBA. Assuming each piece of construction equipment operates at same distance from the other equipment, the worst-case combined noise level during construction would be 84 dBA L_{max} at 50 feet from active construction area. The closest sensitive receptors to the project site are approximately half a dozen single-family residences located approximately 100 feet south of the project site across Brodiaea Avenue. At this distance, noise levels would be attenuated by approximately 6 dBA from the active construction area. Therefore, the closest sensitive receptors may be subject to short-term construction noise reaching 78 dBA Lmax (84 dBA – 6 dBA) when construction occurs at the project site boundary. It should be noted that these construction-related noise impacts would be the same whether the site was developed for R3 uses or for the proposed RS10 uses, although construction of the residential units might take slightly longer for the proposed project due to the higher number of units involved. Construction noise is permitted by the City when activities occur between the hours of 7:00 a.m. and 8:00 p.m. daily, however, mitigation is recommended to help reduce short-term impacts to the extent feasible.

NOI-1 **Construction Noise.** Prior to issuance of a grading permit, the developer shall prepare a Construction Noise Control Plan (CNCP) and submit it to the City for review and approval. The plan shall include but will not be limited to the following:

- During all project site excavation and grading, contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards.
- The project contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site (i.e. south).
- The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise-sensitive receptors nearest the project site (i.e., south) during all project construction.
- A temporary construction barrier with a minimum height of 8 feet shall be placed along the project's southern property line during project grading and construction.
- During all project site construction, the construction contractor shall limit all construction-related activities, including maintenance of construction equipment and the staging of haul trucks, to between the hours of 7:00 a.m. to 5:00 p.m. Monday through Friday and 8:00 a.m. to 5:00 p.m. on Saturday. No construction is permitted on Sundays and government code holidays.
- Prior to issuance of a grading or building permit, the developer shall prepare a haul route and staging plan for any trucks hauling earth or construction materials to or from the project site to where material will be disposed (i.e. export). The plan shall be reviewed and approved by the City before a grading permit is issued by the City. To the extent feasible, haul routes and truck staging areas shall not pass sensitive land uses or residential dwellings not on a direct driving route to the closest freeway.

26 *Transit Noise and Vibration Impact Assessment,* Federal Transit Administration, 2006.

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Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Construction noise would result in a temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. With the implementation of Mitigation Measure NOI-1, short-term impacts would be reduced to less than significant levels.

Long-Term Noise

Long-term noise impacts are evaluated by both the absolute increase in perceived noise levels as well as by changes to the Community Noise Equivalent Level (CNEL) for the project area. The CNEL provides a weighting factor (i.e., penalty) for noise after 10 PM and before 6 AM as residents are more sensitive to noises during nighttime and early morning hours. Both noise impacts are measured using decibels (dB) on the A scale (dBA) which most closely corresponds to the range of sound perceptible to humans. The applicant is proposing higher density housing (RS10 zoning) compared to the current land use and zoning designations (R3) although the overall character of the area, including the project site, would be residential. The incremental increase in density would increase the number of housing units on the site, but this change would not result in a significant increase in noise levels expected in this residential area.

Traffic Noise. The primary source of long-term noise from this residential project would be the incremental increase in vehicular traffic along Brodiaea Avenue. Noise calculations by Urban Crossroads (Appendix I) indicate existing traffic generates noise levels approximately 2.8 dBA in excess of ambient noise levels without any vehicle travel. If the traffic from the proposed project were added to existing baseline levels, overall noise levels would increase by 3.2 dBA. This noise level increase would be just over the limit of perception by the human ear in an outdoor environment (i.e., +3 dBA), however, it would be less than the increase typically considered to be a significant noise impact in an urban/suburban environment (i.e., +5 dBA). By comparison, the existing CNEL of the project area is estimated by Urban Crossroads to be 60.2 dBA without the proposed project and 60.8 dBA with the proposed project. Therefore, project-related traffic noise would contribute only 0.6 dBA to the CNEL which is below the threshold for human perception and the level considered a significant noise impact in suburban environments. It should be noted that development under RS10 standards may result in an incremental increase in noise levels compared to if the site supported R3 uses due to the higher number of units. However, the preceding analysis determined the long-term noise impacts of RS10 development would still be less than significant.

It should also be noted that the buildings and fences within the proposed project will help attenuate vehicular and other (stationary) noise internal to the project. Therefore, the proposed project would have less than significant long-term noise impacts and no mitigation is required.

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Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			X	

Less Than Significant Impact. Vibration refers to groundborne noise and perceptible motion. Groundborne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors, where the motion may be discernible, but without the effects associated with the shaking of a building, there is a less adverse reaction. According to Federal Transit Administration (FTA) guidelines, vibration levels up to 102 VdB will not result in structural damage to buildings. Table G shows the vibration level for equipment that could potentially be used during construction. Table H shows the human response to different levels of groundborne noise and vibration.

Table G: Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV/L_V at 25 ft	
	PPV (in/sec)	L_V (VdB)
Large Bulldozer	0.089	87
Loaded Trucks	0.076	86
Jackhammer	0.035	79

Sources: Transit Noise and Vibration Impact Assessment (FTA 2006).

ft = feet
L_V = velocity in decibels
VdB = vibration velocity decibels
in/sec = inches per second
PPV = peak particle velocity

Table H: Human Response to Groundborne Noise and Vibration

Vibration Velocity Level	Noise Level		Human Response
	Low Frequency[1]	Mid Frequency[2]	
65 VdB	25 dBA	40 dBA	Approximate threshold of perception for many humans. Low-frequency sound usually inaudible; mid-frequency sound excessive for quiet sleeping areas.
75 VdB	35 dBA	50 dBA	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find transit vibration at this level unacceptable. Low-frequency noise acceptable for sleeping areas; mid-frequency noise annoying in most quiet occupied areas.
85 VdB	45 dBA	60 dBA	Vibration acceptable only if there are an infrequent number of events per day. Low-frequency noise unacceptable for sleeping areas; mid-frequency noise unacceptable even for infrequent events with institutional land uses such as schools and churches.

Source: *Transit Noise and Vibration Impact Assessment* (FTA 2006).

[1] Approximate noise level when vibration spectrum peak is near 30 Hz.
[2] Approximate noise level when vibration spectrum peak is near 60 Hz.

dBA = A-weighted decibels
Hz = Hertz
VdB = vibration velocity decibels

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Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Short-Term Vibration

During site grading, vibration may be felt at the residences to the south of the project across Brodiaea Avenue. Table I lists the projected vibration level from various construction equipment expected to be used on the project site to the nearest buildings in the project vicinity. For typical construction activity, the equipment with the highest vibration generation potential is the large bulldozer, which would generate 87 VdB at 25-feet. The nearest sensitive receptors to the project would be approximately 100 feet from the project boundary to the south. Based on the distance attenuation, the closest residences would experience vibration levels of up to 71 Vdb (0.014 PPV [in/sec]) This vibration level at the closest residential structures from construction equipment would not exceed FTA threshold of 94 VdB (0.2 in/sec PPV) for building damage. This level is also below the FTA's "barely perceptible" human response criteria of 0.04 PPV for transient sources of vibration events. Therefore, ground-borne vibration impacts from project-related construction activities would be considered less than significant. No mitigation is warranted.

Table I: Summary of Construction Equipment and Activity Vibration

Land Use	Direction	Equipment/ Activity	Reference Vibration Level (VdB) at 25 feet	Reference Vibration Level (PPV) at 25 feet	Distance (feet)	Maximum Vibration Level (VdB)	Maximum Vibration Level (PPV)
Residential	South/ Southwest	Large Bulldozers	87	0.089	10	99	0.352
		Loaded Trucks	86	0.076	10	98	0.300

Source: *Transit Noise and Vibration Impact Assessment* (FTA 2006).
Note: The FTA-recommended building damage threshold is 0.2 PPV (in/sec) or approximately 94 VdB at the receiving residential/church structure and 0.3 PPV (in/sec) or approximately 98 VdB at the receiving commercial structure.

ft = foot/feet
in/sec = inch/inches per second
FTA = Federal Transit Administration
PPV = peak particle velocity
VdB = vibration velocity decibels

Long-Term Vibration

The streets surrounding the project area are paved, smooth, and unlikely to cause significant ground-borne vibration. In addition, the rubber tires and suspension systems of buses and other on-road vehicles make it unusual for on-road vehicles to cause ground-borne noise or vibration problems. It is, therefore, assumed that no such vehicular vibration impacts would occur and, therefore, no vibration impact analysis of on-road vehicles is necessary. Additionally, once constructed, the proposed project would not contain uses that would generate ground-borne vibration. Therefore, a less than significant impact would occur regarding long-term vibration, and no mitigation is required.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			X	

Less Than Significant Impact. Please refer to Checklist Response XII.a. A less than significant impact related to increase in ambient noise levels would occur. No mitigation is required.

d) A substantially temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	

Less Than Significant Impact. Please refer to Checklist Response XII.a. A less than significant impact related to increase in ambient noise levels would occur. No mitigation is required.

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan, or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
No Impact. The closest airport to the proposed project site is March Air Reserve Base (RIV) located approximately 5.5 miles southwest of the project site. Aircraft noise is rarely audible at the project site; and no portion of the site lies within the 55 dBA CNEL noise contours of the airport. Therefore, no impact would occur with the exposure of people residing or working within the project boundaries. No mitigation is required.				
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X
No Impact. Please refer to Checklist Reponse XII.e. **No impact** would occur and no mitigation is required.				
XIII. **POPULATION AND HOUSING.** Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			X	
Less than Significant Impact. During the construction process, the project would create short-term construction jobs and are anticipated to be filled primarily by workers who reside in the project vicinity. The proposed Project is the construction of 45 single family residential units which would generate a maximum of 176 residents.[27] This would be an incremental increase over the housing and population increases under the existing General Plan and zoning (i.e., plus 18 units and 78 persons)[28]. It is unknown how many new residents to the City this project will generate, although it is likely that some proportion of project residents would move from existing units within the City, therefore, the project is not expected to result in a large influx of new residents to the City. The project could induce some additional growth in this portion of the City, especially if the land use designation or zoning of other properties are changed to allow higher density housing. However, the project is not expected to induce substantial or significant growth in the City or region beyond the growth forecasts detailed in the City's General Plan or SCAG's regional growth forecasts since the proposed project is consistent with the existing land use and zoning designations (i.e., suburban residential). Therefore, a less than significant impact related to this issue will occur. No mitigation is required.				
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
No Impact. The proposed project is currently vacant and does not contain any residences that would be removed as a result of the proposed Project. Therefore, the Project would not displace a substantial number of existing housing or residences so as to necessitate the construction of replacement of housing. **No impact** would occur with respect to the displacement of existing housing. No mitigation is required.				
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X
No Impact. Please refer to Response Question XIII.b. **No impact** related to this issue would occur as a result of the Project and no mitigation is required.				

[27] 45 units times the average household size in the City (3.91 persons per household per U.S. Census data) equals 176 new residents. https://www.census.gov/quickfacts/fact/table/morenovalleycitycalifornia/POP010210

[28] 30 units times the average household size in the City (3.91 persons per household per U.S. Census data) equals 117 residents.

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

XIV. **PUBLIC SERVICES**. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

a) Fire protection?			X	

Less Than Significant Impact. The proposed Project would place new residential uses on undeveloped land. The City of Moreno Valley Fire Department (MVFD) contracts with the Riverside County Fire Department (RCFD) for local fire protection services. The closest stations to the project site are the Fire Station at 28040 Eucalyptus Avenue (2.5 miles north of the site) and Fire Station 99 located at 13400 Morrison Street approximately 2.8 miles northwest of the project site, Response time from either station to the project site is estimated at under 5 minutes based on a travel speed of 35 miles per hour. According to the City's General Plan, a five-minute response time is considered to be the maximum time standard for serving urban and suburban uses.[29] Considering this, the project will have a less than significant impact on fire protection. No mitigation is required.

b) Police protection?			X	

Less Than Significant Impact. The Project includes the development of residential uses at the northwest corner of Brodiaea Avenue and Quincy Street. Police services are provided by the Moreno Valley Police Department (MVPD) under contract with the Riverside County Sheriff's Department which has 162 sworn officers and a current officer to population ratio of 0.9 officers per 1,000 populations in the City. The closest police stations to the project site are the City Hall Station located at 22850 Calle San Juan De Los Lagos approximately 5.8 miles west of the project site, and the station located at 23819 Sunnymead Boulevard approximately 6.2 miles west of the project site. It should be noted the MVPD divides the City into "beat" or service areas to assure the entire City receives adequate police patrol and protection services. The Project could introduce a maximum of 176 residents to the City versus 117 persons under the existing zoning. Although it is not known how many of these residents would be new to the City, the project would incrementally increase the need for police. Since adequate police services are currently available in the City, development of the project would have a less than significant impact on police protection. No mitigation is required.

c) Schools?			X	

Less Than Significant Impact. The Project proposed the development of residential uses which would generate school aged children. Based on data from the Moreno Valley Unified School District[30] (MVUSD) website, the project site, and its future residents, would be served by the following MVUSD schools:

- Ridge Crest Elementary School (K-5) 28500 John F. Kennedy Drive 0.6 mile south of the site
- Landmark Middle School (6-8) 15261 Legendary Drive 1.2 miles southwest of the site
- Vista Del Lago High School (9-12) 15150 Lasselle Street 2.5 miles west-southwest of the site

The historical enrollments at these schools are shown in Table J below based on the District's most current demographic report[31]. Based on the District's most current Developer Impact Fee Report, the project would be expected to generate approximately 30 elementary, 14 middle school, and 19 high school students (63 total students), as shown in Table K below. By comparison, development of the site under the existing General Plan and zoning designations would generate 20 elementary, 10 middle school, and 13 high school students (43 total students).

29 Chapter 6 "Safety," City of Moreno Valley General Plan, July 11, 2006.
30 MVUSD website accessed April 18, 2018 http://apps.schoolsitelocator.com/?districtCode=42798
31 https://www.mvusd.net/apps/pages/index.jsp?uREC_ID=786774&type=d&pREC_ID=1181757

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Table J: Historical Enrollments at Local MVUSD Schools

School	Enrollments[1]		
	2015	2016	2017
Ridge Crest Elementary	560	596	592
Landmark Middle	1,153	1,160	1,222
Vista Del Lago High	2,003	1,910	2,073

Source: District Demographic Report[32] issued February 5, 2018
[1] not including special day class (SDC) enrollments

Table K: Estimated Student Generation

School Level	Grades	Students/ Household	Potential Student Generation	
			Current[1]	Proposed[2]
Elementary	K-5	0.65	20	30
Middle	6-8	0.32	10	14
High	9-12	0.43	13	19
Total	**K-12**	**1.40**	**43**	**63**

Source: extrapolated and estimated from MVUSD Developer Impact Fee Report 2018.
1 Assumes 30 units based on R3 zoning limit of 3 units/acre for 10-acre site
2 Based on 45 units under TTM 37544 under RS10 zoning.

According to Cheryl Acevedo, MVUSD Demographics Clerk, most of the new residential construction within the boundaries of the Moreno Valley Unified School District (MVUSD) fall within the Level II Statutory Fee Schedule which is $4.50 per square foot as approved on July 19, 2017. However, the proposed project is within the boundaries of Community Facilities District 91-1, one of if not the oldest CFDs in the District, and so the project would pay $4.50 per square foot in developer impact fees (per the MVUSD Fee Mitigations Map). According to state law, residential development that pays its appropriate established developer impact fee to the serving school district(s) is considered to have fully mitigated its potential impacts to school facilities and services, and no additional mitigation is required. Therefore, with payment of established school impact fees, the project would have a less than significant impact relative to schools and no additional mitigation is required.

d) Parks?			X	

Less Than Significant Impact. As mentioned above, the proposed Project would construct 45 new homes which could generate an additional 176 residents in the City. This represents an increase over the potential 98 residents that could be expected if the property were to be developed according to the current General Plan and zoning designations (3 units per acre = 27 units x 3.91 persons/unit). Project residents would be expected to use City or regional park facilities and services. The closest City recreational facility to the project site is the Cottonwood Equestrian Center (28590 Cottonwood Avenue), approximately 0.6 mile north of the project site. However, the closest full City park is Ridge Crest Park (28506 John F. Kennedy Drive) a half mile south of the site. The Ridge Crest Park contains multi-use athletic fields, picnic tables, barbeques, soccer fields, a tot lot, restrooms, and off-street parking. In addition, the regional Lake Perris State Recreational Area is 3 miles south of the site and offers a wide range of recreational facilities and programs, including boating, camping, hiking, bicycling, horseback riding, picnic shelters, swimming beaches, fishing, nature walks and tours, windsurfing, restrooms, and showers. The additional residents of the project would be expected to utilize the various recreational facilities in the surrounding area. The project does not propose any onsite park or open space areas, so would be required to pay the City's in lieu Development Impact Fee (DIF) for recreational facilities. With payment of the required DIF, the project would have less than significant impacts relative to parks, and no mitigation is required.

[32] https://www.mvusd.net/apps/pages/index.jsp?uREC_ID=786774&type=d&pREC_ID=1181757

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Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Other public facilities?			X	

Less Than Significant Impact. The proposed Project would not induce significant population growth within the City of Moreno Valley. The project could introduce a maximum of 176 residents into the City, although it is not known how many of these would actually be new to the City (i.e., existing residents relocating to new housing). Because the Project would not introduce a substantial amount of additional population into the City of Moreno Valley, development of the Project would have a less than significant impact on public facilities and no mitigation is required.

XV. **RECREATION.**

a) Would the project increase the use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?			X	

Less than Significant Impact. The proposed project includes the construction of 45 new residences which could generate approximately 176 new City residents (based on 3.91 persons per household from U.S. Census data). Project residents would be expected to use City or regional park facilities and services. The closest City recreational facility to the project site is the Cottonwood Equestrian Center (28590 Cottonwood Avenue), approximately 0.6 mile north of the project site. However, the closest full City park is Ridge Crest Park (28506 John F. Kennedy Drive) a half mile south of the site. The Ridge Crest Park contains multi-use athletic fields, picnic tables, barbeques, soccer fields, a tot lot, restrooms, and off-street parking. In addition, the regional Lake Perris State Recreational Area is 3 miles south of the site and offers a wide range of recreational facilities and programs, including boating, camping, hiking, bicycling, horseback riding, picnic shelters, swimming beaches, fishing, nature walks and tours, windsurfing, restrooms, and showers. The additional residents of the project would utilize the various recreational facilities in the surrounding area. However, development of the proposed Project is not expected to result in a significant increase in the use of existing neighborhood parks, regional or state parks, or other recreational facilities. According to the State Quimby Act, a project of this size would be expected to generate a need for 0.35 acres of parkland[33]. The project does not propose any onsite park or open space areas, however, it will provide a linear park in conjunction with trail improvements along the portion of the Quincy Channel (west bank) that is adjacent to the project site. In addition, the project would be required to pay the City's in lieu Development Impact Fee (DIF) to offset impacts to parks and recreational programs. With construction of the linear park/trail improvements and payment of the required DIF, the project would have less than significant impacts relative to recreation, and no mitigation is required.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?			X	

Less Than Significant Impact. The proposed 45 new residences could generate approximately 176 new City residents (based on 3.91 persons per household from U.S. Census data). By comparison, development under the existing zoning (R3) would result in 27 new units and 98 new residents, although not all of these would be expected to be new City residents (i.e., some portion would relocate from within the City). The proposed project does not include any onsite recreational facilities or parkland but will provide a linear park in conjunction with trail improvements along the portion of the Quincy Channel (west bank) that is adjacent to the project site the potential impacts of which have been analyzed in this Initial Study. In addition, the project would be required to pay applicable Development Impact Fees (DIF) to offset impacts to parks and recreational programs. Therefore, the project would not result in the need for construction or expansion of recreational facilities, and impacts would be less than significant in this regard. No mitigation is required.

XVI. **TRANSPORTATION/TRAFFIC.** Would the project:

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system,			X	

[33] 117 new residents divided by 1000 = 0.117 x Quimby Act recommended standard of 3 acres per 1000 new residents = 0.35 acre or 15,300 square feet of parkland.

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?				
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?			X	

Less Than Significant Impact. A trip generation analysis (Appendix J) indicates the project would generate approximately 444 total daily trips[34] compared to 255 trips that would be generated by the site if it were developed with uses consistent with the existing General Plan and zoning designations. The project would generate 36 total trips in the a.m. peak hour and 48 net trips in the p.m. peak hour. Due to its small size, the City determined the project would not be required to prepare a traffic impact assessment since it would not generate more than 50 peak hour trips at any one intersection, as outlined in the County Congestion Management Plan (CMP). The proposed project would generate proportionally more traffic than under existing land use designations (i.e., 444 versus 255 trips), however, existing intersections in the project area are currently operating and are expected to operate at satisfactory level of service in the future. Eventually Quincy Street will be extended north to connect Brodiaea Avenue with Alessandro Avenue, which will help reduce potential congestion along Brodiaea Avenue. Therefore, the project would have a less than significant impact related to conflicts with established transportation plans, and no mitigation is required.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?				X

No Impact. The nearest airport is the March Air Reserve Base located approximately 5.5 miles southwest of the project site. The proposed project is outside the Airport Influence Area. The project does not include uses or components that would affect air traffic, so no substantial safety risks would result from project implementation. Because of these reasons, no impact would occur with the development of the project. No mitigation required.

d) Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?			X	

Less Than Significant Impact. The project is located on a residential collector street (Brodiaea Avenue) which connects to Redlands Boulevard on the east and Moreno Beach Drive on the west. Alessandro Blvd., Redlands Blvd., and Moreno Beach Drive are classified as divided major roadways (134' ROW) while Cactus Avenue and Quincy Street are classified as minor arterials (89' ROW) in the City's General Plan Circulation Element (Figure 4.2-1, Circulation Plan). Roadways must provide adequate sight distance and traffic control, and these provisions are normally achieved through standard roadway design to facilitate vehicular traffic flow. Roadway improvements within and adjacent to the project site would be designed and constructed to satisfy all City requirements for street widths, corner radii, intersection control as well as incorporate design standards tailored specifically to site access requirements. Adherence to applicable City requirements would ensure the proposed development would not include any sharp curves or dangerous intersections. Therefore, no substantial increase in hazards due to a design feature would occur, resulting in a less than significant impact. No mitigation is required.

e) Result in inadequate emergency access?			X	

Less Than Significant Impact. The Moreno Valley Police Department maintains a station located at 22850 Calle San Juan De Los Lagos which is approximately 4.8 miles northwest of the project site, and the Moreno Valley Fire Department

[34] Project Trip Generation Summary and Trip Generation Comparison Memo, Urban Crossroads, September 4, 2018.

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Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Station 74 is located at 16110 Lasselle Street which is approximately 1.4 miles southwest of the project site. Traffic associated with project construction may have a temporary effect on existing traffic circulation patterns, including emergency access. Although the site is in the eastern (more rural) portion of the City, it is in a generally suburban setting and direct access to the site will be available via Brodiaea Avenue off of both Moreno Beach Drive to the west and Redlands Boulevard to the east. The site will also have access to Cactus Avenue to the south. Therefore, the project area would have adequate circulation to accommodate emergency services. Due to the proximity of emergency services, the urban setting, and availability of access to the site, impacts to emergency access will be less than significant. The proposed project will also comply with all of the City's requirements for emergency access. Therefore, impacts will be less than significant impacts and no mitigation is required.

f) Conflict with adopted policies or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?				X

No Impact. Bus service to the project area is provided by the Riverside Transit Agency (RTA). The closest bus line to the project site is Route 20 along Moreno Beach Drive approximately 0.36 mile west of the project site at its closest point. Route 20 connects to the central and western portions of Moreno Valley and at transfer points to other routes serving western Riverside County. Eventually as this area grows and supports more residences, RTA will modify its bus routes and service availability to accommodate future growth. The proposed project would not impede the implementation of any City programs supporting walking, bicycling, and use of buses, and the proposed project will not conflict with any adopted transportation policies. No impact associated with this issue would occur. No mitigation is required.

XVII. **UTILITIES AND SERVICE SYSTEMS.** Would the project:

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?			X	

Less Than Significant Impact. Wastewater services in the City of Moreno Valley are provided by the Eastern Municipal Water District (EMWD), serving most of the City and surrounding areas, and the Edgemont Community Services District.[35] The EMWD provides wastewater services to approximately 239,000 customers within its service area and currently treats approximately 43 million gallons per day of wastewater at its five active regional water reclamation facilities through 1,813 miles of sewer pipelines.[36] These reclamation plants include: San Jacinto Regional Water Reclamation Facility; Moreno Valley Regional Water Reclamation Facility; Perris Valley Regional Water Reclamation Facility; Sun City Regional Water Reclamation Facility; and Temecula Valley Regional Water Reclamation Facility. Generated wastewater from the Project site would be treated at the Moreno Valley Regional Water Reclamation Facility. The proposed project is expected to generate a maximum of 176 residents who would generate approximately 17,600 gallons of wastewater per day or 6.4 million gallons per year of wastewater based on a worst case estimate of 100 gallons per person per day[35]. The typical daily flow at the MVRWRF is 10.6 million gallons per day with a current capacity of 16 million gallons per day, having a current excess capacity of approximately 5.4 million gallons per day. The proposed project would represent approximately 0.3 percent of that excess capacity. The proposed project would be required to comply with the applicable waste discharge prohibitions and water quality objectives established by the Santa Ana RWQCB. The project proponent would also be required to satisfy City requirements related to the payment of fees and/or the provision of wastewater conveyance features, and installation and maintenance prior to the issuance of building permits. Adherence to requirements included in the NPDES permit, SWPPP, WQMP, and City wastewater conveyance standards would reduce potential wastewater quality impacts to a less than significant level and no mitigation is required.

b) Require or result in construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			X	

[35] Sewer Services, Public Services and Utilities, City of Moreno Valley General Plan Final Program EIR, July 2006.
[36] Wastewater Service, Eastern Municipal Water District (EMWD), 2018. (Website accessed April 1, 2018). https://www.emwd.org/services/wastewater-service

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Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Less Than Significant Impact. Wastewater flows from the proposed project site would be handled by the Eastern Municipal Water District (EMWD) and would be conveyed to the Moreno Valley Regional Water Reclamation Facility (MVRWRF) located in the southwestern portion of the City. Current capacity at this facility is 16 million gallons per day (mgd) with an existing average inflow of approximately 10.6 mgd per day. Under current conditions, the average daily surplus treatment capacity is approximately 5.4 mgd. Generally, water use and wastewater flows are related in that wastewater is generated from indoor water uses. The Project is expected to generate up to 17,600 gallons of wastewater per day or 6.4 million gallons per year based on a worst case estimate of 100 gallons per person per day[35]. Because the amount of wastewater generated would be within the existing surplus treatment capacity, the proposed project would not require the construction of a new water or wastewater treatment facilities or expansion of existing facilities, which could cause significant environmental effects; and impacts related to this issue would be considered less than significant. No mitigation is required.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			X	

Less Than Significant Impact. There is an existing storm drain in Brodiaea Avenue and the project is not expected to direct any drainage toward the nearby Quincy Channel. The proposed site plan includes a detention basin in the southwest corner and an underground water quality basin near the southeast corner of the site. The project hydrology study indicates the site will not increase offsite downstream flows in the developed condition (see Appendix H). The project runoff will ultimately discharge to the southwest (to the existing storm drain in Brodiaea Avenue) as it does in the existing condition (i.e., flows south and west). The proposed project will also pay the City's established Development Impact Fee (DIF) for drainage to help offset costs for new storm water drainage facilities. Therefore, the proposed project will have a less than significant impact on these facilities, and no mitigation is required.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?			X	

Less Than Significant Impact. Due to the size of the project, a water supply assessment report to determine water supply availability was not prepared for this project. The project is consistent with the City of Moreno Valley General Plan Land Use designation and the City's zoning of residential at 3 units/acre (R3). The City of Moreno Valley is served by two water purveyors: Eastern Municipal Water District (EMWD) and the Box Springs Mutual Water Company.[37] However, the EMWD is the primary water purveyor from the City and would provide water to the project site. Water demands of the project are generally consistent with and are anticipated under the EMWD 2015 Urban Water Management Plan (UWMP). It is estimated the 45 residences would generate 176 new residents which would consume 33,440 gallons of potable water per day based on a worst case estimate of 190 gallons consumed per person per day per the EMWD UWMP. This is equivalent to 12.2 million gallons or 37.4 acre-feet of water per year (1 acre-foot = 326,000 gallons). This is because water demands reflected in the UWMP takes into account anticipated development growth in the City pursuant to the City's General Plan. Therefore, the UWMP reflects and anticipates residential uses at suburban level densities similar to that proposed by the project. As identified in the 2015 UWMP, EMWD has the ability to meet current and project water demands through 2040 during normal, historic single-dry and historic multiple-dry year periods using imported water from Metropolitan Water District (MWD) with existing supply resources.[38] Therefore, a less than significant impact would occur related to this issue, and no mitigation required.

e) Result in a determination by the wastewater treatment provider which serves or may serve the project determined that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			X	

[37] City of Moreno Valley General Plan Final Program EIR, City of Moreno Valley, July 2006.
[38] Tables 7-4 through 7-9, Eastern Municipal Water District, 2015 Urban Water Management Plan, June 2016.

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Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Less Than Significant Impact. Please refer to response to Checklist Question XVI(b).

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			X	

Less Than Significant Impact. Solid waste collection is a "demand-responsive" service and current service levels can be expanded and funded through user fees without difficulty. Solid waste generated within the proposed Project will be transported to the Riverside County Waste Management Department's (RCWMD) Badlands Landfill located at 31125 Ironwood Avenue approximately 4 miles east of the project site. The Badlands Sanitary Landfill has a maximum daily permitted throughput of 4,800 tons per day, a remaining capacity of 15,748,799 cubic yards, and an estimated closure of 2022.[39] During the year 2012, the landfill received 469,705 tons of solid waste for disposal, an average of 1,520 tons per day, a surplus capacity of 2,480 tons per day.[40] Based on a solid waste generation of 4.4 pounds per person per day[41], the proposed project is anticipated to generate approximately 774 pounds per day or 141 tons per year of solid waste. The volume of solid waste generated by the proposed project per day represents 0.008 percent of the current permitted throughput at the Badlands Sanitary Landfill. As adequate daily surplus capacity exists at the receiving landfill, development of the proposed project would not significantly impact current operations or the expected lifetime of the landfill serving the project area. A less than significant impact would occur and no mitigation is required.

g) Comply with federal, state, and local statues and regulations related to solid waste?			X	

Less Than Significant Impact. The proposed project would be required to comply with applicable elements of AB 1327, Chapter 18 (California Solid Waste Reuse and Recycling Access Act of 1991) and other applicable local, state, and federal solid waste disposal standards, thereby ensuring that the solid waste stream to the Badlands Sanitary Landfill is reduced in accordance with existing regulations. A less than significant impact related to this issue would occur. No mitigation is required.

XVIII. **TRIBAL CULTURAL RESOURCES**

a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:		X		

Less Than Significant with Mitigation. The City sent out SB 18 and AB 52 letters/emails to local tribal representatives on March 29, 2018 and received the following replies regarding government to government consultation on this project:

- San Manuel Band - letter dated March 29, 2018 requesting consultation.
- Agua Caliente Band of Cahuilla Indians – 2 letters dated April 2, 2018 deferring consultation to the Morongo and Soboba tribes.
- Soboba Tribe – letter dated April 27, 2018 requesting consultation.
- Pechanga Tribe (Temecula Band of Luiseno Mission Indians) two letters dated April 5, 2018 requesting consultation under both SB 18 and AB 52

[39] Facility/Site Summary Details: Badlands Sanitary Landfill, CalRecycle, 2017.
[40] 5.13 Public Services and Utilities, Solid Waste, City of Moreno Valley General Plan Final Program EIR, July 2006.
[41] US EPA website, accessed April 18, 2018 https://archive.epa.gov/epawaste/nonhaz/municipal/web/html/

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Consultation with San Manuel, Soboba, and Pechanga tribes which requested consultation on this project, between the City and the tribes are ongoing. With implementation of Mitigation Measures CUL-1 through CUL-6, potential impacts related to tribal cultural resources will be reduced to less than significant levels.

i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or				X

Less Than Significant with Mitigation. The Cultural Resources Assessment determined there were no resources that were listed or eligible for listing on the CRHR or are considered locally significant. In addition, potential discovery of buried historical resources on the site during grading is covered by Mitigation Measure CUL-3. Therefore, there will be less than significant impacts regarding historical resources and no additional mitigation is required.

ii) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or				X

Less Than Significant with Mitigation. The Cultural Resources Assessment determined there were no resources that were listed or eligible for listing on the CRHR or are considered locally significant. In addition, potential discovery of buried historical resources on the site during grading is covered by Mitigation Measure CUL-3. Therefore, there will be less than significant impacts regarding historical resources and no additional mitigation is required.

iii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resource Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5025.1, the lead agency shall consider the significance of the resource to a California Native American tribe.		X		

Less Than Significant with Mitigation. According to the Cultural Resource Assessment,[42] one cultural resource was noted within a half mile radius of the project site, and six cultural resource reports have been previously completed within the half mile buffer surrounding the Project site. During the field reconnaissance, no "historical resources" as defined under CEQA were discovered onsite. However, numerous prehistoric resources lie in the uplands to the south and southwest. To assure there will be no significant impacts to any potential buried cultural resources, Mitigation Measures CUL-1 through CUL-6 were recommended to reduce impacts related to tribal cultural resources to less than significant levels.

XIX. **MANDATORY FINDINGS OF SIGNIFICANCE.**

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?		X		

Less Than Significant with Mitigation. The Project proposes 45 residences on 8.5 acres and surrounding land uses are residential and vacant land. No federal jurisdictional waters, wetlands, and/or streambeds regulated by CDFW were identified within the project area. As mentioned before, the project site is located within the Multiple Species Habitat Conservation Plan (MSHCP) City of Moreno Valley Area Plan. No special-status species were found or observed during

[42] Cultural Resource Assessment, Frontier Communities Brodiaea Avenue Residential Project, RCA Asssociates, Inc. April 26, 2018.

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Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

the field reconnaissance. However, based on a literature review and the field survey, some special-interest species, including federal/State listed species, are known to occur in the region. Because the project site is currently un-vegetated, a burrowing owl habitat assessment and burrow survey was conducted and concluding negative results for owls and owl sign, and no evidence of usable burrows. Mitigation Measures BIO-1 (burrowing owl), BIO-2 (Quincy Channel improvements), and BIO-3 (nesting birds) will reduce potential impacts to biological resources to less than significant levels.

There are no sites within the City of Moreno Valley listed as a state landmark, nor are there any sites on the National Register of Historic Places. Six (6) cultural resource studies have been previously conducted within a 1-mile radius of the Project, none of which included any portion of the Project.[43] Although no cultural resources were identified on the Project site, one prehistoric site has been recorded within 1-mile (see Checklist Question V.a). Numerous prehistoric resources lie to the south and southeast, and the sensitivity of the areas between these resources and the Project is unknown. With implementation of Mitigation Measures CUL-1 through CUL-6, impacts to tribal and cultural resources would be less than significant.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?		X		

Less Than Significant Impact. The City's General Plan identifies the site as Residential: Max. 3 units/acre with similar zoning (R3) which could result in a maximum of 25 units on the project site (3 units per acre on 8.55 gross acres), however, the project proposes to change the land use intensity to a maximum of 10 units per acre (RS10). It is possible this project may indirectly induce additional growth into the area in the future because the surrounding vacant properties (approximately 130 acres) are currently zoned R3. If the entire 130 acres of vacant land were to be changed to RS10 zoning, the vacant land would generate up to 1,300 units (max. 10 units/acre) versus 390 units under the existing R3 zoning (3 units/acre). If the remaining vacant land in the area were to be developed at the density of the proposed project (5.09 units/acre gross and 7.75 units/acre net), it would only generate 684 units (versus 390 units under the existing R3 zoning). Due to the presence of RS10 and R5 zoning immediately south of the site, the proposed change in land use designations/intensity would result in less than significant land use impacts. The project proposes the development of 45 residences in an area of the City where residential uses have been anticipated in local and regional planning documents. The potential environmental effects associated with the proposed project and cumulative projects in the City are addressed within the scope of impacts identified in the City's General Plan. The increase in number of units that would be built on the site (i.e., 45 units under RS10 vs. 25 units under R3) would incrementally increase impacts directly related to number of units (e.g., traffic, water consumption, noise, etc.). As discussed throughout this Initial Study, in all instances where the Project has the potential to contribute to a cumulatively-considerable impact to the environment, mitigation measures have been imposed to reduce potential effects to less than significant levels.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		X		

Less Than Significant with Mitigation. The proposed project would result in impacts to human beings by degrading water quality. While potential water quality impacts could result from the proposed project, implementation of NPDES permits ensures that the State's mandatory standards for the maintenance of clean water and the Federal minimums are met. Adherence to Mitigation Measures HYD-1 through HYD-3 would ensure impacts to water quality would be reduced to less than significant levels. Therefore, the proposed project would not have a significant water quality impact.

The South Coast Air Basin is currently designated as a non-attainment area for ozone, PM10, and PM2.5. Development of the project would contribute to air pollutant emissions on a short-term basis. The project would be required to comply with

[43] Cultural Resource Assessment, Brodiaea Avenue Residential Project. RCA Associates, Inc. April 26, 2018.

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

regional rules that assist in reducing short-term air pollutant emissions plus Mitigation Measure AIR-1. The purpose of SCAQMD Rule 403 is to reduce the amount of particulate matter in the atmosphere resulting from man-made fugitive dust sources. Adherence to these measures would reduce short-term construction air quality impacts to a less than significant level.

Like all of Southern California, the project site could be subject to strong ground shaking resulting from large earthquakes. Additionally, the proposed project could experience adverse effects from unstable soils. Adherence to existing Uniform Building Code and California Building Code standards as well as Mitigation Measure GEO-1 and recommendations detailed in the project-specific geotechnical studies would ensure potential impacts related to geologic and soil conditions are less than significant.

As detailed in the preceding responses, development of the proposed project would not result, either directly or indirectly, in adverse impacts to human beings.

References

Air Quality and Greenhouse Gas Emissions Memo, Urban Crossroads, Tables issued April 2018, Memo issued September 12, 2018.

General Biological Resources Assessment, Brodiaea Avenue Property, Frontier Communities. RCA Associates, Inc. March 2018.

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Department of Conservation, Farmland Mapping and Monitoring Program, website accessed April 1, 2018. http://maps.conservation.ca.gov/ciff/ciff.html

2015 Final Urban Water Management Plan, Eastern Municipal Water District, RMC Water and Environment, June 2016.

Grading Plan, TTM 37544, Frontier Communities. Michael Baker International. Original April 2018, Updated July 2018.

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March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan, Riverside County Airport Land Use Commission, Mead & Hunt, November 13, 2017.

Noise Impact Tables. Urban Crossroads, April 2018.

Attachment: Project 2_Exhibit A Initial Study Frontier 9-18-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Phase I Environmental Site Assessment, Frontier Enterprises. Geotek, Inc. March 3, 2014.

Project Specific Water Quality Management Plan, Brodiaea Moreno Valley (TTM 37544). Michael Baker International. Draft April 24, 2018.

Preliminary Hydrology Study, Brodiaea Moreno Valley (TTM 37544). Michael Baker International. Draft April 2018.

Trip Generation Memorandum, Urban Crossroads. Tables issued in March 2018, Memo dated September 4, 2018.

Geotechnical Investigation and Infiltration Study, Geotek, Inc. February 12, 2014.

Transit Noise and Vibration Impact Assessment. Federal Transit Authority. 2006.

Air Quality Handbook, South Coast Air Quality Management District (SCAQMD), 1993.

Summary of Mitigation Measures

Air Quality

AIR-1 **Construction Emissions.** The following actions shall be implemented to help reduce project construction-related emissions to the greatest extent feasible. The project shall comply with the requirements of SCAQMD Rules 402 and 403, Fugitive Dust, which require the implementation of Reasonable Available Control Measures (RACM) for all fugitive dust sources, and the AQMP, which identifies Best Available Control Measures (BACM) and Best Available Control Technologies (BACT) for area sources and point sources, respectively. This includes the following actions:

1. The project proponent shall ensure that construction equipment is properly maintained and serviced to minimize exhaust emissions.
2. The project proponent shall ensure that existing power sources are utilized where feasible via temporary power lines to avoid on-site power generation.
3. The project proponent shall ensure that construction employees be informed of ride-sharing and transit opportunities.
4. The project proponent shall ensure that any portion of the site to be graded shall be pre-watered to a depth of three (3) feet prior to the onset of grading activities.
5. The project proponent shall ensure that twice daily watering of the site or other soil stabilization methods shall be employed on an ongoing basis after the initiation of any on-site grading activity. Portions of the site that are actively being graded shall be watered regularly to ensure that a crust is formed on the ground surface and shall be watered at the end of each workday.
6. The project proponent shall ensure that all disturbed areas are treated to prevent erosion until the site is constructed.
7. To reduce the potential for wind erosion, the project proponent shall ensure that landscaped areas are installed as soon as possible.
8. The project proponent shall ensure that SCAQMD Rule 403 is adhered to, ensuring the cleanup of construction-related dirt on approach routes to the project site.
9. The project proponent shall ensure that all grading activities are suspended during first and second stage ozone episodes or when wind speeds exceed 25 miles per hour.

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10. Cover all trucks hauling dirt, sand, soil, or other loose materials, or maintain at least 0.6 m (2 feet) of freeboard (vertical space between the top of the load and top of the trailer) in accordance with the requirements of California Vehicle Code (CVC) Section 23114.
11. Limit all onsite traffic speeds to 15 mph or less.
12. The construction contractor shall use construction equipment that have Tier 4 compliant engines and Level 3 diesel particulate filters (DPF) with oxidations catalyst that impart a 20% reduction.

Biological Resources

BIO-1 **Burrowing Owl Survey.** Prior to the issuance of grading permit, a pre-construction survey for burrowing owl shall be conducted by a qualified biologist no more than 30 days before the commencement of vegetation removal or ground disturbing activities to confirm the absence of burrowing owl onsite. If burrowing owl(s) are detected during the focused surveys, a Burrowing Owl Mitigation and Monitoring Plan ("Plan") shall be prepared by a qualified biologist and submitted to the California Department of Fish and Wildlife for review and approval prior to commencement of project activities. The Plan shall describe appropriate avoidance, minimization, and mitigation measures to reduce impacts to burrowing owls and ensure the implementation of appropriate and commensurate compensatory mitigation for the loss of burrowing owl nesting and foraging habitat. No further action is required if the 30-day pre-construction survey does not result in burrowing owl sign or observations.

BIO-2 **Quincy Channel Improvements.** Prior to issuance of the first occupancy permit, the applicant shall demonstrate to the City of Moreno Valley Planning Division that a final improvement plan has been approved for that portion of the Quincy Channel adjacent to the project site by the City Public Works Division, the Riverside County Flood Control and Water Conservation District, the California Department of Fish and Wildlife, and possibly the U.S. Army Corps of Engineers (if federal jurisdiction is determined to apply to the project or channel). The applicant shall make appropriate improvements to the channel to the satisfaction of the City Engineer per the approved improvement plan and prior to the issuance of the first occupancy permit.

BIO-3 **Nesting Bird Survey.** If project activities are planned during the avian nesting season (approximately February 1 through September 15), a nesting bird survey shall be conducted onsite within ten days prior to disturbance to ensure birds protected under the MBTA are not disturbed by construction-related activities such as noise and increased human presence. Any active nests detected in the area shall be flagged and an appropriate buffer around the nest location will be established, as determined by the CDFW. The buffer area is to be avoided until the nesting cycle is complete or it is determined by the biologist that the nest has failed. This measure shall be implemented to the satisfaction of the City Planning Division.

Cultural Resources

CUL-1 **Project Archaeologist.** Prior to the issuance of a grading permit, the Developer shall retain a professional archaeologist to conduct monitoring of all mass grading and trenching activities. The Project Archaeologist shall have the authority to temporarily redirect earthmoving activities in the event that suspected archaeological resources are unearthed during Project construction. The Project Archaeologist, in consultation with the Consulting Tribe(s), the contractor, and the City, shall develop a Cultural Resources Management Plan (CRMP) in consultation pursuant to the definition in AB52 to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the project site. A consulting tribe is defined as a tribe that initiated the AB 52 tribal consultation process for the Project, has not opted out of the AB52 consultation process, and has completed AB 52 consultation with the City as provided for in Cal Pub Res Code Section 21080.3.2(b)(1) of AB52. Details in the Plan shall include:

a. Project grading and development scheduling;

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b. The Project archeologist and the Consulting Tribes(s) as defined in CUL-1 shall attend the pre-grading meeting with the City, the construction manager and any contractors and will conduct a mandatory Cultural Resources Worker Sensitivity Training to those in attendance. The Training will include a brief review of the cultural sensitivity of the Project and the surrounding area; what resources could potentially be identified during earthmoving activities; the requirements of the monitoring program; the protocols that apply in the event inadvertent discoveries of cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated; and any other appropriate protocols. All new construction personnel that will conduct earthwork or grading activities that begin work on the Project following the initial Training must take the Cultural Sensitivity Training prior to beginning work and the Project archaeologist and Consulting Tribe(s) shall make themselves available to provide the training on an as-needed basis;

c. The protocols and stipulations that the contractor, City, Consulting Tribe(s) and Project archaeologist will follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits that shall be subject to a cultural resources evaluation.

CUL-2 **Tribal Monitoring.** Prior to the issuance of a grading permit, the City of Moreno Valley shall secure agreements with the Pechanga Band of Luiseño Indians and Soboba Band of Luiseño Indians for tribal monitoring. The Developer is also required to provide a minimum of 30 days advance notice to the tribes of all mass grading and trenching activities. The Native American Tribal Representatives shall have the authority to temporarily halt and redirect earth moving activities in the affected area in the event that suspected archaeological resources are unearthed. If the Native American Tribal Representatives suspect that an archaeological resource may have been unearthed, the Project Archaeologist or the Tribal Representatives shall immediately redirect grading operations in a 100-foot radius around the find to allow identification and evaluation of the suspected resource. In consultation with the Native American Tribal Representatives, the Project Archaeologist shall evaluate the suspected resource and make a determination of significance pursuant to California Public Resources Code Section 21083.2. (only applicable if tribes require monitoring).

CUL-3 **Finds During Grading.** In the event that Native American cultural resources are discovered during the course of grading (inadvertent discoveries), the following procedures shall be carried out for final disposition of the discoveries:

a) One or more of the following treatments, in order of preference, shall be employed with the tribes. Evidence of such shall be provided to the City of Moreno Valley Planning Division:

i. Preservation-In-Place of the cultural resources, if feasible. Preservation in place means avoiding the resources, leaving them in the place they were found with no development affecting the integrity of the resources.

ii. Onsite reburial of the discovered items as detailed in the treatment plan required pursuant to Mitigation Measure CUL-1. This shall include measures and provisions to protect the future reburial area from any future impacts in perpetuity. Reburial shall not occur until all legally required cataloging and basic recordation have been completed. No recordation of sacred items is permitted without the written consent of all Consulting Native American Tribal Governments as defined in CUL-1. The location for the future reburial area shall be identified on a confidential exhibit on file with the City and concurred to by the Consulting Native American Tribal Governments prior to certification of the environmental document.

CUL-4 **Grading Plan Note.** The City shall verify that the following note is included on the Grading Plan:

"If any suspected archaeological resources are discovered during ground-disturbing activities and the Project Archaeologist or Native American Tribal Representatives are not present, the construction supervisor is obligated to halt work in a 100-foot radius around the find and call the Project Archaeologist and the Tribal Representatives to the site to assess the significance of the find."

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Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

CUL-5 **Accidental Finds.** If potential historic or cultural resources are uncovered during excavation or construction activities at the project site, work in the affected area must cease immediately and a qualified person meeting the Secretary of the Interior's standards (36 CFR 61), Tribal Representatives, and all site monitors per the Mitigation Measures, shall be consulted by the City to evaluate the find, and as appropriate recommend alternative measures to avoid, minimize or mitigate negative effects on the historic, or prehistoric resource. Determinations and recommendations by the consultant shall be immediately submitted to the Planning Division for consideration and implemented as deemed appropriate by the Community Development Director, in consultation with the State Historic Preservation Officer (SHPO) and any and all Consulting Native American Tribes as defined in CUL-1 before any further work commences in the affected area.

CUL-6 **Human Remains.** If human remains are discovered, no further disturbance shall occur in the affected area until the County Coroner has made necessary findings as to origin. If the County Coroner determines that the remains are potentially Native American, the California Native American Heritage Commission shall be notified within 24 hours of the published finding to be given a reasonable opportunity to identify the "most likely descendant". The "most likely descendant" shall then make recommendations and engage in consultations concerning the treatment of the remains (California Public Resources Code 5097.98). (GP Objective 23.3, CEQA).

CUL-7 **Paleontological Resources.** Prior to the issuance of a grading permit, the Project Applicant shall provide evidence to the City of Moreno Valley that a qualified paleontologist has been retained by the Project Applicant to conduct monitoring of excavation activities and has the authority to halt and redirect earthmoving activities in the event that suspected paleontological resources are unearthed.

CUL-8 **Paleo Monitor.** The paleontological monitor shall conduct full-time monitoring during grading and excavation operations in undisturbed, very old alluvial fan sediments at or below four (4) feet below ground surface and shall be equipped to salvage fossils if they are unearthed to avoid construction delays and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. The paleontological monitor shall be empowered to temporarily halt or divert equipment to allow of removal of abundant and large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface, or if present, are determined upon exposure and examination by qualified paleontological personnel to have a low potential to contain or yield fossil resources.

CUL-9 **Paleo Curation.** Recovered specimens shall be properly prepared to a point of identification and permanent preservation, including screen washing sediments to recover small invertebrates and vertebrates, if necessary. Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage, such as the Western Science Museum in Hemet, California, is required for significant discoveries.

CUL-10 **Paleo Report.** A final paleontological monitoring and mitigation report of findings and significance shall be prepared, including lists of all fossils recovered and written repository agreements, if any, and necessary maps and graphics to accurately record the original location of the specimens. The report shall be submitted to the City of Moreno Valley prior to building final.

Geology and Soils

GEO-1 **Geotech Report.** Prior to issuance of building permits, the project applicant or its designee shall demonstrate all recommendations contained in project-specific geotechnical and/or soils and foundation evaluation report by Geotek, Inc. dated February 12, 2014 are implemented. This measure shall be implemented to the satisfaction of the City Engineer.

GEO-2 **Soil Limitations.** Prior to the issuance of a grading permit, the project applicant shall provide proof to the City that a soils engineer has evaluated onsite soils and recommended appropriate construction techniques to

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adequately protect buried metal pipes or other onsite improvement from onsite soil conditions. This measure shall be implemented to the satisfaction of the City Engineer.

Greenhouse Gases

GHG-1 **GHG Emissions.** To ensure that the proposed project complies with and would not conflict with or impede the implementation of state and local greenhouse gas (GHG) reduction goals, the project will implement the following measures to help reduce its GHG emissions to the extent feasible. Prior to issuance of any occupancy permits, these measures shall be incorporated into the design and construction of the project to the satisfaction of the City:

Construction and Building Materials

(a) Divert at least 50 percent of the demolished and/or grubbed construction materials (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard).

Energy Efficiency

(a) Design all project buildings to exceed the current California Building Code Title 24 energy standard by ten (10) percent, such as by installing energy-efficient heating and cooling systems, appliances and equipment, and control systems.

(b) Install electrical to allow for future installation of roof-mounted photovoltaic solar equipment and electric vehicle charging equipment in garages.

Water Conservation and Efficiency

(a) Install water-efficient landscaping within parkways and common areas of the development.

(b) Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls, within parkways and common areas of the development.

(c) Restrict watering methods (e.g., prohibit systems that apply water to non-vegetated surfaces) and control runoff from parkways and common areas within the development.

Hydrology and Water Quality

HYD-1 **File NOI.** Prior to the issuance of a grading permit, the project applicant shall file and obtain a Notice of Intent (NOI) with the Regional Water Quality Control Board (RWQCB) in order to be in compliance with the State NPDES General Construction Storm Water Permit for discharge of surface runoff associated with construction activities. Evidence that this has been obtained (i.e., a copy of the Waste Discharger's Identification Number) shall be submitted to the City for coverage under the NPDES General Construction Permit. The NOI shall address the potential for an extended and discontinuous construction period based on funding availability.

HYD-2 **Prepare SWPPP.** Prior to the issuance of a grading permit, the project applicant shall prepare a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP shall include a surface water control plan and erosion control plan citing specific measures to control on-site and off-site erosion during the entire grading and construction period. In addition, the SWPPP shall emphasize structural and nonstructural Best Management Practices (BMPs) to control sediment and non-visible discharges from the site. The SWPPP will include inspection forms for routine monitoring of the site during construction phase to ensure NPDES compliance and additional BMPs and erosion control measures will be documented in the SWPPP and utilized if necessary. The SWPPP shall address the potential for an extended and discontinuous construction period based on funding availability. The SWPPP will be kept on site for the entire duration of project construction and will be available to the local RWQCB for inspection at any time. BMPs included in the SWPPP may include the following:

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- Sediment discharges from the site may be controlled by the following: sandbags, silt fences, straw wattles and temporary basins (if deemed necessary), and other discharge control devices. The construction and condition of the BMPs will be periodically inspected during construction and repairs will be made when necessary as required by the SWPPP.
- Materials that have the potential to contribute to non-visible pollutants to storm water must not be placed in drainage ways and must be contained, elevated, and placed in temporary storage containment areas.
- All loose piles of soil, silt, clay, sand, debris, and other earthen material shall be protected in a reasonable manner to eliminate any discharge from the site. Stockpiles will be surrounded by silt fences and covered with plastic tarps.
- In addition, the construction contractor shall be responsible for performing and documenting the application of BMPs identified in the SWPPP. Weekly inspections shall be performed on sandbag barriers and other sediment control measures called for in the SWPPP. Monthly reports and inspection logs shall be maintained by the Contractor and reviewed by the City and the representatives of the State Water Resources Control Board. In the event that it is not feasible to implement specific BMPs, the City can make a determination that other BMPs will provide equivalent or superior treatment either on or off site.

HYD-3 **Prepare WQMP.** Prior to the issuance of a grading permit, the applicant shall submit a Water Quality Management Plan (WQMP) to the City for review and approval. The project shall implement project design features identified in the Water Quality Management Plan (draft by MBI submitted April 24. 2018). This measure shall be implemented to the satisfaction of the City Public Works Department.

HYD-4 **Drainage Improvements.** Prior to issuance of grading and building permits, as appropriate, the developer and project engineer shall demonstrate the project has installed the various drainage and flood control improvements outlined in Tentative Tract Map 37544, the project hydrology report (MBI April 2014), and the project Water Quality Management Plan (MBI April 24, 2018) to the satisfaction of the City Engineer.

Noise

NOI-1 **Construction Noise.** Prior to issuance of a grading permit, the developer shall prepare a Construction Noise Control Plan (CNCP) and submit it to the City for review and approval. The plan shall include but will not be limited to the following:

- During all project site excavation and grading, contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards.
- The project contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site (i.e. south).
- The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise-sensitive receptors nearest the project site (i.e., south) during all project construction.
- A temporary construction barrier with a minimum height of 8 feet shall be placed along the project's southern property line during project grading and construction.
- During all project site construction, the construction contractor shall limit all construction-related activities, including maintenance of construction equipment and the staging of haul trucks, to between the hours of 7:00 a.m. to 5:00 p.m. Monday through Friday and 8:00 a.m. to 5:00 p.m. on Saturday. No construction is permitted on Sundays and government code holidays.
- Prior to issuance of a grading or building permit, the developer shall prepare a haul route and staging plan for any trucks hauling earth or construction materials to or from the project site to where material will be disposed (i.e. export). The plan shall be reviewed and approved by the City before a grading permit is issued

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by the City. To the extent feasible, haul routes and truck staging areas shall not pass sensitive land uses or residential dwellings not on a direct driving route to the closest freeway.

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MITIGATION MONITORING AND REPORTING PROGRAM – FRONTIER COMMUNITIES BRODIAEA RS10 RESIDENTIAL PROJECT SEPTEMBER 18, 2018

1. INTRODUCTION

To ensure that the mitigation measures contained in this Initial Study/Mitigated Negative Declaration are properly implemented, a monitoring plan has been developed pursuant to State law. This Mitigation Monitoring and Reporting Program (MMRP) identifies measures incorporated in the Project which reduce its potential environmental effects; the entities responsible for implementation and monitoring of mitigation measures; and the appropriate timing for implementation of mitigation measures. As described at *CEQA Guidelines* Section 15097, this MMRP employs both reporting on, and monitoring of, Project mitigation measures.

The objectives of the MMRP are to:

• Assign responsibility for, and ensure proper implementation of mitigation measures;

• Assign responsibility for, and provide for monitoring and reporting of compliance with mitigation measures; and

• Provide the mechanism to identify areas of noncompliance and need for enforcement action before irreversible environmental damage occurs.

Mitigation monitoring and reporting procedures incorporated in the Project are presented in the following Section 2. Specific mitigation measures incorporated in the Project, mitigation timing, and implementation and reporting/monitoring responsibilities are presented within this Section at Table 1.

2. MITIGATION MONITORING AND RESPONSIBILITIES

As the Lead Agency, the City of Moreno Valley is responsible for ensuring full compliance with the mitigation measures adopted for the proposed Project. The City will monitor and report on all mitigation activities. Mitigation measures will be implemented at different stages of development throughout the Project area. In this regard, the responsibilities for implementation have been assigned to the Applicant, Contractor, or a combination thereof. If during the course of Project implementation, any of the mitigation measures identified herein cannot be successfully implemented, the City shall be immediately informed, and the City will then inform any affected responsible agencies. The City, in conjunction with any affected responsible agencies, will then determine if modification to the Project is required and/or whether alternative mitigation is appropriate.

Important Note: To facilitate coordination and effective implementation of mitigation measures, the mitigation measures provided herein shall appear on all grading plans, construction specifications, and bid documents as appropriate. Incorporation of required notations shall be verified by the City prior to issuance of first development permit. Implementation Entities shall comply with listed mitigation requirements.

Attachment: Project 2_Exhibit B MMRP Frontier 9-18-18 final (3321 : Centerpointe Commerce Center, and

Table 1: Frontier Communities Brodiaea Avenue RS10 Residential Project – Mitigation Monitoring and Reporting Program – September 18, 2018

Mitigation Measures	Mitigation Timing	Implementation Entity	Monitoring/ Reporting Entity	Monitoring/Reporting Frequency
AIR QUALITY				
AIR-1 Construction Emissions. The following actions shall be implemented to help reduce project construction-related emissions to the greatest extent feasible. The project shall comply with the requirements of SCAQMD Rules 402 and 403, Fugitive Dust, which require the implementation of Reasonable Available Control Measures (RACM) for all fugitive dust sources, and the AQMP, which identifies Best Available Control Measures (BACM) and Best Available Control Technologies (BACT) for area sources and point sources, respectively. This includes the following actions: 1. The project proponent shall ensure that construction equipment is properly maintained and serviced to minimize exhaust emissions. 2. The project proponent shall ensure that existing power sources are utilized where feasible via temporary power lines to avoid on-site power generation. 3. The project proponent shall ensure that construction employees be informed of ride-sharing and transit opportunities. 4. The project proponent shall ensure that any portion of the site to be graded shall be pre-watered to a depth of three (3) feet prior to the onset of grading activities. 5. The project proponent shall ensure that twice daily watering of the site or other soil stabilization methods shall be employed on an ongoing basis after the initiation of any on-site grading activity. Portions of the site that are actively being graded shall be watered regularly to ensure that a crust is formed on the ground surface and shall be watered at the end of each workday. 6. The project proponent shall ensure that all disturbed areas are treated to prevent erosion until the site is constructed. 7. To reduce the potential for wind erosion, the project proponent shall ensure that landscaped areas are installed as soon as possible. 8. The project proponent shall ensure that SCAQMD Rule 403 is adhered to, ensuring the cleanup of construction-related dirt on approach routes to the project site.	During grading and construction	Applicant, grading contractor, and construction contractors	City Inspectors and City Planning Division as needed	During grading and construction based on daily activities, as warranted

Attachment: Project 2_Exhibit B MMRP Frontier 9-18-18 final (3321 : Centerpointe Commerce Center, and

Mitigation Measures	Mitigation Timing	Implementation Entity	Monitoring/ Reporting Entity	Monitoring/Reporting Frequency
9. The project proponent shall ensure that all grading activities are suspended during first and second stage ozone episodes or when wind speeds exceed 25 miles per hour. 10. Cover all trucks hauling dirt, sand, soil, or other loose materials, or maintain at least 0.6 m (2 feet) of freeboard (vertical space between the top of the load and top of the trailer) in accordance with the requirements of California Vehicle Code (CVC) Section 23114. 11. Limit all onsite traffic speeds to 15 mph or less. 12. The construction contractor shall use construction equipment that have Tier 4 compliant engines and Level 3 diesel particulate filters (DPF) with oxidations catalyst that impart a 20% reduction.				
BIOLOGICAL RESOURCES				
BIO-1 Burrowing Owl Survey. Prior to the issuance of grading permit, a pre-construction survey for burrowing owl shall be conducted by a qualified biologist no more than 30 days before the commencement of vegetation removal or ground disturbing activities to confirm the absence of burrowing owl onsite. If burrowing owl(s) are detected during the focused surveys, a Burrowing Owl Mitigation and Monitoring Plan ("Plan") shall be prepared by a qualified biologist and submitted to the California Department of Fish and Wildlife for review and approval prior to commencement of project activities. The Plan shall describe appropriate avoidance, minimization, and mitigation measures to reduce impacts to burrowing owls and ensure the implementation of appropriate and commensurate compensatory mitigation for the loss of burrowing owl nesting and foraging habitat. No further action is required if the 30-day pre-construction survey does not result in burrowing owl sign or observations.	Prior to grading permit (within 30 days)	Applicant to retain qualified biologist	City Planning Division	Submit report prior to issuance of grading permit
BIO-2 Quincy Channel Improvements. Prior to issuance of the first occupancy permit, the applicant shall demonstrate to the City of Moreno Valley Planning Division that a final improvement plan has been approved for that portion of the Quincy Channel adjacent to the project site by the City Public Works Division, the Riverside County Flood Control and Water Conservation District, the California Department of Fish and Wildlife, and possibly the U.S.	Prior to issuance of first occupancy permit	Applicant	City Planning Division	Submit Final Improvement Plan for Quincy Channel

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Mitigation Measures	Mitigation Timing	Implementation Entity	Monitoring/ Reporting Entity	Monitoring/Reporting Frequency
Army Corps of Engineers (if federal jurisdiction is determined to apply to the project or channel). The applicant shall make appropriate improvements to the channel to the satisfaction of the City Engineer per the approved improvement plan and prior to the issuance of the first occupancy permit.				
BIO-3 Nesting Bird Survey. If project activities are planned during the avian nesting season (approximately February 1 through September 15), a nesting bird survey shall be conducted onsite within ten days prior to disturbance to ensure birds protected under the MBTA are not disturbed by construction-related activities such as noise and increased human presence. Any active nests detected in the area shall be flagged and an appropriate buffer around the nest location will be established, as determined by the CDFW. The buffer area is to be avoided until the nesting cycle is complete or it is determined by the biologist that the nest has failed. This measure shall be implemented to the satisfaction of the City Planning Division.	Prior to start of grading or construction (within 10 days)	Applicant to retain qualified biologist	City Planning Division	Submit report prior to issuance of grading permit
CULTURAL RESOURCES				
CUL-1 Project Archaeologist. Prior to the issuance of a grading permit, the Developer shall retain a professional archaeologist to conduct monitoring of all mass grading and trenching activities. The Project Archaeologist shall have the authority to temporarily redirect earthmoving activities in the event that suspected archaeological resources are unearthed during Project construction. The Project Archaeologist, in consultation with the Consulting Tribe(s), the contractor, and the City, shall develop a Cultural Resources Management Plan (CRMP) in consultation pursuant to the definition in AB52 to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the project site. A consulting tribe is defined as a tribe that initiated the AB 52 tribal consultation process for the Project, has not opted out of the AB52 consultation process, and has completed AB 52 consultation with the City as provided for in Cal Pub Res Code Section 21080.3.2(b)(1) of AB52. Details in the Plan shall include:	Prior to grading permit	Applicant to retain qualified archaeologist to monitor grading	City Planning Division	Submit proof of retention of a qualified archaeologist prior to grading Prior to grading document procedures are in place in the event monitoring reveals artifacts

Attachment: Project 2_Exhibit B MMRP Frontier 9-18-18 final (3321 : Centerpointe Commerce Center, and

Mitigation Measures	Mitigation Timing	Implementation Entity	Monitoring/ Reporting Entity	Monitoring/Reporting Frequency
a. Project grading and development scheduling; b. The Project archeologist and the Consulting Tribes(s) as defined in CUL-1 shall attend the pre-grading meeting with the City, the construction manager and any contractors and will conduct a mandatory Cultural Resources Worker Sensitivity Training to those in attendance. The Training will include a brief review of the cultural sensitivity of the Project and the surrounding area; what resources could potentially be identified during earthmoving activities; the requirements of the monitoring program; the protocols that apply in the event inadvertent discoveries of cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated; and any other appropriate protocols. All new construction personnel that will conduct earthwork or grading activities that begin work on the Project following the initial Training must take the Cultural Sensitivity Training prior to beginning work and the Project archaeologist and Consulting Tribe(s) shall make themselves available to provide the training on an as-needed basis; c. The protocols and stipulations that the contractor, City, Consulting Tribe(s) and Project archaeologist will follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits that shall be subject to a cultural resources evaluation.				
CUL-2 Tribal Monitoring. Prior to the issuance of a grading permit, the City of Moreno Valley shall secure agreements with the Pechanga Band of Luiseño Indians and Soboba Band of Luiseño Indians for tribal monitoring. The Developer is also required to provide a minimum of 30 days advance notice to the tribes of all mass grading and trenching activities. The Native American Tribal Representatives shall have the authority to temporarily halt and redirect earth moving activities in the affected area in the event that suspected archaeological resources are unearthed. If the Native American Tribal Representatives suspect that an archaeological resource may have been unearthed, the Project Archaeologist or the Tribal Representatives shall immediately redirect grading	Prior to grading permit	Applicant	City Planning Division	Submit proof of monitoring agreements with local tribes before permit issued

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Mitigation Measures	Mitigation Timing	Implementation Entity	Monitoring/ Reporting Entity	Monitoring/Reporting Frequency
operations in a 100-foot radius around the find to allow identification and evaluation of the suspected resource. In consultation with the Native American Tribal Representatives, the Project Archaeologist shall evaluate the suspected resource and make a determination of significance pursuant to California Public Resources Code Section 21083.2. (only applicable if tribes require monitoring).				
CUL-3 Finds During Grading. In the event that Native American cultural resources are discovered during the course of grading (inadvertent discoveries), the following procedures shall be carried out for final disposition of the discoveries: a) One or more of the following treatments, in order of preference, shall be employed with the tribes. Evidence of such shall be provided to the City of Moreno Valley Planning Division: i. Preservation-In-Place of the cultural resources, if feasible. Preservation in place means avoiding the resources, leaving them in the place they were found with no development affecting the integrity of the resources. ii. Onsite reburial of the discovered items as detailed in the treatment plan required pursuant to Mitigation Measure CUL-1. This shall include measures and provisions to protect the future reburial area from any future impacts in perpetuity. Reburial shall not occur until all legally required cataloging and basic recordation have been completed. No recordation of sacred items is permitted without the written consent of all Consulting Native American Tribal Governments as defined in CUL-1. The location for the future reburial area shall be identified on a confidential exhibit on file with the City and concurred to by the Consulting Native American Tribal Governments prior to certification of the environmental document.	During grading	Project Archaeologist	City Planning Division	Submit monitoring plan to City prior to grading outlining procedures to follow if artifacts are found during grading
CUL-4 Grading Plan Note. The City shall verify that the following note is included on the Grading Plan: "If any suspected archaeological resources are discovered during ground-disturbing activities and the Project Archaeologist or Native American Tribal Representatives are not present, the construction	Prior to issuance of grading permit	Project Engineer	City Planning Division	Verify note on grading plan prior to plan approval

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Mitigation Measures	Mitigation Timing	Implementation Entity	Monitoring/ Reporting Entity	Monitoring/Reporting Frequency
supervisor is obligated to halt work in a 100-foot radius around the find and call the Project Archaeologist and the Tribal Representatives to the site to assess the significance of the find."				
CUL-5 Accidental Finds. If potential historic or cultural resources are uncovered during excavation or construction activities at the project site, work in the affected area must cease immediately and a qualified person meeting the Secretary of the Interior's standards (36 CFR 61), Tribal Representatives, and all site monitors per the Mitigation Measures, shall be consulted by the City to evaluate the find, and as appropriate recommend alternative measures to avoid, minimize or mitigate negative effects on the historic, or prehistoric resource. Determinations and recommendations by the consultant shall be immediately submitted to the Planning Division for consideration and implemented as deemed appropriate by the Community Development Director, in consultation with the State Historic Preservation Officer (SHPO) and any and all Consulting Native American Tribes as defined in CUL-1 before any further work commences in the affected area.	During grading	Project Archaeologist and Applicant	City Planning Division	Submit monitoring plan to City prior to grading outlining procedures to follow if artifacts are found during grading
CUL-6 Human Remains. If human remains are discovered, no further disturbance shall occur in the affected area until the County Coroner has made necessary findings as to origin. If the County Coroner determines that the remains are potentially Native American, the California Native American Heritage Commission shall be notified within 24 hours of the published finding to be given a reasonable opportunity to identify the “most likely descendant”. The “most likely descendant” shall then make recommendations and engage in consultations concerning the treatment of the remains (California Public Resources Code 5097.98). (GP Objective 23.3, CEQA).	During grading	Project Archaeologist and Applicant	City Planning Division	Notify coroner or NA tribal representatives within 5 days of discovery
CUL-7 Paleontological Resources. Prior to the issuance of a grading permit, the Project Applicant shall provide evidence to the City of Moreno Valley that a qualified paleontologist has been retained by the Project Applicant to conduct monitoring of excavation activities and has the authority to halt and redirect	Prior to grading permit	Applicant to retain qualified paleontologist	City Planning Division	Submit signed agreement to City prior to grading permit issuance

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Mitigation Measures	Mitigation Timing	Implementation Entity	Monitoring/ Reporting Entity	Monitoring/Reporting Frequency
earthmoving activities in the event that suspected paleontological resources are unearthed.				
CUL-8 Paleo Monitor. The paleontological monitor shall conduct full-time monitoring during grading and excavation operations in undisturbed, very old alluvial fan sediments at or below four (4) feet below ground surface and shall be equipped to salvage fossils if they are unearthed to avoid construction delays and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. The paleontological monitor shall be empowered to temporarily halt or divert equipment to allow of removal of abundant and large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface, or if present, are determined upon exposure and examination by qualified paleontological personnel to have a low potential to contain or yield fossil resources.	During grading	Applicant to retain qualified paleontologist	City Planning Division	If fossils are found during grading, halt work and retain paleontologist to handle materials
CUL-9 Paleo Curation. Recovered specimens shall be properly prepared to a point of identification and permanent preservation, including screen washing sediments to recover small invertebrates and vertebrates, if necessary. Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage, such as the Western Science Museum in Hemet, California, is required for significant discoveries.	After removal of any artifacts	Applicant and project paleontologist	City Planning Division	Provide copy of curation agreement to City if artifacts are curated
CUL-10 Paleo Report. A final paleontological monitoring and mitigation report of findings and significance shall be prepared, including lists of all fossils recovered and written repository agreements, if any, and necessary maps and graphics to accurately record the original location of the specimens. The report shall be submitted to the City of Moreno Valley prior to building final.	Prior to first occupancy permit	Applicant from project paleontologist	City Planning Division	Provide report to City upon completion of any curation
GEOLOGY AND SOILS				
GEO-1 Geotech Report. Prior to issuance of building permits, the project applicant or its designee shall demonstrate all recommendations contained in project-specific geotechnical and/or soils and foundation evaluation report by Geotek, Inc. dated	Prior to building permit issuance	Applicant and Project Engineer	City Engineering Department	Demonstrate requirements have been met before permit issuance

Attachment: Project 2_Exhibit B MMRP Frontier 9-18-18 final (3321 : Centerpointe Commerce Center, and

Mitigation Measures	Mitigation Timing	Implementation Entity	Monitoring/ Reporting Entity	Monitoring/Reporting Frequency
February 12, 2014 are implemented. This measure shall be implemented to the satisfaction of the City Engineer.				
GEO-2 Soil Limitations. Prior to the issuance of a grading permit, the project applicant shall provide proof to the City that a soils engineer has evaluated onsite soils and recommended appropriate construction techniques to adequately protect buried metal pipes or other onsite improvement from onsite soil conditions. This measure shall be implemented to the satisfaction of the City Engineer.	Prior to grading permit issuance	Applicant and Project Engineer	City Engineering Department	Demonstrate requirements have been met before permit issuance
GREENHOUSE GAS EMISSIONS				
GHG-1 GHG Emissions. To ensure that the proposed project complies with and would not conflict with or impede the implementation of state and local greenhouse gas (GHG) reduction goals, the project will implement the following measures to help reduce its GHG emissions to the extent feasible. Prior to issuance of any occupancy permits, these measures shall be incorporated into the design and construction of the project to the satisfaction of the City: **Construction and Building Materials** (a) Divert at least 50 percent of the demolished and/or grubbed construction materials (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard). **Energy Efficiency** (a) Design all project buildings to exceed the current California Building Code Title 24 energy standard by ten (10) percent, such as by installing energy-efficient heating and cooling systems, appliances and equipment, and control systems. (b) Install electrical to allow for future installation of roof-mounted photovoltaic solar equipment and electric vehicle charging equipment in garages.	Prior to issuance of a certificate of occupancy	Applicant and Project Engineer	City Planning Division and City Engineering Department as appropriate	Demonstrate requirements have been met before permit issuance

Attachment: Project 2_Exhibit B MMRP Frontier 9-18-18 final (3321 : Centerpointe Commerce Center, and

Mitigation Measures	Mitigation Timing	Implementation Entity	Monitoring/ Reporting Entity	Monitoring/Reporting Frequency
Water Conservation and Efficiency (a) Install water-efficient landscaping within parkways and common areas of the development. (b) Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls, within parkways and common areas of the development. (c) Restrict watering methods (e.g., prohibit systems that apply water to non-vegetated surfaces) and control runoff from parkways and common areas within the development.				
HYDROLOGY AND WATER QUALITY				
HYD-1 File NOI. Prior to the issuance of a grading permit, the project applicant shall file and obtain a Notice of Intent (NOI) with the Regional Water Quality Control Board (RWQCB) in order to be in compliance with the State NPDES General Construction Storm Water Permit for discharge of surface runoff associated with construction activities. Evidence that this has been obtained (i.e., a copy of the Waste Discharger's Identification Number) shall be submitted to the City for coverage under the NPDES General Construction Permit. The NOI shall address the potential for an extended and discontinuous construction period based on funding availability.	Prior to issuance of a grading permit	Applicant and Project Engineer	City Planning Division	Submit proof NOI issuance
HYD-2 Prepare SWPPP. Prior to the issuance of a grading permit, the project applicant shall prepare a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP shall include a surface water control plan and erosion control plan citing specific measures to control on-site and off-site erosion during the entire grading and construction period. In addition, the SWPPP shall emphasize structural and nonstructural Best Management Practices (BMPs) to control sediment and non-visible discharges from the site. The SWPPP will include inspection forms for routine monitoring of the site during construction phase to ensure NPDES compliance and additional BMPs and erosion control measures will be documented in the SWPPP and utilized if necessary. The SWPPP shall address the potential for an extended and discontinuous construction period	Prior to grading permit issuance	Applicant and Project Engineer	City Engineering Department	Submit approved SWPPP prior to permit issuance

Attachment: Project 2_Exhibit B MMRP Frontier 9-18-18 final (3321 : Centerpointe Commerce Center, and

Mitigation Measures	Mitigation Timing	Implementation Entity	Monitoring/ Reporting Entity	Monitoring/Reporting Frequency
based on funding availability. The SWPPP will be kept on site for the entire duration of project construction and will be available to the local RWQCB for inspection at any time. BMPs included in the SWPPP may include the following: • Sediment discharges from the site may be controlled by the following: sandbags, silt fences, straw wattles and temporary basins (if deemed necessary), and other discharge control devices. The construction and condition of the BMPs will be periodically inspected during construction and repairs will be made when necessary as required by the SWPPP. • Materials that have the potential to contribute to non-visible pollutants to storm water must not be placed in drainage ways and must be contained, elevated, and placed in temporary storage containment areas. • All loose piles of soil, silt, clay, sand, debris, and other earthen material shall be protected in a reasonable manner to eliminate any discharge from the site. Stockpiles will be surrounded by silt fences and covered with plastic tarps. • In addition, the construction contractor shall be responsible for performing and documenting the application of BMPs identified in the SWPPP. Weekly inspections shall be performed on sandbag barriers and other sediment control measures called for in the SWPPP. Monthly reports and inspection logs shall be maintained by the Contractor and reviewed by the City and the representatives of the State Water Resources Control Board. In the event that it is not feasible to implement specific BMPs, the City can make a determination that other BMPs will provide equivalent or superior treatment either on or off site.				
HYD-3 Prepare WQMP. Prior to the issuance of a grading permit, the applicant shall submit a Water Quality Management Plan (WQMP) to the City for review and approval. The project shall implement project design features identified in the Water Quality Management Plan (draft by MBI submitted April 24. 2018). This measure shall be implemented to the satisfaction of the City Public Works Department.	Prior to grading permit issuance	Applicant and Project Engineer	City Engineering Department	Submit approved WQMP prior to permit issuance

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Mitigation Measures	Mitigation Timing	Implementation Entity	Monitoring/ Reporting Entity	Monitoring/Reporting Frequency
HYD-4 Drainage Improvements. Prior to issuance of grading and building permits, as appropriate, the developer and project engineer shall demonstrate the project has installed the various drainage and flood control improvements outlined in Tentative Tract Map 37544, the project hydrology report (MBI April 2014), and the project Water Quality Management Plan (MBI April 24, 2018) to the satisfaction of the City Engineer.	Prior to issuance of grading or building permits	Applicant and Project Engineer	City Engineering and Public Works Departments as appropriate	Demonstrate installation prior to first permit issuance
NOISE				
NOI-1 Construction Noise. Prior to issuance of a grading permit, the developer shall prepare a Construction Noise Control Plan (CNCP) and submit it to the City for review and approval. The plan shall include but will not be limited to the following: • During all project site excavation and grading, contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards. • The project contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site (i.e. south). • The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise-sensitive receptors nearest the project site (i.e., south) during all project construction. • A temporary construction barrier with a minimum height of 8 feet shall be placed along the project's southern property line during project grading and construction. • During all project site construction, the construction contractor shall limit all construction-related activities, including maintenance of construction equipment and the staging of haul trucks, to between the hours of 7:00 a.m. to 5:00 p.m. Monday through Friday and 8:00 a.m. to 5:00 p.m. on Saturday. No construction is permitted on Sundays and government code holidays.	Prior to grading permit issuance	Applicant and Project Engineer	City Engineering Department	Obtain approved CNCP prior to permit issuance

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Mitigation Measures	Mitigation Timing	Implementation Entity	Monitoring/ Reporting Entity	Monitoring/Reporting Frequency
• Prior to issuance of a grading or building permit, the developer shall prepare a haul route and staging plan for any trucks hauling earth or construction materials to or from the project site to where material will be disposed (i.e. export). The plan shall be reviewed and approved by the City before a grading permit is issued by the City. To the extent feasible, haul routes and truck staging areas shall not pass sensitive land uses or residential dwellings not on a direct driving route to the closest freeway.				

September 18, 2018

Attachment: Project 2_Exhibit B MMRP Frontier 9-18-18 final (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Ordinance No 2018-XX Change of Zone (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

ORDINANCE NO. _____

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA APPROVING CHANGE OF ZONE APPLICATION NO. PEN18-0054. AN AMENDMENT TO THE OFFICIAL ZONING ATLAS CHANGING THE ZONING CLASSIFICATION FROM R3 (MAXIMUM 3 UNITS/ACRE) TO RS 10 (SINGLE-FAMILY MAXIUMUM 10 UNITS/ACRE) FOR APPROXIMATELY 8.85 ACRES GENERALLY LOCATED ON THE NORTHWEST CORNER OF BRODIAEA AVENUE AND QUINCY STREET, EASTERLY OF MORENO BEACH DRIVE, ASSESSOR PARCEL NUMBER (APN) 478-080-014

The City Council of the City of Moreno Valley does ordain as follows:

SECTION 1 GENERAL:

1.1 The applicant, FH II, LLC., has filed an application (PEN18-0053) requesting an Amendment to Page 101 of the official Zoning Atlas to change the zoning classification for certain property as described in the title of this ordinance and the attached Exhibit A.

1.2 Pursuant to the provisions of the law, a public hearing was held before the City Council December 4, 2018, for deliberations and decision.

1.3 The matter was fully discussed, and the public and other agencies were given opportunity to present testimony and documentation.

1.4 An Initial Study has been prepared for the project for the purpose of compliance with the California Environmental Quality Act (CEQA). Based on the initial Study, it was determined that the project impacts are less than significant and approval of a Mitigated Negative Declaration is recommended.

SECTION 2 FINDINGS:

2.1 Based upon substantial evidence presented to this City Council during the above-referenced meeting on December 4, 2018, including written and oral staff reports, and the record from the public hearing, this City Council hereby specifically finds as follows:

A. Conformance with General Plan Policies – The proposed Change of Zone is consistent with the General Plan, and its goals, objectives, policies and programs.

FACTS: The General Plan encourages an organized, well-designed, high quality, and functional balance of urban and rural land uses that will meet

Attachment: Project 2_Ordinance No 2018-XX Change of Zone (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

the needs of a diverse population, and promotes the optimum degree of health, safety, well-being, and beauty for all areas of the community, while maintaining a sound economic base (Goal 2.2). The General Plan further calls for a supply of housing in sufficient numbers suitable to meet the diverse needs of future residents and to support healthy economic development without creating an oversupply of any particular type of housing. To achieve these goals, the General Plan establishes Objective 2.2 which aims to provide a wide range of residential opportunities and dwelling types to meet the demands of present and future residents of all socioeconomic groups. The Project includes a request for a General Plan Amendment to change the General Plan Land Use Designation of the subject site from Residential 3 to Residential 10 which would provide a wider range of dwelling types and opportunities for diverse socioeconomic groups.

With the approval of the General Plan Amendment PEN18-0053, the Change of Zone from R3 to RS10 will be consistent with the General Plan Land Use Designation of Residential 10 (maximum 10 units per acre).

B. Conformance with the Zoning Regulations – The proposed zoning is consistent with the purposes and intent of Title 9 of the City of Moreno Valley Municipal Code.

FACTS: As proposed, the Change of Zone from R3 to RS10 for the 8.85 acre project site is consistent with the purposes and intent of Title 9 Planning and Zoning of the Municipal Code. The subject subdivision under the RS10 district provides for the construction of a suburban residential development on small single-family lots with amenities not generally found in suburban subdivisions. The district is intended for subdivisions at a maximum allowable density of ten (10) dwelling units per net acre.

The Project is providing a linear park and meandering trail with recreational amenities along Quincy Channel which will be maintained by the Project HOA as an added amenity to serve the community. The design of the dwelling units for the residential development will be subject to the permitting requirements of the City's Municipal Code, and will be required to comply with all established development standards for residential districts, including setbacks, height, site coverage and landscaping and site and building design considerations.

Although the Zoning designation for the project site will change from R3 to RS10, it will be compatible with the existing developments immediately to the south and the southeast which are developed with similar or higher density single-family residential developments. The properties immediately to the north of the site are currently undeveloped and are zoned R3 intended for development for suburban lifestyles similar to the project.

C. Health, Safety and Welfare – The proposed Change of Zone will not be detrimental to the public health, safety and welfare.

FACTS: The Change of Zone will change the project site's existing zoning designation from R3 to RS10 which will allow the subdivision and construction of 45 single-family residential units. This use and density would be compatible with the surrounding area which primarily consists of similar suburban and rural residential developments. Therefore, the project will not have adverse effects on residential neighborhoods or other types of sensitive land uses.

The implementation of the Change of Zone for the 8.85-acre site, as designed and conditioned will not adversely affect the public health, safety and welfare, and is consistent with General Plan Objectives 6.1 and 6.2 to minimize the potential for loss of life and protect residents, workers and visitors from physical injury and property damage due to seismic ground shaking and flooding.

The analysis presented in the Initial Study/Mitigated Negative Declaration prepared for the Project (including the Change of Zone), pursuant to California Environmental Quality Act (CEQA), Public Resources Code 21000, indicates that the Project will not have a significant environmental impact as designed and mitigated.

SECTION 3 AMENDMENT OF THE OFFICIAL ZONING ATLAS

3.1 The City of Moreno Valley Official Zoning Atlas, as adopted by Ordinance No. 359 on April 14, 1992, of the City of Moreno Valley, and as amended thereafter from time to time by the City Council of the City of Moreno Valley, is further amended by placing in effect the zone or zone classification to page 101 of the Official Zoning Atlas as shown on the attached map marked "Exhibit A" and included herein by reference and on file in the office of the City Clerk.

SECTION 4 EFFECT OF ENACTMENT

4.1 Except as specifically provided herein, nothing contained in this ordinance shall be deemed to modify or supersede any prior enactment of the City Council which addresses the same subject addressed herein.

SECTION 5 NOTICE OF ADOPTION

5.1 Within fifteen days after the date of adoption hereof, the City Clerk shall certify to the adoption of this ordinance and cause it to be posted in three public places within the City.

Attachment: Project 2_Ordinance No 2018-XX Change of Zone (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

SECTION 6 EFFECTIVE DATE

6.1 This ordinance shall take effect thirty days after the date of its adoption.

APPROVED AND ADOPTED this 4th day of December, 2018.

_____
Mayor

ATTEST:

_____
City Clerk

APPROVED AS TO FORM:

_____
City Attorney

Attachment: Project 2_Ordinance No 2018-XX Change of Zone (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

ORDINANCE JURAT

STATE OF CALIFORNIA)

COUNTY OF RIVERSIDE) ss.

CITY OF MORENO VALLEY)

I, Pat Jacquez-Nares, City Clerk of the City of Moreno Valley, California, do hereby certify that Ordinance No. 2018-__ was duly and regularly adopted by the City Council of the City of Moreno Valley at a regular meeting thereof held on the __ day of December 2018 by the following vote.

AYES:

NOES:

ABSENT:

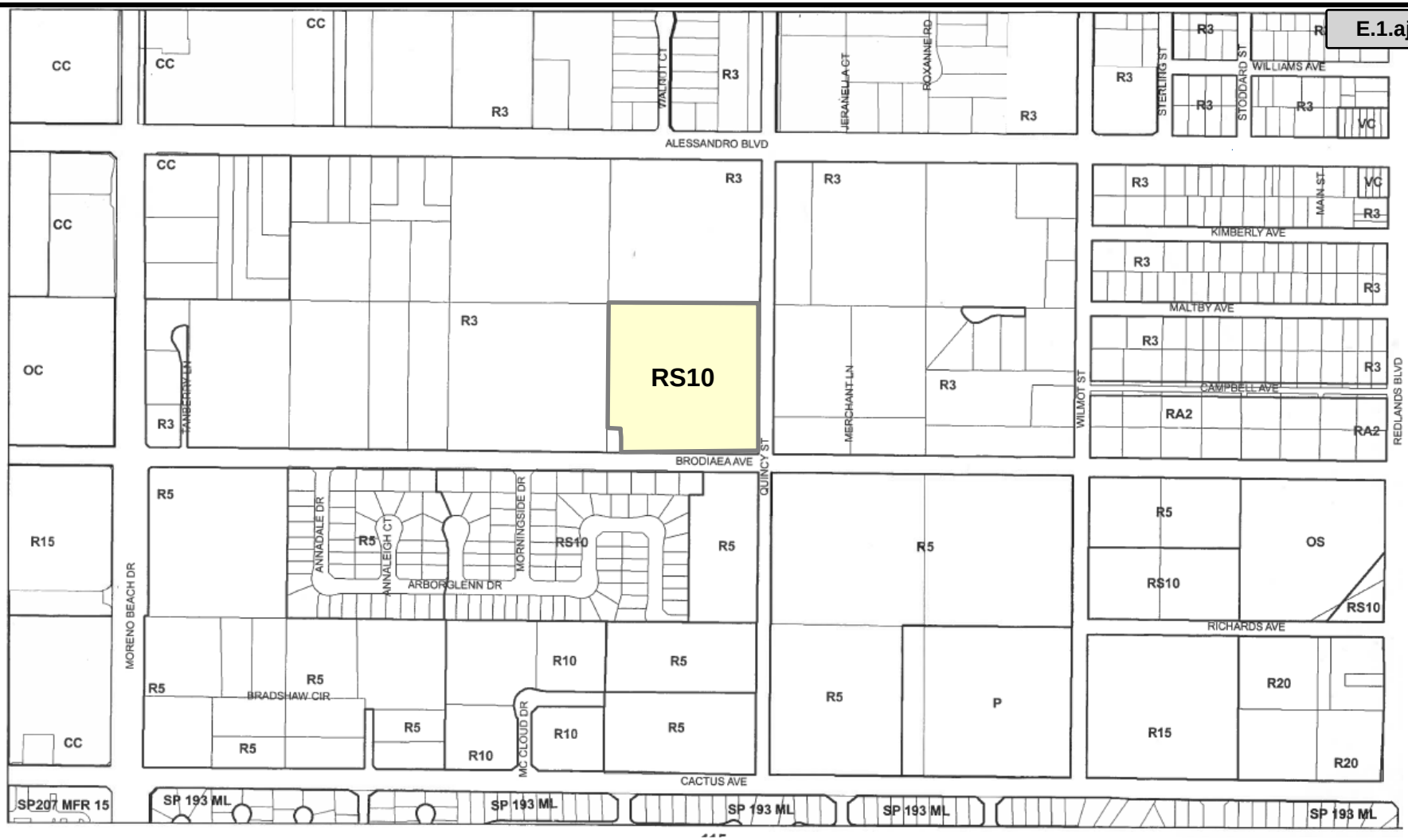
ABSTAIN:

(Council Members, Mayor Tem and Mayor)

_____
City Clerk

(SEAL)

Attachment: Project 2_Ordinance No 2018-XX Change of Zone (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM



City of Moreno Valley Zoning Atlas Page 101

PEN18-0054 - Change of Zone

From Residential 3 (R3) to Residential Single-Family 10 (RS10)

Attachment: Project 2_Exhibit A to Ordinance No 2018-XX CZ (3321 : Centerpointe

RESOLUTION NO. 2018-XX

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY APPROVING PEN18-0092, TENTATIVE TRACT MAP 37544, TO SUBDIVIDE 8.85 ACRES INTO FORTY-FIVE RESIDENTIAL LOTS AND FOUR LETTERED LOTS LOCATED AT THE NORTHWEST CORNER OF BRODIAEA AVENUE AND QUINCY STREET, ASSESSOR PARCEL NUMBER (APN) 478-080-014

WHEREAS, the applicant, FH II, LLC., filed Application No. PEN18-0092, requesting approval of Tentative Tract Map 37544 on the property as described in the title of this resolution; and

WHEREAS, the application for the Tentative Tract Map has been evaluated in accordance with established City of Moreno Valley (City) procedures, and with consideration of the General Plan and other applicable laws and regulations; and

WHEREAS, An Initial Study and Mitigated Negative Declaration have been prepared for the Project consistent with the California Environmental Quality Act (CEQA), and based on a thorough analysis, it was determined that the project impacts are less than significant with mitigation, and the Mitigated Negative Declaration represents the City's independent judgment and analysis; and

WHEREAS, the Planning Commission of the City of Moreno Valley held a public hearing on October 25, 2018 to consider the subject application and all environmental documentation prepared for the Project and recommended approval of the Project by the City Council; and

WHEREAS, the public hearing notice for this project was published in the local newspaper on November 23, 2018. Public notice was sent to all property owners of record within 300 feet of the project site on November XX, 2018. The public hearing notice for this project was also posted on the project site on November XX, 2018; and

WHEREAS, on December 4, 2018, the City Council of the City of Moreno Valley held a public hearing to consider the subject application and all of the environmental documentation prepared for the project; and

WHEREAS, all legal prerequisites to the adoption of this Resolution have occurred; and

WHEREAS, pursuant to Government Code Section 66020(d)(1), NOTICE IS HEREBY GIVEN that this project is subject to certain fees, dedications, reservations and other exactions as provided herein.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

Attachment: Project 2_Resolution No 2018-XX Tentative Tract Map 37544 [Revision 2] (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 2_Resolution No 2018-XX Tentative Tract Map 37544 [Revision 2] (3321 : Centerpointe Commerce Center, and Brodiaea

A. This City Council specifically finds that all of the facts set forth above in the Resolution are true and correct.

B. Based upon substantial evidence presented to this City Council during meeting on December 4, 2018, including written and oral staff reports, public testimony and the record from the public hearing, this City Council hereby specifically finds as follows:

1. That the proposed use is consistent with applicable general and specific plans.

   FACTS: Tentative Tract Map 37544 will subdivide an 8.85-acre property into 45 residential lots and 4 lettered lots for water quality/detention and open space/recreational purposes. The Project includes a request for a General Plan Amendment (PEN18-0053) to change the General Plan Land Use Designation of the subject site from Residential 3 to Residential 10 which in accordance with Objective 2.2 of the General Plan Community Development Element would provide a wider range of residential opportunities and dwelling types to meet the demands of present and future residents of all socioeconomic groups.

   With the approval of the General Plan Amendment PEN18-0053, the Tentative Tract Map will be consistent with the General Plan. There is no specific plan applicable to the project.

2. That the design or improvement of the proposed land division is consistent with the applicable general and specific plans

   FACTS: The Tentative Tract Map will subdivide the subject 8.85-acre property into residential and open space lots in accordance with the General Plan land use designation of Residential 10 (maximum 10 units per acre), with associated infrastructure improvements which meet the established standards and regulations. The project is consistent with applicable development standards for RS10 zoning district of the Municipal Code, and there are no specific plans applicable to the project.

3. That the site of the proposed land division is physically suitable for the type of development and density.

   FACTS: The project is located on an undeveloped, gently sloping, rectangular-shaped property located in a primarily residential portion of the City. The surrounding areas are zoned and/or developed with rural or suburban residential development of varying densities. The areas to the north of the site consist of land that is generally undeveloped or developed with lower density suburban or rural housing, while the areas to the south of the site generally consist of existing suburban residential developments with densities similar to

the project. There are no prominent topographic or other features on the site. The Tentative Tract Map is designed in accordance with the provisions of Section 9.14 – Land Divisions, of the City's Municipal Code.

4. That the design of the proposed land division or the proposed improvements, are not likely to cause substantial environmental damage or substantially and unavoidably injure fish or wildlife or their habitat.

FACTS: No fish or wildlife resources will be substantially affected by this land division. An Initial Study/Mitigated Negative Declaration was prepared for the Project (including the General Plan Amendment and Change of Zone), pursuant to California Environmental Quality Act (CEQA), Public Resources Code 21000, which found that the Project will not have a significant environmental impact as designed and mitigated.

5. That the design of the proposed land division or the type of improvements are unlikely to cause serious public health problems.

FACT: The design of the land division and type of improvements will comply with all applicable City and other regulatory agency standards, including the street and utility infrastructure improvements. As designed and conditioned, the Project will be consistent with General Plan Objectives 6.1 and 6.2 which aim to minimize the potential for loss of life and protect residents, workers and visitors to the City from physical injury and property damage due to seismic ground shaking and flooding, and the Municipal Code relative to public health and safety.

6. That the design of the subdivision or the type of improvements will not conflict with easements, acquired by the public at large for access through or use of property within the proposed subdivision.

FACT: The Tentative Tract Map has been designed to accommodate and not conflict with existing easements on the subject site including utility and storm drain easements.

7. That the proposed land division and the associated design and improvements are consistent with applicable ordinances of the City.

FACT: The land division proposed by Tentative Tract Map No. 37544 is consistent with the City's Municipal Code Section 9.14 Land Divisions and other applicable ordinances of the City.

C. FEES, DEDICATIONS, RESERVATIONS, AND OTHER EXACTIONS

1. FEES

Impact, mitigation and other fees are due and payable under currently applicable ordinances and resolutions. These fees may include but are not

Attachment: Project 2_Resolution No 2018-XX Tentative Tract Map 37544 [Revision 2] (3321 : Centerpointe Commerce Center, and Brodiaea

limited to: Development Impact Fee; Transportation Uniform Mitigation Fee (TUMF); Multi-species Habitat Conservation Plan (MSHCP) Mitigation Fee, Stephens Kangaroo Rat Habitat Fee, Underground Utilities in lieu Fee; Area Drainage Plan Fee; Bridge and Thoroughfare Mitigation Fee (Future); and Traffic Signal Mitigation Fee. The final amount of fees payable is dependent upon information provided by the applicant and will be determined at the time the fees become due and payable.

Unless otherwise provided for by this resolution, all impact fees shall be calculated and collected at the time and in the manner provided in Chapter 3.32 of the City of Moreno Valley Municipal Code or as so provided in the applicable ordinances and resolutions. The City expressly reserves the right to amend the fees and the fee calculations consistent with applicable law.

2. DEDICATIONS, RESERVATIONS, AND OTHER EXACTIONS

The adopted Conditions of Approval for PEN18-0092, incorporated herein by reference, may include dedications, reservations, and exactions pursuant to Government Code Section 66020 (d) (1).

3. CITY RIGHT TO MODIFY/ADJUST; PROTEST LIMITATIONS

The City expressly reserve the right to establish, modify or adjust any fee, dedication, reservation or other exaction to the extent permitted and as authorized by law.

Pursuant to Government Code Section 66020(d) (1), NOTICE IS FURTHER GIVEN that the 90-day period to protest the imposition of any impact fee, dedication, reservation, or other exaction described in this resolution begins on the effective date of this resolution and any such protest must be in a manner that complies with Section 66020 (a) and failure to timely follow this procedure will bar any subsequent legal action to attack, review, set aside, void or annul imposition.

The right to protest the fees, dedications, reservation, or other exactions does not apply to planning, zoning, grading, or other similar application processing fees or service fees in connection with this project and it does not apply to any fees, dedication, reservation, or other exactions of which a notice has been given similar to this, nor does it revive challenges to any fees for which the Statute of Limitations has previously expired.

BE IT FURTHER RESOLVED that the City Council HEREBY APPROVES Resolution No. 2018-XX, and:

1. APPROVES Tentative Tract Map 37544, PEN18-0092 subject to conditions of approval attached as Exhibit A.

Attachment: Project 2_Resolution No 2018-XX Tentative Tract Map 37544 [Revision 2] (3321 : Centerpointe Commerce Center, and Brodiaea

APPROVED AND ADOPTED this 11th day of December, 2018.

_____
Mayor of the City of Moreno Valley

ATTEST:

_____
City Clerk

APPROVED AS TO FORM:

_____
City Attorney

Attachment: Project 2_Resolution No 2018-XX Tentative Tract Map 37544 [Revision 2] (3321 : Centerpointe Commerce Center, and Brodiaea

RESOLUTION JURAT

STATE OF CALIFORNIA)

COUNTY OF RIVERSIDE) ss.

CITY OF MORENO VALLEY)

I, Pat Jacquez-Nares, City Clerk of the City of Moreno Valley, California, do hereby certify that Resolution No. 2018-XX was duly and regularly adopted by the City Council of the City of Moreno Valley at a special meeting thereof held on the 11th day of December, 2018 by the following vote.

AYES:

NOES:

ABSENT:

ABSTAIN:

(Council Members, Mayor Tem and Mayor)

_____

City Clerk

(SEAL)

ATTACHED:

Exhibit A - Conditions of Approval

Attachment: Project 2_Resolution No 2018-XX Tentative Tract Map 37544 [Revision 2] (3321 : Centerpointe Commerce Center, and Brodiaea

CITY OF MORENO VALLEY
CONDITIONS OF APPROVAL
Tentative Tract Map (PEN18-0092)

EFFECTIVE DATE:
EXPIRATION DATE:

COMMUNITY DEVELOPMENT DEPARTMENT

Special Conditions

1. Prior to recordation of the final subdivision map, the following documents shall be submitted to and approved by the Planning Division which shall demonstrate that the project will be developed and maintained in accordance with the intent and purpose of the approval:

   a. The document to convey title
   b. Deed restrictions, easements, or Covenants, Conditions and Restrictions to be recorded

   The approved documents shall be recorded at the same time that the subdivision map is recorded. The documents shall contain provisions for general maintenance of the site, joint access to proposed parcels, open space use restrictions, conservation easements, guest parking, feeder trails, water quality basins, lighting, landscaping and common area use items such as general building maintenance (apartments, condominiums and townhomes) tot lot/public seating areas and other recreation facilities or buildings. The approved documents shall also contain a provision, which provides that they may not be terminated and/or substantially amended without the consent of the City and the developer's successor-in-interest. (MC 9.14.090)

   In addition, the following deed restrictions and disclosures shall be included within the document and grant deed of the properties:
   a. The developer and homeowners association shall promote the use of native plants and trees and drought tolerant species.
   b. All lots designated for open space and or detention basins, shall be included as an easement to, and maintained by a Homeowners Association (HOA) or other private maintenance entity. All reverse frontage landscape areas shall also be maintained by the onsite HOA. Language to this effect shall be included and reviewed within the required Covenant Conditions and Restrictions (CC&Rs) prior to the approval of the final map.
   c. Maintenance of any and all common facilities.
   d. A conservation easement for lettered lots shall be recorded on the deed of the

Attachment: Project 2_Exhibit A Conditions of Approval TTM 37544 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

property and shown on the final map. Said easement shall include access restrictions prohibiting motorized vehicles from these areas.

e. Oleander plants or trees shall be prohibited on open space lots adjacent to multi-use trails.

2. Prior to final map recordation any required trail easements shall be provided.

3. Prior to approval of a grading plan, a detailed trail plan shall be submitted to and approved by the Planning Division. The plan shall indicate widths, maximum slopes, physical conditions, fencing, walls, and/or amenities in accordance with City standards.

4. Prior to approval of any grading permit, a tree plan shall be submitted to and approved by the Planning Division. The plan shall identify all mature trees (4 inch trunk diameter or larger) on the subject property and City right-of-way. Using the grading plan as a base, the plan shall indicate trees to be relocated, retained, and removed. Replacement trees shall be shown on the plan, be a minimum size of 24 inch box, and meet a ratio of three replacement trees for each mature tree removed or as approved by the Planning Official. (GP Objective 4.4, 4.5, DG)

5. All undeveloped portions of the site in perpetuity shall be maintained in a manner that provides for the control of weeds, erosion and dust. (MC 9.02.030)

6. Prior to the issuance of building permits, the developer shall provide documentation that contact was made to the U.S. Postal Service to determine the appropriate type and location of mailboxes.

7. Prior to grading plan approval, wall and fence plans shall be submitted to and approved by the Planning Division subject to the City's Municipal Code including the following:

A. Side and rear yard fences/walls (not adjacent to a right of way) shall be constructed of decorative block, poly-vinyl or wood.
B. A solid decorative (e.g. split face, color variation, pattern variation, or as approved by the Planning Official) block wall with pilasters and a cap is required along the perimeter of the tract adjacent to any right of way or reverse frontage location and along any right of way within the interior of the tract (all corner lots).
C. A six (6) foot high combination wall with pilasters is required at top of slope along an open space area or adjacent to a park.
D. Decorative open iron or steel fencing with pilasters is required adjacent to open space areas and view lots. (View lots are defined as lots where there is more than 15 foot difference in pad elevation.)
E. Non-combustible fencing is required for all lots adjacent to all fuel modification zones, subject to the approval of the Fire Prevention Bureau.

Attachment: Project 2_Exhibit A Conditions of Approval TTM 37544 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

8. All site plans, grading plans, landscape and irrigation plans, and street improvement plans shall be coordinated for consistency with this approval.

9. This approval shall comply with all applicable requirements of the City of Moreno Valley Municipal Code.

10. The site shall be developed in accordance with the approved tentative map on file in the Community Development Department-Planning Division, the Municipal Code regulations, General Plan, and the conditions contained herein. (MC 9.14.020)

11. Prior to the issuance of grading permits, final erosion control landscape and irrigation plans for all cut or fill slopes over 3 feet in height shall be submitted to and approved by the Planning Division. The plans shall be designed in accordance with the slope erosion plan as required by the City Engineer. Man-made slopes greater than 10 feet in height shall be "land formed" to conform to the natural terrain and shall be landscaped and stabilized to minimize visual scarring. (GP Objective 1.5, MC 9.08.080, DG)

12. Prior to recordation, all feeder trail easements shall be shown on the final map. All feeder trails that traverse a side yard shall allow for five feet of additional area to compensate for landscape and street trees at the base of any fence or wall.

13. Prior to the issuance of grading permits, grading plans shall be submitted to and approved by the Planning Division to ascertain that development and grading of all lots have been designed to reduce the extent of cut and fill and loss of coastal scrub vegetation. Grading plans shall incorporate multiple level foundations, custom foundations and/or split level pads in accordance with the City's Municipal Code. (MC 9.03.030)

14. This tentative map shall expire three years after the approval date of this tentative map unless extended as provided by the City of Moreno Valley Municipal Code; otherwise it shall become null and void and of no effect whatsoever in the event the applicant or any successor in interest fails to properly file a final map before the date of expiration. (MC 9.02.230, 9.14.050, 080)

15. Prior to the issuance of grading permits, mitigation measures contained in the Mitigation Monitoring Program approved with this project shall be implemented as provided therein.

16. Prior to any site disturbance and/or grading plan submittal, and or final map recordation, a mitigation monitoring fee, as provided by City ordinance, shall be paid by the applicant/owner. No City permit or approval shall be issued until such fee is paid. (CEQA)

17. Prior to issuance of a building permit, the developer/property owner or developer's

Attachment: Project 2_Exhibit A Conditions of Approval TTM 37544 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

Attachment: Project 2_Exhibit A Conditions of Approval TTM 37544 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

successor-in-interest shall pay all applicable impact fees due at permit issuance, including but not limited to Multi-species Habitat Conservation Plan (MSHCP) mitigation fees. (Ord.)

18. Prior to approval of any grading plan, local and master-planned multi-use trail easements shall be shown on the rough and precise grading plans in accordance with the City's Master Trail Plan.

19. Prior to the issuance of grading permits, a temporary project identification sign shall be erected on the site in a secure and visible manner. The sign shall be conspicuously posted at the site and remain in place until occupancy of the project. The sign shall include the following: The name and address of the development and the developer's name and address to include a 24-hour emergency phone number.

20. Separate Administrative Plot Plans, including, Design Review (product approval), Model Home Complex or custom home reviews are required for approval of the design of the future single-family homes for Tentative Tract Map 37544.

21. Prior to issuance of grading permits, the developer shall pay the applicable Stephen's' Kangaroo Rat (SKR) Habitat Conservation Plan mitigation fee.

22. MM CUL 1- Project Archaeologist. Prior to the issuance of a grading permit, the Developer shall retain a professional archaeologist to conduct monitoring of all mass grading and trenching activities. The Project Archaeologist shall have the authority to temporarily redirect earthmoving activities in the event that suspected archaeological resources are unearthed during Project construction. The Project Archaeologist, in consultation with the Consulting Tribe(s), the contractor, and the City, shall develop a Cultural Resources Management Plan (CRMP) in consultation pursuant to the definition in AB52 to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the project site. A consulting tribe is defined as a tribe that initiated the AB 52 tribal consultation process for the Project, has not opted out of the AB52 consultation process, and has completed AB 52 consultation with the City as provided for in Cal Pub Res Code Section 21080.3.2(b)(1) of AB52. Details in the Plan shall include: a. Project grading and development scheduling; b. The Project archeologist and the Consulting Tribes(s) as defined in CUL-1 shall attend the pre-grading meeting with the City, the construction manager and any contractors and will conduct a mandatory Cultural Resources Worker Sensitivity Training to those in attendance. The Training will include a brief review of the cultural sensitivity of the Project and the surrounding area; what resources could potentially be identified during earthmoving activities; the requirements of the monitoring program; the protocols that apply in the event inadvertent discoveries of cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated; and any other appropriate protocols. All new construction personnel that will conduct

earthwork or grading activities that begin work on the Project following the initial Training must take the Cultural Sensitivity Training prior to beginning work and the Project archaeologist and Consulting Tribe(s) shall make themselves available to provide the training on an as-needed basis; c. The protocols and stipulations that the contractor, City, Consulting Tribe(s) and Project archaeologist will follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits that shall be subject to a cultural resources evaluation.

23. MM CUL 2 - Tribal Monitoring. Prior to the issuance of a grading permit, the City of Moreno Valley shall secure agreements with the Pechanga Band of Luiseño Indians and Soboba Band of Luiseño Indians for tribal monitoring. The Developer is also required to provide a minimum of 30 days advance notice to the tribes of all mass grading and trenching activities. The Native American Tribal Representatives shall have the authority to temporarily halt and redirect earth moving activities in the affected area in the event that suspected archaeological resources are unearthed. If the Native American Tribal Representatives suspect that an archaeological resource may have been unearthed, the Project Archaeologist or the Tribal Representatives shall immediately redirect grading operations in a 100-foot radius around the find to allow identification and evaluation of the suspected resource. In consultation with the Native American Tribal Representatives, the Project Archaeologist shall evaluate the suspected resource and make a determination of significance pursuant to California Public Resources Code Section 21083.2. (only applicable if tribes require monitoring)

24. MM CUL 3 - Finds During Grading. In the event that Native American cultural resources are discovered during the course of grading (inadvertent discoveries), the following procedures shall be carried out for final disposition of the discoveries: a) One or more of the following treatments, in order of preference, shall be employed with the tribes. Evidence of such shall be provided to the City of Moreno Valley Planning Division: i. Preservation-In-Place of the cultural resources, if feasible. Preservation in place means avoiding the resources, leaving them in the place they were found with no development affecting the integrity of the resources. ii. Onsite reburial of the discovered items as detailed in the treatment plan required pursuant to Mitigation Measure CUL-1. This shall include measures and provisions to protect the future reburial area from any future impacts in perpetuity. Reburial shall not occur until all legally required cataloging and basic recordation have been completed. No recordation of sacred items is permitted without the written consent of all Consulting Native American Tribal Governments as defined in CUL-1. The location for the future reburial area shall be identified on a confidential exhibit on file with the City and concurred to by the Consulting Native American Tribal Governments prior to certification of the environmental document.

25. The following cultural resources mitigation measures shall apply to this project:

Attachment: Project 2_Exhibit A Conditions of Approval TTM 37544 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

MM CUL 4 - Grading Plan Note. The City shall verify that the following note is included on the Grading Plan: “If any suspected archaeological resources are discovered during ground-disturbing activities and the Project Archaeologist or Native American Tribal Representatives are not present, the construction supervisor is obligated to halt work in a 100-foot radius around the find and call the Project Archaeologist and the Tribal Representatives to the site to assess the significance of the find."

MM CUL 5 - Accidental Finds. If potential historic or cultural resources are uncovered during excavation or construction activities at the project site, work in the affected area must cease immediately and a qualified person meeting the Secretary of the Interior's standards (36 CFR 61), Tribal Representatives, and all site monitors per the Mitigation Measures, shall be consulted by the City to evaluate the find, and as appropriate recommend alternative measures to avoid, minimize or mitigate negative effects on the historic, or prehistoric resource. Determinations and recommendations by the consultant shall be immediately submitted to the Planning Division for consideration and implemented as deemed appropriate by the Community Development Director, in consultation with the State Historic Preservation Officer (SHPO) and any and all Consulting Native American Tribes as defined in CUL-1 before any further work commences in the affected area.

MM CUL 6 - Human Remains. If human remains are discovered, no further disturbance shall occur in the affected area until the County Coroner has made necessary findings as to origin. If the County Coroner determines that the remains are potentially Native American, the California Native American Heritage Commission shall be notified within 24 hours of the published finding to be given a reasonable opportunity to identify the “most likely descendant”. The “most likely descendant” shall then make recommendations and engage in consultations concerning the treatment of the remains (California Public Resources Code 5097.98). (GP Objective 23.3, CEQA).

26. Prior to the Grading Permits, the developer shall submit a Trail Amenity Plan for construction and operation of a linear park and walking trail that will run the entire length of the project along Quincy Channel with amenities to include: meandering trail, benches, exercise stations, and landscape. The trail shall be maintained by the City. Amenities and landscaping within Lot "B" shall be maintained by the HOA. (See Amenity Note on TTM 37544)

27. The following mitigation measures for Paleontological Resources shall apply to the project:

CUL 7 Paleontological Resources. Prior to the issuance of a grading permit, the Project Applicant shall provide evidence to the City of Moreno Valley that a qualified paleontologist has been retained by the Project Applicant to conduct monitoring of

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excavation activities and has the authority to halt and redirect earthmoving activities in the event that suspected paleontological resources are unearthed.

CUL 8 Paleo Monitor. The paleontological monitor shall conduct full-time monitoring during grading and excavation operations in undisturbed, very old alluvial fan sediments at or below four (4) feet below ground surface and shall be equipped to salvage fossils if they are unearthed to avoid construction delays and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. The paleontological monitor shall be empowered to temporarily halt or divert equipment to allow of removal of abundant and large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface, or if present, are determined upon exposure and examination by qualified paleontological personnel to have a low potential to contain or yield fossil resources.

CUL 9 Paleo Curation. Recovered specimens shall be properly prepared to a point of identification and permanent preservation, including screen washing sediments to recover small invertebrates and vertebrates, if necessary. Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage, such as the Western Science Museum in Hemet, California, is required for significant discoveries.

CUL 10 Paleo Report. A final paleontological monitoring and mitigation report of findings and significance shall be prepared, including lists of all fossils recovered and written repository agreements, if any, and necessary maps and graphics to accurately record the original location of the specimens. The report shall be submitted to the City of Moreno Valley prior to building final.

Prior to Grading Permit

28. Within thirty (30) days prior to any grading or other land disturbance, a pre-construction survey for Burrowing Owls shall be conducted pursuant to the established guidelines of Multiple Species Habitat Conservation Plan. The pre-construction survey shall be submitted to the Planning Division prior to any disturbance of the site and/or grading permit issuance.

Building Division

29. Any construction within the city shall only be completed between the hour of seven a.m. to seven p.m. Monday through Friday, excluding holidays and from eight a.m. to four p.m. on Saturday, unless written approval is obtained from the city building official or city engineer (Municipal Code Section 8.14.040.E).

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30. Prior to submittal, all new development, including residential second units, are required to obtain a valid property address prior to permit application. Addresses can be obtained by contacting the Building Safety Division at 951.413.3350.

31. Contact the Building Safety Division for permit application submittal requirements.

32. Any construction within the city shall only be completed between the hour of seven a.m. to seven p.m. Monday through Friday, excluding holidays and from eight a.m. to four p.m. on Saturday, unless written approval is obtained from the city building official or city engineer (Municipal Code Section 8.14.040.E).

33. Building plans submitted shall be signed and sealed by a California licensed design professional as required by the State Business and Professions Code.

34. The proposed development is subject to the payment of applicable processing fees as required by the City's current Fee Ordinance at the time a building permit application is submitted or prior to the issuance of permits as determined by the City.

35. All new structures shall be designed in conformance to the latest design standards adopted by the State of California in the California Building Code, (CBC) Part 2, Title 24, California Code of Regulations including requirements for allowable area, occupancy separations, fire suppression systems, accessibility, etc. The current code edition is the 2016 CBC.

36. The proposed project's occupancy shall be classified by the Building Official and must comply with exiting, occupancy separation(s) and minimum plumbing fixture requirements. Minimum plumbing fixtures shall be provided per the 2016 California Plumbing Code, Table 422.1. The occupant load and occupancy classification shall be determined in accordance with the California Building Code.

37. The proposed residential project shall comply with The 2016 California Green Building Standards Code, Section 4.106.4, mandatory requirements for Electric Vehicle Charging Station (EVCS).

38. Prior to permit issuance, every applicant shall submit a properly completed Waste Management Plan (WMP), as a portion of the building or demolition permit process. (MC 8.80.030)

FIRE DEPARTMENT

Fire Prevention Bureau

Attachment: Project 2_Exhibit A Conditions of Approval TTM 37544 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

39. Future development of residential dwellings shall be provided with residential fire sprinklers.

40. Future development shall provide fire flow and fire hydrants in accordance with the California Fire code.

PUBLIC WORKS DEPARTMENT

Land Development

41. Aggregate slurry, as defined in Section 203-5 of Standard Specifications for Public Works Construction, may be required just prior to the end of the one-year warranty period of the public streets at the discretion of the City Engineer. If slurry is required, a slurry mix design shall be submitted for review and approved by the City Engineer. The latex additive shall be Ultra Pave 70 (for anionic) or Ultra Pave 65 K (for cationic) or an approved equal per the geotechnical report. The latex shall be added at the emulsion plant after weighing the asphalt and before the addition of mixing water. The latex shall be added at a rate of two to two-and-one-half (2 to 2½) parts to one-hundred (100) parts of emulsion by volume. Any existing striping shall be removed prior to slurry application and replaced per City standards.

42. The developer shall comply with all applicable City ordinances and resolutions including the City's Municipal Code (MC) and if subdividing land, the Government Code (GC) of the State of California, specifically Sections 66410 through 66499.58, said sections also referred to as the Subdivision Map Act (SMA). [MC 9.14.010]

43. The final approved conditions of approval (COAs) and any applicable Mitigation Measures issued by the Planning Division shall be photographically or electronically placed on mylar sheets and included in the Grading and Street Improvement plans.

44. The developer shall monitor, supervise and control all construction related activities, so as to prevent these activities from causing a public nuisance, including but not limited to, insuring strict adherence to the following:
(a) Removal of dirt, debris, or other construction material deposited on any public street no later than the end of each working day.
(b) Observance of working hours as stipulated on permits issued by the Land Development Division.
(c) The construction site shall accommodate the parking of all motor vehicles used by persons working at or providing deliveries to the site.
(d) All dust control measures per South Coast Air Quality Management District (SCAQMD) requirements during the grading operations.
Violation of any condition, restriction or prohibition set forth in these conditions shall subject the owner, applicant, developer or contractor(s) to remedy as noted in City Municipal Code 8.14.090. In addition, the City Engineer or Building Official may

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suspend all construction related activities for violation of any condition, restriction or prohibition set forth in these conditions until such time as it has been determined that all operations and activities are in conformance with these conditions.

45. Drainage facilities (e.g., catch basins, water quality basins, etc.) with sump conditions shall be designed to convey the tributary 100-year storm flows. Secondary emergency escape shall also be provided.

46. If improvements associated with this project are not initiated within two (2) years of the date of approval of the Public Improvement Agreement (PIA), the City Engineer may require that the engineer's estimate for improvements associated with the project be modified to reflect current City construction costs in effect at the time of request for an extension of time for the PIA or issuance of a permit. [MC 9.14.210(B)(C)]

47. The developer shall protect downstream properties from damage caused by alteration of drainage patterns (i.e. concentration or diversion of flow, etc). Protection shall be provided by constructing adequate drainage facilities, including, but not limited to, modifying existing facilities or by securing a drainage easement. [MC 9.14.110]

48. For single family residential subdivisions, all lots shall drain toward the street unless otherwise approved by the City Engineer. Residential lot drainage to the street shall be by side yard swales, and must be directed to a driveway or drainage devices located outside the right-of-way in accordance with City Standard MVSI-154-0. No cross-lot or over the sidewalk drainage shall be allowed.

49. This project shall submit civil engineering design plans, reports and/or documents (prepared by a registered/licensed civil engineer) for review and approval by the City Engineer per the current submittal requirements, prior to the indicated threshold or as required by the City Engineer. The submittal consists of, but is not limited to, the following:

    a. Final (Tract) Map (recordation prior to building permit issuance);
    b. Rough grading w/ erosion control plan (prior to grading permit issuance);
    c. Precise grading w/ erosion control plan (prior to grading permit issuance);
    d. Public improvement plan (e.g., street/storm drain w/ striping, RCFC storm drain, sewer/water, etc.) (prior to encroachment permit issuance);
    e. Final drainage study (prior to grading plan approval);
    f. Final WQMP (prior to grading plan approval);
    g. Legal documents (e.g., easement(s), dedication(s), lot line adjustment, vacation, etc.) (prior to building permit issuance);
    h. As-Built revision for all plans (prior to Occupancy release);

50. Water quality best management practices (BMPs) designed to meet Water Quality Management Plan (WQMP) requirements for single-family residential development

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shall not be used as a construction BMP. Water quality BMPs shall be maintained for the entire duration of the project construction and be used to treat runoff from those developed portions of the project. Water quality BMPs shall be protected from upstream construction related runoff by having proper best management practices in place and maintained. Water quality BMPs shall be graded per the approved design plans and once landscaping and irrigation has been installed, it and its maintenance shall be turned over to an established Homeowner's Association (HOA). The Homeowner's Association shall enter into an agreement with the City for basin maintenance.

Prior to Grading Plan Approval

51. A final detailed drainage study (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer. The study shall include, but not be limited to: existing and proposed hydrologic conditions as well as hydraulic calculations for all drainage control devices and storm drain lines. The study shall analyze 1, 3, 6 and 24-hour duration events for the 2, 5, 10 and 100-year storm events [MC 9.14.110(A.1)]. A digital (pdf) copy of the approved drainage study shall be submitted to the Land Development Division.

52. Emergency overflow areas shall be shown at all applicable drainage improvement locations in the event that the drainage improvement fails or exceeds full capacity.

53. A final project-specific Water Quality Management Plan (WQMP) shall be submitted for review and approved by the City Engineer, which:

a. Addresses Site Design Best Management Practices (BMPs) such as minimizing impervious areas, maximizing permeability, minimizes directly connected impervious areas to the City's street and storm drain systems, and conserves natural areas;

b. Incorporates Source Control BMPs and provides a detailed description of their implementation;

c. Describes the long-term operation and maintenance requirements for BMPs requiring maintenance; and

d. Describes the mechanism for funding the long-term operation and maintenance of the BMPs.

A copy of the final WQMP template can be obtained on the City's Website or by contacting the Land Development Division. A digital (pdf) copy of the approved final project-specific Water Quality Management Plan (WQMP) shall be submitted to the Land Development Division.

54. The developer shall comply with the rules and regulations of FEMA and City Municipal Code 8.12 for development within a flood hazard area (defined as Zones A, AE and AH).
For developments required to submit a CLOMR(-F) / LOMR(-F), the following items

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(prepared by a licensed civil engineer or land surveyor) shall be submitted:

a. Prior to plan approval, a Floodplain Development Permit (application available at the City).

b. Prior to issuance of the first building permit, a Conditional Letter of Map Revision (CLOMR) including Base Flood Elevation (BFE) shall be approved by the City Engineer and FEMA.

c. Prior to issuance of the certificate of occupancy, a Letter of Map Revision (LOMR) package with appropriate fees shall be submitted and approved by the City Engineer and FEMA.

d. Prior to 90% reduction of public improvement securities, a Letter of Map Revision (LOMR) approved by FEMA shall be submitted to the City.

55. The developer shall ensure compliance with the City Grading ordinance, these Conditions of Approval and the following criteria:

a. The project street and lot grading shall be designed in a manner that perpetuates the existing natural drainage patterns with respect to tributary drainage area and outlet points. Unless otherwise approved by the City Engineer, lot lines shall be located at the top of slopes.

b. Any grading that creates cut or fill slopes adjacent to the street shall provide erosion control, sight distance control, and slope easements as approved by the City Engineer.

c. All improvement plans are substantially complete and appropriate clearance letters are provided to the City.

d. A soils/geotechnical report (addressing the soil's stability and geological conditions of the site) shall be submitted to the Land Development Division for review. A digital (pdf) copy of the soils/geotechnical report shall be submitted to the Land Development Division.

56. Grading plans (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal requirements.

57. The developer shall select Low Impact Development (LID) Best Management Practices (BMPs) designed per the latest version of the Water Quality Management Plan (WQMP) - a guidance document for the Santa Ana region of Riverside County.

58. The developer shall pay all remaining plan check fees.

59. A Storm Water Pollution Prevention Plan (SWPPP) shall be prepared in conformance with the State's current Construction Activities Storm Water General Permit. A copy of the current SWPPP shall be kept at the project site and be available for review upon request.

60. For projects that will result in discharges of storm water associated with construction with a soil disturbance of one or more acres of land, the developer shall submit a

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Notice of Intent (NOI) and obtain a Waste Discharger's Identification number (WDID#) from the State Water Quality Control Board (SWQCB) which shall be noted on the grading plans.

61. Landscape & Irrigation plans (prepared by a registered/licensed civil engineer) for water quality BMPs shall be submitted for review and approved by the City Engineer per the current submittal requirements, if applicable.

Prior to Grading Permit

62. A receipt showing payment of the Area Drainage Plan (ADP) fee to Riverside County Flood Control and Water Conservation District shall be submitted. [MC 9.14.100(O)]

63. If the developer chooses to construct the project in phases, a Construction Phasing Plan for the construction of on-site public or private improvements shall be submitted for review and approved by the City Engineer.

64. A digital (pdf) copy of all approved grading plans shall be submitted to the Land Development Division.

65. Security, in the form of a cash deposit (preferable), or letter of credit shall be submitted as a guarantee of the implementation and maintenance of erosion control measures. At least twenty-five (25) percent of the required security shall be in the form of a cash deposit with the City. [MC 8.21.160(H)]

66. Security, in the form of a cash deposit (preferable), or letter of credit shall be submitted as a guarantee of the completion of the grading operations for the project. [MC 8.21.070]

67. The developer shall pay all applicable inspection fees.

Prior to Map Approval

68. All proposed street names shall be submitted for review and approved by the City Engineer, if applicable. [MC 9.14.090(E.2.k)]

69. A copy of the Covenants, Conditions and Restrictions (CC&R's) shall be submitted for review and approved by the City Engineer. The CC&R's shall include, but not be limited to, access easements, reciprocal access, private and/or public utility easements as may be relevant to the project. In addition, for single-family residential development, bylaws and articles of incorporation shall also be included as part of the maintenance agreement for any water quality BMPs.

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70. The developer shall enter into a Cooperative Agreement with the City and Riverside County Flood Control and Water Conservation District establishing the terms and conditions covering the inspection, operation and maintenance of Master Drainage Plan facilities required to be constructed as part of the project, if applicable.

71. After recordation, a digital (pdf) copy of the recorded map shall be submitted to the Land Development Division.

72. If the project involves the subdivision of land, maps may be developed in phases with the approval of the City Engineer. Financial security shall be provided for all public improvements associated with each phase of the map. The boundaries of any multiple map increment shall be subject to the approval of the City Engineer. If the project does not involve the subdivision of land and it is necessary to dedicate right-of-way/easements, the developer shall make the appropriate offer of dedication by separate instrument. In either case, the City Engineer may require the dedication and construction of necessary utility, street or other improvements beyond the project boundary, if the improvements are needed for circulation, parking, access, or for the welfare or safety of the public. This approval must be obtained prior to the Developer submitting a Phasing Plan to the California Bureau of Real Estate. [MC 9.14.080(B)(C), GC 66412 & 66462.5]

73. Maps (prepared by a registered civil engineer and/or licensed surveyor) shall be submitted for review and approved by the City Engineer per the current submittal requirements.

74. Under the current permit for storm water activities required as part of the National Pollutant Discharge Elimination System (NPDES) as mandated by the Federal Clean Water Act, this project is subject to the following requirements:

a. Establish a Home Owners Association (HOA) to finance the maintenance of the “Water Quality BMPs”. Any lots which are identified as “Water Quality BMPs” shall be owned in fee by the HOA.

b. Dedicate a maintenance easement to the City of Moreno Valley.

c. Execute a maintenance agreement between the City of Moreno Valley and the HOA, which shall be approved by City Council.

d. Provide a certificate of insurance per the terms of the maintenance agreement.

e. Meet the financial responsibility to provide storm water utilities services for the required continuous operation, maintenance, monitoring system evaluations and enhancements, remediation and/or replacement, all in accordance with Resolution No. 2002-46 by participating in the mail ballot proceeding in compliance with Proposition 218, for the Residential NPDES Regulatory Rate Schedule and pay all associated costs with the ballot process.

f. Notify the Special Districts Division of the intent to record the final map 90 days prior to City Council action authorizing recordation of the final map and the

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financial option selected. The final option selected shall be in place prior to the issuance of certificate of occupancy. [California Government Code & Municipal Code]

75. The developer shall guarantee the completion of all related improvements required for this project by executing a Public Improvement Agreement (PIA) with the City and posting the required security. [MC 9.14.220]

76. All public improvement plans required for this project shall be approved by the City Engineer in order to execute the Public Improvement Agreement (PIA).

77. The developer shall comply with the requirements of the City Engineer based on recommendations of the Riverside County Flood Control District regarding the construction of County Master Plan Facilities.

78. All street dedications shall be free of all encumbrances, irrevocably offered to the public and shall continue in force until the City accepts or abandons such offers, unless otherwise approved by the City Engineer.

Prior to Improvement Plan Approval

79. The developer shall submit clearances from all applicable agencies, and pay all applicable plan check fees.

80. The street improvement plans shall comply with current City policies, plans and applicable City standards (i.e. MVSI-160 series, etc.) throughout this project.

81. The design plan and profile shall be based upon a centerline, extending beyond the project boundaries a minimum distance of 300 feet at a grade and alignment approved by the City Engineer.

82. Drainage facilities (i.e. catch basins, etc.) with sump conditions shall be designed to convey the tributary 100-year storm flows. Secondary emergency escape shall also be provided.

83. The hydrology study shall be designed to accept and properly convey all off-site drainage flowing onto or through the site. In the event that the City Engineer permits the use of streets for drainage purposes, the provisions of current City standards shall apply. Should the quantities exceed the street capacity or the use of streets be prohibited for drainage purposes, as in the case where one travel lane in each direction shall not be used for drainage conveyance for emergency vehicle access on streets classified as minor arterials and greater, the developer shall provide adequate facilities as approved by the City Engineer. [MC 9.14.110 A.2]

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84. All public improvement plans (prepared by a licensed/registered civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal requirements.

85. Any missing or deficient existing improvements along the project frontage within shall be constructed or secured for construction. The City Engineer may require the ultimate structural section for pavement to half-street width plus 18 feet or provide core test results confirming that existing pavement section is per current City Standards; additional signing & striping to accommodate increased traffic imposed by the development, etc.

86. The plans shall indicate any restrictions on trench repair pavement cuts to reflect the City's moratorium on disturbing newly-constructed pavement less than three (3) years old and recently slurry sealed streets less than one (1) year old. Pavement cuts for trench repairs may be allowed for emergency repairs or as specifically approved by the City Engineer.

87. All dry and wet utilities shall be shown on the plans and any crossings shall be potholed to determine actual location and elevation. Any conflicts shall be identified and addressed on the plans. The pothole survey data shall be submitted to Land Development with the public improvement plans for reference purposes only. The developer is responsible to coordinate with all affected utility companies and bear all costs of any utility relocation.

88. The developer shall coordinate with Riverside County Flood Control District regarding removal of their westerly access ramp at the southeast corner of the project.

89. Brodiaea Avenue, Collector, City Standard No. MVSI-106B-0 (66'/44' CC) shall be constructed to half-width plus 12' along the project's southerly frontage. Improvements shall consist of, but not limited to, pavement, curb and gutter, sidewalk, street lights, striping. In addition, the developer shall vacate 7' of right-of-way on the north side of the street along the project's southerly frontage.

Prior to Encroachment Permit

90. A digital (pdf) copy of all approved improvement plans shall be submitted to the Land Development Division.

91. All applicable inspection fees shall be paid.

92. Any work performed within public right-of-way requires an encroachment permit.

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Prior to Building Permit

93. An engineered-fill certification, rough grade certification and compaction report shall be submitted for review and approved by the City Engineer. A digital (pdf) copy of the approved compaction report shall be submitted to the Land Development Division. All pads shall meet pad elevations per approved grading plans as noted by the setting of "blue-top" markers installed by a registered land surveyor or licensed civil engineer.

94. For all subdivision projects, the map shall be recorded (excluding model homes). [MC 9.14.190]

95. Certification to the line, grade, flow test and system invert elevations for the water quality control BMPs shall be submitted for review and approved by the City Engineer (excluding models homes).

96. The developer shall submit for review and approval the legal documents for the quitclaim of existing Quincy Street right-of-way to Riverside County Flood Control. The limits shall be along the project's easterly boundary.

Prior to Occupancy

97. All outstanding fees shall be paid.

98. All required as-built plans (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal requirements.

99. The final/precise grade certification shall be submitted for review and approved by the City Engineer.

100. The developer shall complete all public improvements in conformance with current City standards, except as noted in the Special Conditions, including but not limited to the following:

a. Street improvements including, but not limited to: pavement, base, curb and/or gutter, cross gutters, spandrel, sidewalks, drive approaches, pedestrian ramps, street lights, signing, striping, under sidewalk drains, landscaping and irrigation, medians, pavement tapers/transitions and traffic control devices as appropriate.

b. Storm drain facilities including, but not limited to: storm drain pipe, storm drain laterals, open channels, catch basins and local depressions.

c. City-owned utilities.

d. Sewer and water systems including, but not limited to: sanitary sewer, potable

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water and recycled water.

e. Under grounding of all existing and proposed utilities adjacent to and on-site. [MC 9.14.130]

f. Relocation of overhead electrical utility lines including, but not limited to: electrical, cable and telephone.

101. For residential subdivisions, punch list work for improvements and capping of streets shall be completed and approved for acceptance by the City Engineer.

102. The applicant shall ensure the following, pursuant to Section XII. I. of the 2010 NPDES Permit:

a. Field verification that structural Site Design, Source Control and Treatment Control BMPs are designed, constructed and functional in accordance with the approved Final Water Quality Management Plan (WQMP).

b. Certification of best management practices (BMPs) from a state licensed civil engineer. An original WQMP BMP Certification shall be submitted for review and approved by the City Engineer.

103. The Developer shall comply with the following water quality related items:

a. Notify the Land Development Division prior to construction and installation of all structural BMPs so that an inspection can be performed.

b. Demonstrate that all structural BMPs described in the approved final project-specific WQMP have been constructed and installed in conformance with the approved plans and specifications;

c. Demonstrate that Developer is prepared to implement all non-structural BMPs described in the approved final project-specific WQMP; and

d. Demonstrate that an adequate number of copies of the approved final project-specific WQMP are available for future owners/occupants.

e. Clean and repair the water quality BMP's, including re-grading to approved civil drawing if necessary.

f. Obtain approval and complete installation of the irrigation and landscaping.

Special Districts Division

104. Prior to the issuance of the first building permit for this project, the Developer shall pay Advanced Energy fees for all applicable Residential and Arterial Street Lights required for this development. Payment shall be made to the City of Moreno Valley and collected by the Land Development Division. Fees are based upon the Advanced Energy fee rate in place at the time of payment, as set forth in the current Listing of City Fees, Charges, and Rates adopted by City Council. The Developer shall provide a copy of the receipt to the Special Districts Division (specialdistricts@moval.org). Any change in the project which may increase the number of street lights to be installed will require payment of additional Advanced Energy fees at the then current fee. Questions may be directed to the Special

Districts Division at 951.413.3480 or specialdistricts@moval.org.

105. This project has been identified to potentially be included in the formation of a Map Act Area of Benefit Special District for the construction of major thoroughfares and/or freeway improvements. The property owner(s) shall participate in such District and pay any special tax, assessment, or fee levied upon the project property for such District. At the time of the public hearing to consider formation of the district, the property owner(s) will not protest the formation, but will retain the right to object any eventual assessment that is not equitable should the financial burden of the assessment not be reasonably proportionate to the benefit the affected property obtains from the improvements to be installed. The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org of its selected financial option when submitting an application for the first building permit to determine whether the development will be subjected to this condition. If subject to the condition, the special election requires a 90 day process in compliance with the provisions of Article 13C of the California Constitution. (Street & Highway Code, GP Objective 2.14.2, MC 9.14.100).

106. This project is conditioned to provide a funding source for the operation and maintenance of public improvements and/or services associated with new development in that territory. The Developer shall satisfy this condition with one of the options below.

a. Participate in a special election for maintenance/services and pay all associated costs of the election process and formation, if any. Financing may be structured through a Community Facilities District, Landscape and Lighting Maintenance District, or other financing structure as determined by the City; or

b. Establish an endowment fund to cover the future maintenance and/or service costs.

The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org of its selected financial option prior to City Council action authorizing recordation of the final map for the development. A minimum of 90 days is needed to complete the special election process. This allows adequate time to be in compliance with the provisions of Article 13C of the California Constitution for conducting a special election.

The financial option selected shall be in place prior to the issuance of the first building permit for the project.

107. This project is conditioned to provide a funding source for the following special financing program(s):

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a. Street Lighting Services for capital improvements, energy charges, and maintenance.

The Developer's responsibility is to provide a funding source for the capital improvements and the continued maintenance of the landscaped area. The Developer shall satisfy this condition with one of the options below.

i. Participate in a special election (mail ballot proceeding) and pay all associated costs of the special election and formation, if any. Financing may be structured through a Community Services District zone, Community Facilities District, Landscape and Lighting Maintenance District, or other financing structure as determined by the City; or

ii. Establish a Property Owner's Association (POA) or Home Owner's Association (HOA) which will be responsible for any and all operation and maintenance costs.

The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org of its selected financial option prior to City Council action authorizing recordation of the final map for the development. The option for participating in a special election requires approximately 90 days to complete the special election process. This allows adequate time to be in compliance with the provisions of Article 13C of the California Constitution for conducting a special election.

The financial option selected shall be in place prior to the issuance of the first building permit for this project and prior to acceptance of any improvements.

108. This project has been conditioned to provide a funding source for the continued maintenance, enhancement, and/or retrofit of parks, open spaces, linear parks, and/or trail systems. The Developer shall satisfy this condition with one of the options below.

a. Participate in a special election for annexation into Community Facilities District No. 1 or other district and pay all associated costs of the special election process and formation, if any; or

b. Establish an endowment fund to cover future maintenance costs for new neighborhood parks.

The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org of its selected financial option prior to City Council

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action authorizing recordation of the final map for the development. A minimum of 90 days is needed to complete the special election process. This allows adequate time to be in compliance with the provisions of Article 13C of the California Constitution for conducting a special election.

Annexation to CFD No. 1 shall be completed or proof of payment to establish the endowment fund shall be provided prior to the issuance of the first building permit for this project.

109. This project has been identified to be included in the formation of a Community Facilities District for Public Safety services including but not limited to Police, Fire Protection, Paramedic Services, Park Rangers, and Animal Control services. The property owner(s) shall not protest the formation; however, they retain the right to object to the rate and method of maximum special tax. In compliance with Proposition 218, the property owner shall agree to approve the mail ballot proceeding (special election) for either formation of the CFD or annexation into an existing district that may already be established. The Developer must notify the Special Districts Division at 951.413.3480 or specialdistricts@moval.org of its intent to record the final map for the development 90 days prior to City Council action authorizing recordation of the map. This allows adequate time to be in compliance with the provisions of Article 13C of the California Constitution. (California Government Code Section 53313 et. seq.)

110. Residential (R) If Land Development, a Division of the Public Works Department, requires this project to supply a funding source necessary to provide for, but not limited to, stormwater utilities services for the required continuous operation, maintenance, monitoring, systems evaluation and enhancements of on-site facilities and performing annual inspections of the affected areas to ensure compliance with state mandated storm water regulations, a funding source needs to be established. The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org of its selected financial option for the National Pollution Discharge Elimination System (NPDES) program (see Land Development's related condition). Participating in a special election the process requires a 90 day period prior to City Council action authorizing recordation of the final map for the development and to participate in a special election process. This allows adequate time to be in compliance with the provisions of Article 13D of the California Constitution. California Health and Safety Code Sections 5473 through 5473.8 (Ord. 708 Section 3.1, 2006) & City of Moreno Valley Municipal Code Title 3, Section 3.50.050.)

111. Street Light Authorization forms for all street lights that are conditioned to be installed as part of this project must be submitted to the Special Districts Division for approval, prior to street light installation. The Street Light Authorization form can be obtained from the utility company providing electric service to the project, either

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Moreno Valley Utility or Southern California Edison. For questions, contact the Special Districts Division at 951.413.3480 or specialdistricts@moval.org.

112. The parcel(s) associated with this project have been incorporated into the Moreno Valley Community Services District Zone A (Parks & Community Services) and Zone C (Arterial Street Lighting). All assessable parcels therein shall be subject to annual parcel taxes for Zone A and Zone C for operations and capital improvements.

113. The ongoing maintenance of any landscaping required to be installed behind the curb shall be the responsibility of the property owner.

Transportation Engineering Division

114. Prior to issuance of a construction permit, construction traffic control plans prepared by a qualified, registered Civil or Traffic engineer shall be required for plan approval by the City Traffic Engineer.

115. Conditions of approval may be modified or added if a phasing plan is submitted for this development.

116. All project driveways shall conform to Section 9.11.080, and Table 9.11.080-14 of the City's Development Code – Design Guidelines and City of Moreno Valley Standard Plans No. MVSI-111A~C-0 for residential driveway approaches.

117. Sight distance at the proposed roadways and driveways shall conform to City of Moreno Valley Standard No. MVSI-164A,B,C-0 at the time of preparation of final grading, landscape, and street improvement plans.

118. During construction activity, developer is responsible for regularly scheduled street sweeping per approved street sweeping schedule.

119. Prior to the final approval of the street improvement plans, a signing and striping plan shall be prepared per City of Moreno Valley Standard Plans - Section 4 for all streets within the project area.

120. Prior to issuance of a Building Final or Certificate of Occupancy, all approved street improvements shall be installed to the satisfaction of the City Engineer.

121. Prior to issuance of a Building Final or Certificate of Occupancy, all approved signing and striping shall be installed per current City Standards and the approved plans.

122. Prior to acceptance of streets into the City-maintained road system, all approved signing and striping shall be installed per current City Standards and the approved

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plans.

123. Brodiaea Avenue is classified as a Collector (66'RW/44'CC) per City Standard Plan No. MVSI-106B-0. A 10:1 pavement transition shall be provided to meet the existing pavement edge. Any improvements to the roadway shall be per City standards or as approved by the City Engineer.

124. Prior to issuance of an encroachment permit for works within the public right-of-way, construction traffic control plans prepared by a qualified, registered Civil or Traffic engineer shall be required for plan approval by the City Traffic Engineer.

PARKS & COMMUNITY SERVICES DEPARTMENT

125. This project is subject to current Development Impact Fees.

126. This project is required to supply a funding source for the continued maintenance, enhancement, and or retrofit of neighborhood parks, open spaces, linear parks, and/or trails systems. This can be achieved through annexing into Community Facilities District No. 1 (Park Maintenance). Please contact the Special Districts Division at 951.413.3480 or specialdistricts@moval.org to complete the annexation process.

127. This project is subject to current Quimby Fees.

128. The parcel(s) associated with this project have been incorporated into the Moreno Valley Community Services District Zone A (Parks and Community Services). All assessable parcels therein shall be subject to the annual Zone 'A' charge for operations and capital improvements. Proof of such shall be supplied to Parks and Community Services upon Final Map and at Building Permits.

129. Lot 'B' shall be shown to include the 16.5' trail easement to the Moreno Valley Community Services District and Riverside County Flood Control and Water District for trail use and access. An access to the trail and HOA amenities shall be made to align with Street 'C'.

130. The trail shall be comprised of 6" thick stabilized decomposed granite over 95% compacted native. City details provided by the CSD.

131. The trail shall be fully constructed with the channel and street improvements. Bonds for construction required.

Standard Conditions

132. Detailed final plans (mylars, PDF, and AutoCAD file on a DVD-R) for parks,

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trails/bikeways, fencing, and adjoining landscaped areas shall be submitted to and approved by the Director of Parks and Community Services, or his/her designee, prior to the issuance of any building permits. All plans are to include a profile showing grade changes.

133. Within the improvements for PCS, the applicant shall show all existing and planned easements on all maps and plans. Easements on City/CSD owned or maintained parks, trails, bikeways, and landscape shall be identified on each of these plans with the instrument number of the recorded easement.

134. Prior to recordation of the Final Map, the applicant shall post security to guarantee construction or modification of parks, trails and/or bikeways for the City/CSD. Copies of said documentation shall be provided to PCS, prior to the approval of the Final Map.

135. Applicable plan check and inspection fees shall be paid, per the approved City fee schedule.

136. A restriction shall be placed on lots that back up to City/CSD owned or maintained parks, trails, bikeways, and landscaped areas, preventing openings or gates accessing the City/CSD owned or maintained property. This shall be documented through Covenants, Conditions, and Restrictions (CC&R's). A copy of the CC&R's with this restriction noted shall be submitted and approved by the Director of Parks and Community Services or his/her designee, prior to the recordation of the Final Map.

137. The following plans require PCS written approval: Tentative tract/parcel maps; rough grading plans (including all Delta changes); Final Map; precise grading plans; street improvement plans; traffic signal plans; fence and wall plans; landscape plans for areas adjacent to bikeways; trail improvement plans. PCS will not approve any permits without review and approval of the above items.

Attachment: Project 2_Exhibit A Conditions of Approval TTM 37544 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project,

URBAN CROSSROADS

260 E. Baker St. | Suite 200 | Costa Mesa, CA 92626 | (949) 660-1994
urbanxroads.com

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

September 12, 2018

c/o Mr. Daniel C. Pocius
Frontier Communities
8300 Utica Avenue, Suite 300
Rancho Cucamonga, CA 91730

SUBJECT: BRODIAEA (TTM 37544) FOCUSED AIR QUALITY AND GREENHOUSE GAS ASSESSMENT

Dear Mr. Daniel C. Pocius:

Urban Crossroads, Inc. is pleased to submit this Air Quality and Greenhouse Gas Assessment for the proposed Brodiaea (TTM 37544) ("Project"), which is located in the City of Moreno Valley.

INTRODUCTION

This focused Air Quality and Greenhouse Gas Assessment has been completed to determine impacts associated with the development of the Brodiaea (TTM 37544) ("Project"). This study briefly describes the proposed Project and includes an analysis of the potential Project-related construction air quality and greenhouse gas impacts.

PROJECT DESCRIPTION

The Project is approximately 9.0 acres and is currently zoned for R-3 development (3 dwelling unit per acre or 27 units) and is proposing a zone change to R-10 (up to 10 dwelling units per acre). The Project is proposing development of up to 47 single-family detached residential dwelling units.

PROJECT-RELATED AIR QUALITY AND GREENHOUSE GAS EMISSIONS CALCULATIONS

Land uses such as the Project affect air quality through construction-source and operational-source emissions.

On October 2, 2013, the SCAQMD in conjunction with the California Air Pollution Control Officers Association (CAPCOA) released the latest version of the California Emissions Estimator Model™ (CalEEMod™) v2013.2.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (NO_x, VOC, PM_{10}, $PM_{2.5}$, SO_x, and CO) and greenhouse gas (GHG) emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (1). Air Quality outputs from the model runs are provided in Attachments "A", "B", "C", and "D" and greenhouse gas outputs from the model runs are provided in Attachments "E" and "F".

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

AIR QUALITY

PROPOSED PROJECT: CONSTRUCTION EMISSIONS

The estimated maximum daily regional construction emissions without mitigation are summarized on Table 1. Detailed construction model outputs are presented in Attachment "A". Please note that credit for Rule 403 has been taken. As indicated at Table 1, emissions resulting from the Project construction would not exceed the applicable SCAQMD regional thresholds of significance for any criteria pollutant. As such, no mitigation is required.

TABLE 1: PROPOSED PROJECT CONSTRUCTION EMISSIONS SUMMARY

Year	Emissions (pounds per day)					
	VOC	NOx	CO	SO_x	PM_{10}	$PM_{2.5}$
2018	5.21	59.61	36.00	0.06	9.83	6.30
2019	26.84	23.34	19.16	0.03	1.61	1.36
Maximum Daily Emissions	**26.84**	**59.61**	**36.00**	**0.06**	**9.83**	**6.30**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

CURRENTLY ADOPTED LAND USE: CONSTRUCTION EMISSIONS

The estimated maximum daily regional construction emissions for the currently adopted land use are summarized on Table 2. Detailed construction model outputs are presented in Attachment "B". As indicated at Table 2, emissions resulting from the construction of the currently adopted land use would not exceed the applicable SCAQMD regional thresholds of significance for any criteria pollutant.

TABLE 2: CURRENTLY ADOPTED LAND USE CONSTRUCTION EMISSIONS SUMMARY

Year	Emissions (pounds per day)					
	VOC	NOx	CO	SO_x	PM_{10}	$PM_{2.5}$
2018	4.66	48.27	23.38	0.04	20.85	12.36
2019	15.57	23.08	18.85	0.031	1.51	1.33
Maximum Daily Emissions	**15.57**	**48.27**	**23.38**	**0.04**	**20.85**	**12.36**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

COMPARISON OF PROPOSED PROJECT TO THE CURRENTLY ADOPTED LAND USE

As summarized on Table 3, the proposed Project is anticipated to generate more emissions of VOCs, NO_X, CO, and SO_X as compared to the emissions from the currently adopted land use. However, since Project-related emissions do not have the potential to not exceed the applicable SCAQMD regional thresholds, the Project-related emissions are considered less than significant.

TABLE 3: PROPOSED PROJECT CONSTRUCTION EMISSIONS VS CURRENTLY ADOPTED LAND USE CONSTRUCTION EMISSIONS

Year	Emissions (pounds per day)					
	VOC	**NOx**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Proposed Project	26.84	59.61	36.00	0.06	9.83	6.30
Currently Adopted Land Use	15.57	48.27	23.38	0.04	20.85	12.36
Variance (Proposed – Current)	**11.27**	**11.34**	**12.62**	**0.02**	**-11.02**	**-6.06**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

OPERATIONAL EMISSIONS

Operational activities associated with the Project will result in emissions of CO, VOCs, NO_x, SO_x, PM_{10}, and $PM_{2.5}$. Operational related emissions are expected from the following primary sources: area source emissions, energy source emissions, and mobile source emissions.

Project mobile source air quality impacts are dependent on both overall daily vehicle trip generation and the effect of the Project on peak hour traffic volumes and traffic operations in the vicinity of the Project. The Project-related operational air quality impacts are derived primarily from vehicle trips generated by the Project. Trip characteristics available from the report, *Brodiaea (TTM 37544) Trip Generation Evaluation* (Urban Crossroads, Inc. 2018) were utilized in this analysis (2).

The estimated operational-source emissions for the proposed Project and the currently adopted land use are summarized and compared on Table 4. Detailed operational model outputs are presented in Attachment "C" and "D". As shown, the proposed Project would result in slightly more emissions VOCs, NO_x, SO_x, PM_{10}, and $PM_{2.5}$ emissions as compared to the currently adopted land uses. However, since the variance in emissions is nominal and project-related emissions do not exceed the applicable SCAQMD regional thresholds, the Project-related emissions are considered less than significant.

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 4: PROPOSED PROJECT OPERATIONAL EMISSIONS VS CURRENTLY ADOPTED LAND USE OPERATIONAL EMISSIONS

Operational Activities – Summer Scenario	Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Proposed Project	15.33	6.53	41.82	0.11	7.07	4.59
Currently Adopted Land Use	8.81	3.75	24.03	0.06	4.06	3.64
Variance (Proposed – Current)	**6.52**	**2.78**	**17.79**	**0.05**	**3.01**	**0.95**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
Operational Activities – Winter Scenario	**Emissions (pounds per day)**					
	VOC	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Proposed Project	15.28	6.66	40.96	0.11	7.03	4.59
Currently Adopted Land Use	8.78	3.83	24.34	0.06	4.06	2.12
Variance (Proposed – Current)	**6.50**	**2.83**	**16.62**	**0.05**	**2.97**	**2.47**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

GREENHOUSE GAS

CONSTRUCTION AND OPERATIONAL EMISSIONS

Construction activities associated with the proposed Project will result in emissions of CO_2 and CH_4 from construction activities. For the construction phase Project emissions, GHGs are quantified and amortized over the life of the Project. To amortize the emissions over the life of the Project, the SCAQMD recommends calculating the total greenhouse gas emissions for the construction activities, dividing it by a 30-year project life then adding that number to the annual operational phase GHG emissions. As such, construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions.

As previously noted, the site area for the proposed Project and the currently approved land use are generally consistent. As such, construction-source greenhouse gas emissions associated with development of the proposed Project are expected to be similar to and no more than what would occur if the currently approved land use were constructed. As such, no additional impacts would occur.

Operational activities associated with the proposed Project will result in emissions of CO_2, CH_4, and N_2O from the following primary sources: area source emissions, energy source emissions, mobile source emissions, solid waste, and water supply, treatment, and distribution.

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

PROPOSED PROJECT: GREENHOUSE GAS EMISSIONS

The annual GHG emissions associated with the construction and operation of the proposed Project are estimated to be 974.56 $MTCO_2e$ per year as summarized in Table 5. Detailed construction and operational model outputs are presented in Attachment "A" and "E". As shown, the proposed Project would not exceed the 3,000 $MTCO_2e$ threshold. As such, the proposed Project would result in a less than significant impact with respect to GHG emissions no mitigation is required.

TABLE 5: PROPOSED PROJECT GREENHOUSE GAS EMISSIONS

Emission Source	Emissions (metric tons per year)			
	CO_2	CH_4	N_2O	Total CO_2E
Annual construction-related emissions amortized over 30 years	18.56	0.00	0.00	18.68
Area	15.38	0.02	0.00	15.87
Energy	207.27	0.01	0.00	208.19
Mobile Sources	679.50	0.04	0.00	680.41
Waste	11.15	0.66	0.00	27.63
Water Usage	20.51	0.10	0.00	23.78
Total CO_2E (All Sources)	**974.56**			
Screening Threshold (CO_2E)	**3,000**			
Threshold Exceeded?	**NO**			

CURRENTLY ADOPTED LAND USE: GREENHOUSE GAS EMISSIONS

The annual GHG emissions associated with the construction and operation of the proposed Project are estimated to be 564.41 $MTCO_2e$ per year as summarized in Table 6. Detailed construction and operational model outputs are presented in Attachment "B" and "F". As shown, the proposed Project would not exceed the 3,000 $MTCO_2e$ threshold. As such, the proposed Project would result in a less than significant impact with respect to GHG emissions no mitigation is required.

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 6: CURRENTLY ADOPTED LAND USE GREENHOUSE GAS EMISSIONS

Emission Source	Emissions (metric tons per year)			
	CO_2	CH_4	N_2O	Total CO_2E
Annual construction-related emissions amortized over 30 years	12.83	0.00	0.00	12.91
Area	8.83	0.01	0.00	9.12
Energy	119.07	0.00	0.00	119.60
Mobile Sources	392.73	0.02	0.00	393.26
Waste	6.41	0.38	0.00	15.88
Water Usage	11.78	0.06	0.00	13.66
Total CO_2E (All Sources)	**564.41**			
Screening Threshold (CO_2E)	**3,000**			
Threshold Exceeded?	**NO**			

COMPARISON OF PROPOSED PROJECT TO THE CURRENTLY ADOPTED LAND USE

The annual net GHG emissions associated with the proposed Project are estimated to be 947.56 $MTCO_2e$ per year and 564.43 $MTCO_2$ for the currently adopted land use, as summarized in Table 7. Although the proposed Project has the potential to result in more emissions compared to emissions expected from the currently adopted land use, the difference is nominal. As such, the proposed Project would result in a less than significant impact with respect to GHG emissions.

TABLE 7: GREENHOUSE GAS EMISSIONS SUMMARY PROPOSED PROJECT VS CURRENTLY APPROVED LAND USE

Emission Source	Emissions (metric tons per year)			
	CO_2	CH_4	N_2O	Total CO_2E
Proposed Project	952.37	0.83	0.00	974.56
Currently Approved Land Use	551.65	0.47	0.00	564.43
Variance Total CO_2E (All Sources)	**410.15**			

If you have any questions, please contact me directly at (949) 336-5987.

Respectfully submitted,

URBAN CROSSROADS, INC.

Haseeb Qureshi,
Senior Associate

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

REFERENCES

1. **South Coast Air Quality Management District.** California Emissions Estimator Model. [Online] 2013. [Cited: November 13, 2013.] http://www.caleemod.com/.

2. **Urban Crossroads, Inc.** *Brodiaea (TTM 37544) Trip Generation Evaluation.* 2018.

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

ATTACHMENT A:

CALEEMOD AIR QUALITY PROPOSED PROJECT (CONSTRUCTION) EMISSIONS MODEL OUTPUTS

Brodiaea Residential Proposed (Construction-Unmitigated)

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	47.00	Dwelling Unit	15.26	84,600.00	134

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Project Characteristics -

Land Use -

Construction Phase -

Off-road Equipment - Hours based on 8 hour work day

Off-road Equipment -

Off-road Equipment - hours based on 8 hour work day

Vehicle Trips - Construction run only

Woodstoves - Construction run only

Energy Use - Construction run only

Water And Wastewater - Construction run only

Solid Waste - Construction run only

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	PhaseEndDate	12/6/2019	11/8/2019
tblConstructionPhase	PhaseEndDate	10/11/2019	9/13/2019
tblConstructionPhase	PhaseEndDate	8/17/2018	7/20/2018
tblConstructionPhase	PhaseEndDate	11/8/2019	10/11/2019
tblConstructionPhase	PhaseEndDate	7/6/2018	6/8/2018
tblConstructionPhase	PhaseStartDate	11/9/2019	10/12/2019
tblConstructionPhase	PhaseStartDate	8/18/2018	7/21/2018
tblConstructionPhase	PhaseStartDate	7/7/2018	6/9/2018
tblConstructionPhase	PhaseStartDate	10/12/2019	9/14/2019
tblConstructionPhase	PhaseStartDate	6/23/2018	5/28/2018
tblEnergyUse	LightingElect	1,608.84	0.00
tblEnergyUse	NT24E	6,155.97	0.00
tblEnergyUse	NT24NG	6,030.00	0.00

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

tblEnergyUse	T24E	951.67	0.00
tblEnergyUse	T24NG	24,566.15	0.00
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	39.95	0.00
tblFireplaces	NumberNoFireplace	4.70	0.00
tblFireplaces	NumberWood	2.35	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblSolidWaste	SolidWasteGenerationRate	54.94	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	HO_TL	8.70	0.00
tblVehicleTrips	HO_TTP	40.60	0.00
tblVehicleTrips	HS_TL	5.90	0.00
tblVehicleTrips	HS_TTP	19.20	0.00
tblVehicleTrips	HW_TL	14.70	0.00
tblVehicleTrips	HW_TTP	40.20	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	86.00	0.00
tblVehicleTrips	ST_TR	9.91	0.00
tblVehicleTrips	SU_TR	8.62	0.00
tblVehicleTrips	WD_TR	9.52	0.00
tblWater	IndoorWaterUseRate	3,062,239.20	0.00
tblWater	OutdoorWaterUseRate	1,930,542.11	0.00
tblWoodstoves	NumberCatalytic	2.35	0.00

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

tblWoodstoves	NumberNoncatalytic	2.35	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	5.2073	59.6064	35.9976	0.0643	18.2675	2.6355	20.8460	9.9840	2.4247	12.3563	0.0000	6,472.5643	6,472.5643	1.9518	0.0000	6,521.3583
2019	26.8394	23.3422	19.1571	0.0320	0.2220	1.3855	1.6076	0.0596	1.3009	1.3605	0.0000	3,100.2593	3,100.2593	0.7193	0.0000	3,117.9118
Maximum	**26.8394**	**59.6064**	**35.9976**	**0.0643**	**18.2675**	**2.6355**	**20.8460**	**9.9840**	**2.4247**	**12.3563**	**0.0000**	**6,472.5643**	**6,472.5643**	**1.9518**	**0.0000**	**6,521.3583**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	5.2073	59.6064	35.9976	0.0643	7.2470	2.6355	9.8256	3.9263	2.4247	6.2986	0.0000	6,472.5642	6,472.5642	1.9518	0.0000	6,521.3583
2019	26.8394	23.3422	19.1571	0.0320	0.2220	1.3855	1.6076	0.0596	1.3009	1.3605	0.0000	3,100.2593	3,100.2593	0.7193	0.0000	3,117.9118
Maximum	**26.8394**	**59.6064**	**35.9976**	**0.0643**	**7.2470**	**2.6355**	**9.8256**	**3.9263**	**2.4247**	**6.2986**	**0.0000**	**6,472.5642**	**6,472.5642**	**1.9518**	**0.0000**	**6,521.3583**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**59.60**	**0.00**	**49.08**	**60.31**	**0.00**	**44.16**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.9394	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214	0.0000	6.9820	6.9820	6.8500e-003	0.0000	7.1533
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.9394**	**0.0451**	**3.8968**	**2.0000e-004**	**0.0000**	**0.0214**	**0.0214**	**0.0000**	**0.0214**	**0.0214**	**0.0000**	**6.9820**	**6.9820**	**6.8500e-003**	**0.0000**	**7.1533**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.9394	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214	0.0000	6.9820	6.9820	6.8500e-003	0.0000	7.1533
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.9394**	**0.0451**	**3.8968**	**2.0000e-004**	**0.0000**	**0.0214**	**0.0214**	**0.0000**	**0.0214**	**0.0214**	**0.0000**	**6.9820**	**6.9820**	**6.8500e-003**	**0.0000**	**7.1533**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/28/2018	6/8/2018	5	10	
2	Grading	Grading	6/9/2018	7/20/2018	5	30	
3	Building Construction	Building Construction	7/21/2018	9/13/2019	5	300	
4	Paving	Paving	9/14/2019	10/11/2019	5	20	
5	Architectural Coating	Architectural Coating	10/12/2019	11/8/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 171,315; Residential Outdoor: 57,105; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	8.00	78	0.48
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	17.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708		3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**18.0663**	**2.5769**	**20.6432**	**9.9307**	**2.3708**	**12.3014**		**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.2 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1055	0.0762	0.8174	2.0600e-003	0.2012	1.6000e-003	0.2028	0.0534	1.4800e-003	0.0548		205.3223	205.3223	7.0100e-003		205.4974
Total	**0.1055**	**0.0762**	**0.8174**	**2.0600e-003**	**0.2012**	**1.6000e-003**	**0.2028**	**0.0534**	**1.4800e-003**	**0.0548**		**205.3223**	**205.3223**	**7.0100e-003**		**205.4974**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0458	0.0000	7.0458	3.8730	0.0000	3.8730			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708	0.0000	3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**7.0458**	**2.5769**	**9.6228**	**3.8730**	**2.3708**	**6.2437**	**0.0000**	**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.2 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1055	0.0762	0.8174	2.0600e-003	0.2012	1.6000e-003	0.2028	0.0534	1.4800e-003	0.0548		205.3223	205.3223	7.0100e-003		205.4974
Total	**0.1055**	**0.0762**	**0.8174**	**2.0600e-003**	**0.2012**	**1.6000e-003**	**0.2028**	**0.0534**	**1.4800e-003**	**0.0548**		**205.3223**	**205.3223**	**7.0100e-003**		**205.4974**

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230		6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**8.6733**	**2.6337**	**11.3071**	**3.5965**	**2.4230**	**6.0195**		**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

3.3 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1172	0.0846	0.9082	2.2900e-003	0.2236	1.7800e-003	0.2253	0.0593	1.6400e-003	0.0609		228.1358	228.1358	7.7800e-003		228.3305
Total	**0.1172**	**0.0846**	**0.9082**	**2.2900e-003**	**0.2236**	**1.7800e-003**	**0.2253**	**0.0593**	**1.6400e-003**	**0.0609**		**228.1358**	**228.1358**	**7.7800e-003**		**228.3305**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3826	0.0000	3.3826	1.4026	0.0000	1.4026			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230	0.0000	6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**3.3826**	**2.6337**	**6.0163**	**1.4026**	**2.4230**	**3.8257**	**0.0000**	**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.3 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1172	0.0846	0.9082	2.2900e-003	0.2236	1.7800e-003	0.2253	0.0593	1.6400e-003	0.0609		228.1358	228.1358	7.7800e-003		228.3305
Total	**0.1172**	**0.0846**	**0.9082**	**2.2900e-003**	**0.2236**	**1.7800e-003**	**0.2253**	**0.0593**	**1.6400e-003**	**0.0609**		**228.1358**	**228.1358**	**7.7800e-003**		**228.3305**

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8506	25.2288	18.7719	0.0288		1.6066	1.6066		1.5082	1.5082		2,810.8008	2,810.8008	0.7012		2,828.3317
Total	**2.8506**	**25.2288**	**18.7719**	**0.0288**		**1.6066**	**1.6066**		**1.5082**	**1.5082**		**2,810.8008**	**2,810.8008**	**0.7012**		**2,828.3317**

3.4 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0222	0.6069	0.1675	1.2700e-003	0.0320	4.5000e-003	0.0365	9.2100e-003	4.3000e-003	0.0135		135.3782	135.3782	0.0102		135.6329
Worker	0.0996	0.0720	0.7720	1.9500e-003	0.1900	1.5100e-003	0.1915	0.0504	1.4000e-003	0.0518		193.9155	193.9155	6.6200e-003		194.0809
Total	**0.1218**	**0.6789**	**0.9395**	**3.2200e-003**	**0.2220**	**6.0100e-003**	**0.2280**	**0.0596**	**5.7000e-003**	**0.0653**		**329.2937**	**329.2937**	**0.0168**		**329.7138**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8506	25.2288	18.7719	0.0288		1.6066	1.6066		1.5082	1.5082	0.0000	2,810.8008	2,810.8008	0.7012		2,828.3317
Total	**2.8506**	**25.2288**	**18.7719**	**0.0288**		**1.6066**	**1.6066**		**1.5082**	**1.5082**	**0.0000**	**2,810.8008**	**2,810.8008**	**0.7012**		**2,828.3317**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0222	0.6069	0.1675	1.2700e-003	0.0320	4.5000e-003	0.0365	9.2100e-003	4.3000e-003	0.0135		135.3782	135.3782	0.0102		135.6329
Worker	0.0996	0.0720	0.7720	1.9500e-003	0.1900	1.5100e-003	0.1915	0.0504	1.4000e-003	0.0518		193.9155	193.9155	6.6200e-003		194.0809
Total	**0.1218**	**0.6789**	**0.9395**	**3.2200e-003**	**0.2220**	**6.0100e-003**	**0.2280**	**0.0596**	**5.7000e-003**	**0.0653**		**329.2937**	**329.2937**	**0.0168**		**329.7138**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5115	22.7062	18.3139	0.0288		1.3802	1.3802		1.2958	1.2958		2,778.3097	2,778.3097	0.6904		2,795.5700
Total	**2.5115**	**22.7062**	**18.3139**	**0.0288**		**1.3802**	**1.3802**		**1.2958**	**1.2958**		**2,778.3097**	**2,778.3097**	**0.6904**		**2,795.5700**

3.4 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0201	0.5725	0.1540	1.2600e-003	0.0320	3.8500e-003	0.0359	9.2100e-003	3.6800e-003	0.0129		134.1581	134.1581	9.8200e-003		134.4036
Worker	0.0907	0.0635	0.6892	1.8900e-003	0.1900	1.4800e-003	0.1915	0.0504	1.3600e-003	0.0518		187.7915	187.7915	5.8700e-003		187.9382
Total	**0.1108**	**0.6360**	**0.8432**	**3.1500e-003**	**0.2220**	**5.3300e-003**	**0.2274**	**0.0596**	**5.0400e-003**	**0.0647**		**321.9496**	**321.9496**	**0.0157**		**322.3418**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5115	22.7062	18.3139	0.0288		1.3802	1.3802		1.2958	1.2958	0.0000	2,778.3097	2,778.3097	0.6904		2,795.5700
Total	**2.5115**	**22.7062**	**18.3139**	**0.0288**		**1.3802**	**1.3802**		**1.2958**	**1.2958**	**0.0000**	**2,778.3097**	**2,778.3097**	**0.6904**		**2,795.5700**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0201	0.5725	0.1540	1.2600e-003	0.0320	3.8500e-003	0.0359	9.2100e-003	3.6800e-003	0.0129		134.1581	134.1581	9.8200e-003		134.4036
Worker	0.0907	0.0635	0.6892	1.8900e-003	0.1900	1.4800e-003	0.1915	0.0504	1.3600e-003	0.0518		187.7915	187.7915	5.8700e-003		187.9382
Total	**0.1108**	**0.6360**	**0.8432**	**3.1500e-003**	**0.2220**	**5.3300e-003**	**0.2274**	**0.0596**	**5.0400e-003**	**0.0647**		**321.9496**	**321.9496**	**0.0157**		**322.3418**

3.5 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586		2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**		**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.5 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0800	0.0560	0.6081	1.6600e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		165.6984	165.6984	5.1800e-003		165.8278
Total	**0.0800**	**0.0560**	**0.6081**	**1.6600e-003**	**0.1677**	**1.3000e-003**	**0.1690**	**0.0445**	**1.2000e-003**	**0.0457**		**165.6984**	**165.6984**	**5.1800e-003**		**165.8278**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586	0.0000	2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**	**0.0000**	**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.5 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0800	0.0560	0.6081	1.6600e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		165.6984	165.6984	5.1800e-003		165.8278
Total	**0.0800**	**0.0560**	**0.6081**	**1.6600e-003**	**0.1677**	**1.3000e-003**	**0.1690**	**0.0445**	**1.2000e-003**	**0.0457**		**165.6984**	**165.6984**	**5.1800e-003**		**165.8278**

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	26.4682					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717		375.2641	375.2641	0.0317		376.0565
Total	**26.8234**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**		**375.2641**	**375.2641**	**0.0317**		**376.0565**

3.6 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0160	0.0112	0.1216	3.3000e-004	0.0335	2.6000e-004	0.0338	8.8900e-003	2.4000e-004	9.1300e-003		33.1397	33.1397	1.0400e-003		33.1656
Total	**0.0160**	**0.0112**	**0.1216**	**3.3000e-004**	**0.0335**	**2.6000e-004**	**0.0338**	**8.8900e-003**	**2.4000e-004**	**9.1300e-003**		**33.1397**	**33.1397**	**1.0400e-003**		**33.1656**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	26.4682					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717	0.0000	375.2641	375.2641	0.0317		376.0565
Total	**26.8234**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**	**0.0000**	**375.2641**	**375.2641**	**0.0317**		**376.0565**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.6 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0160	0.0112	0.1216	3.3000e-004	0.0335	2.6000e-004	0.0338	8.8900e-003	2.4000e-004	9.1300e-003		33.1397	33.1397	1.0400e-003		33.1656
Total	**0.0160**	**0.0112**	**0.1216**	**3.3000e-004**	**0.0335**	**2.6000e-004**	**0.0338**	**8.8900e-003**	**2.4000e-004**	**9.1300e-003**		**33.1397**	**33.1397**	**1.0400e-003**		**33.1656**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

5.0 Energy Detail

Historical Energy Use: N

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.9394	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214	0.0000	6.9820	6.9820	6.8500e-003	0.0000	7.1533
Unmitigated	1.9394	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214	0.0000	6.9820	6.9820	6.8500e-003	0.0000	7.1533

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1450					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6751					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1193	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214		6.9820	6.9820	6.8500e-003		7.1533
Total	**1.9394**	**0.0451**	**3.8968**	**2.0000e-004**		**0.0214**	**0.0214**		**0.0214**	**0.0214**	**0.0000**	**6.9820**	**6.9820**	**6.8500e-003**	**0.0000**	**7.1533**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1450					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6751					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1193	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214		6.9820	6.9820	6.8500e-003		7.1533
Total	**1.9394**	**0.0451**	**3.8968**	**2.0000e-004**		**0.0214**	**0.0214**		**0.0214**	**0.0214**	**0.0000**	**6.9820**	**6.9820**	**6.8500e-003**	**0.0000**	**7.1533**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Brodiaea Residential Proposed (Construction-Unmitigated)

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	47.00	Dwelling Unit	15.26	84,600.00	134

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Project Characteristics -

Land Use -

Construction Phase -

Off-road Equipment - Hours based on 8 hour work day

Off-road Equipment -

Off-road Equipment - hours based on 8 hour work day

Vehicle Trips - Construction run only

Woodstoves - Construction run only

Energy Use - Construction run only

Water And Wastewater - Construction run only

Solid Waste - Construction run only

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	PhaseEndDate	12/6/2019	11/8/2019
tblConstructionPhase	PhaseEndDate	10/11/2019	9/13/2019
tblConstructionPhase	PhaseEndDate	8/17/2018	7/20/2018
tblConstructionPhase	PhaseEndDate	11/8/2019	10/11/2019
tblConstructionPhase	PhaseEndDate	7/6/2018	6/8/2018
tblConstructionPhase	PhaseStartDate	11/9/2019	10/12/2019
tblConstructionPhase	PhaseStartDate	8/18/2018	7/21/2018
tblConstructionPhase	PhaseStartDate	7/7/2018	6/9/2018
tblConstructionPhase	PhaseStartDate	10/12/2019	9/14/2019
tblConstructionPhase	PhaseStartDate	6/23/2018	5/28/2018
tblEnergyUse	LightingElect	1,608.84	0.00
tblEnergyUse	NT24E	6,155.97	0.00
tblEnergyUse	NT24NG	6,030.00	0.00

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

tblEnergyUse	T24E	951.67	0.00
tblEnergyUse	T24NG	24,566.15	0.00
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	39.95	0.00
tblFireplaces	NumberNoFireplace	4.70	0.00
tblFireplaces	NumberWood	2.35	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblSolidWaste	SolidWasteGenerationRate	54.94	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	HO_TL	8.70	0.00
tblVehicleTrips	HO_TTP	40.60	0.00
tblVehicleTrips	HS_TL	5.90	0.00
tblVehicleTrips	HS_TTP	19.20	0.00
tblVehicleTrips	HW_TL	14.70	0.00
tblVehicleTrips	HW_TTP	40.20	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	86.00	0.00
tblVehicleTrips	ST_TR	9.91	0.00
tblVehicleTrips	SU_TR	8.62	0.00
tblVehicleTrips	WD_TR	9.52	0.00
tblWater	IndoorWaterUseRate	3,062,239.20	0.00
tblWater	OutdoorWaterUseRate	1,930,542.11	0.00
tblWoodstoves	NumberCatalytic	2.35	0.00

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

tblWoodstoves	NumberNoncatalytic	2.35	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	5.1979	59.5991	36.0929	0.0645	18.2675	2.6355	20.8460	9.9840	2.4247	12.3563	0.0000	6,488.2987	6,488.2987	1.9523	0.0000	6,537.1060
2019	26.8381	23.3363	19.2161	0.0321	0.2220	1.3855	1.6075	0.0596	1.3008	1.3604	0.0000	3,117.1877	3,117.1877	0.7196	0.0000	3,134.8334
Maximum	**26.8381**	**59.5991**	**36.0929**	**0.0645**	**18.2675**	**2.6355**	**20.8460**	**9.9840**	**2.4247**	**12.3563**	**0.0000**	**6,488.2987**	**6,488.2987**	**1.9523**	**0.0000**	**6,537.1060**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	5.1979	59.5991	36.0929	0.0645	7.2470	2.6355	9.8256	3.9263	2.4247	6.2986	0.0000	6,488.2987	6,488.2987	1.9523	0.0000	6,537.1060
2019	26.8381	23.3363	19.2161	0.0321	0.2220	1.3855	1.6075	0.0596	1.3008	1.3604	0.0000	3,117.1877	3,117.1877	0.7196	0.0000	3,134.8334
Maximum	**26.8381**	**59.5991**	**36.0929**	**0.0645**	**7.2470**	**2.6355**	**9.8256**	**3.9263**	**2.4247**	**6.2986**	**0.0000**	**6,488.2987**	**6,488.2987**	**1.9523**	**0.0000**	**6,537.1060**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**59.60**	**0.00**	**49.08**	**60.31**	**0.00**	**44.16**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.9394	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214	0.0000	6.9820	6.9820	6.8500e-003	0.0000	7.1533
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.9394**	**0.0451**	**3.8968**	**2.0000e-004**	**0.0000**	**0.0214**	**0.0214**	**0.0000**	**0.0214**	**0.0214**	**0.0000**	**6.9820**	**6.9820**	**6.8500e-003**	**0.0000**	**7.1533**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.9394	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214	0.0000	6.9820	6.9820	6.8500e-003	0.0000	7.1533
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.9394**	**0.0451**	**3.8968**	**2.0000e-004**	**0.0000**	**0.0214**	**0.0214**	**0.0000**	**0.0214**	**0.0214**	**0.0000**	**6.9820**	**6.9820**	**6.8500e-003**	**0.0000**	**7.1533**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/28/2018	6/8/2018	5	10	
2	Grading	Grading	6/9/2018	7/20/2018	5	30	
3	Building Construction	Building Construction	7/21/2018	9/13/2019	5	300	
4	Paving	Paving	9/14/2019	10/11/2019	5	20	
5	Architectural Coating	Architectural Coating	10/12/2019	11/8/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 171,315; Residential Outdoor: 57,105; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	8.00	78	0.48
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	17.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708		3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**18.0663**	**2.5769**	**20.6432**	**9.9307**	**2.3708**	**12.3014**		**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.2 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0970	0.0695	0.9032	2.2100e-003	0.2012	1.6000e-003	0.2028	0.0534	1.4800e-003	0.0548		219.4833	219.4833	7.4800e-003		219.6704
Total	**0.0970**	**0.0695**	**0.9032**	**2.2100e-003**	**0.2012**	**1.6000e-003**	**0.2028**	**0.0534**	**1.4800e-003**	**0.0548**		**219.4833**	**219.4833**	**7.4800e-003**		**219.6704**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0458	0.0000	7.0458	3.8730	0.0000	3.8730			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708	0.0000	3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**7.0458**	**2.5769**	**9.6228**	**3.8730**	**2.3708**	**6.2437**	**0.0000**	**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.2 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0970	0.0695	0.9032	2.2100e-003	0.2012	1.6000e-003	0.2028	0.0534	1.4800e-003	0.0548		219.4833	219.4833	7.4800e-003		219.6704
Total	**0.0970**	**0.0695**	**0.9032**	**2.2100e-003**	**0.2012**	**1.6000e-003**	**0.2028**	**0.0534**	**1.4800e-003**	**0.0548**		**219.4833**	**219.4833**	**7.4800e-003**		**219.6704**

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230		6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**8.6733**	**2.6337**	**11.3071**	**3.5965**	**2.4230**	**6.0195**		**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

3.3 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1078	0.0773	1.0035	2.4500e-003	0.2236	1.7800e-003	0.2253	0.0593	1.6400e-003	0.0609		243.8703	243.8703	8.3200e-003		244.0782
Total	**0.1078**	**0.0773**	**1.0035**	**2.4500e-003**	**0.2236**	**1.7800e-003**	**0.2253**	**0.0593**	**1.6400e-003**	**0.0609**		**243.8703**	**243.8703**	**8.3200e-003**		**244.0782**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3826	0.0000	3.3826	1.4026	0.0000	1.4026			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230	0.0000	6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**3.3826**	**2.6337**	**6.0163**	**1.4026**	**2.4230**	**3.8257**	**0.0000**	**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.3 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1078	0.0773	1.0035	2.4500e-003	0.2236	1.7800e-003	0.2253	0.0593	1.6400e-003	0.0609		243.8703	243.8703	8.3200e-003		244.0782
Total	**0.1078**	**0.0773**	**1.0035**	**2.4500e-003**	**0.2236**	**1.7800e-003**	**0.2253**	**0.0593**	**1.6400e-003**	**0.0609**		**243.8703**	**243.8703**	**8.3200e-003**		**244.0782**

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8506	25.2288	18.7719	0.0288		1.6066	1.6066		1.5082	1.5082		2,810.8008	2,810.8008	0.7012		2,828.3317
Total	**2.8506**	**25.2288**	**18.7719**	**0.0288**		**1.6066**	**1.6066**		**1.5082**	**1.5082**		**2,810.8008**	**2,810.8008**	**0.7012**		**2,828.3317**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0213	0.6059	0.1509	1.3100e-003	0.0320	4.4300e-003	0.0364	9.2100e-003	4.2400e-003	0.0135		139.3290	139.3290	9.4800e-003		139.5661
Worker	0.0916	0.0657	0.8530	2.0800e-003	0.1900	1.5100e-003	0.1915	0.0504	1.4000e-003	0.0518		207.2898	207.2898	7.0700e-003		207.4665
Total	**0.1129**	**0.6716**	**1.0039**	**3.3900e-003**	**0.2220**	**5.9400e-003**	**0.2280**	**0.0596**	**5.6400e-003**	**0.0652**		**346.6188**	**346.6188**	**0.0166**		**347.0326**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8506	25.2288	18.7719	0.0288		1.6066	1.6066		1.5082	1.5082	0.0000	2,810.8008	2,810.8008	0.7012		2,828.3317
Total	**2.8506**	**25.2288**	**18.7719**	**0.0288**		**1.6066**	**1.6066**		**1.5082**	**1.5082**	**0.0000**	**2,810.8008**	**2,810.8008**	**0.7012**		**2,828.3317**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0213	0.6059	0.1509	1.3100e-003	0.0320	4.4300e-003	0.0364	9.2100e-003	4.2400e-003	0.0135		139.3290	139.3290	9.4800e-003		139.5661
Worker	0.0916	0.0657	0.8530	2.0800e-003	0.1900	1.5100e-003	0.1915	0.0504	1.4000e-003	0.0518		207.2898	207.2898	7.0700e-003		207.4665
Total	**0.1129**	**0.6716**	**1.0039**	**3.3900e-003**	**0.2220**	**5.9400e-003**	**0.2280**	**0.0596**	**5.6400e-003**	**0.0652**		**346.6188**	**346.6188**	**0.0166**		**347.0326**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5115	22.7062	18.3139	0.0288		1.3802	1.3802		1.2958	1.2958		2,778.3097	2,778.3097	0.6904		2,795.5700
Total	**2.5115**	**22.7062**	**18.3139**	**0.0288**		**1.3802**	**1.3802**		**1.2958**	**1.2958**		**2,778.3097**	**2,778.3097**	**0.6904**		**2,795.5700**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0193	0.5721	0.1383	1.3000e-003	0.0320	3.7900e-003	0.0358	9.2100e-003	3.6300e-003	0.0128		138.1099	138.1099	9.1400e-003		138.3383
Worker	0.0833	0.0579	0.7639	2.0200e-003	0.1900	1.4800e-003	0.1915	0.0504	1.3600e-003	0.0518		200.7681	200.7681	6.2800e-003		200.9251
Total	**0.1025**	**0.6301**	**0.9022**	**3.3200e-003**	**0.2220**	**5.2700e-003**	**0.2273**	**0.0596**	**4.9900e-003**	**0.0646**		**338.8780**	**338.8780**	**0.0154**		**339.2634**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5115	22.7062	18.3139	0.0288		1.3802	1.3802		1.2958	1.2958	0.0000	2,778.3097	2,778.3097	0.6904		2,795.5700
Total	**2.5115**	**22.7062**	**18.3139**	**0.0288**		**1.3802**	**1.3802**		**1.2958**	**1.2958**	**0.0000**	**2,778.3097**	**2,778.3097**	**0.6904**		**2,795.5700**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0193	0.5721	0.1383	1.3000e-003	0.0320	3.7900e-003	0.0358	9.2100e-003	3.6300e-003	0.0128		138.1099	138.1099	9.1400e-003		138.3383
Worker	0.0833	0.0579	0.7639	2.0200e-003	0.1900	1.4800e-003	0.1915	0.0504	1.3600e-003	0.0518		200.7681	200.7681	6.2800e-003		200.9251
Total	**0.1025**	**0.6301**	**0.9022**	**3.3200e-003**	**0.2220**	**5.2700e-003**	**0.2273**	**0.0596**	**4.9900e-003**	**0.0646**		**338.8780**	**338.8780**	**0.0154**		**339.2634**

3.5 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586		2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**		**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.5 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0735	0.0511	0.6740	1.7800e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		177.1484	177.1484	5.5400e-003		177.2869
Total	**0.0735**	**0.0511**	**0.6740**	**1.7800e-003**	**0.1677**	**1.3000e-003**	**0.1690**	**0.0445**	**1.2000e-003**	**0.0457**		**177.1484**	**177.1484**	**5.5400e-003**		**177.2869**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586	0.0000	2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**	**0.0000**	**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.5 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0735	0.0511	0.6740	1.7800e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		177.1484	177.1484	5.5400e-003		177.2869
Total	**0.0735**	**0.0511**	**0.6740**	**1.7800e-003**	**0.1677**	**1.3000e-003**	**0.1690**	**0.0445**	**1.2000e-003**	**0.0457**		**177.1484**	**177.1484**	**5.5400e-003**		**177.2869**

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	26.4682					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717		375.2641	375.2641	0.0317		376.0565
Total	**26.8234**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**		**375.2641**	**375.2641**	**0.0317**		**376.0565**

3.6 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0147	0.0102	0.1348	3.6000e-004	0.0335	2.6000e-004	0.0338	8.8900e-003	2.4000e-004	9.1300e-003		35.4297	35.4297	1.1100e-003		35.4574
Total	**0.0147**	**0.0102**	**0.1348**	**3.6000e-004**	**0.0335**	**2.6000e-004**	**0.0338**	**8.8900e-003**	**2.4000e-004**	**9.1300e-003**		**35.4297**	**35.4297**	**1.1100e-003**		**35.4574**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	26.4682					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717	0.0000	375.2641	375.2641	0.0317		376.0565
Total	**26.8234**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**	**0.0000**	**375.2641**	**375.2641**	**0.0317**		**376.0565**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.6 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0147	0.0102	0.1348	3.6000e-004	0.0335	2.6000e-004	0.0338	8.8900e-003	2.4000e-004	9.1300e-003		35.4297	35.4297	1.1100e-003		35.4574
Total	**0.0147**	**0.0102**	**0.1348**	**3.6000e-004**	**0.0335**	**2.6000e-004**	**0.0338**	**8.8900e-003**	**2.4000e-004**	**9.1300e-003**		**35.4297**	**35.4297**	**1.1100e-003**		**35.4574**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

5.0 Energy Detail

Historical Energy Use: N

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.9394	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214	0.0000	6.9820	6.9820	6.8500e-003	0.0000	7.1533
Unmitigated	1.9394	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214	0.0000	6.9820	6.9820	6.8500e-003	0.0000	7.1533

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1450					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6751					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1193	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214		6.9820	6.9820	6.8500e-003		7.1533
Total	**1.9394**	**0.0451**	**3.8968**	**2.0000e-004**		**0.0214**	**0.0214**		**0.0214**	**0.0214**	**0.0000**	**6.9820**	**6.9820**	**6.8500e-003**	**0.0000**	**7.1533**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1450					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6751					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1193	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214		6.9820	6.9820	6.8500e-003		7.1533
Total	**1.9394**	**0.0451**	**3.8968**	**2.0000e-004**		**0.0214**	**0.0214**		**0.0214**	**0.0214**	**0.0000**	**6.9820**	**6.9820**	**6.8500e-003**	**0.0000**	**7.1533**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Brodiaea Residential Proposed (Construction-Unmitigated)

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	47.00	Dwelling Unit	15.26	84,600.00	134

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Project Characteristics -

Land Use -

Construction Phase -

Off-road Equipment - Hours based on 8 hour work day

Off-road Equipment -

Off-road Equipment - hours based on 8 hour work day

Vehicle Trips - Construction run only

Woodstoves - Construction run only

Energy Use - Construction run only

Water And Wastewater - Construction run only

Solid Waste - Construction run only

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	PhaseEndDate	12/6/2019	11/8/2019
tblConstructionPhase	PhaseEndDate	10/11/2019	9/13/2019
tblConstructionPhase	PhaseEndDate	8/17/2018	7/20/2018
tblConstructionPhase	PhaseEndDate	11/8/2019	10/11/2019
tblConstructionPhase	PhaseEndDate	7/6/2018	6/8/2018
tblConstructionPhase	PhaseStartDate	11/9/2019	10/12/2019
tblConstructionPhase	PhaseStartDate	8/18/2018	7/21/2018
tblConstructionPhase	PhaseStartDate	7/7/2018	6/9/2018
tblConstructionPhase	PhaseStartDate	10/12/2019	9/14/2019
tblConstructionPhase	PhaseStartDate	6/23/2018	5/28/2018
tblEnergyUse	LightingElect	1,608.84	0.00
tblEnergyUse	NT24E	6,155.97	0.00
tblEnergyUse	NT24NG	6,030.00	0.00

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

tblEnergyUse	T24E	951.67	0.00
tblEnergyUse	T24NG	24,566.15	0.00
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	39.95	0.00
tblFireplaces	NumberNoFireplace	4.70	0.00
tblFireplaces	NumberWood	2.35	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblSolidWaste	SolidWasteGenerationRate	54.94	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	HO_TL	8.70	0.00
tblVehicleTrips	HO_TTP	40.60	0.00
tblVehicleTrips	HS_TL	5.90	0.00
tblVehicleTrips	HS_TTP	19.20	0.00
tblVehicleTrips	HW_TL	14.70	0.00
tblVehicleTrips	HW_TTP	40.20	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	86.00	0.00
tblVehicleTrips	ST_TR	9.91	0.00
tblVehicleTrips	SU_TR	8.62	0.00
tblVehicleTrips	WD_TR	9.52	0.00
tblWater	IndoorWaterUseRate	3,062,239.20	0.00
tblWater	OutdoorWaterUseRate	1,930,542.11	0.00
tblWoodstoves	NumberCatalytic	2.35	0.00

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

tblWoodstoves	NumberNoncatalytic	2.35	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2731	2.6389	1.8010	3.0300e-003	0.2374	0.1460	0.3833	0.1081	0.1360	0.2442	0.0000	271.9740	271.9740	0.0698	0.0000	273.7182
2019	0.5241	2.3262	1.9422	3.2300e-003	0.0220	0.1374	0.1595	5.9200e-003	0.1290	0.1349	0.0000	284.9247	284.9247	0.0657	0.0000	286.5680
Maximum	**0.5241**	**2.6389**	**1.9422**	**3.2300e-003**	**0.2374**	**0.1460**	**0.3833**	**0.1081**	**0.1360**	**0.2442**	**0.0000**	**284.9247**	**284.9247**	**0.0698**	**0.0000**	**286.5680**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2731	2.6389	1.8010	3.0300e-003	0.1029	0.1460	0.2489	0.0449	0.1360	0.1810	0.0000	271.9737	271.9737	0.0698	0.0000	273.7179
2019	0.5241	2.3262	1.9422	3.2300e-003	0.0220	0.1374	0.1595	5.9200e-003	0.1290	0.1349	0.0000	284.9244	284.9244	0.0657	0.0000	286.5677
Maximum	**0.5241**	**2.6389**	**1.9422**	**3.2300e-003**	**0.1029**	**0.1460**	**0.2489**	**0.0449**	**0.1360**	**0.1810**	**0.0000**	**284.9244**	**284.9244**	**0.0698**	**0.0000**	**286.5677**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**51.84**	**0.00**	**24.77**	**55.41**	**0.00**	**16.67**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	5-28-2018	8-27-2018	1.5905	1.5905
2	8-28-2018	11-27-2018	0.9487	0.9487
3	11-28-2018	2-27-2019	0.8885	0.8885
4	2-28-2019	5-27-2019	0.8250	0.8250
5	5-28-2019	8-27-2019	0.8527	0.8527
6	8-28-2019	9-30-2019	0.2597	0.2597
		Highest	1.5905	1.5905

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3471	5.6400e-003	0.4871	3.0000e-005		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	0.7917	0.7917	7.8000e-004	0.0000	0.8112
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.3471**	**5.6400e-003**	**0.4871**	**3.0000e-005**	**0.0000**	**2.6700e-003**	**2.6700e-003**	**0.0000**	**2.6700e-003**	**2.6700e-003**	**0.0000**	**0.7917**	**0.7917**	**7.8000e-004**	**0.0000**	**0.8112**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3471	5.6400e-003	0.4871	3.0000e-005		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	0.7917	0.7917	7.8000e-004	0.0000	0.8112
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.3471**	**5.6400e-003**	**0.4871**	**3.0000e-005**	**0.0000**	**2.6700e-003**	**2.6700e-003**	**0.0000**	**2.6700e-003**	**2.6700e-003**	**0.0000**	**0.7917**	**0.7917**	**7.8000e-004**	**0.0000**	**0.8112**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/28/2018	6/8/2018	5	10	
2	Grading	Grading	6/9/2018	7/20/2018	5	30	
3	Building Construction	Building Construction	7/21/2018	9/13/2019	5	300	
4	Paving	Paving	9/14/2019	10/11/2019	5	20	
5	Architectural Coating	Architectural Coating	10/12/2019	11/8/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 171,315; Residential Outdoor: 57,105; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	8.00	78	0.48
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	17.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3800	17.3800	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0903**	**0.0129**	**0.1032**	**0.0497**	**0.0119**	**0.0615**	**0.0000**	**17.3800**	**17.3800**	**5.4100e-003**	**0.0000**	**17.5152**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.2 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.9000e-004	4.2000e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9473	0.9473	3.0000e-005	0.0000	0.9481
Total	**4.8000e-004**	**3.9000e-004**	**4.2000e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**1.0000e-003**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.9473**	**0.9473**	**3.0000e-005**	**0.0000**	**0.9481**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0352	0.0000	0.0352	0.0194	0.0000	0.0194	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3799	17.3799	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0352**	**0.0129**	**0.0481**	**0.0194**	**0.0119**	**0.0312**	**0.0000**	**17.3799**	**17.3799**	**5.4100e-003**	**0.0000**	**17.5152**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.2 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.9000e-004	4.2000e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9473	0.9473	3.0000e-005	0.0000	0.9481
Total	**4.8000e-004**	**3.9000e-004**	**4.2000e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**1.0000e-003**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.9473**	**0.9473**	**3.0000e-005**	**0.0000**	**0.9481**

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9728	84.9728	0.0265	0.0000	85.6341
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.1301**	**0.0395**	**0.1696**	**0.0540**	**0.0364**	**0.0903**	**0.0000**	**84.9728**	**84.9728**	**0.0265**	**0.0000**	**85.6341**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.3 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5900e-003	1.3000e-003	0.0140	3.0000e-005	3.2900e-003	3.0000e-005	3.3200e-003	8.7000e-004	2.0000e-005	9.0000e-004	0.0000	3.1575	3.1575	1.1000e-004	0.0000	3.1602
Total	**1.5900e-003**	**1.3000e-003**	**0.0140**	**3.0000e-005**	**3.2900e-003**	**3.0000e-005**	**3.3200e-003**	**8.7000e-004**	**2.0000e-005**	**9.0000e-004**	**0.0000**	**3.1575**	**3.1575**	**1.1000e-004**	**0.0000**	**3.1602**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0507	0.0000	0.0507	0.0210	0.0000	0.0210	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9727	84.9727	0.0265	0.0000	85.6340
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.0507**	**0.0395**	**0.0903**	**0.0210**	**0.0364**	**0.0574**	**0.0000**	**84.9727**	**84.9727**	**0.0265**	**0.0000**	**85.6340**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.3 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5900e-003	1.3000e-003	0.0140	3.0000e-005	3.2900e-003	3.0000e-005	3.3200e-003	8.7000e-004	2.0000e-005	9.0000e-004	0.0000	3.1575	3.1575	1.1000e-004	0.0000	3.1602
Total	**1.5900e-003**	**1.3000e-003**	**0.0140**	**3.0000e-005**	**3.2900e-003**	**3.0000e-005**	**3.3200e-003**	**8.7000e-004**	**2.0000e-005**	**9.0000e-004**	**0.0000**	**3.1575**	**3.1575**	**1.1000e-004**	**0.0000**	**3.1602**

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1653	1.4633	1.0888	1.6700e-003		0.0932	0.0932		0.0875	0.0875	0.0000	147.8951	147.8951	0.0369	0.0000	148.8175
Total	**0.1653**	**1.4633**	**1.0888**	**1.6700e-003**		**0.0932**	**0.0932**		**0.0875**	**0.0875**	**0.0000**	**147.8951**	**147.8951**	**0.0369**	**0.0000**	**148.8175**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2600e-003	0.0359	9.2400e-003	8.0000e-005	1.8300e-003	2.6000e-004	2.0900e-003	5.3000e-004	2.5000e-004	7.7000e-004	0.0000	7.2437	7.2437	5.2000e-004	0.0000	7.2566
Worker	5.2400e-003	4.2900e-003	0.0460	1.1000e-004	0.0108	9.0000e-005	0.0109	2.8700e-003	8.0000e-005	2.9500e-003	0.0000	10.3777	10.3777	3.5000e-004	0.0000	10.3865
Total	**6.5000e-003**	**0.0401**	**0.0553**	**1.9000e-004**	**0.0127**	**3.5000e-004**	**0.0130**	**3.4000e-003**	**3.3000e-004**	**3.7200e-003**	**0.0000**	**17.6214**	**17.6214**	**8.7000e-004**	**0.0000**	**17.6432**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1653	1.4633	1.0888	1.6700e-003		0.0932	0.0932		0.0875	0.0875	0.0000	147.8949	147.8949	0.0369	0.0000	148.8174
Total	**0.1653**	**1.4633**	**1.0888**	**1.6700e-003**		**0.0932**	**0.0932**		**0.0875**	**0.0875**	**0.0000**	**147.8949**	**147.8949**	**0.0369**	**0.0000**	**148.8174**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2600e-003	0.0359	9.2400e-003	8.0000e-005	1.8300e-003	2.6000e-004	2.0900e-003	5.3000e-004	2.5000e-004	7.7000e-004	0.0000	7.2437	7.2437	5.2000e-004	0.0000	7.2566
Worker	5.2400e-003	4.2900e-003	0.0460	1.1000e-004	0.0108	9.0000e-005	0.0109	2.8700e-003	8.0000e-005	2.9500e-003	0.0000	10.3777	10.3777	3.5000e-004	0.0000	10.3865
Total	**6.5000e-003**	**0.0401**	**0.0553**	**1.9000e-004**	**0.0127**	**3.5000e-004**	**0.0130**	**3.4000e-003**	**3.3000e-004**	**3.7200e-003**	**0.0000**	**17.6214**	**17.6214**	**8.7000e-004**	**0.0000**	**17.6432**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2311	2.0890	1.6849	2.6500e-003		0.1270	0.1270		0.1192	0.1192	0.0000	231.8805	231.8805	0.0576	0.0000	233.3211
Total	**0.2311**	**2.0890**	**1.6849**	**2.6500e-003**		**0.1270**	**0.1270**		**0.1192**	**0.1192**	**0.0000**	**231.8805**	**231.8805**	**0.0576**	**0.0000**	**233.3211**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.8100e-003	0.0536	0.0135	1.2000e-004	2.9000e-003	3.5000e-004	3.2500e-003	8.4000e-004	3.4000e-004	1.1700e-003	0.0000	11.3883	11.3883	7.9000e-004	0.0000	11.4080
Worker	7.5500e-003	6.0000e-003	0.0652	1.8000e-004	0.0172	1.4000e-004	0.0173	4.5600e-003	1.3000e-004	4.6800e-003	0.0000	15.9417	15.9417	5.0000e-004	0.0000	15.9542
Total	**9.3600e-003**	**0.0596**	**0.0787**	**3.0000e-004**	**0.0201**	**4.9000e-004**	**0.0206**	**5.4000e-003**	**4.7000e-004**	**5.8500e-003**	**0.0000**	**27.3300**	**27.3300**	**1.2900e-003**	**0.0000**	**27.3622**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2311	2.0890	1.6849	2.6500e-003		0.1270	0.1270		0.1192	0.1192	0.0000	231.8802	231.8802	0.0576	0.0000	233.3208
Total	**0.2311**	**2.0890**	**1.6849**	**2.6500e-003**		**0.1270**	**0.1270**		**0.1192**	**0.1192**	**0.0000**	**231.8802**	**231.8802**	**0.0576**	**0.0000**	**233.3208**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.8100e-003	0.0536	0.0135	1.2000e-004	2.9000e-003	3.5000e-004	3.2500e-003	8.4000e-004	3.4000e-004	1.1700e-003	0.0000	11.3883	11.3883	7.9000e-004	0.0000	11.4080
Worker	7.5500e-003	6.0000e-003	0.0652	1.8000e-004	0.0172	1.4000e-004	0.0173	4.5600e-003	1.3000e-004	4.6800e-003	0.0000	15.9417	15.9417	5.0000e-004	0.0000	15.9542
Total	**9.3600e-003**	**0.0596**	**0.0787**	**3.0000e-004**	**0.0201**	**4.9000e-004**	**0.0206**	**5.4000e-003**	**4.7000e-004**	**5.8500e-003**	**0.0000**	**27.3300**	**27.3300**	**1.2900e-003**	**0.0000**	**27.3622**

3.5 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1524	0.1467	2.3000e-004		8.2500e-003	8.2500e-003		7.5900e-003	7.5900e-003	0.0000	20.4752	20.4752	6.4800e-003	0.0000	20.6371
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0145**	**0.1524**	**0.1467**	**2.3000e-004**		**8.2500e-003**	**8.2500e-003**		**7.5900e-003**	**7.5900e-003**	**0.0000**	**20.4752**	**20.4752**	**6.4800e-003**	**0.0000**	**20.6371**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.5 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	5.8000e-004	6.2500e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5289	1.5289	5.0000e-005	0.0000	1.5301
Total	**7.2000e-004**	**5.8000e-004**	**6.2500e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5289**	**1.5289**	**5.0000e-005**	**0.0000**	**1.5301**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1524	0.1467	2.3000e-004		8.2500e-003	8.2500e-003		7.5900e-003	7.5900e-003	0.0000	20.4752	20.4752	6.4800e-003	0.0000	20.6371
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0145**	**0.1524**	**0.1467**	**2.3000e-004**		**8.2500e-003**	**8.2500e-003**		**7.5900e-003**	**7.5900e-003**	**0.0000**	**20.4752**	**20.4752**	**6.4800e-003**	**0.0000**	**20.6371**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.5 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	5.8000e-004	6.2500e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5289	1.5289	5.0000e-005	0.0000	1.5301
Total	**7.2000e-004**	**5.8000e-004**	**6.2500e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5289**	**1.5289**	**5.0000e-005**	**0.0000**	**1.5301**

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2647					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.5500e-003	0.0245	0.0246	4.0000e-005		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003	0.0000	3.4043	3.4043	2.9000e-004	0.0000	3.4115
Total	**0.2682**	**0.0245**	**0.0246**	**4.0000e-005**		**1.7200e-003**	**1.7200e-003**		**1.7200e-003**	**1.7200e-003**	**0.0000**	**3.4043**	**3.4043**	**2.9000e-004**	**0.0000**	**3.4115**

3.6 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.2000e-004	1.2500e-003	0.0000	3.3000e-004	0.0000	3.3000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.3058	0.3058	1.0000e-005	0.0000	0.3060
Total	**1.4000e-004**	**1.2000e-004**	**1.2500e-003**	**0.0000**	**3.3000e-004**	**0.0000**	**3.3000e-004**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**0.0000**	**0.3058**	**0.3058**	**1.0000e-005**	**0.0000**	**0.3060**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2647					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.5500e-003	0.0245	0.0246	4.0000e-005		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003	0.0000	3.4043	3.4043	2.9000e-004	0.0000	3.4115
Total	**0.2682**	**0.0245**	**0.0246**	**4.0000e-005**		**1.7200e-003**	**1.7200e-003**		**1.7200e-003**	**1.7200e-003**	**0.0000**	**3.4043**	**3.4043**	**2.9000e-004**	**0.0000**	**3.4115**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.6 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.2000e-004	1.2500e-003	0.0000	3.3000e-004	0.0000	3.3000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.3058	0.3058	1.0000e-005	0.0000	0.3060
Total	**1.4000e-004**	**1.2000e-004**	**1.2500e-003**	**0.0000**	**3.3000e-004**	**0.0000**	**3.3000e-004**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**0.0000**	**0.3058**	**0.3058**	**1.0000e-005**	**0.0000**	**0.3060**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

5.0 Energy Detail

Historical Energy Use: N

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3471	5.6400e-003	0.4871	3.0000e-005		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	0.7917	0.7917	7.8000e-004	0.0000	0.8112
Unmitigated	0.3471	5.6400e-003	0.4871	3.0000e-005		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	0.7917	0.7917	7.8000e-004	0.0000	0.8112

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0265					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3057					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0149	5.6400e-003	0.4871	3.0000e-005		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	0.7917	0.7917	7.8000e-004	0.0000	0.8112
Total	**0.3471**	**5.6400e-003**	**0.4871**	**3.0000e-005**		**2.6700e-003**	**2.6700e-003**		**2.6700e-003**	**2.6700e-003**	**0.0000**	**0.7917**	**0.7917**	**7.8000e-004**	**0.0000**	**0.8112**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0265					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3057					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0149	5.6400e-003	0.4871	3.0000e-005		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	0.7917	0.7917	7.8000e-004	0.0000	0.8112
Total	**0.3471**	**5.6400e-003**	**0.4871**	**3.0000e-005**		**2.6700e-003**	**2.6700e-003**		**2.6700e-003**	**2.6700e-003**	**0.0000**	**0.7917**	**0.7917**	**7.8000e-004**	**0.0000**	**0.8112**

7.0 Water Detail

7.1 Mitigation Measures Water

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

ATTACHMENT B:

CALEEMOD AIR QUALITY CURRENTLY ADOPTED LAND USE (CONSTRUCTION) MISSIONS MODEL OUTPUTS

Brodiaea Residential Current (Construction)

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	27.00	Dwelling Unit	8.77	48,600.00	77

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Project Characteristics -

Land Use -

Construction Phase - Current Proposed Construction Run Only (27 DU)

Off-road Equipment - Current Construction Run Only (27 DU)

Off-road Equipment - Construction Run Only (Current 27 DU)

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Vehicle Trips - Current Construction Run Only (27 DU)

Woodstoves - Operations Run Only.

Energy Use - Operations Run Only.

Consumer Products -

Water And Wastewater - Operations Run Only.

Solid Waste - Operations Run Only.

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblEnergyUse	LightingElect	1,608.84	0.00
tblEnergyUse	NT24E	6,155.97	0.00
tblEnergyUse	NT24NG	6,030.00	0.00
tblEnergyUse	T24E	951.67	0.00
tblEnergyUse	T24NG	24,566.15	0.00
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	22.95	0.00
tblFireplaces	NumberNoFireplace	2.70	0.00

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

tblFireplaces	NumberWood	1.35	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblSolidWaste	SolidWasteGenerationRate	31.57	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	HO_TL	8.70	0.00
tblVehicleTrips	HO_TTP	40.60	0.00
tblVehicleTrips	HS_TL	5.90	0.00
tblVehicleTrips	HS_TTP	19.20	0.00
tblVehicleTrips	HW_TL	14.70	0.00
tblVehicleTrips	HW_TTP	40.20	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	86.00	0.00
tblVehicleTrips	ST_TR	9.91	0.00
tblVehicleTrips	SU_TR	8.62	0.00
tblVehicleTrips	WD_TR	9.52	0.00
tblWater	IndoorWaterUseRate	1,759,158.69	0.00
tblWater	OutdoorWaterUseRate	1,109,034.83	0.00
tblWoodstoves	NumberCatalytic	1.35	0.00
tblWoodstoves	NumberNoncatalytic	1.35	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	4.6682	48.2749	23.2937	0.0401	18.2675	2.5785	20.8460	9.9840	2.3722	12.3563	0.0000	4,036.9461	4,036.9461	1.1999	0.0000	4,066.9422
2019	15.5710	23.0870	18.8117	0.0307	0.1677	1.3834	1.5144	0.0445	1.2989	1.3340	0.0000	2,969.2701	2,969.2701	0.7193	0.0000	2,986.7640
Maximum	**15.5710**	**48.2749**	**23.2937**	**0.0401**	**18.2675**	**2.5785**	**20.8460**	**9.9840**	**2.3722**	**12.3563**	**0.0000**	**4,036.9461**	**4,036.9461**	**1.1999**	**0.0000**	**4,066.9422**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	4.6682	48.2749	23.2937	0.0401	7.2470	2.5785	9.8256	3.9263	2.3722	6.2986	0.0000	4,036.9461	4,036.9461	1.1999	0.0000	4,066.9422
2019	15.5710	23.0870	18.8117	0.0307	0.1677	1.3834	1.5144	0.0445	1.2989	1.3340	0.0000	2,969.2701	2,969.2701	0.7193	0.0000	2,986.7640
Maximum	**15.5710**	**48.2749**	**23.2937**	**0.0401**	**7.2470**	**2.5785**	**9.8256**	**3.9263**	**2.3722**	**6.2986**	**0.0000**	**4,036.9461**	**4,036.9461**	**1.1999**	**0.0000**	**4,066.9422**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**59.78**	**0.00**	**49.29**	**60.40**	**0.00**	**44.25**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.1141	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	4.0109	4.0109	3.9400e-003	0.0000	4.1093
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.1141**	**0.0259**	**2.2386**	**1.2000e-004**	**0.0000**	**0.0123**	**0.0123**	**0.0000**	**0.0123**	**0.0123**	**0.0000**	**4.0109**	**4.0109**	**3.9400e-003**	**0.0000**	**4.1093**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.1141	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	4.0109	4.0109	3.9400e-003	0.0000	4.1093
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.1141**	**0.0259**	**2.2386**	**1.2000e-004**	**0.0000**	**0.0123**	**0.0123**	**0.0000**	**0.0123**	**0.0123**	**0.0000**	**4.0109**	**4.0109**	**3.9400e-003**	**0.0000**	**4.1093**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/28/2018	6/8/2018	5	10	
2	Grading	Grading	6/9/2018	7/6/2018	5	20	
3	Building Construction	Building Construction	7/7/2018	5/24/2019	5	230	
4	Paving	Paving	5/25/2019	6/21/2019	5	20	
5	Architectural Coating	Architectural Coating	6/22/2019	7/19/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 98,415; Residential Outdoor: 32,805; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	8.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	10.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Water Exposed Area

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708		3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**18.0663**	**2.5769**	**20.6432**	**9.9307**	**2.3708**	**12.3014**		**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1055	0.0762	0.8174	2.0600e-003	0.2012	1.6000e-003	0.2028	0.0534	1.4800e-003	0.0548		205.3223	205.3223	7.0100e-003		205.4974
Total	**0.1055**	**0.0762**	**0.8174**	**2.0600e-003**	**0.2012**	**1.6000e-003**	**0.2028**	**0.0534**	**1.4800e-003**	**0.0548**		**205.3223**	**205.3223**	**7.0100e-003**		**205.4974**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.2 Site Preparation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0458	0.0000	7.0458	3.8730	0.0000	3.8730			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708	0.0000	3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**7.0458**	**2.5769**	**9.6228**	**3.8730**	**2.3708**	**6.2437**	**0.0000**	**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1055	0.0762	0.8174	2.0600e-003	0.2012	1.6000e-003	0.2028	0.0534	1.4800e-003	0.0548		205.3223	205.3223	7.0100e-003		205.4974
Total	**0.1055**	**0.0762**	**0.8174**	**2.0600e-003**	**0.2012**	**1.6000e-003**	**0.2028**	**0.0534**	**1.4800e-003**	**0.0548**		**205.3223**	**205.3223**	**7.0100e-003**		**205.4974**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	2.7733	30.6725	16.5770	0.0297		1.5513	1.5513		1.4272	1.4272		2,988.0216	2,988.0216	0.9302		3,011.2769
Total	**2.7733**	**30.6725**	**16.5770**	**0.0297**	**6.5523**	**1.5513**	**8.1037**	**3.3675**	**1.4272**	**4.7947**		**2,988.0216**	**2,988.0216**	**0.9302**		**3,011.2769**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0879	0.0635	0.6811	1.7200e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2300e-003	0.0457		171.1019	171.1019	5.8400e-003		171.2479
Total	**0.0879**	**0.0635**	**0.6811**	**1.7200e-003**	**0.1677**	**1.3400e-003**	**0.1690**	**0.0445**	**1.2300e-003**	**0.0457**		**171.1019**	**171.1019**	**5.8400e-003**		**171.2479**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.3 Grading - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5554	0.0000	2.5554	1.3133	0.0000	1.3133			0.0000			0.0000
Off-Road	2.7733	30.6725	16.5770	0.0297		1.5513	1.5513		1.4272	1.4272	0.0000	2,988.0216	2,988.0216	0.9302		3,011.2769
Total	**2.7733**	**30.6725**	**16.5770**	**0.0297**	**2.5554**	**1.5513**	**4.1067**	**1.3133**	**1.4272**	**2.7405**	**0.0000**	**2,988.0216**	**2,988.0216**	**0.9302**		**3,011.2769**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0879	0.0635	0.6811	1.7200e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2300e-003	0.0457		171.1019	171.1019	5.8400e-003		171.2479
Total	**0.0879**	**0.0635**	**0.6811**	**1.7200e-003**	**0.1677**	**1.3400e-003**	**0.1690**	**0.0445**	**1.2300e-003**	**0.0457**		**171.1019**	**171.1019**	**5.8400e-003**		**171.2479**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8506	25.2288	18.7719	0.0288		1.6066	1.6066		1.5082	1.5082		2,810.8008	2,810.8008	0.7012		2,828.3317
Total	**2.8506**	**25.2288**	**18.7719**	**0.0288**		**1.6066**	**1.6066**		**1.5082**	**1.5082**		**2,810.8008**	**2,810.8008**	**0.7012**		**2,828.3317**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0133	0.3642	0.1005	7.6000e-004	0.0192	2.7000e-003	0.0219	5.5300e-003	2.5800e-003	8.1100e-003		81.2269	81.2269	6.1100e-003		81.3797
Worker	0.0586	0.0423	0.4541	1.1500e-003	0.1118	8.9000e-004	0.1127	0.0296	8.2000e-004	0.0305		114.0679	114.0679	3.8900e-003		114.1652
Total	**0.0719**	**0.4065**	**0.5546**	**1.9100e-003**	**0.1310**	**3.5900e-003**	**0.1346**	**0.0352**	**3.4000e-003**	**0.0386**		**195.2949**	**195.2949**	**0.0100**		**195.5450**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8506	25.2288	18.7719	0.0288		1.6066	1.6066		1.5082	1.5082	0.0000	2,810.8008	2,810.8008	0.7012		2,828.3317
Total	**2.8506**	**25.2288**	**18.7719**	**0.0288**		**1.6066**	**1.6066**		**1.5082**	**1.5082**	**0.0000**	**2,810.8008**	**2,810.8008**	**0.7012**		**2,828.3317**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0133	0.3642	0.1005	7.6000e-004	0.0192	2.7000e-003	0.0219	5.5300e-003	2.5800e-003	8.1100e-003		81.2269	81.2269	6.1100e-003		81.3797
Worker	0.0586	0.0423	0.4541	1.1500e-003	0.1118	8.9000e-004	0.1127	0.0296	8.2000e-004	0.0305		114.0679	114.0679	3.8900e-003		114.1652
Total	**0.0719**	**0.4065**	**0.5546**	**1.9100e-003**	**0.1310**	**3.5900e-003**	**0.1346**	**0.0352**	**3.4000e-003**	**0.0386**		**195.2949**	**195.2949**	**0.0100**		**195.5450**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5115	22.7062	18.3139	0.0288		1.3802	1.3802		1.2958	1.2958		2,778.3097	2,778.3097	0.6904		2,795.5700
Total	**2.5115**	**22.7062**	**18.3139**	**0.0288**		**1.3802**	**1.3802**		**1.2958**	**1.2958**		**2,778.3097**	**2,778.3097**	**0.6904**		**2,795.5700**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0121	0.3435	0.0924	7.6000e-004	0.0192	2.3100e-003	0.0215	5.5300e-003	2.2100e-003	7.7400e-003		80.4949	80.4949	5.8900e-003		80.6422
Worker	0.0533	0.0373	0.4054	1.1100e-003	0.1118	8.7000e-004	0.1127	0.0296	8.0000e-004	0.0305		110.4656	110.4656	3.4500e-003		110.5519
Total	**0.0654**	**0.3808**	**0.4978**	**1.8700e-003**	**0.1310**	**3.1800e-003**	**0.1342**	**0.0352**	**3.0100e-003**	**0.0382**		**190.9605**	**190.9605**	**9.3400e-003**		**191.1940**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5115	22.7062	18.3139	0.0288		1.3802	1.3802		1.2958	1.2958	0.0000	2,778.3097	2,778.3097	0.6904		2,795.5700
Total	**2.5115**	**22.7062**	**18.3139**	**0.0288**		**1.3802**	**1.3802**		**1.2958**	**1.2958**	**0.0000**	**2,778.3097**	**2,778.3097**	**0.6904**		**2,795.5700**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0121	0.3435	0.0924	7.6000e-004	0.0192	2.3100e-003	0.0215	5.5300e-003	2.2100e-003	7.7400e-003		80.4949	80.4949	5.8900e-003		80.6422
Worker	0.0533	0.0373	0.4054	1.1100e-003	0.1118	8.7000e-004	0.1127	0.0296	8.0000e-004	0.0305		110.4656	110.4656	3.4500e-003		110.5519
Total	**0.0654**	**0.3808**	**0.4978**	**1.8700e-003**	**0.1310**	**3.1800e-003**	**0.1342**	**0.0352**	**3.0100e-003**	**0.0382**		**190.9605**	**190.9605**	**9.3400e-003**		**191.1940**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.5 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586		2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**		**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0800	0.0560	0.6081	1.6600e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		165.6984	165.6984	5.1800e-003		165.8278
Total	**0.0800**	**0.0560**	**0.6081**	**1.6600e-003**	**0.1677**	**1.3000e-003**	**0.1690**	**0.0445**	**1.2000e-003**	**0.0457**		**165.6984**	**165.6984**	**5.1800e-003**		**165.8278**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.5 Paving - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586	0.0000	2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**	**0.0000**	**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0800	0.0560	0.6081	1.6600e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		165.6984	165.6984	5.1800e-003		165.8278
Total	**0.0800**	**0.0560**	**0.6081**	**1.6600e-003**	**0.1677**	**1.3000e-003**	**0.1690**	**0.0445**	**1.2000e-003**	**0.0457**		**165.6984**	**165.6984**	**5.1800e-003**		**165.8278**

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	15.2051					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717		375.2641	375.2641	0.0317		376.0565
Total	**15.5604**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**		**375.2641**	**375.2641**	**0.0317**		**376.0565**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0107	7.4700e-003	0.0811	2.2000e-004	0.0224	1.7000e-004	0.0225	5.9300e-003	1.6000e-004	6.0900e-003		22.0931	22.0931	6.9000e-004		22.1104
Total	**0.0107**	**7.4700e-003**	**0.0811**	**2.2000e-004**	**0.0224**	**1.7000e-004**	**0.0225**	**5.9300e-003**	**1.6000e-004**	**6.0900e-003**		**22.0931**	**22.0931**	**6.9000e-004**		**22.1104**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.6 Architectural Coating - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	15.2051					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717	0.0000	375.2641	375.2641	0.0317		376.0565
Total	**15.5604**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**	**0.0000**	**375.2641**	**375.2641**	**0.0317**		**376.0565**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0107	7.4700e-003	0.0811	2.2000e-004	0.0224	1.7000e-004	0.0225	5.9300e-003	1.6000e-004	6.0900e-003		22.0931	22.0931	6.9000e-004		22.1104
Total	**0.0107**	**7.4700e-003**	**0.0811**	**2.2000e-004**	**0.0224**	**1.7000e-004**	**0.0225**	**5.9300e-003**	**1.6000e-004**	**6.0900e-003**		**22.0931**	**22.0931**	**6.9000e-004**		**22.1104**

4.0 Operational Detail - Mobile

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.1141	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	4.0109	4.0109	3.9400e-003	0.0000	4.1093
Unmitigated	1.1141	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	4.0109	4.0109	3.9400e-003	0.0000	4.1093

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0833					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9623					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0685	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123		4.0109	4.0109	3.9400e-003		4.1093
Total	**1.1141**	**0.0259**	**2.2386**	**1.2000e-004**		**0.0123**	**0.0123**		**0.0123**	**0.0123**	**0.0000**	**4.0109**	**4.0109**	**3.9400e-003**	**0.0000**	**4.1093**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0833					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9623					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0685	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123		4.0109	4.0109	3.9400e-003		4.1093
Total	**1.1141**	**0.0259**	**2.2386**	**1.2000e-004**		**0.0123**	**0.0123**		**0.0123**	**0.0123**	**0.0000**	**4.0109**	**4.0109**	**3.9400e-003**	**0.0000**	**4.1093**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Brodiaea Residential Current (Construction)

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	27.00	Dwelling Unit	8.77	48,600.00	77

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Project Characteristics -

Land Use -

Construction Phase - Current Proposed Construction Run Only (27 DU)

Off-road Equipment - Current Construction Run Only (27 DU)

Off-road Equipment - Construction Run Only (Current 27 DU)

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Vehicle Trips - Current Construction Run Only (27 DU)

Woodstoves - Operations Run Only.

Energy Use - Operations Run Only.

Consumer Products -

Water And Wastewater - Operations Run Only.

Solid Waste - Operations Run Only.

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblEnergyUse	LightingElect	1,608.84	0.00
tblEnergyUse	NT24E	6,155.97	0.00
tblEnergyUse	NT24NG	6,030.00	0.00
tblEnergyUse	T24E	951.67	0.00
tblEnergyUse	T24NG	24,566.15	0.00
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	22.95	0.00
tblFireplaces	NumberNoFireplace	2.70	0.00

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

tblFireplaces	NumberWood	1.35	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblSolidWaste	SolidWasteGenerationRate	31.57	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	HO_TL	8.70	0.00
tblVehicleTrips	HO_TTP	40.60	0.00
tblVehicleTrips	HS_TL	5.90	0.00
tblVehicleTrips	HS_TTP	19.20	0.00
tblVehicleTrips	HW_TL	14.70	0.00
tblVehicleTrips	HW_TTP	40.20	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	86.00	0.00
tblVehicleTrips	ST_TR	9.91	0.00
tblVehicleTrips	SU_TR	8.62	0.00
tblVehicleTrips	WD_TR	9.52	0.00
tblWater	IndoorWaterUseRate	1,759,158.69	0.00
tblWater	OutdoorWaterUseRate	1,109,034.83	0.00
tblWoodstoves	NumberCatalytic	1.35	0.00
tblWoodstoves	NumberNoncatalytic	1.35	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	4.6597	48.2683	23.3795	0.0402	18.2675	2.5785	20.8460	9.9840	2.3722	12.3563	0.0000	4,051.1072	4,051.1072	1.2003	0.0000	4,081.1152
2019	15.5702	23.0835	18.8462	0.0308	0.1677	1.3834	1.5143	0.0445	1.2988	1.3340	0.0000	2,979.2745	2,979.2745	0.7196	0.0000	2,996.7642
Maximum	**15.5702**	**48.2683**	**23.3795**	**0.0402**	**18.2675**	**2.5785**	**20.8460**	**9.9840**	**2.3722**	**12.3563**	**0.0000**	**4,051.1072**	**4,051.1072**	**1.2003**	**0.0000**	**4,081.1152**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	4.6597	48.2683	23.3795	0.0402	7.2470	2.5785	9.8256	3.9263	2.3722	6.2986	0.0000	4,051.1072	4,051.1072	1.2003	0.0000	4,081.1152
2019	15.5702	23.0835	18.8462	0.0308	0.1677	1.3834	1.5143	0.0445	1.2988	1.3340	0.0000	2,979.2745	2,979.2745	0.7196	0.0000	2,996.7642
Maximum	**15.5702**	**48.2683**	**23.3795**	**0.0402**	**7.2470**	**2.5785**	**9.8256**	**3.9263**	**2.3722**	**6.2986**	**0.0000**	**4,051.1072**	**4,051.1072**	**1.2003**	**0.0000**	**4,081.1152**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**59.78**	**0.00**	**49.29**	**60.40**	**0.00**	**44.25**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.1141	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	4.0109	4.0109	3.9400e-003	0.0000	4.1093
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.1141**	**0.0259**	**2.2386**	**1.2000e-004**	**0.0000**	**0.0123**	**0.0123**	**0.0000**	**0.0123**	**0.0123**	**0.0000**	**4.0109**	**4.0109**	**3.9400e-003**	**0.0000**	**4.1093**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.1141	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	4.0109	4.0109	3.9400e-003	0.0000	4.1093
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.1141**	**0.0259**	**2.2386**	**1.2000e-004**	**0.0000**	**0.0123**	**0.0123**	**0.0000**	**0.0123**	**0.0123**	**0.0000**	**4.0109**	**4.0109**	**3.9400e-003**	**0.0000**	**4.1093**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/28/2018	6/8/2018	5	10	
2	Grading	Grading	6/9/2018	7/6/2018	5	20	
3	Building Construction	Building Construction	7/7/2018	5/24/2019	5	230	
4	Paving	Paving	5/25/2019	6/21/2019	5	20	
5	Architectural Coating	Architectural Coating	6/22/2019	7/19/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 98,415; Residential Outdoor: 32,805; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	8.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	10.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Water Exposed Area

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708		3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**18.0663**	**2.5769**	**20.6432**	**9.9307**	**2.3708**	**12.3014**		**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0970	0.0695	0.9032	2.2100e-003	0.2012	1.6000e-003	0.2028	0.0534	1.4800e-003	0.0548		219.4833	219.4833	7.4800e-003		219.6704
Total	**0.0970**	**0.0695**	**0.9032**	**2.2100e-003**	**0.2012**	**1.6000e-003**	**0.2028**	**0.0534**	**1.4800e-003**	**0.0548**		**219.4833**	**219.4833**	**7.4800e-003**		**219.6704**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.2 Site Preparation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0458	0.0000	7.0458	3.8730	0.0000	3.8730			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708	0.0000	3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**7.0458**	**2.5769**	**9.6228**	**3.8730**	**2.3708**	**6.2437**	**0.0000**	**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0970	0.0695	0.9032	2.2100e-003	0.2012	1.6000e-003	0.2028	0.0534	1.4800e-003	0.0548		219.4833	219.4833	7.4800e-003		219.6704
Total	**0.0970**	**0.0695**	**0.9032**	**2.2100e-003**	**0.2012**	**1.6000e-003**	**0.2028**	**0.0534**	**1.4800e-003**	**0.0548**		**219.4833**	**219.4833**	**7.4800e-003**		**219.6704**

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	2.7733	30.6725	16.5770	0.0297		1.5513	1.5513		1.4272	1.4272		2,988.0216	2,988.0216	0.9302		3,011.2769
Total	**2.7733**	**30.6725**	**16.5770**	**0.0297**	**6.5523**	**1.5513**	**8.1037**	**3.3675**	**1.4272**	**4.7947**		**2,988.0216**	**2,988.0216**	**0.9302**		**3,011.2769**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0808	0.0580	0.7526	1.8400e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2300e-003	0.0457		182.9028	182.9028	6.2400e-003		183.0587
Total	**0.0808**	**0.0580**	**0.7526**	**1.8400e-003**	**0.1677**	**1.3400e-003**	**0.1690**	**0.0445**	**1.2300e-003**	**0.0457**		**182.9028**	**182.9028**	**6.2400e-003**		**183.0587**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.3 Grading - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5554	0.0000	2.5554	1.3133	0.0000	1.3133			0.0000			0.0000
Off-Road	2.7733	30.6725	16.5770	0.0297		1.5513	1.5513		1.4272	1.4272	0.0000	2,988.0216	2,988.0216	0.9302		3,011.2769
Total	**2.7733**	**30.6725**	**16.5770**	**0.0297**	**2.5554**	**1.5513**	**4.1067**	**1.3133**	**1.4272**	**2.7405**	**0.0000**	**2,988.0216**	**2,988.0216**	**0.9302**		**3,011.2769**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0808	0.0580	0.7526	1.8400e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2300e-003	0.0457		182.9028	182.9028	6.2400e-003		183.0587
Total	**0.0808**	**0.0580**	**0.7526**	**1.8400e-003**	**0.1677**	**1.3400e-003**	**0.1690**	**0.0445**	**1.2300e-003**	**0.0457**		**182.9028**	**182.9028**	**6.2400e-003**		**183.0587**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8506	25.2288	18.7719	0.0288		1.6066	1.6066		1.5082	1.5082		2,810.8008	2,810.8008	0.7012		2,828.3317
Total	**2.8506**	**25.2288**	**18.7719**	**0.0288**		**1.6066**	**1.6066**		**1.5082**	**1.5082**		**2,810.8008**	**2,810.8008**	**0.7012**		**2,828.3317**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0128	0.3636	0.0905	7.9000e-004	0.0192	2.6600e-003	0.0219	5.5300e-003	2.5400e-003	8.0700e-003		83.5974	83.5974	5.6900e-003		83.7397
Worker	0.0539	0.0386	0.5018	1.2300e-003	0.1118	8.9000e-004	0.1127	0.0296	8.2000e-004	0.0305		121.9352	121.9352	4.1600e-003		122.0391
Total	**0.0667**	**0.4022**	**0.5923**	**2.0200e-003**	**0.1310**	**3.5500e-003**	**0.1345**	**0.0352**	**3.3600e-003**	**0.0385**		**205.5326**	**205.5326**	**9.8500e-003**		**205.7788**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8506	25.2288	18.7719	0.0288		1.6066	1.6066		1.5082	1.5082	0.0000	2,810.8008	2,810.8008	0.7012		2,828.3317
Total	**2.8506**	**25.2288**	**18.7719**	**0.0288**		**1.6066**	**1.6066**		**1.5082**	**1.5082**	**0.0000**	**2,810.8008**	**2,810.8008**	**0.7012**		**2,828.3317**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0128	0.3636	0.0905	7.9000e-004	0.0192	2.6600e-003	0.0219	5.5300e-003	2.5400e-003	8.0700e-003		83.5974	83.5974	5.6900e-003		83.7397
Worker	0.0539	0.0386	0.5018	1.2300e-003	0.1118	8.9000e-004	0.1127	0.0296	8.2000e-004	0.0305		121.9352	121.9352	4.1600e-003		122.0391
Total	**0.0667**	**0.4022**	**0.5923**	**2.0200e-003**	**0.1310**	**3.5500e-003**	**0.1345**	**0.0352**	**3.3600e-003**	**0.0385**		**205.5326**	**205.5326**	**9.8500e-003**		**205.7788**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5115	22.7062	18.3139	0.0288		1.3802	1.3802		1.2958	1.2958		2,778.3097	2,778.3097	0.6904		2,795.5700
Total	**2.5115**	**22.7062**	**18.3139**	**0.0288**		**1.3802**	**1.3802**		**1.2958**	**1.2958**		**2,778.3097**	**2,778.3097**	**0.6904**		**2,795.5700**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0116	0.3433	0.0830	7.8000e-004	0.0192	2.2700e-003	0.0215	5.5300e-003	2.1800e-003	7.7000e-003		82.8659	82.8659	5.4800e-003		83.0030
Worker	0.0490	0.0341	0.4493	1.1900e-003	0.1118	8.7000e-004	0.1127	0.0296	8.0000e-004	0.0305		118.0989	118.0989	3.6900e-003		118.1912
Total	**0.0605**	**0.3774**	**0.5323**	**1.9700e-003**	**0.1310**	**3.1400e-003**	**0.1341**	**0.0352**	**2.9800e-003**	**0.0382**		**200.9648**	**200.9648**	**9.1700e-003**		**201.1942**

3.4 Building Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5115	22.7062	18.3139	0.0288		1.3802	1.3802		1.2958	1.2958	0.0000	2,778.3097	2,778.3097	0.6904		2,795.5700
Total	**2.5115**	**22.7062**	**18.3139**	**0.0288**		**1.3802**	**1.3802**		**1.2958**	**1.2958**	**0.0000**	**2,778.3097**	**2,778.3097**	**0.6904**		**2,795.5700**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0116	0.3433	0.0830	7.8000e-004	0.0192	2.2700e-003	0.0215	5.5300e-003	2.1800e-003	7.7000e-003		82.8659	82.8659	5.4800e-003		83.0030
Worker	0.0490	0.0341	0.4493	1.1900e-003	0.1118	8.7000e-004	0.1127	0.0296	8.0000e-004	0.0305		118.0989	118.0989	3.6900e-003		118.1912
Total	**0.0605**	**0.3774**	**0.5323**	**1.9700e-003**	**0.1310**	**3.1400e-003**	**0.1341**	**0.0352**	**2.9800e-003**	**0.0382**		**200.9648**	**200.9648**	**9.1700e-003**		**201.1942**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.5 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586		2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**		**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0735	0.0511	0.6740	1.7800e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		177.1484	177.1484	5.5400e-003		177.2869
Total	**0.0735**	**0.0511**	**0.6740**	**1.7800e-003**	**0.1677**	**1.3000e-003**	**0.1690**	**0.0445**	**1.2000e-003**	**0.0457**		**177.1484**	**177.1484**	**5.5400e-003**		**177.2869**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.5 Paving - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586	0.0000	2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**	**0.0000**	**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0735	0.0511	0.6740	1.7800e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		177.1484	177.1484	5.5400e-003		177.2869
Total	**0.0735**	**0.0511**	**0.6740**	**1.7800e-003**	**0.1677**	**1.3000e-003**	**0.1690**	**0.0445**	**1.2000e-003**	**0.0457**		**177.1484**	**177.1484**	**5.5400e-003**		**177.2869**

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	15.2051					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717		375.2641	375.2641	0.0317		376.0565
Total	**15.5604**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**		**375.2641**	**375.2641**	**0.0317**		**376.0565**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	9.7900e-003	6.8200e-003	0.0899	2.4000e-004	0.0224	1.7000e-004	0.0225	5.9300e-003	1.6000e-004	6.0900e-003		23.6198	23.6198	7.4000e-004		23.6383
Total	**9.7900e-003**	**6.8200e-003**	**0.0899**	**2.4000e-004**	**0.0224**	**1.7000e-004**	**0.0225**	**5.9300e-003**	**1.6000e-004**	**6.0900e-003**		**23.6198**	**23.6198**	**7.4000e-004**		**23.6383**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.6 Architectural Coating - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	15.2051					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717	0.0000	375.2641	375.2641	0.0317		376.0565
Total	**15.5604**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**	**0.0000**	**375.2641**	**375.2641**	**0.0317**		**376.0565**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	9.7900e-003	6.8200e-003	0.0899	2.4000e-004	0.0224	1.7000e-004	0.0225	5.9300e-003	1.6000e-004	6.0900e-003		23.6198	23.6198	7.4000e-004		23.6383
Total	**9.7900e-003**	**6.8200e-003**	**0.0899**	**2.4000e-004**	**0.0224**	**1.7000e-004**	**0.0225**	**5.9300e-003**	**1.6000e-004**	**6.0900e-003**		**23.6198**	**23.6198**	**7.4000e-004**		**23.6383**

4.0 Operational Detail - Mobile

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.1141	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	4.0109	4.0109	3.9400e-003	0.0000	4.1093
Unmitigated	1.1141	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	4.0109	4.0109	3.9400e-003	0.0000	4.1093

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0833					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9623					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0685	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123		4.0109	4.0109	3.9400e-003		4.1093
Total	**1.1141**	**0.0259**	**2.2386**	**1.2000e-004**		**0.0123**	**0.0123**		**0.0123**	**0.0123**	**0.0000**	**4.0109**	**4.0109**	**3.9400e-003**	**0.0000**	**4.1093**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0833					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9623					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0685	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123		4.0109	4.0109	3.9400e-003		4.1093
Total	**1.1141**	**0.0259**	**2.2386**	**1.2000e-004**		**0.0123**	**0.0123**		**0.0123**	**0.0123**	**0.0000**	**4.0109**	**4.0109**	**3.9400e-003**	**0.0000**	**4.1093**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Brodiaea Residential Current (Construction)

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	27.00	Dwelling Unit	8.77	48,600.00	77

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Project Characteristics -

Land Use -

Construction Phase - Current Proposed Construction Run Only (27 DU)

Off-road Equipment - Current Construction Run Only (27 DU)

Off-road Equipment - Construction Run Only (Current 27 DU)

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Vehicle Trips - Current Construction Run Only (27 DU)

Woodstoves - Operations Run Only.

Energy Use - Operations Run Only.

Consumer Products -

Water And Wastewater - Operations Run Only.

Solid Waste - Operations Run Only.

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblEnergyUse	LightingElect	1,608.84	0.00
tblEnergyUse	NT24E	6,155.97	0.00
tblEnergyUse	NT24NG	6,030.00	0.00
tblEnergyUse	T24E	951.67	0.00
tblEnergyUse	T24NG	24,566.15	0.00
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	22.95	0.00
tblFireplaces	NumberNoFireplace	2.70	0.00

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

tblFireplaces	NumberWood	1.35	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblSolidWaste	SolidWasteGenerationRate	31.57	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	HO_TL	8.70	0.00
tblVehicleTrips	HO_TTP	40.60	0.00
tblVehicleTrips	HS_TL	5.90	0.00
tblVehicleTrips	HS_TTP	19.20	0.00
tblVehicleTrips	HW_TL	14.70	0.00
tblVehicleTrips	HW_TTP	40.20	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	86.00	0.00
tblVehicleTrips	ST_TR	9.91	0.00
tblVehicleTrips	SU_TR	8.62	0.00
tblVehicleTrips	WD_TR	9.52	0.00
tblWater	IndoorWaterUseRate	1,759,158.69	0.00
tblWater	OutdoorWaterUseRate	1,109,034.83	0.00
tblWoodstoves	NumberCatalytic	1.35	0.00
tblWoodstoves	NumberNoncatalytic	1.35	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2356	2.1643	1.5074	2.4500e-003	0.1666	0.1299	0.2965	0.0862	0.1214	0.2076	0.0000	219.0092	219.0092	0.0546	0.0000	220.3736
2019	0.3047	1.3785	1.1569	1.8800e-003	8.5500e-003	0.0819	0.0905	2.2900e-003	0.0769	0.0792	0.0000	165.8376	165.8376	0.0398	0.0000	166.8332
Maximum	**0.3047**	**2.1643**	**1.5074**	**2.4500e-003**	**0.1666**	**0.1299**	**0.2965**	**0.0862**	**0.1214**	**0.2076**	**0.0000**	**219.0092**	**219.0092**	**0.0546**	**0.0000**	**220.3736**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2356	2.1643	1.5074	2.4500e-003	0.0715	0.1299	0.2014	0.0354	0.1214	0.1568	0.0000	219.0090	219.0090	0.0546	0.0000	220.3733
2019	0.3047	1.3785	1.1569	1.8800e-003	8.5500e-003	0.0819	0.0905	2.2900e-003	0.0769	0.0792	0.0000	165.8375	165.8375	0.0398	0.0000	166.8330
Maximum	**0.3047**	**2.1643**	**1.5074**	**2.4500e-003**	**0.0715**	**0.1299**	**0.2014**	**0.0354**	**0.1214**	**0.1568**	**0.0000**	**219.0090**	**219.0090**	**0.0546**	**0.0000**	**220.3733**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**54.28**	**0.00**	**24.57**	**57.44**	**0.00**	**17.73**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	5-28-2018	8-27-2018	1.0929	1.0929
2	8-28-2018	11-27-2018	0.9382	0.9382
3	11-28-2018	2-27-2019	0.8784	0.8784
4	2-28-2019	5-27-2019	0.8061	0.8061
5	5-28-2019	8-27-2019	0.3304	0.3304
		Highest	1.0929	1.0929

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1994	3.2400e-003	0.2798	1.0000e-005		1.5300e-003	1.5300e-003		1.5300e-003	1.5300e-003	0.0000	0.4548	0.4548	4.5000e-004	0.0000	0.4660
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1994**	**3.2400e-003**	**0.2798**	**1.0000e-005**	**0.0000**	**1.5300e-003**	**1.5300e-003**	**0.0000**	**1.5300e-003**	**1.5300e-003**	**0.0000**	**0.4548**	**0.4548**	**4.5000e-004**	**0.0000**	**0.4660**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1994	3.2400e-003	0.2798	1.0000e-005		1.5300e-003	1.5300e-003		1.5300e-003	1.5300e-003	0.0000	0.4548	0.4548	4.5000e-004	0.0000	0.4660
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1994**	**3.2400e-003**	**0.2798**	**1.0000e-005**	**0.0000**	**1.5300e-003**	**1.5300e-003**	**0.0000**	**1.5300e-003**	**1.5300e-003**	**0.0000**	**0.4548**	**0.4548**	**4.5000e-004**	**0.0000**	**0.4660**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/28/2018	6/8/2018	5	10	
2	Grading	Grading	6/9/2018	7/6/2018	5	20	
3	Building Construction	Building Construction	7/7/2018	5/24/2019	5	230	
4	Paving	Paving	5/25/2019	6/21/2019	5	20	
5	Architectural Coating	Architectural Coating	6/22/2019	7/19/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 98,415; Residential Outdoor: 32,805; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	8.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	10.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Water Exposed Area

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3800	17.3800	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0903**	**0.0129**	**0.1032**	**0.0497**	**0.0119**	**0.0615**	**0.0000**	**17.3800**	**17.3800**	**5.4100e-003**	**0.0000**	**17.5152**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.9000e-004	4.2000e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9473	0.9473	3.0000e-005	0.0000	0.9481
Total	**4.8000e-004**	**3.9000e-004**	**4.2000e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**1.0000e-003**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.9473**	**0.9473**	**3.0000e-005**	**0.0000**	**0.9481**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.2 Site Preparation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0352	0.0000	0.0352	0.0194	0.0000	0.0194	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3799	17.3799	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0352**	**0.0129**	**0.0481**	**0.0194**	**0.0119**	**0.0312**	**0.0000**	**17.3799**	**17.3799**	**5.4100e-003**	**0.0000**	**17.5152**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.9000e-004	4.2000e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9473	0.9473	3.0000e-005	0.0000	0.9481
Total	**4.8000e-004**	**3.9000e-004**	**4.2000e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**1.0000e-003**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.9473**	**0.9473**	**3.0000e-005**	**0.0000**	**0.9481**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0655	0.0000	0.0655	0.0337	0.0000	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0277	0.3067	0.1658	3.0000e-004		0.0155	0.0155		0.0143	0.0143	0.0000	27.1069	27.1069	8.4400e-003	0.0000	27.3178
Total	**0.0277**	**0.3067**	**0.1658**	**3.0000e-004**	**0.0655**	**0.0155**	**0.0810**	**0.0337**	**0.0143**	**0.0479**	**0.0000**	**27.1069**	**27.1069**	**8.4400e-003**	**0.0000**	**27.3178**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-004	6.5000e-004	7.0000e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5788	1.5788	5.0000e-005	0.0000	1.5801
Total	**8.0000e-004**	**6.5000e-004**	**7.0000e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5788**	**1.5788**	**5.0000e-005**	**0.0000**	**1.5801**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.3 Grading - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0256	0.0000	0.0256	0.0131	0.0000	0.0131	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0277	0.3067	0.1658	3.0000e-004		0.0155	0.0155		0.0143	0.0143	0.0000	27.1068	27.1068	8.4400e-003	0.0000	27.3178
Total	**0.0277**	**0.3067**	**0.1658**	**3.0000e-004**	**0.0256**	**0.0155**	**0.0411**	**0.0131**	**0.0143**	**0.0274**	**0.0000**	**27.1068**	**27.1068**	**8.4400e-003**	**0.0000**	**27.3178**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-004	6.5000e-004	7.0000e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5788	1.5788	5.0000e-005	0.0000	1.5801
Total	**8.0000e-004**	**6.5000e-004**	**7.0000e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5788**	**1.5788**	**5.0000e-005**	**0.0000**	**1.5801**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1796	1.5894	1.1826	1.8100e-003		0.1012	0.1012		0.0950	0.0950	0.0000	160.6447	160.6447	0.0401	0.0000	161.6466
Total	**0.1796**	**1.5894**	**1.1826**	**1.8100e-003**		**0.1012**	**0.1012**		**0.0950**	**0.0950**	**0.0000**	**160.6447**	**160.6447**	**0.0401**	**0.0000**	**161.6466**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.2000e-004	0.0234	6.0200e-003	5.0000e-005	1.1900e-003	1.7000e-004	1.3600e-003	3.4000e-004	1.6000e-004	5.0000e-004	0.0000	4.7209	4.7209	3.4000e-004	0.0000	4.7293
Worker	3.3500e-003	2.7400e-003	0.0294	7.0000e-005	6.9100e-003	6.0000e-005	6.9700e-003	1.8400e-003	5.0000e-005	1.8900e-003	0.0000	6.6308	6.6308	2.3000e-004	0.0000	6.6364
Total	**4.1700e-003**	**0.0261**	**0.0354**	**1.2000e-004**	**8.1000e-003**	**2.3000e-004**	**8.3300e-003**	**2.1800e-003**	**2.1000e-004**	**2.3900e-003**	**0.0000**	**11.3517**	**11.3517**	**5.7000e-004**	**0.0000**	**11.3657**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1796	1.5894	1.1826	1.8100e-003		0.1012	0.1012		0.0950	0.0950	0.0000	160.6445	160.6445	0.0401	0.0000	161.6464
Total	**0.1796**	**1.5894**	**1.1826**	**1.8100e-003**		**0.1012**	**0.1012**		**0.0950**	**0.0950**	**0.0000**	**160.6445**	**160.6445**	**0.0401**	**0.0000**	**161.6464**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.2000e-004	0.0234	6.0200e-003	5.0000e-005	1.1900e-003	1.7000e-004	1.3600e-003	3.4000e-004	1.6000e-004	5.0000e-004	0.0000	4.7209	4.7209	3.4000e-004	0.0000	4.7293
Worker	3.3500e-003	2.7400e-003	0.0294	7.0000e-005	6.9100e-003	6.0000e-005	6.9700e-003	1.8400e-003	5.0000e-005	1.8900e-003	0.0000	6.6308	6.6308	2.3000e-004	0.0000	6.6364
Total	**4.1700e-003**	**0.0261**	**0.0354**	**1.2000e-004**	**8.1000e-003**	**2.3000e-004**	**8.3300e-003**	**2.1800e-003**	**2.1000e-004**	**2.3900e-003**	**0.0000**	**11.3517**	**11.3517**	**5.7000e-004**	**0.0000**	**11.3657**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1306	1.1807	0.9523	1.5000e-003		0.0718	0.0718		0.0674	0.0674	0.0000	131.0629	131.0629	0.0326	0.0000	131.8771
Total	**0.1306**	**1.1807**	**0.9523**	**1.5000e-003**		**0.0718**	**0.0718**		**0.0674**	**0.0674**	**0.0000**	**131.0629**	**131.0629**	**0.0326**	**0.0000**	**131.8771**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.1000e-004	0.0182	4.5600e-003	4.0000e-005	9.8000e-004	1.2000e-004	1.1000e-003	2.8000e-004	1.1000e-004	4.0000e-004	0.0000	3.8621	3.8621	2.7000e-004	0.0000	3.8688
Worker	2.5100e-003	1.9900e-003	0.0217	6.0000e-005	5.7100e-003	5.0000e-005	5.7500e-003	1.5200e-003	4.0000e-005	1.5600e-003	0.0000	5.3003	5.3003	1.7000e-004	0.0000	5.3045
Total	**3.1200e-003**	**0.0202**	**0.0262**	**1.0000e-004**	**6.6900e-003**	**1.7000e-004**	**6.8500e-003**	**1.8000e-003**	**1.5000e-004**	**1.9600e-003**	**0.0000**	**9.1624**	**9.1624**	**4.4000e-004**	**0.0000**	**9.1733**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.4 Building Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1306	1.1807	0.9523	1.5000e-003		0.0718	0.0718		0.0674	0.0674	0.0000	131.0627	131.0627	0.0326	0.0000	131.8770
Total	**0.1306**	**1.1807**	**0.9523**	**1.5000e-003**		**0.0718**	**0.0718**		**0.0674**	**0.0674**	**0.0000**	**131.0627**	**131.0627**	**0.0326**	**0.0000**	**131.8770**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.1000e-004	0.0182	4.5600e-003	4.0000e-005	9.8000e-004	1.2000e-004	1.1000e-003	2.8000e-004	1.1000e-004	4.0000e-004	0.0000	3.8621	3.8621	2.7000e-004	0.0000	3.8688
Worker	2.5100e-003	1.9900e-003	0.0217	6.0000e-005	5.7100e-003	5.0000e-005	5.7500e-003	1.5200e-003	4.0000e-005	1.5600e-003	0.0000	5.3003	5.3003	1.7000e-004	0.0000	5.3045
Total	**3.1200e-003**	**0.0202**	**0.0262**	**1.0000e-004**	**6.6900e-003**	**1.7000e-004**	**6.8500e-003**	**1.8000e-003**	**1.5000e-004**	**1.9600e-003**	**0.0000**	**9.1624**	**9.1624**	**4.4000e-004**	**0.0000**	**9.1733**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.5 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1524	0.1467	2.3000e-004		8.2500e-003	8.2500e-003		7.5900e-003	7.5900e-003	0.0000	20.4752	20.4752	6.4800e-003	0.0000	20.6371
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0145**	**0.1524**	**0.1467**	**2.3000e-004**		**8.2500e-003**	**8.2500e-003**		**7.5900e-003**	**7.5900e-003**	**0.0000**	**20.4752**	**20.4752**	**6.4800e-003**	**0.0000**	**20.6371**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	5.8000e-004	6.2500e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5289	1.5289	5.0000e-005	0.0000	1.5301
Total	**7.2000e-004**	**5.8000e-004**	**6.2500e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5289**	**1.5289**	**5.0000e-005**	**0.0000**	**1.5301**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.5 Paving - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1524	0.1467	2.3000e-004		8.2500e-003	8.2500e-003		7.5900e-003	7.5900e-003	0.0000	20.4752	20.4752	6.4800e-003	0.0000	20.6371
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0145**	**0.1524**	**0.1467**	**2.3000e-004**		**8.2500e-003**	**8.2500e-003**		**7.5900e-003**	**7.5900e-003**	**0.0000**	**20.4752**	**20.4752**	**6.4800e-003**	**0.0000**	**20.6371**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	5.8000e-004	6.2500e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5289	1.5289	5.0000e-005	0.0000	1.5301
Total	**7.2000e-004**	**5.8000e-004**	**6.2500e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5289**	**1.5289**	**5.0000e-005**	**0.0000**	**1.5301**

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1521					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.5500e-003	0.0245	0.0246	4.0000e-005		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003	0.0000	3.4043	3.4043	2.9000e-004	0.0000	3.4115
Total	**0.1556**	**0.0245**	**0.0246**	**4.0000e-005**		**1.7200e-003**	**1.7200e-003**		**1.7200e-003**	**1.7200e-003**	**0.0000**	**3.4043**	**3.4043**	**2.9000e-004**	**0.0000**	**3.4115**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	8.0000e-005	8.3000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.2039	0.2039	1.0000e-005	0.0000	0.2040
Total	**1.0000e-004**	**8.0000e-005**	**8.3000e-004**	**0.0000**	**2.2000e-004**	**0.0000**	**2.2000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.2039**	**0.2039**	**1.0000e-005**	**0.0000**	**0.2040**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.6 Architectural Coating - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1521					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.5500e-003	0.0245	0.0246	4.0000e-005		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003	0.0000	3.4043	3.4043	2.9000e-004	0.0000	3.4115
Total	**0.1556**	**0.0245**	**0.0246**	**4.0000e-005**		**1.7200e-003**	**1.7200e-003**		**1.7200e-003**	**1.7200e-003**	**0.0000**	**3.4043**	**3.4043**	**2.9000e-004**	**0.0000**	**3.4115**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	8.0000e-005	8.3000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.2039	0.2039	1.0000e-005	0.0000	0.2040
Total	**1.0000e-004**	**8.0000e-005**	**8.3000e-004**	**0.0000**	**2.2000e-004**	**0.0000**	**2.2000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.2039**	**0.2039**	**1.0000e-005**	**0.0000**	**0.2040**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1994	3.2400e-003	0.2798	1.0000e-005		1.5300e-003	1.5300e-003		1.5300e-003	1.5300e-003	0.0000	0.4548	0.4548	4.5000e-004	0.0000	0.4660
Unmitigated	0.1994	3.2400e-003	0.2798	1.0000e-005		1.5300e-003	1.5300e-003		1.5300e-003	1.5300e-003	0.0000	0.4548	0.4548	4.5000e-004	0.0000	0.4660

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0152					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1756					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	8.5700e-003	3.2400e-003	0.2798	1.0000e-005		1.5300e-003	1.5300e-003		1.5300e-003	1.5300e-003	0.0000	0.4548	0.4548	4.5000e-004	0.0000	0.4660
Total	**0.1994**	**3.2400e-003**	**0.2798**	**1.0000e-005**		**1.5300e-003**	**1.5300e-003**		**1.5300e-003**	**1.5300e-003**	**0.0000**	**0.4548**	**0.4548**	**4.5000e-004**	**0.0000**	**0.4660**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0152					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1756					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	8.5700e-003	3.2400e-003	0.2798	1.0000e-005		1.5300e-003	1.5300e-003		1.5300e-003	1.5300e-003	0.0000	0.4548	0.4548	4.5000e-004	0.0000	0.4660
Total	**0.1994**	**3.2400e-003**	**0.2798**	**1.0000e-005**		**1.5300e-003**	**1.5300e-003**		**1.5300e-003**	**1.5300e-003**	**0.0000**	**0.4548**	**0.4548**	**4.5000e-004**	**0.0000**	**0.4660**

7.0 Water Detail

7.1 Mitigation Measures Water

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

ATTACHMENT C:

CALEEMOD AIR QUALITY PROPOSED PROJECT (OPERATIONAL) EMISSIONS MODEL OUTPUTS

Brodiaea Residential Proposed (Operation)

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	47.00	Dwelling Unit	15.26	84,600.00	134

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Operations Run Only

Off-road Equipment - Operations Run Only

Trips and VMT - Operations Run Only

Vehicle Trips - Trip Rates from Trip Generation by Urban Crossroads 2018

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	1.00
tblConstructionPhase	PhaseEndDate	6/22/2018	5/28/2018
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	14.2551	1.0203	27.7987	0.0612		3.6116	3.6116		3.6116	3.6116	440.2452	852.9820	1,293.2271	1.3198	0.0299	1,335.1253
Energy	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
Mobile	0.9840	5.2794	13.0028	0.0422	3.3844	0.0498	3.4342	0.9057	0.0469	0.9525		4,281.0811	4,281.0811	0.2340		4,286.9310
Total	**15.2815**	**6.6628**	**40.9560**	**0.1057**	**3.3844**	**3.6908**	**7.0751**	**0.9057**	**3.6878**	**4.5935**	**440.2452**	**5,597.5663**	**6,037.8115**	**1.5626**	**0.0384**	**6,088.3140**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	14.2551	1.0203	27.7987	0.0612		3.6116	3.6116		3.6116	3.6116	440.2452	852.9820	1,293.2271	1.3198	0.0299	1,335.1253
Energy	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
Mobile	0.9840	5.2794	13.0028	0.0422	3.3844	0.0498	3.4342	0.9057	0.0469	0.9525		4,281.0811	4,281.0811	0.2340		4,286.9310
Total	**15.2815**	**6.6628**	**40.9560**	**0.1057**	**3.3844**	**3.6908**	**7.0751**	**0.9057**	**3.6878**	**4.5935**	**440.2452**	**5,597.5663**	**6,037.8115**	**1.5626**	**0.0384**	**6,088.3140**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/28/2018	5/28/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Excavators	0	8.00	158	0.38
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.2 Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.9840	5.2794	13.0028	0.0422	3.3844	0.0498	3.4342	0.9057	0.0469	0.9525		4,281.0811	4,281.0811	0.2340		4,286.9310
Unmitigated	0.9840	5.2794	13.0028	0.0422	3.3844	0.0498	3.4342	0.9057	0.0469	0.9525		4,281.0811	4,281.0811	0.2340		4,286.9310

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	443.68	465.77	405.14	1,508,092	1,508,092
Total	443.68	465.77	405.14	1,508,092	1,508,092

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
NaturalGas Unmitigated	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	3939.78	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
Total		**0.0425**	**0.3631**	**0.1545**	**2.3200e-003**		**0.0294**	**0.0294**		**0.0294**	**0.0294**		**463.5033**	**463.5033**	**8.8800e-003**	**8.5000e-003**	**466.2577**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	3.93978	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
Total		**0.0425**	**0.3631**	**0.1545**	**2.3200e-003**		**0.0294**	**0.0294**		**0.0294**	**0.0294**		**463.5033**	**463.5033**	**8.8800e-003**	**8.5000e-003**	**466.2577**

6.0 Area Detail

6.1 Mitigation Measures Area

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	14.2551	1.0203	27.7987	0.0612		3.6116	3.6116		3.6116	3.6116	440.2452	852.9820	1,293.2271	1.3198	0.0299	1,335.1253
Unmitigated	14.2551	1.0203	27.7987	0.0612		3.6116	3.6116		3.6116	3.6116	440.2452	852.9820	1,293.2271	1.3198	0.0299	1,335.1253

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1450					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6751					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	12.3157	0.9752	23.9019	0.0610		3.5903	3.5903		3.5903	3.5903	440.2452	846.0000	1,286.2452	1.3129	0.0299	1,327.9720
Landscaping	0.1193	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214		6.9820	6.9820	6.8500e-003		7.1533
Total	**14.2551**	**1.0203**	**27.7987**	**0.0612**		**3.6116**	**3.6116**		**3.6116**	**3.6116**	**440.2452**	**852.9820**	**1,293.2271**	**1.3198**	**0.0299**	**1,335.1253**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1450					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6751					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	12.3157	0.9752	23.9019	0.0610		3.5903	3.5903		3.5903	3.5903	440.2452	846.0000	1,286.2452	1.3129	0.0299	1,327.9720
Landscaping	0.1193	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214		6.9820	6.9820	6.8500e-003		7.1533
Total	**14.2551**	**1.0203**	**27.7987**	**0.0612**		**3.6116**	**3.6116**		**3.6116**	**3.6116**	**440.2452**	**852.9820**	**1,293.2271**	**1.3198**	**0.0299**	**1,335.1253**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Brodiaea Residential Proposed (Operation)

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	47.00	Dwelling Unit	15.26	84,600.00	134

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Operations Run Only

Off-road Equipment - Operations Run Only

Trips and VMT - Operations Run Only

Vehicle Trips - Trip Rates from Trip Generation by Urban Crossroads 2018

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	1.00
tblConstructionPhase	PhaseEndDate	6/22/2018	5/28/2018
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	14.2551	1.0203	27.7987	0.0612		3.6116	3.6116		3.6116	3.6116	440.2452	852.9820	1,293.2271	1.3198	0.0299	1,335.1253
Energy	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
Mobile	1.0301	5.1489	13.8717	0.0446	3.3844	0.0495	3.4338	0.9057	0.0466	0.9522		4,523.0086	4,523.0086	0.2351		4,528.8854
Total	**15.3277**	**6.5323**	**41.8249**	**0.1081**	**3.3844**	**3.6904**	**7.0748**	**0.9057**	**3.6875**	**4.5932**	**440.2452**	**5,839.4939**	**6,279.7390**	**1.5637**	**0.0384**	**6,330.2684**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	14.2551	1.0203	27.7987	0.0612		3.6116	3.6116		3.6116	3.6116	440.2452	852.9820	1,293.2271	1.3198	0.0299	1,335.1253
Energy	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
Mobile	1.0301	5.1489	13.8717	0.0446	3.3844	0.0495	3.4338	0.9057	0.0466	0.9522		4,523.0086	4,523.0086	0.2351		4,528.8854
Total	**15.3277**	**6.5323**	**41.8249**	**0.1081**	**3.3844**	**3.6904**	**7.0748**	**0.9057**	**3.6875**	**4.5932**	**440.2452**	**5,839.4939**	**6,279.7390**	**1.5637**	**0.0384**	**6,330.2684**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/28/2018	5/28/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Excavators	0	8.00	158	0.38
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.2 Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0301	5.1489	13.8717	0.0446	3.3844	0.0495	3.4338	0.9057	0.0466	0.9522		4,523.0086	4,523.0086	0.2351		4,528.8854
Unmitigated	1.0301	5.1489	13.8717	0.0446	3.3844	0.0495	3.4338	0.9057	0.0466	0.9522		4,523.0086	4,523.0086	0.2351		4,528.8854

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	443.68	465.77	405.14	1,508,092	1,508,092
Total	443.68	465.77	405.14	1,508,092	1,508,092

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
NaturalGas Unmitigated	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	3939.78	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
Total		**0.0425**	**0.3631**	**0.1545**	**2.3200e-003**		**0.0294**	**0.0294**		**0.0294**	**0.0294**		**463.5033**	**463.5033**	**8.8800e-003**	**8.5000e-003**	**466.2577**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	3.93978	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
Total		**0.0425**	**0.3631**	**0.1545**	**2.3200e-003**		**0.0294**	**0.0294**		**0.0294**	**0.0294**		**463.5033**	**463.5033**	**8.8800e-003**	**8.5000e-003**	**466.2577**

6.0 Area Detail

6.1 Mitigation Measures Area

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	14.2551	1.0203	27.7987	0.0612		3.6116	3.6116		3.6116	3.6116	440.2452	852.9820	1,293.2271	1.3198	0.0299	1,335.1253
Unmitigated	14.2551	1.0203	27.7987	0.0612		3.6116	3.6116		3.6116	3.6116	440.2452	852.9820	1,293.2271	1.3198	0.0299	1,335.1253

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1450					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6751					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	12.3157	0.9752	23.9019	0.0610		3.5903	3.5903		3.5903	3.5903	440.2452	846.0000	1,286.2452	1.3129	0.0299	1,327.9720
Landscaping	0.1193	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214		6.9820	6.9820	6.8500e-003		7.1533
Total	**14.2551**	**1.0203**	**27.7987**	**0.0612**		**3.6116**	**3.6116**		**3.6116**	**3.6116**	**440.2452**	**852.9820**	**1,293.2271**	**1.3198**	**0.0299**	**1,335.1253**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1450					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6751					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	12.3157	0.9752	23.9019	0.0610		3.5903	3.5903		3.5903	3.5903	440.2452	846.0000	1,286.2452	1.3129	0.0299	1,327.9720
Landscaping	0.1193	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214		6.9820	6.9820	6.8500e-003		7.1533
Total	**14.2551**	**1.0203**	**27.7987**	**0.0612**		**3.6116**	**3.6116**		**3.6116**	**3.6116**	**440.2452**	**852.9820**	**1,293.2271**	**1.3198**	**0.0299**	**1,335.1253**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

ATTACHMENT D:

CALEEMOD AIR QUALITY CURRENTLY ADOPTED LAND USE (OPERATIONAL) MISSIONS MODEL OUTPUTS

Brodieaea Residential Current (Operations)

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	27.00	Dwelling Unit	8.77	48,600.00	77

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Current Operations Run Only

Construction Phase - Current Operations Run Only (27 DU)

Off-road Equipment - Operations Run Only (27 DU)

Vehicle Trips - Trip Rates from Trip Generator by Urban Crossroads 2018

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	1.00
tblConstructionPhase	PhaseEndDate	6/22/2018	5/28/2018

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.8069	38.3860	22.9852	0.0405	0.1677	1.9399	2.1076	0.0445	1.8061	1.8505	0.0000	4,042.8684	4,042.8684	1.0726	0.0000	4,069.6822
Maximum	**3.8069**	**38.3860**	**22.9852**	**0.0405**	**0.1677**	**1.9399**	**2.1076**	**0.0445**	**1.8061**	**1.8505**	**0.0000**	**4,042.8684**	**4,042.8684**	**1.0726**	**0.0000**	**4,069.6822**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.8069	38.3860	22.9852	0.0405	0.1677	1.9399	2.1076	0.0445	1.8061	1.8505	0.0000	4,042.8684	4,042.8684	1.0726	0.0000	4,069.6822
Maximum	**3.8069**	**38.3860**	**22.9852**	**0.0405**	**0.1677**	**1.9399**	**2.1076**	**0.0445**	**1.8061**	**1.8505**	**0.0000**	**4,042.8684**	**4,042.8684**	**1.0726**	**0.0000**	**4,069.6822**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.1891	0.5861	15.9695	0.0352		2.0748	2.0748		2.0748	2.0748	252.9068	490.0109	742.9177	0.7582	0.0172	766.9869
Energy	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
Mobile	0.5653	3.0329	7.4697	0.0242	1.9442	0.0286	1.9728	0.5203	0.0269	0.5472		2,459.3444	2,459.3444	0.1344		2,462.7050
Total	**8.7788**	**3.8276**	**23.5279**	**0.0607**	**1.9442**	**2.1202**	**4.0644**	**0.5203**	**2.1185**	**2.6388**	**252.9068**	**3,215.6232**	**3,468.5300**	**0.8977**	**0.0221**	**3,497.5421**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.1891	0.5861	15.9695	0.0352		2.0748	2.0748		2.0748	2.0748	252.9068	490.0109	742.9177	0.7582	0.0172	766.9869
Energy	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
Mobile	0.5653	3.0329	7.4697	0.0242	1.9442	0.0286	1.9728	0.5203	0.0269	0.5472		2,459.3444	2,459.3444	0.1344		2,462.7050
Total	**8.7788**	**3.8276**	**23.5279**	**0.0607**	**1.9442**	**2.1202**	**4.0644**	**0.5203**	**2.1185**	**2.6388**	**252.9068**	**3,215.6232**	**3,468.5300**	**0.8977**	**0.0221**	**3,497.5421**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/28/2018	5/28/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7190	38.3225	22.3040	0.0388		1.9386	1.9386		1.8048	1.8048		3,871.7665	3,871.7665	1.0667		3,898.4344
Total	**3.7190**	**38.3225**	**22.3040**	**0.0388**		**1.9386**	**1.9386**		**1.8048**	**1.8048**		**3,871.7665**	**3,871.7665**	**1.0667**		**3,898.4344**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0879	0.0635	0.6811	1.7200e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2300e-003	0.0457		171.1019	171.1019	5.8400e-003		171.2479
Total	**0.0879**	**0.0635**	**0.6811**	**1.7200e-003**	**0.1677**	**1.3400e-003**	**0.1690**	**0.0445**	**1.2300e-003**	**0.0457**		**171.1019**	**171.1019**	**5.8400e-003**		**171.2479**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.2 Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7190	38.3225	22.3040	0.0388		1.9386	1.9386		1.8048	1.8048	0.0000	3,871.7665	3,871.7665	1.0667		3,898.4344
Total	**3.7190**	**38.3225**	**22.3040**	**0.0388**		**1.9386**	**1.9386**		**1.8048**	**1.8048**	**0.0000**	**3,871.7665**	**3,871.7665**	**1.0667**		**3,898.4344**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0879	0.0635	0.6811	1.7200e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2300e-003	0.0457		171.1019	171.1019	5.8400e-003		171.2479
Total	**0.0879**	**0.0635**	**0.6811**	**1.7200e-003**	**0.1677**	**1.3400e-003**	**0.1690**	**0.0445**	**1.2300e-003**	**0.0457**		**171.1019**	**171.1019**	**5.8400e-003**		**171.2479**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.5653	3.0329	7.4697	0.0242	1.9442	0.0286	1.9728	0.5203	0.0269	0.5472		2,459.3444	2,459.3444	0.1344		2,462.7050
Unmitigated	0.5653	3.0329	7.4697	0.0242	1.9442	0.0286	1.9728	0.5203	0.0269	0.5472		2,459.3444	2,459.3444	0.1344		2,462.7050

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	257.04	267.57	232.74	871,623	871,623
Total	257.04	267.57	232.74	871,623	871,623

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
NaturalGas Unmitigated	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	2263.28	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
Total		**0.0244**	**0.2086**	**0.0888**	**1.3300e-003**		**0.0169**	**0.0169**		**0.0169**	**0.0169**		**266.2679**	**266.2679**	**5.1000e-003**	**4.8800e-003**	**267.8502**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	2.26328	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
Total		**0.0244**	**0.2086**	**0.0888**	**1.3300e-003**		**0.0169**	**0.0169**		**0.0169**	**0.0169**		**266.2679**	**266.2679**	**5.1000e-003**	**4.8800e-003**	**267.8502**

6.0 Area Detail

6.1 Mitigation Measures Area

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.1891	0.5861	15.9695	0.0352		2.0748	2.0748		2.0748	2.0748	252.9068	490.0109	742.9177	0.7582	0.0172	766.9869
Unmitigated	8.1891	0.5861	15.9695	0.0352		2.0748	2.0748		2.0748	2.0748	252.9068	490.0109	742.9177	0.7582	0.0172	766.9869

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0833					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9623					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	7.0750	0.5602	13.7309	0.0350		2.0625	2.0625		2.0625	2.0625	252.9068	486.0000	738.9068	0.7542	0.0172	762.8775
Landscaping	0.0685	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123		4.0109	4.0109	3.9400e-003		4.1093
Total	**8.1891**	**0.5861**	**15.9695**	**0.0352**		**2.0748**	**2.0748**		**2.0748**	**2.0748**	**252.9068**	**490.0109**	**742.9177**	**0.7582**	**0.0172**	**766.9869**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0833					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9623					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	7.0750	0.5602	13.7309	0.0350		2.0625	2.0625		2.0625	2.0625	252.9068	486.0000	738.9068	0.7542	0.0172	762.8775
Landscaping	0.0685	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123		4.0109	4.0109	3.9400e-003		4.1093
Total	**8.1891**	**0.5861**	**15.9695**	**0.0352**		**2.0748**	**2.0748**		**2.0748**	**2.0748**	**252.9068**	**490.0109**	**742.9177**	**0.7582**	**0.0172**	**766.9869**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Brodieaea Residential Current (Operations)

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	27.00	Dwelling Unit	8.77	48,600.00	77

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Current Operations Run Only

Construction Phase - Current Operations Run Only (27 DU)

Off-road Equipment - Operations Run Only (27 DU)

Vehicle Trips - Trip Rates from Trip Generator by Urban Crossroads 2018

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	1.00
tblConstructionPhase	PhaseEndDate	6/22/2018	5/28/2018

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.7998	38.3805	23.0567	0.0407	0.1677	1.9399	2.1076	0.0445	1.8061	1.8505	0.0000	4,054.6693	4,054.6693	1.0730	0.0000	4,081.4931
Maximum	**3.7998**	**38.3805**	**23.0567**	**0.0407**	**0.1677**	**1.9399**	**2.1076**	**0.0445**	**1.8061**	**1.8505**	**0.0000**	**4,054.6693**	**4,054.6693**	**1.0730**	**0.0000**	**4,081.4931**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.7998	38.3805	23.0567	0.0407	0.1677	1.9399	2.1076	0.0445	1.8061	1.8505	0.0000	4,054.6693	4,054.6693	1.0730	0.0000	4,081.4930
Maximum	**3.7998**	**38.3805**	**23.0567**	**0.0407**	**0.1677**	**1.9399**	**2.1076**	**0.0445**	**1.8061**	**1.8505**	**0.0000**	**4,054.6693**	**4,054.6693**	**1.0730**	**0.0000**	**4,081.4930**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Brodieaea Residential Current (Operations) - South Coast AQMD Air District, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.1891	0.5861	15.9695	0.0352		2.0748	2.0748		2.0748	2.0748	252.9068	490.0109	742.9177	0.7582	0.0172	766.9869
Energy	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
Mobile	0.5918	2.9579	7.9688	0.0256	1.9442	0.0284	1.9726	0.5203	0.0267	0.5470		2,598.3241	2,598.3241	0.1350		2,601.7001
Total	**8.8053**	**3.7526**	**24.0271**	**0.0621**	**1.9442**	**2.1200**	**4.0642**	**0.5203**	**2.1184**	**2.6386**	**252.9068**	**3,354.6028**	**3,607.5096**	**0.8983**	**0.0221**	**3,636.5372**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.1891	0.5861	15.9695	0.0352		2.0748	2.0748		2.0748	2.0748	252.9068	490.0109	742.9177	0.7582	0.0172	766.9869
Energy	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
Mobile	0.5918	2.9579	7.9688	0.0256	1.9442	0.0284	1.9726	0.5203	0.0267	0.5470		2,598.3241	2,598.3241	0.1350		2,601.7001
Total	**8.8053**	**3.7526**	**24.0271**	**0.0621**	**1.9442**	**2.1200**	**4.0642**	**0.5203**	**2.1184**	**2.6386**	**252.9068**	**3,354.6028**	**3,607.5096**	**0.8983**	**0.0221**	**3,636.5372**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/28/2018	5/28/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7190	38.3225	22.3040	0.0388		1.9386	1.9386		1.8048	1.8048		3,871.7665	3,871.7665	1.0667		3,898.4344
Total	**3.7190**	**38.3225**	**22.3040**	**0.0388**		**1.9386**	**1.9386**		**1.8048**	**1.8048**		**3,871.7665**	**3,871.7665**	**1.0667**		**3,898.4344**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0808	0.0580	0.7526	1.8400e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2300e-003	0.0457		182.9028	182.9028	6.2400e-003		183.0587
Total	**0.0808**	**0.0580**	**0.7526**	**1.8400e-003**	**0.1677**	**1.3400e-003**	**0.1690**	**0.0445**	**1.2300e-003**	**0.0457**		**182.9028**	**182.9028**	**6.2400e-003**		**183.0587**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.2 Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7190	38.3225	22.3040	0.0388		1.9386	1.9386		1.8048	1.8048	0.0000	3,871.7665	3,871.7665	1.0667		3,898.4344
Total	**3.7190**	**38.3225**	**22.3040**	**0.0388**		**1.9386**	**1.9386**		**1.8048**	**1.8048**	**0.0000**	**3,871.7665**	**3,871.7665**	**1.0667**		**3,898.4344**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0808	0.0580	0.7526	1.8400e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2300e-003	0.0457		182.9028	182.9028	6.2400e-003		183.0587
Total	**0.0808**	**0.0580**	**0.7526**	**1.8400e-003**	**0.1677**	**1.3400e-003**	**0.1690**	**0.0445**	**1.2300e-003**	**0.0457**		**182.9028**	**182.9028**	**6.2400e-003**		**183.0587**

4.0 Operational Detail - Mobile

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.5918	2.9579	7.9688	0.0256	1.9442	0.0284	1.9726	0.5203	0.0267	0.5470		2,598.3241	2,598.3241	0.1350		2,601.7001
Unmitigated	0.5918	2.9579	7.9688	0.0256	1.9442	0.0284	1.9726	0.5203	0.0267	0.5470		2,598.3241	2,598.3241	0.1350		2,601.7001

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	257.04	267.57	232.74	871,623	871,623
Total	257.04	267.57	232.74	871,623	871,623

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
NaturalGas Unmitigated	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	2263.28	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
Total		**0.0244**	**0.2086**	**0.0888**	**1.3300e-003**		**0.0169**	**0.0169**		**0.0169**	**0.0169**		**266.2679**	**266.2679**	**5.1000e-003**	**4.8800e-003**	**267.8502**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	2.26328	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
Total		**0.0244**	**0.2086**	**0.0888**	**1.3300e-003**		**0.0169**	**0.0169**		**0.0169**	**0.0169**		**266.2679**	**266.2679**	**5.1000e-003**	**4.8800e-003**	**267.8502**

6.0 Area Detail

6.1 Mitigation Measures Area

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.1891	0.5861	15.9695	0.0352		2.0748	2.0748		2.0748	2.0748	252.9068	490.0109	742.9177	0.7582	0.0172	766.9869
Unmitigated	8.1891	0.5861	15.9695	0.0352		2.0748	2.0748		2.0748	2.0748	252.9068	490.0109	742.9177	0.7582	0.0172	766.9869

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0833					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9623					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	7.0750	0.5602	13.7309	0.0350		2.0625	2.0625		2.0625	2.0625	252.9068	486.0000	738.9068	0.7542	0.0172	762.8775
Landscaping	0.0685	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123		4.0109	4.0109	3.9400e-003		4.1093
Total	**8.1891**	**0.5861**	**15.9695**	**0.0352**		**2.0748**	**2.0748**		**2.0748**	**2.0748**	**252.9068**	**490.0109**	**742.9177**	**0.7582**	**0.0172**	**766.9869**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0833					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9623					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	7.0750	0.5602	13.7309	0.0350		2.0625	2.0625		2.0625	2.0625	252.9068	486.0000	738.9068	0.7542	0.0172	762.8775
Landscaping	0.0685	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123		4.0109	4.0109	3.9400e-003		4.1093
Total	**8.1891**	**0.5861**	**15.9695**	**0.0352**		**2.0748**	**2.0748**		**2.0748**	**2.0748**	**252.9068**	**490.0109**	**742.9177**	**0.7582**	**0.0172**	**766.9869**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

ATTACHMENT E:

CALEEMOD PROPOSED PROJECT GREENHOUSE GAS EMISSIONS MODEL OUTPUTS

Brodiaea Residential Proposed (Operation)

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	47.00	Dwelling Unit	15.26	84,600.00	134

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Operations Run Only

Off-road Equipment - Operations Run Only

Trips and VMT - Operations Run Only

Vehicle Trips - Trip Rates from Trip Generation by Urban Crossroads 2018

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	1.00
tblConstructionPhase	PhaseEndDate	6/22/2018	5/28/2018
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.5010	0.0178	0.7859	7.9000e-004		0.0476	0.0476		0.0476	0.0476	4.9923	10.3852	15.3775	0.0157	3.4000e-004	15.8701
Energy	7.7500e-003	0.0663	0.0282	4.2000e-004		5.3600e-003	5.3600e-003		5.3600e-003	5.3600e-003	0.0000	207.2693	207.2693	6.8600e-003	2.5200e-003	208.1923
Mobile	0.1661	0.9272	2.2783	7.3700e-003	0.5731	8.5400e-003	0.5816	0.1536	8.0400e-003	0.1616	0.0000	679.5040	679.5040	0.0364	0.0000	680.4147
Waste						0.0000	0.0000		0.0000	0.0000	11.1523	0.0000	11.1523	0.6591	0.0000	27.6294
Water						0.0000	0.0000		0.0000	0.0000	0.9715	19.5384	20.5099	0.1006	2.5200e-003	23.7765
Total	**0.6749**	**1.0113**	**3.0923**	**8.5800e-003**	**0.5731**	**0.0615**	**0.6345**	**0.1536**	**0.0610**	**0.2145**	**17.1161**	**916.6969**	**933.8130**	**0.8186**	**5.3800e-003**	**955.8830**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.5010	0.0178	0.7859	7.9000e-004		0.0476	0.0476		0.0476	0.0476	4.9923	10.3852	15.3775	0.0157	3.4000e-004	15.8701
Energy	7.7500e-003	0.0663	0.0282	4.2000e-004		5.3600e-003	5.3600e-003		5.3600e-003	5.3600e-003	0.0000	207.2693	207.2693	6.8600e-003	2.5200e-003	208.1923
Mobile	0.1661	0.9272	2.2783	7.3700e-003	0.5731	8.5400e-003	0.5816	0.1536	8.0400e-003	0.1616	0.0000	679.5040	679.5040	0.0364	0.0000	680.4147
Waste						0.0000	0.0000		0.0000	0.0000	11.1523	0.0000	11.1523	0.6591	0.0000	27.6294
Water						0.0000	0.0000		0.0000	0.0000	0.9715	19.5384	20.5099	0.1006	2.5200e-003	23.7765
Total	**0.6749**	**1.0113**	**3.0923**	**8.5800e-003**	**0.5731**	**0.0615**	**0.6345**	**0.1536**	**0.0610**	**0.2145**	**17.1161**	**916.6969**	**933.8130**	**0.8186**	**5.3800e-003**	**955.8830**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/28/2018	5/28/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Excavators	0	8.00	158	0.38
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.2 Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1661	0.9272	2.2783	7.3700e-003	0.5731	8.5400e-003	0.5816	0.1536	8.0400e-003	0.1616	0.0000	679.5040	679.5040	0.0364	0.0000	680.4147
Unmitigated	0.1661	0.9272	2.2783	7.3700e-003	0.5731	8.5400e-003	0.5816	0.1536	8.0400e-003	0.1616	0.0000	679.5040	679.5040	0.0364	0.0000	680.4147

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	443.68	465.77	405.14	1,508,092	1,508,092
Total	443.68	465.77	405.14	1,508,092	1,508,092

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	130.5311	130.5311	5.3900e-003	1.1100e-003	130.9981
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	130.5311	130.5311	5.3900e-003	1.1100e-003	130.9981
NaturalGas Mitigated	7.7500e-003	0.0663	0.0282	4.2000e-004		5.3600e-003	5.3600e-003		5.3600e-003	5.3600e-003	0.0000	76.7382	76.7382	1.4700e-003	1.4100e-003	77.1942
NaturalGas Unmitigated	7.7500e-003	0.0663	0.0282	4.2000e-004		5.3600e-003	5.3600e-003		5.3600e-003	5.3600e-003	0.0000	76.7382	76.7382	1.4700e-003	1.4100e-003	77.1942

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	1.43802e+006	7.7500e-003	0.0663	0.0282	4.2000e-004		5.3600e-003	5.3600e-003		5.3600e-003	5.3600e-003	0.0000	76.7382	76.7382	1.4700e-003	1.4100e-003	77.1942
Total		**7.7500e-003**	**0.0663**	**0.0282**	**4.2000e-004**		**5.3600e-003**	**5.3600e-003**		**5.3600e-003**	**5.3600e-003**	**0.0000**	**76.7382**	**76.7382**	**1.4700e-003**	**1.4100e-003**	**77.1942**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	1.43802e+006	7.7500e-003	0.0663	0.0282	4.2000e-004		5.3600e-003	5.3600e-003		5.3600e-003	5.3600e-003	0.0000	76.7382	76.7382	1.4700e-003	1.4100e-003	77.1942
Total		**7.7500e-003**	**0.0663**	**0.0282**	**4.2000e-004**		**5.3600e-003**	**5.3600e-003**		**5.3600e-003**	**5.3600e-003**	**0.0000**	**76.7382**	**76.7382**	**1.4700e-003**	**1.4100e-003**	**77.1942**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	409675	130.5311	5.3900e-003	1.1100e-003	130.9981
Total		**130.5311**	**5.3900e-003**	**1.1100e-003**	**130.9981**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	409675	130.5311	5.3900e-003	1.1100e-003	130.9981
Total		**130.5311**	**5.3900e-003**	**1.1100e-003**	**130.9981**

6.0 Area Detail

6.1 Mitigation Measures Area

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5010	0.0178	0.7859	7.9000e-004		0.0476	0.0476		0.0476	0.0476	4.9923	10.3852	15.3775	0.0157	3.4000e-004	15.8701
Unmitigated	0.5010	0.0178	0.7859	7.9000e-004		0.0476	0.0476		0.0476	0.0476	4.9923	10.3852	15.3775	0.0157	3.4000e-004	15.8701

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0265					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3057					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.1540	0.0122	0.2988	7.6000e-004		0.0449	0.0449		0.0449	0.0449	4.9923	9.5935	14.5858	0.0149	3.4000e-004	15.0590
Landscaping	0.0149	5.6400e-003	0.4871	3.0000e-005		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	0.7917	0.7917	7.8000e-004	0.0000	0.8112
Total	**0.5010**	**0.0178**	**0.7859**	**7.9000e-004**		**0.0476**	**0.0476**		**0.0476**	**0.0476**	**4.9923**	**10.3852**	**15.3775**	**0.0157**	**3.4000e-004**	**15.8701**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0265					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3057					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.1540	0.0122	0.2988	7.6000e-004		0.0449	0.0449		0.0449	0.0449	4.9923	9.5935	14.5858	0.0149	3.4000e-004	15.0590
Landscaping	0.0149	5.6400e-003	0.4871	3.0000e-005		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	0.7917	0.7917	7.8000e-004	0.0000	0.8112
Total	**0.5010**	**0.0178**	**0.7859**	**7.9000e-004**		**0.0476**	**0.0476**		**0.0476**	**0.0476**	**4.9923**	**10.3852**	**15.3775**	**0.0157**	**3.4000e-004**	**15.8701**

7.0 Water Detail

7.1 Mitigation Measures Water

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	20.5099	0.1006	2.5200e-003	23.7765
Unmitigated	20.5099	0.1006	2.5200e-003	23.7765

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	3.06224 / 1.93054	20.5099	0.1006	2.5200e-003	23.7765
Total		**20.5099**	**0.1006**	**2.5200e-003**	**23.7765**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	3.06224 / 1.93054	20.5099	0.1006	2.5200e-003	23.7765
Total		**20.5099**	**0.1006**	**2.5200e-003**	**23.7765**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	11.1523	0.6591	0.0000	27.6294
Unmitigated	11.1523	0.6591	0.0000	27.6294

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	54.94	11.1523	0.6591	0.0000	27.6294
Total		**11.1523**	**0.6591**	**0.0000**	**27.6294**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	54.94	11.1523	0.6591	0.0000	27.6294
Total		**11.1523**	**0.6591**	**0.0000**	**27.6294**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

ATTACHMENT F:

CALEEMOD CURRENTLY ADOPTED LAND USE GREENHOUSE GAS EMISSIONS MODEL OUTPUTS

Brodieaea Residential Current (Operations)

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	27.00	Dwelling Unit	8.77	48,600.00	77

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Current Operations Run Only

Construction Phase - Current Operations Run Only (27 DU)

Off-road Equipment - Operations Run Only (27 DU)

Vehicle Trips - Trip Rates from Trip Generator by Urban Crossroads 2018

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	1.00
tblConstructionPhase	PhaseEndDate	6/22/2018	5/28/2018

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	1.9000e-003	0.0192	0.0115	2.0000e-005	8.0000e-005	9.7000e-004	1.0500e-003	2.0000e-005	9.0000e-004	9.2000e-004	0.0000	1.8351	1.8351	4.9000e-004	0.0000	1.8473
Maximum	**1.9000e-003**	**0.0192**	**0.0115**	**2.0000e-005**	**8.0000e-005**	**9.7000e-004**	**1.0500e-003**	**2.0000e-005**	**9.0000e-004**	**9.2000e-004**	**0.0000**	**1.8351**	**1.8351**	**4.9000e-004**	**0.0000**	**1.8473**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	1.9000e-003	0.0192	0.0115	2.0000e-005	8.0000e-005	9.7000e-004	1.0500e-003	2.0000e-005	9.0000e-004	9.2000e-004	0.0000	1.8351	1.8351	4.9000e-004	0.0000	1.8473
Maximum	**1.9000e-003**	**0.0192**	**0.0115**	**2.0000e-005**	**8.0000e-005**	**9.7000e-004**	**1.0500e-003**	**2.0000e-005**	**9.0000e-004**	**9.2000e-004**	**0.0000**	**1.8351**	**1.8351**	**4.9000e-004**	**0.0000**	**1.8473**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**5-28-2018**	**8-27-2018**	0.0151	0.0151
		Highest	0.0151	0.0151

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.2878	0.0102	0.4515	4.5000e-004		0.0273	0.0273		0.0273	0.0273	2.8679	5.9660	8.8339	9.0000e-003	1.9000e-004	9.1169
Energy	4.4500e-003	0.0381	0.0162	2.4000e-004		3.0800e-003	3.0800e-003		3.0800e-003	3.0800e-003	0.0000	119.0696	119.0696	3.9400e-003	1.4500e-003	119.5998
Mobile	0.0960	0.5359	1.3168	4.2600e-003	0.3312	4.9400e-003	0.3361	0.0888	4.6500e-003	0.0934	0.0000	392.7289	392.7289	0.0211	0.0000	393.2552
Waste						0.0000	0.0000		0.0000	0.0000	6.4084	0.0000	6.4084	0.3787	0.0000	15.8766
Water						0.0000	0.0000		0.0000	0.0000	0.5581	11.2242	11.7823	0.0578	1.4500e-003	13.6589
Total	**0.3883**	**0.5842**	**1.7844**	**4.9500e-003**	**0.3312**	**0.0353**	**0.3665**	**0.0888**	**0.0350**	**0.1238**	**9.8344**	**528.9886**	**538.8231**	**0.4705**	**3.0900e-003**	**551.5074**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.2878	0.0102	0.4515	4.5000e-004		0.0273	0.0273		0.0273	0.0273	2.8679	5.9660	8.8339	9.0000e-003	1.9000e-004	9.1169
Energy	4.4500e-003	0.0381	0.0162	2.4000e-004		3.0800e-003	3.0800e-003		3.0800e-003	3.0800e-003	0.0000	119.0696	119.0696	3.9400e-003	1.4500e-003	119.5998
Mobile	0.0960	0.5359	1.3168	4.2600e-003	0.3312	4.9400e-003	0.3361	0.0888	4.6500e-003	0.0934	0.0000	392.7289	392.7289	0.0211	0.0000	393.2552
Waste						0.0000	0.0000		0.0000	0.0000	6.4084	0.0000	6.4084	0.3787	0.0000	15.8766
Water						0.0000	0.0000		0.0000	0.0000	0.5581	11.2242	11.7823	0.0578	1.4500e-003	13.6589
Total	**0.3883**	**0.5842**	**1.7844**	**4.9500e-003**	**0.3312**	**0.0353**	**0.3665**	**0.0888**	**0.0350**	**0.1238**	**9.8344**	**528.9886**	**538.8231**	**0.4705**	**3.0900e-003**	**551.5074**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/28/2018	5/28/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.8600e-003	0.0192	0.0112	2.0000e-005		9.7000e-004	9.7000e-004		9.0000e-004	9.0000e-004	0.0000	1.7562	1.7562	4.8000e-004	0.0000	1.7683
Total	**1.8600e-003**	**0.0192**	**0.0112**	**2.0000e-005**		**9.7000e-004**	**9.7000e-004**		**9.0000e-004**	**9.0000e-004**	**0.0000**	**1.7562**	**1.7562**	**4.8000e-004**	**0.0000**	**1.7683**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0789	0.0789	0.0000	0.0000	0.0790
Total	**4.0000e-005**	**3.0000e-005**	**3.5000e-004**	**0.0000**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0789**	**0.0789**	**0.0000**	**0.0000**	**0.0790**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

3.2 Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.8600e-003	0.0192	0.0112	2.0000e-005		9.7000e-004	9.7000e-004		9.0000e-004	9.0000e-004	0.0000	1.7562	1.7562	4.8000e-004	0.0000	1.7683
Total	**1.8600e-003**	**0.0192**	**0.0112**	**2.0000e-005**		**9.7000e-004**	**9.7000e-004**		**9.0000e-004**	**9.0000e-004**	**0.0000**	**1.7562**	**1.7562**	**4.8000e-004**	**0.0000**	**1.7683**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0789	0.0789	0.0000	0.0000	0.0790
Total	**4.0000e-005**	**3.0000e-005**	**3.5000e-004**	**0.0000**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0789**	**0.0789**	**0.0000**	**0.0000**	**0.0790**

4.0 Operational Detail - Mobile

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0960	0.5359	1.3168	4.2600e-003	0.3312	4.9400e-003	0.3361	0.0888	4.6500e-003	0.0934	0.0000	392.7289	392.7289	0.0211	0.0000	393.2552
Unmitigated	0.0960	0.5359	1.3168	4.2600e-003	0.3312	4.9400e-003	0.3361	0.0888	4.6500e-003	0.0934	0.0000	392.7289	392.7289	0.0211	0.0000	393.2552

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	257.04	267.57	232.74	871,623	871,623
Total	257.04	267.57	232.74	871,623	871,623

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	74.9860	74.9860	3.1000e-003	6.4000e-004	75.2542
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	74.9860	74.9860	3.1000e-003	6.4000e-004	75.2542
NaturalGas Mitigated	4.4500e-003	0.0381	0.0162	2.4000e-004		3.0800e-003	3.0800e-003		3.0800e-003	3.0800e-003	0.0000	44.0836	44.0836	8.4000e-004	8.1000e-004	44.3456
NaturalGas Unmitigated	4.4500e-003	0.0381	0.0162	2.4000e-004		3.0800e-003	3.0800e-003		3.0800e-003	3.0800e-003	0.0000	44.0836	44.0836	8.4000e-004	8.1000e-004	44.3456

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	826096	4.4500e-003	0.0381	0.0162	2.4000e-004		3.0800e-003	3.0800e-003		3.0800e-003	3.0800e-003	0.0000	44.0836	44.0836	8.4000e-004	8.1000e-004	44.3456
Total		**4.4500e-003**	**0.0381**	**0.0162**	**2.4000e-004**		**3.0800e-003**	**3.0800e-003**		**3.0800e-003**	**3.0800e-003**	**0.0000**	**44.0836**	**44.0836**	**8.4000e-004**	**8.1000e-004**	**44.3456**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	826096	4.4500e-003	0.0381	0.0162	2.4000e-004		3.0800e-003	3.0800e-003		3.0800e-003	3.0800e-003	0.0000	44.0836	44.0836	8.4000e-004	8.1000e-004	44.3456
Total		**4.4500e-003**	**0.0381**	**0.0162**	**2.4000e-004**		**3.0800e-003**	**3.0800e-003**		**3.0800e-003**	**3.0800e-003**	**0.0000**	**44.0836**	**44.0836**	**8.4000e-004**	**8.1000e-004**	**44.3456**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	235345	74.9860	3.1000e-003	6.4000e-004	75.2542
Total		**74.9860**	**3.1000e-003**	**6.4000e-004**	**75.2542**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	235345	74.9860	3.1000e-003	6.4000e-004	75.2542
Total		**74.9860**	**3.1000e-003**	**6.4000e-004**	**75.2542**

6.0 Area Detail

6.1 Mitigation Measures Area

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2878	0.0102	0.4515	4.5000e-004		0.0273	0.0273		0.0273	0.0273	2.8679	5.9660	8.8339	9.0000e-003	1.9000e-004	9.1169
Unmitigated	0.2878	0.0102	0.4515	4.5000e-004		0.0273	0.0273		0.0273	0.0273	2.8679	5.9660	8.8339	9.0000e-003	1.9000e-004	9.1169

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0152					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1756					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0884	7.0000e-003	0.1716	4.4000e-004		0.0258	0.0258		0.0258	0.0258	2.8679	5.5112	8.3791	8.5500e-003	1.9000e-004	8.6509
Landscaping	8.5700e-003	3.2400e-003	0.2798	1.0000e-005		1.5300e-003	1.5300e-003		1.5300e-003	1.5300e-003	0.0000	0.4548	0.4548	4.5000e-004	0.0000	0.4660
Total	**0.2878**	**0.0102**	**0.4515**	**4.5000e-004**		**0.0273**	**0.0273**		**0.0273**	**0.0273**	**2.8679**	**5.9660**	**8.8339**	**9.0000e-003**	**1.9000e-004**	**9.1169**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0152					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1756					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0884	7.0000e-003	0.1716	4.4000e-004		0.0258	0.0258		0.0258	0.0258	2.8679	5.5112	8.3791	8.5500e-003	1.9000e-004	8.6509
Landscaping	8.5700e-003	3.2400e-003	0.2798	1.0000e-005		1.5300e-003	1.5300e-003		1.5300e-003	1.5300e-003	0.0000	0.4548	0.4548	4.5000e-004	0.0000	0.4660
Total	**0.2878**	**0.0102**	**0.4515**	**4.5000e-004**		**0.0273**	**0.0273**		**0.0273**	**0.0273**	**2.8679**	**5.9660**	**8.8339**	**9.0000e-003**	**1.9000e-004**	**9.1169**

7.0 Water Detail

7.1 Mitigation Measures Water

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	11.7823	0.0578	1.4500e-003	13.6589
Unmitigated	11.7823	0.0578	1.4500e-003	13.6589

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	1.75916 / 1.10903	11.7823	0.0578	1.4500e-003	13.6589
Total		**11.7823**	**0.0578**	**1.4500e-003**	**13.6589**

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	1.75916 / 1.10903	11.7823	0.0578	1.4500e-003	13.6589
Total		**11.7823**	**0.0578**	**1.4500e-003**	**13.6589**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	6.4084	0.3787	0.0000	15.8766
Unmitigated	6.4084	0.3787	0.0000	15.8766

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	31.57	6.4084	0.3787	0.0000	15.8766
Total		**6.4084**	**0.3787**	**0.0000**	**15.8766**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	31.57	6.4084	0.3787	0.0000	15.8766
Total		**6.4084**	**0.3787**	**0.0000**	**15.8766**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Air Quality GHG Memo (9-12-18) (3321 : Centerpointe Commerce Center, and

URBAN CROSSROADS

260 E. Baker St. | Suite 200 | Costa Mesa, CA 92626 | (949) 660-1994
urbanxroads.com

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

September 12, 2018

c/o Mr. Daniel C. Pocius
Frontier Communities
8300 Utica Avenue, Suite 300
Rancho Cucamonga, CA 91730

SUBJECT: BRODIAEA (TTM 37544) FOCUSED AIR QUALITY AND GREENHOUSE GAS ASSESSMENT

Dear Mr. Daniel C. Pocius:

Urban Crossroads, Inc. is pleased to submit this Air Quality and Greenhouse Gas Assessment for the proposed Brodiaea (TTM 37544) ("Project"), which is located in the City of Moreno Valley.

INTRODUCTION

This focused Air Quality and Greenhouse Gas Assessment has been completed to determine impacts associated with the development of the Brodiaea (TTM 37544) ("Project"). This study briefly describes the proposed Project and includes an analysis of the potential Project-related construction air quality and greenhouse gas impacts.

PROJECT DESCRIPTION

The Project is approximately 9.0 acres and is currently zoned for R-3 development (3 dwelling unit per acre or 27 units) and is proposing a zone change to R-10 (up to 10 dwelling units per acre). The Project is proposing development of up to 47 single-family detached residential dwelling units.

PROJECT-RELATED AIR QUALITY AND GREENHOUSE GAS EMISSIONS CALCULATIONS

Land uses such as the Project affect air quality through construction-source and operational-source emissions.

On October 2, 2013, the SCAQMD in conjunction with the California Air Pollution Control Officers Association (CAPCOA) released the latest version of the California Emissions Estimator Model™ (CalEEMod™) v2013.2.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (NO_x, VOC, PM_{10}, $PM_{2.5}$, SO_x, and CO) and greenhouse gas (GHG) emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (1). Air Quality outputs from the model runs are provided in Attachments "A", "B", "C", and "D" and greenhouse gas outputs from the model runs are provided in Attachments "E" and "F".

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

AIR QUALITY

PROPOSED PROJECT: CONSTRUCTION EMISSIONS

The estimated maximum daily regional construction emissions without mitigation are summarized on Table 1. Detailed construction model outputs are presented in Attachment "A". Please note that credit for Rule 403 has been taken. As indicated at Table 1, emissions resulting from the Project construction would not exceed the applicable SCAQMD regional thresholds of significance for any criteria pollutant. As such, no mitigation is required.

TABLE 1: PROPOSED PROJECT CONSTRUCTION EMISSIONS SUMMARY

Year	Emissions (pounds per day)					
	VOC	NOx	CO	SO_x	PM_{10}	$PM_{2.5}$
2018	5.21	59.61	36.00	0.06	9.83	6.30
2019	26.84	23.34	19.16	0.03	1.61	1.36
Maximum Daily Emissions	**26.84**	**59.61**	**36.00**	**0.06**	**9.83**	**6.30**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

CURRENTLY ADOPTED LAND USE: CONSTRUCTION EMISSIONS

The estimated maximum daily regional construction emissions for the currently adopted land use are summarized on Table 2. Detailed construction model outputs are presented in Attachment "B". As indicated at Table 2, emissions resulting from the construction of the currently adopted land use would not exceed the applicable SCAQMD regional thresholds of significance for any criteria pollutant.

TABLE 2: CURRENTLY ADOPTED LAND USE CONSTRUCTION EMISSIONS SUMMARY

Year	Emissions (pounds per day)					
	VOC	NOx	CO	SO_x	PM_{10}	$PM_{2.5}$
2018	4.66	48.27	23.38	0.04	20.85	12.36
2019	15.57	23.08	18.85	0.031	1.51	1.33
Maximum Daily Emissions	**15.57**	**48.27**	**23.38**	**0.04**	**20.85**	**12.36**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

COMPARISON OF PROPOSED PROJECT TO THE CURRENTLY ADOPTED LAND USE

As summarized on Table 3, the proposed Project is anticipated to generate more emissions of VOCs, NO_X, CO, and SO_X as compared to the emissions from the currently adopted land use. However, since Project-related emissions do not have the potential to not exceed the applicable SCAQMD regional thresholds, the Project-related emissions are considered less than significant.

TABLE 3: PROPOSED PROJECT CONSTRUCTION EMISSIONS VS CURRENTLY ADOPTED LAND USE CONSTRUCTION EMISSIONS

Year	Emissions (pounds per day)					
	VOC	**NOx**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Proposed Project	26.84	59.61	36.00	0.06	9.83	6.30
Currently Adopted Land Use	15.57	48.27	23.38	0.04	20.85	12.36
Variance (Proposed – Current)	**11.27**	**11.34**	**12.62**	**0.02**	**-11.02**	**-6.06**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

OPERATIONAL EMISSIONS

Operational activities associated with the Project will result in emissions of CO, VOCs, NO_x, SO_x, PM_{10}, and $PM_{2.5}$. Operational related emissions are expected from the following primary sources: area source emissions, energy source emissions, and mobile source emissions.

Project mobile source air quality impacts are dependent on both overall daily vehicle trip generation and the effect of the Project on peak hour traffic volumes and traffic operations in the vicinity of the Project. The Project-related operational air quality impacts are derived primarily from vehicle trips generated by the Project. Trip characteristics available from the report, *Brodiaea (TTM 37544) Trip Generation Evaluation* (Urban Crossroads, Inc. 2018) were utilized in this analysis (2).

The estimated operational-source emissions for the proposed Project and the currently adopted land use are summarized and compared on Table 4. Detailed operational model outputs are presented in Attachment "C" and "D". As shown, the proposed Project would result in slightly more emissions VOCs, NO_x, SO_x, PM_{10}, and $PM_{2.5}$ emissions as compared to the currently adopted land uses. However, since the variance in emissions is nominal and project-related emissions do not exceed the applicable SCAQMD regional thresholds, the Project-related emissions are considered less than significant.

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 4: PROPOSED PROJECT OPERATIONAL EMISSIONS VS CURRENTLY ADOPTED LAND USE OPERATIONAL EMISSIONS

Operational Activities – Summer Scenario	Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Proposed Project	15.33	6.53	41.82	0.11	7.07	4.59
Currently Adopted Land Use	8.81	3.75	24.03	0.06	4.06	3.64
Variance (Proposed – Current)	**6.52**	**2.78**	**17.79**	**0.05**	**3.01**	**0.95**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
Operational Activities – Winter Scenario	**Emissions (pounds per day)**					
	VOC	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Proposed Project	15.28	6.66	40.96	0.11	7.03	4.59
Currently Adopted Land Use	8.78	3.83	24.34	0.06	4.06	2.12
Variance (Proposed – Current)	**6.50**	**2.83**	**16.62**	**0.05**	**2.97**	**2.47**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

GREENHOUSE GAS

CONSTRUCTION AND OPERATIONAL EMISSIONS

Construction activities associated with the proposed Project will result in emissions of CO_2 and CH_4 from construction activities. For the construction phase Project emissions, GHGs are quantified and amortized over the life of the Project. To amortize the emissions over the life of the Project, the SCAQMD recommends calculating the total greenhouse gas emissions for the construction activities, dividing it by a 30-year project life then adding that number to the annual operational phase GHG emissions. As such, construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions.

As previously noted, the site area for the proposed Project and the currently approved land use are generally consistent. As such, construction-source greenhouse gas emissions associated with development of the proposed Project are expected to be similar to and no more than what would occur if the currently approved land use were constructed. As such, no additional impacts would occur.

Operational activities associated with the proposed Project will result in emissions of CO_2, CH_4, and N_2O from the following primary sources: area source emissions, energy source emissions, mobile source emissions, solid waste, and water supply, treatment, and distribution.

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

PROPOSED PROJECT: GREENHOUSE GAS EMISSIONS

The annual GHG emissions associated with the construction and operation of the proposed Project are estimated to be 974.56 $MTCO_2e$ per year as summarized in Table 5. Detailed construction and operational model outputs are presented in Attachment "A" and "E". As shown, the proposed Project would not exceed the 3,000 $MTCO_2e$ threshold. As such, the proposed Project would result in a less than significant impact with respect to GHG emissions no mitigation is required.

TABLE 5: PROPOSED PROJECT GREENHOUSE GAS EMISSIONS

Emission Source	Emissions (metric tons per year)			
	CO_2	CH_4	N_2O	Total CO_2E
Annual construction-related emissions amortized over 30 years	18.56	0.00	0.00	18.68
Area	15.38	0.02	0.00	15.87
Energy	207.27	0.01	0.00	208.19
Mobile Sources	679.50	0.04	0.00	680.41
Waste	11.15	0.66	0.00	27.63
Water Usage	20.51	0.10	0.00	23.78
Total CO_2E (All Sources)	**974.56**			
Screening Threshold (CO_2E)	**3,000**			
Threshold Exceeded?	**NO**			

CURRENTLY ADOPTED LAND USE: GREENHOUSE GAS EMISSIONS

The annual GHG emissions associated with the construction and operation of the proposed Project are estimated to be 564.41 $MTCO_2e$ per year as summarized in Table 6. Detailed construction and operational model outputs are presented in Attachment "B" and "F". As shown, the proposed Project would not exceed the 3,000 $MTCO_2e$ threshold. As such, the proposed Project would result in a less than significant impact with respect to GHG emissions no mitigation is required.

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 6: CURRENTLY ADOPTED LAND USE GREENHOUSE GAS EMISSIONS

Emission Source	Emissions (metric tons per year)			
	CO_2	CH_4	N_2O	Total CO_2E
Annual construction-related emissions amortized over 30 years	12.83	0.00	0.00	12.91
Area	8.83	0.01	0.00	9.12
Energy	119.07	0.00	0.00	119.60
Mobile Sources	392.73	0.02	0.00	393.26
Waste	6.41	0.38	0.00	15.88
Water Usage	11.78	0.06	0.00	13.66
Total CO_2E (All Sources)	**564.41**			
Screening Threshold (CO_2E)	**3,000**			
Threshold Exceeded?	**NO**			

COMPARISON OF PROPOSED PROJECT TO THE CURRENTLY ADOPTED LAND USE

The annual net GHG emissions associated with the proposed Project are estimated to be 947.56 $MTCO_2e$ per year and 564.43 $MTCO_2$ for the currently adopted land use, as summarized in Table 7. Although the proposed Project has the potential to result in more emissions compared to emissions expected from the currently adopted land use, the difference is nominal. As such, the proposed Project would result in a less than significant impact with respect to GHG emissions.

TABLE 7: GREENHOUSE GAS EMISSIONS SUMMARY PROPOSED PROJECT VS CURRENTLY APPROVED LAND USE

Emission Source	Emissions (metric tons per year)			
	CO_2	CH_4	N_2O	Total CO_2E
Proposed Project	952.37	0.83	0.00	974.56
Currently Approved Land Use	551.65	0.47	0.00	564.43
Variance Total CO_2E (All Sources)	**410.15**			

If you have any questions, please contact me directly at (949) 336-5987.

Respectfully submitted,

URBAN CROSSROADS, INC.

Haseeb Qureshi,
Senior Associate

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

REFERENCES

1. **South Coast Air Quality Management District.** California Emissions Estimator Model. [Online] 2013. [Cited: November 13, 2013.] http://www.caleemod.com/.

2. **Urban Crossroads, Inc.** *Brodiaea (TTM 37544) Trip Generation Evaluation.* 2018.

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

ATTACHMENT A:

CALEEMOD AIR QUALITY PROPOSED PROJECT (CONSTRUCTION) EMISSIONS MODEL OUTPUTS

Brodiaea Residential Proposed (Construction-Unmitigated)

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	47.00	Dwelling Unit	15.26	84,600.00	134

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Project Characteristics -

Land Use -

Construction Phase -

Off-road Equipment - Hours based on 8 hour work day

Off-road Equipment -

Off-road Equipment - hours based on 8 hour work day

Vehicle Trips - Construction run only

Woodstoves - Construction run only

Energy Use - Construction run only

Water And Wastewater - Construction run only

Solid Waste - Construction run only

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	PhaseEndDate	12/6/2019	11/8/2019
tblConstructionPhase	PhaseEndDate	10/11/2019	9/13/2019
tblConstructionPhase	PhaseEndDate	8/17/2018	7/20/2018
tblConstructionPhase	PhaseEndDate	11/8/2019	10/11/2019
tblConstructionPhase	PhaseEndDate	7/6/2018	6/8/2018
tblConstructionPhase	PhaseStartDate	11/9/2019	10/12/2019
tblConstructionPhase	PhaseStartDate	8/18/2018	7/21/2018
tblConstructionPhase	PhaseStartDate	7/7/2018	6/9/2018
tblConstructionPhase	PhaseStartDate	10/12/2019	9/14/2019
tblConstructionPhase	PhaseStartDate	6/23/2018	5/28/2018
tblEnergyUse	LightingElect	1,608.84	0.00
tblEnergyUse	NT24E	6,155.97	0.00
tblEnergyUse	NT24NG	6,030.00	0.00

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

tblEnergyUse	T24E	951.67	0.00
tblEnergyUse	T24NG	24,566.15	0.00
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	39.95	0.00
tblFireplaces	NumberNoFireplace	4.70	0.00
tblFireplaces	NumberWood	2.35	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblSolidWaste	SolidWasteGenerationRate	54.94	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	HO_TL	8.70	0.00
tblVehicleTrips	HO_TTP	40.60	0.00
tblVehicleTrips	HS_TL	5.90	0.00
tblVehicleTrips	HS_TTP	19.20	0.00
tblVehicleTrips	HW_TL	14.70	0.00
tblVehicleTrips	HW_TTP	40.20	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	86.00	0.00
tblVehicleTrips	ST_TR	9.91	0.00
tblVehicleTrips	SU_TR	8.62	0.00
tblVehicleTrips	WD_TR	9.52	0.00
tblWater	IndoorWaterUseRate	3,062,239.20	0.00
tblWater	OutdoorWaterUseRate	1,930,542.11	0.00
tblWoodstoves	NumberCatalytic	2.35	0.00

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

tblWoodstoves	NumberNoncatalytic	2.35	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	5.2073	59.6064	35.9976	0.0643	18.2675	2.6355	20.8460	9.9840	2.4247	12.3563	0.0000	6,472.5643	6,472.5643	1.9518	0.0000	6,521.3583
2019	26.8394	23.3422	19.1571	0.0320	0.2220	1.3855	1.6076	0.0596	1.3009	1.3605	0.0000	3,100.2593	3,100.2593	0.7193	0.0000	3,117.9118
Maximum	**26.8394**	**59.6064**	**35.9976**	**0.0643**	**18.2675**	**2.6355**	**20.8460**	**9.9840**	**2.4247**	**12.3563**	**0.0000**	**6,472.5643**	**6,472.5643**	**1.9518**	**0.0000**	**6,521.3583**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	5.2073	59.6064	35.9976	0.0643	7.2470	2.6355	9.8256	3.9263	2.4247	6.2986	0.0000	6,472.5642	6,472.5642	1.9518	0.0000	6,521.3583
2019	26.8394	23.3422	19.1571	0.0320	0.2220	1.3855	1.6076	0.0596	1.3009	1.3605	0.0000	3,100.2593	3,100.2593	0.7193	0.0000	3,117.9118
Maximum	**26.8394**	**59.6064**	**35.9976**	**0.0643**	**7.2470**	**2.6355**	**9.8256**	**3.9263**	**2.4247**	**6.2986**	**0.0000**	**6,472.5642**	**6,472.5642**	**1.9518**	**0.0000**	**6,521.3583**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**59.60**	**0.00**	**49.08**	**60.31**	**0.00**	**44.16**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.9394	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214	0.0000	6.9820	6.9820	6.8500e-003	0.0000	7.1533
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.9394**	**0.0451**	**3.8968**	**2.0000e-004**	**0.0000**	**0.0214**	**0.0214**	**0.0000**	**0.0214**	**0.0214**	**0.0000**	**6.9820**	**6.9820**	**6.8500e-003**	**0.0000**	**7.1533**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.9394	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214	0.0000	6.9820	6.9820	6.8500e-003	0.0000	7.1533
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.9394**	**0.0451**	**3.8968**	**2.0000e-004**	**0.0000**	**0.0214**	**0.0214**	**0.0000**	**0.0214**	**0.0214**	**0.0000**	**6.9820**	**6.9820**	**6.8500e-003**	**0.0000**	**7.1533**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/28/2018	6/8/2018	5	10	
2	Grading	Grading	6/9/2018	7/20/2018	5	30	
3	Building Construction	Building Construction	7/21/2018	9/13/2019	5	300	
4	Paving	Paving	9/14/2019	10/11/2019	5	20	
5	Architectural Coating	Architectural Coating	10/12/2019	11/8/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 171,315; Residential Outdoor: 57,105; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	8.00	78	0.48
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	17.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708		3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**18.0663**	**2.5769**	**20.6432**	**9.9307**	**2.3708**	**12.3014**		**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1055	0.0762	0.8174	2.0600e-003	0.2012	1.6000e-003	0.2028	0.0534	1.4800e-003	0.0548		205.3223	205.3223	7.0100e-003		205.4974
Total	**0.1055**	**0.0762**	**0.8174**	**2.0600e-003**	**0.2012**	**1.6000e-003**	**0.2028**	**0.0534**	**1.4800e-003**	**0.0548**		**205.3223**	**205.3223**	**7.0100e-003**		**205.4974**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0458	0.0000	7.0458	3.8730	0.0000	3.8730			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708	0.0000	3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**7.0458**	**2.5769**	**9.6228**	**3.8730**	**2.3708**	**6.2437**	**0.0000**	**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1055	0.0762	0.8174	2.0600e-003	0.2012	1.6000e-003	0.2028	0.0534	1.4800e-003	0.0548		205.3223	205.3223	7.0100e-003		205.4974
Total	**0.1055**	**0.0762**	**0.8174**	**2.0600e-003**	**0.2012**	**1.6000e-003**	**0.2028**	**0.0534**	**1.4800e-003**	**0.0548**		**205.3223**	**205.3223**	**7.0100e-003**		**205.4974**

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230		6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**8.6733**	**2.6337**	**11.3071**	**3.5965**	**2.4230**	**6.0195**		**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.3 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1172	0.0846	0.9082	2.2900e-003	0.2236	1.7800e-003	0.2253	0.0593	1.6400e-003	0.0609		228.1358	228.1358	7.7800e-003		228.3305
Total	**0.1172**	**0.0846**	**0.9082**	**2.2900e-003**	**0.2236**	**1.7800e-003**	**0.2253**	**0.0593**	**1.6400e-003**	**0.0609**		**228.1358**	**228.1358**	**7.7800e-003**		**228.3305**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3826	0.0000	3.3826	1.4026	0.0000	1.4026			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230	0.0000	6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**3.3826**	**2.6337**	**6.0163**	**1.4026**	**2.4230**	**3.8257**	**0.0000**	**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.3 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1172	0.0846	0.9082	2.2900e-003	0.2236	1.7800e-003	0.2253	0.0593	1.6400e-003	0.0609		228.1358	228.1358	7.7800e-003		228.3305
Total	**0.1172**	**0.0846**	**0.9082**	**2.2900e-003**	**0.2236**	**1.7800e-003**	**0.2253**	**0.0593**	**1.6400e-003**	**0.0609**		**228.1358**	**228.1358**	**7.7800e-003**		**228.3305**

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8506	25.2288	18.7719	0.0288		1.6066	1.6066		1.5082	1.5082		2,810.8008	2,810.8008	0.7012		2,828.3317
Total	**2.8506**	**25.2288**	**18.7719**	**0.0288**		**1.6066**	**1.6066**		**1.5082**	**1.5082**		**2,810.8008**	**2,810.8008**	**0.7012**		**2,828.3317**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0222	0.6069	0.1675	1.2700e-003	0.0320	4.5000e-003	0.0365	9.2100e-003	4.3000e-003	0.0135		135.3782	135.3782	0.0102		135.6329
Worker	0.0996	0.0720	0.7720	1.9500e-003	0.1900	1.5100e-003	0.1915	0.0504	1.4000e-003	0.0518		193.9155	193.9155	6.6200e-003		194.0809
Total	**0.1218**	**0.6789**	**0.9395**	**3.2200e-003**	**0.2220**	**6.0100e-003**	**0.2280**	**0.0596**	**5.7000e-003**	**0.0653**		**329.2937**	**329.2937**	**0.0168**		**329.7138**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8506	25.2288	18.7719	0.0288		1.6066	1.6066		1.5082	1.5082	0.0000	2,810.8008	2,810.8008	0.7012		2,828.3317
Total	**2.8506**	**25.2288**	**18.7719**	**0.0288**		**1.6066**	**1.6066**		**1.5082**	**1.5082**	**0.0000**	**2,810.8008**	**2,810.8008**	**0.7012**		**2,828.3317**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0222	0.6069	0.1675	1.2700e-003	0.0320	4.5000e-003	0.0365	9.2100e-003	4.3000e-003	0.0135		135.3782	135.3782	0.0102		135.6329
Worker	0.0996	0.0720	0.7720	1.9500e-003	0.1900	1.5100e-003	0.1915	0.0504	1.4000e-003	0.0518		193.9155	193.9155	6.6200e-003		194.0809
Total	**0.1218**	**0.6789**	**0.9395**	**3.2200e-003**	**0.2220**	**6.0100e-003**	**0.2280**	**0.0596**	**5.7000e-003**	**0.0653**		**329.2937**	**329.2937**	**0.0168**		**329.7138**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5115	22.7062	18.3139	0.0288		1.3802	1.3802		1.2958	1.2958		2,778.3097	2,778.3097	0.6904		2,795.5700
Total	**2.5115**	**22.7062**	**18.3139**	**0.0288**		**1.3802**	**1.3802**		**1.2958**	**1.2958**		**2,778.3097**	**2,778.3097**	**0.6904**		**2,795.5700**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0201	0.5725	0.1540	1.2600e-003	0.0320	3.8500e-003	0.0359	9.2100e-003	3.6800e-003	0.0129		134.1581	134.1581	9.8200e-003		134.4036
Worker	0.0907	0.0635	0.6892	1.8900e-003	0.1900	1.4800e-003	0.1915	0.0504	1.3600e-003	0.0518		187.7915	187.7915	5.8700e-003		187.9382
Total	**0.1108**	**0.6360**	**0.8432**	**3.1500e-003**	**0.2220**	**5.3300e-003**	**0.2274**	**0.0596**	**5.0400e-003**	**0.0647**		**321.9496**	**321.9496**	**0.0157**		**322.3418**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5115	22.7062	18.3139	0.0288		1.3802	1.3802		1.2958	1.2958	0.0000	2,778.3097	2,778.3097	0.6904		2,795.5700
Total	**2.5115**	**22.7062**	**18.3139**	**0.0288**		**1.3802**	**1.3802**		**1.2958**	**1.2958**	**0.0000**	**2,778.3097**	**2,778.3097**	**0.6904**		**2,795.5700**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0201	0.5725	0.1540	1.2600e-003	0.0320	3.8500e-003	0.0359	9.2100e-003	3.6800e-003	0.0129		134.1581	134.1581	9.8200e-003		134.4036
Worker	0.0907	0.0635	0.6892	1.8900e-003	0.1900	1.4800e-003	0.1915	0.0504	1.3600e-003	0.0518		187.7915	187.7915	5.8700e-003		187.9382
Total	**0.1108**	**0.6360**	**0.8432**	**3.1500e-003**	**0.2220**	**5.3300e-003**	**0.2274**	**0.0596**	**5.0400e-003**	**0.0647**		**321.9496**	**321.9496**	**0.0157**		**322.3418**

3.5 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586		2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**		**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.5 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0800	0.0560	0.6081	1.6600e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		165.6984	165.6984	5.1800e-003		165.8278
Total	**0.0800**	**0.0560**	**0.6081**	**1.6600e-003**	**0.1677**	**1.3000e-003**	**0.1690**	**0.0445**	**1.2000e-003**	**0.0457**		**165.6984**	**165.6984**	**5.1800e-003**		**165.8278**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586	0.0000	2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**	**0.0000**	**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.5 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0800	0.0560	0.6081	1.6600e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		165.6984	165.6984	5.1800e-003		165.8278
Total	**0.0800**	**0.0560**	**0.6081**	**1.6600e-003**	**0.1677**	**1.3000e-003**	**0.1690**	**0.0445**	**1.2000e-003**	**0.0457**		**165.6984**	**165.6984**	**5.1800e-003**		**165.8278**

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	26.4682					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717		375.2641	375.2641	0.0317		376.0565
Total	**26.8234**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**		**375.2641**	**375.2641**	**0.0317**		**376.0565**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.6 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0160	0.0112	0.1216	3.3000e-004	0.0335	2.6000e-004	0.0338	8.8900e-003	2.4000e-004	9.1300e-003		33.1397	33.1397	1.0400e-003		33.1656
Total	**0.0160**	**0.0112**	**0.1216**	**3.3000e-004**	**0.0335**	**2.6000e-004**	**0.0338**	**8.8900e-003**	**2.4000e-004**	**9.1300e-003**		**33.1397**	**33.1397**	**1.0400e-003**		**33.1656**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	26.4682					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717	0.0000	375.2641	375.2641	0.0317		376.0565
Total	**26.8234**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**	**0.0000**	**375.2641**	**375.2641**	**0.0317**		**376.0565**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.6 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0160	0.0112	0.1216	3.3000e-004	0.0335	2.6000e-004	0.0338	8.8900e-003	2.4000e-004	9.1300e-003		33.1397	33.1397	1.0400e-003		33.1656
Total	**0.0160**	**0.0112**	**0.1216**	**3.3000e-004**	**0.0335**	**2.6000e-004**	**0.0338**	**8.8900e-003**	**2.4000e-004**	**9.1300e-003**		**33.1397**	**33.1397**	**1.0400e-003**		**33.1656**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

5.0 Energy Detail

Historical Energy Use: N

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.9394	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214	0.0000	6.9820	6.9820	6.8500e-003	0.0000	7.1533
Unmitigated	1.9394	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214	0.0000	6.9820	6.9820	6.8500e-003	0.0000	7.1533

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1450					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6751					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1193	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214		6.9820	6.9820	6.8500e-003		7.1533
Total	**1.9394**	**0.0451**	**3.8968**	**2.0000e-004**		**0.0214**	**0.0214**		**0.0214**	**0.0214**	**0.0000**	**6.9820**	**6.9820**	**6.8500e-003**	**0.0000**	**7.1533**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1450					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6751					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1193	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214		6.9820	6.9820	6.8500e-003		7.1533
Total	**1.9394**	**0.0451**	**3.8968**	**2.0000e-004**		**0.0214**	**0.0214**		**0.0214**	**0.0214**	**0.0000**	**6.9820**	**6.9820**	**6.8500e-003**	**0.0000**	**7.1533**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Brodiaea Residential Proposed (Construction-Unmitigated)

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	47.00	Dwelling Unit	15.26	84,600.00	134

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Project Characteristics -

Land Use -

Construction Phase -

Off-road Equipment - Hours based on 8 hour work day

Off-road Equipment -

Off-road Equipment - hours based on 8 hour work day

Vehicle Trips - Construction run only

Woodstoves - Construction run only

Energy Use - Construction run only

Water And Wastewater - Construction run only

Solid Waste - Construction run only

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	PhaseEndDate	12/6/2019	11/8/2019
tblConstructionPhase	PhaseEndDate	10/11/2019	9/13/2019
tblConstructionPhase	PhaseEndDate	8/17/2018	7/20/2018
tblConstructionPhase	PhaseEndDate	11/8/2019	10/11/2019
tblConstructionPhase	PhaseEndDate	7/6/2018	6/8/2018
tblConstructionPhase	PhaseStartDate	11/9/2019	10/12/2019
tblConstructionPhase	PhaseStartDate	8/18/2018	7/21/2018
tblConstructionPhase	PhaseStartDate	7/7/2018	6/9/2018
tblConstructionPhase	PhaseStartDate	10/12/2019	9/14/2019
tblConstructionPhase	PhaseStartDate	6/23/2018	5/28/2018
tblEnergyUse	LightingElect	1,608.84	0.00
tblEnergyUse	NT24E	6,155.97	0.00
tblEnergyUse	NT24NG	6,030.00	0.00

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tblEnergyUse	T24E	951.67	0.00
tblEnergyUse	T24NG	24,566.15	0.00
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	39.95	0.00
tblFireplaces	NumberNoFireplace	4.70	0.00
tblFireplaces	NumberWood	2.35	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblSolidWaste	SolidWasteGenerationRate	54.94	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	HO_TL	8.70	0.00
tblVehicleTrips	HO_TTP	40.60	0.00
tblVehicleTrips	HS_TL	5.90	0.00
tblVehicleTrips	HS_TTP	19.20	0.00
tblVehicleTrips	HW_TL	14.70	0.00
tblVehicleTrips	HW_TTP	40.20	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	86.00	0.00
tblVehicleTrips	ST_TR	9.91	0.00
tblVehicleTrips	SU_TR	8.62	0.00
tblVehicleTrips	WD_TR	9.52	0.00
tblWater	IndoorWaterUseRate	3,062,239.20	0.00
tblWater	OutdoorWaterUseRate	1,930,542.11	0.00
tblWoodstoves	NumberCatalytic	2.35	0.00

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

tblWoodstoves	NumberNoncatalytic	2.35	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	5.1979	59.5991	36.0929	0.0645	18.2675	2.6355	20.8460	9.9840	2.4247	12.3563	0.0000	6,488.2987	6,488.2987	1.9523	0.0000	6,537.1060
2019	26.8381	23.3363	19.2161	0.0321	0.2220	1.3855	1.6075	0.0596	1.3008	1.3604	0.0000	3,117.1877	3,117.1877	0.7196	0.0000	3,134.8334
Maximum	**26.8381**	**59.5991**	**36.0929**	**0.0645**	**18.2675**	**2.6355**	**20.8460**	**9.9840**	**2.4247**	**12.3563**	**0.0000**	**6,488.2987**	**6,488.2987**	**1.9523**	**0.0000**	**6,537.1060**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	5.1979	59.5991	36.0929	0.0645	7.2470	2.6355	9.8256	3.9263	2.4247	6.2986	0.0000	6,488.2987	6,488.2987	1.9523	0.0000	6,537.1060
2019	26.8381	23.3363	19.2161	0.0321	0.2220	1.3855	1.6075	0.0596	1.3008	1.3604	0.0000	3,117.1877	3,117.1877	0.7196	0.0000	3,134.8334
Maximum	**26.8381**	**59.5991**	**36.0929**	**0.0645**	**7.2470**	**2.6355**	**9.8256**	**3.9263**	**2.4247**	**6.2986**	**0.0000**	**6,488.2987**	**6,488.2987**	**1.9523**	**0.0000**	**6,537.1060**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**59.60**	**0.00**	**49.08**	**60.31**	**0.00**	**44.16**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.9394	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214	0.0000	6.9820	6.9820	6.8500e-003	0.0000	7.1533
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.9394**	**0.0451**	**3.8968**	**2.0000e-004**	**0.0000**	**0.0214**	**0.0214**	**0.0000**	**0.0214**	**0.0214**	**0.0000**	**6.9820**	**6.9820**	**6.8500e-003**	**0.0000**	**7.1533**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.9394	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214	0.0000	6.9820	6.9820	6.8500e-003	0.0000	7.1533
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.9394**	**0.0451**	**3.8968**	**2.0000e-004**	**0.0000**	**0.0214**	**0.0214**	**0.0000**	**0.0214**	**0.0214**	**0.0000**	**6.9820**	**6.9820**	**6.8500e-003**	**0.0000**	**7.1533**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/28/2018	6/8/2018	5	10	
2	Grading	Grading	6/9/2018	7/20/2018	5	30	
3	Building Construction	Building Construction	7/21/2018	9/13/2019	5	300	
4	Paving	Paving	9/14/2019	10/11/2019	5	20	
5	Architectural Coating	Architectural Coating	10/12/2019	11/8/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 171,315; Residential Outdoor: 57,105; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	8.00	78	0.48
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	17.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708		3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**18.0663**	**2.5769**	**20.6432**	**9.9307**	**2.3708**	**12.3014**		**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0970	0.0695	0.9032	2.2100e-003	0.2012	1.6000e-003	0.2028	0.0534	1.4800e-003	0.0548		219.4833	219.4833	7.4800e-003		219.6704
Total	**0.0970**	**0.0695**	**0.9032**	**2.2100e-003**	**0.2012**	**1.6000e-003**	**0.2028**	**0.0534**	**1.4800e-003**	**0.0548**		**219.4833**	**219.4833**	**7.4800e-003**		**219.6704**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0458	0.0000	7.0458	3.8730	0.0000	3.8730			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708	0.0000	3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**7.0458**	**2.5769**	**9.6228**	**3.8730**	**2.3708**	**6.2437**	**0.0000**	**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0970	0.0695	0.9032	2.2100e-003	0.2012	1.6000e-003	0.2028	0.0534	1.4800e-003	0.0548		219.4833	219.4833	7.4800e-003		219.6704
Total	**0.0970**	**0.0695**	**0.9032**	**2.2100e-003**	**0.2012**	**1.6000e-003**	**0.2028**	**0.0534**	**1.4800e-003**	**0.0548**		**219.4833**	**219.4833**	**7.4800e-003**		**219.6704**

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230		6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**8.6733**	**2.6337**	**11.3071**	**3.5965**	**2.4230**	**6.0195**		**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.3 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1078	0.0773	1.0035	2.4500e-003	0.2236	1.7800e-003	0.2253	0.0593	1.6400e-003	0.0609		243.8703	243.8703	8.3200e-003		244.0782
Total	**0.1078**	**0.0773**	**1.0035**	**2.4500e-003**	**0.2236**	**1.7800e-003**	**0.2253**	**0.0593**	**1.6400e-003**	**0.0609**		**243.8703**	**243.8703**	**8.3200e-003**		**244.0782**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3826	0.0000	3.3826	1.4026	0.0000	1.4026			0.0000			0.0000
Off-Road	5.0901	59.5218	35.0894	0.0620		2.6337	2.6337		2.4230	2.4230	0.0000	6,244.4284	6,244.4284	1.9440		6,293.0278
Total	**5.0901**	**59.5218**	**35.0894**	**0.0620**	**3.3826**	**2.6337**	**6.0163**	**1.4026**	**2.4230**	**3.8257**	**0.0000**	**6,244.4284**	**6,244.4284**	**1.9440**		**6,293.0278**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.3 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1078	0.0773	1.0035	2.4500e-003	0.2236	1.7800e-003	0.2253	0.0593	1.6400e-003	0.0609		243.8703	243.8703	8.3200e-003		244.0782
Total	**0.1078**	**0.0773**	**1.0035**	**2.4500e-003**	**0.2236**	**1.7800e-003**	**0.2253**	**0.0593**	**1.6400e-003**	**0.0609**		**243.8703**	**243.8703**	**8.3200e-003**		**244.0782**

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8506	25.2288	18.7719	0.0288		1.6066	1.6066		1.5082	1.5082		2,810.8008	2,810.8008	0.7012		2,828.3317
Total	**2.8506**	**25.2288**	**18.7719**	**0.0288**		**1.6066**	**1.6066**		**1.5082**	**1.5082**		**2,810.8008**	**2,810.8008**	**0.7012**		**2,828.3317**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0213	0.6059	0.1509	1.3100e-003	0.0320	4.4300e-003	0.0364	9.2100e-003	4.2400e-003	0.0135		139.3290	139.3290	9.4800e-003		139.5661
Worker	0.0916	0.0657	0.8530	2.0800e-003	0.1900	1.5100e-003	0.1915	0.0504	1.4000e-003	0.0518		207.2898	207.2898	7.0700e-003		207.4665
Total	**0.1129**	**0.6716**	**1.0039**	**3.3900e-003**	**0.2220**	**5.9400e-003**	**0.2280**	**0.0596**	**5.6400e-003**	**0.0652**		**346.6188**	**346.6188**	**0.0166**		**347.0326**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8506	25.2288	18.7719	0.0288		1.6066	1.6066		1.5082	1.5082	0.0000	2,810.8008	2,810.8008	0.7012		2,828.3317
Total	**2.8506**	**25.2288**	**18.7719**	**0.0288**		**1.6066**	**1.6066**		**1.5082**	**1.5082**	**0.0000**	**2,810.8008**	**2,810.8008**	**0.7012**		**2,828.3317**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0213	0.6059	0.1509	1.3100e-003	0.0320	4.4300e-003	0.0364	9.2100e-003	4.2400e-003	0.0135		139.3290	139.3290	9.4800e-003		139.5661
Worker	0.0916	0.0657	0.8530	2.0800e-003	0.1900	1.5100e-003	0.1915	0.0504	1.4000e-003	0.0518		207.2898	207.2898	7.0700e-003		207.4665
Total	**0.1129**	**0.6716**	**1.0039**	**3.3900e-003**	**0.2220**	**5.9400e-003**	**0.2280**	**0.0596**	**5.6400e-003**	**0.0652**		**346.6188**	**346.6188**	**0.0166**		**347.0326**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5115	22.7062	18.3139	0.0288		1.3802	1.3802		1.2958	1.2958		2,778.3097	2,778.3097	0.6904		2,795.5700
Total	**2.5115**	**22.7062**	**18.3139**	**0.0288**		**1.3802**	**1.3802**		**1.2958**	**1.2958**		**2,778.3097**	**2,778.3097**	**0.6904**		**2,795.5700**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0193	0.5721	0.1383	1.3000e-003	0.0320	3.7900e-003	0.0358	9.2100e-003	3.6300e-003	0.0128		138.1099	138.1099	9.1400e-003		138.3383
Worker	0.0833	0.0579	0.7639	2.0200e-003	0.1900	1.4800e-003	0.1915	0.0504	1.3600e-003	0.0518		200.7681	200.7681	6.2800e-003		200.9251
Total	**0.1025**	**0.6301**	**0.9022**	**3.3200e-003**	**0.2220**	**5.2700e-003**	**0.2273**	**0.0596**	**4.9900e-003**	**0.0646**		**338.8780**	**338.8780**	**0.0154**		**339.2634**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5115	22.7062	18.3139	0.0288		1.3802	1.3802		1.2958	1.2958	0.0000	2,778.3097	2,778.3097	0.6904		2,795.5700
Total	**2.5115**	**22.7062**	**18.3139**	**0.0288**		**1.3802**	**1.3802**		**1.2958**	**1.2958**	**0.0000**	**2,778.3097**	**2,778.3097**	**0.6904**		**2,795.5700**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0193	0.5721	0.1383	1.3000e-003	0.0320	3.7900e-003	0.0358	9.2100e-003	3.6300e-003	0.0128		138.1099	138.1099	9.1400e-003		138.3383
Worker	0.0833	0.0579	0.7639	2.0200e-003	0.1900	1.4800e-003	0.1915	0.0504	1.3600e-003	0.0518		200.7681	200.7681	6.2800e-003		200.9251
Total	**0.1025**	**0.6301**	**0.9022**	**3.3200e-003**	**0.2220**	**5.2700e-003**	**0.2273**	**0.0596**	**4.9900e-003**	**0.0646**		**338.8780**	**338.8780**	**0.0154**		**339.2634**

3.5 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586		2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**		**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.5 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0735	0.0511	0.6740	1.7800e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		177.1484	177.1484	5.5400e-003		177.2869
Total	**0.0735**	**0.0511**	**0.6740**	**1.7800e-003**	**0.1677**	**1.3000e-003**	**0.1690**	**0.0445**	**1.2000e-003**	**0.0457**		**177.1484**	**177.1484**	**5.5400e-003**		**177.2869**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586	0.0000	2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**	**0.0000**	**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.5 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0735	0.0511	0.6740	1.7800e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		177.1484	177.1484	5.5400e-003		177.2869
Total	**0.0735**	**0.0511**	**0.6740**	**1.7800e-003**	**0.1677**	**1.3000e-003**	**0.1690**	**0.0445**	**1.2000e-003**	**0.0457**		**177.1484**	**177.1484**	**5.5400e-003**		**177.2869**

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	26.4682					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717		375.2641	375.2641	0.0317		376.0565
Total	**26.8234**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**		**375.2641**	**375.2641**	**0.0317**		**376.0565**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.6 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0147	0.0102	0.1348	3.6000e-004	0.0335	2.6000e-004	0.0338	8.8900e-003	2.4000e-004	9.1300e-003		35.4297	35.4297	1.1100e-003		35.4574
Total	**0.0147**	**0.0102**	**0.1348**	**3.6000e-004**	**0.0335**	**2.6000e-004**	**0.0338**	**8.8900e-003**	**2.4000e-004**	**9.1300e-003**		**35.4297**	**35.4297**	**1.1100e-003**		**35.4574**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	26.4682					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717	0.0000	375.2641	375.2641	0.0317		376.0565
Total	**26.8234**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**	**0.0000**	**375.2641**	**375.2641**	**0.0317**		**376.0565**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.6 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0147	0.0102	0.1348	3.6000e-004	0.0335	2.6000e-004	0.0338	8.8900e-003	2.4000e-004	9.1300e-003		35.4297	35.4297	1.1100e-003		35.4574
Total	**0.0147**	**0.0102**	**0.1348**	**3.6000e-004**	**0.0335**	**2.6000e-004**	**0.0338**	**8.8900e-003**	**2.4000e-004**	**9.1300e-003**		**35.4297**	**35.4297**	**1.1100e-003**		**35.4574**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

5.0 Energy Detail

Historical Energy Use: N

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.9394	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214	0.0000	6.9820	6.9820	6.8500e-003	0.0000	7.1533
Unmitigated	1.9394	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214	0.0000	6.9820	6.9820	6.8500e-003	0.0000	7.1533

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1450					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6751					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1193	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214		6.9820	6.9820	6.8500e-003		7.1533
Total	**1.9394**	**0.0451**	**3.8968**	**2.0000e-004**		**0.0214**	**0.0214**		**0.0214**	**0.0214**	**0.0000**	**6.9820**	**6.9820**	**6.8500e-003**	**0.0000**	**7.1533**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1450					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6751					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1193	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214		6.9820	6.9820	6.8500e-003		7.1533
Total	**1.9394**	**0.0451**	**3.8968**	**2.0000e-004**		**0.0214**	**0.0214**		**0.0214**	**0.0214**	**0.0000**	**6.9820**	**6.9820**	**6.8500e-003**	**0.0000**	**7.1533**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Brodiaea Residential Proposed (Construction-Unmitigated)

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	47.00	Dwelling Unit	15.26	84,600.00	134

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Project Characteristics -

Land Use -

Construction Phase -

Off-road Equipment - Hours based on 8 hour work day

Off-road Equipment -

Off-road Equipment - hours based on 8 hour work day

Vehicle Trips - Construction run only

Woodstoves - Construction run only

Energy Use - Construction run only

Water And Wastewater - Construction run only

Solid Waste - Construction run only

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	PhaseEndDate	12/6/2019	11/8/2019
tblConstructionPhase	PhaseEndDate	10/11/2019	9/13/2019
tblConstructionPhase	PhaseEndDate	8/17/2018	7/20/2018
tblConstructionPhase	PhaseEndDate	11/8/2019	10/11/2019
tblConstructionPhase	PhaseEndDate	7/6/2018	6/8/2018
tblConstructionPhase	PhaseStartDate	11/9/2019	10/12/2019
tblConstructionPhase	PhaseStartDate	8/18/2018	7/21/2018
tblConstructionPhase	PhaseStartDate	7/7/2018	6/9/2018
tblConstructionPhase	PhaseStartDate	10/12/2019	9/14/2019
tblConstructionPhase	PhaseStartDate	6/23/2018	5/28/2018
tblEnergyUse	LightingElect	1,608.84	0.00
tblEnergyUse	NT24E	6,155.97	0.00
tblEnergyUse	NT24NG	6,030.00	0.00

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tblEnergyUse	T24E	951.67	0.00
tblEnergyUse	T24NG	24,566.15	0.00
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	39.95	0.00
tblFireplaces	NumberNoFireplace	4.70	0.00
tblFireplaces	NumberWood	2.35	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblSolidWaste	SolidWasteGenerationRate	54.94	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	HO_TL	8.70	0.00
tblVehicleTrips	HO_TTP	40.60	0.00
tblVehicleTrips	HS_TL	5.90	0.00
tblVehicleTrips	HS_TTP	19.20	0.00
tblVehicleTrips	HW_TL	14.70	0.00
tblVehicleTrips	HW_TTP	40.20	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	86.00	0.00
tblVehicleTrips	ST_TR	9.91	0.00
tblVehicleTrips	SU_TR	8.62	0.00
tblVehicleTrips	WD_TR	9.52	0.00
tblWater	IndoorWaterUseRate	3,062,239.20	0.00
tblWater	OutdoorWaterUseRate	1,930,542.11	0.00
tblWoodstoves	NumberCatalytic	2.35	0.00

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tblWoodstoves	NumberNoncatalytic	2.35	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2731	2.6389	1.8010	3.0300e-003	0.2374	0.1460	0.3833	0.1081	0.1360	0.2442	0.0000	271.9740	271.9740	0.0698	0.0000	273.7182
2019	0.5241	2.3262	1.9422	3.2300e-003	0.0220	0.1374	0.1595	5.9200e-003	0.1290	0.1349	0.0000	284.9247	284.9247	0.0657	0.0000	286.5680
Maximum	**0.5241**	**2.6389**	**1.9422**	**3.2300e-003**	**0.2374**	**0.1460**	**0.3833**	**0.1081**	**0.1360**	**0.2442**	**0.0000**	**284.9247**	**284.9247**	**0.0698**	**0.0000**	**286.5680**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2731	2.6389	1.8010	3.0300e-003	0.1029	0.1460	0.2489	0.0449	0.1360	0.1810	0.0000	271.9737	271.9737	0.0698	0.0000	273.7179
2019	0.5241	2.3262	1.9422	3.2300e-003	0.0220	0.1374	0.1595	5.9200e-003	0.1290	0.1349	0.0000	284.9244	284.9244	0.0657	0.0000	286.5677
Maximum	**0.5241**	**2.6389**	**1.9422**	**3.2300e-003**	**0.1029**	**0.1460**	**0.2489**	**0.0449**	**0.1360**	**0.1810**	**0.0000**	**284.9244**	**284.9244**	**0.0698**	**0.0000**	**286.5677**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**51.84**	**0.00**	**24.77**	**55.41**	**0.00**	**16.67**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	5-28-2018	8-27-2018	1.5905	1.5905
2	8-28-2018	11-27-2018	0.9487	0.9487
3	11-28-2018	2-27-2019	0.8885	0.8885
4	2-28-2019	5-27-2019	0.8250	0.8250
5	5-28-2019	8-27-2019	0.8527	0.8527
6	8-28-2019	9-30-2019	0.2597	0.2597
		Highest	1.5905	1.5905

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3471	5.6400e-003	0.4871	3.0000e-005		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	0.7917	0.7917	7.8000e-004	0.0000	0.8112
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.3471**	**5.6400e-003**	**0.4871**	**3.0000e-005**	**0.0000**	**2.6700e-003**	**2.6700e-003**	**0.0000**	**2.6700e-003**	**2.6700e-003**	**0.0000**	**0.7917**	**0.7917**	**7.8000e-004**	**0.0000**	**0.8112**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3471	5.6400e-003	0.4871	3.0000e-005		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	0.7917	0.7917	7.8000e-004	0.0000	0.8112
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.3471**	**5.6400e-003**	**0.4871**	**3.0000e-005**	**0.0000**	**2.6700e-003**	**2.6700e-003**	**0.0000**	**2.6700e-003**	**2.6700e-003**	**0.0000**	**0.7917**	**0.7917**	**7.8000e-004**	**0.0000**	**0.8112**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/28/2018	6/8/2018	5	10	
2	Grading	Grading	6/9/2018	7/20/2018	5	30	
3	Building Construction	Building Construction	7/21/2018	9/13/2019	5	300	
4	Paving	Paving	9/14/2019	10/11/2019	5	20	
5	Architectural Coating	Architectural Coating	10/12/2019	11/8/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 171,315; Residential Outdoor: 57,105; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	8.00	78	0.48
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	17.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3800	17.3800	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0903**	**0.0129**	**0.1032**	**0.0497**	**0.0119**	**0.0615**	**0.0000**	**17.3800**	**17.3800**	**5.4100e-003**	**0.0000**	**17.5152**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.9000e-004	4.2000e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9473	0.9473	3.0000e-005	0.0000	0.9481
Total	**4.8000e-004**	**3.9000e-004**	**4.2000e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**1.0000e-003**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.9473**	**0.9473**	**3.0000e-005**	**0.0000**	**0.9481**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0352	0.0000	0.0352	0.0194	0.0000	0.0194	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3799	17.3799	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0352**	**0.0129**	**0.0481**	**0.0194**	**0.0119**	**0.0312**	**0.0000**	**17.3799**	**17.3799**	**5.4100e-003**	**0.0000**	**17.5152**

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3.2 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.9000e-004	4.2000e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9473	0.9473	3.0000e-005	0.0000	0.9481
Total	**4.8000e-004**	**3.9000e-004**	**4.2000e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**1.0000e-003**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.9473**	**0.9473**	**3.0000e-005**	**0.0000**	**0.9481**

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9728	84.9728	0.0265	0.0000	85.6341
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.1301**	**0.0395**	**0.1696**	**0.0540**	**0.0364**	**0.0903**	**0.0000**	**84.9728**	**84.9728**	**0.0265**	**0.0000**	**85.6341**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.3 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5900e-003	1.3000e-003	0.0140	3.0000e-005	3.2900e-003	3.0000e-005	3.3200e-003	8.7000e-004	2.0000e-005	9.0000e-004	0.0000	3.1575	3.1575	1.1000e-004	0.0000	3.1602
Total	**1.5900e-003**	**1.3000e-003**	**0.0140**	**3.0000e-005**	**3.2900e-003**	**3.0000e-005**	**3.3200e-003**	**8.7000e-004**	**2.0000e-005**	**9.0000e-004**	**0.0000**	**3.1575**	**3.1575**	**1.1000e-004**	**0.0000**	**3.1602**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0507	0.0000	0.0507	0.0210	0.0000	0.0210	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9727	84.9727	0.0265	0.0000	85.6340
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.0507**	**0.0395**	**0.0903**	**0.0210**	**0.0364**	**0.0574**	**0.0000**	**84.9727**	**84.9727**	**0.0265**	**0.0000**	**85.6340**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.3 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5900e-003	1.3000e-003	0.0140	3.0000e-005	3.2900e-003	3.0000e-005	3.3200e-003	8.7000e-004	2.0000e-005	9.0000e-004	0.0000	3.1575	3.1575	1.1000e-004	0.0000	3.1602
Total	**1.5900e-003**	**1.3000e-003**	**0.0140**	**3.0000e-005**	**3.2900e-003**	**3.0000e-005**	**3.3200e-003**	**8.7000e-004**	**2.0000e-005**	**9.0000e-004**	**0.0000**	**3.1575**	**3.1575**	**1.1000e-004**	**0.0000**	**3.1602**

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1653	1.4633	1.0888	1.6700e-003		0.0932	0.0932		0.0875	0.0875	0.0000	147.8951	147.8951	0.0369	0.0000	148.8175
Total	**0.1653**	**1.4633**	**1.0888**	**1.6700e-003**		**0.0932**	**0.0932**		**0.0875**	**0.0875**	**0.0000**	**147.8951**	**147.8951**	**0.0369**	**0.0000**	**148.8175**

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3.4 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2600e-003	0.0359	9.2400e-003	8.0000e-005	1.8300e-003	2.6000e-004	2.0900e-003	5.3000e-004	2.5000e-004	7.7000e-004	0.0000	7.2437	7.2437	5.2000e-004	0.0000	7.2566
Worker	5.2400e-003	4.2900e-003	0.0460	1.1000e-004	0.0108	9.0000e-005	0.0109	2.8700e-003	8.0000e-005	2.9500e-003	0.0000	10.3777	10.3777	3.5000e-004	0.0000	10.3865
Total	**6.5000e-003**	**0.0401**	**0.0553**	**1.9000e-004**	**0.0127**	**3.5000e-004**	**0.0130**	**3.4000e-003**	**3.3000e-004**	**3.7200e-003**	**0.0000**	**17.6214**	**17.6214**	**8.7000e-004**	**0.0000**	**17.6432**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1653	1.4633	1.0888	1.6700e-003		0.0932	0.0932		0.0875	0.0875	0.0000	147.8949	147.8949	0.0369	0.0000	148.8174
Total	**0.1653**	**1.4633**	**1.0888**	**1.6700e-003**		**0.0932**	**0.0932**		**0.0875**	**0.0875**	**0.0000**	**147.8949**	**147.8949**	**0.0369**	**0.0000**	**148.8174**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2600e-003	0.0359	9.2400e-003	8.0000e-005	1.8300e-003	2.6000e-004	2.0900e-003	5.3000e-004	2.5000e-004	7.7000e-004	0.0000	7.2437	7.2437	5.2000e-004	0.0000	7.2566
Worker	5.2400e-003	4.2900e-003	0.0460	1.1000e-004	0.0108	9.0000e-005	0.0109	2.8700e-003	8.0000e-005	2.9500e-003	0.0000	10.3777	10.3777	3.5000e-004	0.0000	10.3865
Total	**6.5000e-003**	**0.0401**	**0.0553**	**1.9000e-004**	**0.0127**	**3.5000e-004**	**0.0130**	**3.4000e-003**	**3.3000e-004**	**3.7200e-003**	**0.0000**	**17.6214**	**17.6214**	**8.7000e-004**	**0.0000**	**17.6432**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2311	2.0890	1.6849	2.6500e-003		0.1270	0.1270		0.1192	0.1192	0.0000	231.8805	231.8805	0.0576	0.0000	233.3211
Total	**0.2311**	**2.0890**	**1.6849**	**2.6500e-003**		**0.1270**	**0.1270**		**0.1192**	**0.1192**	**0.0000**	**231.8805**	**231.8805**	**0.0576**	**0.0000**	**233.3211**

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3.4 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.8100e-003	0.0536	0.0135	1.2000e-004	2.9000e-003	3.5000e-004	3.2500e-003	8.4000e-004	3.4000e-004	1.1700e-003	0.0000	11.3883	11.3883	7.9000e-004	0.0000	11.4080
Worker	7.5500e-003	6.0000e-003	0.0652	1.8000e-004	0.0172	1.4000e-004	0.0173	4.5600e-003	1.3000e-004	4.6800e-003	0.0000	15.9417	15.9417	5.0000e-004	0.0000	15.9542
Total	**9.3600e-003**	**0.0596**	**0.0787**	**3.0000e-004**	**0.0201**	**4.9000e-004**	**0.0206**	**5.4000e-003**	**4.7000e-004**	**5.8500e-003**	**0.0000**	**27.3300**	**27.3300**	**1.2900e-003**	**0.0000**	**27.3622**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2311	2.0890	1.6849	2.6500e-003		0.1270	0.1270		0.1192	0.1192	0.0000	231.8802	231.8802	0.0576	0.0000	233.3208
Total	**0.2311**	**2.0890**	**1.6849**	**2.6500e-003**		**0.1270**	**0.1270**		**0.1192**	**0.1192**	**0.0000**	**231.8802**	**231.8802**	**0.0576**	**0.0000**	**233.3208**

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3.4 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.8100e-003	0.0536	0.0135	1.2000e-004	2.9000e-003	3.5000e-004	3.2500e-003	8.4000e-004	3.4000e-004	1.1700e-003	0.0000	11.3883	11.3883	7.9000e-004	0.0000	11.4080
Worker	7.5500e-003	6.0000e-003	0.0652	1.8000e-004	0.0172	1.4000e-004	0.0173	4.5600e-003	1.3000e-004	4.6800e-003	0.0000	15.9417	15.9417	5.0000e-004	0.0000	15.9542
Total	**9.3600e-003**	**0.0596**	**0.0787**	**3.0000e-004**	**0.0201**	**4.9000e-004**	**0.0206**	**5.4000e-003**	**4.7000e-004**	**5.8500e-003**	**0.0000**	**27.3300**	**27.3300**	**1.2900e-003**	**0.0000**	**27.3622**

3.5 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1524	0.1467	2.3000e-004		8.2500e-003	8.2500e-003		7.5900e-003	7.5900e-003	0.0000	20.4752	20.4752	6.4800e-003	0.0000	20.6371
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0145**	**0.1524**	**0.1467**	**2.3000e-004**		**8.2500e-003**	**8.2500e-003**		**7.5900e-003**	**7.5900e-003**	**0.0000**	**20.4752**	**20.4752**	**6.4800e-003**	**0.0000**	**20.6371**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.5 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	5.8000e-004	6.2500e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5289	1.5289	5.0000e-005	0.0000	1.5301
Total	**7.2000e-004**	**5.8000e-004**	**6.2500e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5289**	**1.5289**	**5.0000e-005**	**0.0000**	**1.5301**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1524	0.1467	2.3000e-004		8.2500e-003	8.2500e-003		7.5900e-003	7.5900e-003	0.0000	20.4752	20.4752	6.4800e-003	0.0000	20.6371
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0145**	**0.1524**	**0.1467**	**2.3000e-004**		**8.2500e-003**	**8.2500e-003**		**7.5900e-003**	**7.5900e-003**	**0.0000**	**20.4752**	**20.4752**	**6.4800e-003**	**0.0000**	**20.6371**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.5 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	5.8000e-004	6.2500e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5289	1.5289	5.0000e-005	0.0000	1.5301
Total	**7.2000e-004**	**5.8000e-004**	**6.2500e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5289**	**1.5289**	**5.0000e-005**	**0.0000**	**1.5301**

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2647					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.5500e-003	0.0245	0.0246	4.0000e-005		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003	0.0000	3.4043	3.4043	2.9000e-004	0.0000	3.4115
Total	**0.2682**	**0.0245**	**0.0246**	**4.0000e-005**		**1.7200e-003**	**1.7200e-003**		**1.7200e-003**	**1.7200e-003**	**0.0000**	**3.4043**	**3.4043**	**2.9000e-004**	**0.0000**	**3.4115**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.6 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.2000e-004	1.2500e-003	0.0000	3.3000e-004	0.0000	3.3000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.3058	0.3058	1.0000e-005	0.0000	0.3060
Total	**1.4000e-004**	**1.2000e-004**	**1.2500e-003**	**0.0000**	**3.3000e-004**	**0.0000**	**3.3000e-004**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**0.0000**	**0.3058**	**0.3058**	**1.0000e-005**	**0.0000**	**0.3060**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2647					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.5500e-003	0.0245	0.0246	4.0000e-005		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003	0.0000	3.4043	3.4043	2.9000e-004	0.0000	3.4115
Total	**0.2682**	**0.0245**	**0.0246**	**4.0000e-005**		**1.7200e-003**	**1.7200e-003**		**1.7200e-003**	**1.7200e-003**	**0.0000**	**3.4043**	**3.4043**	**2.9000e-004**	**0.0000**	**3.4115**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.6 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.2000e-004	1.2500e-003	0.0000	3.3000e-004	0.0000	3.3000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.3058	0.3058	1.0000e-005	0.0000	0.3060
Total	**1.4000e-004**	**1.2000e-004**	**1.2500e-003**	**0.0000**	**3.3000e-004**	**0.0000**	**3.3000e-004**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**0.0000**	**0.3058**	**0.3058**	**1.0000e-005**	**0.0000**	**0.3060**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

5.0 Energy Detail

Historical Energy Use: N

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3471	5.6400e-003	0.4871	3.0000e-005		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	0.7917	0.7917	7.8000e-004	0.0000	0.8112
Unmitigated	0.3471	5.6400e-003	0.4871	3.0000e-005		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	0.7917	0.7917	7.8000e-004	0.0000	0.8112

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0265					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3057					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0149	5.6400e-003	0.4871	3.0000e-005		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	0.7917	0.7917	7.8000e-004	0.0000	0.8112
Total	**0.3471**	**5.6400e-003**	**0.4871**	**3.0000e-005**		**2.6700e-003**	**2.6700e-003**		**2.6700e-003**	**2.6700e-003**	**0.0000**	**0.7917**	**0.7917**	**7.8000e-004**	**0.0000**	**0.8112**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0265					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3057					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0149	5.6400e-003	0.4871	3.0000e-005		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	0.7917	0.7917	7.8000e-004	0.0000	0.8112
Total	**0.3471**	**5.6400e-003**	**0.4871**	**3.0000e-005**		**2.6700e-003**	**2.6700e-003**		**2.6700e-003**	**2.6700e-003**	**0.0000**	**0.7917**	**0.7917**	**7.8000e-004**	**0.0000**	**0.8112**

7.0 Water Detail

7.1 Mitigation Measures Water

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

ATTACHMENT B:

CALEEMOD AIR QUALITY CURRENTLY ADOPTED LAND USE (CONSTRUCTION) MISSIONS MODEL OUTPUTS

Brodiaea Residential Current (Construction)

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	27.00	Dwelling Unit	8.77	48,600.00	77

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Project Characteristics -

Land Use -

Construction Phase - Current Proposed Construction Run Only (27 DU)

Off-road Equipment - Current Construction Run Only (27 DU)

Off-road Equipment - Construction Run Only (Current 27 DU)

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Vehicle Trips - Current Construction Run Only (27 DU)

Woodstoves - Operations Run Only.

Energy Use - Operations Run Only.

Consumer Products -

Water And Wastewater - Operations Run Only.

Solid Waste - Operations Run Only.

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblEnergyUse	LightingElect	1,608.84	0.00
tblEnergyUse	NT24E	6,155.97	0.00
tblEnergyUse	NT24NG	6,030.00	0.00
tblEnergyUse	T24E	951.67	0.00
tblEnergyUse	T24NG	24,566.15	0.00
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	22.95	0.00
tblFireplaces	NumberNoFireplace	2.70	0.00

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tblFireplaces	NumberWood	1.35	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblSolidWaste	SolidWasteGenerationRate	31.57	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	HO_TL	8.70	0.00
tblVehicleTrips	HO_TTP	40.60	0.00
tblVehicleTrips	HS_TL	5.90	0.00
tblVehicleTrips	HS_TTP	19.20	0.00
tblVehicleTrips	HW_TL	14.70	0.00
tblVehicleTrips	HW_TTP	40.20	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	86.00	0.00
tblVehicleTrips	ST_TR	9.91	0.00
tblVehicleTrips	SU_TR	8.62	0.00
tblVehicleTrips	WD_TR	9.52	0.00
tblWater	IndoorWaterUseRate	1,759,158.69	0.00
tblWater	OutdoorWaterUseRate	1,109,034.83	0.00
tblWoodstoves	NumberCatalytic	1.35	0.00
tblWoodstoves	NumberNoncatalytic	1.35	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	4.6682	48.2749	23.2937	0.0401	18.2675	2.5785	20.8460	9.9840	2.3722	12.3563	0.0000	4,036.9461	4,036.9461	1.1999	0.0000	4,066.9422
2019	15.5710	23.0870	18.8117	0.0307	0.1677	1.3834	1.5144	0.0445	1.2989	1.3340	0.0000	2,969.2701	2,969.2701	0.7193	0.0000	2,986.7640
Maximum	**15.5710**	**48.2749**	**23.2937**	**0.0401**	**18.2675**	**2.5785**	**20.8460**	**9.9840**	**2.3722**	**12.3563**	**0.0000**	**4,036.9461**	**4,036.9461**	**1.1999**	**0.0000**	**4,066.9422**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	4.6682	48.2749	23.2937	0.0401	7.2470	2.5785	9.8256	3.9263	2.3722	6.2986	0.0000	4,036.9461	4,036.9461	1.1999	0.0000	4,066.9422
2019	15.5710	23.0870	18.8117	0.0307	0.1677	1.3834	1.5144	0.0445	1.2989	1.3340	0.0000	2,969.2701	2,969.2701	0.7193	0.0000	2,986.7640
Maximum	**15.5710**	**48.2749**	**23.2937**	**0.0401**	**7.2470**	**2.5785**	**9.8256**	**3.9263**	**2.3722**	**6.2986**	**0.0000**	**4,036.9461**	**4,036.9461**	**1.1999**	**0.0000**	**4,066.9422**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**59.78**	**0.00**	**49.29**	**60.40**	**0.00**	**44.25**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.1141	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	4.0109	4.0109	3.9400e-003	0.0000	4.1093
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.1141**	**0.0259**	**2.2386**	**1.2000e-004**	**0.0000**	**0.0123**	**0.0123**	**0.0000**	**0.0123**	**0.0123**	**0.0000**	**4.0109**	**4.0109**	**3.9400e-003**	**0.0000**	**4.1093**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.1141	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	4.0109	4.0109	3.9400e-003	0.0000	4.1093
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.1141**	**0.0259**	**2.2386**	**1.2000e-004**	**0.0000**	**0.0123**	**0.0123**	**0.0000**	**0.0123**	**0.0123**	**0.0000**	**4.0109**	**4.0109**	**3.9400e-003**	**0.0000**	**4.1093**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/28/2018	6/8/2018	5	10	
2	Grading	Grading	6/9/2018	7/6/2018	5	20	
3	Building Construction	Building Construction	7/7/2018	5/24/2019	5	230	
4	Paving	Paving	5/25/2019	6/21/2019	5	20	
5	Architectural Coating	Architectural Coating	6/22/2019	7/19/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 98,415; Residential Outdoor: 32,805; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	8.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	10.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Water Exposed Area

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708		3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**18.0663**	**2.5769**	**20.6432**	**9.9307**	**2.3708**	**12.3014**		**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1055	0.0762	0.8174	2.0600e-003	0.2012	1.6000e-003	0.2028	0.0534	1.4800e-003	0.0548		205.3223	205.3223	7.0100e-003		205.4974
Total	**0.1055**	**0.0762**	**0.8174**	**2.0600e-003**	**0.2012**	**1.6000e-003**	**0.2028**	**0.0534**	**1.4800e-003**	**0.0548**		**205.3223**	**205.3223**	**7.0100e-003**		**205.4974**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0458	0.0000	7.0458	3.8730	0.0000	3.8730			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708	0.0000	3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**7.0458**	**2.5769**	**9.6228**	**3.8730**	**2.3708**	**6.2437**	**0.0000**	**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1055	0.0762	0.8174	2.0600e-003	0.2012	1.6000e-003	0.2028	0.0534	1.4800e-003	0.0548		205.3223	205.3223	7.0100e-003		205.4974
Total	**0.1055**	**0.0762**	**0.8174**	**2.0600e-003**	**0.2012**	**1.6000e-003**	**0.2028**	**0.0534**	**1.4800e-003**	**0.0548**		**205.3223**	**205.3223**	**7.0100e-003**		**205.4974**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	2.7733	30.6725	16.5770	0.0297		1.5513	1.5513		1.4272	1.4272		2,988.0216	2,988.0216	0.9302		3,011.2769
Total	**2.7733**	**30.6725**	**16.5770**	**0.0297**	**6.5523**	**1.5513**	**8.1037**	**3.3675**	**1.4272**	**4.7947**		**2,988.0216**	**2,988.0216**	**0.9302**		**3,011.2769**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0879	0.0635	0.6811	1.7200e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2300e-003	0.0457		171.1019	171.1019	5.8400e-003		171.2479
Total	**0.0879**	**0.0635**	**0.6811**	**1.7200e-003**	**0.1677**	**1.3400e-003**	**0.1690**	**0.0445**	**1.2300e-003**	**0.0457**		**171.1019**	**171.1019**	**5.8400e-003**		**171.2479**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.3 Grading - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5554	0.0000	2.5554	1.3133	0.0000	1.3133			0.0000			0.0000
Off-Road	2.7733	30.6725	16.5770	0.0297		1.5513	1.5513		1.4272	1.4272	0.0000	2,988.0216	2,988.0216	0.9302		3,011.2769
Total	**2.7733**	**30.6725**	**16.5770**	**0.0297**	**2.5554**	**1.5513**	**4.1067**	**1.3133**	**1.4272**	**2.7405**	**0.0000**	**2,988.0216**	**2,988.0216**	**0.9302**		**3,011.2769**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0879	0.0635	0.6811	1.7200e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2300e-003	0.0457		171.1019	171.1019	5.8400e-003		171.2479
Total	**0.0879**	**0.0635**	**0.6811**	**1.7200e-003**	**0.1677**	**1.3400e-003**	**0.1690**	**0.0445**	**1.2300e-003**	**0.0457**		**171.1019**	**171.1019**	**5.8400e-003**		**171.2479**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8506	25.2288	18.7719	0.0288		1.6066	1.6066		1.5082	1.5082		2,810.8008	2,810.8008	0.7012		2,828.3317
Total	**2.8506**	**25.2288**	**18.7719**	**0.0288**		**1.6066**	**1.6066**		**1.5082**	**1.5082**		**2,810.8008**	**2,810.8008**	**0.7012**		**2,828.3317**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0133	0.3642	0.1005	7.6000e-004	0.0192	2.7000e-003	0.0219	5.5300e-003	2.5800e-003	8.1100e-003		81.2269	81.2269	6.1100e-003		81.3797
Worker	0.0586	0.0423	0.4541	1.1500e-003	0.1118	8.9000e-004	0.1127	0.0296	8.2000e-004	0.0305		114.0679	114.0679	3.8900e-003		114.1652
Total	**0.0719**	**0.4065**	**0.5546**	**1.9100e-003**	**0.1310**	**3.5900e-003**	**0.1346**	**0.0352**	**3.4000e-003**	**0.0386**		**195.2949**	**195.2949**	**0.0100**		**195.5450**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8506	25.2288	18.7719	0.0288		1.6066	1.6066		1.5082	1.5082	0.0000	2,810.8008	2,810.8008	0.7012		2,828.3317
Total	**2.8506**	**25.2288**	**18.7719**	**0.0288**		**1.6066**	**1.6066**		**1.5082**	**1.5082**	**0.0000**	**2,810.8008**	**2,810.8008**	**0.7012**		**2,828.3317**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0133	0.3642	0.1005	7.6000e-004	0.0192	2.7000e-003	0.0219	5.5300e-003	2.5800e-003	8.1100e-003		81.2269	81.2269	6.1100e-003		81.3797
Worker	0.0586	0.0423	0.4541	1.1500e-003	0.1118	8.9000e-004	0.1127	0.0296	8.2000e-004	0.0305		114.0679	114.0679	3.8900e-003		114.1652
Total	**0.0719**	**0.4065**	**0.5546**	**1.9100e-003**	**0.1310**	**3.5900e-003**	**0.1346**	**0.0352**	**3.4000e-003**	**0.0386**		**195.2949**	**195.2949**	**0.0100**		**195.5450**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5115	22.7062	18.3139	0.0288		1.3802	1.3802		1.2958	1.2958		2,778.3097	2,778.3097	0.6904		2,795.5700
Total	**2.5115**	**22.7062**	**18.3139**	**0.0288**		**1.3802**	**1.3802**		**1.2958**	**1.2958**		**2,778.3097**	**2,778.3097**	**0.6904**		**2,795.5700**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0121	0.3435	0.0924	7.6000e-004	0.0192	2.3100e-003	0.0215	5.5300e-003	2.2100e-003	7.7400e-003		80.4949	80.4949	5.8900e-003		80.6422
Worker	0.0533	0.0373	0.4054	1.1100e-003	0.1118	8.7000e-004	0.1127	0.0296	8.0000e-004	0.0305		110.4656	110.4656	3.4500e-003		110.5519
Total	**0.0654**	**0.3808**	**0.4978**	**1.8700e-003**	**0.1310**	**3.1800e-003**	**0.1342**	**0.0352**	**3.0100e-003**	**0.0382**		**190.9605**	**190.9605**	**9.3400e-003**		**191.1940**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5115	22.7062	18.3139	0.0288		1.3802	1.3802		1.2958	1.2958	0.0000	2,778.3097	2,778.3097	0.6904		2,795.5700
Total	**2.5115**	**22.7062**	**18.3139**	**0.0288**		**1.3802**	**1.3802**		**1.2958**	**1.2958**	**0.0000**	**2,778.3097**	**2,778.3097**	**0.6904**		**2,795.5700**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0121	0.3435	0.0924	7.6000e-004	0.0192	2.3100e-003	0.0215	5.5300e-003	2.2100e-003	7.7400e-003		80.4949	80.4949	5.8900e-003		80.6422
Worker	0.0533	0.0373	0.4054	1.1100e-003	0.1118	8.7000e-004	0.1127	0.0296	8.0000e-004	0.0305		110.4656	110.4656	3.4500e-003		110.5519
Total	**0.0654**	**0.3808**	**0.4978**	**1.8700e-003**	**0.1310**	**3.1800e-003**	**0.1342**	**0.0352**	**3.0100e-003**	**0.0382**		**190.9605**	**190.9605**	**9.3400e-003**		**191.1940**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.5 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586		2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**		**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0800	0.0560	0.6081	1.6600e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		165.6984	165.6984	5.1800e-003		165.8278
Total	**0.0800**	**0.0560**	**0.6081**	**1.6600e-003**	**0.1677**	**1.3000e-003**	**0.1690**	**0.0445**	**1.2000e-003**	**0.0457**		**165.6984**	**165.6984**	**5.1800e-003**		**165.8278**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.5 Paving - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586	0.0000	2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**	**0.0000**	**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0800	0.0560	0.6081	1.6600e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		165.6984	165.6984	5.1800e-003		165.8278
Total	**0.0800**	**0.0560**	**0.6081**	**1.6600e-003**	**0.1677**	**1.3000e-003**	**0.1690**	**0.0445**	**1.2000e-003**	**0.0457**		**165.6984**	**165.6984**	**5.1800e-003**		**165.8278**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	15.2051					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717		375.2641	375.2641	0.0317		376.0565
Total	**15.5604**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**		**375.2641**	**375.2641**	**0.0317**		**376.0565**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0107	7.4700e-003	0.0811	2.2000e-004	0.0224	1.7000e-004	0.0225	5.9300e-003	1.6000e-004	6.0900e-003		22.0931	22.0931	6.9000e-004		22.1104
Total	**0.0107**	**7.4700e-003**	**0.0811**	**2.2000e-004**	**0.0224**	**1.7000e-004**	**0.0225**	**5.9300e-003**	**1.6000e-004**	**6.0900e-003**		**22.0931**	**22.0931**	**6.9000e-004**		**22.1104**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.6 Architectural Coating - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	15.2051					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717	0.0000	375.2641	375.2641	0.0317		376.0565
Total	**15.5604**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**	**0.0000**	**375.2641**	**375.2641**	**0.0317**		**376.0565**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0107	7.4700e-003	0.0811	2.2000e-004	0.0224	1.7000e-004	0.0225	5.9300e-003	1.6000e-004	6.0900e-003		22.0931	22.0931	6.9000e-004		22.1104
Total	**0.0107**	**7.4700e-003**	**0.0811**	**2.2000e-004**	**0.0224**	**1.7000e-004**	**0.0225**	**5.9300e-003**	**1.6000e-004**	**6.0900e-003**		**22.0931**	**22.0931**	**6.9000e-004**		**22.1104**

4.0 Operational Detail - Mobile

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.1141	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	4.0109	4.0109	3.9400e-003	0.0000	4.1093
Unmitigated	1.1141	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	4.0109	4.0109	3.9400e-003	0.0000	4.1093

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0833					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9623					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0685	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123		4.0109	4.0109	3.9400e-003		4.1093
Total	**1.1141**	**0.0259**	**2.2386**	**1.2000e-004**		**0.0123**	**0.0123**		**0.0123**	**0.0123**	**0.0000**	**4.0109**	**4.0109**	**3.9400e-003**	**0.0000**	**4.1093**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0833					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9623					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0685	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123		4.0109	4.0109	3.9400e-003		4.1093
Total	**1.1141**	**0.0259**	**2.2386**	**1.2000e-004**		**0.0123**	**0.0123**		**0.0123**	**0.0123**	**0.0000**	**4.0109**	**4.0109**	**3.9400e-003**	**0.0000**	**4.1093**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Brodiaea Residential Current (Construction)

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	27.00	Dwelling Unit	8.77	48,600.00	77

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Project Characteristics -

Land Use -

Construction Phase - Current Proposed Construction Run Only (27 DU)

Off-road Equipment - Current Construction Run Only (27 DU)

Off-road Equipment - Construction Run Only (Current 27 DU)

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Vehicle Trips - Current Construction Run Only (27 DU)

Woodstoves - Operations Run Only.

Energy Use - Operations Run Only.

Consumer Products -

Water And Wastewater - Operations Run Only.

Solid Waste - Operations Run Only.

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblEnergyUse	LightingElect	1,608.84	0.00
tblEnergyUse	NT24E	6,155.97	0.00
tblEnergyUse	NT24NG	6,030.00	0.00
tblEnergyUse	T24E	951.67	0.00
tblEnergyUse	T24NG	24,566.15	0.00
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	22.95	0.00
tblFireplaces	NumberNoFireplace	2.70	0.00

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tblFireplaces	NumberWood	1.35	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblSolidWaste	SolidWasteGenerationRate	31.57	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	HO_TL	8.70	0.00
tblVehicleTrips	HO_TTP	40.60	0.00
tblVehicleTrips	HS_TL	5.90	0.00
tblVehicleTrips	HS_TTP	19.20	0.00
tblVehicleTrips	HW_TL	14.70	0.00
tblVehicleTrips	HW_TTP	40.20	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	86.00	0.00
tblVehicleTrips	ST_TR	9.91	0.00
tblVehicleTrips	SU_TR	8.62	0.00
tblVehicleTrips	WD_TR	9.52	0.00
tblWater	IndoorWaterUseRate	1,759,158.69	0.00
tblWater	OutdoorWaterUseRate	1,109,034.83	0.00
tblWoodstoves	NumberCatalytic	1.35	0.00
tblWoodstoves	NumberNoncatalytic	1.35	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	4.6597	48.2683	23.3795	0.0402	18.2675	2.5785	20.8460	9.9840	2.3722	12.3563	0.0000	4,051.1072	4,051.1072	1.2003	0.0000	4,081.1152
2019	15.5702	23.0835	18.8462	0.0308	0.1677	1.3834	1.5143	0.0445	1.2988	1.3340	0.0000	2,979.2745	2,979.2745	0.7196	0.0000	2,996.7642
Maximum	**15.5702**	**48.2683**	**23.3795**	**0.0402**	**18.2675**	**2.5785**	**20.8460**	**9.9840**	**2.3722**	**12.3563**	**0.0000**	**4,051.1072**	**4,051.1072**	**1.2003**	**0.0000**	**4,081.1152**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	4.6597	48.2683	23.3795	0.0402	7.2470	2.5785	9.8256	3.9263	2.3722	6.2986	0.0000	4,051.1072	4,051.1072	1.2003	0.0000	4,081.1152
2019	15.5702	23.0835	18.8462	0.0308	0.1677	1.3834	1.5143	0.0445	1.2988	1.3340	0.0000	2,979.2745	2,979.2745	0.7196	0.0000	2,996.7642
Maximum	**15.5702**	**48.2683**	**23.3795**	**0.0402**	**7.2470**	**2.5785**	**9.8256**	**3.9263**	**2.3722**	**6.2986**	**0.0000**	**4,051.1072**	**4,051.1072**	**1.2003**	**0.0000**	**4,081.1152**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**59.78**	**0.00**	**49.29**	**60.40**	**0.00**	**44.25**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.1141	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	4.0109	4.0109	3.9400e-003	0.0000	4.1093
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.1141**	**0.0259**	**2.2386**	**1.2000e-004**	**0.0000**	**0.0123**	**0.0123**	**0.0000**	**0.0123**	**0.0123**	**0.0000**	**4.0109**	**4.0109**	**3.9400e-003**	**0.0000**	**4.1093**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.1141	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	4.0109	4.0109	3.9400e-003	0.0000	4.1093
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.1141**	**0.0259**	**2.2386**	**1.2000e-004**	**0.0000**	**0.0123**	**0.0123**	**0.0000**	**0.0123**	**0.0123**	**0.0000**	**4.0109**	**4.0109**	**3.9400e-003**	**0.0000**	**4.1093**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/28/2018	6/8/2018	5	10	
2	Grading	Grading	6/9/2018	7/6/2018	5	20	
3	Building Construction	Building Construction	7/7/2018	5/24/2019	5	230	
4	Paving	Paving	5/25/2019	6/21/2019	5	20	
5	Architectural Coating	Architectural Coating	6/22/2019	7/19/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 98,415; Residential Outdoor: 32,805; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	8.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	10.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Water Exposed Area

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708		3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**18.0663**	**2.5769**	**20.6432**	**9.9307**	**2.3708**	**12.3014**		**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0970	0.0695	0.9032	2.2100e-003	0.2012	1.6000e-003	0.2028	0.0534	1.4800e-003	0.0548		219.4833	219.4833	7.4800e-003		219.6704
Total	**0.0970**	**0.0695**	**0.9032**	**2.2100e-003**	**0.2012**	**1.6000e-003**	**0.2028**	**0.0534**	**1.4800e-003**	**0.0548**		**219.4833**	**219.4833**	**7.4800e-003**		**219.6704**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0458	0.0000	7.0458	3.8730	0.0000	3.8730			0.0000			0.0000
Off-Road	4.5627	48.1988	22.4763	0.0380		2.5769	2.5769		2.3708	2.3708	0.0000	3,831.6239	3,831.6239	1.1928		3,861.4448
Total	**4.5627**	**48.1988**	**22.4763**	**0.0380**	**7.0458**	**2.5769**	**9.6228**	**3.8730**	**2.3708**	**6.2437**	**0.0000**	**3,831.6239**	**3,831.6239**	**1.1928**		**3,861.4448**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0970	0.0695	0.9032	2.2100e-003	0.2012	1.6000e-003	0.2028	0.0534	1.4800e-003	0.0548		219.4833	219.4833	7.4800e-003		219.6704
Total	**0.0970**	**0.0695**	**0.9032**	**2.2100e-003**	**0.2012**	**1.6000e-003**	**0.2028**	**0.0534**	**1.4800e-003**	**0.0548**		**219.4833**	**219.4833**	**7.4800e-003**		**219.6704**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	2.7733	30.6725	16.5770	0.0297		1.5513	1.5513		1.4272	1.4272		2,988.0216	2,988.0216	0.9302		3,011.2769
Total	**2.7733**	**30.6725**	**16.5770**	**0.0297**	**6.5523**	**1.5513**	**8.1037**	**3.3675**	**1.4272**	**4.7947**		**2,988.0216**	**2,988.0216**	**0.9302**		**3,011.2769**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0808	0.0580	0.7526	1.8400e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2300e-003	0.0457		182.9028	182.9028	6.2400e-003		183.0587
Total	**0.0808**	**0.0580**	**0.7526**	**1.8400e-003**	**0.1677**	**1.3400e-003**	**0.1690**	**0.0445**	**1.2300e-003**	**0.0457**		**182.9028**	**182.9028**	**6.2400e-003**		**183.0587**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.3 Grading - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5554	0.0000	2.5554	1.3133	0.0000	1.3133			0.0000			0.0000
Off-Road	2.7733	30.6725	16.5770	0.0297		1.5513	1.5513		1.4272	1.4272	0.0000	2,988.0216	2,988.0216	0.9302		3,011.2769
Total	**2.7733**	**30.6725**	**16.5770**	**0.0297**	**2.5554**	**1.5513**	**4.1067**	**1.3133**	**1.4272**	**2.7405**	**0.0000**	**2,988.0216**	**2,988.0216**	**0.9302**		**3,011.2769**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0808	0.0580	0.7526	1.8400e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2300e-003	0.0457		182.9028	182.9028	6.2400e-003		183.0587
Total	**0.0808**	**0.0580**	**0.7526**	**1.8400e-003**	**0.1677**	**1.3400e-003**	**0.1690**	**0.0445**	**1.2300e-003**	**0.0457**		**182.9028**	**182.9028**	**6.2400e-003**		**183.0587**

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3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8506	25.2288	18.7719	0.0288		1.6066	1.6066		1.5082	1.5082		2,810.8008	2,810.8008	0.7012		2,828.3317
Total	**2.8506**	**25.2288**	**18.7719**	**0.0288**		**1.6066**	**1.6066**		**1.5082**	**1.5082**		**2,810.8008**	**2,810.8008**	**0.7012**		**2,828.3317**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0128	0.3636	0.0905	7.9000e-004	0.0192	2.6600e-003	0.0219	5.5300e-003	2.5400e-003	8.0700e-003		83.5974	83.5974	5.6900e-003		83.7397
Worker	0.0539	0.0386	0.5018	1.2300e-003	0.1118	8.9000e-004	0.1127	0.0296	8.2000e-004	0.0305		121.9352	121.9352	4.1600e-003		122.0391
Total	**0.0667**	**0.4022**	**0.5923**	**2.0200e-003**	**0.1310**	**3.5500e-003**	**0.1345**	**0.0352**	**3.3600e-003**	**0.0385**		**205.5326**	**205.5326**	**9.8500e-003**		**205.7788**

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3.4 Building Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8506	25.2288	18.7719	0.0288		1.6066	1.6066		1.5082	1.5082	0.0000	2,810.8008	2,810.8008	0.7012		2,828.3317
Total	**2.8506**	**25.2288**	**18.7719**	**0.0288**		**1.6066**	**1.6066**		**1.5082**	**1.5082**	**0.0000**	**2,810.8008**	**2,810.8008**	**0.7012**		**2,828.3317**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0128	0.3636	0.0905	7.9000e-004	0.0192	2.6600e-003	0.0219	5.5300e-003	2.5400e-003	8.0700e-003		83.5974	83.5974	5.6900e-003		83.7397
Worker	0.0539	0.0386	0.5018	1.2300e-003	0.1118	8.9000e-004	0.1127	0.0296	8.2000e-004	0.0305		121.9352	121.9352	4.1600e-003		122.0391
Total	**0.0667**	**0.4022**	**0.5923**	**2.0200e-003**	**0.1310**	**3.5500e-003**	**0.1345**	**0.0352**	**3.3600e-003**	**0.0385**		**205.5326**	**205.5326**	**9.8500e-003**		**205.7788**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5115	22.7062	18.3139	0.0288		1.3802	1.3802		1.2958	1.2958		2,778.3097	2,778.3097	0.6904		2,795.5700
Total	**2.5115**	**22.7062**	**18.3139**	**0.0288**		**1.3802**	**1.3802**		**1.2958**	**1.2958**		**2,778.3097**	**2,778.3097**	**0.6904**		**2,795.5700**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0116	0.3433	0.0830	7.8000e-004	0.0192	2.2700e-003	0.0215	5.5300e-003	2.1800e-003	7.7000e-003		82.8659	82.8659	5.4800e-003		83.0030
Worker	0.0490	0.0341	0.4493	1.1900e-003	0.1118	8.7000e-004	0.1127	0.0296	8.0000e-004	0.0305		118.0989	118.0989	3.6900e-003		118.1912
Total	**0.0605**	**0.3774**	**0.5323**	**1.9700e-003**	**0.1310**	**3.1400e-003**	**0.1341**	**0.0352**	**2.9800e-003**	**0.0382**		**200.9648**	**200.9648**	**9.1700e-003**		**201.1942**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5115	22.7062	18.3139	0.0288		1.3802	1.3802		1.2958	1.2958	0.0000	2,778.3097	2,778.3097	0.6904		2,795.5700
Total	**2.5115**	**22.7062**	**18.3139**	**0.0288**		**1.3802**	**1.3802**		**1.2958**	**1.2958**	**0.0000**	**2,778.3097**	**2,778.3097**	**0.6904**		**2,795.5700**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0116	0.3433	0.0830	7.8000e-004	0.0192	2.2700e-003	0.0215	5.5300e-003	2.1800e-003	7.7000e-003		82.8659	82.8659	5.4800e-003		83.0030
Worker	0.0490	0.0341	0.4493	1.1900e-003	0.1118	8.7000e-004	0.1127	0.0296	8.0000e-004	0.0305		118.0989	118.0989	3.6900e-003		118.1912
Total	**0.0605**	**0.3774**	**0.5323**	**1.9700e-003**	**0.1310**	**3.1400e-003**	**0.1341**	**0.0352**	**2.9800e-003**	**0.0382**		**200.9648**	**200.9648**	**9.1700e-003**		**201.1942**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.5 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586		2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**		**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0735	0.0511	0.6740	1.7800e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		177.1484	177.1484	5.5400e-003		177.2869
Total	**0.0735**	**0.0511**	**0.6740**	**1.7800e-003**	**0.1677**	**1.3000e-003**	**0.1690**	**0.0445**	**1.2000e-003**	**0.0457**		**177.1484**	**177.1484**	**5.5400e-003**		**177.2869**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.5 Paving - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4544	15.2441	14.6648	0.0228		0.8246	0.8246		0.7586	0.7586	0.0000	2,257.0025	2,257.0025	0.7141		2,274.8548
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4544**	**15.2441**	**14.6648**	**0.0228**		**0.8246**	**0.8246**		**0.7586**	**0.7586**	**0.0000**	**2,257.0025**	**2,257.0025**	**0.7141**		**2,274.8548**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0735	0.0511	0.6740	1.7800e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		177.1484	177.1484	5.5400e-003		177.2869
Total	**0.0735**	**0.0511**	**0.6740**	**1.7800e-003**	**0.1677**	**1.3000e-003**	**0.1690**	**0.0445**	**1.2000e-003**	**0.0457**		**177.1484**	**177.1484**	**5.5400e-003**		**177.2869**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	15.2051					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717		375.2641	375.2641	0.0317		376.0565
Total	**15.5604**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**		**375.2641**	**375.2641**	**0.0317**		**376.0565**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	9.7900e-003	6.8200e-003	0.0899	2.4000e-004	0.0224	1.7000e-004	0.0225	5.9300e-003	1.6000e-004	6.0900e-003		23.6198	23.6198	7.4000e-004		23.6383
Total	**9.7900e-003**	**6.8200e-003**	**0.0899**	**2.4000e-004**	**0.0224**	**1.7000e-004**	**0.0225**	**5.9300e-003**	**1.6000e-004**	**6.0900e-003**		**23.6198**	**23.6198**	**7.4000e-004**		**23.6383**

3.6 Architectural Coating - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	15.2051					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717	0.0000	375.2641	375.2641	0.0317		376.0565
Total	**15.5604**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**	**0.0000**	**375.2641**	**375.2641**	**0.0317**		**376.0565**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	9.7900e-003	6.8200e-003	0.0899	2.4000e-004	0.0224	1.7000e-004	0.0225	5.9300e-003	1.6000e-004	6.0900e-003		23.6198	23.6198	7.4000e-004		23.6383
Total	**9.7900e-003**	**6.8200e-003**	**0.0899**	**2.4000e-004**	**0.0224**	**1.7000e-004**	**0.0225**	**5.9300e-003**	**1.6000e-004**	**6.0900e-003**		**23.6198**	**23.6198**	**7.4000e-004**		**23.6383**

4.0 Operational Detail - Mobile

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.1141	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	4.0109	4.0109	3.9400e-003	0.0000	4.1093
Unmitigated	1.1141	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123	0.0000	4.0109	4.0109	3.9400e-003	0.0000	4.1093

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0833					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9623					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0685	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123		4.0109	4.0109	3.9400e-003		4.1093
Total	**1.1141**	**0.0259**	**2.2386**	**1.2000e-004**		**0.0123**	**0.0123**		**0.0123**	**0.0123**	**0.0000**	**4.0109**	**4.0109**	**3.9400e-003**	**0.0000**	**4.1093**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0833					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9623					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0685	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123		4.0109	4.0109	3.9400e-003		4.1093
Total	**1.1141**	**0.0259**	**2.2386**	**1.2000e-004**		**0.0123**	**0.0123**		**0.0123**	**0.0123**	**0.0000**	**4.0109**	**4.0109**	**3.9400e-003**	**0.0000**	**4.1093**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Brodiaea Residential Current (Construction)

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	27.00	Dwelling Unit	8.77	48,600.00	77

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Project Characteristics -

Land Use -

Construction Phase - Current Proposed Construction Run Only (27 DU)

Off-road Equipment - Current Construction Run Only (27 DU)

Off-road Equipment - Construction Run Only (Current 27 DU)

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Vehicle Trips - Current Construction Run Only (27 DU)

Woodstoves - Operations Run Only.

Energy Use - Operations Run Only.

Consumer Products -

Water And Wastewater - Operations Run Only.

Solid Waste - Operations Run Only.

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblEnergyUse	LightingElect	1,608.84	0.00
tblEnergyUse	NT24E	6,155.97	0.00
tblEnergyUse	NT24NG	6,030.00	0.00
tblEnergyUse	T24E	951.67	0.00
tblEnergyUse	T24NG	24,566.15	0.00
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	22.95	0.00
tblFireplaces	NumberNoFireplace	2.70	0.00

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tblFireplaces	NumberWood	1.35	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblSolidWaste	SolidWasteGenerationRate	31.57	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	HO_TL	8.70	0.00
tblVehicleTrips	HO_TTP	40.60	0.00
tblVehicleTrips	HS_TL	5.90	0.00
tblVehicleTrips	HS_TTP	19.20	0.00
tblVehicleTrips	HW_TL	14.70	0.00
tblVehicleTrips	HW_TTP	40.20	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	86.00	0.00
tblVehicleTrips	ST_TR	9.91	0.00
tblVehicleTrips	SU_TR	8.62	0.00
tblVehicleTrips	WD_TR	9.52	0.00
tblWater	IndoorWaterUseRate	1,759,158.69	0.00
tblWater	OutdoorWaterUseRate	1,109,034.83	0.00
tblWoodstoves	NumberCatalytic	1.35	0.00
tblWoodstoves	NumberNoncatalytic	1.35	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2356	2.1643	1.5074	2.4500e-003	0.1666	0.1299	0.2965	0.0862	0.1214	0.2076	0.0000	219.0092	219.0092	0.0546	0.0000	220.3736
2019	0.3047	1.3785	1.1569	1.8800e-003	8.5500e-003	0.0819	0.0905	2.2900e-003	0.0769	0.0792	0.0000	165.8376	165.8376	0.0398	0.0000	166.8332
Maximum	**0.3047**	**2.1643**	**1.5074**	**2.4500e-003**	**0.1666**	**0.1299**	**0.2965**	**0.0862**	**0.1214**	**0.2076**	**0.0000**	**219.0092**	**219.0092**	**0.0546**	**0.0000**	**220.3736**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2356	2.1643	1.5074	2.4500e-003	0.0715	0.1299	0.2014	0.0354	0.1214	0.1568	0.0000	219.0090	219.0090	0.0546	0.0000	220.3733
2019	0.3047	1.3785	1.1569	1.8800e-003	8.5500e-003	0.0819	0.0905	2.2900e-003	0.0769	0.0792	0.0000	165.8375	165.8375	0.0398	0.0000	166.8330
Maximum	**0.3047**	**2.1643**	**1.5074**	**2.4500e-003**	**0.0715**	**0.1299**	**0.2014**	**0.0354**	**0.1214**	**0.1568**	**0.0000**	**219.0090**	**219.0090**	**0.0546**	**0.0000**	**220.3733**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**54.28**	**0.00**	**24.57**	**57.44**	**0.00**	**17.73**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	5-28-2018	8-27-2018	1.0929	1.0929
2	8-28-2018	11-27-2018	0.9382	0.9382
3	11-28-2018	2-27-2019	0.8784	0.8784
4	2-28-2019	5-27-2019	0.8061	0.8061
5	5-28-2019	8-27-2019	0.3304	0.3304
		Highest	1.0929	1.0929

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1994	3.2400e-003	0.2798	1.0000e-005		1.5300e-003	1.5300e-003		1.5300e-003	1.5300e-003	0.0000	0.4548	0.4548	4.5000e-004	0.0000	0.4660
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1994**	**3.2400e-003**	**0.2798**	**1.0000e-005**	**0.0000**	**1.5300e-003**	**1.5300e-003**	**0.0000**	**1.5300e-003**	**1.5300e-003**	**0.0000**	**0.4548**	**0.4548**	**4.5000e-004**	**0.0000**	**0.4660**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1994	3.2400e-003	0.2798	1.0000e-005		1.5300e-003	1.5300e-003		1.5300e-003	1.5300e-003	0.0000	0.4548	0.4548	4.5000e-004	0.0000	0.4660
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1994**	**3.2400e-003**	**0.2798**	**1.0000e-005**	**0.0000**	**1.5300e-003**	**1.5300e-003**	**0.0000**	**1.5300e-003**	**1.5300e-003**	**0.0000**	**0.4548**	**0.4548**	**4.5000e-004**	**0.0000**	**0.4660**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/28/2018	6/8/2018	5	10	
2	Grading	Grading	6/9/2018	7/6/2018	5	20	
3	Building Construction	Building Construction	7/7/2018	5/24/2019	5	230	
4	Paving	Paving	5/25/2019	6/21/2019	5	20	
5	Architectural Coating	Architectural Coating	6/22/2019	7/19/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 98,415; Residential Outdoor: 32,805; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	8.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	10.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Water Exposed Area

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3800	17.3800	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0903**	**0.0129**	**0.1032**	**0.0497**	**0.0119**	**0.0615**	**0.0000**	**17.3800**	**17.3800**	**5.4100e-003**	**0.0000**	**17.5152**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.9000e-004	4.2000e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9473	0.9473	3.0000e-005	0.0000	0.9481
Total	**4.8000e-004**	**3.9000e-004**	**4.2000e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**1.0000e-003**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.9473**	**0.9473**	**3.0000e-005**	**0.0000**	**0.9481**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Site Preparation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0352	0.0000	0.0352	0.0194	0.0000	0.0194	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3799	17.3799	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0352**	**0.0129**	**0.0481**	**0.0194**	**0.0119**	**0.0312**	**0.0000**	**17.3799**	**17.3799**	**5.4100e-003**	**0.0000**	**17.5152**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.9000e-004	4.2000e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9473	0.9473	3.0000e-005	0.0000	0.9481
Total	**4.8000e-004**	**3.9000e-004**	**4.2000e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**1.0000e-003**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.9473**	**0.9473**	**3.0000e-005**	**0.0000**	**0.9481**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0655	0.0000	0.0655	0.0337	0.0000	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0277	0.3067	0.1658	3.0000e-004		0.0155	0.0155		0.0143	0.0143	0.0000	27.1069	27.1069	8.4400e-003	0.0000	27.3178
Total	**0.0277**	**0.3067**	**0.1658**	**3.0000e-004**	**0.0655**	**0.0155**	**0.0810**	**0.0337**	**0.0143**	**0.0479**	**0.0000**	**27.1069**	**27.1069**	**8.4400e-003**	**0.0000**	**27.3178**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-004	6.5000e-004	7.0000e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5788	1.5788	5.0000e-005	0.0000	1.5801
Total	**8.0000e-004**	**6.5000e-004**	**7.0000e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5788**	**1.5788**	**5.0000e-005**	**0.0000**	**1.5801**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.3 Grading - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0256	0.0000	0.0256	0.0131	0.0000	0.0131	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0277	0.3067	0.1658	3.0000e-004		0.0155	0.0155		0.0143	0.0143	0.0000	27.1068	27.1068	8.4400e-003	0.0000	27.3178
Total	**0.0277**	**0.3067**	**0.1658**	**3.0000e-004**	**0.0256**	**0.0155**	**0.0411**	**0.0131**	**0.0143**	**0.0274**	**0.0000**	**27.1068**	**27.1068**	**8.4400e-003**	**0.0000**	**27.3178**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-004	6.5000e-004	7.0000e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5788	1.5788	5.0000e-005	0.0000	1.5801
Total	**8.0000e-004**	**6.5000e-004**	**7.0000e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5788**	**1.5788**	**5.0000e-005**	**0.0000**	**1.5801**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1796	1.5894	1.1826	1.8100e-003		0.1012	0.1012		0.0950	0.0950	0.0000	160.6447	160.6447	0.0401	0.0000	161.6466
Total	**0.1796**	**1.5894**	**1.1826**	**1.8100e-003**		**0.1012**	**0.1012**		**0.0950**	**0.0950**	**0.0000**	**160.6447**	**160.6447**	**0.0401**	**0.0000**	**161.6466**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.2000e-004	0.0234	6.0200e-003	5.0000e-005	1.1900e-003	1.7000e-004	1.3600e-003	3.4000e-004	1.6000e-004	5.0000e-004	0.0000	4.7209	4.7209	3.4000e-004	0.0000	4.7293
Worker	3.3500e-003	2.7400e-003	0.0294	7.0000e-005	6.9100e-003	6.0000e-005	6.9700e-003	1.8400e-003	5.0000e-005	1.8900e-003	0.0000	6.6308	6.6308	2.3000e-004	0.0000	6.6364
Total	**4.1700e-003**	**0.0261**	**0.0354**	**1.2000e-004**	**8.1000e-003**	**2.3000e-004**	**8.3300e-003**	**2.1800e-003**	**2.1000e-004**	**2.3900e-003**	**0.0000**	**11.3517**	**11.3517**	**5.7000e-004**	**0.0000**	**11.3657**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1796	1.5894	1.1826	1.8100e-003		0.1012	0.1012		0.0950	0.0950	0.0000	160.6445	160.6445	0.0401	0.0000	161.6464
Total	**0.1796**	**1.5894**	**1.1826**	**1.8100e-003**		**0.1012**	**0.1012**		**0.0950**	**0.0950**	**0.0000**	**160.6445**	**160.6445**	**0.0401**	**0.0000**	**161.6464**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.2000e-004	0.0234	6.0200e-003	5.0000e-005	1.1900e-003	1.7000e-004	1.3600e-003	3.4000e-004	1.6000e-004	5.0000e-004	0.0000	4.7209	4.7209	3.4000e-004	0.0000	4.7293
Worker	3.3500e-003	2.7400e-003	0.0294	7.0000e-005	6.9100e-003	6.0000e-005	6.9700e-003	1.8400e-003	5.0000e-005	1.8900e-003	0.0000	6.6308	6.6308	2.3000e-004	0.0000	6.6364
Total	**4.1700e-003**	**0.0261**	**0.0354**	**1.2000e-004**	**8.1000e-003**	**2.3000e-004**	**8.3300e-003**	**2.1800e-003**	**2.1000e-004**	**2.3900e-003**	**0.0000**	**11.3517**	**11.3517**	**5.7000e-004**	**0.0000**	**11.3657**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1306	1.1807	0.9523	1.5000e-003		0.0718	0.0718		0.0674	0.0674	0.0000	131.0629	131.0629	0.0326	0.0000	131.8771
Total	**0.1306**	**1.1807**	**0.9523**	**1.5000e-003**		**0.0718**	**0.0718**		**0.0674**	**0.0674**	**0.0000**	**131.0629**	**131.0629**	**0.0326**	**0.0000**	**131.8771**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.1000e-004	0.0182	4.5600e-003	4.0000e-005	9.8000e-004	1.2000e-004	1.1000e-003	2.8000e-004	1.1000e-004	4.0000e-004	0.0000	3.8621	3.8621	2.7000e-004	0.0000	3.8688
Worker	2.5100e-003	1.9900e-003	0.0217	6.0000e-005	5.7100e-003	5.0000e-005	5.7500e-003	1.5200e-003	4.0000e-005	1.5600e-003	0.0000	5.3003	5.3003	1.7000e-004	0.0000	5.3045
Total	**3.1200e-003**	**0.0202**	**0.0262**	**1.0000e-004**	**6.6900e-003**	**1.7000e-004**	**6.8500e-003**	**1.8000e-003**	**1.5000e-004**	**1.9600e-003**	**0.0000**	**9.1624**	**9.1624**	**4.4000e-004**	**0.0000**	**9.1733**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.4 Building Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1306	1.1807	0.9523	1.5000e-003		0.0718	0.0718		0.0674	0.0674	0.0000	131.0627	131.0627	0.0326	0.0000	131.8770
Total	**0.1306**	**1.1807**	**0.9523**	**1.5000e-003**		**0.0718**	**0.0718**		**0.0674**	**0.0674**	**0.0000**	**131.0627**	**131.0627**	**0.0326**	**0.0000**	**131.8770**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.1000e-004	0.0182	4.5600e-003	4.0000e-005	9.8000e-004	1.2000e-004	1.1000e-003	2.8000e-004	1.1000e-004	4.0000e-004	0.0000	3.8621	3.8621	2.7000e-004	0.0000	3.8688
Worker	2.5100e-003	1.9900e-003	0.0217	6.0000e-005	5.7100e-003	5.0000e-005	5.7500e-003	1.5200e-003	4.0000e-005	1.5600e-003	0.0000	5.3003	5.3003	1.7000e-004	0.0000	5.3045
Total	**3.1200e-003**	**0.0202**	**0.0262**	**1.0000e-004**	**6.6900e-003**	**1.7000e-004**	**6.8500e-003**	**1.8000e-003**	**1.5000e-004**	**1.9600e-003**	**0.0000**	**9.1624**	**9.1624**	**4.4000e-004**	**0.0000**	**9.1733**

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3.5 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1524	0.1467	2.3000e-004		8.2500e-003	8.2500e-003		7.5900e-003	7.5900e-003	0.0000	20.4752	20.4752	6.4800e-003	0.0000	20.6371
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0145**	**0.1524**	**0.1467**	**2.3000e-004**		**8.2500e-003**	**8.2500e-003**		**7.5900e-003**	**7.5900e-003**	**0.0000**	**20.4752**	**20.4752**	**6.4800e-003**	**0.0000**	**20.6371**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	5.8000e-004	6.2500e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5289	1.5289	5.0000e-005	0.0000	1.5301
Total	**7.2000e-004**	**5.8000e-004**	**6.2500e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5289**	**1.5289**	**5.0000e-005**	**0.0000**	**1.5301**

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3.5 Paving - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0145	0.1524	0.1467	2.3000e-004		8.2500e-003	8.2500e-003		7.5900e-003	7.5900e-003	0.0000	20.4752	20.4752	6.4800e-003	0.0000	20.6371
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0145**	**0.1524**	**0.1467**	**2.3000e-004**		**8.2500e-003**	**8.2500e-003**		**7.5900e-003**	**7.5900e-003**	**0.0000**	**20.4752**	**20.4752**	**6.4800e-003**	**0.0000**	**20.6371**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	5.8000e-004	6.2500e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5289	1.5289	5.0000e-005	0.0000	1.5301
Total	**7.2000e-004**	**5.8000e-004**	**6.2500e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5289**	**1.5289**	**5.0000e-005**	**0.0000**	**1.5301**

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3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1521					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.5500e-003	0.0245	0.0246	4.0000e-005		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003	0.0000	3.4043	3.4043	2.9000e-004	0.0000	3.4115
Total	**0.1556**	**0.0245**	**0.0246**	**4.0000e-005**		**1.7200e-003**	**1.7200e-003**		**1.7200e-003**	**1.7200e-003**	**0.0000**	**3.4043**	**3.4043**	**2.9000e-004**	**0.0000**	**3.4115**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	8.0000e-005	8.3000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.2039	0.2039	1.0000e-005	0.0000	0.2040
Total	**1.0000e-004**	**8.0000e-005**	**8.3000e-004**	**0.0000**	**2.2000e-004**	**0.0000**	**2.2000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.2039**	**0.2039**	**1.0000e-005**	**0.0000**	**0.2040**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.6 Architectural Coating - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1521					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.5500e-003	0.0245	0.0246	4.0000e-005		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003	0.0000	3.4043	3.4043	2.9000e-004	0.0000	3.4115
Total	**0.1556**	**0.0245**	**0.0246**	**4.0000e-005**		**1.7200e-003**	**1.7200e-003**		**1.7200e-003**	**1.7200e-003**	**0.0000**	**3.4043**	**3.4043**	**2.9000e-004**	**0.0000**	**3.4115**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	8.0000e-005	8.3000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.2039	0.2039	1.0000e-005	0.0000	0.2040
Total	**1.0000e-004**	**8.0000e-005**	**8.3000e-004**	**0.0000**	**2.2000e-004**	**0.0000**	**2.2000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.2039**	**0.2039**	**1.0000e-005**	**0.0000**	**0.2040**

4.0 Operational Detail - Mobile

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

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5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1994	3.2400e-003	0.2798	1.0000e-005		1.5300e-003	1.5300e-003		1.5300e-003	1.5300e-003	0.0000	0.4548	0.4548	4.5000e-004	0.0000	0.4660
Unmitigated	0.1994	3.2400e-003	0.2798	1.0000e-005		1.5300e-003	1.5300e-003		1.5300e-003	1.5300e-003	0.0000	0.4548	0.4548	4.5000e-004	0.0000	0.4660

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0152					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1756					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	8.5700e-003	3.2400e-003	0.2798	1.0000e-005		1.5300e-003	1.5300e-003		1.5300e-003	1.5300e-003	0.0000	0.4548	0.4548	4.5000e-004	0.0000	0.4660
Total	**0.1994**	**3.2400e-003**	**0.2798**	**1.0000e-005**		**1.5300e-003**	**1.5300e-003**		**1.5300e-003**	**1.5300e-003**	**0.0000**	**0.4548**	**0.4548**	**4.5000e-004**	**0.0000**	**0.4660**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0152					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1756					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	8.5700e-003	3.2400e-003	0.2798	1.0000e-005		1.5300e-003	1.5300e-003		1.5300e-003	1.5300e-003	0.0000	0.4548	0.4548	4.5000e-004	0.0000	0.4660
Total	**0.1994**	**3.2400e-003**	**0.2798**	**1.0000e-005**		**1.5300e-003**	**1.5300e-003**		**1.5300e-003**	**1.5300e-003**	**0.0000**	**0.4548**	**0.4548**	**4.5000e-004**	**0.0000**	**0.4660**

7.0 Water Detail

7.1 Mitigation Measures Water

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

ATTACHMENT C:

CALEEMOD AIR QUALITY PROPOSED PROJECT (OPERATIONAL) EMISSIONS MODEL OUTPUTS

Brodiaea Residential Proposed (Operation)

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	47.00	Dwelling Unit	15.26	84,600.00	134

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Operations Run Only

Off-road Equipment - Operations Run Only

Trips and VMT - Operations Run Only

Vehicle Trips - Trip Rates from Trip Generation by Urban Crossroads 2018

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	1.00
tblConstructionPhase	PhaseEndDate	6/22/2018	5/28/2018
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	14.2551	1.0203	27.7987	0.0612		3.6116	3.6116		3.6116	3.6116	440.2452	852.9820	1,293.2271	1.3198	0.0299	1,335.1253
Energy	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
Mobile	0.9840	5.2794	13.0028	0.0422	3.3844	0.0498	3.4342	0.9057	0.0469	0.9525		4,281.0811	4,281.0811	0.2340		4,286.9310
Total	**15.2815**	**6.6628**	**40.9560**	**0.1057**	**3.3844**	**3.6908**	**7.0751**	**0.9057**	**3.6878**	**4.5935**	**440.2452**	**5,597.5663**	**6,037.8115**	**1.5626**	**0.0384**	**6,088.3140**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	14.2551	1.0203	27.7987	0.0612		3.6116	3.6116		3.6116	3.6116	440.2452	852.9820	1,293.2271	1.3198	0.0299	1,335.1253
Energy	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
Mobile	0.9840	5.2794	13.0028	0.0422	3.3844	0.0498	3.4342	0.9057	0.0469	0.9525		4,281.0811	4,281.0811	0.2340		4,286.9310
Total	**15.2815**	**6.6628**	**40.9560**	**0.1057**	**3.3844**	**3.6908**	**7.0751**	**0.9057**	**3.6878**	**4.5935**	**440.2452**	**5,597.5663**	**6,037.8115**	**1.5626**	**0.0384**	**6,088.3140**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/28/2018	5/28/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Excavators	0	8.00	158	0.38
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.9840	5.2794	13.0028	0.0422	3.3844	0.0498	3.4342	0.9057	0.0469	0.9525		4,281.0811	4,281.0811	0.2340		4,286.9310
Unmitigated	0.9840	5.2794	13.0028	0.0422	3.3844	0.0498	3.4342	0.9057	0.0469	0.9525		4,281.0811	4,281.0811	0.2340		4,286.9310

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	443.68	465.77	405.14	1,508,092	1,508,092
Total	443.68	465.77	405.14	1,508,092	1,508,092

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
NaturalGas Unmitigated	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	3939.78	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
Total		**0.0425**	**0.3631**	**0.1545**	**2.3200e-003**		**0.0294**	**0.0294**		**0.0294**	**0.0294**		**463.5033**	**463.5033**	**8.8800e-003**	**8.5000e-003**	**466.2577**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	3.93978	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
Total		**0.0425**	**0.3631**	**0.1545**	**2.3200e-003**		**0.0294**	**0.0294**		**0.0294**	**0.0294**		**463.5033**	**463.5033**	**8.8800e-003**	**8.5000e-003**	**466.2577**

6.0 Area Detail

6.1 Mitigation Measures Area

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	14.2551	1.0203	27.7987	0.0612		3.6116	3.6116		3.6116	3.6116	440.2452	852.9820	1,293.2271	1.3198	0.0299	1,335.1253
Unmitigated	14.2551	1.0203	27.7987	0.0612		3.6116	3.6116		3.6116	3.6116	440.2452	852.9820	1,293.2271	1.3198	0.0299	1,335.1253

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1450					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6751					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	12.3157	0.9752	23.9019	0.0610		3.5903	3.5903		3.5903	3.5903	440.2452	846.0000	1,286.2452	1.3129	0.0299	1,327.9720
Landscaping	0.1193	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214		6.9820	6.9820	6.8500e-003		7.1533
Total	**14.2551**	**1.0203**	**27.7987**	**0.0612**		**3.6116**	**3.6116**		**3.6116**	**3.6116**	**440.2452**	**852.9820**	**1,293.2271**	**1.3198**	**0.0299**	**1,335.1253**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1450					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6751					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	12.3157	0.9752	23.9019	0.0610		3.5903	3.5903		3.5903	3.5903	440.2452	846.0000	1,286.2452	1.3129	0.0299	1,327.9720
Landscaping	0.1193	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214		6.9820	6.9820	6.8500e-003		7.1533
Total	**14.2551**	**1.0203**	**27.7987**	**0.0612**		**3.6116**	**3.6116**		**3.6116**	**3.6116**	**440.2452**	**852.9820**	**1,293.2271**	**1.3198**	**0.0299**	**1,335.1253**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Brodiaea Residential Proposed (Operation)

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	47.00	Dwelling Unit	15.26	84,600.00	134

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Operations Run Only

Off-road Equipment - Operations Run Only

Trips and VMT - Operations Run Only

Vehicle Trips - Trip Rates from Trip Generation by Urban Crossroads 2018

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	1.00
tblConstructionPhase	PhaseEndDate	6/22/2018	5/28/2018
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	14.2551	1.0203	27.7987	0.0612		3.6116	3.6116		3.6116	3.6116	440.2452	852.9820	1,293.2271	1.3198	0.0299	1,335.1253
Energy	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
Mobile	1.0301	5.1489	13.8717	0.0446	3.3844	0.0495	3.4338	0.9057	0.0466	0.9522		4,523.0086	4,523.0086	0.2351		4,528.8854
Total	**15.3277**	**6.5323**	**41.8249**	**0.1081**	**3.3844**	**3.6904**	**7.0748**	**0.9057**	**3.6875**	**4.5932**	**440.2452**	**5,839.4939**	**6,279.7390**	**1.5637**	**0.0384**	**6,330.2684**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	14.2551	1.0203	27.7987	0.0612		3.6116	3.6116		3.6116	3.6116	440.2452	852.9820	1,293.2271	1.3198	0.0299	1,335.1253
Energy	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
Mobile	1.0301	5.1489	13.8717	0.0446	3.3844	0.0495	3.4338	0.9057	0.0466	0.9522		4,523.0086	4,523.0086	0.2351		4,528.8854
Total	**15.3277**	**6.5323**	**41.8249**	**0.1081**	**3.3844**	**3.6904**	**7.0748**	**0.9057**	**3.6875**	**4.5932**	**440.2452**	**5,839.4939**	**6,279.7390**	**1.5637**	**0.0384**	**6,330.2684**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/28/2018	5/28/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Excavators	0	8.00	158	0.38
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0301	5.1489	13.8717	0.0446	3.3844	0.0495	3.4338	0.9057	0.0466	0.9522		4,523.0086	4,523.0086	0.2351		4,528.8854
Unmitigated	1.0301	5.1489	13.8717	0.0446	3.3844	0.0495	3.4338	0.9057	0.0466	0.9522		4,523.0086	4,523.0086	0.2351		4,528.8854

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	443.68	465.77	405.14	1,508,092	1,508,092
Total	443.68	465.77	405.14	1,508,092	1,508,092

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
NaturalGas Unmitigated	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	3939.78	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
Total		**0.0425**	**0.3631**	**0.1545**	**2.3200e-003**		**0.0294**	**0.0294**		**0.0294**	**0.0294**		**463.5033**	**463.5033**	**8.8800e-003**	**8.5000e-003**	**466.2577**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	3.93978	0.0425	0.3631	0.1545	2.3200e-003		0.0294	0.0294		0.0294	0.0294		463.5033	463.5033	8.8800e-003	8.5000e-003	466.2577
Total		**0.0425**	**0.3631**	**0.1545**	**2.3200e-003**		**0.0294**	**0.0294**		**0.0294**	**0.0294**		**463.5033**	**463.5033**	**8.8800e-003**	**8.5000e-003**	**466.2577**

6.0 Area Detail

6.1 Mitigation Measures Area

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	14.2551	1.0203	27.7987	0.0612		3.6116	3.6116		3.6116	3.6116	440.2452	852.9820	1,293.2271	1.3198	0.0299	1,335.1253
Unmitigated	14.2551	1.0203	27.7987	0.0612		3.6116	3.6116		3.6116	3.6116	440.2452	852.9820	1,293.2271	1.3198	0.0299	1,335.1253

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1450					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6751					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	12.3157	0.9752	23.9019	0.0610		3.5903	3.5903		3.5903	3.5903	440.2452	846.0000	1,286.2452	1.3129	0.0299	1,327.9720
Landscaping	0.1193	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214		6.9820	6.9820	6.8500e-003		7.1533
Total	**14.2551**	**1.0203**	**27.7987**	**0.0612**		**3.6116**	**3.6116**		**3.6116**	**3.6116**	**440.2452**	**852.9820**	**1,293.2271**	**1.3198**	**0.0299**	**1,335.1253**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1450					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6751					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	12.3157	0.9752	23.9019	0.0610		3.5903	3.5903		3.5903	3.5903	440.2452	846.0000	1,286.2452	1.3129	0.0299	1,327.9720
Landscaping	0.1193	0.0451	3.8968	2.0000e-004		0.0214	0.0214		0.0214	0.0214		6.9820	6.9820	6.8500e-003		7.1533
Total	**14.2551**	**1.0203**	**27.7987**	**0.0612**		**3.6116**	**3.6116**		**3.6116**	**3.6116**	**440.2452**	**852.9820**	**1,293.2271**	**1.3198**	**0.0299**	**1,335.1253**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

ATTACHMENT D:

CALEEMOD AIR QUALITY CURRENTLY ADOPTED LAND USE (OPERATIONAL) MISSIONS MODEL OUTPUTS

Brodieaea Residential Current (Operations)

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	27.00	Dwelling Unit	8.77	48,600.00	77

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Current Operations Run Only

Construction Phase - Current Operations Run Only (27 DU)

Off-road Equipment - Operations Run Only (27 DU)

Vehicle Trips - Trip Rates from Trip Generator by Urban Crossroads 2018

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	1.00
tblConstructionPhase	PhaseEndDate	6/22/2018	5/28/2018

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.8069	38.3860	22.9852	0.0405	0.1677	1.9399	2.1076	0.0445	1.8061	1.8505	0.0000	4,042.8684	4,042.8684	1.0726	0.0000	4,069.6822
Maximum	**3.8069**	**38.3860**	**22.9852**	**0.0405**	**0.1677**	**1.9399**	**2.1076**	**0.0445**	**1.8061**	**1.8505**	**0.0000**	**4,042.8684**	**4,042.8684**	**1.0726**	**0.0000**	**4,069.6822**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.8069	38.3860	22.9852	0.0405	0.1677	1.9399	2.1076	0.0445	1.8061	1.8505	0.0000	4,042.8684	4,042.8684	1.0726	0.0000	4,069.6822
Maximum	**3.8069**	**38.3860**	**22.9852**	**0.0405**	**0.1677**	**1.9399**	**2.1076**	**0.0445**	**1.8061**	**1.8505**	**0.0000**	**4,042.8684**	**4,042.8684**	**1.0726**	**0.0000**	**4,069.6822**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.1891	0.5861	15.9695	0.0352		2.0748	2.0748		2.0748	2.0748	252.9068	490.0109	742.9177	0.7582	0.0172	766.9869
Energy	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
Mobile	0.5653	3.0329	7.4697	0.0242	1.9442	0.0286	1.9728	0.5203	0.0269	0.5472		2,459.3444	2,459.3444	0.1344		2,462.7050
Total	**8.7788**	**3.8276**	**23.5279**	**0.0607**	**1.9442**	**2.1202**	**4.0644**	**0.5203**	**2.1185**	**2.6388**	**252.9068**	**3,215.6232**	**3,468.5300**	**0.8977**	**0.0221**	**3,497.5421**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.1891	0.5861	15.9695	0.0352		2.0748	2.0748		2.0748	2.0748	252.9068	490.0109	742.9177	0.7582	0.0172	766.9869
Energy	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
Mobile	0.5653	3.0329	7.4697	0.0242	1.9442	0.0286	1.9728	0.5203	0.0269	0.5472		2,459.3444	2,459.3444	0.1344		2,462.7050
Total	**8.7788**	**3.8276**	**23.5279**	**0.0607**	**1.9442**	**2.1202**	**4.0644**	**0.5203**	**2.1185**	**2.6388**	**252.9068**	**3,215.6232**	**3,468.5300**	**0.8977**	**0.0221**	**3,497.5421**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/28/2018	5/28/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7190	38.3225	22.3040	0.0388		1.9386	1.9386		1.8048	1.8048		3,871.7665	3,871.7665	1.0667		3,898.4344
Total	**3.7190**	**38.3225**	**22.3040**	**0.0388**		**1.9386**	**1.9386**		**1.8048**	**1.8048**		**3,871.7665**	**3,871.7665**	**1.0667**		**3,898.4344**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0879	0.0635	0.6811	1.7200e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2300e-003	0.0457		171.1019	171.1019	5.8400e-003		171.2479
Total	**0.0879**	**0.0635**	**0.6811**	**1.7200e-003**	**0.1677**	**1.3400e-003**	**0.1690**	**0.0445**	**1.2300e-003**	**0.0457**		**171.1019**	**171.1019**	**5.8400e-003**		**171.2479**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7190	38.3225	22.3040	0.0388		1.9386	1.9386		1.8048	1.8048	0.0000	3,871.7665	3,871.7665	1.0667		3,898.4344
Total	**3.7190**	**38.3225**	**22.3040**	**0.0388**		**1.9386**	**1.9386**		**1.8048**	**1.8048**	**0.0000**	**3,871.7665**	**3,871.7665**	**1.0667**		**3,898.4344**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0879	0.0635	0.6811	1.7200e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2300e-003	0.0457		171.1019	171.1019	5.8400e-003		171.2479
Total	**0.0879**	**0.0635**	**0.6811**	**1.7200e-003**	**0.1677**	**1.3400e-003**	**0.1690**	**0.0445**	**1.2300e-003**	**0.0457**		**171.1019**	**171.1019**	**5.8400e-003**		**171.2479**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.5653	3.0329	7.4697	0.0242	1.9442	0.0286	1.9728	0.5203	0.0269	0.5472		2,459.3444	2,459.3444	0.1344		2,462.7050
Unmitigated	0.5653	3.0329	7.4697	0.0242	1.9442	0.0286	1.9728	0.5203	0.0269	0.5472		2,459.3444	2,459.3444	0.1344		2,462.7050

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	257.04	267.57	232.74	871,623	871,623
Total	257.04	267.57	232.74	871,623	871,623

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
NaturalGas Unmitigated	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	2263.28	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
Total		**0.0244**	**0.2086**	**0.0888**	**1.3300e-003**		**0.0169**	**0.0169**		**0.0169**	**0.0169**		**266.2679**	**266.2679**	**5.1000e-003**	**4.8800e-003**	**267.8502**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	2.26328	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
Total		**0.0244**	**0.2086**	**0.0888**	**1.3300e-003**		**0.0169**	**0.0169**		**0.0169**	**0.0169**		**266.2679**	**266.2679**	**5.1000e-003**	**4.8800e-003**	**267.8502**

6.0 Area Detail

6.1 Mitigation Measures Area

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.1891	0.5861	15.9695	0.0352		2.0748	2.0748		2.0748	2.0748	252.9068	490.0109	742.9177	0.7582	0.0172	766.9869
Unmitigated	8.1891	0.5861	15.9695	0.0352		2.0748	2.0748		2.0748	2.0748	252.9068	490.0109	742.9177	0.7582	0.0172	766.9869

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0833					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9623					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	7.0750	0.5602	13.7309	0.0350		2.0625	2.0625		2.0625	2.0625	252.9068	486.0000	738.9068	0.7542	0.0172	762.8775
Landscaping	0.0685	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123		4.0109	4.0109	3.9400e-003		4.1093
Total	**8.1891**	**0.5861**	**15.9695**	**0.0352**		**2.0748**	**2.0748**		**2.0748**	**2.0748**	**252.9068**	**490.0109**	**742.9177**	**0.7582**	**0.0172**	**766.9869**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0833					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9623					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	7.0750	0.5602	13.7309	0.0350		2.0625	2.0625		2.0625	2.0625	252.9068	486.0000	738.9068	0.7542	0.0172	762.8775
Landscaping	0.0685	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123		4.0109	4.0109	3.9400e-003		4.1093
Total	**8.1891**	**0.5861**	**15.9695**	**0.0352**		**2.0748**	**2.0748**		**2.0748**	**2.0748**	**252.9068**	**490.0109**	**742.9177**	**0.7582**	**0.0172**	**766.9869**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Brodieaea Residential Current (Operations)

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	27.00	Dwelling Unit	8.77	48,600.00	77

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Current Operations Run Only

Construction Phase - Current Operations Run Only (27 DU)

Off-road Equipment - Operations Run Only (27 DU)

Vehicle Trips - Trip Rates from Trip Generator by Urban Crossroads 2018

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	1.00
tblConstructionPhase	PhaseEndDate	6/22/2018	5/28/2018

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.7998	38.3805	23.0567	0.0407	0.1677	1.9399	2.1076	0.0445	1.8061	1.8505	0.0000	4,054.6693	4,054.6693	1.0730	0.0000	4,081.4931
Maximum	**3.7998**	**38.3805**	**23.0567**	**0.0407**	**0.1677**	**1.9399**	**2.1076**	**0.0445**	**1.8061**	**1.8505**	**0.0000**	**4,054.6693**	**4,054.6693**	**1.0730**	**0.0000**	**4,081.4931**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.7998	38.3805	23.0567	0.0407	0.1677	1.9399	2.1076	0.0445	1.8061	1.8505	0.0000	4,054.6693	4,054.6693	1.0730	0.0000	4,081.4930
Maximum	**3.7998**	**38.3805**	**23.0567**	**0.0407**	**0.1677**	**1.9399**	**2.1076**	**0.0445**	**1.8061**	**1.8505**	**0.0000**	**4,054.6693**	**4,054.6693**	**1.0730**	**0.0000**	**4,081.4930**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Brodieaea Residential Current (Operations) - South Coast AQMD Air District, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.1891	0.5861	15.9695	0.0352		2.0748	2.0748		2.0748	2.0748	252.9068	490.0109	742.9177	0.7582	0.0172	766.9869
Energy	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
Mobile	0.5918	2.9579	7.9688	0.0256	1.9442	0.0284	1.9726	0.5203	0.0267	0.5470		2,598.3241	2,598.3241	0.1350		2,601.7001
Total	**8.8053**	**3.7526**	**24.0271**	**0.0621**	**1.9442**	**2.1200**	**4.0642**	**0.5203**	**2.1184**	**2.6386**	**252.9068**	**3,354.6028**	**3,607.5096**	**0.8983**	**0.0221**	**3,636.5372**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.1891	0.5861	15.9695	0.0352		2.0748	2.0748		2.0748	2.0748	252.9068	490.0109	742.9177	0.7582	0.0172	766.9869
Energy	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
Mobile	0.5918	2.9579	7.9688	0.0256	1.9442	0.0284	1.9726	0.5203	0.0267	0.5470		2,598.3241	2,598.3241	0.1350		2,601.7001
Total	**8.8053**	**3.7526**	**24.0271**	**0.0621**	**1.9442**	**2.1200**	**4.0642**	**0.5203**	**2.1184**	**2.6386**	**252.9068**	**3,354.6028**	**3,607.5096**	**0.8983**	**0.0221**	**3,636.5372**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/28/2018	5/28/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7190	38.3225	22.3040	0.0388		1.9386	1.9386		1.8048	1.8048		3,871.7665	3,871.7665	1.0667		3,898.4344
Total	**3.7190**	**38.3225**	**22.3040**	**0.0388**		**1.9386**	**1.9386**		**1.8048**	**1.8048**		**3,871.7665**	**3,871.7665**	**1.0667**		**3,898.4344**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0808	0.0580	0.7526	1.8400e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2300e-003	0.0457		182.9028	182.9028	6.2400e-003		183.0587
Total	**0.0808**	**0.0580**	**0.7526**	**1.8400e-003**	**0.1677**	**1.3400e-003**	**0.1690**	**0.0445**	**1.2300e-003**	**0.0457**		**182.9028**	**182.9028**	**6.2400e-003**		**183.0587**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7190	38.3225	22.3040	0.0388		1.9386	1.9386		1.8048	1.8048	0.0000	3,871.7665	3,871.7665	1.0667		3,898.4344
Total	**3.7190**	**38.3225**	**22.3040**	**0.0388**		**1.9386**	**1.9386**		**1.8048**	**1.8048**	**0.0000**	**3,871.7665**	**3,871.7665**	**1.0667**		**3,898.4344**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0808	0.0580	0.7526	1.8400e-003	0.1677	1.3400e-003	0.1690	0.0445	1.2300e-003	0.0457		182.9028	182.9028	6.2400e-003		183.0587
Total	**0.0808**	**0.0580**	**0.7526**	**1.8400e-003**	**0.1677**	**1.3400e-003**	**0.1690**	**0.0445**	**1.2300e-003**	**0.0457**		**182.9028**	**182.9028**	**6.2400e-003**		**183.0587**

4.0 Operational Detail - Mobile

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.5918	2.9579	7.9688	0.0256	1.9442	0.0284	1.9726	0.5203	0.0267	0.5470		2,598.3241	2,598.3241	0.1350		2,601.7001
Unmitigated	0.5918	2.9579	7.9688	0.0256	1.9442	0.0284	1.9726	0.5203	0.0267	0.5470		2,598.3241	2,598.3241	0.1350		2,601.7001

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	257.04	267.57	232.74	871,623	871,623
Total	257.04	267.57	232.74	871,623	871,623

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
NaturalGas Unmitigated	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	2263.28	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
Total		**0.0244**	**0.2086**	**0.0888**	**1.3300e-003**		**0.0169**	**0.0169**		**0.0169**	**0.0169**		**266.2679**	**266.2679**	**5.1000e-003**	**4.8800e-003**	**267.8502**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	2.26328	0.0244	0.2086	0.0888	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.2679	266.2679	5.1000e-003	4.8800e-003	267.8502
Total		**0.0244**	**0.2086**	**0.0888**	**1.3300e-003**		**0.0169**	**0.0169**		**0.0169**	**0.0169**		**266.2679**	**266.2679**	**5.1000e-003**	**4.8800e-003**	**267.8502**

6.0 Area Detail

6.1 Mitigation Measures Area

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.1891	0.5861	15.9695	0.0352		2.0748	2.0748		2.0748	2.0748	252.9068	490.0109	742.9177	0.7582	0.0172	766.9869
Unmitigated	8.1891	0.5861	15.9695	0.0352		2.0748	2.0748		2.0748	2.0748	252.9068	490.0109	742.9177	0.7582	0.0172	766.9869

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0833					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9623					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	7.0750	0.5602	13.7309	0.0350		2.0625	2.0625		2.0625	2.0625	252.9068	486.0000	738.9068	0.7542	0.0172	762.8775
Landscaping	0.0685	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123		4.0109	4.0109	3.9400e-003		4.1093
Total	**8.1891**	**0.5861**	**15.9695**	**0.0352**		**2.0748**	**2.0748**		**2.0748**	**2.0748**	**252.9068**	**490.0109**	**742.9177**	**0.7582**	**0.0172**	**766.9869**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0833					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.9623					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	7.0750	0.5602	13.7309	0.0350		2.0625	2.0625		2.0625	2.0625	252.9068	486.0000	738.9068	0.7542	0.0172	762.8775
Landscaping	0.0685	0.0259	2.2386	1.2000e-004		0.0123	0.0123		0.0123	0.0123		4.0109	4.0109	3.9400e-003		4.1093
Total	**8.1891**	**0.5861**	**15.9695**	**0.0352**		**2.0748**	**2.0748**		**2.0748**	**2.0748**	**252.9068**	**490.0109**	**742.9177**	**0.7582**	**0.0172**	**766.9869**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

ATTACHMENT E:

CALEEMOD PROPOSED PROJECT GREENHOUSE GAS EMISSIONS MODEL OUTPUTS

Brodiaea Residential Proposed (Operation)

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	47.00	Dwelling Unit	15.26	84,600.00	134

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Operations Run Only

Off-road Equipment - Operations Run Only

Trips and VMT - Operations Run Only

Vehicle Trips - Trip Rates from Trip Generation by Urban Crossroads 2018

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	1.00
tblConstructionPhase	PhaseEndDate	6/22/2018	5/28/2018
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.5010	0.0178	0.7859	7.9000e-004		0.0476	0.0476		0.0476	0.0476	4.9923	10.3852	15.3775	0.0157	3.4000e-004	15.8701
Energy	7.7500e-003	0.0663	0.0282	4.2000e-004		5.3600e-003	5.3600e-003		5.3600e-003	5.3600e-003	0.0000	207.2693	207.2693	6.8600e-003	2.5200e-003	208.1923
Mobile	0.1661	0.9272	2.2783	7.3700e-003	0.5731	8.5400e-003	0.5816	0.1536	8.0400e-003	0.1616	0.0000	679.5040	679.5040	0.0364	0.0000	680.4147
Waste						0.0000	0.0000		0.0000	0.0000	11.1523	0.0000	11.1523	0.6591	0.0000	27.6294
Water						0.0000	0.0000		0.0000	0.0000	0.9715	19.5384	20.5099	0.1006	2.5200e-003	23.7765
Total	**0.6749**	**1.0113**	**3.0923**	**8.5800e-003**	**0.5731**	**0.0615**	**0.6345**	**0.1536**	**0.0610**	**0.2145**	**17.1161**	**916.6969**	**933.8130**	**0.8186**	**5.3800e-003**	**955.8830**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.5010	0.0178	0.7859	7.9000e-004		0.0476	0.0476		0.0476	0.0476	4.9923	10.3852	15.3775	0.0157	3.4000e-004	15.8701
Energy	7.7500e-003	0.0663	0.0282	4.2000e-004		5.3600e-003	5.3600e-003		5.3600e-003	5.3600e-003	0.0000	207.2693	207.2693	6.8600e-003	2.5200e-003	208.1923
Mobile	0.1661	0.9272	2.2783	7.3700e-003	0.5731	8.5400e-003	0.5816	0.1536	8.0400e-003	0.1616	0.0000	679.5040	679.5040	0.0364	0.0000	680.4147
Waste						0.0000	0.0000		0.0000	0.0000	11.1523	0.0000	11.1523	0.6591	0.0000	27.6294
Water						0.0000	0.0000		0.0000	0.0000	0.9715	19.5384	20.5099	0.1006	2.5200e-003	23.7765
Total	**0.6749**	**1.0113**	**3.0923**	**8.5800e-003**	**0.5731**	**0.0615**	**0.6345**	**0.1536**	**0.0610**	**0.2145**	**17.1161**	**916.6969**	**933.8130**	**0.8186**	**5.3800e-003**	**955.8830**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/28/2018	5/28/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Excavators	0	8.00	158	0.38
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Rubber Tired Dozers	0	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1661	0.9272	2.2783	7.3700e-003	0.5731	8.5400e-003	0.5816	0.1536	8.0400e-003	0.1616	0.0000	679.5040	679.5040	0.0364	0.0000	680.4147
Unmitigated	0.1661	0.9272	2.2783	7.3700e-003	0.5731	8.5400e-003	0.5816	0.1536	8.0400e-003	0.1616	0.0000	679.5040	679.5040	0.0364	0.0000	680.4147

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	443.68	465.77	405.14	1,508,092	1,508,092
Total	443.68	465.77	405.14	1,508,092	1,508,092

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	130.5311	130.5311	5.3900e-003	1.1100e-003	130.9981
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	130.5311	130.5311	5.3900e-003	1.1100e-003	130.9981
NaturalGas Mitigated	7.7500e-003	0.0663	0.0282	4.2000e-004		5.3600e-003	5.3600e-003		5.3600e-003	5.3600e-003	0.0000	76.7382	76.7382	1.4700e-003	1.4100e-003	77.1942
NaturalGas Unmitigated	7.7500e-003	0.0663	0.0282	4.2000e-004		5.3600e-003	5.3600e-003		5.3600e-003	5.3600e-003	0.0000	76.7382	76.7382	1.4700e-003	1.4100e-003	77.1942

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	1.43802e+006	7.7500e-003	0.0663	0.0282	4.2000e-004		5.3600e-003	5.3600e-003		5.3600e-003	5.3600e-003	0.0000	76.7382	76.7382	1.4700e-003	1.4100e-003	77.1942
Total		**7.7500e-003**	**0.0663**	**0.0282**	**4.2000e-004**		**5.3600e-003**	**5.3600e-003**		**5.3600e-003**	**5.3600e-003**	**0.0000**	**76.7382**	**76.7382**	**1.4700e-003**	**1.4100e-003**	**77.1942**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	1.43802e+006	7.7500e-003	0.0663	0.0282	4.2000e-004		5.3600e-003	5.3600e-003		5.3600e-003	5.3600e-003	0.0000	76.7382	76.7382	1.4700e-003	1.4100e-003	77.1942
Total		**7.7500e-003**	**0.0663**	**0.0282**	**4.2000e-004**		**5.3600e-003**	**5.3600e-003**		**5.3600e-003**	**5.3600e-003**	**0.0000**	**76.7382**	**76.7382**	**1.4700e-003**	**1.4100e-003**	**77.1942**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	409675	130.5311	5.3900e-003	1.1100e-003	130.9981
Total		**130.5311**	**5.3900e-003**	**1.1100e-003**	**130.9981**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	409675	130.5311	5.3900e-003	1.1100e-003	130.9981
Total		**130.5311**	**5.3900e-003**	**1.1100e-003**	**130.9981**

6.0 Area Detail

6.1 Mitigation Measures Area

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5010	0.0178	0.7859	7.9000e-004		0.0476	0.0476		0.0476	0.0476	4.9923	10.3852	15.3775	0.0157	3.4000e-004	15.8701
Unmitigated	0.5010	0.0178	0.7859	7.9000e-004		0.0476	0.0476		0.0476	0.0476	4.9923	10.3852	15.3775	0.0157	3.4000e-004	15.8701

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0265					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3057					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.1540	0.0122	0.2988	7.6000e-004		0.0449	0.0449		0.0449	0.0449	4.9923	9.5935	14.5858	0.0149	3.4000e-004	15.0590
Landscaping	0.0149	5.6400e-003	0.4871	3.0000e-005		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	0.7917	0.7917	7.8000e-004	0.0000	0.8112
Total	**0.5010**	**0.0178**	**0.7859**	**7.9000e-004**		**0.0476**	**0.0476**		**0.0476**	**0.0476**	**4.9923**	**10.3852**	**15.3775**	**0.0157**	**3.4000e-004**	**15.8701**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0265					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3057					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.1540	0.0122	0.2988	7.6000e-004		0.0449	0.0449		0.0449	0.0449	4.9923	9.5935	14.5858	0.0149	3.4000e-004	15.0590
Landscaping	0.0149	5.6400e-003	0.4871	3.0000e-005		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	0.7917	0.7917	7.8000e-004	0.0000	0.8112
Total	**0.5010**	**0.0178**	**0.7859**	**7.9000e-004**		**0.0476**	**0.0476**		**0.0476**	**0.0476**	**4.9923**	**10.3852**	**15.3775**	**0.0157**	**3.4000e-004**	**15.8701**

7.0 Water Detail

7.1 Mitigation Measures Water

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	20.5099	0.1006	2.5200e-003	23.7765
Unmitigated	20.5099	0.1006	2.5200e-003	23.7765

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	3.06224 / 1.93054	20.5099	0.1006	2.5200e-003	23.7765
Total		**20.5099**	**0.1006**	**2.5200e-003**	**23.7765**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	3.06224 / 1.93054	20.5099	0.1006	2.5200e-003	23.7765
Total		**20.5099**	**0.1006**	**2.5200e-003**	**23.7765**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	11.1523	0.6591	0.0000	27.6294
Unmitigated	11.1523	0.6591	0.0000	27.6294

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	54.94	11.1523	0.6591	0.0000	27.6294
Total		**11.1523**	**0.6591**	**0.0000**	**27.6294**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	54.94	11.1523	0.6591	0.0000	27.6294
Total		**11.1523**	**0.6591**	**0.0000**	**27.6294**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

ATTACHMENT F:

CALEEMOD CURRENTLY ADOPTED LAND USE GREENHOUSE GAS EMISSIONS MODEL OUTPUTS

Brodieaea Residential Current (Operations)

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	27.00	Dwelling Unit	8.77	48,600.00	77

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Current Operations Run Only

Construction Phase - Current Operations Run Only (27 DU)

Off-road Equipment - Operations Run Only (27 DU)

Vehicle Trips - Trip Rates from Trip Generator by Urban Crossroads 2018

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	1.00
tblConstructionPhase	PhaseEndDate	6/22/2018	5/28/2018

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	1.9000e-003	0.0192	0.0115	2.0000e-005	8.0000e-005	9.7000e-004	1.0500e-003	2.0000e-005	9.0000e-004	9.2000e-004	0.0000	1.8351	1.8351	4.9000e-004	0.0000	1.8473
Maximum	**1.9000e-003**	**0.0192**	**0.0115**	**2.0000e-005**	**8.0000e-005**	**9.7000e-004**	**1.0500e-003**	**2.0000e-005**	**9.0000e-004**	**9.2000e-004**	**0.0000**	**1.8351**	**1.8351**	**4.9000e-004**	**0.0000**	**1.8473**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	1.9000e-003	0.0192	0.0115	2.0000e-005	8.0000e-005	9.7000e-004	1.0500e-003	2.0000e-005	9.0000e-004	9.2000e-004	0.0000	1.8351	1.8351	4.9000e-004	0.0000	1.8473
Maximum	**1.9000e-003**	**0.0192**	**0.0115**	**2.0000e-005**	**8.0000e-005**	**9.7000e-004**	**1.0500e-003**	**2.0000e-005**	**9.0000e-004**	**9.2000e-004**	**0.0000**	**1.8351**	**1.8351**	**4.9000e-004**	**0.0000**	**1.8473**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**5-28-2018**	**8-27-2018**	0.0151	0.0151
		Highest	0.0151	0.0151

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.2878	0.0102	0.4515	4.5000e-004		0.0273	0.0273		0.0273	0.0273	2.8679	5.9660	8.8339	9.0000e-003	1.9000e-004	9.1169
Energy	4.4500e-003	0.0381	0.0162	2.4000e-004		3.0800e-003	3.0800e-003		3.0800e-003	3.0800e-003	0.0000	119.0696	119.0696	3.9400e-003	1.4500e-003	119.5998
Mobile	0.0960	0.5359	1.3168	4.2600e-003	0.3312	4.9400e-003	0.3361	0.0888	4.6500e-003	0.0934	0.0000	392.7289	392.7289	0.0211	0.0000	393.2552
Waste						0.0000	0.0000		0.0000	0.0000	6.4084	0.0000	6.4084	0.3787	0.0000	15.8766
Water						0.0000	0.0000		0.0000	0.0000	0.5581	11.2242	11.7823	0.0578	1.4500e-003	13.6589
Total	**0.3883**	**0.5842**	**1.7844**	**4.9500e-003**	**0.3312**	**0.0353**	**0.3665**	**0.0888**	**0.0350**	**0.1238**	**9.8344**	**528.9886**	**538.8231**	**0.4705**	**3.0900e-003**	**551.5074**

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2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.2878	0.0102	0.4515	4.5000e-004		0.0273	0.0273		0.0273	0.0273	2.8679	5.9660	8.8339	9.0000e-003	1.9000e-004	9.1169
Energy	4.4500e-003	0.0381	0.0162	2.4000e-004		3.0800e-003	3.0800e-003		3.0800e-003	3.0800e-003	0.0000	119.0696	119.0696	3.9400e-003	1.4500e-003	119.5998
Mobile	0.0960	0.5359	1.3168	4.2600e-003	0.3312	4.9400e-003	0.3361	0.0888	4.6500e-003	0.0934	0.0000	392.7289	392.7289	0.0211	0.0000	393.2552
Waste						0.0000	0.0000		0.0000	0.0000	6.4084	0.0000	6.4084	0.3787	0.0000	15.8766
Water						0.0000	0.0000		0.0000	0.0000	0.5581	11.2242	11.7823	0.0578	1.4500e-003	13.6589
Total	**0.3883**	**0.5842**	**1.7844**	**4.9500e-003**	**0.3312**	**0.0353**	**0.3665**	**0.0888**	**0.0350**	**0.1238**	**9.8344**	**528.9886**	**538.8231**	**0.4705**	**3.0900e-003**	**551.5074**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/28/2018	5/28/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

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Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.8600e-003	0.0192	0.0112	2.0000e-005		9.7000e-004	9.7000e-004		9.0000e-004	9.0000e-004	0.0000	1.7562	1.7562	4.8000e-004	0.0000	1.7683
Total	**1.8600e-003**	**0.0192**	**0.0112**	**2.0000e-005**		**9.7000e-004**	**9.7000e-004**		**9.0000e-004**	**9.0000e-004**	**0.0000**	**1.7562**	**1.7562**	**4.8000e-004**	**0.0000**	**1.7683**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0789	0.0789	0.0000	0.0000	0.0790
Total	**4.0000e-005**	**3.0000e-005**	**3.5000e-004**	**0.0000**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0789**	**0.0789**	**0.0000**	**0.0000**	**0.0790**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

3.2 Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.8600e-003	0.0192	0.0112	2.0000e-005		9.7000e-004	9.7000e-004		9.0000e-004	9.0000e-004	0.0000	1.7562	1.7562	4.8000e-004	0.0000	1.7683
Total	**1.8600e-003**	**0.0192**	**0.0112**	**2.0000e-005**		**9.7000e-004**	**9.7000e-004**		**9.0000e-004**	**9.0000e-004**	**0.0000**	**1.7562**	**1.7562**	**4.8000e-004**	**0.0000**	**1.7683**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0789	0.0789	0.0000	0.0000	0.0790
Total	**4.0000e-005**	**3.0000e-005**	**3.5000e-004**	**0.0000**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0789**	**0.0789**	**0.0000**	**0.0000**	**0.0790**

4.0 Operational Detail - Mobile

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0960	0.5359	1.3168	4.2600e-003	0.3312	4.9400e-003	0.3361	0.0888	4.6500e-003	0.0934	0.0000	392.7289	392.7289	0.0211	0.0000	393.2552
Unmitigated	0.0960	0.5359	1.3168	4.2600e-003	0.3312	4.9400e-003	0.3361	0.0888	4.6500e-003	0.0934	0.0000	392.7289	392.7289	0.0211	0.0000	393.2552

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	257.04	267.57	232.74	871,623	871,623
Total	257.04	267.57	232.74	871,623	871,623

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	74.9860	74.9860	3.1000e-003	6.4000e-004	75.2542
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	74.9860	74.9860	3.1000e-003	6.4000e-004	75.2542
NaturalGas Mitigated	4.4500e-003	0.0381	0.0162	2.4000e-004		3.0800e-003	3.0800e-003		3.0800e-003	3.0800e-003	0.0000	44.0836	44.0836	8.4000e-004	8.1000e-004	44.3456
NaturalGas Unmitigated	4.4500e-003	0.0381	0.0162	2.4000e-004		3.0800e-003	3.0800e-003		3.0800e-003	3.0800e-003	0.0000	44.0836	44.0836	8.4000e-004	8.1000e-004	44.3456

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	826096	4.4500e-003	0.0381	0.0162	2.4000e-004		3.0800e-003	3.0800e-003		3.0800e-003	3.0800e-003	0.0000	44.0836	44.0836	8.4000e-004	8.1000e-004	44.3456
Total		**4.4500e-003**	**0.0381**	**0.0162**	**2.4000e-004**		**3.0800e-003**	**3.0800e-003**		**3.0800e-003**	**3.0800e-003**	**0.0000**	**44.0836**	**44.0836**	**8.4000e-004**	**8.1000e-004**	**44.3456**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	826096	4.4500e-003	0.0381	0.0162	2.4000e-004		3.0800e-003	3.0800e-003		3.0800e-003	3.0800e-003	0.0000	44.0836	44.0836	8.4000e-004	8.1000e-004	44.3456
Total		**4.4500e-003**	**0.0381**	**0.0162**	**2.4000e-004**		**3.0800e-003**	**3.0800e-003**		**3.0800e-003**	**3.0800e-003**	**0.0000**	**44.0836**	**44.0836**	**8.4000e-004**	**8.1000e-004**	**44.3456**

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	235345	74.9860	3.1000e-003	6.4000e-004	75.2542
Total		**74.9860**	**3.1000e-003**	**6.4000e-004**	**75.2542**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	235345	74.9860	3.1000e-003	6.4000e-004	75.2542
Total		**74.9860**	**3.1000e-003**	**6.4000e-004**	**75.2542**

6.0 Area Detail

6.1 Mitigation Measures Area

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2878	0.0102	0.4515	4.5000e-004		0.0273	0.0273		0.0273	0.0273	2.8679	5.9660	8.8339	9.0000e-003	1.9000e-004	9.1169
Unmitigated	0.2878	0.0102	0.4515	4.5000e-004		0.0273	0.0273		0.0273	0.0273	2.8679	5.9660	8.8339	9.0000e-003	1.9000e-004	9.1169

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0152					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1756					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0884	7.0000e-003	0.1716	4.4000e-004		0.0258	0.0258		0.0258	0.0258	2.8679	5.5112	8.3791	8.5500e-003	1.9000e-004	8.6509
Landscaping	8.5700e-003	3.2400e-003	0.2798	1.0000e-005		1.5300e-003	1.5300e-003		1.5300e-003	1.5300e-003	0.0000	0.4548	0.4548	4.5000e-004	0.0000	0.4660
Total	**0.2878**	**0.0102**	**0.4515**	**4.5000e-004**		**0.0273**	**0.0273**		**0.0273**	**0.0273**	**2.8679**	**5.9660**	**8.8339**	**9.0000e-003**	**1.9000e-004**	**9.1169**

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6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0152					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1756					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0884	7.0000e-003	0.1716	4.4000e-004		0.0258	0.0258		0.0258	0.0258	2.8679	5.5112	8.3791	8.5500e-003	1.9000e-004	8.6509
Landscaping	8.5700e-003	3.2400e-003	0.2798	1.0000e-005		1.5300e-003	1.5300e-003		1.5300e-003	1.5300e-003	0.0000	0.4548	0.4548	4.5000e-004	0.0000	0.4660
Total	**0.2878**	**0.0102**	**0.4515**	**4.5000e-004**		**0.0273**	**0.0273**		**0.0273**	**0.0273**	**2.8679**	**5.9660**	**8.8339**	**9.0000e-003**	**1.9000e-004**	**9.1169**

7.0 Water Detail

7.1 Mitigation Measures Water

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	11.7823	0.0578	1.4500e-003	13.6589
Unmitigated	11.7823	0.0578	1.4500e-003	13.6589

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	1.75916 / 1.10903	11.7823	0.0578	1.4500e-003	13.6589
Total		**11.7823**	**0.0578**	**1.4500e-003**	**13.6589**

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7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	1.75916 / 1.10903	11.7823	0.0578	1.4500e-003	13.6589
Total		**11.7823**	**0.0578**	**1.4500e-003**	**13.6589**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	6.4084	0.3787	0.0000	15.8766
Unmitigated	6.4084	0.3787	0.0000	15.8766

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	31.57	6.4084	0.3787	0.0000	15.8766
Total		**6.4084**	**0.3787**	**0.0000**	**15.8766**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	31.57	6.4084	0.3787	0.0000	15.8766
Total		**6.4084**	**0.3787**	**0.0000**	**15.8766**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment: Project 2_Bio Report March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea

BURROWING OWL SURVEY REPORT

MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA

(Township 3 South, Range 3 West, Section 14)

Owner/Applicant

FH II, LLC
2151 E. Convention Center Way
Suite 100
Ontario, California 91764

Prepared by:

RCA Associates, Inc.
15555 Main Street, #D4-235
Hesperia, California 92345

Principal Investigators:
Randall Arnold, Senior Biologist
Blake Curran, Environmental Biologist
Parker Smith, Project Manager

Project No: RCA#2018-21

March 2018

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TITLE PAGE

Date Report Written: March 27, 2018

Date Field Work Completed: March 12th, March 16th, March 21th, and March 26th 2018

Report Title: Burrowing Owl Focused Survey Report

Assessor's Parcel Number: 478-080-014

Prepared for:
FH II, LLC
2151 E. Convention Center Way
Suite 100
Ontario, California 91764

Principal Investigators:
Randall C. Arnold, Jr., Senior Biologist
Parker L. Smith, Biological Field Technician
Blake Curran, Environmental Biologist

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Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Appendix A - Burrowing Owl Occurrences

Appendix B - Flora and Fauna Compendia

Certification

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

EXECUTIVE SUMMARY

A focused burrowing owl (*Athene cunicularia*) survey was performed on a parcel located in the incorporated city of Moreno Valley, California (Township 3 South, Range 3 West, Section 14, USGS Sunnymead, California Quadrangle, 1956) (Figures 1, 2, 3). The site has been cleared of native vegetation several years ago; however, there has been some revegetation on the site. The site is heavily disturbed by past human activity. Observing historical aerial photographs, the property was used for agriculture production. The property has been cleared and supports mostly non-native grasses and scrubs. The site is fully enclosed by a chain-link fence.

It was determined during an initial assessment that the site supports potential habitat for burrowing owls. Therefore, focused surveys were required to be completed prior to the start of any construction activities. Four site visits were completed in March 2018 during which transects were walked throughout the site to determine the presence or absence of suitable (i.e., occupiable) burrows and/or burrowing owls. The survey was performed as per the requirements of the California Department of Fish and Wildlife (CDFW) survey protocol (March 7, 2012).

No burrowing owls or owl sign were observed during the surveys and no suitable burrows were identified. Based on these factors and lack of suitable, there is very little potential for the property to support populations of the burrowing owl in the future. The following sections provide a discussion of the survey results which are valid for 30-days as per CDFW requirements. If burrowing owls are observed on the property in the future, the owls should not be removed, harassed, or in any way disturbed regardless of the results of this survey. To do so may constitute a violation of State and City regulations.

If owls are encountered during future development activities, all activities should cease and CDFW should be notified.

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

1.0 PROJECT AND PROPERTY DESCRIPTION

The property is approximately 10-acres in size and is located north of Brodiaea Road. Brodiaea Road borders the site on its southern boundary and vacant land borders the site on the north, east, and west in the incorporated city of Moreno Valley, California (Township 3 South, Range 3 West, Section 14, USGS Sunnymead, California Quadrangle, 1956) (Appendix A: Figures 1, 2, and 3). The site has been cleared of native vegetation several years ago; however, there has been some revegetation on the site. The site is heavily disturbed by past human activity. Observing historical aerial photographs, the property was used for agriculture production. The property has been cleared and supports mostly non-native grasses and scrubs. The site is fully enclosed by a chain-link fence.

The plant species that were identified on site included California buckwheat (*Eriogonum fasciculatum*), Fiddlenecks (*Amsinckia spp*.), brome grasses *(Bromus sp.),* annual bursage (Ambrosia acanthicarpa), and Erodium (*Erodium sp.*). Table 1 provides a list of all plants occurring on the site and in the immediate surrounding area.

No sensitive habitats or wildlife movement corridors were noted on the property, and although intermittent blueline channels are present throughout the area according to the Sunnymead Quad map, the proposed project will not have an effect on any of these channels.

A total of four (4) focused burrowing owl surveys were performed on March 12th, March 16th, March 21th, and March 26th of 2018 during which meandering 30-meter transects were walked throughout the site to determine the presence/absence of burrowing owls, active owl burrows, and/or owl sign (excrement, casting, etc.). Weather conditions during the 2018 surveys consisted of winds ranging from 0 to 5 mph, temperatures in the mid 40's (AM, °F) to mid-60's (AM, °F) with approximately 0-50 percent cloud coverage.

The project proponent is proposing to sub-divide the 10-acre parcel into 37 parcels on which residential housing will be built.

2.0 LITERATURE AND RECORD REVIEW - BURROWING OWL

As part of the environmental process, California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS) data sources were reviewed prior to initiation of field surveys to determine if burrowing owls have been documented on the site or in the area surrounding the property. Based on the literature review and evaluation of the CNDDB database for the area, it was determined that the property is located within the general distribution of the burrowing owl. In addition, three documented occurrences of burrowing owls have been identified in the surrounding area according to CNDDB (2018). However, owls have not been previously identified on the site, and the nearest documented owl observation is about two miles southwest of the property (CNDDB, 2018).

The burrowing owl is a year-long resident of open, dry grassland and desert habitats. The species was formerly common throughout central and southern California; however, the species has seen a significant reduction over the last few decades due to development activities; farming activities, predation by dogs and cats, and habitat destruction (Zeiner 1990). Conversions of grassland and desert habitats to agricultural fields and residential developments have contributed to the greatest amount of habitat destruction in recent decades. The reduction in population levels was noted as early as the 1940s. Burrowing owls primarily prey upon insects; although, small mammals, lizards, birds, and carrion make up a portion of the owl's diet (Zeiner 1990). Burrowing owls typically utilize abandoned California ground squirrel burrows for roosting and nesting.

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

3.0 METHODOLOGY

The California Burrowing Owl Consortium's *Burrowing Owl Survey Protocol and Mitigation Guidelines* (CBOC 1993) recommend a four-step approach to surveying for this species. An initial assessment of the site by biologists from RCA Associates, Inc. (Blake Curran and Parker Smith) determined that suitable owl habitat was present on the property. Because the assessment indicated that the site does contain suitable burrowing owl habitat, the remaining three phases of the survey were performed. Burrowing owls are typically found in a wide variety of habitats including disturbed grasslands, agricultural areas, and developed areas. Therefore, focused surveys were performed on March 12th, March 16th, March 21th, and March 26th of 2018 to determine if any owls, owl sign, or suitable burrows are currently present on the site.

As required by survey protocol, 30-meter, parallel belt transects were walked in a north-south direction until the site had been checked for owls and/or owl sign (burrows, tracks, scats, etc.). The survey protocol also requires that zone of influence (ZOI) surveys be conducted in the surrounding area out to a distance of 500-feet. All transects were walked at a pace that allowed careful observations along the transect routes and in the immediate vicinity. Field notes were recorded regarding native plant assemblages, wildlife sign, and human effects in order to determine the presence or absence of suitable owl habitat. Each survey was performed from about 0700 to 1000 hours.

Focused surveys combined with the identification of the habitat on the site and in the surrounding area will provide data on the potential presence or absence of burrowing owls. Temperatures during the surveys were in the mid 40's (AM, °F) to mid-60's (AM, °F) with approximately 0-50 percent cloud coverage and winds ranging from 0 to 5 mph. No precipitation was recorded during the surveys.

Limitations:

The results of this report do not constitute authorization for the "take" (impact) of burrowing owls or any other listed or sensitive wildlife species. The authorization to impact the burrowing owl can only be granted by CDFW.

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

4.0 GENERAL BIOLOGICAL SURVEY RESULTS

The field investigations were conducted on March 12th, March 16th, March 21th, and March 26th of 2018. The plant species that were identified on site included California buckwheat (*Eriogonum fasciculatum*), Fiddlenecks (*Amsinckia spp.*), brome grasses *(Bromus sp.),* annual bursage (Ambrosia acanthicarpa), and Erodium (*Erodium sp.*). Table 1 provides a list of all plants occurring on the site and in the immediate surrounding area. The site is not expected to support a variety of wildlife species on the site; however, only a few species have potential to be seen during the field investigations. Mammals observed on the site or which are expected to inhabit the site include jackrabbits (*Lepus californicus*), cottontails (*Sylvilagus audubonii*), and California ground squirrel (*Otospermophilus beecheyi*).

Reptiles are typically inactive during the winter months; however, species common in the region which is expected to inhabit the site include desert spiny lizard (*Sceloporus magister*), side-blotched lizard (*Uta stansburiana*), western whiptail lizard (*Cnemidophorus tigris*), and rattlesnake (*Crotolus sp.*). Table 2 provides a compendium of wildlife species observed during the various surveys and those likely to occur in the area.

No sensitive habitats (e.g., wetlands, vernal pools, critical habitats for sensitive species, etc.) were observed on the site during the field investigations.

There is a blue-lined channel that borders the property to the east, this channel is off-site of the property. The channel supports a riparian habitat and the channel flows in a north-south direction.

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

5.0 RESULTS – BURROWING OWL

PHASE I HABITAT ASSESSMENT RESULTS

During the Phase I habitat assessment, physical and biological characteristics of the project site were compared to burrowing owl habitat requirements in an effort to determine whether the site is suitable for this species. The project site is within the geographic range of the burrowing owl, as depicted on current range maps, and on-site elevations are within the range occupied by the species (Haug et al. 1993). Vegetation on-site is composed invasive disturbed agricultural land, a community that is well represented throughout Moreno Valley and that is known to be capable of supporting burrowing owls. Based on this information, the project site contains suitable habitat for the burrowing owl.

PHASE II TRANSECT SURVEY RESULTS

During Phase II transect surveys, the overall density of animal burrows within the project site was observed to be low. Occasional small mammal burrows, likely those of kangaroo rats (*Dipodomys spp.*), pocket mouse (*Perognathus spp.*), and/or woodrat (*Neotoma spp.*) were observed but were not of sufficient size to accommodate a burrowing owl. From the results of the transect survey, it was determined the project site did not contain any suitable burrowing for the burrowing owl. As per requested by the MSHCP, a full nesting season survey was to be performed for this particular project.

PHASE III OWL CENSUS AND OBSERVATION RESULTS

Phase III of the burrowing owl survey protocol was performed for the project site to monitor for any observations of owl sightings or activity.

The focused surveys for the burrowing owl conducted on March 12th, March 16th, March 21th, and March 26th of 2018 did not identify any owls or owl sign (i.e., whitewash, castings, etc.). In addition, no occupiable burrows were observed on the site reducing the likelihood the species will inhabit the site in the future given the fact burrowing owls rely upon abandoned burrows which have been excavated by other animals (i.e., coyotes, foxes, ground squirrels, etc.).

PHASE IV SURVEY REPORT

Phase IV of the burrowing owl survey protocol involves preparing a survey report that presents the results of the protocol surveys. This Focused Burrowing Owl Survey Report constitutes the Phase IV report for the project site.

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

6.0 IMPACTS AND RECOMMENDATIONS

Future development of the site is not expected to have any direct or indirect impacts on burrowing owls or occupied owl habitat based on the results of the focused surveys conducted on March 12th, March 16th, March 21th, and March 26th of 2018. No additional investigations are recommended at this time. However, CDFW may require a 30-day pre-construction survey be performed immediately prior (i.e., 30-days or less) to the start of any future construction activities to determine if any owls have moved onto the site since the March 2018 surveys.

If any special status wildlife species are observed on the property during future development activities, CDFW and USFWS (as applicable) should be contacted to discuss specific mitigation measures which may be required for the individual species. CDFW and USFWS are the only agencies which can grant authorization for the "take" of any sensitive species.

This Focused Burrowing Owl Survey Report and mitigation measures recommended herein do not constitute authorization for incidental take of migratory birds.

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

FIGURES

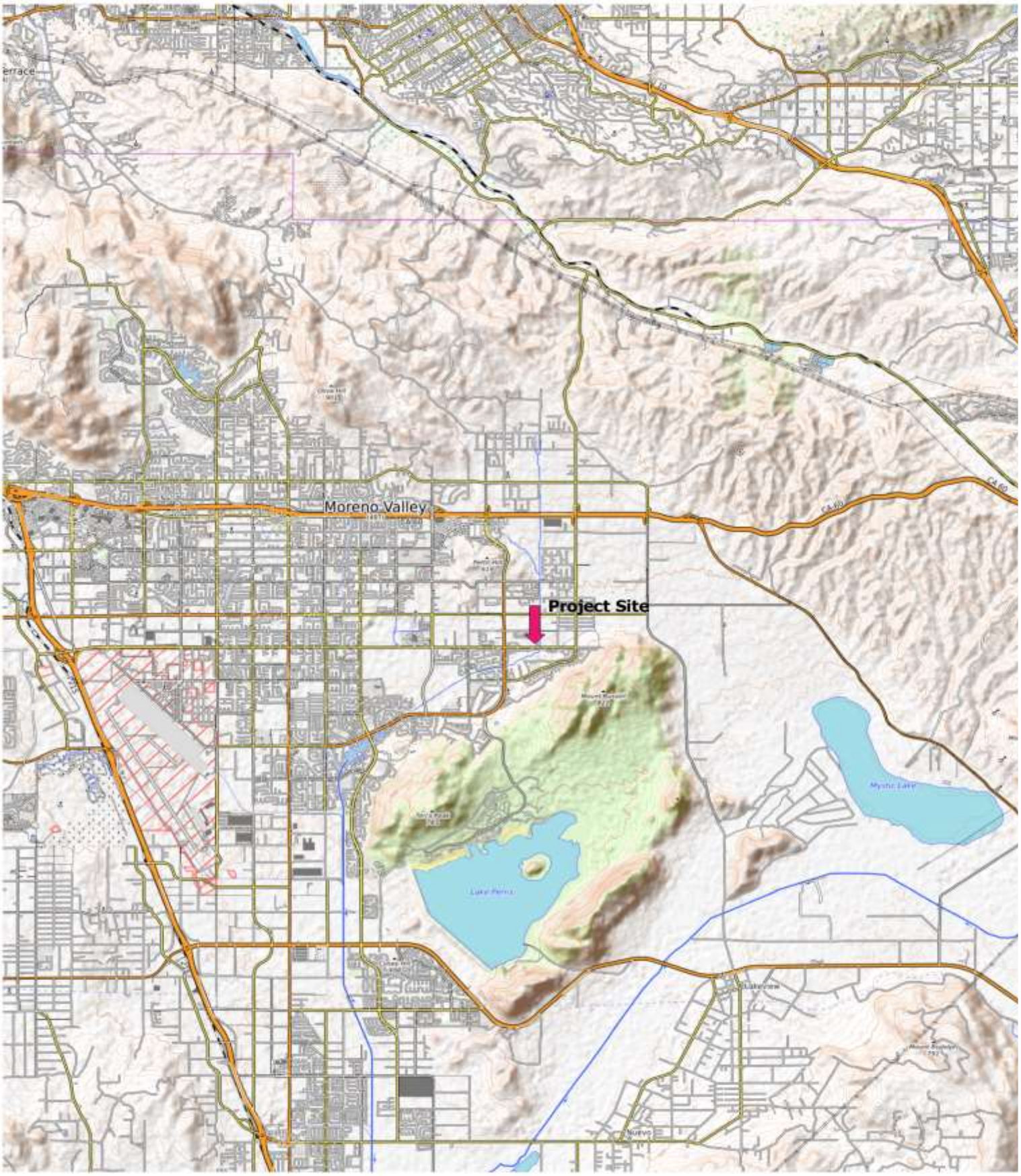
Figure 1

Regional Vicinity Map

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Figure 2

Local Topographic Map



Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Figure 3

Local Vicinity Map

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX A

Burrowing Owl Occurrences

Burrowing Owl occurrences within the region based on the California Diversity Data Base (2018). (SC = Species of special concern)

Name	Listing Status	Habitat Requirements	Presence/Absence	Comments (Other owl colonies in the region.)
Burrowing owl (*Athene cuniculuria*)	CDFW: SC	Various: desert scrub, agricultural lands, disturbed areas	Site does support suitable habitat for the species; however, no burrowing owls or sign observed on site.	Five (2) documented occurrences within approximately 5 miles of the property.

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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APPENDIX B

Flora and Fauna Compendia

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 1 - Plants observed on the site and known to occur in the immediate surrounding area.

Common Name	Scientific Name	Comments
Snakeweed	*Gutierrezia sarothrea*	Observed on-site and Surrounding Area
Telegraph weed	*Heterotheca gradifolia*	"
Fiddleneck	*Amsinckia tessellate*	"
Black mustard	*Brassica nigra*	"
Plantain	*Plantago erecta*	"
Pearly everlasting	*Gnaphalium californicum*	"
Phacelia	*Phacelia distans*	"
Lambs quarters	*Chenopodium califonicum*	"
Centaurem	*Centaurea squarrosa*	"
Brome grass	*Bromus sp.*	"
Dove weed	*Eremocarpus setigerus*	Surrounding Area
Tobacco	*Nicotiana attenuta*	"
Lamb's quarters	*Chenopodium album*	"
Arroyo Willow	(*Salix lasiolepis*	"
Heliotrope	*Heliotropium sp.*	"
Buckwheat	*Eriogonum fasciculatum*	"
Erodium	*Erodium cicutarium*	"
Goldfields	*Lasthenia californica*	"
Russian thistle	*Salsola tragus*	"
Stephanomeria	*Stephanomeria sp.*	"
Mustard	*Brassica tourneforti*	"
Tamarisk	*Tamarix ramoissina*	"

Note: The above list is not intended to be a comprehensive list of every plant which may occur on the site or in the zone of influence.

Table 2 - Wildlife observed on the site during the field investigations.

Common Name	Scientific Name	Location
Common raven	*Corvus corax*	On-site and in the surrounding area.
Anna's hummingbird	*Calypte anna*	"
White-crowned sparrow	*Zonotrichia leucophrys*	"
Say' Phoebe	*Sayornis saya*	"
California ground squirrel	*Spermophilus beecheyi*	"
Song sparrow	*Melospiza melodia*	"
House sparrow	*Passer domesticus*	"
House finch	*Carpodacus mexicanus*	"
Northern mockingbird	*Mimus polyglottus*	"
Mourning dove	*Zenaida macroura*	"
Turkey vulture	*Cathertes aura*	On site and surrounding area
Red-tailed hawk	*Buteo jamaicensis*	"
Western flycatcher	*Tyrannus verticalis*	Surrounding area
Western whiptail lizard	*Cnemidophorus tigris*	"
Side-blotched lizard	*Uta stansburiana*	"
Spiny lizard	*Sceloporus magister*	"
Cottontail	*Sylvilagus auduboni*	"
Jackrabbit	*Lepus Californicus*	"
Coyotes	*Canis latrans*	"

Note: The above Table is not a comprehensive list of every animal species which may occur in the area, but is a list of those common species which were identified on the site or which have been observed in the region by biologists from RCA Associates, Inc.

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits, present the data and information required for this biological evaluation and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. Fieldwork conducted for this assessment was performed by me or under my direct supervision. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project applicant or applicant's representative and that I have no financial interest in the project.

Date: 03/29/2018 Signed: Blake Curran
Report Author

Field Work Performed By: Randall Arnold
Senior Biologist

Field Work Performed By: Parker Smith
Biological Technician

Field Work Performed By: Blake Curran
Environmental Biologist

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

SECTION 8.0 LEGAL STATUS

The burrowing owl is a migratory bird species protected by international treaty under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter, any migratory bird listed in 50 C.F.R.Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 C.F.R. 21). Sections 3503, 3503.5, and 3800 of the California Department of Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs. Implementation of the take provisions requires that project-related disturbance at active nesting territories be reduced or eliminated during critical phases of the nesting cycle (March 1 - August 15, annually). Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) or the loss of habitat upon which the birds depend is considered "taking" and is potentially punishable by fines and/or imprisonment. Such taking would also violate federal law protecting migratory birds (e.g.,MBTA).

The burrowing owl is a Species of Special Concern to California because of declines of suitable habitat and both localized and statewide population declines. Guidelines for the Implementation of the California Environmental Quality Act (CEQA) provide that a species be considered as endangered or "rare" regardless of appearance on a formal list for the purposes of the CEQA (Guidelines, Section 15380, subsections b and d). The CEQA requires a mandatory finding of significance if impacts to threatened or endangered species are likely to occur (Sections 21001(c), 21083. Guidelines 15380, 15064, 15065). Avoidance or mitigation must be presented to reduce impacts to less than significant levels.

CEQA AND SUBDIVISION MAP ACT

CEQA Guidelines Section 15065 directs that a mandatory finding of significance is required for projects that have the potential to substantially degrade or reduce the habitat of or restrict the range of a threatened or endangered species. CEQA requires agencies to implement feasible mitigation measures or feasible alternatives identified in EIR's for projects which will otherwise cause significant adverse impacts (Sections 21002, 21081, 21083; Guidelines, sections 15002, subd. (a)(3), 15021, subd. (a)(2), 15091, subd. (a).). To be legally adequate, mitigation measures must be capable of "avoiding the impact altogether by not taking a certain action or parts of an action";

"minimizing impacts by limiting the degree or magnitude of the action and its implementation"; "rectifying the impact by repairing, rehabilitating or restoring the impacted environment"; "or reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action." (Guidelines, Section 15.370). Section 66474 (e) of the Subdivision Map Act states "a legislative body of a city or county shall deny approval of a tentative map or parcel map for which a tentative map was not required, if it makes any of the following findings: (e) that the design of the subdivision or the proposed improvements are likely to cause substantial environmental damage or substantially and avoidably injure fish and wildlife or their habitat". In recent court cases, the court upheld that Section 66474(e) provides for environmental impact review separate from and independent of the requirements of CEQA (Topanga Assn. for a Scenic Community v. County of Los Angeles, 263 Cal. Rptr. 214 (1989).). The finding in Section 66174 is in addition to the requirements for the preparation of an EIR or Negative Declaration.

Attachment: Project 2_Burrowing Owl RCAA March 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

REVISED
Phase I Cultural Resources Assessment for the Brodiaea, Moreno Valley Residential Development, Brodiaea Avenue and Quincy Street, Riverside County, California

(Township 3 South, Range 3 West, Section 14, Sunnymead 7.5' USGS, California Quadrangle)

Prepared for:

Frontier Homes

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Project: #2018-23
Type of Study: Phase 1 Cultural Resource Assessment
Key Words: Negative Results, Moreno Valley, Cahuilla, Luiseno, cultural resources

Revised
September 6, 2018

Attachment: Project 2_Cultural Report Final 9-6-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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EXECUTIVE SUMMARY

RCA Associates, Inc. is under contract to conduct a Phase I Cultural Resources Assessment for the proposed Brodiaea Residential Development in Moreno Valley. This work is being completed for a Project located northwest of the intersection of Brodiaea Avenue and Quincy Street in the city of Moreno Valley in Riverside County, California. The parcel of land under study is currently being employed as agricultural land and can be found on the Sunnymead, United States Geological Survey (USGS) Topographic Quadrangle Map (Figures 1 and 2). This cultural resources study was performed pursuant to the California Environmental Quality Act (CEQA). A cultural resources records search, pedestrian field survey, shovel test pits, and Native American consultation and coordination were all elements of this project that were included within the present Scope of Work. Native American individuals and tribal groups were contacted by letter, email, and telephone for the Consultation and Coordination elements and their views on the project and input were solicited. The letters and outreach action list documents these efforts and a summary of this work is provided in Appendix B.

Field survey investigations were conducted on March 16, 2018 by RCA Associates, Inc. and did not result in the identification of any cultural resources (prehistoric / historic archaeological artifacts, sites or historic architectural remains). No cultural resources of any kind were noted within the Project boundaries. Four shovel-test pits were excavated on the property and these pits did not yield any materials of historic or prehistoric origin that could be considered cultural resources. A cultural resources records search was completed (in person) on March 15, 2018 at the Eastern Information Center (EIC) at the University of California, Riverside which showed there were no cultural resources that had been previously recorded within the Project area itself. However, one cultural resource was noted within a half mile radius of the Project (19919) and six previous cultural resource reports (0414, 2171, 4717, 6754, 8802, and 9083) had been previously completed within the half mile buffer surrounding the Project site.

The Native American Heritage Commission (NAHC) completed a Sacred Lands File Search, which yielded negative results for Sacred Lands in the general Project area. Of the six Native American tribes that were sent consultation letters, the San Manuel Band of Mission Indians (SMBMI) and the Temecula Band of Luiseño Mission Indians (Pechanga Cultural Resources) were the groups that replied. The SMBMI advised that this particular project area is not of great concern. However, the region in general remains a highly sensitive location for cultural resources. As a result, SMBMI prefers to consult with the lead agency as a point of contact for this project area. The Temecula Band of Luiseño Mission Indians recommends that Archaeological and Native American Monitoring mitigation measures be added for this Project. They state that, "the Project is located between a historic trail and the Russell Mountains…The Tribe believes the possibility of uncovering sub-surface resources is high." The Soboba Band of Luiseno Indians (Tribal Historic Preservation Officer) advised via mailed letter that the Project location is culturally sensitive as it was used in ongoing trade between the Tribes. The Tribe would like to initiate consultation with the Lead Agency as a result.

Given the Temecula Band's concerns, our recommendation would be to retain both an Archaeological (Cultural Resources) and a Native American Monitor during ground disturbing construction activities for the Project. This recommendation is the same as that supplied in letter form with their comments addressing the original version of this report (Appendix B).

If previously undocumented cultural resources are identified during earthmoving construction activities, a qualified (RPA certified) archaeologist must be contacted to assess the nature and significance of the find. Project construction activities shall be diverted if necessary.

If human remains are encountered during the undertaking, State Health and Safety Code Section 7050.5 applies and these provisions state that no further disturbance shall occur until the County Coroner has made a determination of the origin and disposition of the remains pursuant to Public Resources Code Section 5097.98. The County Coroner must also be immediately notified of the find. If the remains are determined to be prehistoric or protohistoric and of Native American origin, the Coroner or the Project Archaeologist will notify the NAHC. The NAHC shall determine and identify a Most Likely Descendant (MLD) that will consult with RCA Associates and recommend the manner of treatment for any human remains and associated religious offerings. With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 48 hours of notification by the NAHC.

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INTRODUCTION

RCA Associates, Inc. is under contract with Frontier Homes to complete a Phase 1 Cultural Resources Assessment for a proposed residential development project in Moreno Valley, Riverside County, California (Township 3 South, Range 3 West, Section 14, Sunnymead, California USGS Quadrangle) (Figures 1 and 2). This study was performed pursuant to the California Environmental Quality Act (CEQA).

The California Environmental Quality Act (CEQA) requires consideration of project impacts on archaeological or historical sites deemed to be "historical resources." Under CEQA, a substantial adverse change in the significant qualities of an historical resource is considered a significant effect on the environment. For the purposes of CEQA, an "historical resource" is a resource listed in, or determined to be eligible for listing in, the California Register of Historical Resources (Title 14 CCR §15064.5(a)(1)-(3)). Historical resources may include, but are not limited to, "any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (PRC §5020.1(j)).

The eligibility criteria for the California Register are the definitive characteristics for assessing the significance of historical resources for purposes of CEQA (Office of Historic Preservation). Generally, a resource is considered "historically significant" if it meets one or more of the following criteria for listing on the California Register:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
(2) Is associated with the lives of persons important in our past.
(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
(4) Has yielded, or may be likely to yield, information important in prehistory or history. (PRC §5024.1(c))

NATURAL SETTING

The City of Moreno Valley is located in northwestern Riverside County. It is further situated along the valley floor and is bounded by the hills and mountains of the "Badlands" to the east, Old Highway 215 to the west, the Box Springs Mountains to the north, and Lake Perris State Recreation Area to the south. The area is developed with residential, commercial, and industrial land use. Lands in current agricultural production are concentrated in the eastern portion of the City. Elevations in the general area range from a low of approximately 1,550 feet above mean sea level (amsl) to a high of 1,800 feet amsl. The area gradually slopes to the south and southwest with the higher elevations north of State Route 60 and the lower elevations near March Air Reserve Base.

The City of Moreno Valley lies primarily on bedrock geology known as the Perris Block. This structural unit is located within the Peninsular Range Geomorphic Province, one of the major

geologic landforms of Southern California. The Perris Block is a large granitic mass of rock bounded by the San Jacinto Fault, Elsinore Fault, and Santa Ana River. The Perris Block has a history of tectonic land movements of several thousand feet due to shifts in the Elsinore and San Jacinto Faults. The primary source of strong seismic activity is the San Jacinto fault. The San Jacinto Fault Zone traverses the eastern portion of the general Project area. The project area and vicinity is within the Santa Ana River and San Jacinto River watersheds.

The climate of the area is characterized by warm, dry summers and mild winters. Most rain falls between the months of November and March. Occasionally, in the fall, cyclical breezes are interrupted by strong, dry, warm desert winds (identified locally as Santa Anas) from the north/northeast.

The natural habitat of the area is largely disturbed by urban development, weed abatement or agricultural activities. However, the area does support certain native or semi-native plant communities including sagebrush scrub, non-native grassland, chaparral, riparian scrub, disturbed alluvium, alkali playa, alluvial fan sagebrush scrub, and marsh.

The area has a rich diversity of native wildlife species. Mammals, including mule deer, and large carnivores, including coyotes, bobcats, badgers, and gray fox, exist in the more undeveloped areas. Opossums, raccoons, skunks, cottontail and jack rabbits, and many rodent species are common. A wide variety of reptiles can be found. Additionally, over one hundred species of birds, including owls, hawks, and other birds of prey can be noted in the area.

CULTURAL SETTING

Prehistory

Synthetic treatments of the prehistory of Inland California are found in a number of academic references. The latter sources include topical treatments in Basgall (1993), Basgall and Hall (1994), Basgall et al. (1988), Bettinger and Taylor (1974), Garfinkel (2007), Garfinkel and Williams (2011, 2015), Garfinkel et al. (2010), Gilreath and Hildebrandt (1997), Grayson (2011), Lengner (2013), Schneider et al. (2000), Sutton et al. (2007), Ugan and Rosenthal (2015), Van Tilburg et al. (2012), Warren (1984), Warren and Crabtree (1986), Whitley (1998), Ugan and Rosenthal (2015) and Yohe (1992).

Research into the prehistory of the Inland California has a lengthy pedigree. Perhaps some of the earliest scientific investigations were those conducted by the husband-wife team of William and Elizabeth Campbell working out of the Southwest Museum (Campbell 1931; Campbell and Campbell 1935; Campbell et al. 1935). During this same general time period Malcolm Rogers was conducting studies through his association with the San Diego Museum of Man. His research emphasized the identification of the flaked stone artifacts and prehistoric cultures mainly found in the Colorado Desert but overlapping also into the Mojave Desert as well (Rogers 1939). Another very early researcher in the area was Mark Raymond Harrington who conducted archaeological studies at the Stahl Site, Stahl Site Cave and Fossil Falls sites in the Coso Range of eastern California while engaged by the Southwest Museum (1948a, 1948b, 1949, 1950, 1951, 1952, 1953, 1957).

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In the 1960's Edward Lanning working with the University of California, Berkeley wrote up the previous research completed at Rose Spring (CA-INY-372) in the Coso Range of eastern California and this work served as a critical benchmark and anchor to develop the regional cultural sequence and chronology for Inland California and the southwestern Great Basin. Robert Yohe returned to Rose Spring much later and provided an even more detailed and well-supported chronology bolstered by a suite of precise radiocarbon dates for this physically and culturally stratified site (Yohe 1992).

Much of the scholarly research in Inland California has been completed under the umbrella of cultural resource management studies. Many federal and state agencies (Bureau of Land Management, California Department of Transportation, California Department of Parks and Recreation, and United States Forest Service) and also private developers (relating to the construction of renewable energy initiatives employing both solar and wind) have been the major proponents and financial underwriters for these investigations.

Inland California has seen much archaeological study. This research has spawned some of the contentious dialogues in professional archaeology with respect to competing models attempting to illuminate the nature and antiquity of various prehistoric cultural manifestations. The focus of these debates relate to the nature and timing of various cultural transformations. Such discussions hinge on the age and character of technological shifts, settlement-subsistence change, economic developments, artistic and ideological transitions, prehistoric population movements / replacements and linguistic prehistory (cf. Garfinkel 2006, 2007; Garfinkel and Austin 2011; Garfinkel et al. 2007, 2009, 2010; Grant et al. 1968; Goldsmith and Garfinkel 2013; Gilreath 2007; Gilreath and Hildebrandt 2008, 2011; Hedges 2001; Hildebrandt and McGuire 2002; McGuire and Hildebrandt 2005; Stewart et al. 2005; Van Tilburg et al. 2012; Whitley 1987; 1998; 2003; Whitley and Dorn 1987, 2011). Given the critical nature and central importance of chronological controls for Inland California, a prehistoric cultural sequence and the associated identification of specific temporal periods remain an important and salient topic for continuing research.

Cultural Sequence

Late Pleistocene: Paleo-Indian / Western Clovis Period

Basally-fluted, projectile points of the Clovis (aka Western Clovis) cultural complex are generally considered to be the most dominant, hallmark of prehistoric occupation during the Late Pleistocene era. These Clovis points and their associated cultural materials have been the focus of intensive study and the general consensus is that they date from about 13,500 to 12,500 calibrated radiocarbon years (cal) before present (BP). Some researchers have tried to pinpoint the duration of the Clovis tradition to an even more exacting and narrower time span (12,800 to 13,200 cal BP) but recent critiques of that perspective support the notion that at least a millennium of time was necessary for the wide-ranging Clovis tradition to have developed and spread within the continental United States (cf. Goebel et al. 2008; Waters and Stafford 2007).

Until recently, the Clovis complex was considered to be the basement cultural expression in the Americas. However, reports from sites like Monte Verde (Chile), Paisley Cave (Oregon), the Schaefer and Hebior sites (Wisconsin), Meadowcroft Shelter (Pennsylvania), Page-Ladson (Florida), and the Debra L. Friedkin Site (Texas), have now provided substantial and persuasive

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evidence for pre-Clovis occupation dating to a period from ca. 16,000 and 14,000 cal BP, the latter archaeological complex having occurred some two to three thousand years before Clovis (Gilbert et al. 2008; Goebel et al. 2008; Waters et al. 2011b).

Unfortunately, as of yet, there is no tangible and compelling evidence within California or the Great Basin for such early pre-Clovis discoveries. Yet, there have been a number of claims (Davis 1978; Leakey et al. 1968) based on heavily weathered and crude cobble and core tools as part of a pre-projectile point tradition (cf. Moratto 1984:29-73). However, such claims have not withstood the test of time.

Nevertheless, although California has posted early claims of great human antiquity, even Clovis-like fluted points discoveries themselves are fairly rare (cf. Rondeau et al. 2007). When such finds are identified they are most frequently isolates and typically found in association with now dry Pleistocene lakebeds. Besides the limited discoveries of fluted points, we have little in the way of related diagnostic elements of Clovis technology that would provide a more complete picture of the entire archaeological assemblage. Complementary artifacts, such as prismatic blades, blade cores and bone tools are commonly described from the Clovis heartland in the American Southwest and Plains (however cf. Fenenga 2015).

Further, there is long-standing ambiguity in the age and sequence of terminal Pleistocene cultural complexes in California and the Great Basin generally. Some researchers have expressed doubts as to whether the Clovis Complex per se has a temporally or geographically extensive presence in California and the Great Basin. Furthermore, some researchers question the true antiquity of these putative earliest California and Great Basin projectile point forms. Finally, other confounding issues remain with respect to the chronological relationship of one projectile point type to another (e.g. Western Fluted vs. Concave Base vs. Western Stemmed forms).

China Lake Basin and the adjacent Rose Valley are home to some of the largest concentrations of fluted and concave base points in California. The sites in Rose Valley are located on relict terraces of the Lower Pleistocene Owens River. The Rose Valley sites were initially recognized and studied by Ferris Borden and the Archaeological Survey Association (Borden 1971; Moratto et al. 2018). The China Lake sites were researched by Emma Lou Davis (Davis 1978). A number of the fluted and unfluted concave base points discovered in the Coso Basin have yielded putatively ancient obsidian hydration dates that would provide a tentative late Pleistocene age determination (cf. Garfinkel et al. 2008; Moratto et al. 2018). Yet, no direct and associated radiocarbon determinations exist that demonstrate the age of these early points and there are only a handful (n = 4) of radiocarbon determinations dating to the Clovis age for any archaeological expressions in all of prehistoric California.

Nevertheless, recent obsidian hydration data provides a growing number of very large hydration rim measurements (greater than 16.0 microns) from several sites in the China Lake Basin and vicinity. These hydration measurements do support an age for both Western Fluted and Basally Thinned Concave Base points dating to a time from about 12,000 to 13,500 cal BP. (Giambastiani and Bullard 2010; Rogers 2011; Garfinkel and Hopkins 2008; Garfinkel et al. 2016; Moratto et al. 2018). If those ages are further substantiated, that would imply a prehistoric California Paleoindian complex of equivalent age to the Clovis tradition of the American Southwest and Plains. Significantly, the technological and typological elements for these early California

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projectile points appear slightly different and may represent a somewhat distinctive tradition - a bit different from their kindred artifacts in other areas of the United States.

In contradistinction to the above discussion, Beck and Jones (2010; see also Bryan 1988) argue, that Western Stemmed Points are in fact characteristic of the terminal Pleistocene and would be contemporaneous with the Clovis Complex. While it is widely assumed that fluted and unfluted concave-base points date to the terminal Pleistocene in the Mojave Desert, this has never been demonstrated radiometrically or chrono-stratigraphically. Nevertheless, recent finds at China Lake have noted that Fluted and Concave Base points have a different overall spatial distribution than Western Stemmed points. Finally, all three projectile point styles (Western Stemmed, Fluted and Concave Base) often occur in the same microenvironments, in closely similar depositional contexts, and at the very same sites (Basgall 1988, 2007; Basgall and Hall 1991; Giambastiani 2008, 2010; Giambastiani and Bullard 2010).

Early Holocene: Mojave or Lake Mojave Period

Significant environmental changes, correlating with broad shifts in regional temperature, occurred in the post-Pleistocene with only minor changes in rainfall. Increased runoff from glacial melting resulted in the infilling of valleys and basins by streams, marshes, and lakes. Initially these large bodies of water supported great amounts of biota – including big game animals (e.g., deer, antelope, and bighorn). During this time there exists an ancient, well-established and wide-ranging prehistoric tradition dating from ca. 12,000 to 8,000 cal BP. This archaeological complex is a well-known expression and received its geographic referent from the landmark studies of Campbell et al. (1937).

The Campbells and their research associates focused their work along the relict shorelines of Pleistocene Soda Lake and Silver Lake in the eastern Mojave Desert near Baker, California. These early Holocene assemblages are recognized for their distinctive formalized flaked stone tool kits. The Lake Mojave flaked stone tools include large stemmed points (identified as either the larger and more robust Lake Mojave type or the smaller Silver Lake form) that are considered chronological diagnostics. Associated with these temporally sensitive point/tool forms are other stone tools including bifacial crescents, heavily worked domed (steep-sided) unifaces (end scrapers and side scrapers), knives, bifaces, gravers, plano-convex limaces and large core-cobble tools (cf. Beck and Jones 1997).

Throughout southern California (and especially in eastern California) Lake Mojave era sites have been recognized with a variety of other identifiers. In the Colorado Desert, Malcolm Rogers calls similar traditions as his Playa Complex (Rogers 1939, 1966). In the San Diego area, the related assemblages have been designated as San Dieguito (Warren 1967; Warren and True 1961). William Wallace (1962) employs the Lake Mojave moniker for all such expressions throughout southern California.

Significantly, the majority of the Lake Mojave sites are exclusively surface expressions making them difficult to date and only infrequently are they dated directly by employing radiocarbon assays. Nonetheless, Beck and Jones (1997, 2010; cf. Willig et al. 1988) have assembled a series of radiocarbon dates for these stemmed point, early Holocene prehistoric expressions in the northern and central Great Basin. Their research indicates that the Lake Mojave related materials

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are older than 9500 cal BP and are possibly as ancient as 13,200 cal BP. If such dates were to apply in California they would be contemporaneous with the ages applied to the Clovis Tradition in the American Southwest and on the Plains. Yet, perhaps contrary to expectations, dates for the Lake Mojave materials at Fort Irwin cluster from 9500 to 11,000 cal BP (Basgall 1993b; Sutton et al. 2007).

Claude Warren and his colleagues (Warren 1967, 1984, 1986, 2008; Warren and Crabtree 1986; Warren and Schneider 2003; Warren et al 1986) and other researchers (cf. Bedwell 1970) recognize that Western Stemmed point sites of the Lake Mojave Tradition were most often associated with extinct lakes. Since these materials are clustered around ancient shorelines, the logical conclusion was that this early lifeway was lacustrine based and that the artifacts would best be interpreted as representing a hunting emphasis on lakeshore resources. Further, since few artifacts were discovered that could be interpreting as representing milling equipment, only a very minor expression of plant food exploitation was indicated.

However, more recent research in the central and western Mojave Desert attests to a different perspective with a wider range of habitats for sites outside of lakeshore settings (Basgall 1993b; Basgall and Hall 1994c; Basgall et al. 1988; Sutton et al. 2007). Further, the faunal remains recovered from such sites attest to a dominant expression of small mammal (especially lagomorphs) and reptile exploitation rather than large game such as deer, pronghorn and bighorn sheep. Additionally, milling equipment, although evidently only a minor element in the Lake Mojave archaeological assemblages, are indeed a regular part of the documented cultural materials at such sites. The latter perhaps indicates that plant food was of some importance in the diet of these early Holocene peoples. Nevertheless, use-wear studies suggest that corms and bulbs, especially marshland taxa rather than small seeds, were the plant foods processed (Basgall 1993b, 2000).

Most researchers agree that high diversity of toolstone material and extensive curation and maintenance of Lake Mojave age tools supports the conclusion that very large foraging areas and frequent residential moves were typical (Basgall 1989; Basgall and Hall 1994c; Basgall and McGuire 1988; Delacorte 199; Delacorte and McGuire 1993). It is posited that these foraging groups were limited to a small number of family units and the groups themselves were quite small in size. The food resources that were extracted would have been exhausted quickly causing people to move about the landscape often. Considering these frequent moves, the stone tool assemblages remained small and relatively homogenous (Kelly 1983, 1985, 1988; Shott 1986, 1989; Thomas 1983a, 1983b).

Middle Holocene: Little Lake or Pinto Period

In the Middle Holocene during the time from ca. 8,000 to 4,000 cal BP temperature and aridity peaked. Lowland bodies of water shrank in size and associated plant communities dwindled - reaching a state that was incapable of supporting the former abundance of large game (Sutton et al. 2007). With the exception of certain rare refuge areas, human land use shifted to upland areas where a few relict streams and lakes remained. Correlating with these changes was the inception of a cultural expression known as the Pinto Complex.

Researchers have recognized that it has been challenging to clearly articulate the Middle Holocene

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cultural-historical traditions and settlement systems since few prehistoric sites date within this specific time frame. The latter circumstance may owe to a lack of geological visibility (Basgall 2009; Meyer and Rosenthal 2010) or alternatively this may be a reflection of the heightened aridity or a corollary demographic collapse (Elston 1982; Grayson 2011; Sutton et al. 2007; Warren 1986). From either perspective, there are a paucity of radiocarbon assays that fall within the Middle Holocene time and these expressions are especially absent during the waning years of this period - from ca. 5000 and 4000 cal BP (Sutton et al. 2007).

The Pinto Complex, rather than representing a different cultural group, is posited as an outgrowth of the former hunting tradition of the Lake Mojave Complex of the Early Holocene. Such a model is based on a variety of similarities in the two traditions. Spatial and temporal overlap in projectile point forms, the continued use of difficult to reduce toolstone (basalt and igneous fine-grained materials) for bifacial tools - distinctly different from the use of cryptocrystalline and obsidian materials so common to later periods, continuity in the character of flaked stone production emphasizing percussion flaking in contrast with a later emphasis on pressure flaking, and the continued popularity of specialized tool forms (biface knives, ovate domed and keeled scrapers, and engravers) - all suggest a pattern of continuity.

Pinto Complex sites decline in number during the driest portion of the Middle Holocene era from 6500 to 4000 cal BP and are largely restricted to spring-side localities. Besides the differing land use patterns, the stone tool assemblage changes at this time from the formalized stone tool forms of the Early Holocene to the more perfunctory flake scrapers, handstones, and milling slabs. Ground stone implements signal an important distinction and a growing emphasis on small seed use. Since hunting equipment persists, Claude Warren and others (Warren 1967, 1984, 1986) have suggested that large game procurement continued despite deteriorating climatic conditions and declining big game populations.

Archaeofaunal assemblages from Pinto sites attest to the fact that artiodactyls by this time are almost completely absent - with small game, including tortoise, becoming the norm. Pinto populations, originally geared towards hunting, would have been hard-pressed to accommodate the changing environmental conditions and their adaptation may have ultimately failed. Populations may have either suffered extinction or perhaps migrated to more well-watered areas, abandoning their desert homes.

A few Middle Holocene sites in the southern Owens Valley and Rose Valley have produced assemblages similar to those in the Mojave Desert and appear to be consistent with generalized adaptations of highly mobile foragers with wide-ranging settlement patterns. However, substantial house floors discovered at Lubkin Creek (CA-INY-30) and the diverse array of occupational debris having been recovered at the Stahl Site (CA-INY-182) at Little Lake (on the western edge of the Coso Range) has led some researchers to posit much greater residential stability and a degree of permanence in settlement pattern in some exceptional instances.

The hallmark and defining diagnostics for this period are large, heavy, bifurcate-stemmed dart points known as the Little Lake Series (Basgall and Hall 1992, 1994c, 2000; Bettinger and Taylor 1974; Fitzgerald et al. 2005; Harrington 1957; Lanning 1963; Vaughan and Warren

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1987). Researchers have recognized that these Pinto-like points were most frequent at the Stahl site near Little Lake (Harrington 1957).

The Pinto-like points that were discovered at Little Lake were originally thought to be morphologically distinct from Pinto points identified at the type site in the Pinto Basin in Riverside County in the southern Mojave Desert (Amsden 1937; Campbell and Amsden 1934; Campbell and Campbell 1935; Schroth 1994). In-depth research (Basgall and Hall 2000) relating to the questions of chronology and point classification suggests that the Little Lake points are largely indistinguishable from Mojave Desert examples typically identified as Pinto points.

The research of Basgall and Hall redefined the Pinto Series indicating that there existed a larger, heavier, and more robust variant of this point style that has an age range from 7500-4000 rcybp. A smaller, lighter, and more gracile form, more characteristic of the northern Great Basin, is equivalent with the Gatecliff Split-stem type previously identified by David Hurst Thomas (1981). Those latter artifacts are argued to date to a more recent vintage, consistent with a temporal range from ca. 5000-3200 rcybp. A further result of the Basgall-Hall Study was the discovery that there is considerable spatial overlap between both the robust and gracile variants with both forms having substantial representation.

Other researchers disagree with the Basgall and Hall Pinto point chronology. Haynes (2004) argues that Pinto points range in age from 9,500 to 5,500 radiocarbon years before present (rcybp). Perhaps an age range of 11,000 to 3,500 cal BP is a more accurate representation for the full span of use of this rather enigmatic point form. Recent studies have in fact led many researchers to conclude that Pinto points have a much longer duration than has been typically applied. Pinto points, based on their most recent re-evaluations, are sometimes contemporaneous with the Western Stemmed Series (as above). However, Pinto points were infrequent during the earliest years of their introduction but flourished and endured for a much longer period time after Western Stemmed points ceased.

Heavily worn stone tools crafted from exotic toolstone suggests that prehistoric Middle Holocene Natives were still highly mobile. These patterns led Basgall and Hall (1992c, 1994c) to conclude that both early and middle Holocene adaptations in the Mojave Desert represent a more generalized subsistence orientation than conventionally portrayed by Warren (1967, 1984, 1986) and others.

Late Holocene: Newberry Period or Gypsum Complex

In the Late Holocene, beginning ca. 4000 / 3500 cal BP and continuing to about 2000 cal BP, significant interregional variability in aboriginal land use can be recognized. With respect to the local environmental conditions. Mehringer and Sheppard (1978), based on lake-core sampling at Little Lake, identify that available water increased about 3000 cal BP, with a subsequent dry period at about 2000 cal BP. Hence, cool winters and relatively wet intervals were characteristic of what is known as the Neo-pluvial Period that occurred between 4000 and 2000 rcybp (Wigand and Rhode 2002).

In the Mojave Desert, Basgall and Hall (1992, 1994c) identified cultural deposits from Fort Irwin that include a full complement of milling equipment, flaked stone tools, and the replacement of basalt and rhyolite by cryptocrystalline silicate toolstone. The occurrence of bifaces increases

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dramatically during this time. Nonetheless, prehistoric sites are often small and it has been argued that these settlements represent wide-ranging mobility oriented to short-term occupations rather than targeted procurement of specialized resources.

Many radiocarbon assays from houses and features are documented from the southern Owens Valley (Basgall and Delacorte 2012; Basgall and McGuire 1988; Byrd and Hale 2003). These well-built houses and associated remains provide robust data for chronological controls. Their remains indicate an emphasis on cached and curated articles (including bifaces, bone tools, and milling equipment) and lend credence to the premise that these particular sites were seasonally re-occupied. Obsidian tool/debitage sources appear to indicate a wide-ranging and extremely expansive, yet regularized annual settlement round. From food remains (faunal material and plant macrofossils) one may infer that logistical forays were made to long-distance upland settings to procure specialized resources (pinyon nuts, bighorn sheep, and marmots) that were brought back to the base camp.

Warren et al. (1984) provide a contrasting view for this period and argue for the prominence of large game hunting due in part to their natural abundance based on ameliorating climatic conditions. Additional intensification in the use of plant foods is represented by increased numbers of milling equipment. Warren and others identify a change in social organization from the smaller family-band units in earlier eras to multi-family groups. William Hildebrandt and Kelly McGuire (2002) similarly argue that settlements during the Late Holocene (Middle Archaic also known as the Newberry Period) may have been less mobile than originally implied and may be best interpreted as year-round occupations. They also argue that the characteristic settlement pattern appears to have incorporated sedentary occupations of ecological sweet spots where women remained at hamlets while men ranged to distant outlying areas for artiodactyl hunting.

One implication of this emphasis on artiodactyl exploitation was the necessity of serviceable hunting equipment. Stone tool reduction and particularly obsidian biface manufacture became critically important from about 2500 to 1500 cal BP. Amy Gilreath and William Hildebrandt (1997, 2011) argue that in the Coso Basin, obsidian stone tool reduction reached a peak level of task specialization where early stoneworkers produced bifaces in enormous numbers both for domestic use but mostly as surplus exports intended for trans-Sierran trade. During this same time span, an enormous number of rock drawings (petroglyphs) are recognized and appear to be associated with increase rites, revealing a level of socio-ceremonial complexity exceeding that of earlier and later periods (Garfinkel 2006; Garfinkel et al. 2009; Yohe and Garfinkel 2012).

Prehistoric settlements dating to the Late Holocene are marked by the occurrence of medium-sized to large stemmed and notched points. The most frequent point forms are variants of the Elko, Humboldt (Concave Base and Basal-notched), and Gypsum Series. Heizer and Baumhoff (1961) were the first to define Elko points. This series is composed of large, heavy, notched points with variable stem characteristics (Heizer et al. 1968; O'Connell 1967). These include eared, corner- and side-notched specimens. Elko Contracting stem forms are often assigned to the Gypsum type having the same general chronological frame. In the western Great Basin, Elko points have often been found in contexts dating from 3750-1290 cal years B.P. (Basgall and McGuire 1988; Bettinger and Taylor 1974; Gilreath and Hildebrandt 1997; Heizer and Hester 1978; Justice 2002; Thomas 1981). Such a chronological position is supported by a plethora of radiocarbon,

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stratigraphic, and obsidian hydration data. However, it is becoming increasingly apparent that large corner-notched and side-notched variants of this Elko form sometimes occur in earlier contexts.

Gilreath and Hildebrandt (1997) observed that more robust Elko points, especially those thicker than 6.5 mm, regularly produce obsidian hydration measurements that are more ancient than the Newberry Period. One explanation for this problem is the difficulty in identifying between earlier Pinto and the more recent look-alike Elko forms (Basgall and Hall 2000; Vaughan and Warren 1987). Finally, the Rose Spring site (CA-INY-372) on the western edge of the Coso Range is a culturally and naturally stratified deposit. Five separate successive units provided cultural material amenable to dating. The lower three strata range in age from ca. 4000 to 1700 cal BP and as such fall within this period (Clewlow et al. 1970; Yohe 1992).

Late Holocene: Haiwee, Rose Spring, Saratoga Springs Period

Inland California witnessed a significant series of adaptation shifts beginning in this time period (ca. 2000 to 700 cal BP). During the onset of the period a dramatic set of subsistence-settlement changes were documented. These changes include: the introduction of the bow and arrow replacing the dart and atlatl, a dramatic decrease in large game hunting, increased reliance on dryland hard seeds, the beginning of intensive green-cone piñon pine nut exploitation, and the development of sites emphasizing the acquisition of easily procured and abundant small game animals (especially with respect to large numbers of lagomorphs and grebes). These cultural changes may reflect a Numic (Great Basin Paiute-Shoshone) in-migration.

It is important to note that the Project area under study includes the Luiseño and they are a different and distinct language group representing the Californian Uto-Aztecan branch while the Shoshonean languages are of the Northern Uto-Aztecan Branch.

Also certain technological innovations and labor-intensive adaptive strategies are also broadly consistent with those of the intrusive Numic groups (Bettinger and Baumhoff 1982; Delacorte 1994, 1995).

In the western Mojave Desert specialized sites first occur that are single component loci targeting small, easily-harvested, game animals harvested through communal hunts and mass capture that focus on jack rabbits and grebes (Gold 2005; Garfinkel 2006; McGuire et al. 1982). These sites and similar localities often contain abundant portable milling equipment, rock ring structures, bedrock milling, and plant food threshing features. These data reflect a shift to more intensive use of small game and local plants (dryland hard seeds) perhaps as a means of mitigating increasing human population pressure – consistent with the model presented by Bettinger and Baumhoff for Numic adaptations (1982).

Such an adaptation would have perhaps provided Numic peoples with a competitive advantage over existing pre-Numic populations since it would have enabled them to exploit a wider range of resources that were more costly to collect and process. Hence, resources with high extractive and processing costs would have been exploited only after the arrival of Numic groups in the area (cf. Bettinger and Baumhoff 1982; Delacorte and McGuire 1993).

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From a careful study of the archaeological record, a pattern of lowland, intensive small-game hunting camps appear to have occurred with the development of large-scale, intensive, upland green-cone piñon pine nut exploitation. This pattern is contemporaneous with an initial focus on the acquisition, mass processing, and storage of dryland seeds (Basgall and Delacorte 2003; Basgall and Giambastiani 1995). These seed camps routinely include rock rings, thought to be the foundations of brush structures. Many of these rock structures contain doorways facing toward the rising sun and are associated with numerous handstones, milling slabs, and bedrock grinding features.

Single-component Haiwee-age hunting camps are frequently located in "geographically isolated areas" (Delacorte 1994). Such localities provided access to a limited range of biotic communities and appear to have a rather specialized focus on a narrow array of subsistence resources. Hence, these settlements are a distinctly different group of sites from earlier or later occupations that tend to overlap at the same settlements and hence evince a lack of continuity from earlier settlements.

Gilreath and Hildebrandt (1997) note that Coso obsidian lithic production shifts to major obsidian outcrops in Late Newberry (500 B.C. to A.D. 600) and this pattern continues into the Haiwee interval (A.D. 600 to 1300). Obsidian quarrying during this time is confined to a few massive exposures rather than the less plentiful but more widespread secondary deposits. In the Haiwee Period, nearly exclusive use of the massive Sugarloaf Mountain, Coso obsidian exposure occurs with other deposits largely ignored.

On the margins of Koehn Lake in Fremont Valley, south of the Indian Wells Valley and the Coso Range, Sutton (1987, 1991) reports on a village site (CA-KER-875) dating to this period. House structures with juniper center posts (*Juniperus* sp.) were documented. The site is well dated with radiocarbon assays and Coso obsidian hydration dates and appears to have been associated with a standing lake. The site was abandoned during the drying up of the area correlating with the initiation of a series of epic droughts known as the Medieval Climatic Anomaly (ca. AD 970 to 1350).

Rose Spring points are one of the key hallmarks of this time period. These points were originally recognized and described from the type-site of that same name, located in southern Owens Valley (also known as Rose Valley) on the western edge of the Coso Range (Lanning 1963: Yohe 1992, 1999, 2000). The Rose Spring arrow point is a small, narrow, triangular arrow point with a variety of stem forms. Rose Spring points are time markers and date primarily to the interval from ca. 2000-650 cal B.P. in the western Great Basin (Basgall and McGuire 1988; Bettinger and Taylor 1974; Garfinkel 2007; Gilreath and Hildebrandt 1997; Thomas 1981; Yohe 1992, 1999, 2000).

Recent Holocene: Marana, Late Prehistoric

This final cultural period (700 cal BP to the historic) represents the ethnographic occupation of historic Native American groups (including the Serrano and Luiseno). Desert Side-notched and Cottonwood arrow points are characteristic and brownware ceramics, soapstone beads, and pictographs also date to this time frame, as do many sites associated with systematic and intensive upland piñon exploitation (Bettinger 1978; Garfinkel and McGuire 1980; McGuire and Garfinkel 1976, 1980).

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Resource intensification that began in the prior period continues and strengthens with settlements tied to seasonal differences in resource availability. The most spatially confined seasonal movement and the smallest foraging ranges occur during this time period. Region-wide expansion of diet breadth and intensification of small seed resources involved a change in the technology used in the collection and processing of these resources. It is argued that cutting and mass collecting of green, dryland, hard seeds provided a considerably higher return than was possible using the former method of seed beating. This pattern begins about 1300 cal BP but increases substantially throughout the Late Prehistoric (650 cal BP – Contact) and into the Protohistoric era. Direct flotation evidence indicates mass harvesting and threshing of Indian rice grass (*Achnatherum hymenoides*), cattail (*Typha* spp.), goosefoot (*Chenopodium* spp.), and blazing star (*Mentzelia* spp.) seeds.

This time period also sees the final collapse of trans-Sierran trade in Coso obsidian. The early emphasis (ca. 8000-1000 cal B.P.) on biface preform or flake blank technology gives way to flake-based reduction. Large bifaces decrease in abundance, yet also diminish in size and formality ultimately being replaced by more numerous flake-based tools. Artiodactyl exploitation is dramatically reduced and replaced by procurement of small game including a tremendous increase in desert tortoise and reptile use. Evidence of increased contact with outside populations (e.g., the American Southwest) and the expansion of Numic-affiliated populations out of eastern California into most areas of the Great Basin and much of the Mojave Desert are recognized during the last 1000 years (Bettinger and Baumhoff 1982; Fowler 1972; Lamb 1958).

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Table 1. Prehistoric Cultural Sequence for the Inland California Region

Cultural Complex	Approximate Time Period in Calibrated Radiocarbon Years Before Present (cal B.P.) and Calendar Years Approximated as AD/BC	Artifact Characteristic
Fluted and Concave Base points, Late Pleistocene Period (Paleoindian)	12,000 – 13,500 cal B.P.; 10,000 BC to 11,500 BC	Fluted points and Concave Base points (Western Clovis)
Lake Mojave Period	12,000 – 8,000 cal B.P.; 10,000 BC to 6,000 BC	Western Stemmed points (Lake Mojave, Silver Lake)
Little Lake (Pinto) Period	8,000 – 4,000 cal B.P.; 6,000 BC to 2000 BC	Pinto and Leaf-shaped points
Newberry (Gypsum) Period	4,000 – 2,000 cal B.P.; 2000 BC to AD 1	Gypsum, Elko, and Humboldt Series points
Haiwee (Saratoga Spring) Period	2000 – 700 cal B.P.; A.D. 1 – 1300	Rose Spring, Eastgate, Saratoga Springs points
Marana (Late Prehistoric) Period	700 cal B.P.; A.D. 1300 – Historic Contact with European explorers ca. 1770	Desert Series points, ceramics

(Warren 1980, 1984, Bettinger and Taylor 1974)

Ethnography

The project area is located between the aboriginal territories of two ethnolinguistic groups: the Cahuilla and the Luiseno. Anthropological research on these two groups is rather extensive and data on these Native Californian pre-contact cultures has been collected since about 1900 (Barrows 1900; Bean 1972, 1978; Bean and Saubel 1972; Bean and Shipek 1978; Kroeber 1908, 1925; Sparkman 1908; Strong 1929; White 1963).

Cahuilla

Cahuilla territory was near the geographic center of Southern California. The Cahuilla aboriginal homeland was bounded to the north by the San Bernardino Mountains, to the south by Borrego Springs and the Chocolate Mountains, to the east by the Colorado Desert, and to the west by the San Jacinto Plain and the eastern slopes of the Palomar Mountains (Bean 1978). Cahuilla traditional areas also dominated the Peninsular and Transverse Mountain Ranges and the San Jacinto Plain, ranging east into the Colorado Desert Region and south into areas beyond the Salton Sea (Bean and Shipek 1978:550-575).

Cahuilla settlements were generally located at high elevations in well-watered canyons or on fans near streams and springs and when situated at lower elevations near natural springs (Moratto

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1984). Hence, Cahuilla villages occupied both high-altitude locations as well as low desert lands. In general they were positioned in close proximity to canyons with high precipitation levels or plentiful water sources (mountainous locations). Such settlements were typically also situated near fresh water sources or at the terminus of alluvial fans where the high water table provided abundant mesquite and shallow wells could be dug. House structures ranged from brush shelters to dome-shaped or rectangular structures some 15-20 feet long (Bean 1978).

Cahuilla social structure revolved around clans and exogamous moieties (components connected through inter-marriage). Hunting, in conjunction with the exploitation of a variety of available natural plant resources governed the Cahuilla subsistence strategy. The Cahuilla used a great range of wild resources, such as acorns and piñon nuts, deer, desert bighorn sheep, rabbits, fish, and quail. Agricultural techniques were present within the Cahuilla, particularly among those groups living near the Colorado River.

The material culture of the Cahuilla was extensive and varied, and included pottery, ornamental items, charmstones, and a variety of flaked stone implements. Unlike other Native American populations in Southern California, the Cahuilla were able to retain their autonomy even after the arrival and increasing control of European explorers and the settling governments that followed. It was not until 1891 that Cahuilla Native culture and the indigenous population began to succumb to the pressures and impacts of European displacements and, later, were adversely affected by the United States governing bodies (Bean 1978; Bean and Smith 1978).

The Cahuilla also had well-developed trade networks with neighboring Serrano and Diegueño groups (Bean 1978).

Luiseño

The Luiseño spoke a language considered to be a member of the Takic subgroup of the Shoshonean language family which is an element of the larger and wide-ranging Utoaztecan linguistic stock. It is important to note the in the Archaeological Background Section we detailed some of the changes characteristic of the ancestors of the people who are classified as speaking a Numic Language.

The people who represent speakers of a Numic language are typically identified as members of the Great Basin or Far Western Paiute and Shoshone. These Numic speaking peoples are classified as an element of the Shoshonean Languages of Uto-Aztecan language stock. The Luiseno language is classified as an element of the Californian Languages of Uto-Aztgecan or the Takic branch of Uto-Aztecan.

The name Luiseno emanates from the indigenous mission association of these Native Californians. It was Mission San Luis Rey de Francia that principally served the region and incorporated the Luiseño people as converts composing part of the Mission population. The aboriginal population of the Luiseño Native people at the time of Euroamerican contact was very likely not more than 4000 individuals (Heizer et al. 1974:172-176).

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Anthropologists have considered the Luiseño to be best classified into two large environmental units – differentiating the interior from the coastal groups. The Native population at the time of Euroamerican contact has been estimated at 4000 persons (Heizer et al. 1974:172-176). The metropolitan communities of Riverside and Jurupa are near the nexus or contiguous territorial boundaries for the Luiseño, Cahuilla, and Serrano Native Californian homelands (Kroeber 1908:32-33). Notable ethnographic and ethnohistoric research is available in the studies of Bean and Shipek (1978), Boscana (1947), Kroeber (1925), Robinson (1947), Shipek (1977), Sparkman (1908), Talley (1982) and White (1963).

The native pre-contact cultural traditions of the Luiseño have been summarized in Heizer et al. (1974:97-206) and in Sparkman (1908:187-204). DuBois (1908:70-186) has contributed an authoritative discussion on Luiseño world view and religious ceremonialism. The discussion below is a summary of these and other primary and secondary sources.

As with most Native Californian cultures, the Luiseño were exclusively foragers (hunter-gatherers). Men hunted large and small game and women acquired the bulk of the basic subsistence resources which were mostly plant foods. The acorn was the central stable nut crop (specifically a number of species of *Quercus* including the favored black oak [*Quercus kellogii*]).

Unusual by world standards for hunter-gatherer groups, the Luiseño lived in permanent, year round villages located in the vicinity of a relatively permanent source of potable water. Inter-village contacts were frequent. Trail systems allowed for travel and trade. The Luiseño sociopolitical organization and kinship systems were based on exogamous partrilineages that were formed into clans.

Bean and Shipek (1978:550) note that the sociopolitical organization of the Luiseño included an extensive array of social statuses. This group exhibited explicitly delineated ruling families that had reciprocal relations with various villages creating what might be best termed a formalized ethnic nationality. Further, the Luiseño were recognized or their elaborate cosmology that included the use of the psychoactive drug (*Datura* spp., aka jimsonweed). Finally, the Luiseño were recognized for their sophisticated religious expressions that included cosmological ritual practices incorporating ceremonial symbolism with sand paintings representing an avenging supra-mundane being name Chinigchingish.

*Luiseño Self-identification and Sacred Religious Traditions**

The Luiseño recognize that the world was created in the area now known as Temecula (Masiel-Zamora 2016), and the Luiseño People have been in this area since the beginning of time. The Pechanga Tribe asserts that the Project area is part of the 'Atáaxum (Luiseno), and therefore has, since time immemorial, been within the Tribe's aboriginal territory. The Pechanga Tribe's knowledge of ancestral boundaries is based on information passed down from their elders through songs and stories; published academic works in the areas of anthropology, history and ethno-history; and through unpublished ethnographic and linguistic field notes. Many anthropologists and historians have proposed boundaries of the Luiseño traditional territory and have included the

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Project area in their descriptions (Kroeber 1925; Drucker 1939; Heizer and Whipple 1951; Smith and Freers 1994).

***The preceding material was kindly provided by Molly Earp-Escobar, Pechanga Cultural Resources Specialist, Temecula Band of Luiseño Mission Indians via letter and specific comments pertaining to the original version of this report. This report has been revised in light of the input from the Temecula Band of Luiseño Mission Indians. The authors and RCA Associates greatly appreciate the insights and corrections of the Pechanga and the Temecula Band of the Luiseño Mission Indians and want to recognize their contribution to our greater understanding of the Project area and further details on their cultural values.**

General History

The Historic era of California is divided into the Mission or Spanish Period (1769 to 1831), the Mexican or Rancho Period (1831 to 1848), and the American Period (1848 to present).

Spanish Period (1769-1831): The first known European explorers to pass through the Mojave Desert and travel into the San Bernardino Mountains were Lieutenant Pedro Fages and a party of soldiers in 1769. A group of explorers were led by Spanish priest, Francisco Garces, who guided Juan Bautista de Anza through the high desert region. In 1771, De Anza led a group from Arizona to create a headquarters at the Mission San Gabriel near what is now the City of Pasadena. The Mojave Trail was established in 1776 as a route across the Mojave Desert to the San Gabriel Mission (Beck and Haase 1974).

Mexican or Rancho Period (1831-1848): Spanish rule was overthrown by Mexico in 1791, and the missions lost their land holdings as the Mexican government passed the Secularization Act in 1833 (Beattie and Beattie 1974). The notable Old Spanish Trail was established between southern California and Sante Fe, New Mexico in the 1830s (Beck and Haase 1974).

American Period (1848 - Present): After the Mexican-American War in 1848 and the discovery of gold in California, the Old Spanish Road was a widely-used trade route for the shipment of goods and Mexican mules and horses. This allowed travelers from Salt Lake City to Las Vegas through the Cajon Pass to reach San Bernardino and Los Angeles. In the 1870s and afterward, small towns in the high desert region and near the Calico Mountains were established as railway stops on the Sante Fe Railroad (Kyle 1990). A silver strike in the Calico Mountains brought a modest mining boom in 1881 (Schuiling 1984:95).

Moreno Valley Local History

Moreno Valley is located immediately outside the boundary of Rancho San Jacinto Nuevo y Portero, a San Jacinto land grant. The Anza expedition may have passed through the valley of San Jacinto in 1774 referring to it as a "Valley of Paradise". Cattle belonging to Mission San Luis Rey were grazed in the valley and an adobe was also built there. The large, 35,000 acre, Rancho San

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Jacinto Viejo, extended to the communities of Hemet and San Jacinto. The Rancho was a land grant to Jose Antonio Estudillo made in 1842 as payment for efforts during mission secularization.

After California statehood in 1850 the Butterfield Overland Mail Company state passed through the area (City of Moreno Valley 1996-2006). Frank E. Brown (Moreno in Spanish) established the Bear Valley Land and Water Company in 1883. Much of the present street grid was built out by 1901.

March Field constructed in 1918 ushered in a new series of developments for Moreno Valley. The field was initially employed to train fighter pilots. It had a short use life closing in 1922 but re-opening in 1927. The field became a permanent military established named March Air Force Base and has had an active and important history for the last 70 years. In 1996, March Field was established as an Air Reserve Base. The city of Moreno Valley itself was incorporated in 1984. The metropolitan area for the city includes the communities of Moreno, Sunnymead and Edgemont.

PERSONNEL

Dr. Alan Garfinkel Gold, RPA completed a records search at Eastern Information Center, University of California, Riverside to conduct a cultural resource records search. Following receipt of the data from SCCIC, a systematic pedestrian field survey was conducted by Dr. Gold and Alina Landa on March 16, 2018. Following completion of the field survey, this report was prepared based on the results of the data search and the field investigations.

METHODS

Research

A cultural resources records search was completed (in person) on March 15, 2018 at the Eastern Information Center (EIC) at the University of California, Riverside which showed there were no cultural resources that had been previously recorded within the Project area itself. The results of the records search are summarized in this report. Native American Consultation and Coordination included a Sacred Lands File Search conducted by the Native American Heritage Commission (NAHC) on March 22, 2018. Native American individuals and groups identified by the NAHC as interested parties associated with the Project area were all contacted for consultation. Copies of the letters are provided in Appendix B.

Field Survey

A comprehensive archaeological field survey was conducted by Alan Garfinkel Gold and Alina Landa on March 16, 2018. The survey was conducted by walking parallel transects in a north-south direction. The transects were spaced approximately 10 to 15 meters apart in order to provide reasonably comprehensive coverage of the site. Four shovel test pits were excavated at a depth of approximately 30 cm.

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RESULTS

Native American Consultation

The NAHC conducted a Sacred Lands file search on March 22, 2018, which returned negative results for Sacred Lands in or near the proposed project area. Potentially interested tribes that are associated with the project area were contacted. The contact list is made available in Appendix B. The San Manuel Band of Mission Indians, Twenty-nine Palms Band of Mission Indians and the Temecula Band of Luiseno Mission Indians (Pechanga Cultural Resources) responded to the inquiries.

The SMBMI advised that this particular project area is not of great concern. However, the High Desert Region in general remains a highly sensitive location for cultural resources. As a result, SMBMI prefers to consult with the lead agency as a point of contact for this project area.

The Twenty-Nine Palms Band of Mission Indians indicated that they have no specific information regarding previously recorded cultural resources in or near the Project.

The Soboba Band of Luiseno Indians (Tribal Historic Preservation Officer) advised via mailed letter that the Project location is culturally sensitive as it was used in ongoing trade between the Tribes. The Tribe would like to initiate consultation with the Lead Agency as a result.

The Temecula Band of Luiseño Mission Indians recommends that Archaeological and Native American Monitoring mitigation measures be added for this Project. They state that, "the Project is located between a historic trail and the Russell Mountains…The Tribe believes the possibility of uncovering sub-surface resources is high."

Cultural Resources Records Search

A cultural resources records search was completed (in person) on March 15, 2018 at the Eastern Information Center (EIC) at the University of California, Riverside, which showed there were no cultural resources that had been previously recorded within the Project area itself. The record search of previously documented cultural resources and cultural resource surveys previously completed within the boundaries of the Project and within a half mile buffer. The search included a review of all recorded historic and prehistoric archaeological resources and any built-environment historical resources as well. Additionally, this review includes an archival search of the existing cultural resource reports on file with the Information Center. Also included was a search of the California Points of Historical Interest (CPHI), California Historical Landmarks (CHL), California Register of Historical Resources (CALREG), National Register of Historic Places (NRHP), and California State Historic Properties Directory (CHPD) listings. **Table 2 (below)** provides a summary of the previously recorded cultural resource directly located within the half-mile buffer of the Project area.

Table 2. Known Cultural Resources Within a ½ mile Buffer of the Project Area

Primary Number	Trinomial	Age	Type	Previous Evaluation
P-33-019919	None	Historic	Irrigation	C. Cotterman, ECORP

Site P-33-019919

Site P-33-019919 was identified within the cultural resources records search completed (in person) on March 15, 2018 at the Eastern Information Center (EIC) at the University of California, Riverside. This historic period site consists of the remains of an irrigation pumping feature and a capped well, located in a former agricultural field. Two features were recorded.

Feature 1 is a possible pump stand, now missing its pumping equipment. It includes a concrete slab footing measuring approximately 5 feet (east-west) by 4 feet (north-south), with an 8-inch-diameter steel pipe projecting upwards from its east half to a height of approximately 6 feet. A horizontal steel pipe connects the vertical pipe to a pipe junction at the west end of the slab, but the junction is no longer connected to any other pipe. The concrete footing and steel pipes are flanked by two concrete irrigation standpipes. One of the standpipes, adjacent to the north side of the footing, is 18 inches in diameter and approximately 12 inches high. The other standpipe, near the south side of the footing, is 15 inches in diameter and approximately 18 inches high.

Feature 2 appears to be a capped well, located approximately 55 feet north-northeast of Feature 1. Feature 2 consists of a 12-inch-diameter steel pipe, set in concrete, and projecting to a height of 42 inches above the surrounding ground surface. The top of the pipe is covered with a flat steel plate, and the sides of the pipe are coated with tar. Feature 1 is at the east end of an east-west row of olive trees that extends approximately 300 feet towards the west.

The site record, completed in 2010, includes a photograph of the features and a sketch map of the various elements identified with respect to their aerial extent and spatial relationships. The site record was crafted by C. Cotterman of ECORP Consulting, Inc. Redlands, California.

Table 3 (below) provides a list of the six cultural resources survey reports identified from archival studies with the Information Center that are located within the half-mile buffer of the proposed Project.

Table 3. Cultural Resources Reports Within a ½ mile Buffer of the Project Area

InfoCenter No.	Authors	Title	Year
RI-00414	Thomas Holcomb, Archaeological Research Unit, UC Riverside	Environmental Impact Evaluation: Archaeological Assessment of Two Portions of Land in Moreno Valley, Riverside County, CA	1978
RI-02171	Daniel F. McCarthy Archaeological Research Unit, UC Riverside	Cultural Resources Inventory for the City of Moreno Valley, Riverside County, CA	1987

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RI-04717	Keith A. O'Connell URS Corporation	Results of Archaeological Survey Conducted at the Proposed Moreno Beach Verizon Wireless Tower, Riverside, CA	2007
RI-06754	Affinis, El Cajon, CA	Cultural Resources Inventory, Lowes Moreno Valley Project, Moreno Valley, Riverside County, CA	2006
RI8802	Bai "Tom" Tang and Michael Hogan, CRM Tech	Phase I Archaeological Assessment Moreno Master Drainage Plan Revision, City of Moreno Valley Riverside County, CA	2012
RI9803	Bai "Tom" Tang and Michael Hogan, CRM Tech	Phase I Archaeological Assessment Tentative Tract Map, Parcel No. 36740, City of Moreno Valley, Riverside County, CA	2011

Field Survey

During the field survey conducted on March 16, 2018 the Project area was carefully inspected for the presence of any cultural resources, including prehistoric or historic remains and historic buildings. No cultural resources were discovered for the Project area. The survey was conducted by walking parallel transects in an east-west direction. These transects were spaced approximately 10 to 15 meters apart. Four shovel-test pits were excavated during the survey. The test pits were excavated to a depth of approximately 20 cm. No buried cultural resources were discovered upon excavation of the shovel test pits (STPs).

Shovel Test Pits

During the field survey, shovel-test pits were excavated in order to further evaluate the cultural significance of the project area. These test pits were excavated to a depth of approximately 20 cm. No cultural resources (flaked stone, bone, charcoal, historic or prehistoric artifacts [e.g. projectiles points, stone tools, unmodified flakes, shell or stone beads]) were found based on the excavations performed at these test pits.

CONCLUSION

This cultural study was completed pursuant to CEQA. Field survey investigations conducted on March 16, 2018 by RCA Associates, Inc. did not identify any cultural resources, including prehistoric / historic archaeological remains or historic buildings within the Project boundaries. Shovel-test pits excavated on the property did not yield any subsurface cultural remains. A cultural resources records search was conducted by SCCIC which showed that no cultural resources had been previously recorded on the Project property. The NAHC conducted a Sacred Lands File Search and provided a list of potentially interest parties and affiliated Native California individuals and groups.

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The NAHC search yielded negative results for Sacred Lands in the immediate Project area. Follow up and Native American consultation and coordination with the six Native American tribes were completed. All parties were sent consultation letters. The San Manuel Band of Mission Indians replied by email. The Tribe initially advised that although this particular project area is not of great concern, the region remains a highly sensitive location for cultural resources. As a result, SMBMI elects to consult with the lead agency as a point of contact for this project.

The Soboba Band of Luiseno Indians (Tribal Historic Preservation Officer) advised via mailed letter that the Project location is culturally sensitive as it was used in ongoing trade between the Tribes. The Tribe would like to initiate consultation with the Lead Agency as a result.

The Temecula Band of Luiseño Mission Indians recommends that Archaeological and Native American Monitoring mitigation measures be added for this Project. They state that, "the Project is located between a historic trail and the Russell Mountains…The Tribe believes the possibility of uncovering sub-surface resources is high."

Given the Soboba and Temecula Band's concerns, our recommendation would be to retain both an Archaeological (Cultural Resources) and a Native American Monitor during ground disturbing construction activities for the Project. This recommendation is the same as that supplied in letter form with their comments addressing the original version of this report.

If previously undocumented cultural resources are identified during earthmoving activities, a qualified archaeologist should be contacted to assess the nature and significance of the find, diverting construction excavation if necessary. If human remains are encountered during the undertaking, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or his/her representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 48 hours of notification by the NAHC.

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APPENDIX A
FIGURES

Attachment: Project 2_Cultural Report Final 9-6-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Figure 1

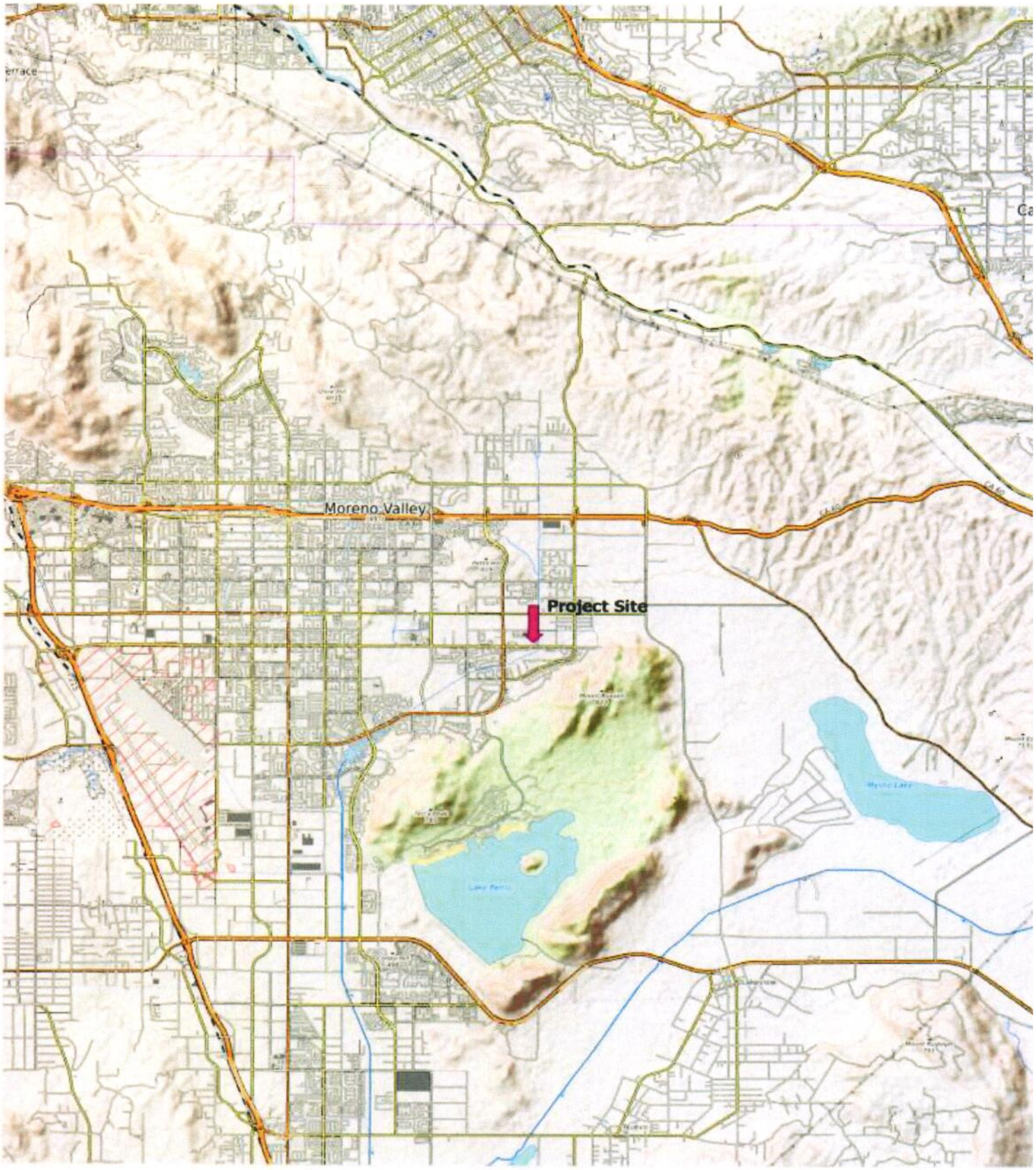
Regional Vicinity Map

RCA ASSOCIATES, INC

Attachment: Project 2_Cultural Report Final 9-6-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Figure 2

Local Topographic Map



RCA ASSOCIATES INC

Attachment: Project 2_Cultural Report Final 9-6-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

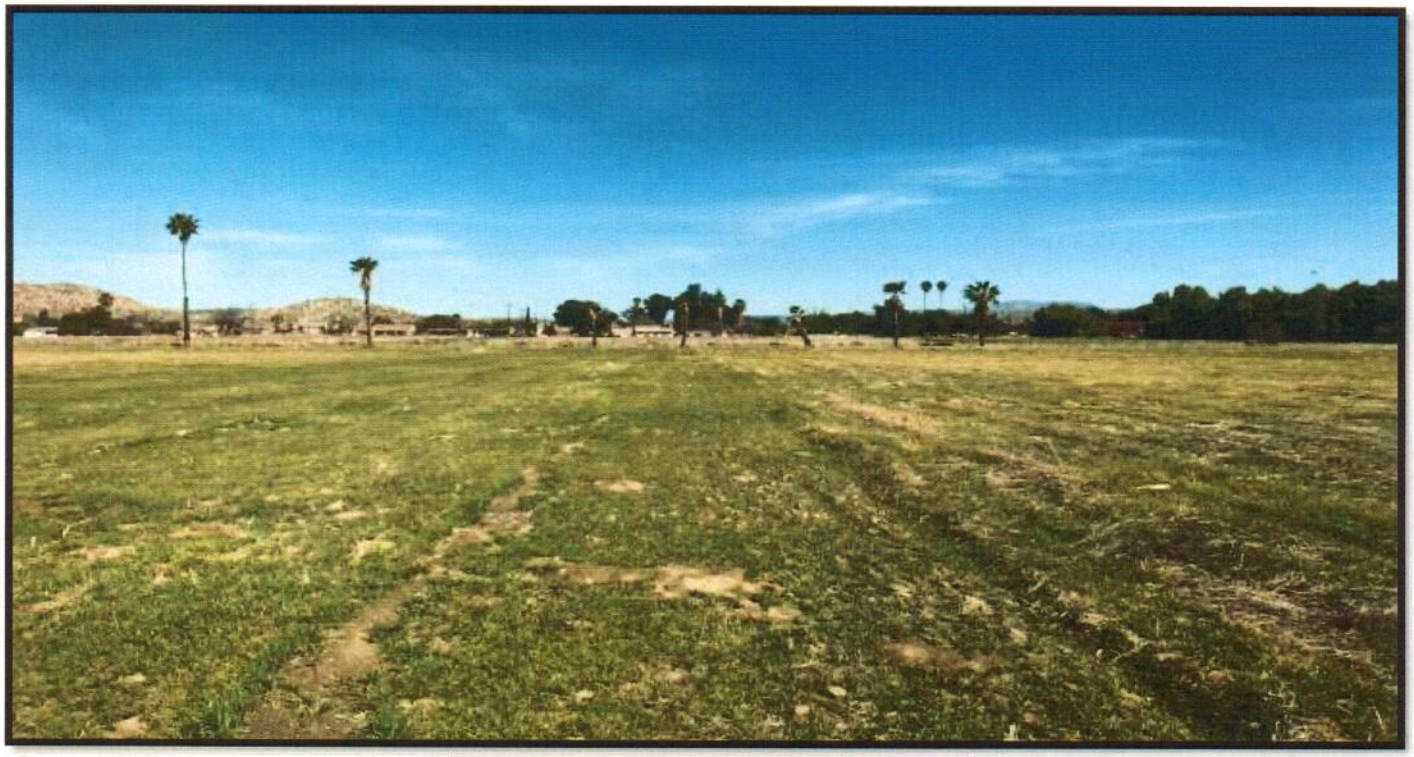
Figure 3

Local Vicinity Map

RCA ASSOCIATES, INC

Attachment: Project 2_Cultural Report Final 9-6-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Site Photographs



SITE LOOKING NORTH

SITE LOOKING EAST

Attachment: Project 2_Cultural Report Final 9-6-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Site Photographs Cont.

SITE LOOKING SOUTH

SITE LOOKING WEST

Attachment: Project 2_Cultural Report Final 9-6-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX B
NATIVE AMERICAN CONSULTATION

Attachment: Project 2_Cultural Report Final 9-6-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Sacred Lands File & Native American Contacts List Request

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
916-373-3710
916-373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project Single-family homes

County: Riverside

USGS Quadrangle Name: Sunnymead, California

Township: 3 S **Range:** 3 W **Section(s):** 14

Company/Firm/Agency: RCA Associates/ Frontier Communities/ City of Moreno Valley

Street Address: north of Brodiaea Ave. and west of Quincy Street.

City: Moreno Valley **Zip:** 92551-557

Phone: 760-596-0017

Fax: 760-956-9212

Email: alinalanda@ymail.com

Project Description: Single-family home development.

Attachment: Project 2_Cultural Report Final 9-6-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Native American Heritage Commission
Native American Contact List
Riverside County
3/22/2018

Agua Caliente Band of Cahuilla Indians
Jeff Grubbe, Chairperson
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264 — Luiseno
Phone: (760) 699 - 6800
Fax: (760) 699-6919

Agua Caliente Band of Cahuilla Indians
Patricia Garcia-Plotkin, Director
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264 — Luiseno
Phone: (760) 699 - 6907
Fax: (760) 699-6924
ACBCI-THPO@aguacaliente.net

Augustine Band of Cahuilla Mission Indians
Amanda Vance, Chairperson
P.O. Box 846 — Cahuilla
Coachella, CA, 92236
Phone: (760) 398 - 4722
Fax: (760) 369-7161
hhaines@augustinetribe.com

Cabazon Band of Mission Indians
Doug Welmas, Chairperson
84-245 Indio Springs Parkway — Cahuilla
Indio, CA, 92203
Phone: (760) 342 - 2593
Fax: (760) 347-7880
jstapp@cabazonindians-nsn.gov

Cahuilla Band of Indians
Daniel Salgado, Chairperson
52701 U.S. Highway 371 — Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 5549
Fax: (951) 763-2808
Chairman@cahuilla.net

Campo Band of Mission Indians
Ralph Goff, Chairperson
36190 Church Road, Suite 1 — Kumeyaay
Campo, CA, 91906
Phone: (619) 478 - 9046
Fax: (619) 478-5818
rgoff@campo-nsn.gov

Ewiiaapaayp Tribal Office
Robert Pinto, Chairperson
4054 Willows Road — Kumeyaay
Alpine, CA, 91901
Phone: (619) 445 - 6315
Fax: (619) 445-9126
wmicklin@leaningrock.net

Ewiiaapaayp Tribal Office
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michaelg@leaningrock.net

Jamul Indian Village
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Phone: (619) 669 - 4785
Fax: (619) 669-4817
mohusky@jiv-nsn.gov

La Jolla Band of Luiseno Indians
Thomas Rodriguez, Chairperson
22000 Highway 76 — Luiseno
Pauma Valley, CA, 92061
Phone: (760) 742 - 3771

La Posta Band of Mission Indians
Javaughn Miller, Tribal Administrator
8 Crestwood Road — Kumeyaay
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
jmiller@LPtribe.net

La Posta Band of Mission Indians
Gwendolyn Parada, Chairperson
8 Crestwood Road — Kumeyaay
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
LP13boots@aol.com

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Quincy Street Homes (2018-21) Project, Riverside County.

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Los Coyotes Band of Mission Indians
John Perada, Environmental Director
P. O. Box 189
Warner Springs, CA, 92086
Phone: (760) 782 - 0712
Fax: (760) 782-2730
Cahuilla

Los Coyotes Band of Mission Indians
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Cahuilla

Manzanita Band of Kumeyaay Nation
Angela Elliott Santos, Chairperson
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Kumeyaay

Morongo Band of Mission Indians
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dtorres@morongo-nsn.gov
Cahuilla
Serrano

Morongo Band of Mission Indians

Denisa Torres, Cultural Resources Manager

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Cahuilla Serrano

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sgaughen@palatribe.com
Cupeno
Luiseno

Pauma Band of Luiseno Indians - Pauma & Yuima Reservation
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Luiseno

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Luiseno

Ramona Band of Cahuilla

Mission Indians
John Gomez, Environmental

Attachment: Project 2_Cultural Report Final 9-6-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Cahuilla

Rincon Band of Mission Indians Jim McPherson, Tribal Historic Preservation Officer
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Luiseno

Rincon Band of Mission Indians
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Chairperson 1 West
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Luiseno

San Fernando Band of Mission Indians
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Kitanemuk Serrano Tataviam

San Manuel Band of Mission Indians
Lee Clauss, Director of Cultural Resources
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Fax: (909) 864-3370
lclauss@sanmanuel-nsn.gov
Serrano

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Kumeyaay

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Cahuilla

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Serrano

Soboba Band of Luiseno Indians
Scott Cozart, Chairperson
P. O. Box 487
San Jacinto, CA, 92583
Phone: (951) 654 - 2765
Fax: (951) 654-4198
jontiveros@soboba-nsn.gov
Cahuilla Luiseno

Attachment: Project 2_Cultural Report Final 9-6-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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carrieg@soboba-nsn.gov

Soboba Band of Luiseno Indians
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mmirelez@tmdci.org

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jhagen@viejas-nsn.gov

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jhagen@viejas-nsn.gov

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PECHANGA CULTURAL RESOURCES
Temecula Band of Luiseño Mission Indians

Post Office. Box 2183 • Temecula, CA 92593
Telephone (951) 770-6300 • Fax (951) 506-9491

Chairperson:
Neal Ibanez

Vice Chairperson:
Bridgett Barcello

Committee Members:
Andrew Masiel, Sr.
Darlene Miranda
Evie Gerber
Richard B. Scearce, III
Robert Villalobos

Director:
Gary DuBois

Coordinator:
Paul Macarro

Planning Specialist:
Tuba Ebru Ozdil

August 10, 2018

VIA E-MAIL and USPS

Seda Yaghoubian, Planning Consultant
City of Moreno Valley
Community Development Department, Planning Division
14177 Frederick Street
P.O. Box 88005
Moreno Valley CA 92552-0805

Re: Pechanga Tribe Comments on the Phase I Cultural Resources Assessment for the PEN 18-0092/0053/0054 Frontier Project in the City of Moreno Valley.

Dear Ms. Yaghoubian,

This comment letter is written on behalf of the Pechanga Band of Luiseño Indians (hereinafter, "the Tribe"), a federally recognized Indian tribe and sovereign government. The Tribe submits these comments for the official record concerning the Phase I Cultural Resources Assessment Report for the PAMA Business Park Project prepared by RCA Associates, Inc., dated April 26, 2018, and received by the Tribe June 2018.

The Tribe extends its thanks to the City for providing the Cultural Resource Assessment so the Tribe can review and provide comments on the content based upon tribal knowledge so we may continue to preserve and protect Luiseño cultural resources in the City of Moreno Valley.

In the "*Late Holocene: Haiwaee, Rose Spring, Saratoga Springs Period*" section, found on page 5, the report makes remarks that during this period, "Cultural changes may reflect a Numic (Great basin Paiute-Shoshone) in migration." The report goes on to say in the "Luiseño" sub-section, page 17, that "the Luiseño spoke a language considered to be a member of the Takic subgroup of the Shoshonean language family which is an element of the larger and wide-ranging Utoaztecan linguistic stock." Though the report does correctly state that the Luiseño are a Takic-speaking population, the Luiseño language and the Shoshonean language are separate groups within the Uto-Aztecan Language Family. The Luiseño languages are within the Californian Uto-Aztecan branch while the Shoshonean languages are of the Northern Uto-Aztecan branch therefore

Attachment: Project 2_Cultural Report Final 9-6-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

making them two distinct language sub-groups within in the Uto-Aztecan Language Family. For further clarification, the Glottolog organization[1] has language classification charts.

The Luiseño recognize that the world was created in the area now known as Temecula[2], and the Luiseño People have been in this area since the beginning of time.The Pechanga Tribe asserts that the Project area is part of 'Atáaxum (Luiseño), and therefore has, since time immoral, been within the Tribe's aboriginal territory. The Pechanga Tribe's knowledge of our ancestral boundaries is based on information passed down from our elders through songs and stories; published academic works in the areas of anthropology, history and ethno-history; and through unpublished ethnographic and linguistic field notes. Many anthropologists and historians who have proposed boundaries of the Luiseño traditional territory have included the project area in their descriptions (Kroeber 1925[3]; Drucker 1939[4]; Heizer and Whipple 1951[5]; Smith and Freers 1994[6]). The Tribe requests our comments and tribal perspective to be included in the report and suggest the addition of a Luiseño sub-section of the Ethnography.

Additionally, it is archaeological standard that a mile radius records search be conducted for all projects. The Tribe requests that a mile radius search be conducted for all future Cultural Resource Assessments.

Lastly, the Tribe recommends the addition of Archaeological and Native American mitigation measures be included for this project. The Project is located between a historic trail and the Russell Mountains. Though no cultural resources have been observed on the surface within the Project's APE, the Tribe believes the possibility of uncovering sub-surface resources is high. The Historic wagon road was used for thousands of years by Native Americans prior to it becoming a wagon road and the Russell Mountains have a plethora of sites, which is often an indication that there is a high possibility of finding subsurface resources in the surrounding areas. The Project has previously been used for agriculture for several decades, unfortunately the Tribe has learned over the last 30 years that Native American resources were often collected from the fields as they were brought to the surface. Therefore, given that the Project is on agricultural land and situated between a well-traveled trail and known cultural resources the Tribe requests archaeological and Native American monitors be present for all ground-disturbing activities.

The Tribe would like our comments to be forwarded to RCA Associates, Inc. so they may review and make the necessary updates/changes to their report and for the City to include this letter

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[1] http://glottolog.org/resource/languoid/id/luis1253
[2] Masiel-Zamora, Myra, 2016, *'Éxva Teméeku: Where We Began.* Great Oak Press, Pechanga, California.
[3] Alfred. L. Kroeber 1925. *Handbook of the Indians of California.* Bulletin 78, Bureau of American Ethnology, Government Printing Office, Washington D.C.
[4] Phillip Drucker 1939. Culture Element Distribution, V, Southern California. *University of California Publications in American Archaeology and Ethnology,* Vol. 1.
[5] Robert F. Heizer and M.A. Whipple 1951. *The California Indians.* University of California Press, Berkeley.
[6] Gerald A. Smith and Steven M. Freers 1994. *Fading Images: Indian Pictographs of Western Riverside County.* Riverside Museum Press, Riverside, Ca.

Attachment: Project 2_Cultural Report Final 9-6-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

in the confidential appendix of the final report. The Tribe welcomes the opportunity to meet with the City of Moreno Valley to further explain our comments. The Tribe reserves the right to fully participate in the environmental review process, as well as to provide further comment on the Project's impacts to cultural resources and potential mitigation for such impacts.

The Pechanga Tribe looks forward to working together with the City of Moreno Valley in protecting the invaluable and non-renewable Luiseño cultural resources found in the Project area. Please contact me at 951-770-6314 or at crs@pechanga-nsn.gov if there are any questions or concerns regarding our cultural report comments. Otherwise, please contact our Cultural Analyst, Ebru Ozdil at 951-770-6313 or at eozdil@pechanga-nsn.gov regarding all other project related questions or concerns. Thank you.

Sincerely,

Molly Earp-Escobar

Cultural Resource Specialist

Cc Pechanga Office of the General Counsel

Attachment: Project 2_Cultural Report Final 9-6-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

May 1, 2018

Attn: Alina Landa, Cultural Resource Specialist
RCA Associates, LLC
15555 Main Street, #D4-235
Hesperia, CA 92345

RE: Single-Family Home Development on a 3.7 acre parcel – north of Brodiaea Avenue and West of Quincy Street – City of Moreno Valley, Riverside County, CA

The Soboba Band of Luiseño Indians appreciates your observance of Tribal Cultural Resources and their preservation in your project. The information provided to us on said project has been assessed through our Cultural Resource Department, where it was concluded that although it is outside the existing reservation, the project area does fall within the bounds of our Tribal Traditional Use Areas. This project location is in proximity to known sites, is a shared use area that was used in ongoing trade between the tribes, and is considered to be culturally sensitive by the people of Soboba.

Soboba Band of Luiseño Indians is requesting the following:

1. To initiate a consultation with the project proponents and lead agency.
2. The transfer of information to the Soboba Band of Luiseno Indians regarding the progress of this project should be done as soon as new developments occur.
3. Soboba Band of Luiseño Indians continues to act as a consulting tribal entity for this project.
4. Working in and around traditional use areas intensifies the possibility of encountering cultural resources during the construction/excavation phase. For this reason the Soboba Band of Luiseño Indians requests that Native American Monitor(s) from the Soboba Band of Luiseño Indians Cultural Resource Department to be present during any ground disturbing proceedings. Including surveys and archaeological testing.
5. Request that proper procedures be taken and requests of the tribe be honored (Please see the attachment)

Multiple areas of potential impact were identified during an in-house database search. Specifics to be discussed in consultation with the lead agency.

Sincerely,

Joseph Ontiveros, Tribal Historic Preservation Officer
Soboba Band of Luiseño Indians
P.O. Box 487
San Jacinto, CA 92581
Phone (951) 654-5544 ext. 4137
Cell (951) 663-5279
jontiveros@soboba-nsn.gov

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Cultural Items (Artifacts). Ceremonial items and items of cultural patrimony reflect traditional religious beliefs and practices of the Soboba Band. The Developer should agree to return all Native American ceremonial items and items of cultural patrimony that may be found on the project site to the Soboba Band for appropriate treatment. In addition, the Soboba Band requests the return of all other cultural items (artifacts) that are recovered during the course of archaeological investigations. Where appropriate and agreed upon in advance, Developer's archeologist may conduct analyses of certain artifact classes if required by CEQA, Section 106 of NHPA, the mitigation measures or conditions of approval for the Project. This may include but is not limited or restricted to include shell, bone, ceramic, stone or other artifacts.

The Developer should waive any and all claims to ownership of Native American ceremonial and cultural artifacts that may be found on the Project site. Upon completion of authorized and mandatory archeological analysis, the Developer should return said artifacts to the Soboba Band within a reasonable time period agreed to by the Parties and not to exceed (30) days from the initial recovery of the items.

Treatment and Disposition of Remains.

A. The Soboba Band shall be allowed, under California Public Resources Code § 5097.98 (a), to (1) inspect the site of the discovery and (2) make determinations as to how the human remains and grave goods shall be treated and disposed of with appropriate dignity.

B. The Soboba Band, as MLD, shall complete its inspection within twenty-four (24) hours of receiving notification from either the Developer or the NAHC, as required by California Public Resources Code § 5097.98 (a). The Parties agree to discuss in good faith what constitutes "appropriate dignity" as that term is used in the applicable statutes.

C. Reburial of human remains shall be accomplished in compliance with the California Public Resources Code § 5097.98 (a) and (b). The Soboba Band, as the MLD in consultation with the Developer, shall make the final discretionary determination regarding the appropriate disposition and treatment of human remains.

D. All parties are aware that the Soboba Band may wish to rebury the human remains and associated ceremonial and cultural items (artifacts) on or near, the site of their discovery, in an area that shall not be subject to future subsurface disturbances. The Developer should accommodate on-site reburial in a location mutually agreed upon by the Parties.

E. The term "human remains" encompasses more than human bones because the Soboba Band's traditions periodically necessitated the ceremonial burning of human remains. Grave goods are those artifacts associated with any human remains. These items, and other funerary remnants and their ashes are to be treated in the same manner as human bone fragments or bones that remain intact

Coordination with County Coroner's Office. The Lead Agencies and the Developer should immediately contact both the Coroner and the Soboba Band in the event that any human remains are discovered during implementation of the Project. If the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, the Coroner shall ensure that notification is provided to the NAHC within twenty-four (24) hours of the determination, as required by California Health and Safety Code § 7050.5 (c).

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Non-Disclosure of Location Reburials. It is understood by all parties that unless otherwise required by law, the site of any reburial of Native American human remains or cultural artifacts shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, parties, and Lead Agencies, will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code § 6254 (r). Ceremonial items and items of cultural patrimony reflect traditional religious beliefs and practices of the Soboba Band. The Developer agrees to return all Native American ceremonial items and items of cultural patrimony that may be found on the project site to the Soboba Band for appropriate treatment. In addition, the Soboba Band requests the return of all other cultural items (artifacts) that are recovered during the course of archaeological investigations. Where appropriate and agreed upon in advance, Developer's archeologist may conduct analyses of certain artifact classes if required by CEQA, Section 106 of NHPA, the mitigation measures or conditions of approval for the Project. This may include but is not limited or restricted to include shell, bone, ceramic, stone or other artifacts.

Confidentiality: The entirety of the contents of this letter shall remain confidential between Soboba and RCA Associates, LLC. No part of the contents of this letter may be shared, copied, or utilized in any way with any other individual, entity, municipality, or tribe, whatsoever, without the expressed written permission of the Soboba Band of Luiseño Indians.

Attachment: Project 2_Cultural Report Final 9-6-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

RCA ASSOCIATES INC

15555 Main Street, #D4-235
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www.rcaassociatesllc.com

April 5, 2018

Angela Elliott Santos, Chairperson
Manzanita Band of Kumeyaay Nation
P.O. Box 1302
Boulevard, CA 91905

Dear Ms. Elliot Santos,

I am writing you to bring to your attention a proposed project in compliance with CEQA and the City of Moreno Valley. The proposed project is a single-family home development located on a 3.7 acre parcel (Township 3 south, Range 3 west, Section 14) Sunnymead, California Quadrangle. The project is located north of Brodiaea Ave and west of Quincy street. The property is surrounded by mostly vacant land, except single family homes south of Brodiaea Ave.

As part of the cultural resources study for the project, I am requesting your insight on potential Native American cultural properties and resources in or near the area of potential effect. Please respond at your earliest convenience if you have any information to consider for this study. Thank you.

Respectfully,

Alina Landa
Cultural Resource Specialist
RCA Associates, LLC
Email: alinalanda@ymail.com

Attachment: Project 2_Cultural Report Final 9-6-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX C
RESUMES

Attachment: Project 2_Cultural Report Final 9-6-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Dr. Alan Philip Garfinkel Gold, R.P.A.
avram1952@yahoo.com
805.312.2261

Positions:

Principal Archaeologist
RCA Associates, LLC
Hesperia, California

Founder and Director
California Rock Art Foundation
http://www.carockart.org

Senior Cultural Resource Specialist
AECOM (http://www.aecom.com)
Camarillo, California (Total time 3 years)

Freelance Cultural Resource Management Consultant
(Total time 20 years)

Environmental Planner, Cultural Resources
California Department of Transportation
(Total time 18 years)

Education:

Bachelor of Arts, Department of Anthropology, California State University, Northridge, (*magna cum laude*), 1974
Master of Arts, Department of Anthropology, University of California, Davis, 1977
Doctor of Philosophy, Prehistoric Forager Ecology, University of California, Davis, 2005

Representative Cultural Resource Management Projects

Cultural Resource Management Director for North Sky Wind Energy Project. Identified 76 cultural resource sites. Collected, excavated and documented sites including intensive data recovery effort resulting in a collection of 5,000 artifacts. Managed up to 25 Native American Monitors concurrently for the 102 wind turbine 15,000 acre study area. Resulted in project approval through NEPA and CEQA compliance and approved federal tax credit. Senior author for the resulting 2,769 page report.

Identification and evaluation of potential effects for the Red Rock Canyon Bridge Replacement Project. Identified and evaluated historic properties within the project area, developed historic background for the Red Rock Railroad historic resource. Completed Historic Property Survey Report including the documentation of identification (Prehistoric Archaeological and Historic Archaeological Survey) and evaluation efforts (Geoarchaeological Study). Consultation completed with local museums, Red Rock Canyon State Park, Native American Heritage Commission (NAHC) and Native American groups identified. Area had been listed as a Sacred Site by NAHC. Result: no historic properties within area of potential effects (APE).

Black Creek Site (CA-CAL-789) eligibility evaluation, testing, data recovery, and public interpretation. Contracted with Far Western and Sonoma State for data recovery and construction phase of systematic late discovery identification. Coordinated and consulted with Advisory Council, State Historic Preservation Office, the Army Corps of Engineers, and the Calaveras Band of Mi-Wuk. Significant and eligible site fully mitigated from adverse effects of road realignment through data recovery and public interpretation projects that included website, interpretive booklet, public presentations at conferences and public schools.
Project received California Governor's Award for Historic Preservation in 2008.

Attachment: Project 2_Cultural Report Final 9-6-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

The Applegate Site (CA-AMA-56) eligibility, data recovery, negotiation of reburial arrangement with the Ione Band of the Miwok, presentation of history and character of cultural resource studies in public program sponsored by Far Western Anthropological Research Group, State Historic Preservation Office, California Department of Transportation, and the Ione Band of the Miwok. Worked out program for dealing with eligible site that had received impacts from Caltrans over the course of 50 years of impacts. Dealt with major issues with human remains and associated mortuary offerings.

East Sonora Bypass archaeological studies. Developed program to mitigate adverse effects of numerous eligible historic and prehistoric archaeological sites. Consultation with Mi-Wuk on one of the most controversial Caltrans projects in the history of their cultural resource program due to the pattern of late discoveries and lack of thorough consultation with Native Americans. Coordination with State Historic Preservation Office concerning Memorandum of Agreement, Data Recovery Program, Programmatic Agreement, and Treatment Plan, Supplemental Historic Property Survey Report.

Development of a management plan and National Register nomination for the Fossil Falls/Little Lake Archaeological District for the Bureau of Land Management. Resulted in protective actions, road closures, interpretation, and identification of resources for inclusion in the National Register nomination and the resulting report was published by the Bakersfield District Office of the Bureau of Land Management.

Project Archaeologist with the Desert Planning Staff, Bureau of Land Management, Riverside, California.

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Alina Landa
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Experience

RCA Associates, Inc., Victorville, California **January 2017-Present**
Cultural Resources Specialist

Survey properties in the California high desert region. Correspond with Native American Tribes. Contact Native American Heritage Commission and California Historical Resources Information Center. Prepare CEQA Phase I cultural reports under a certified archaeologist.

Education

Cal Poly Pomona, Pomona, California **June 2016**
Bachelor of Science, General Anthropology
Cultural Resource Management, Applied Anthropology

Chaffey College, Rancho Cucamonga, California **June 2013**
Associate of Arts: Social Sciences

Relevant Coursework

Archaeology Field Class, Lake Arrowhead, California **Spring 2015**
Conducted excavations in a small group overseen by Dr. Mark W. Allen.
Documented unit elevations and used basic excavations skills such as troweling and dry screening.

Cultural Resources Management Class **Winter 2015**
Studied the basic laws regarding the protection of historic properties.
Involved in a group effort to nominate the Santa Anita Racetrack to be on the National Register of Historic Properties.

California Archaeology Class **Winter 2015**
Presented research paper on human behavioral ecology during the Medieval Climatic Anomaly.
Studied prehistoric California culture ways to understand subsistence patterns and inter-tribal communications.

Leadership

San Bernardino County Library Page, Fontana, California **June 2017- Present**
Lewis Library and Technology Center
San Bernardino County Museum Volunteer **February 2016- June 2016**

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Attachment: Project 2_Cultural Report Final 9-6-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GEOTECHNICAL EVALUATION AND INFILTRATION STUDY

FOR

PROPOSED RESIDENTIAL DEVELOPMENT

APN 478-080-013

CITY OF MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA

PREPARED FOR

FRONTIER ENTERPRISES
8300 UTICA AVENUE, SUITE 300
RANCHO CUCAMONGA, CALIFORNIA 91730

PREPARED BY

GEOTEK, INC.
710 EAST PARKRIDGE AVENUE, SUITE 105
CORONA, CALIFORNIA 92879

PROJECT NO. 1132-CR3 FEBRUARY 12, 2014

GEOTEK

GeoTek, Inc.
710 E. Parkridge Avenue, Suite 105, Corona, California 92879-1097
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February 12, 2014
Project No. 1132-CR3

Frontier Enterprises
8300 Utica Avenue, Suite 300
Rancho Cucamonga, California 91730

Attention: Mr. Lonnie Ellisor

Subject: Geotechnical Evaluation and Infiltration Study
Proposed Residential Development
APN 478-080-013
City of Moreno Valley, Riverside County, California

Dear Mr. Ellisor:

We are pleased to provide herein the results of our Geotechnical Evaluation and Infiltration Study for the subject project located in the City of Moreno Valley, Riverside County, California. This report presents the results of our evaluation and discussion of our findings. In our opinion, site development appears feasible from a geotechnical viewpoint. Site development and grading plans should be reviewed by this firm as they become available, as it will be necessary to provide appropriate recommendations for intended specific site development as those plans become refined.

The opportunity to be of service is sincerely appreciated. If you should have any questions, please do not hesitate to call our office.

Respectfully submitted,
GeoTek, Inc.

Edward H. LaMont
CEG 1824, Exp. 07/31/14
Principal Geologist

Edmond Vardeh
RCE 56992, Exp. 06/30/15
Project Engineer

Distribution: (1) Addressee via email
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Figure 2 – General Site Topography Map
Figure 3 – Boring Location Map

Appendix A – Logs of Exploratory Borings
Appendix B – Results of Laboratory Testing
Appendix C – Infiltration Test Results
Appendix D – General Earthwork Grading Guidelines

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1. PURPOSE AND SCOPE OF SERVICES

The purpose of this study was to evaluate the general geotechnical conditions on the site. Services provided for this study included the following:

- Research and review of available geologic and geotechnical data, and general information pertinent to the site,
- Site exploration consisting of the excavation, logging and sampling of four (4) exploratory borings by a geologist from our firm,
- Laboratory testing of soil samples collected during the field investigation,
- Evaluation of near-surface water infiltration potential at the project site,
- Review and evaluation of site seismicity, and
- Compilation of this geotechnical report which presents our findings and a general summary of pertinent site geotechnical conditions relevant for site development.

2. SITE DESCRIPTION AND PROPOSED DEVELOPMENT

2.1 SITE DESCRIPTION

The subject project site is located northwest of the intersection of Quincy Street and Brodiaea Avenue in the City of Moreno Valley, Riverside County, California (see Figure 1). The square-shaped property is comprised of roughly 9 acres of vacant land. The property is bounded by Brodiaea Avenue followed by an existing residential development to the south, vacant land to the north and west, and Quincy Street followed by vacant land to the east.

The site is relatively flat with total relief across the site on the order of roughly fifteen feet, with surface drainage generally directed toward the south. Topographically, the property ranges from approximately 1,580 to approximately 1,595 feet above mean sea level (msl). Figure 2, to the rear of the text of this report, shows historic topographic contours of the site and site area.

2.2 PROPOSED DEVELOPMENT

It is our understanding that proposed development will consist of single-family residential structures and associated streets. For this evaluation it was assumed that the structures will be one (1)- to two (2)-story, wood-framed residences situated atop slab-on-ground

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foundations. As site development planning progresses and plans become available, the plans should be provided to GeoTek for review and comment.

3. FIELD EXPLORATION AND LABORATORY TESTING

3.1 FIELD EXPLORATION

Field exploration was conducted on January 22, 2014 and consisted of excavating four (4) exploratory borings, one (1) to a maximum depth of approximately 51.5 feet. Approximate locations of the exploratory borings are shown on the Boring Location Map (see Figure 3). A geologist from our firm logged the excavations and collected samples for use in the laboratory testing. The logs of the exploratory borings are included in Appendix A.

3.2 LABORATORY TESTING

Laboratory testing was performed on selected soil samples collected during the field exploration. The purpose of the laboratory testing was to help confirm the field classification of the soil materials encountered and to evaluate their physical and chemical properties for use in the engineering design and analysis. Results of the laboratory testing program, along with a brief description and relevant information regarding testing procedures, are included in Appendix B.

4. GEOLOGIC AND SOILS CONDITIONS

4.1 REGIONAL SETTING

The subject property is situated in the Peninsular Ranges geomorphic province. The Peninsular Ranges province is one of the largest geomorphic units in western North America. Basically, it extends roughly 975 miles from the north and northeasterly adjacent the Transverse Ranges geomorphic province to the tip of Baja California. This province varies in width from about 30 to 100 miles. It is bounded on the west by the Pacific Ocean, on the south by the Gulf of California and on the east by the Colorado Desert Province.

The Peninsular Ranges are essentially a series of northwest-southeast oriented fault blocks. Several major fault zones are found in this province. The Elsinore Fault zone and the San Jacinto Fault zones trend northwest-southeast and are found in the near the middle of the province. The San Andreas Fault zone borders the northeasterly margin of the province.

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More specific to the subject property, the site is located in an area geologically mapped to be underlain by Quaternary age alluvial fan deposits (Dibblee, 2003). No faults are shown in the immediate site vicinity on the maps reviewed for the area.

4.2 GENERAL SOIL CONDITIONS

A brief description of the earth materials encountered during our subsurface exploration is presented in the following section. Based on our site reconnaissance, field observations, our exploratory excavations and review of published geologic maps the subject site area is locally underlain by alluvial deposits. Although not encountered during our subsurface exploration, localized accumulations of undocumented artificial fill materials may exist onsite.

4.2.1 Alluvial Deposits

Alluvial deposits were observed to underlie the project site at the explored locations. The alluvial deposits encountered generally consist of sandy silt, silty sand and clayey sand, which is mostly gray brown to red brown, dry to slightly moist, and medium dense to dense (see logs in Appendix A).

Based on the results of the laboratory testing performed on a sample of the near surface onsite materials, these near surface alluvial materials indicated a "very low" expansion potential ($0 \leq EI \leq 20$) when tested and classified in accordance with ASTM D 4829. It is likely that most of the onsite materials encountered during grading and construction will have a "very low" expansion potential. Test results are shown in Appendix B.

4.3 SURFACE WATER AND GROUNDWATER

4.3.1 Surface Water

Surface water was not observed during our site visit. If encountered during earthwork construction, surface water on this site is the result of precipitation or possibly some minor surface run-off from immediately surrounding properties. Overall site area drainage is generally in a southerly direction, as directed by site topography. Provisions for surface drainage will need to be accounted for by the project civil engineer.

4.3.2 Groundwater

Groundwater was not encountered in any of our exploratory borings excavated for the herein evaluation. Perched groundwater or localized seepage can occur due to variations in rainfall, irrigation practices, and other factors not evident at the time of this investigation.

4.4 FAULTING AND SEISMICITY

The geologic structure of the entire southern California area is dominated mainly by northwest-trending faults associated with the San Andreas system. The site is in a seismically active region. No active or potentially active fault is known to exist at this site nor is the site situated within an *"Alquist-Priolo"* Earthquake Fault Zone or a Special Studies Zone (CGS, 1974; Bryant and Hart, 2007). No faults are identified on geologic maps readily available and reviewed by this firm for the immediate study area. The County of Riverside has designated the site as having a "moderate" potential for liquefaction, as being "susceptible" to subsidence and not within a Riverside county designated fault zone.

4.4.1 Seismic Design Parameters

The site is located at approximately 33.9148 Latitude and -117.1665 Longitude. Site spectral accelerations (Ss and S_1), for 0.2 and 1.0 second periods for a Class "D" site, were determined from the USGS Website, Earthquake Hazards Program, U.S. Seismic Design Maps for Risk-Targeted Maximum Considered Earthquake (MCE_R) Ground Motion Response Accelerations for the Conterminous 48 States by Latitude/Longitude. The results are presented in the following table:

SITE SEISMIC PARAMETERS	
Mapped 0.2 sec Period Spectral Acceleration, S_S	1.992g
Mapped 1.0 sec Period Spectral Acceleration, S_1	0.891g
Site Coefficient for Site Class "D", F_a	1.0
Site Coefficient for Site Class "D", F_v	1.5
Maximum Considered Earthquake Spectral Response Acceleration for 0.2 Second, S_{MS}	1.992g
Maximum Considered Earthquake Spectral Response Acceleration for 1.0 Second, S_{M1}	1.336g
5% Damped Design Spectral Response Acceleration Parameter at 0.2 Second, S_{DS}	1.328g
5% Damped Design Spectral Response Acceleration Parameter at 1 second, S_{D1}	0.891g

4.5 LIQUEFACTION/SEISMIC SETTLEMENT

Liquefaction describes a phenomenon in which cyclic stresses, produced by earthquake-induced ground motion, create excess pore pressures in relatively cohesionless soils. These soils may thereby acquire a high degree of mobility, which can lead to lateral movement, sliding, consolidation and settlement of loose sediments, sand boils and other damaging deformations. This phenomenon occurs only below the water table, but, after liquefaction has

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developed, the effects can propagate upward into overlying non-saturated soil as excess pore water dissipates.

The factors known to influence liquefaction potential include soil type and grain size, relative density, groundwater level, confining pressures, and both intensity and duration of ground shaking. In general, materials that are susceptible to liquefaction are loose, saturated granular soils having low fines content under low confining pressures.

The liquefaction potential on this site is considered to be low due to the lack of a shallow groundwater table.

4.6 OTHER SEISMIC HAZARDS

Evidence of ancient landslides or slope instabilities at this site was not observed during our investigation as the topography of the site is relatively flat. Thus, the potential for landslides is considered negligible.

The potential for secondary seismic hazards such as seiche and tsunami are considered to be remote due to site elevation and distance from an open body of water.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 GENERAL

Development of the site appears feasible from a geotechnical viewpoint. Specific recommendations for site development provided herein will need to be further evaluated when development plans are provided for our review.

5.2 EARTHWORK CONSIDERATIONS

5.2.1 General

Earthwork and grading should be performed in accordance with the applicable grading ordinances of City of Moreno Valley, the 2013 California Building Code (CBC), and recommendations contained in this report. The Grading Guidelines included in Appendix D outline general procedures and do not anticipate all site specific situations. In the event of conflict, the recommendations presented in the text of this report should supersede those contained in Appendix D.

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5.2.2 Site Clearing and Preparation

Site preparation should start with demolition/razing of any existing improvements and removal of deleterious materials and vegetation. These materials should be properly disposed of offsite. Any existing underground improvements, utilities and trench backfill should also be removed or be further evaluated as part of site development operations.

5.2.3 Remedial Grading

Prior to placement of fill materials, the upper loose and compressible materials should be removed for structural site areas. Additionally, all undocumented artificial fill materials should be removed for structural site areas (if encountered). The lateral extent of removals beyond the outside edge of all settlement sensitive structures/foundations should minimally be equivalent to that vertically removed. Depending on actual field conditions encountered during grading, locally deeper and/or shallower areas of removal may be necessary.

Removal depths a minimum of five (5) feet across the site are recommended. At a minimum, removal bottoms in alluvial areas should extend down to relatively uniform material which is not visibly porous. Removal bottoms should also be tested to have a minimum in-place relative compaction of at least 85%, at optimum moisture content or above.

At a minimum, any proposed cut lots and the cut portion(s) of any transition building pad areas should be overexcavated a minimum of three (3) feet below existing grades or a minimum of one (1) foot below the bottom of the deepest proposed footing, whichever is deeper, if not already mitigated by the removal recommendations provided above. Overexcavations should extend a minimum of five (5) feet outside the proposed building envelope(s). The intent of the recommended overexcavation is to support the improvements on engineered fill with relatively uniform engineering characteristics and decrease the potential for future differential settlement.

The bottom of all removals should be scarified to a minimum depth of eight (8) inches, brought to at or above optimum moisture content, and then compacted to minimum project standards prior to fill placement. The remedial excavation bottoms of should be observed by a GeoTek representative prior to scarification. The resultant voids from remedial grading/overexcavation should be filled with materials placed in accordance with Section 5.2.4 Engineered Fill of this report.

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5.2.4 Engineered Fill

Onsite materials are generally considered suitable for reuse as engineered fill provided they are free from vegetation, roots, and rock/concrete or hard lumps greater than six (6) inches in maximum dimension. The earthwork contractor should have the proposed excavated and stockpiled materials to be used as engineered fill at this project approved by the soils engineer prior to placement.

Engineered fill materials should be moisture conditioned to above optimum moisture content and compacted in horizontal lifts not exceeding eight (8) inches in loose thickness to a minimum relative compaction of 90% as determined in accordance with laboratory test procedure ASTM D 1557.

If fill is being placed on slopes steeper than 5:1 (h:v), the fill should be properly benched into the existing slopes and a sufficient size keyway shall be constructed in accordance with the recommendations of the soils engineer.

5.2.5 Excavatability and Oversized Materials

The alluvial materials should excavate easily using conventional heavy equipment in good working condition and modern earthmoving methods. Oversized materials (larger than six (6) inches in dimension) were not encountered during this investigation and are not anticipated to be encountered during rough grading. If encountered, placement of such materials may require special handing. No oversized rocks should be placed within the building footprint or street areas. Oversized materials may be placed in open space, landscape areas, if acceptable to the local agency. Alternatively, the rocks should be reduced in size, removed from the site, or handled as discussed in Appendix D.

Additional recommendations may be necessary based on exposed conditions during earthwork construction. General grading guidelines are included in Appendix D at the back of this report.

5.2.6 Shrinkage and Bulking

Several factors will impact earthwork balancing on the site, including shrinkage, subsidence, trench spoil from utilities and footing excavations, as well as the accuracy of topography.

Shrinkage and subsidence are primarily dependent upon the degree of compactive effort achieved during construction, depth of fill and underlying site conditions. For planning purposes, a shrinkage factor of up to 5 to 15 percent may be considered for the

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materials requiring removal and recompaction. Subsidence on the order of approximately 0.2 foot may occur. Site balance areas should be available in order to adjust project grades, depending on actual field conditions at the conclusion of site earthwork construction.

5.2.7 Trench Excavations and Backfill

Temporary excavations within the onsite materials should be stable at 1:1 inclinations for short durations during construction, and where cuts do not exceed 10 feet in height. Temporary cuts to a maximum height of 4 feet can be excavated vertically.

Trench excavations should conform to Cal-OSHA regulations. The contractor should have a competent person, per OSHA requirements, on site during construction to observe conditions and to make the appropriate recommendations.

Utility trench backfill should be compacted to at least 90% relative compaction (as determined per ASTM D 1557). Under-slab trenches should also be compacted to project specifications. Where applicable, based on jurisdictional requirements, the top 12 inches of backfill below subgrade for road pavements should be compacted to at least 95 percent relative compaction. Onsite materials may not be suitable for use as bedding material, but should be suitable as backfill provided particles larger than 6± inches are removed.

Compaction should be achieved with a mechanical compaction device. Ponding or jetting of trench backfill is not recommended. If backfill soils have dried out, they should be thoroughly moisture conditioned prior to placement in trenches.

5.3 DESIGN RECOMMENDATIONS

5.3.1 Foundation Design Criteria

Preliminary foundation design criteria, in general conformance with the 2013 CBC, are presented herein. These are typical design criteria and are not intended to supersede the design by the structural engineer.

Based on the results of our recent testing, the anticipated onsite soils near subgrade may be preliminary classified as having an expansion potential "very low" ($0 \leq EI \leq 20$) in accordance with ASTM D 4829. Presented below are foundation design parameters for the proposed single-family residences.

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Foundations should be designed in accordance with the *2013 California Building Code* (CBC).

Additional testing of the soils should be performed during construction to evaluate the as-graded conditions. Final foundation recommendations will be based on the as-graded soils conditions.

MINIMUM DESIGN REQUIREMENTS

DESIGN PARAMETER	0≤EI≤20
Foundation Depth or Minimum Perimeter Beam Depth (inches below lowest adjacent grade)	One-Story Exterior Footing – 12" One-Story Interior Footing – 12" Two-Story Exterior Footing – 18" Two-Story Interior Footing – 18"
Minimum Foundation Width	One-Story - 12" Two-Story – 15"
Minimum Slab Thickness (actual)	4"
Minimum Slab Reinforcing	No. 3 rebar 24" on-center, placed in the middle 1/3 of the slab
Minimum Footing Reinforcement	Two (2) No. 4 Reinforcing Bars- one (1) top and one (1) bottom
Presaturation of Subgrade Soil (Percent of Optimum/Depth in Inches)	100% to a depth of 12 inches

It should be noted that the above recommendations are based on soil support characteristics only. The structural engineer should design the slab and beam reinforcement based on actual loading conditions. If it is desired to utilize post-tensioned foundations, then those recommendations can be provided at the appropriate time.

5.3.1.1 An allowable bearing capacity of 1500 pounds per square foot (psf) may be used for design of continuous and perimeter footings 12 inches deep and 12 inches wide, and pad footings 24 inches square and 12 inches deep. This value may be increased by 200 pounds per square foot for each additional 12 inches in depth and 100 pounds per square foot for each additional 12 inches in width to a maximum value of 2000 psf. Additionally, an increase of one-third may be applied when considering short-term live loads (e.g. seismic and wind loads).

5.3.1.2 Based on our experience in the area, foundations may experience a total settlement of approximately one (1) inch as a result of structural loading. Differential settlement of up to one-half of the total settlement over a horizontal distance of 40 feet could result from structural loading. The foundation engineer should incorporate these settlement estimates from the structural loads into the design of the slab, as appropriate.

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5.3.1.3 The passive earth pressure may be computed as an equivalent fluid having a density of 150 psf per foot of depth, to a maximum earth pressure of 2,000 psf for footings founded on engineered fill. A coefficient of friction between soil and concrete of 0.30 may be used with dead load forces. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third.

5.3.1.4 A grade beam, a minimum of 12 inches wide and 12 inches deep, should be utilized across large entrances. The base of the grade beam should be at the same elevation as the bottom of the adjoining footings.

5.3.1.5 A moisture and vapor retarding system should be placed below slabs-on-grade where moisture migration through the slab is undesirable. Guidelines for these are provided in the 2013 California Green Building Standards Code (CALGreen) Section 4.505.2 and the 2013 CBC Section 1907.1 It should be realized that the effectiveness of the vapor retarding membrane can be adversely impacted as a result of construction related punctures (e.g. stake penetrations, tears, punctures from walking on the aggregate layer, etc.). These occurrences should be limited as much as possible during construction.

Thicker membranes are generally more resistant to accidental puncture that thinner ones. Products specifically designed for use as moisture/vapor retarders may also be more puncture resistant. Although the CBC specifies a 6 mil vapor retarder membrane, it is GeoTek's opinion that a minimum 10 mil membrane with joints properly overlapped and sealed should be considered, unless otherwise specified by the slab design professional.

Moisture and vapor retarding systems are intended to provide a certain level of resistance to vapor and moisture transmission through the concrete, but do not eliminate it. The acceptable level of moisture transmission through the slab is to a large extent based on the type of flooring used and environmental conditions. Ultimately, the vapor retarding system should be comprised of suitable elements to limit migration of water and reduce transmission of water vapor through the slab to acceptable levels. The selected elements should have suitable properties (i.e. thickness, composition, strength and permeance) to achieve the desired performance level. Consideration should be given to consulting with an individual possessing specific expertise in this area for additional evaluation.

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5.3.1.6 We recommend that control joints be placed in two directions spaced approximately 24 to 36 times the thickness of the slab in inches. These joints are a widely accepted means to control cracks and should be reviewed by the project structural engineer.

5.3.2 Miscellaneous Foundation Recommendations

5.3.2.1 To minimize moisture penetration beneath the slab on grade areas, utility trenches should be backfilled with engineered fill, lean concrete or concrete slurry where they intercept the perimeter footing or thickened slab edge.

5.3.2.2 Isolated exterior footings should be tied back to the main foundation system in two orthogonal directions.

5.3.2.3 Soils from the footing excavations should not be placed in the slab-on-grade areas unless properly compacted and tested. The excavations should be free of loose/sloughed materials and be neatly trimmed at the time of concrete placement.

5.3.2.4 Unsuitable soil removals along the property lines will likely be restricted due to adjacent improvements. Special considerations will be required for foundation elements in these areas. Such considerations may include deepening of foundations, reduced bearing capacity, or other measures. This issue should be further evaluated once site plans become available.

5.3.3 Foundation Set Backs

Where applicable, the following setbacks should apply to all foundations. Any improvements not conforming to these setbacks may be subject to lateral movements and/or differential settlements:

- The outside bottom edge of all footings should be set back a minimum of H/3 (where H is the slope height) from the face of any descending slope. The setback should be at least 7 feet and need not exceed 40 feet.
- The bottom of all footings for structures near retaining walls should be deepened so as to extend below a 1:1 projection upward from the bottom inside edge of the wall stem. This applies to the existing retaining walls along the perimeter, if they are to remain.
- The bottom of any existing foundations for structures should be deepened so as to extend below a 1:1 projection upward from the bottom of the nearest excavation.

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5.3.4 Soil Corrosivity

The soil resistivity at this site was tested in the laboratory on a sample collected during the field investigation. The results of the testing indicate that the onsite soils are considered "moderately corrosive" to buried metal in accordance with current standards used by corrosion engineers. These characteristics are considered typical of soils commonly found in southern California. We recommend that a corrosion engineer be consulted to provide recommendations for protection of buried metal at this site.

5.3.5 Soil Sulfate Content

The sulfate content was determined in the laboratory for onsite soil sample. The results indicate that the water soluble sulfate range is less than 0.1 percent by weight, which is considered "not applicable" (negligible) as per Table 4.2.1 of ACI 318.

5.4 RETAINING WALL DESIGN AND CONSTRUCTION

5.4.1 General Design Criteria

Recommendations presented herein may apply to typical masonry or concrete vertical retaining walls to a maximum height of 10 feet. Additional review and recommendations should be requested for higher walls.

Retaining wall foundations embedded a minimum of 18 inches into engineered fill or dense formational materials should be designed using an allowable bearing capacity of 1500 psf. An increase of one-third may be applied when considering short-term live loads (e.g. seismic and wind loads). The passive earth pressure may be computed as an equivalent fluid having a density of 200 psf per foot of depth, to a maximum earth pressure of 2,000 psf. A coefficient of friction between soil and concrete of 0.25 may be used with dead load forces. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third.

An equivalent fluid pressure approach may be used to compute the horizontal active pressure against the wall. The appropriate fluid unit weights are given in the table below for specific slope gradients of retained materials.

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Surface Slope of Retained Materials (H:V)	Equivalent Fluid Pressure (PCF) Select Backfill*
Level	35
2:1	55

*Select backfill should consist of imported sand other approved materials with an SE>30 and an EI≤20.

The above equivalent fluid weights do not include other superimposed loading conditions such as expansive soil, vehicular traffic, structures, seismic conditions or adverse geologic conditions.

Additional lateral forces can be induced on retaining walls during an earthquake. For level backfill and a Site Class "D", the minimum earthquake-induced force (F_{eq}) should be $10H^2$ (lbs/linear foot of wall) for cantilever walls. This force can be assumed to act at a distance of 0.6H above the base of the wall, where "H" is the height of the retaining wall measured from the base of the footing (in feet).

5.4.2 Wall Backfill and Drainage

Wall backfill should include a minimum one (1) foot wide section of ¾ to 1-inch clean crushed rock (or approved equivalent). The rock should be placed immediately adjacent to the back of wall and extend up from the backdrain to within approximately 12 inches of finish grade. The upper 12 inches should consist of compacted onsite materials. If the walls are designed using the "select" backfill design parameters, then the "select" materials shall be placed within the active zone as defined by a 1:1 (H:V) projection from the back of the retaining wall footing up to the retained surface behind the wall. Presence of other materials might necessitate revision to the parameters provided and modification of wall designs.

The backfill materials should be placed in lifts no greater than eight (8) inches in thickness and compacted at 90% relative compaction in accordance with ASTM Test Method D 1557. Proper surface drainage needs to be provided and maintained. Water should not be allowed to pond behind retaining walls. Waterproofing of site walls should be performed where moisture migration through the wall is undesirable.

Retaining walls should be provided with an adequate pipe and gravel back drain system to reduce the potential for hydrostatic pressures to develop. A 4-inch diameter perforated collector pipe (Schedule 40 PVC, or approved equivalent) in a minimum of one cubic foot per lineal foot of 3/8 to one inch clean crushed rock or equivalent, wrapped in filter fabric should be placed near the bottom of the backfill and be directed (via a solid outlet pipe) to an

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appropriate disposal area. Maximum horizontal spacing between drain outlets should be 100 feet.

Walls from two (2) to four (4) feet in height may be drained using localized gravel packs behind weep holes at 10 feet maximum spacing (e.g. approximately 1.5 cubic feet of gravel in a woven plastic bag). Weep holes should be provided or the head joints omitted in the first course of block extended above the ground surface. However, nuisance water may still collect in front of the wall.

Drain outlets should be maintained over the life of the project and should not be obstructed or plugged by adjacent improvements.

5.4.3 Restrained Retaining Walls

Any retaining wall that will be restrained prior to placing backfill or walls that have male or reentrant corners should be designed for at-rest soil conditions using an equivalent fluid pressure of 60 pcf (select backfill), plus any applicable surcharge loading. For areas having male or reentrant corners, the restrained wall design should extend a minimum distance equal to twice the height of the wall laterally from the corner, or as otherwise determined by the structural engineer.

5.5 CONCRETE CONSTRUCTION

5.5.1 General

Concrete construction should follow the 2013 CBC and ACI guidelines regarding design, mix placement and curing of the concrete. If desired, we could provide quality control testing of the concrete during construction.

5.5.2 Concrete Mix Design

As indicated in Section 5.3.5, no special concrete mix design is required by Code to resist sulfate attack based on the existing test results. However, additional testing should be performed during grading so that specific recommendations can be formulated based on the as-graded conditions.

5.5.3 Concrete Flatwork

Exterior concrete flatwork (patios, walkways, driveways, etc.) is often some of the most visible aspects of site development. They are typically given the least level of quality control, being considered "non-structural" components. Cracking of these features is fairly common due to

Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

various factors. While cracking is not usually detrimental, it is unsightly. We suggest that the same standards of care be applied to these features as to the structure itself.

Flatwork may consist of 4 inch thick concrete and the use of reinforcement is suggested. The project structural engineer should provide final design recommendations.

5.5.4 Concrete Performance

Concrete cracks should be expected. These cracks can vary from sizes that are essentially unnoticeable to more than 1/8 inch in width. Most cracks in concrete while unsightly do not significantly impact long-term performance. While it is possible to take measures (proper concrete mix, placement, curing, control joints, etc.) to reduce the extent and size of cracks that occur, some cracking will occur despite the best efforts to minimize it. Concrete undergoes chemical processes that are dependent on a wide range of variables, which are difficult, at best, to control. Concrete, while seemingly a stable material, also is subject to internal expansion and contraction due to external changes over time.

One of the simplest means to control cracking is to provide weakened control joints for cracking to occur along. These do not prevent cracks from developing; they simply provide a relief point for the stresses that develop. These joints are a widely accepted means to control cracks but are not always effective. Control joints are more effective the more closely spaced they are. GeoTek suggests that control joints be placed in two directions and located a distance apart roughly equal to 24 to 36 times the slab thickness.

5.6 INFILTRATION STUDY

Percolation testing was performed in a test hole located in the southeastern portion of the site The infiltration testing was completed in general conformance with ASTM D 3385 using a double ring infiltrometer device in the excavation. A representative from our firm conducted the actual infiltration testing.

The slowest/most conservative infiltration rate of four (4) inches per hour was measured for the test hole, after the infiltration rate had generally stabilized. A copy of the infiltration test field data is included in Appendix C.

Over the lifetime of the disposal area, the infiltration rates may be affected by silt build up and biological activities, as well as local variations in near surface soil conditions. Additionally, both remedial and design cut and/or fill grading will be required to construct the proposed improvements. Consideration should be given to re-evaluating the site infiltration rates at the completion of grading.

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5.7 POST CONSTRUCTION CONSIDERATIONS

5.7.1 Landscape Maintenance and Planting

Water has been shown to weaken the inherent strength of soil, and slope stability is significantly reduced by overly wet conditions. Positive surface drainage away from graded slopes should be maintained and only the amount of irrigation necessary to sustain plant life should be provided for planted slopes. Controlling surface drainage and runoff, and maintaining a suitable vegetation cover can minimize erosion. Plants selected for landscaping should be lightweight, deep-rooted types that require little water and are capable of surviving the prevailing climate.

Overwatering should be avoided. The soils should be maintained in a solid to semi-solid state as defined by the materials Atterberg Limits. Care should be taken when adding soil amendments to avoid excessive watering. Leaching as a method of soil preparation prior to planting is not recommended. An abatement program to control ground-burrowing rodents should be implemented and maintained. This is critical as burrowing rodents can decreased the long-term performance of slopes.

It is common for planting to be placed adjacent to structures in planter or lawn areas. This will result in the introduction of water into the ground adjacent to the foundation. This type of landscaping should be avoided. If used, then extreme care should be exercised with regard to the irrigation and drainage in these areas. Waterproofing of the foundation and/or subdrains may be warranted and advisable. We could discuss these issues, if desired, when plans are made available.

5.7.2 Drainage

The need to maintain proper surface drainage and subsurface systems cannot be overly emphasized. Positive site drainage should be maintained at all times. Drainage should not flow uncontrolled down any descending slope. Water should be directed away from foundations and not allowed to pond or seep into the ground. Pad drainage should be directed toward approved area(s) and not be blocked by other improvements.

It is the owner's responsibility to maintain and clean drainage devices on or contiguous to their lot. In order to be effective, maintenance should be conducted on a regular and routine schedule and necessary corrections made prior to each rainy season.

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5.8 PLAN REVIEW AND CONSTRUCTION OBSERVATIONS

We recommend that site grading, specifications, retaining wall plans and foundation plans be reviewed by this office prior to construction to check for conformance with the recommendations of this report. Additional recommendations may be necessary based on these reviews. We also recommend that GeoTek representatives be present during site grading and foundation construction to check for proper implementation of the geotechnical recommendations. The owner/developer should have GeoTek's representative perform at least the following duties:

- Observe site clearing and grubbing operations for proper removal of unsuitable materials.
- Observe and test bottom of removals prior to fill placement.
- Evaluate the suitability of on-site and import materials for fill placement, and collect soil samples for laboratory testing when necessary.
- Observe the fill for uniformity during placement including utility trenches.
- Test the fill for field density and relative compaction.
- Observe and probe foundation excavations to confirm suitability of bearing materials.

If requested, a construction observation and compaction report can be provided by GeoTek, which can comply with the requirements of the governmental agencies having jurisdiction over the project. We recommend that these agencies be notified prior to commencement of construction so that necessary grading permits can be obtained.

6. LIMITATIONS

It is the intent of this report to aid in the design and construction of the proposed development. Implementation of the advice presented in Section 5 of this report is intended to reduce risk associated with construction projects. The professional opinions and geotechnical advice contained in this report are not intended to imply total performance of the project or guarantee that unusual or variable conditions will not be discovered during or after construction.

The scope of our evaluation is limited to the area explored that is shown on the Boring Location Map (Figure 2). This evaluation does not and should in no way be construed to encompass any areas beyond the specific area of proposed construction as indicated to us by the client. Further, no evaluation of any existing site improvements is included. The scope is

Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

based on our understanding of the project and the client's needs, our proposal (Proposal No. P3-1201213) dated December 5, 2013 and geotechnical engineering standards normally used on similar projects in this region.

The materials observed on the project site appear to be representative of the area; however, soil and bedrock materials vary in character between excavations and natural outcrops or conditions exposed during site construction. Site conditions may vary due to seasonal changes or other factors. GeoTek, Inc. assumes no responsibility or liability for work, testing or recommendations performed or provided by others.

Since our recommendations are based on the site conditions observed and encountered, and laboratory testing, our conclusions and recommendations are professional opinions that are limited to the extent of the available data. Observations during construction are important to allow for any change in recommendations found to be warranted. These opinions have been derived in accordance with current standards of practice and no warranty is expressed or implied. Standards of practice are subject to change with time.

7. SELECTED REFERENCES

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Dibblee, Jr., T.W., 2003, "Geologic Map of the Sunnymead/South ½ of Redlands Quadrangles, San Bernardino and Riverside Counties, California," Dibblee Geology Center Map #DF-110, map scale 1:24000.

GeoTek, Inc., In-house proprietary information.

Seismic Design Values for Buildings (http://geohazards.usgs.gov/designmaps/us/application.php).

Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Frontier Enterprises
APN 478-080-013
City of Moreno Valley
Riverside County, California

GeoTek Project No. 1132-CR3

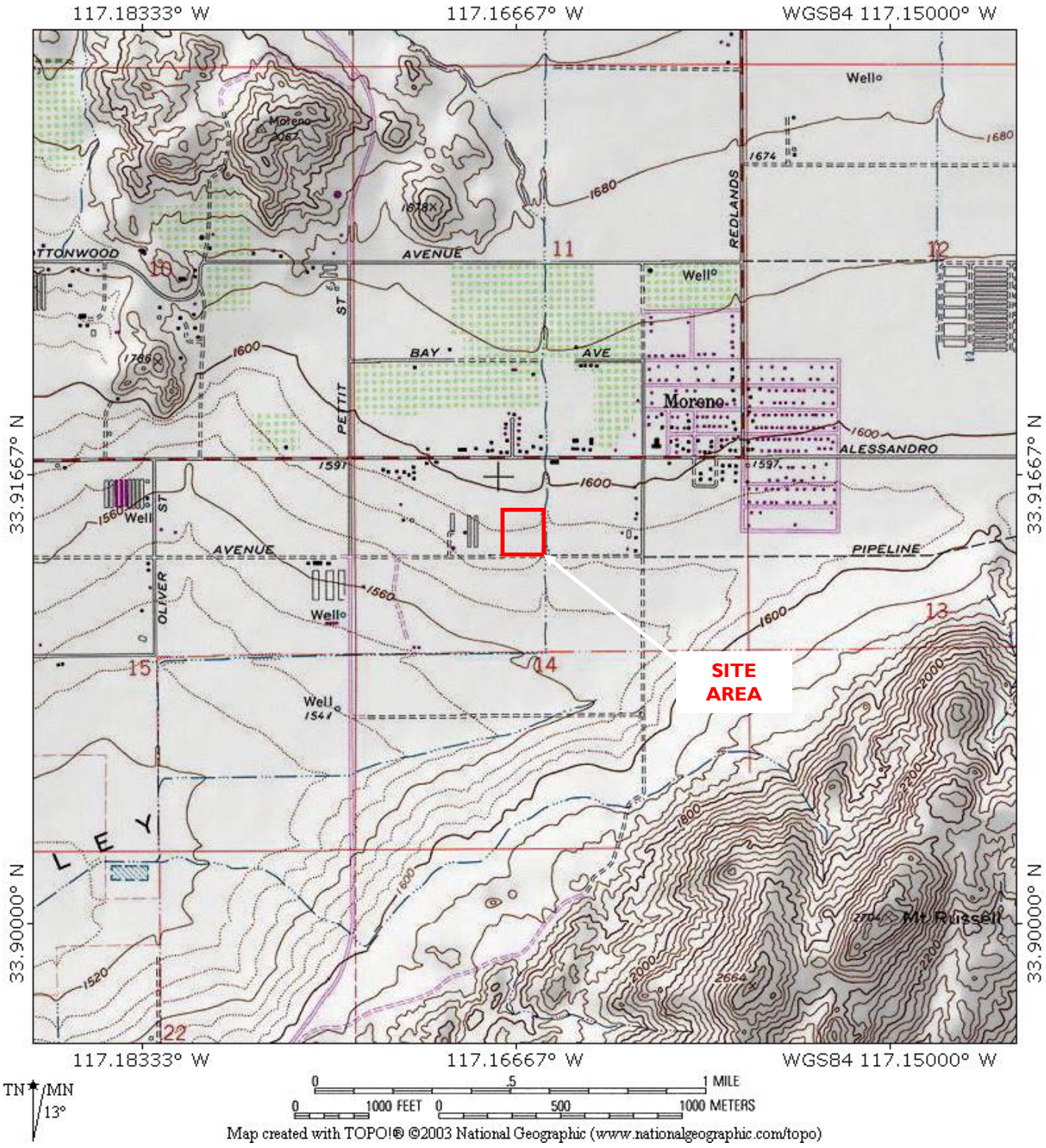
N

Figure 1

Site Location Map

GEOTEK

Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM



Frontier Enterprises
APN 478-080-013
City of Moreno Valley
Riverside County, California

GeoTek Project No. 1132-CR3

Figure 2

General Site Topography Map

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Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Frontier Enterprises
APN 478-080-013
City of Moreno Valley
County of Riverside, California

GeoTek Project No. 1132-CR3

N

Figure 3

Boring Location Map

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Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

APPENDIX A

LOGS OF EXPLORATORY BORINGS

APN 478-080-013
City of Moreno Valley, California
Project No. 1132-CR3

GEOTEK

A - FIELD TESTING AND SAMPLING PROCEDURES

The Modified Split-Barrel Sampler (Ring)

The Ring sampler is driven into the ground in accordance with ASTM Test Method D 3550. The sampler, with an external diameter of 3.0 inches, is lined with 1-inch long, thin brass rings with inside diameters of approximately 2.4 inches. The sampler is typically driven into the ground 12 or 18 inches with a 140-pound hammer free falling from a height of 30 inches. Blow counts are recorded for every 6 inches of penetration as indicated on the log of boring. The samples are removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

Bulk Samples (Large)

These samples are normally large bags of representative earth materials over 20 pounds in weight collected from the field by means of hand digging or exploratory cuttings.

B - BORING LOG LEGEND

The following abbreviations and symbols often appear in the classification and description of soil and rock on the logs of borings:

SOILS

USCS	Unified Soil Classification System
f-c	Fine to coarse
f-m	Fine to medium

GEOLOGIC

B: Attitudes	Bedding: strike/dip
J: Attitudes	Joint: strike/dip
C:	Contact line
……..	Dashed line denotes USCS material change
_____	Solid Line denotes unit / formational change
_____	Thick solid line denotes end of boring

(Additional denotations and symbols are provided on the log of boring)

GEOTEK

Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Frontier Enterprises	**DRILLER:**	2R Drilling	**LOGGED BY:**	AMS
PROJECT NAME:	Quincy Street/Brodiaea Avenue	**DRILL METHOD:**	8" Hollow Stem	**OPERATOR:**	Jeff
PROJECT NO.:	1132-CR3	**HAMMER:**	Auto 140#/30"	**RIG TYPE:**	CME 75
LOCATION:	See Boring Location Map			**DATE:**	1/22/2014

BORING NO.: B-1

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Alluvium:			SH, MD, EI, SR
		2 8 8	B1-1	ML	2': Fine sandy SILT, light gray brown, dry, soft, porous	5.7	88.2	
5		4 7 9	B1-2		5': SAME	7.6	85.5	
10		5 9 12	B1-3		10': SAME, firm to stiff, no visible porosity	7.5	87.6	HC
15		24 50	B1-4	SC	15': Clayey silty f-c SAND, red brown, slightly moist, dense			
20		18 32 50-5"	B1-5	SM	20': Silty fine SAND, light gray brown, slightly moist, dense			
25								
30		11 14 21	B1-6		30': SAME			

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Frontier Enterprises	**DRILLER:**	2R Drilling	**LOGGED BY:**	AMS
PROJECT NAME:	Quincy Street/Brodiaea Avenue	**DRILL METHOD:**	8" Hollow Stem	**OPERATOR:**	Jeff
PROJECT NO.:	1132-CR3	**HAMMER:**	Auto 140#/30"	**RIG TYPE:**	CME 75
LOCATION:	See Boring Location Map			**DATE:**	1/22/2014

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	BORING NO.: B-1 (continued) / MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Alluvium (continued)			
40		18 23 36	B1-7	SM	40': Silty fine SAND, light gray brown, slightly moist, dense			
50		20 30 50	B1-8	SM	50': Silty fine SAND, red brown, slightly moist, dense			
					BORING TERMINATED AT 51.5 FEET No groundwater encountered Boring backfilled with cuttings			

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Frontier Enterprises	**DRILLER:**	2R Drilling	**LOGGED BY:**	AMS
PROJECT NAME:	Quincy Street/Brodiaea Avenue	**DRILL METHOD:**	8" Hollow Stem	**OPERATOR:**	Jeff
PROJECT NO.:	1132-CR3	**HAMMER:**	Auto 140#/30"	**RIG TYPE:**	CME 75
LOCATION:	See Boring Location Map			**DATE:**	1/22/2014

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	BORING NO.: B-2 / MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Alluvium:			
	Ring	6 7 9	B2-1	ML	2': Fine sandy SILT, light gray brown, dry, soft	5.1	101.1	
5	Ring	7 7 9	B2-2		5': SAME, slightly moist, firm	7.4	108.6	
10	Ring	5 7 8	B2-3	SM	10': Silty fine SAND, light gray brown, slightly moist, medium dense	7.1	101.2	
15	Ring	9 12 21	B2-4	SC	15': Silty clayey SAND, red brown, slightly moist, dense			
20	Ring	23 50	B2-5		20': SAME			
					BORING TERMINATED AT 21 FEET No groundwater encountered Boring backfilled with cuttings			
25								
30								

LEGEND

Sample type: Ring; SPT; Small Bulk; Large Bulk; No Recovery; Water Table

Lab testing:
AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test
SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Frontier Enterprises	**DRILLER:**	2R Drilling	**LOGGED BY:**	AMS
PROJECT NAME:	Quincy Street/Brodiaea Avenue	**DRILL METHOD:**	8" Hollow Stem	**OPERATOR:**	Jeff
PROJECT NO.:	1132-CR3	**HAMMER:**	Auto 140#/30"	**RIG TYPE:**	CME 75
LOCATION:	See Boring Location Map			**DATE:**	1/22/2014

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	BORING NO.: B-3 / MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Alluvium:			
	Ring	6 5 7	B3-1	ML	2': Fine sandy SILT, light gray brown, dry, soft	7.4	102.2	
5	Ring	4 6 6	B3-2	SM	5': Silty fine SAND, light gray brown, slightly moist to moist, medium dense	12.4	105.9	
10	Ring	3 6 7	B3-3	SM	10': SAME	9.7	106.2	
15	Ring	8 18 27	B3-4	SC	15': Silty clayey SAND, red brown, slightly moist, dense			
20	Ring	17 25 28	B3-5	SM	20': Silty f-c SAND, light red brown to light brown, slightly moist, dense			
25					**BORING TERMINATED AT 21.5 FEET** No groundwater encountered Boring backfilled with cuttings			
30								

LEGEND

Sample type: Ring; SPT; Small Bulk; Large Bulk; No Recovery; Water Table

Lab testing: AL = Atterberg Limits; SR = Sulfate/Resisitivity Test; EI = Expansion Index; SH = Shear Test; SA = Sieve Analysis; HC= Consolidation; RV = R-Value Test; MD = Maximum Density

Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Frontier Enterprises	**DRILLER:**	2R Drilling	**LOGGED BY:**	AMS
PROJECT NAME:	Quincy Street/Brodiaea Avenue	**DRILL METHOD:**	8" Hollow Stem	**OPERATOR:**	Jeff
PROJECT NO.:	1132-CR3	**HAMMER:**	Auto 140#/30"	**RIG TYPE:**	CME 75
LOCATION:	See Boring Location Map			**DATE:**	1/22/2014

BORING NO.: B-4

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Alluvium:			
	■	5 8 10	B4-1	SM	2': Silty fine SAND, light gray brown, slightly moist, medium dense	6.7	101.5	
5	■	6 7 8	B4-2		5': SAME	5.2	106.7	HC
10	■	6 8 10	B4-3		10': SAME	8.7	108.0	
15	■	7 15 26	B4-4	SC	15': Silty clayey SAND, red brown, slightly moist, dense			
20	■	12 20 38	B4-5	SM	20': Silty f-c SAND, light yellow brown, slightly moist, dense			
25					**BORING TERMINATED AT 21.5 FEET** No groundwater encountered Boring backfilled with cuttings			
30								

LEGEND

Sample type: ■ ---Ring ■ ---SPT ▨ ---Small Bulk ⊠ ---Large Bulk □ ---No Recovery ▽ ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

APPENDIX B

RESULTS OF LABORATORY TESTING

APN 478-080-013
City of Moreno Valley, California
Project No. 1132-CR3

GEOTEK

SUMMARY OF LABORATORY TESTING

Classification

Soils were classified visually in general accordance to the Unified Soil Classification System (ASTM Test Method D 2487). The soil classifications are shown on the logs of exploratory test borings in Appendix A.

Moisture-Density Relations

Laboratory testing was performed on a selected sample collected during the recent subsurface exploration. The laboratory maximum dry density and optimum moisture content for the sample tested was determined in general accordance with test method ASTM Test Method D 1557. The results are included herein.

Expansion Index

Expansion Index testing was performed in general accordance with ASTM Test Method D 4829. The test results are included herein.

Consolidation

Consolidation testing was performed on selected samples of the site soils according to ASTM Test Method D 2435. The results of this testing is presented herein.

Direct Shear Test

Shear testing was performed on a remolded sample of the site soil materials in general accordance with ASTM Test Method D 3080. The test results are included herein.

Sulfate Content, Resistivity and Chloride Content

Testing to determine the water-soluble sulfate content was performed by others in general accordance with California Test No. 417. Resistivity testing was completed by others in general accordance with California Test 643. Testing to determine the chloride content was performed by others in general accordance with California Test No. 422. The results of the testing are included herein.

Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

GEOTEK

MOISTURE/DENSITY RELATIONSHIP

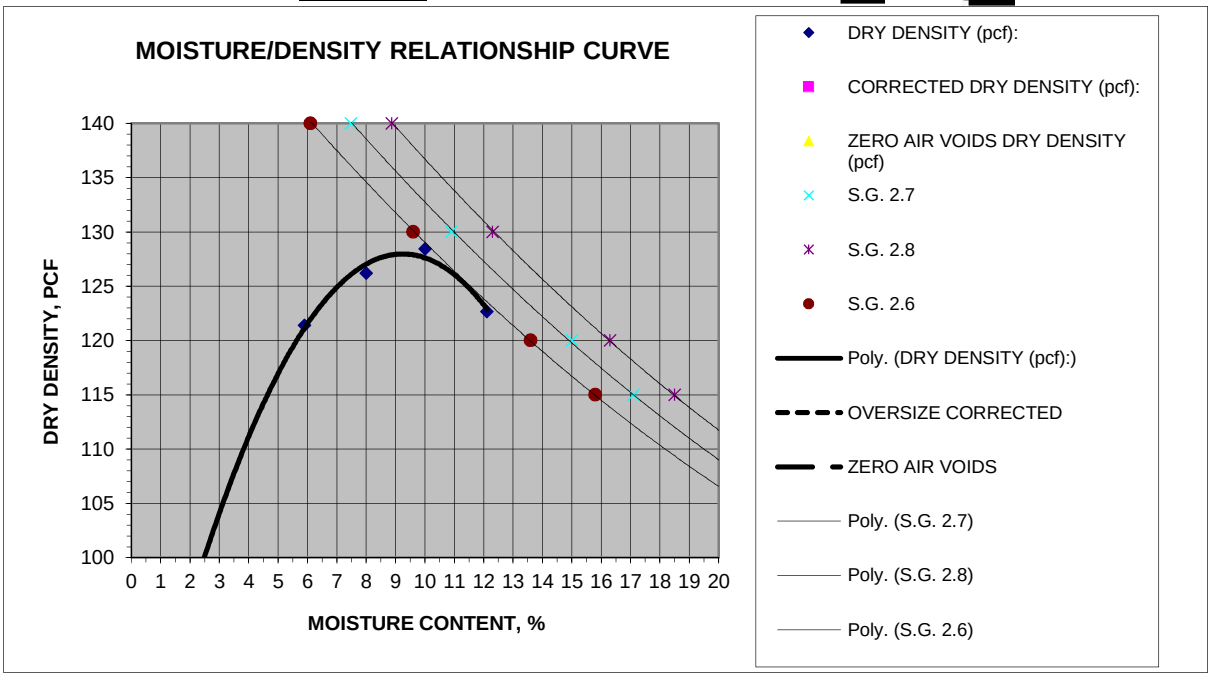
Client: Frontier Enterprises
Project: Quincy/Brodiaea
Location: Moreno Valley
Material Type: Brown Sandy Silt
Material Supplier:
Material Source:
Sample Location: B-1 @ 0-5'

Job No.: 1132-CR3
Lab No.: Corona

Sampled By: AMS
Received By: DI
Tested By: DI
Reviewed By: AMS

Date Sampled: 22-Jan-14
Date Received: 22-Jan-14
Date Tested: 30-Jan-14
Date Reviewed: 11-Feb-14

Test Procedure: ASTM 1557 **Method:** A
Oversized Material (%): 3.2 **Correction Required:** [ ] yes [x] no



MOISTURE DENSITY RELATIONSHIP VALUES

Maximum Dry Density, pcf	127.5	**@ Optimum Moisture, %**	9.5
Corrected Maximum Dry Density, pcf		**@ Optimum Moisture, %**	

MATERIAL DESCRIPTION

Grain Size Distribution:

	% Gravel (retained on No. 4)
	% Sand (Passing No. 4, Retained on No. 200)
	% Silt and Clay (Passing No. 200)

Atterberg Limits:

	Liquid Limit, %
	Plastic Limit, %
	Plasticity Index, %

Classification:
Unified Soils Classification:
AASHTO Soils Classification:

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GEOTEK

EXPANSION INDEX TEST

(ASTM D4829)

Client:	1132-CR3	***Tested/ Checked By:***	DI Lab No Corona
Project Number:	Frontier Enterprises	***Date Tested:***	2/4/2014
Project Location:	Moreno Valley	***Sample Source:***	B-1 @ 0-5'
		Sample Description:	Brown Silty Sand

Ring #:_____ Ring Dia. : 4.01" Ring Ht.1"

Loading weight: 5516. grams

DENSITY DETERMINATION

A	Weight of compacted sample & ring (gm)	767.1
B	Weight of ring (gm)	363.8
C	Net weight of sample (gm)	403.3
D	Wet Density, lb / ft3 (C*0.3016)	121.6
E	Dry Density, lb / ft3 (D/1.F)	**112.1**

SATURATION DETERMINATION

F	Moisture Content, %	8.5
G	Specific Gravity, assumed	2.6
H	Unit Wt. of Water @ 20°C, (pcf)	62.3
I	% Saturation	**50**

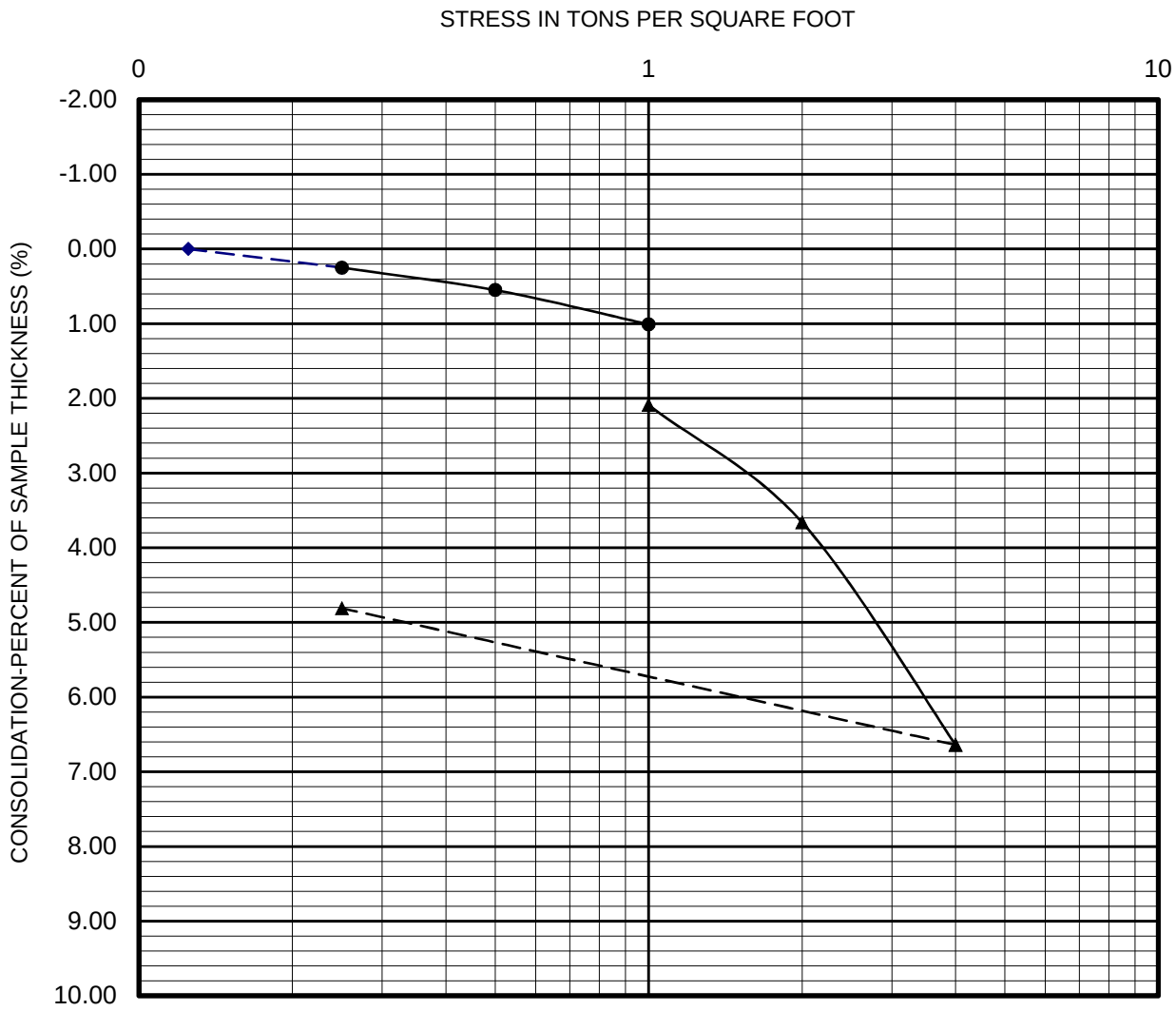
READINGS

DATE	TIME	READING	
2/4/2014	11:00	0.1790	Initial
	11:10	0.1790	10 min/Dry
	11:11	0.1790	1 min/Wet
	11:16	0.1820	5 min/Wet
2/5/2014	4:07	0.1860	Random
	5:12	0.1860	Final

FINAL MOISTURE

Weight of wet sample & tare	Weight of dry sample & tare	Tare	% Moisture
402.0	344.8		**16.6%**

EXPANSION INDEX = 7



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

GEOTEK

CHECKED BY: AMS	Lab: DI
PROJECT NO.: 1132-CR3	02/14

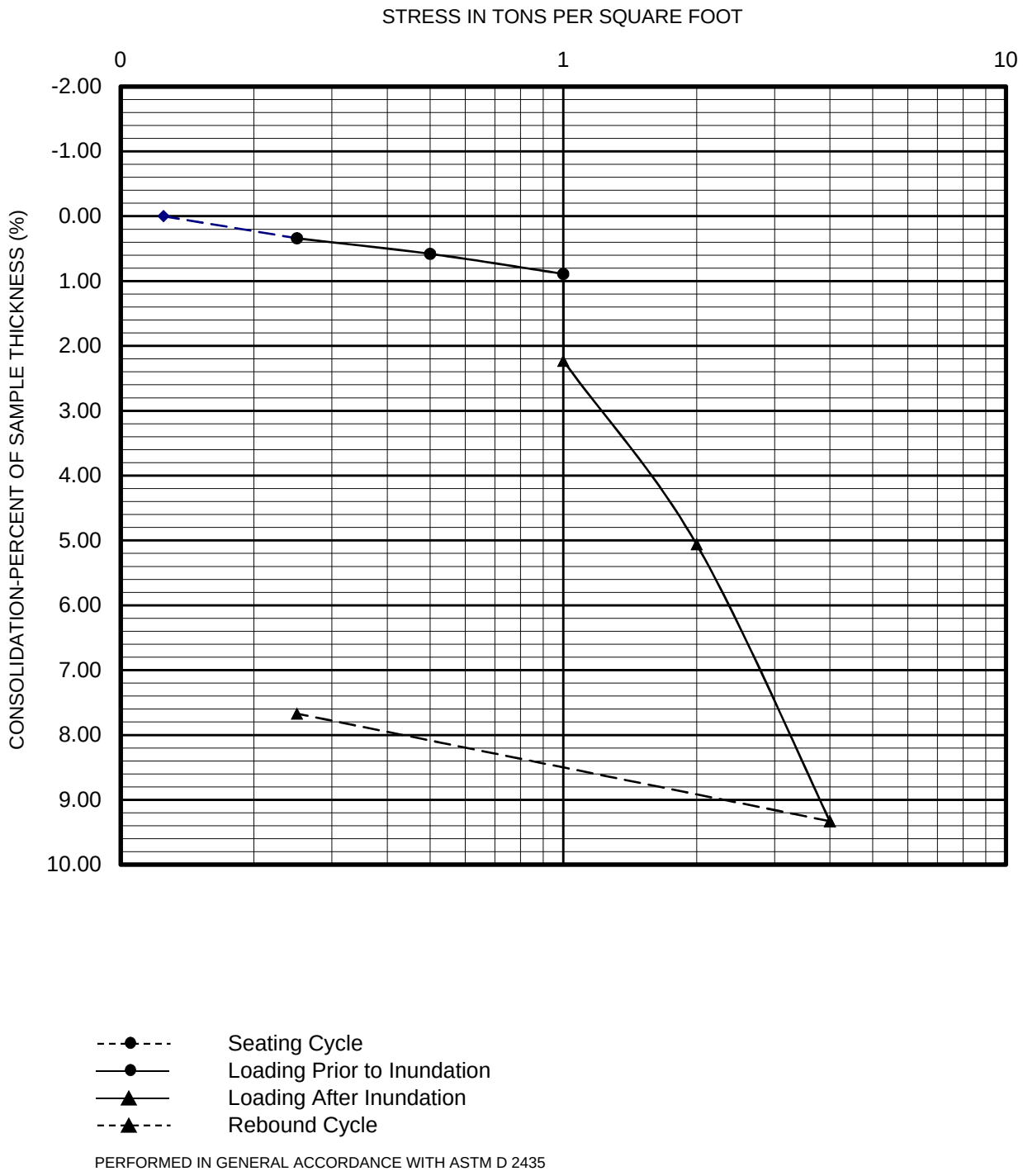
CONSOLIDATION REPORT

Sample: B-1 @ 10'

Quincy Street/Brodiaea Avenue
Moreno Valley, California

Plate C-1

Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

GEOTEK

CHECKED BY: AMS	Lab: DI
PROJECT NO.: 1132-CR3	02/14

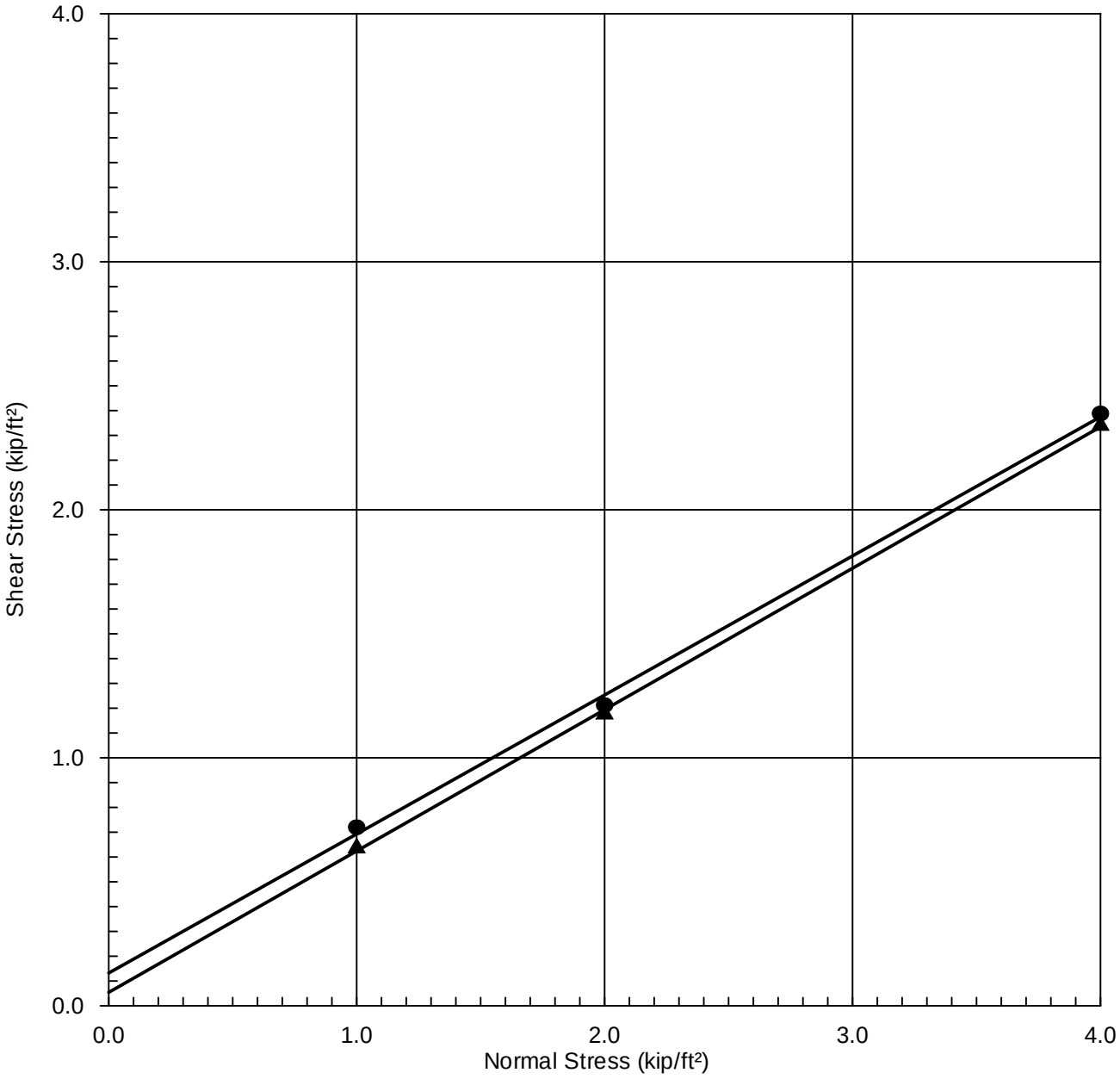
CONSOLIDATION REPORT

Sample: B-4 @ 5'

Quincy Street/Brodiaea Avenue
Moreno Valley, California

Plate C-2

Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM



Boring No. : B-1
Depth (ft.) : 0 - 5
Sample : Remolded
Moisture : Saturated

ULTIMATE STRENGTH PARAMETERS

Cohesion(C) = 50 psf
Friction (ϕ) = 29.5°

PEAK STRENGTH PARAMETERS

Cohesion(C) = 130 psf
Friction (ϕ) = 29°

Project Name: Geotek (1132-CR3)	Project No.: 10-2700

TGR
Geotechnical
Environmental
Hydrogeology
Material Testing
Construction Inspection

TGR GEOTECHNICAL
3037 S. HARBOR BLVD
SANTA ANA, CA 92704
P 714.641.7189 F 714.641.7190
WWW.TGRGEOTECH.COM

DIRECT SHEAR TEST RESULTS
(ASTM D 3080)

Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Cal Land Engineering, Inc.
dba Quartech Consultants
Geotechnical, Environmental, and Civil Engineering

GeoTek, Inc.
710 East Parkridge Avenue, Suite 105
Corona, California 92879

Client: Frontier
W.O.: 1132-CR3
Project: Moreno Valley

Date: January 31, 2014
QCI Project No.: 14-167-01N
Summarized by: KA

Corrosivity Test Results

Sample ID	Depth (Feet)	pH CT-532 (643)	Chloride CT-422 (ppm)	Sulfate CT-417 (% By Weight)	Resistivity CT-532 (643) (ohm-cm)
B-1	0-5’	8.44	106	0.0025	2,950

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Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

APPENDIX C

INFILTRATION TEST DATA

APN 478-080-013
City of Moreno Valley, California
Project No. 1132-CR3

GEOTEK

SE CORNER BRODIAEA AVENUE AT QUINCY STREET

1132-CR3 FRONTIER

DOUBLE RING INFILTROMETER TEST DATA

Project Name and Test Location:
Trench No.: 4
Tested by: DVG
Date of Testing: 2/6/14
Water Table Depth:

Liquid Used: TAP WATER
Ground Temperature:
Liquid Level Mainted by Using:
Penetration of Rings Into Soil (in.): 4 6
USCS Classification:

TRIAL NO.	START/END	TIME	ELAPSED TIME (Min.)	FLOW READINGS: INNER RING (in.)	FLOW READINGS: RING FLOW (water added in ml)	FLOW READINGS: ANNULAR READING (in.)	FLOW READINGS: SPACE FLOW (water added in ml)	LIQUID TEMP. (F)	INFILTRATION RATE: INNER (in./hr.)	INFILTRATION RATE: ANNULAR (in./hr.)	REMARKS
1	S	5:17	0:00	10.0		12.0		72			
	E	5:27	10:00	9.0	1853	11.0	5560		6.0	6.0	
2	S	5:29	0:00	10.0		12.0					
	E	5:39	10:15	9.0	1853	11.0	5560		5.9	5.9	
3	S	5:41	0:00	10.0		12.0					
	E	5:52	10:30	9.0	1853	11.0	5560		5.7	5.7	
4	S	5:54	0:00	10.0		12.0					
	E	6:05	10:45	9.0	1853	11.0	5560		5.6	5.6	
5	S	6:07	0:00	10.0		12.0					
	E	6:18	11:00	9.0	1853	11.0	5560		5.5	5.5	
6	S	6:20	0:00	10.0		12.0					
	E	6:31	11:15	9.0	1853	11.0	5560		5.3	5.3	
7	S	6:33	0:00	10.0		12.0					
	E	6:45	11:30	9.0	1853	11.0	5560		5.2	5.2	
8	S	6:47	0:00	10.0		12.0					
	E	6:59	11:45	9.0	1853		5560		5.1	5.1	
9	S	7:01	0:00	10.0		12.0					
	E	7:13	12.00	9.0	1853	11.0	5560		5.0	5.0	
10	S	7:15	0:00	10.0		12.0					
	E	7:45	30:00	7.5	4633	9 1/2	13900		5.0	5.0	
11	S	7:50	0:00	10.0		12.0					
	E	8:20	30:00	7.5	4633	9 1/2	13900		5.0	5.0	
12	S	8:25	0:00	10.0		12.0					
	E	8:55	30:00	7.5	4633	9 1/2	13900		5.0	5.0	
13	S	9:00	0:00	10.0		12.0					
	E	9:30	30:00	7 5/8	4111	9 1/2	13900		4.75	5.0	
14	S	9:35	0:00	10.0		12.0					
	E	10:05	30:00	7 3/4	4170	9 5/8	13205		4.5	5.0	
15	S	10:10	0:00	10.0		12.0					
	E	10:40	30:00	7 7/8	3938	9 3/4	12510		4.25	4.5	
16	S	10:45	0:00	10.0		12.0					
	E	11:15	30:00	7 7/8	3938	9 3/4	12510		4.25	4.5	
17	S	11:20	0:00	10.0		12.0					
	E	11:50	30:00	8.0	3707	9 3/4	12510		4.0	4.5	
18	S	11:55	0:00	10.0		12.0					
	E	12:25	30:00	8.0	3707	9 3/4	12510		4.0	4.5	
19	S	12:30	0:00	10.0		12.0					
	E	1:00	30:00	8.0	3707	9 3/4	12510	72	4.0	4.5	

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Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

APPENDIX D

GENERAL EARTHWORK GRADING GUIDELINES

APN 478-080-013
City of Moreno Valley, California
Project No. 1132-CR3

GEOTEK

GENERAL GRADING GUIDELINES

Guidelines presented herein are intended to address general construction procedures for earthwork construction. Specific situations and conditions often arise which cannot reasonably be discussed in general guidelines, when anticipated these are discussed in the text of the report. Often unanticipated conditions are encountered which may necessitate modification or changes to these guidelines. It is our hope that these will assist the contractor to more efficiently complete the project by providing a reasonable understanding of the procedures that would be expected during earthwork and the testing and observation used to evaluate those procedures.

General

Grading should be performed to at least the minimum requirements of governing agencies, Chapters 18 and 33 of the Uniform Building Code, CBC (2013) and the guidelines presented below.

Preconstruction Meeting

A preconstruction meeting should be held prior to site earthwork. Any questions the contractor has regarding our recommendations, general site conditions, apparent discrepancies between reported and actual conditions and/or differences in procedures the contractor intends to use should be brought up at that meeting. The contractor (including the main onsite representative) should review our report and these guidelines in advance of the meeting. Any comments the contractor may have regarding these guidelines should be brought up at that meeting.

Grading Observation and Testing

1. Observation of the fill placement should be provided by our representative during grading. Verbal communication during the course of each day will be used to inform the contractor of test results. The contractor should receive a copy of the "Daily Field Report" indicating results of field density tests that day. If our representative does not provide the contractor with these reports, our office should be notified.
2. Testing and observation procedures are, by their nature, specific to the work or area observed and location of the tests taken, variability may occur in other locations. The contractor is responsible for the uniformity of the grading operations; our observations and test results are intended to evaluate the contractor's overall level of efforts during grading. The contractor's personnel are the only individuals participating in all aspect of site work. Compaction testing and observation should not be considered as relieving the contractor's responsibility to properly compact the fill.
3. Cleanouts, processed ground to receive fill, key excavations, and subdrains should be observed by our representative prior to placing any fill. It will be the contractor's responsibility to notify our representative or office when such areas are ready for observation.
4. Density tests may be made on the surface material to receive fill, as considered warranted by this firm.

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5. In general, density tests would be made at maximum intervals of two feet of fill height or every 1,000 cubic yards of fill placed. Criteria will vary depending on soil conditions and size of the fill. More frequent testing may be performed. In any case, an adequate number of field density tests should be made to evaluate the required compaction and moisture content is generally being obtained.
6. Laboratory testing to support field test procedures will be performed, as considered warranted, based on conditions encountered (e.g. change of material sources, types, etc.) Every effort will be made to process samples in the laboratory as quickly as possible and in progress construction projects are our first priority. However, laboratory workloads may cause in delays and some soils may require a **minimum of 48 to 72 hours to complete test procedures**. Whenever possible, our representative(s) should be informed in advance of operational changes that might result in different source areas for materials.
7. Procedures for testing of fill slopes are as follows:
   a) Density tests should be taken periodically during grading on the flat surface of the fill, three to five feet horizontally from the face of the slope.
   b) If a method other than over building and cutting back to the compacted core is to be employed, slope compaction testing during construction should include testing the outer six inches to three feet in the slope face to determine if the required compaction is being achieved.
8. Finish grade testing of slopes and pad surfaces should be performed after construction is complete.

Site Clearing

1. All vegetation, and other deleterious materials, should be removed from the site. If material is not immediately removed from the site it should be stockpiled in a designated area(s) well outside of all current work areas and delineated with flagging or other means. Site clearing should be performed in advance of any grading in a specific area.
2. Efforts should be made by the contractor to remove all organic or other deleterious material from the fill, as even the most diligent efforts may result in the incorporation of some materials. This is especially important when grading is occurring near the natural grade. All equipment operators should be aware of these efforts. Laborers may be required as root pickers.
3. Nonorganic debris or concrete may be placed in deeper fill areas provided the procedures used are observed and found acceptable by our representative.

Treatment of Existing Ground

1. Following site clearing, all surficial deposits of alluvium and colluvium as well as weathered or creep effected bedrock, should be removed unless otherwise specifically indicated in the text of this report.

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2. In some cases, removal may be recommended to a specified depth (e.g. flat sites where partial alluvial removals may be sufficient). The contractor should not exceed these depths unless directed otherwise by our representative.
3. Groundwater existing in alluvial areas may make excavation difficult. Deeper removals than indicated in the text of the report may be necessary due to saturation during winter months.
4. Subsequent to removals, the natural ground should be processed to a depth of six inches, moistened to near optimum moisture conditions and compacted to fill standards.
5. Exploratory back hoe or dozer trenches still remaining after site removal should be excavated and filled with compacted fill if they can be located.

Fill Placement

1. Unless otherwise indicated, all site soil and bedrock may be reused for compacted fill; however, some special processing or handling may be required (see text of report).
2. Material used in the compacting process should be evenly spread, moisture conditioned, processed, and compacted in thin lifts six (6) to eight (8) inches in compacted thickness to obtain a uniformly dense layer. The fill should be placed and compacted on a nearly horizontal plane, unless otherwise found acceptable by our representative.
3. If the moisture content or relative density varies from that recommended by this firm, the contractor should rework the fill until it is in accordance with the following:
   a) Moisture content of the fill should be at or above optimum moisture. Moisture should be evenly distributed without wet and dry pockets. Pre-watering of cut or removal areas should be considered in addition to watering during fill placement, particularly in clay or dry surficial soils. The ability of the contractor to obtain the proper moisture content will control production rates.
   b) Each six-inch layer should be compacted to at least 90 percent of the maximum dry density in compliance with the testing method specified by the controlling governmental agency. In most cases, the testing method is ASTM Test Designation D 1557.
4. Rock fragments less than eight inches in diameter may be utilized in the fill, provided:
   a) They are not placed in concentrated pockets;
   b) There is a sufficient percentage of fine-grained material to surround the rocks;
   c) The distribution of the rocks is observed by, and acceptable to, our representative.
5. Rocks exceeding eight (8) inches in diameter should be taken off site, broken into smaller fragments, or placed in accordance with recommendations of this firm in areas designated suitable for rock disposal. On projects where significant large quantities of oversized materials are anticipated, alternate guidelines for placement may be included. If significant oversize materials are encountered during construction, these guidelines should be requested.
6. In clay soil, dry or large chunks or blocks are common. If in excess of eight (8) inches minimum dimension, then they are considered as oversized. Sheepsfoot compactors or other suitable

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methods should be used to break up blocks. When dry, they should be moisture conditioned to provide a uniform condition with the surrounding fill.

Slope Construction

1. The contractor should obtain a minimum relative compaction of 90 percent out to the finished slope face of fill slopes. This may be achieved by either overbuilding the slope and cutting back to the compacted core, or by direct compaction of the slope face with suitable equipment.
2. Slopes trimmed to the compacted core should be overbuilt by at least three (3) feet with compaction efforts out to the edge of the false slope. Failure to properly compact the outer edge results in trimming not exposing the compacted core and additional compaction after trimming may be necessary.
3. If fill slopes are built "at grade" using direct compaction methods, then the slope construction should be performed so that a constant gradient is maintained throughout construction. Soil should not be "spilled" over the slope face nor should slopes be "pushed out" to obtain grades. Compaction equipment should compact each lift along the immediate top of slope. Slopes should be back rolled or otherwise compacted at approximately every 4 feet vertically as the slope is built.
4. Corners and bends in slopes should have special attention during construction as these are the most difficult areas to obtain proper compaction.
5. Cut slopes should be cut to the finished surface. Excessive undercutting and smoothing of the face with fill may necessitate stabilization.

UTILITY TRENCH CONSTRUCTION AND BACKFILL

Utility trench excavation and backfill is the contractors responsibility. The geotechnical consultant typically provides periodic observation and testing of these operations. While efforts are made to make sufficient observations and tests to verify that the contractors' methods and procedures are adequate to achieve proper compaction, it is typically impractical to observe all backfill procedures. As such, it is critical that the contractor use consistent backfill procedures.

Compaction methods vary for trench compaction and experience indicates many methods can be successful. However, procedures that "worked" on previous projects may or may not prove effective on a given site. The contractor(s) should outline the procedures proposed, so that we may discuss them **prior** to construction. We will offer comments based on our knowledge of site conditions and experience.

1. Utility trench backfill in slopes, structural areas, in streets and beneath flat work or hardscape should be brought to at least optimum moisture and compacted to at least 90 percent of the laboratory standard. Soil should be moisture conditioned prior to placing in the trench.

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2. Flooding and jetting are not typically recommended or acceptable for native soils. Flooding or jetting may be used with select sand having a Sand Equivalent (SE) of 30 or higher. This is typically limited to the following uses:

   a) shallow (12 + inches) under slab interior trenches and,

   b) as bedding in pipe zone.

   The water should be allowed to dissipate prior to pouring slabs or completing trench compaction.

3. Care should be taken not to place soils at high moisture content within the upper three feet of the trench backfill in street areas, as overly wet soils may impact subgrade preparation. Moisture may be reduced to 2% below optimum moisture in areas to be paved within the upper three feet below sub grade.

4. Sand backfill should not be allowed in exterior trenches adjacent to and within an area extending below a 1:1 projection from the outside bottom edge of a footing, unless it is similar to the surrounding soil.

5. Trench compaction testing is generally at the discretion of the geotechnical consultant. Testing frequency will be based on trench depth and the contractors procedures. A probing rod would be used to assess the consistency of compaction between tested areas and untested areas. If zones are found that are considered less compact than other areas, this would be brought to the contractors attention.

JOB SAFETY

General

Personnel safety is a primary concern on all job sites. The following summaries are safety considerations for use by all our employees on multi-employer construction sites. On ground personnel are at highest risk of injury and possible fatality on grading construction projects. The company recognizes that construction activities will vary on each site and that job site safety is the contractor's responsibility. However, it is, imperative that all personnel be safety conscious to avoid accidents and potential injury.

In an effort to minimize risks associated with geotechnical testing and observation, the following precautions are to be implemented for the safety of our field personnel on grading and construction projects.

1. Safety Meetings: Our field personnel are directed to attend the contractor's regularly scheduled safety meetings.

2. Safety Vests: Safety vests are provided for and are to be worn by our personnel while on the job site.

3. Safety Flags: Safety flags are provided to our field technicians; one is to be affixed to the vehicle when on site, the other is to be placed atop the spoil pile on all test pits.

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In the event that the contractor's representative observes any of our personnel not following the above, we request that it be brought to the attention of our office.

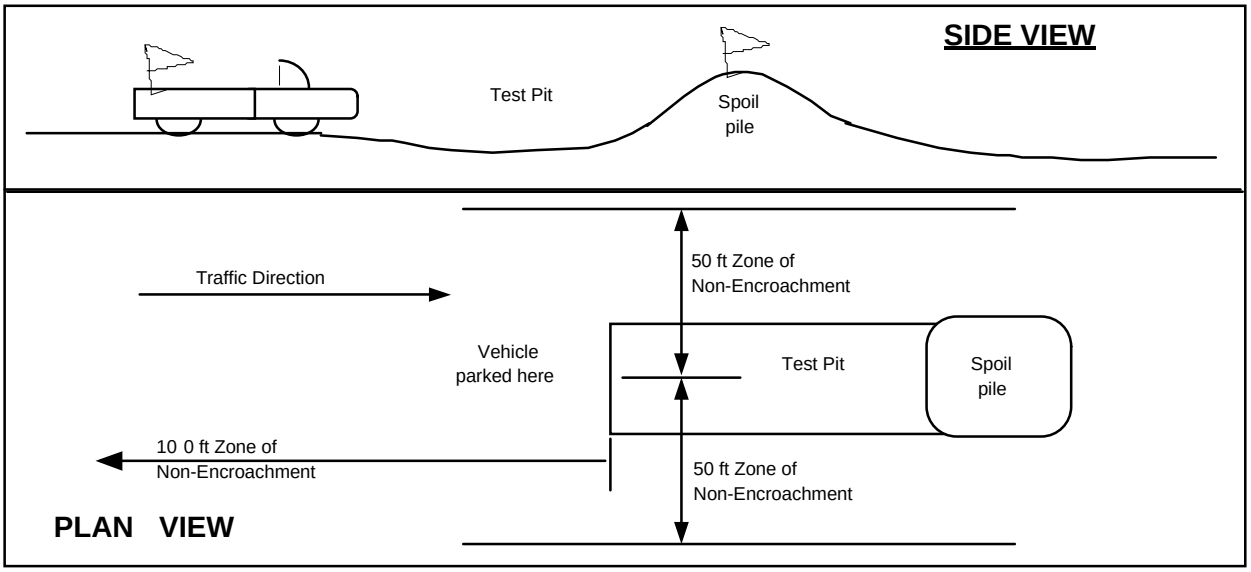
Test Pits Location, Orientation and Clearance

The technician is responsible for selecting test pit locations. The primary concern is the technician's safety. However, it is necessary to take sufficient tests at various locations to obtain a representative sampling of the fill. As such, efforts will be made to coordinate locations with the grading contractors authorized representatives (e.g. dump man, operator, supervisor, grade checker, etc.), and to select locations following or behind the established traffic pattern, preferably outside of current traffic. The contractors authorized representative should direct excavation of the pit and safety during the test period. Again, safety is the paramount concern.

Test pits should be excavated so that the spoil pile is placed away from oncoming traffic. The technician's vehicle is to be placed next to the test pit, opposite the spoil pile. This necessitates that the fill be maintained in a drivable condition. Alternatively, the contractor may opt to park a piece of equipment in front of test pits, particularly in small fill areas or those with limited access.

A zone of non-encroachment should be established for all test pits (see diagram below). No grading equipment should enter this zone during the test procedure. The zone should extend outward to the sides approximately 50 feet from the center of the test pit and 100 feet in the direction of traffic flow. This zone is established both for safety and to avoid excessive ground vibration, which typically decreases test results.

TEST PIT SAFETY PLAN



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Slope Tests

When taking slope tests, the technician should park their vehicle directly above or below the test location on the slope. The contractor's representative should effectively keep all equipment at a safe operation distance (e.g. 50 feet) away from the slope during testing.

The technician is directed to withdraw from the active portion of the fill as soon as possible following testing. The technician's vehicle should be parked at the perimeter of the fill in a highly visible location.

Trench Safety

It is the contractor's responsibility to provide safe access into trenches where compaction testing is needed. Trenches for all utilities should be excavated in accordance with CAL-OSHA and any other applicable safety standards. Safe conditions will be required to enable compaction testing of the trench backfill.

All utility trench excavations in excess of 5 feet deep, which a person enters, are to be shored or laid back. Trench access should be provided in accordance with OSHA standards. Our personnel are directed not to enter any trench by being lowered or "riding down" on the equipment.

Our personnel are directed not to enter any excavation which;

1. is 5 feet or deeper unless shored or laid back,
2. exit points or ladders are not provided,
3. displays any evidence of instability, has any loose rock or other debris which could fall into the trench, or
4. displays any other evidence of any unsafe conditions regardless of depth.

If the contractor fails to provide safe access to trenches for compaction testing, our company policy requires that the soil technician withdraws and notifies their supervisor. The contractors representative will then be contacted in an effort to effect a solution. All backfill not tested due to safety concerns or other reasons is subject to reprocessing and/or removal.

Procedures

In the event that the technician's safety is jeopardized or compromised as a result of the contractor's failure to comply with any of the above, the technician is directed to inform both the developer's and contractor's representatives. If the condition is not rectified, the technician is required, by company policy, to immediately withdraw and notify their supervisor. The contractor's representative will then be contacted in an effort to effect a solution. No further testing will be performed until the situation is rectified. Any fill placed in the interim can be considered unacceptable and subject to reprocessing, recompaction or removal.

In the event that the soil technician does not comply with the above or other established safety guidelines, we request that the contractor bring this to technicians attention and notify our project

Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

manager or office. Effective communication and coordination between the contractors' representative and the field technician(s) is strongly encouraged in order to implement the above safety program and safety in general.

The safety procedures outlined above should be discussed at the contractor's safety meetings. This will serve to inform and remind equipment operators of these safety procedures particularly the zone of non-encroachment.

The safety procedures outlined above should be discussed at the contractor's safety meetings. This will serve to inform and remind equipment operators of these safety procedures particularly the zone of non-encroachment.

Attachment: Project 2_Geotech + Soils Report Geotek 2-12-18 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

PHASE I ENVIRONMENTAL SITE ASSESSMENT
APN 478-080-013
MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA 92555

March 3, 2014

Project No. 1132-CR3

Prepared For:

Frontier Enterprises
8300 Utica Avenue, Suite 300
Rancho Cucamonga, California 91730

GEOTEK

GeoTek, Inc.
710 E. Parkridge Avenue, Suite 105, Corona, California 92879-1097
(951) 710-1160 Office (951) 710-1167 Fax www.geotekusa.com

March 3, 2014
Project No. 1132-CR3

Frontier Enterprises
8300 Utica Avenue, Suite 300
Rancho Cucamonga, California 91730

Attention: Mr. Lonnie Ellisor

Subject: Phase I Environmental Site Assessment
APN 478-080-013
Moreno Valley, Riverside County, California 92555

Dear Mr. Ellisor:

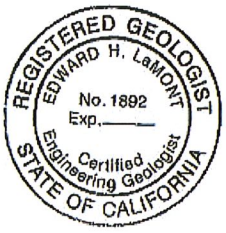
GEOTEK, INC. (GEOTEK) is pleased to present this Phase I Environmental Site Assessment for the above-referenced subject Site. Services were conducted in substantial conformance with the scope and limitations of the American Society of Testing and Materials E 1527-13, "*Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process,*" which is approved to meet the requirements of the federal All Appropriate Inquiries (AAI) standards as set forth in the Code of Federal Regulations, Title 40, Section 312 (40 CFR 312), and GEOTEK'S Proposal No. P3-0105714, dated January 29, 2014.

This Phase I Environmental Site Assessment has not revealed evidence of a recognized environmental condition or concern in connection with the subject Site.

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

We appreciate this opportunity to be of service. If you have any questions, or if we can be of further service, please contact us at (951) 710-1160.

Sincerely,
GEOTEK, INC.



Edward H. LaMont
Engineering Geologist, CEG 1892

Anna M. Scott
Project Geologist

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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1.0 EXECUTIVE SUMMARY

GEOTEK, INC. (GEOTEK) has performed a Phase I Environmental Site Assessment (ESA) for the subject property: APN 478-080-013 (the "Site"), located northwest of the intersection of Brodiaea Avenue and Quincy Street in the City of Moreno Valley, Riverside County, California. Our services were conducted in substantial conformance with the scope and limitations of the American Society of Testing and Materials (ASTM) E 1527-13, "*Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*", which is approved to meet the requirements of the federal All Appropriate Inquiries (AAI) standards as set forth in the Code of Federal Regulations, Title 40, Section 312 (40 CFR 312), and GEOTEK Proposal No. P3-0105714, dated January 29, 2014. Any additions or deletions from our scope of services are discussed in the appropriate sections of this assessment.

A representative of GEOTEK conducted a Site reconnaissance on February 23, 2014. The weather was generally warm and the sky was clear. The square shaped Site consists of one (1) parcel of land [Assessor Parcel Number (APN) 478-080-013] and encompasses a total of approximately nine (9) acres. The Site can generally be accessed from Brodiaea Avenue. The Site is predominantly vacant and undeveloped land.

The Site is in an area largely characterized by vacant land and/or residential development. Brodiaea Avenue followed by residential development and vacant land bounds the Site to the south. Vacant land bounds the Site to the north, west and east. Visual evidence of hazardous substances or wastes was not generally observed. No pungent or acrid odors were observed emanating from the Site.

Based on readily available historic information, the site appears to be utilized for agriculture in the in the 1938 aerial photograph. The site is vacant land from at least 1953 to present. The surrounding properties appear to have been vacant land, utilized for agriculture or residential from at least 1938 to present.

The Site does not appear on the environmental database report obtained for this assessment. No adjacent properties appear on the database report. There is one (1) facility listed on the database report within the various search distances specified by ASTM E 1527-13. This facility is not considered to represent a recognized environmental condition to the Site due to the facility status.

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This Phase I Environmental Site Assessment has not revealed evidence of a recognized environmental condition or concern in connection with the subject Site.

This executive summary does not contain all the information that is found in the full report. The report should be read in its entirety to obtain a more complete understanding of the information provided and to aid in any decisions made or actions taken based on this information.

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2.0 INTRODUCTION

GEOTEK, INC. (GEOTEK) has performed a Phase I Environmental Site Assessment (ESA) for APN 478-080-013 (the "Site"), located in the City of Moreno Valley, Riverside County, California.

2.1 PURPOSE

The purpose of this Phase I ESA was to identify and evaluate actual and potential environmental conditions involving the subject Site. It was not the purpose of this assessment to determine the degree or extent of contamination, if any, but rather the potential for contamination.

2.2 SCOPE OF WORK

The Phase I ESA is a general characterization of environmental concerns based on reasonably ascertainable information and observations. GEOTEK performed the Phase I ESA in substantial accordance with ASTM E 1527-13. The following services were provided for the assessment:

- A reconnaissance of the Site and surrounding properties was conducted to visually assess current utilization and indications of potential surface contamination. This was accomplished by driving the Site boundaries, and then traversing the Site until the entire Site had been surveyed.

- A reconnaissance of the surrounding area for approximately one-half mile was conducted, without entering the properties, making observations concerning property uses, conditions, and housekeeping.

- A review of the geologic and hydrogeologic settings was conducted using reasonably ascertainable public records and documents.

- An environmental database report was obtained from a data service provider. This database report compiles and locates documented "hazardous waste" facilities within specific minimum search distances as defined by ASTM E 1527-13. If necessary, additional information on identified facilities was gathered by a file review at the appropriate federal, state, local, and/or tribal regulatory agency.

- A review of reasonably ascertainable historical records (including aerial photographs, topographic maps, building records, and city directories) was conducted to assess the

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

historical land utilization and indications of potential contamination or sources of contamination for the Site.

- This report was prepared, which relates the findings of this study and presents our conclusions and recommendations.

Specific items not included in this Scope of Services are soil analysis, water analysis, asbestos containing materials analysis, radon analysis, lead-based paint analysis, lead in drinking water, wetlands, regulatory compliance, cultural and historic resources, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality, vapor intrusion, high voltage power lines, and other items not within the scope of ASTM E 1527-13.

2.3 SIGNIFICANT ASSUMPTIONS

Specific assumptions by GEOTEK for this assessment include:

- GEOTEK had permission to access the Site area vicinity;
- The client has provided GEOTEK with available geotechnical or environmental reports for the Site;
- The client has provided GEOTEK with known current or historic uses of hazardous materials at the Site, or with other specialized knowledge of the environmental history of the Site and surrounding area.

2.4 LIMITATIONS AND EXCEPTIONS

GEOTEK conducted a Phase I Environmental Site Assessment in substantial accordance with ASTM E 1527-13 and as authorized by Frontier Enterprises. This study does not include sampling of soil, groundwater and/or the debris on-site for environmental testing. This report is intended for the use of Frontier Enterprises. The contents should not be relied upon by any party other than the aforementioned without the express written consent of GEOTEK.

The findings, conclusions, and recommendations made in this report are based on the information that was made available to GEOTEK, in most instances from public records. The information is relevant to the date of our site work and should not be relied on to represent conditions at any later date. The opinions and conclusions expressed herein are based on information obtained during our assessment and on our experience and current standards of technical practice. GEOTEK makes no other warranties, either express or implied, concerning the completeness of the data furnished to us. GEOTEK cannot be responsible for conditions or

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

consequences arising from relevant facts that were concealed, withheld, or not fully disclosed at the time our assessment was undertaken. GEOTEK is not responsible, nor liable for work, testing or recommendations performed or provided by others. This Phase I Environmental Site Assessment is not and should not be construed as a warranty or guarantee about the presence or absence of environmental hazards or contaminants, which may affect the subject site. Facts, conditions, and acceptable risk factors change with time; accordingly, this report should be viewed within this context.

Specific limitations to the scope of ASTM E 1527-13 due to contract limitations, availability of resources, and/or encountered Site conditions are discussed in the appropriate section(s) of this report.

2.5 SPECIAL TERMS AND CONDITIONS

This assessment report is presented as fulfilling the standard requirements of most financial institutions, governmental regulatory agencies, ASTM, and generally accepted industry standards and practices. Please refer to GEOTEK Proposal No. P3-0105714 for complete terms and conditions for this assessment.

2.6 RELIANCE

This assessment has been prepared for the exclusive use, and may be relied upon by, Frontier Enterprises and its successors and assignees. Third party reliance letters may be issued upon request and upon the payment of the, then current, fee for such letters. All third parties relying on this report, by such reliance, agree to be bound by the General Conditions and Limitations agreed to Frontier Enterprises. No reliance by any party is permitted without such agreement, regardless of the content of the reliance letter itself.

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

3.0 DESCRIPTION OF SITE AND SURROUNDING AREA

The objective of describing the Site and surrounding area is to document current conditions as observed and to obtain information which would indicate the likelihood of a recognized environmental condition in connection with the Site. A representative of GEOTEK conducted a Site reconnaissance on February 23, 2014. The weather was generally warm with clear skies. The Site can generally be accessed from Brodiaea Avenue.

3.1 SITE LOCATION AND LEGAL DESCRIPTION

The Site is located northwest of the intersection of Brodiaea Avenue and Quincy Street in the City of Moreno Valley, Riverside County, California. According to the U.S. Geological Survey (USGS) Sunnymead Quadrangle topographic map (7.5-minute series), the Site is located in Section 14, Township 3 South, Range 3 West, San Bernardino Baseline and Meridian (see Figure 1 in Appendix A). The Riverside County Assessor Parcel Number (APN) is 478-080-013. Additional legal descriptions for the Site are included in Appendix B, as obtained from the Riverside County Land Information System website (RCLIS) (http://www3.tlma.co.riverside.ca.us/pa/rclis/index.html).

3.2 SITE AND VICINITY GENERAL CHARACTERISTICS

The Site is in an area largely characterized by vacant land and/or residential development.

3.3 CURRENT PROPERTY USE

The Site is predominantly vacant and undeveloped land.

3.4 SITE IMPROVEMENTS

The Site is predominantly vacant and undeveloped land. A gas line is located within Brodiaea Avenue adjacent the Site.

3.4.1 HAZARDOUS SUBSTANCES

GEOTEK did not observe any obvious hazardous substances or wastes on the subject property. No significant stains or discolored soil were observed. No pungent or acrid odors were observed emanating from the Site.

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3.4.2 Storage Tanks

GeoTek did not observe evidence of underground or above-ground storage tanks (such as vent pipes, fill pipes, regular-shaped depressions, etc.) on the Site.

3.4.3 Poly-Chlorinated Biphenyls (PCBs)

GeoTek did not observe any suspect equipment (transformers, elevators, trash compactors, etc.), which may contain PCBs on the Site.

3.4.4 Controlled Substances

GeoTek consulted the U.S. Drug Enforcement Agency (DEA) website to cross-check the Site address against published facilities subject to DEA enforcement. The Site did not appear on the list of published facilities. A copy of the DEA printout is included in Appendix B.

GeoTek did not observe evidence of illegal or controlled substances being used or manufactured at the Site.

3.4.5 Indications of Solid Waste Disposal

Waste disposal for the Site area is provided by Waste Management.

3.4.6 Utility Supply

Electricity services for the Site area are provided by Southern California Edison. Water and sewer services for the Site area are provided by the Eastern Municipal Water District. Natural gas is provided for the Site area by Southern California Gas.

3.4.7 Drainage

Natural drainage at the Site is generally interpreted to be toward the south, conforming to the natural topography in the area. Standing water was not observed on the Site on the date of our reconnaissance.

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

3.4.8 Other Conditions of Concern

No visual indication of other conditions of concern that would indicate a recognized environmental condition was observed during the Site reconnaissance.

3.4.9 Interviews

GeoTek interviewed the following individual while performing this assessment, in the form of completing a *User Questionnaire*:

- Mr. Lonnie Ellisor (a representative of Frontier Enterprises) completed the User Questionnaire.

Information from this interview is incorporated into the appropriate sections of this report.

3.5 CURRENT ADJOINING PROPERTY USE

The Site is in an area largely characterized by vacant land and/or residential development. Brodiaea Avenue followed by residential development and vacant land bounds the Site to the south. Vacant land bounds the Site to the north, west and east.

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4.0 CLIENT PROVIDED INFORMATION

As a form of interview, a representative of future Site ownership completed a "User Questionnaire" for the Site in accordance with ASTM E 1527-13. A copy of the completed questionnaire is included in Appendix B.

4.1 ENVIRONMENTAL CLEAN UP LIENS

Mr. Lonnie Ellisor is not aware of any environmental clean-up liens at the Site.

4.2 ACTIVITY AND USE LIMITATIONS

Mr. Lonnie Ellisor is not aware of an activity use limitations at the Site.

4.3 SPECIALIZED KNOWLEDGE

Mr. Lonnie Ellisor states that he has no specialized knowledge regarding the Site or adjacent properties.

4.4 PURCHASE PRICE

Mr. Lonnie Ellisor has indicated that the purchase price being paid for the Site reasonably reflects the fair market value of the Site.

4.5 COMMONLY KNOWN INFORMATION

Mr. Lonnie Ellisor is not aware of commonly known or reasonably ascertainable information regarding the Site.

4.6 OBVIOUS INDICATORS OF CONTAMINATION

Mr. Lonnie Ellisor is not aware of obvious indicators of a likely environmental impact at the Site.

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

4.7 Owner, Property Manager and Occupant Information

It is our understanding that Canterbury Lots – 68, LLC is the current owner and property manager of the Site. No occupant information is available as the Site is unoccupied/vacant.

4.8 Reason for Performing Phase I ESA

This Phase I ESA was performed at the request of Frontier Enterprises.

4.9 Other User Provider Information

GeoTek was not provided with any other information for the Site by Frontier Enterprises.

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

5.0 PROPERTY PHYSICAL SETTING

Surface and subsurface environments are of interest because they control the movement of water-born contaminants, which could be transported to and from the subject Site. GEOTEK reviewed information regarding the physical setting of the subject Site and immediately surrounding area.

5.1 REGIONAL GEOLOGY

The subject property is situated in the Peninsular Ranges geomorphic province. The Peninsular Ranges province is one of the largest geomorphic units in western North America. Basically, it extends roughly 975 miles from the north and northeasterly adjacent the Transverse Ranges geomorphic province to the tip of Baja California. This province varies in width from about 30 to 100 miles. It is bounded on the west by the Pacific Ocean, on the south by the Gulf of California and on the east by the Colorado Desert Province.

The Peninsular Ranges are essentially a series of northwest-southeast oriented fault blocks. Three major fault zones are found in this province. The Elsinore Fault zone and the San Jacinto Fault zones trend northwest-southeast and are found in the near the middle of the province. The San Andreas Fault zone borders the northeasterly margin of the province.

5.2 LOCAL GEOLOGIC SETTING AND TOPOGRAPHY

The Site and Site area are underlain by and older alluvial deposits. Additional data regarding soil survey information for the Site and Site area is also included in Appendix B. The Site area can be considered as having relatively flat terrain.

Based on the USGS topographic map for the area and documents reviewed for this assessment, the elevation of the subject Site ranges from approximately 1,592 to 1,600 feet above mean sea level (see Figure 1, Appendix A).

5.3 VICINITY SURFACE DRAINAGE

Natural drainage at the Site is interpreted to be dominantly directed toward the south, conforming to the natural topography in the area. Storm water runoff from the adjacent properties to the north may drain toward the Site due to the lack of improvements. Storm water runoff from the remaining adjacent properties do not appear to drain toward the Site.

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

According to the Federal Emergency Management Agency (FEMA), the Site is located within a 100- and a 500-year flood plain (see Appendix D).

5.4 HYDROGEOLOGY

According to a review of historical groundwater data (California Department of Water Resources and California State Water Resources Control Board groundwater well data [http://wdl.water.ca.gov and http://geotracker.waterboards.ca.gov]) and in-house information, depth to groundwater is greater than 50 feet below ground surface in the general Site area with a flow direction to the south.

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

6.0 ENVIRONMENTAL REGULATORY RECORDS REVIEW

The records review is conducted to help identify known recognized environmental conditions at the Site and/or on adjacent or nearby properties which may have impacted the subject Site.

6.1 ENVIRONMENTAL DATABASE RECORDS SEARCH

GEOTEK obtained and reviewed an environmental database report of the federal and state environmental records specified by ASTM E 1527-13. The database report was provided by Environmental Data Resources, Inc. (EDR) of Milford, Connecticut. Additionally, orphan or un-mappable sites listed by EDR were reviewed for the approximate minimum search distances noted and included in our discussion, if applicable. Refer to Appendix D for a copy of the database report.

ENVIRONMENTAL DATABASE	MINIMUM SEARCH DISTANCE	SITE	ADJACENT	TOTAL LISTED
U.S. Environmental Protection Agency (USEPA) - National Priorities List (NPL), including delisted NPL	1.0 Mile	No	0	0
USEPA - Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS), including NFRAP[i] sites	0.5 Mile	No	0	0
USEPA – Resource Conservation and Recovery Act (RCRA), Corrective Action Facilities (CORRACTS)	1.0 Mile	No	0	0
USEPA – RCRA, Transportation, Storage, and Disposal facilities (TSD)	0.5 Mile	No	0	0
USEPA - RCRA Generators	Site and Adjacent	No	0	0
USEPA – Emergency Response Notification System (ERNS)	Site	No	N/A	0
Federal institutional control/engineering control registries	0.5 Mile	No	0	0
California Environmental Protection Agency (CEPA) – State Response Sites (SRS, formerly Annual Work Plan and Bond Expenditure Plan)	1.0 Mile	No	0	0

[i] NFRAP = "No Further Remedial Action Planned"

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

ENVIRONMENTAL DATABASE	MINIMUM SEARCH DISTANCE	SITE	ADJACENT	TOTAL LISTED
CEPA – EnviroStor Database (formerly CALSITES)	0.5 Mile	No	0	1
CEPA – CHMIRS - California Hazardous Materials Information Reporting System	Site	No	No	0
CEPA - Solid Waste Fill/Landfill (SWF/LF), Solid Waste Assessment Test (SWAT)/Waste Management Unit Database System (WMUDS)	0.5 Mile	No	0	0
CEPA – Leaking Underground Storage Tanks (LUST)	0.5 Mile	No	0	0
CEPA – Underground Storage Tanks (UST), including historic USTs	Site and Adjacent	No	0	0
CEPA – Spills, Leaks, Investigations & Cleanup Cost Recovery Listing (SLIC)	0.5 Mile	No	0	0
State institutional control/engineering control registries	Site	No	N/A	0
Local and/or Tribal databases	Up To 1.0 Mile	No	0	0

N/A – Not Applicable

6.2 Discussion of Regulatory Records

6.2.1 National Priority List

The National Priority List (NPL) is the EPA's list of confirmed or proposed Superfund sites. Our review of this data includes sites which have been delisted from the NPL. The NPL is searched for a 1.0 mile distance.

The Site does not appear on the NPL. There no facilities on the NPL within 1.0 mile of the Site.

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

6.2.2 Comprehensive Environmental Response, Compensation, and Liability Information System List

The Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) is a compilation of sites that the EPA has investigated or is currently investigating for a release or threatened release of hazardous substances. Our review of CERCLIS sites includes No Further Remedial Action Planed (NFRAP) facilities. The CERCLIS list is searched for a 0.5 mile distance.

The Site does not appear on the CERCLIS list. There are no facilities on the CERCLIS list within 0.5 mile of the Site.

6.2.3 Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act compile selective information on facilities which generate, transport, store, treat and or dispose of hazardous waste. RCRA facilities can be listed on one of three databases:

- *Corrective Action Facilities (CORRACTS)* are facilities undergoing corrective action. A corrective action order is issued pursuant to RCRA Section 3008(h) when there has been a release of hazardous waste or constituents into the environment from a RCRA facility. The CORRACTS list is searched for a 1.0 mile distance.

  The Site does not appear on the CORRACTS list. There are no facilities on the CORRACTS list within 1.0 mile of the Site.

- *Transportation, Storage, and Disposal Facilities (TSD)* includes facilities that transport, store or dispose of hazardous waste and are not listed on the RCRA Generators list. The TSD is searched for a 0.5 mile distance.

  The Site does not appear on the RCRA TSD list. There are no facilities on the RCRA TSD list within 0.5 mile of the Site.

- *Generators List* identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Generators database is a compilation by the EPA of reporting facilities that generate hazardous waste. The RCRA generators list is searched for the Site and adjacent properties.

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

The Site is not listed on the RCRA Generators list. There are no adjacent facilities listed as a RCRA Generator.

6.2.4 Emergency Response Notification System

The Emergency Response Notification System (ERNS) is a national database used to collect information on reported releases of oil or hazardous substances. The ERNS list is searched for the Site. The Site does not appear on the ERNS list.

6.2.5 Federal Institutional Control/Engineering Control Registries

The USEPA maintains two databases which list sites that have institutional and/or engineering controls in place as part of their operations. These databases are searched for the Site. The Site does not appear on either of these databases.

6.2.6 State Response Sites

The State Response Sites (SRS) records are the state equivalent to the federal National Priorities List (NPL) database. The SRS is searched for a 1.0-mile distance.

The Site does not appear on the on the SRS. There were no SRS facilities listed within a 1.0-mile distance of the Site.

6.2.7 EnviroStor Database

The EnviroStor Database (EnviroStor, formerly CALSITES) records are the state equivalent to the federal CERCLIS database. EnviroStor is searched for a 1.0 mile distance.

The Site does not appear on the EnviroStor database.

There us one (1) EnviroStor facility listed within a 1.0 mile distance of the Site. The facility is listed as Proposed Bay Avenue – Wilmot Street School Site, located at SW Corner Bay Avenue and Wilmot Street. The facility is listed as being located 0.25 to 0.5 (0.369) mile northeast of the Site. The facility status is listed as "no further action". Due to the facility status, this facility does not represent an environmental concern to the Site.

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

6.2.8 California Hazardous Material Incident Report System

The California Hazardous Material Incident Report Systems (CHMIRS) is a state database used to collect information on reported hazardous materials incidents (accidental leaks and spills). The CHMIRS list is searched for a 0.25-mile distance.

The Site does not appear on the CHMIRS list. There are no CHMIRS facilities located within 0.25 mile of the Site.

6.2.9 Solid Waste Facilities List

The Solid Waste Fill/Landfill (SWF/LF), Solid Waste Assessment Test (SWAT) and Waste Management Unit Database System (WMUDS) databases includes information pertaining to closed and open solid waste facilities operating in the state of California. The SWF/LF, SWAT and WMUDS databases are searched for a 0.5-mile distance.

The Site does not appear on the SWF/LF, SWAT or WMUDS lists. There are no facilities on the SWF/LF, SWAT or WMUDS lists within 0.5-mile of the subject Site.

6.2.10 Leaking Underground Storage Tanks List

The California Leaking Underground Storage Tanks (LUST) list is a compilation of petroleum storage tank sites that have reported a release. The LUST list is searched for a 0.5 mile distance.

The Site did not appear on the LUST list. There are no nearby facilities listed as being on the LUST list within 0.5 mile of the Site.

6.2.11 Underground Storage Tanks List

The California Underground Storage Tank (UST) list is a compilation of petroleum storage tank sites that are registered with the state of California. The UST list is searched for the Site and adjacent properties.

The Site did not appear on the UST list. There are no facilities listed on the UST or HIST UST list within 0.25 mile of the Site.

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

6.2.12 Spills, Leaks, Investigation and Cleanup Cost Recovery Listing (SLIC)

The SLIC database is compiled by the CEPA California Regional Water Quality Control Board, San Diego Region. It is designed to protect and restore water quality from spills, leaks, and similar discharges. The SLIC is searched for a 0.5 mile distance.

The Site does not appear on the SLIC. There are no SLIC facilities listed within a 0.5-mile distance of the Site.

6.2.13 State Institutional Control/Engineering Control Registries

The State of California maintains institutional and engineering control databases or registries. This lists sites with engineering or institutional controls in place. Institutional controls include administrative measures intended to prevent exposure to contaminants remaining on site. Engineering controls include various forms of caps, building foundations, liners, and treatment methods. The State Institutional Control/Engineering Control Registries is searched for the Site.

The subject Site does not appear on the State Institutional Control/Engineering Control Registries.

6.2.14 Tribal Databases

Tribal governments are under the jurisdiction of the USEPA for environmental concerns. Currently, the USEPA Region 9 publishes LUST and UST information for tribes in Arizona, California, Hawaii, Nevada, and the Pacific Territories. The LUST database is searched for 0.5 mile, and the UST database is searched for 0.25 mile.

The Site does not appear on the Tribal LUST or UST databases. No facilities were identified on the Tribal LUST or UST databases within 0.5 mile of the Site.

6.2.15 Dry Cleaners

The DRYCLEANERS list is compiled and provided by EDR. The DRYCLEANER database is searched for a 0.25 mile distance.

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

The Site does not appear on the DRYCLEANER list. There are no DRYCLEANER facilities listed within 0.25 mile of the Site.

6.2.16 Vapor Encroachment Screen

The purpose of a Vapor Encroachment Screen (VES) is to identify, to the extent feasible, if a vapor encroachment condition exists at the Site.

A Vapor Encroachment Screen Report was generated for the Site and Site area utilizing EDR's Vapor Encroachment Worksheet (see Appendix B). It was determined that there are no historical dry cleaners or gas stations located within 600 feet and/or up gradient from the Site.

6.3 Local Regulatory Agency Records

GeoTek contacted the City of Moreno Valley Fire Department and the City of Moreno Valley Police Department regarding underground or above ground storage tanks, hazardous materials permits or business plans, emergency responses, spills, inspections, or other information of an environmental or hazardous nature.

No information was available from either department as the Site has no associated address.

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

7.0 SITE AND SURROUNDING AREA HISTORY

In order to construct the history of the Site and the surrounding area, GEOTEK reviewed reasonably ascertainable public documents, including aerial photographs, topographic maps, building records, city directories, fire insurance maps, and county assessor history records.

7.1 HISTORICAL SITE USAGE

7.1.1 AERIAL PHOTOGRAPH REVIEW

GEOTEK reviewed aerial photographs dated 1938, 1953, 1967, 1970, 1989, 1994, 2002, 2005, 2006, 2009, 2010 and 2012 (see Appendix B).

In the 1938 aerial photograph, the Site appears to be utilized for agricultural purposes.

In the 1953, 1967, 1970, 1989, 1994, 2002, 2005, 2006, 2009, 2010 and 2012 aerial photographs, the Site is vacant land.

7.1.2 TOPOGRAPHIC MAP REVIEW

GEOTEK reviewed the Elsinore Quadrangle (30-minute series), dated 1901; the Southern California Sheet 1 Quadrangle (60-minute series), dated 1901; the Perris Quadrangle (15-minute series), dated 1943; the Sunnymead Quadrangle (7.5-minute series), dated 1953; the Sunnymead Quadrangle (7.5-minute series), dated 1967; the Sunnymead Quadrangle (7.5-minute series), dated 1973; and the Sunnymead Quadrangle (7.5-minute series), dated 1980 (see Appendix B).

The Site appears to be vacant land on all of the topographic map sheets reviewed.

7.1.3 BUILDING DEPARTMENT RECORDS

Building department records were not reviewed as part of this assessment as the Site currently has no associated address and the Site is currently vacant.

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

7.1.4 City Directory Review

City directories were not reviewed as part of this assessment as the Site has no associated address, the Site is currently vacant and the surrounding properties are generally vacant land or residential development.

7.1.5 Sanborn Map Review

Sanborn Fire Insurance Maps for the parcel were requested from EDR-Sanborn, which owns and maintains the largest and most complete collection of the maps. No coverage for the Site was available. The Sanborn Map Report is included in Appendix B.

7.1.6 Chain of Title

GeoTek obtained a Preliminary Chain-of-Title report from Frontier Enterprises.

No environmental liens or activity use limitations were discovered for this assessment.

A copy of the Preliminary Chain-of-Title report is included in Appendix B.

7.2 Historical Immediately Surrounding Property Usage

7.2.1 Aerial Photograph Review

GeoTek reviewed aerial photographs dated 1938, 1953, 1967, 1970, 1989, 1994, 2002, 2005, 2006, 2009, 2010 and 2012 (see Appendix B).

In the 1938 aerial photograph, the properties to the west, east and south are vacant land. The property to the north is utilized for agriculture.

In the 1953 aerial photograph, the surrounding properties are vacant land.

In the 1967, 1970, 1989, 1994 and 2002 aerial photographs, structures can be observed on the property to the west. The properties to the north, east and south remain vacant land.

In the 2005 aerial photograph, a residential development can be observed to the south of the Site. The properties to the north and east remain vacant land.

Attachment: Project 2_Phase 1 ESA Geotek 3-3-14 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Michael Baker
INTERNATIONAL

PRELIMINARY HYDROLOGY STUDY
FOR
BRODIAEA MORENO VALLEY 26
(TTM 37544)
MORENO VALLEY, CALIFORNIA

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September 2018
JN 161595

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

I. INTRODUCTION

The purpose of this report is to show existing and proposed hydrologic conditions of the proposed Brodiaea Residential site (to be referred to as "site"); the site is 8.65 acres in the City of Moreno Valley bounded by Brodiaea Avenue on the south, Quincy Channel on the east, and existing vacant properties on the north and on the west. The existing vacant property on the north currently drains through the site before reaching Brodiaea Avenue. This creates a hydrologic boundary of 18.5 acres for the site.

This report analyzes and quantifies the 10-year and 100-year storm runoff rates for the existing and proposed condition of the site. Analysis was performed following the Riverside County Flood Control and Water Conservation District Hydrology Manual (RCFC&WCD HM) guidelines and utilized the Advanced Engineering Software (AES) to generate runoff rates (see backup in appendix). The site's drainage patterns, runoff rates, and storm drain infrastructure are shown in the two hydrology maps, the Existing and Proposed Hydrology Maps in Appendix D & G, respectively.

II. EXISTING HYDROLOGY

The existing land use within the 18.5 acres hydrologic boundary consists of an open undeveloped field. The subarea development cover type was classified as undeveloped with poor cover for the entirety of the hydrologic boundary.

The site generally slopes from north to south, with two watersheds flowing down. Roughly 41% of the site's storm runoff flows southwest onto Brodiaea Avenue and roughly 59% of the site's runoff flows southeast onto Brodiaea Avenue. For our AES analysis, the site was broken up into 2 watersheds respecting the tributary areas for each.

Watershed 1 and 2 run parallel with each other down the south of the property. Runoff originates from the adjacent open field in the land to the north and runs across the site until it reaches Brodiaea Avenue.

The results of the AES 100-year event analysis are detailed on the Conceptual Hydrology Map Existing Condition in the appendix. The following is a summary of the 10-year and 100-year results.

Watershed No.	Area	10-Year Q	100-Year Q
Watershed 1	10.81 AC	7.69 CFS	12.99 CFS
Watershed 2	7.72 AC	5.58 CFS	9.46 CFS
Totals	18.5 AC	13.27 CFS	22.45 CFS

III. PROPOSED HYDROLOGY

The proposed hydrologic boundary is the same 18.5 AC as the existing hydrologic boundary. The site's proposed land use is 45 detached single family residential lots with landscaping. The proposed condition is divided into five drainage areas and are discussed in the following paragraphs.

Drainage area "A" consists of approximately 9.5 AC of offsite area and produces a 100-year storm runoff of 12.63 cfs. Storm runoff produced for Area "A" will be conveyed through the existing vacant lot to the north of the site before reaching the site, a v-ditch receives the flow and deposits it into a storm drain system, lastly depositing into Quincy Channel.

Drainage area "B" consists of approximately 2.9 AC and produces a 100-year storm runoff of 5.29 cfs. Storm runoff produced for Area "B" will be conveyed through the onsite curb and gutters before depositing into catch basins. The low flow for half the street is conveyed through a reverse parkway culvert to a bioretention basin.

Drainage area "C" consists of approximately 0.7 AC and produces a 100-year storm runoff of 1.71 cfs. Storm runoff produced for Area "C" will be conveyed through the onsite curb and gutters before depositing into an on-site catch basin. The low flow will be conveyed through a reverse parkway culvert into an infiltration trench.

Drainage area "D" consists of approximately 4.1 AC and produces a 100-year storm runoff of 7.71 cfs. Storm runoff produced for Area "D" will be conveyed through the street's curb and gutter before depositing into an on-site catch basin. The low flow is conveyed through a reverse parkway culvert to a bioretention basin.

Drainage area "E" consists of approximately 1.4 AC and produces a 100-year storm runoff of 2.47 cfs. Storm runoff produced for Area "E" will be conveyed in the street's curb and gutter. The low flow will be captured in a reverse parkway culvert and outlet to a bioretention basin. Larger flows will bypass the culvert and enter a new catch basin along Brodiaea Avenue.

Drainage patterns for the proposed site differ from the runoff patterns of the existing site. A majority of the site drains to the southwest in order to be treated by bioretention basins. The remainder of the site drains Southwest to be treated by an infiltration trench. Under these drainage patterns, runoff is conveyed in the street's curb and gutters, picked up in catch basins, conveyed in storm drain pipes, and will be discharged into Quincy Channel.

The results of the AES 100-year event analysis are detailed on the Conceptual Hydrology Map Proposed Condition in the appendix. The following is a summary of the 10-year and 100-year results.

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Watershed No.	Area	10-Year Q	100-Year Q
Watershed 1	9.53 AC	7.63 CFS	12.63 CFS
Watershed 2	2.91 AC	3.47 CFS	5.29 CFS
Watershed 3	0.66 AC	1.17 CFS	1.71 CFS
Watershed 4	4.06 AC	5.07 CFS	7.71 CFS
Watershed 5	1.35 AC	1.62 CFS	2.47 CFS
Totals	18.5 AC	18.96 CFS	29.81 CFS

Street Capacity:

To demonstrate that the streets can convey the generated 10-year storm event runoff within the proposed 6" curb and gutter and the 100-year storm event runoff within the right of way, street capacity calculations were prepared using FlowMaster v8i. Calculations were done for the typical street cross section half-widths and slope. Per Moreno Valley City Standards, there must also be a 12-foot dry lane during the 100-year storm event. The results show that at the street cross section with the greatest street flows, there were still be a 12-foot dry lane. The calculations can be found in Appendix H.

The discharges for the 10-year and 100-year storm events were calculated and it was found that the maximum flow for both can be carried within the curb and right of way respectively. The maximum capacity of the streets is 14.49 cfs for the 10-year storm event and 47.63 cfs for the 100-year storm event. The calculated storm runoff through the half-street cross section is a maximum of 5.07 cfs for the 10-year storm and 7.71 cfs for the 100-year storm. The calculations for the 10-year and 100-year storm events along with the maximum capacity for both storm events can be found in Appendix H. There is no area of the proposed site where the street flow exceeds the limits of the street capacity, therefore it can be determined that all surface runoff will be conveyed sufficiently through the streets.

The discharge from the offsite portion, Drainage Areas "A-1" and "A-2", are conveyed to a storm drain pipe through a v-ditch at the north portion of the project. V-ditch storm drain inlets are provided for both Area's "A-1" and "A-2". The v-ditch capacity was calculated and it was found that the maximum flow is 11.91 cfs for the 100-year storm event. The calculated storm runoff through the v-ditch is a maximum of 8.60 cfs, which occurs in Area "A-2". The calculations for the 100-year storm events along with the maximum capacity can be found in Appendix H. This demonstrates the v-ditch's capacity is sufficient to convey the offsite flow.

Detention Basins:

The proposed site includes three basins. One bioretention basin is located in Drainage Area "B-1" and one is located in Drainage Area "D-1". One infiltration trench is located in Drainage Area "C-1". The bioretention basins and infiltration trench are used for water quality treatment purposes. The volumes and sizing can be seen in the conceptual grading plan and the preliminary WQMP.

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

IV. SUMMARY CONCLUSION

The preliminary results indicate that the proposed discharge rates can sufficiently be conveyed through the streets before entering the catch basins and finally Quincy Channel. Quincy Channel shall be fully improved and capable of accepting drainage from the proposed development. Mitigation of excess discharges, if applicable, shall be determined during final engineering. If mitigation is required, flow attenuation capabilities of the proposed detention basins shall be analyzed further. Additionally, hydraulics will be performed on the proposed private storm drain system using WSPGW.

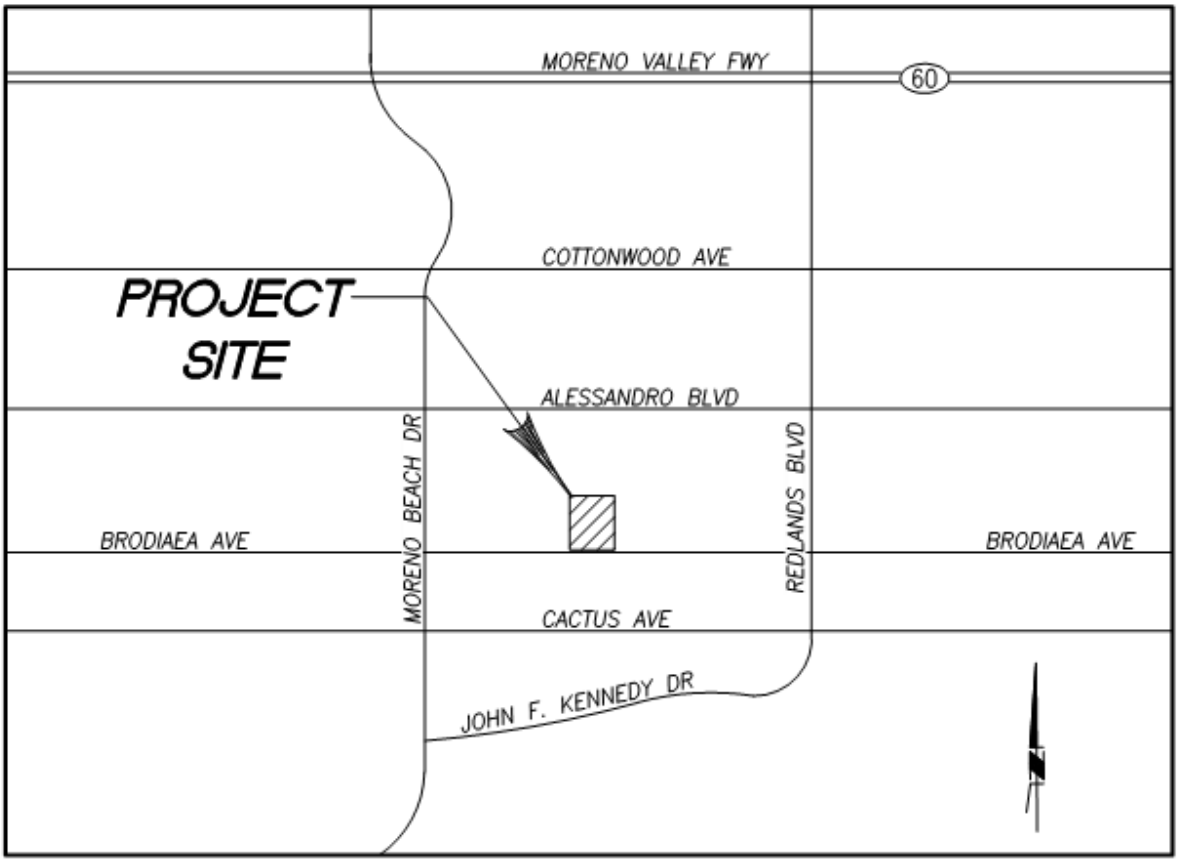
Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX A

-VICINITY MAP

-SUPPORTING INFORMATION FROM RCFC & WCD HYDROLOGY MANUAL

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



VICINITY MAP

NOT TO SCALE

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

RAINFALL INTENSITY—INCHES PER HOUR

SUNNYMEAD - MORENO

DURATION MINUTES	FREQUENCY 10 YEAR	FREQUENCY 100 YEAR
5	2.84	4.16
6	2.59	3.79
7	2.40	3.51
8	2.25	3.29
9	2.12	3.10
10	2.01	2.94
11	1.92	2.80
12	1.83	2.68
13	1.76	2.58
14	1.70	2.48
15	1.64	2.40
16	1.59	2.32
17	1.54	2.25
18	1.50	2.19
19	1.46	2.13
20	1.42	2.08
22	1.35	1.98
24	1.30	1.90
26	1.25	1.82
28	1.20	1.76
30	1.16	1.70
32	1.12	1.64
34	1.09	1.59
36	1.06	1.55
38	1.03	1.51
40	1.00	1.47
45	.95	1.39
50	.90	1.31
55	.86	1.25
60	.82	1.20
65	.79	1.15
70	.76	1.11
75	.73	1.07
80	.71	1.04
85	.69	1.01

SLOPE = .500

10-MIN VALUES USED

WOODCREST

DURATION MINUTES	FREQUENCY 10 YEAR	FREQUENCY 100 YEAR
5	3.37	5.30
6	3.05	4.79
7	2.80	4.40
8	2.60	4.09
9	2.44	3.83
10	2.30	3.62
11	2.19	3.43
12	2.08	3.27
13	1.99	3.13
14	1.91	3.01
15	1.84	2.89
16	1.78	2.79
17	1.72	2.70
18	1.67	2.62
19	1.62	2.54
20	1.57	2.47
22	1.49	2.34
24	1.42	2.23
26	1.36	2.14
28	1.31	2.05
30	1.26	1.98
32	1.22	1.91
34	1.18	1.85
36	1.14	1.79
38	1.11	1.74
40	1.07	1.69
45	1.01	1.58
50	.95	1.49
55	.90	1.42
60	.86	1.35
65	.82	1.29
70	.79	1.24
75	.76	1.19
80	.73	1.15
85	.71	1.11

SLOPE = .550

60-MIN VALUES USED

RCFC & WCD

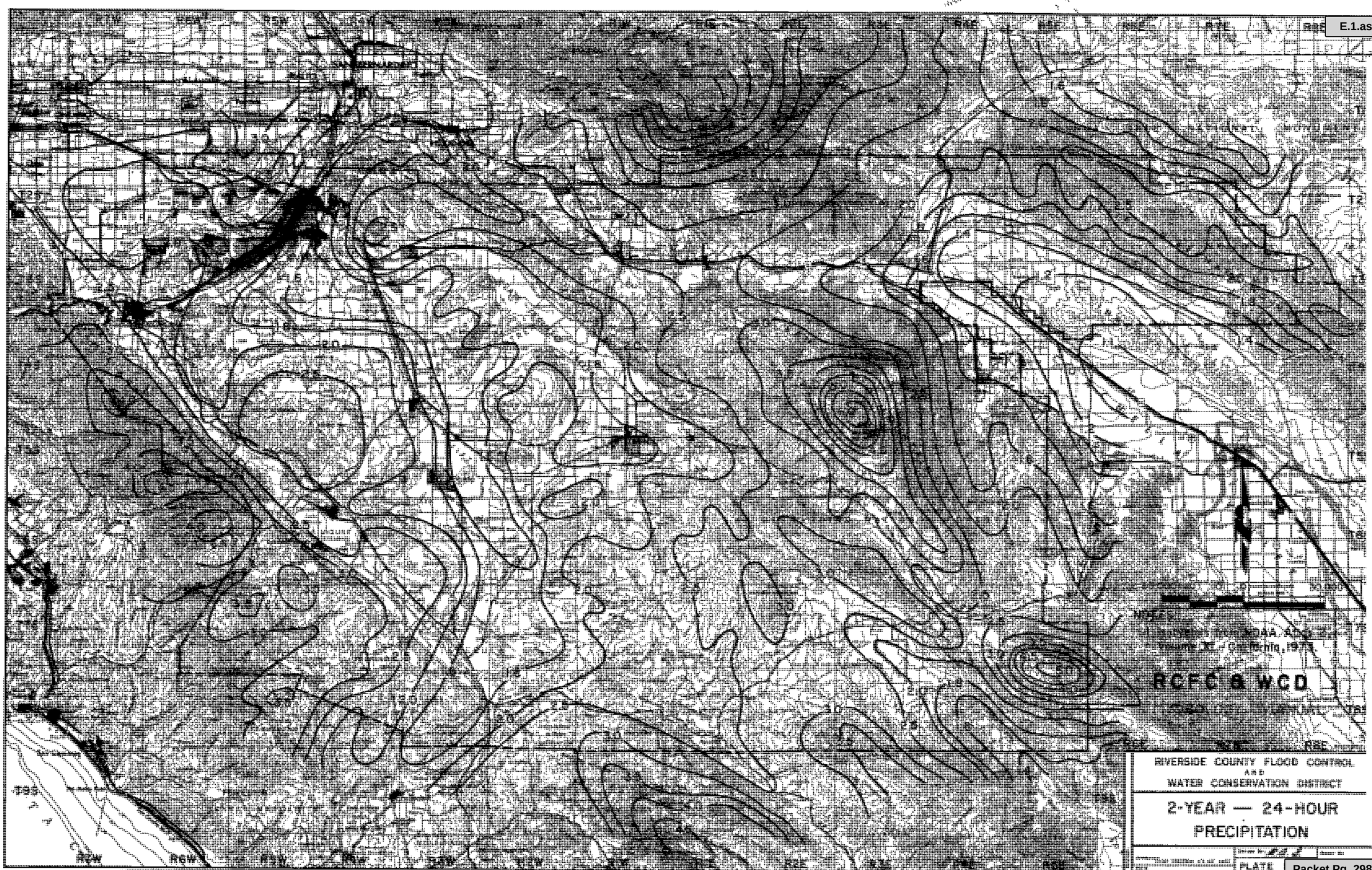
HYDROLOGY MANUAL

STANDARD INTENSITY – DURATION CURVES DATA

PLATE D-4.1 (6 of 6)

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)


NOTES:
RCFC & WCD
RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
2-YEAR — 24-HOUR
PRECIPITATION
PLATE

APPENDIX B

10-YEAR EXISTING CONDITION

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

```
**************************************************************************
           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2013 Advanced Engineering Software (aes)
                    (Rational Tabling Version 20.0)
                Release Date: 06/01/2013  License ID 1264

                        Analysis prepared by:

                            RBF Consulting
                          14257 Alton Parkway
                               Irvine, CA
                                 92618

 ************************* DESCRIPTION OF STUDY *************************
* MORENO VALLEY                                                        *
* EXISTING CONDITION                                                   *
* 10 YEAR EVENT                                                        *
 ************************************************************************

  FILE NAME: EX-10YR.DAT
  TIME/DATE OF STUDY: 15:14 07/30/2018
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.010
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.820
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.940
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.200
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5003939
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5001161
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =   10.00   1-HOUR INTENSITY(INCH/HOUR) =   0.828
  SLOPE OF INTENSITY DURATION CURVE = 0.5004
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: CONSIDER ALL CONFLUENCE STREAM COMBINATIONS
        FOR ALL DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      1.10 IS CODE =  21
```



```
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
  UPSTREAM ELEVATION(FEET) =    614.70
  DOWNSTREAM ELEVATION(FEET) =    595.20
  ELEVATION DIFFERENCE(FEET) =     19.50
  TC = 0.533*[( 1000.00**3)/(    19.50)]**.2 =   18.552
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.490
  USER-SPECIFIED RUNOFF COEFFICIENT = .5285
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      5.72
  TOTAL AREA(ACRES) =      7.27   TOTAL RUNOFF(CFS) =      5.72

**************************************************************************
  FLOW PROCESS FROM NODE      1.10 TO NODE      1.20 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    595.20  DOWNSTREAM(FEET) =    587.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   585.00   CHANNEL SLOPE =  0.0140
  CHANNEL BASE(FEET) =  100.00   "Z" FACTOR =  99.900
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) = 500.00
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.171
  USER-SPECIFIED RUNOFF COEFFICIENT = .4751
  SOIL CLASSIFICATION IS "B"
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.70
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.85
  AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =  11.46
  Tc(MIN.) =   30.02
  SUBAREA AREA(ACRES) =     3.54       SUBAREA RUNOFF(CFS) =    1.97
  TOTAL AREA(ACRES) =       10.8         PEAK FLOW RATE(CFS) =       7.69

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.08   FLOW VELOCITY(FEET/SEC.) =   0.90
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.20 =    1585.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE      2.00 TO NODE      2.10 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
  UPSTREAM ELEVATION(FEET) =    614.80
  DOWNSTREAM ELEVATION(FEET) =    593.00
  ELEVATION DIFFERENCE(FEET) =     21.80
  TC = 0.533*[( 1000.00**3)/(    21.80)]**.2 =   18.143
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.507
  USER-SPECIFIED RUNOFF COEFFICIENT = .5309
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      3.50
```


Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and

```
  TOTAL AREA(ACRES) =      4.37   TOTAL RUNOFF(CFS) =      3.50

****************************************************************************
  FLOW PROCESS FROM NODE      2.10 TO NODE      2.20 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    593.00  DOWNSTREAM(FEET) =    587.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   352.00   CHANNEL SLOPE =  0.0170
  CHANNEL BASE(FEET) =  100.00   "Z" FACTOR =  99.990
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) = 500.00
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.263
  USER-SPECIFIED RUNOFF COEFFICIENT = .4919
  SOIL CLASSIFICATION IS "B"
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.54
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.76
  AVERAGE FLOW DEPTH(FEET) =   0.06   TRAVEL TIME(MIN.) =   7.68
  Tc(MIN.) =   25.82
  SUBAREA AREA(ACRES) =     3.35       SUBAREA RUNOFF(CFS) =    2.08
  TOTAL AREA(ACRES) =        7.7         PEAK FLOW RATE(CFS) =       5.58

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.06   FLOW VELOCITY(FEET/SEC.) =   0.82
  LONGEST FLOWPATH FROM NODE      2.00 TO NODE      2.20 =    1352.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        7.7  TC(MIN.) =     25.82
  PEAK FLOW RATE(CFS)   =       5.58
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```


Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and

Date: 07/30/2018 File name: EX-10YR.RES

APPENDIX C

100-YEAR EXISTING CONDITION

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

```
**************************************************************************
           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                      (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2013 Advanced Engineering Software (aes)
                      (Rational Tabling Version 20.0)
                 Release Date: 06/01/2013  License ID 1264

                          Analysis prepared by:

                              RBF Consulting
                            14257 Alton Parkway
                                 Irvine, CA
                                   92618

 ************************* DESCRIPTION OF STUDY *************************
* MORENO VALLEY                                                        *
* EXISTING CONDITION                                                   *
* 100 YEAR                                                             *
 ************************************************************************

  FILE NAME: EX-100YR.DAT
  TIME/DATE OF STUDY: 15:32 07/30/2018
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.010
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.820
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.940
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.200
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5003939
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5001161
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.200
  SLOPE OF INTENSITY DURATION CURVE = 0.5001
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: CONSIDER ALL CONFLUENCE STREAM COMBINATIONS
        FOR ALL DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      1.10 IS CODE =  21
```



```
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
  UPSTREAM ELEVATION(FEET) =    614.70
  DOWNSTREAM ELEVATION(FEET) =    595.20
  ELEVATION DIFFERENCE(FEET) =     19.50
  TC = 0.533*[( 1000.00**3)/(    19.50)]**.2 =   18.552
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.158
  USER-SPECIFIED RUNOFF COEFFICIENT = .6059
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      9.51
  TOTAL AREA(ACRES) =      7.27   TOTAL RUNOFF(CFS) =      9.51

**************************************************************************
  FLOW PROCESS FROM NODE      1.10 TO NODE      1.20 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    595.20  DOWNSTREAM(FEET) =    587.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   585.00   CHANNEL SLOPE =  0.0140
  CHANNEL BASE(FEET) =  100.00   "Z" FACTOR =  99.900
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) = 500.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.748
  USER-SPECIFIED RUNOFF COEFFICIENT = .5627
  SOIL CLASSIFICATION IS "B"
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.26
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.00
  AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   9.74
  Tc(MIN.) =   28.29
  SUBAREA AREA(ACRES) =     3.54       SUBAREA RUNOFF(CFS) =    3.48
  TOTAL AREA(ACRES) =       10.8         PEAK FLOW RATE(CFS) =      12.99

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.11   FLOW VELOCITY(FEET/SEC.) =   1.07
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.20 =    1585.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE      2.00 TO NODE      2.10 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
  UPSTREAM ELEVATION(FEET) =    614.80
  DOWNSTREAM ELEVATION(FEET) =    593.00
  ELEVATION DIFFERENCE(FEET) =     21.80
  TC = 0.533*[( 1000.00**3)/(    21.80)]**.2 =   18.143
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.183
  USER-SPECIFIED RUNOFF COEFFICIENT = .6081
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      5.80
```


Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and

```
  TOTAL AREA(ACRES) =      4.37   TOTAL RUNOFF(CFS) =      5.80

****************************************************************************
  FLOW PROCESS FROM NODE      2.10 TO NODE      2.20 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    593.00  DOWNSTREAM(FEET) =    587.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   352.00   CHANNEL SLOPE =  0.0170
  CHANNEL BASE(FEET) =  100.00   "Z" FACTOR =  99.990
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) = 500.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.889
  USER-SPECIFIED RUNOFF COEFFICIENT = .5790
  SOIL CLASSIFICATION IS "B"
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.62
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.97
  AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   6.07
  Tc(MIN.) =   24.21
  SUBAREA AREA(ACRES) =     3.35       SUBAREA RUNOFF(CFS) =    3.66
  TOTAL AREA(ACRES) =        7.7         PEAK FLOW RATE(CFS) =       9.46

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.09   FLOW VELOCITY(FEET/SEC.) =   1.00
  LONGEST FLOWPATH FROM NODE      2.00 TO NODE      2.20 =    1352.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        7.7  TC(MIN.) =     24.21
  PEAK FLOW RATE(CFS)   =       9.46
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

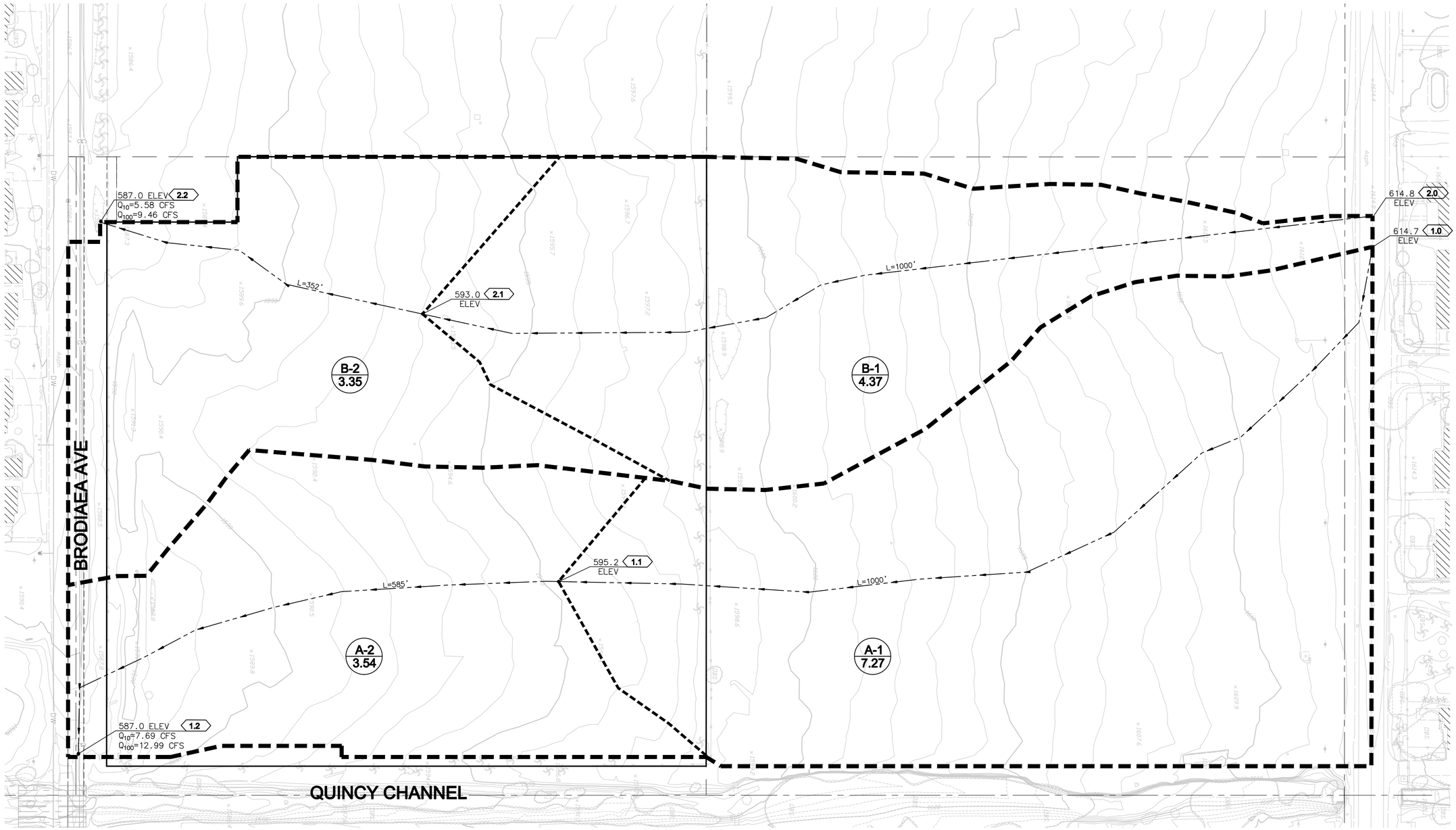

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and

Date: 07/30/2018 File name: EX-100YR.RES

APPENDIX D

HYDROLOGY MAP FOR EXISTING CONDITION

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



LEGEND

- WATERSHED BOUNDARY
- SUB-AREA BOUNDARY
- X-X / X.XX — SUB-AREA NO. / SUB-AREA-ACREAGE
- XX / XXX.X ELEV — NODE NO. & ELEVATION
- FLOW-LINE
- L=270' — LENGTH OF FLOW-LINE

SCALE 1"=50'

50 25 0 50 100 150

SCALE: 1"=50'

JOB NO.:	161595
SCALE:	1" = 50'
DATE:	8/1/18
DESIGNED BY:	JMB

Michael Baker INTERNATIONAL
5 Hutton Centre Drive, Suite 500
Santa Ana CA 92707
Phone: (949) 472-3505
MBAKERINTL.COM

HYDROLOGY MAP
EXISTING CONDITION
BRODIAEA AVENUE

CITY OF MORENO VALLEY

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)
H:\PDATA\161595\CADD\LAND\DLV\HYDRO\161595-EX HYD MAP.DWG JESSICA.LEYVA 7/30/18 3:59 pm

APPENDIX E

10-YEAR PROPOSED CONDITION

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

```
**************************************************************************
           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                      (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2013 Advanced Engineering Software (aes)
                      (Rational Tabling Version 20.0)
                 Release Date: 06/01/2013  License ID 1264

                          Analysis prepared by:

                              RBF Consulting
                            14257 Alton Parkway
                                 Irvine, CA
                                   92618

 ************************* DESCRIPTION OF STUDY *************************
* MORENO VALLEY                                                         *
* PROPOSED CONDITION                                                    *
* 10 YEAR EVENT                                                         *
 ************************************************************************

  FILE NAME: PR-10YR.DAT
  TIME/DATE OF STUDY: 11:16 07/31/2018
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.010
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.820
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.940
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.200
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5003939
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5001161
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =   10.00   1-HOUR INTENSITY(INCH/HOUR) =   0.828
  SLOPE OF INTENSITY DURATION CURVE = 0.5004
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: CONSIDER ALL CONFLUENCE STREAM COMBINATIONS
        FOR ALL DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.10 IS CODE =  21
```



```
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   749.00
  UPSTREAM ELEVATION(FEET) =    614.80
  DOWNSTREAM ELEVATION(FEET) =    598.10
  ELEVATION DIFFERENCE(FEET) =     16.70
  TC = 0.533*[(  749.00**3)/(    16.70)]**.2 =   16.090
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.600
  USER-SPECIFIED RUNOFF COEFFICIENT = .5439
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      2.54
  TOTAL AREA(ACRES) =      2.92   TOTAL RUNOFF(CFS) =      2.54

**************************************************************************
  FLOW PROCESS FROM NODE      0.10 TO NODE      1.10 IS CODE =  41
--------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   593.80  DOWNSTREAM(FEET) =   592.10
  FLOW LENGTH(FEET) =   333.00   MANNING'S N =  0.011
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.17
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.54
  PIPE TRAVEL TIME(MIN.) =   1.33    Tc(MIN.) =   17.42
  LONGEST FLOWPATH FROM NODE      0.00 TO NODE      1.10 =    1082.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE      1.10 TO NODE      1.10 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   17.42
  RAINFALL INTENSITY(INCH/HR) =   1.54
  TOTAL STREAM AREA(ACRES) =     2.92
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.54

**************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      1.10 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   960.00
  UPSTREAM ELEVATION(FEET) =    614.80
  DOWNSTREAM ELEVATION(FEET) =    598.20
  ELEVATION DIFFERENCE(FEET) =     16.60
  TC = 0.533*[(  960.00**3)/(    16.60)]**.2 =   18.696
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.484
```


Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and

```
  USER-SPECIFIED RUNOFF COEFFICIENT = .5276
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      5.18
  TOTAL AREA(ACRES) =      6.61   TOTAL RUNOFF(CFS) =      5.18

****************************************************************************
  FLOW PROCESS FROM NODE      1.10 TO NODE      1.10 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   18.70
  RAINFALL INTENSITY(INCH/HR) =   1.48
  TOTAL STREAM AREA(ACRES) =     6.61
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.18

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.54    17.42        1.538          2.92
      2        5.18    18.70        1.484          6.61

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        7.37    17.42       1.538
      2        7.63    18.70       1.484

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       7.63   Tc(MIN.) =   18.70
  TOTAL AREA(ACRES) =        9.5
  LONGEST FLOWPATH FROM NODE      0.00 TO NODE      1.10 =    1082.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.10 TO NODE      1.20 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   592.10  DOWNSTREAM(FEET) =   591.00
  FLOW LENGTH(FEET) =   223.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  12.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.81
  GIVEN PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.63
  PIPE TRAVEL TIME(MIN.) =   0.77    Tc(MIN.) =   19.47
  LONGEST FLOWPATH FROM NODE      0.00 TO NODE      1.20 =    1305.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      2.00 TO NODE      2.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
```



```
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
  UPSTREAM ELEVATION(FEET) =    598.30
  DOWNSTREAM ELEVATION(FEET) =    586.80
  ELEVATION DIFFERENCE(FEET) =     11.50
  TC = 0.393*[( 1000.00**3)/(    11.50)]**.2 =   15.199
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.646
  USER-SPECIFIED RUNOFF COEFFICIENT = .7250
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      3.47
  TOTAL AREA(ACRES) =      2.91   TOTAL RUNOFF(CFS) =      3.47

****************************************************************************
  FLOW PROCESS FROM NODE      3.00 TO NODE      3.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   648.00
  UPSTREAM ELEVATION(FEET) =    598.50
  DOWNSTREAM ELEVATION(FEET) =    591.30
  ELEVATION DIFFERENCE(FEET) =      7.20
  TC = 0.303*[(  648.00**3)/(     7.20)]**.2 =    9.933
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.037
  USER-SPECIFIED RUNOFF COEFFICIENT = .8694
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      1.17
  TOTAL AREA(ACRES) =      0.66   TOTAL RUNOFF(CFS) =      1.17

****************************************************************************
  FLOW PROCESS FROM NODE      4.00 TO NODE      4.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   891.00
  UPSTREAM ELEVATION(FEET) =    598.80
  DOWNSTREAM ELEVATION(FEET) =    586.80
  ELEVATION DIFFERENCE(FEET) =     12.00
  TC = 0.393*[(  891.00**3)/(    12.00)]**.2 =   14.062
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.712
  USER-SPECIFIED RUNOFF COEFFICIENT = .7292
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      5.07
  TOTAL AREA(ACRES) =      4.06   TOTAL RUNOFF(CFS) =      5.07

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      5.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
```


Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and

```
       DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   878.00
  UPSTREAM ELEVATION(FEET) =    597.30
  DOWNSTREAM ELEVATION(FEET) =    589.20
  ELEVATION DIFFERENCE(FEET) =      8.10
  TC = 0.393*[(  878.00**3)/(     8.10)]**.2 =   15.078
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.653
  USER-SPECIFIED RUNOFF COEFFICIENT = .7254
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      1.62
  TOTAL AREA(ACRES) =      1.35   TOTAL RUNOFF(CFS) =      1.62
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        1.4  TC(MIN.) =     15.08
  PEAK FLOW RATE(CFS)   =       1.62
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```


Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and

Date: 07/31/2018 File name: PR-10YR.RES

APPENDIX F

100-YEAR PROPOSED CONDITION

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

```
**************************************************************************
           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                      (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2013 Advanced Engineering Software (aes)
                      (Rational Tabling Version 20.0)
                 Release Date: 06/01/2013  License ID 1264

                          Analysis prepared by:

                              RBF Consulting
                            14257 Alton Parkway
                                 Irvine, CA
                                   92618

 ************************* DESCRIPTION OF STUDY *************************
* MORENO VALLEY                                                        *
* PROPOSED CONDITION                                                   *
* 100 YEAR EVENT                                                       *
 ************************************************************************

  FILE NAME: PR-100YR.DAT
  TIME/DATE OF STUDY: 11:11 07/31/2018
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.010
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.820
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.940
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.200
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5003939
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5001161
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.200
  SLOPE OF INTENSITY DURATION CURVE = 0.5001
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: CONSIDER ALL CONFLUENCE STREAM COMBINATIONS
        FOR ALL DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      0.10 IS CODE =  21
```



```
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   749.00
  UPSTREAM ELEVATION(FEET) =    614.80
  DOWNSTREAM ELEVATION(FEET) =    598.10
  ELEVATION DIFFERENCE(FEET) =     16.70
  TC = 0.533*[(  749.00**3)/(    16.70)]**.2 =   16.090
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.318
  USER-SPECIFIED RUNOFF COEFFICIENT = .6198
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      4.19
  TOTAL AREA(ACRES) =      2.92   TOTAL RUNOFF(CFS) =      4.19

**************************************************************************
  FLOW PROCESS FROM NODE      0.10 TO NODE      1.10 IS CODE =  41
------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   593.80  DOWNSTREAM(FEET) =   592.10
  FLOW LENGTH(FEET) =   333.00   MANNING'S N =  0.011
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.76
  GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.19
  PIPE TRAVEL TIME(MIN.) =   1.17    Tc(MIN.) =   17.26
  LONGEST FLOWPATH FROM NODE      0.00 TO NODE      1.10 =    1082.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE      1.10 TO NODE      1.10 IS CODE =   1
------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   17.26
  RAINFALL INTENSITY(INCH/HR) =   2.24
  TOTAL STREAM AREA(ACRES) =     2.92
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.19

**************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      1.10 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   960.00
  UPSTREAM ELEVATION(FEET) =    614.80
  DOWNSTREAM ELEVATION(FEET) =    598.20
  ELEVATION DIFFERENCE(FEET) =     16.60
  TC = 0.533*[(  960.00**3)/(    16.60)]**.2 =   18.696
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.150
```


Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and

```
  USER-SPECIFIED RUNOFF COEFFICIENT = .6051
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      8.60
  TOTAL AREA(ACRES) =      6.61   TOTAL RUNOFF(CFS) =      8.60

****************************************************************************
  FLOW PROCESS FROM NODE      1.10 TO NODE      1.10 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   18.70
  RAINFALL INTENSITY(INCH/HR) =   2.15
  TOTAL STREAM AREA(ACRES) =     6.61
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.60

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.19    17.26        2.238          2.92
      2        8.60    18.70        2.150          6.61

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       12.13    17.26       2.238
      2       12.63    18.70       2.150

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      12.63   Tc(MIN.) =   18.70
  TOTAL AREA(ACRES) =        9.5
  LONGEST FLOWPATH FROM NODE      0.00 TO NODE      1.10 =    1082.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.10 TO NODE      1.20 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   592.10  DOWNSTREAM(FEET) =   591.00
  FLOW LENGTH(FEET) =   223.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.37
  GIVEN PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.63
  PIPE TRAVEL TIME(MIN.) =   0.69    Tc(MIN.) =   19.39
  LONGEST FLOWPATH FROM NODE      0.00 TO NODE      1.20 =    1305.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      2.00 TO NODE      2.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
```



```
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
  UPSTREAM ELEVATION(FEET) =    598.30
  DOWNSTREAM ELEVATION(FEET) =    586.80
  ELEVATION DIFFERENCE(FEET) =     11.50
  TC = 0.393*[( 1000.00**3)/(    11.50)]**.2 =   15.199
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.385
  USER-SPECIFIED RUNOFF COEFFICIENT = .7626
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      5.29
  TOTAL AREA(ACRES) =      2.91   TOTAL RUNOFF(CFS) =      5.29

****************************************************************************
  FLOW PROCESS FROM NODE      3.00 TO NODE      3.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   648.00
  UPSTREAM ELEVATION(FEET) =    598.50
  DOWNSTREAM ELEVATION(FEET) =    591.30
  ELEVATION DIFFERENCE(FEET) =      7.20
  TC = 0.303*[(  648.00**3)/(     7.20)]**.2 =    9.933
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.950
  USER-SPECIFIED RUNOFF COEFFICIENT = .8764
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      1.71
  TOTAL AREA(ACRES) =      0.66   TOTAL RUNOFF(CFS) =      1.71

****************************************************************************
  FLOW PROCESS FROM NODE      4.00 TO NODE      4.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   891.00
  UPSTREAM ELEVATION(FEET) =    598.80
  DOWNSTREAM ELEVATION(FEET) =    586.80
  ELEVATION DIFFERENCE(FEET) =     12.00
  TC = 0.393*[(  891.00**3)/(    12.00)]**.2 =   14.062
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.479
  USER-SPECIFIED RUNOFF COEFFICIENT = .7663
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      7.71
  TOTAL AREA(ACRES) =      4.06   TOTAL RUNOFF(CFS) =      7.71

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      5.01 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
```


Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and

```
       DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   878.00
  UPSTREAM ELEVATION(FEET) =    597.30
  DOWNSTREAM ELEVATION(FEET) =    589.20
  ELEVATION DIFFERENCE(FEET) =      8.10
  TC = 0.393*[(  878.00**3)/(     8.10)]**.2 =   15.078
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.394
  USER-SPECIFIED RUNOFF COEFFICIENT = .7630
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      2.47
  TOTAL AREA(ACRES) =      1.35   TOTAL RUNOFF(CFS) =      2.47
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        1.4  TC(MIN.) =     15.08
  PEAK FLOW RATE(CFS)   =       2.47
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

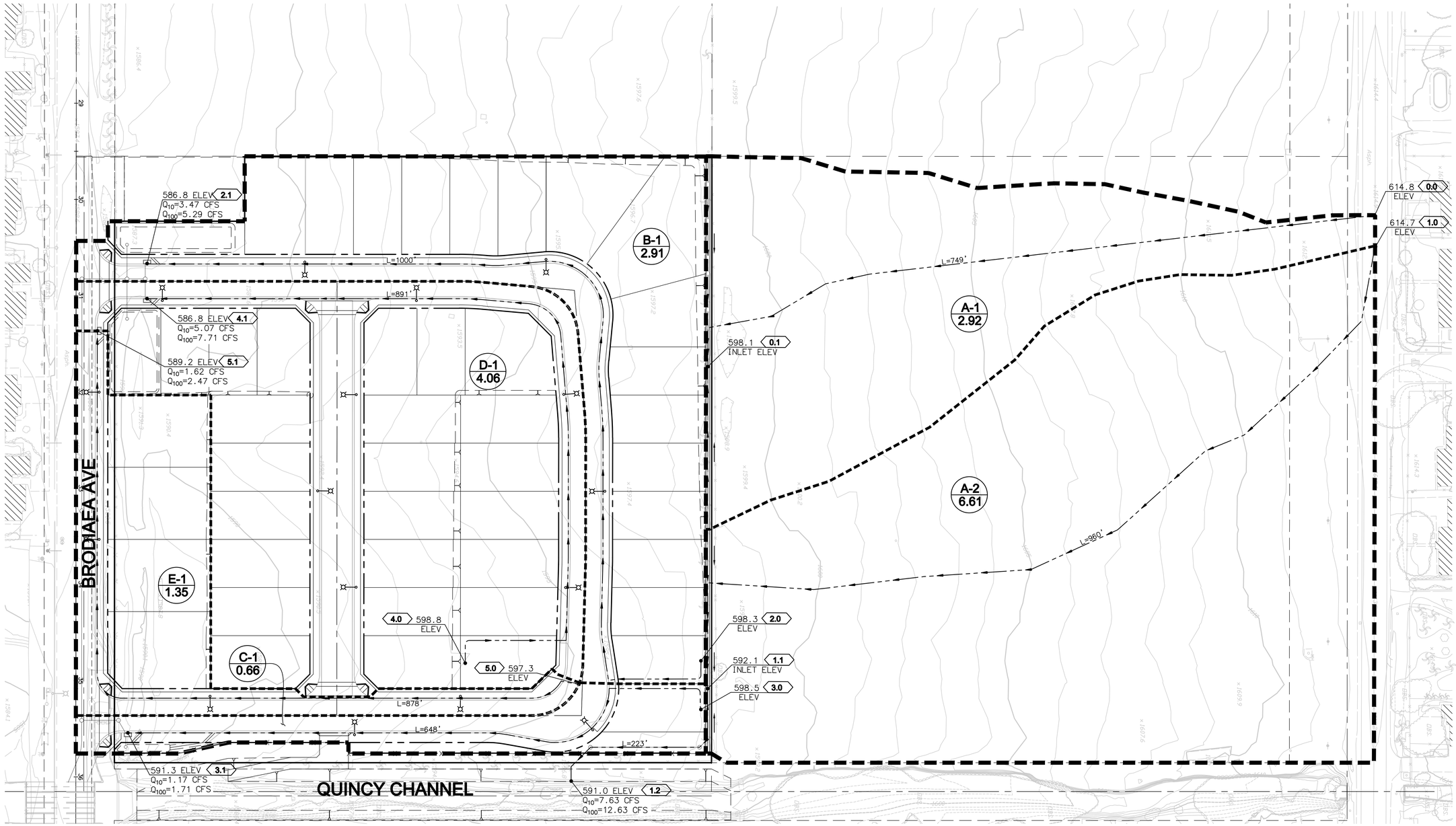

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and

Date: 07/31/2018 File name: PR-100YR.RES

APPENDIX G

HYDROLOGY MAP FOR PROPOSED CONDITION

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



LEGEND

- WATERSHED BOUNDARY
- SUB-AREA BOUNDARY
- X-X / X.XX — SUB-AREA NO. / SUB-AREA-ACREAGE
- XX XXX.X ELEV — NODE NO. & ELEVATION
- FLOW-LINE
- L=270' — LENGTH OF FLOW-LINE
- PROPOSED STORM DRAIN

SCALE 1"=50'

50 25 0 50 100 150

SCALE: 1"=50'

JOB NO.:	161595
SCALE:	1" = 50'
DATE:	9/12/18
DESIGNED BY:	JMB

Michael Baker INTERNATIONAL
5 Hutton Centre Drive, Suite 500
Santa Ana CA 92707
Phone: (949) 472-3505
MBAKERINTL.COM

HYDROLOGY MAP
PROPOSED CONDITION
BRODIAEA AVENUE

CITY OF MORENO VALLEY

Attachment: Project 2. Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)
H:\PDATA\161595\CADD\LAND\DLV\HYDRO\161595-PROP HYD MAP.DWG JARED.BERNARD 9/12/18 1:30 pm

APPENDIX H

STREET CAPACITY CALCULATIONS
V-DITCH CAPACITY CALCULATIONS

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

10-Year Storm Event Calculation

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01700	ft/ft
Discharge	5.07	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	100.00
0+16	99.68
0+16	99.65
0+18	99.48
0+18	99.98
0+28	100.18

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 100.00)	(0+28, 100.18)	0.013

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.38	ft
Elevation Range	99.48 to 100.18 ft	
Flow Area	1.38	ft²
Wetted Perimeter	11.31	ft
Hydraulic Radius	0.12	ft
Top Width	10.92	ft
Normal Depth	0.38	ft

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

10-Year Storm Event Calculation

Results

Critical Depth		0.45	ft
Critical Slope		0.00475	ft/ft
Velocity		3.67	ft/s
Velocity Head		0.21	ft
Specific Energy		0.59	ft
Froude Number		1.82	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth		0.00	ft
Length		0.00	ft
Number Of Steps		0	

GVF Output Data

Upstream Depth		0.00	ft
Profile Description			
Profile Headloss		0.00	ft
Downstream Velocity		Infinity	ft/s
Upstream Velocity		Infinity	ft/s
Normal Depth		0.38	ft
Critical Depth		0.45	ft
Channel Slope		0.01700	ft/ft
Critical Slope		0.00475	ft/ft

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Cross Section for 10-Year Storm Event

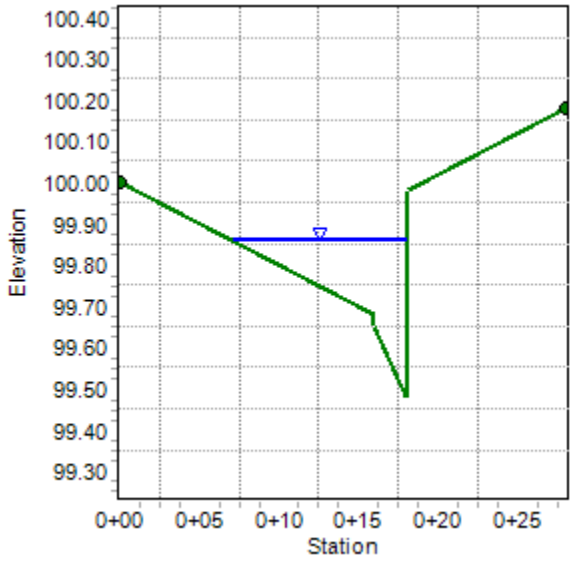
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01700	ft/ft
Normal Depth	0.38	ft
Discharge	5.07	ft³/s

Cross Section Image



Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

10-Year Max Capacity

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.01700	ft/ft
Normal Depth	0.50	ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	100.00
0+16	99.68
0+16	99.65
0+18	99.48
0+18	99.98

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 100.00)	(0+18, 99.98)	0.013

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Discharge	14.49	ft³/s
Elevation Range	99.48 to 100.00 ft	
Flow Area	3.09	ft²
Wetted Perimeter	17.54	ft
Hydraulic Radius	0.18	ft
Top Width	17.05	ft
Normal Depth	0.50	ft
Critical Depth	0.60	ft

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

10-Year Max Capacity

Results

Critical Slope		0.00399	ft/ft
Velocity		4.69	ft/s
Velocity Head		0.34	ft
Specific Energy		0.84	ft
Froude Number		1.94	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.50	ft
Critical Depth	0.60	ft
Channel Slope	0.01700	ft/ft
Critical Slope	0.00399	ft/ft

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Cross Section for 10-Year Max Capacity

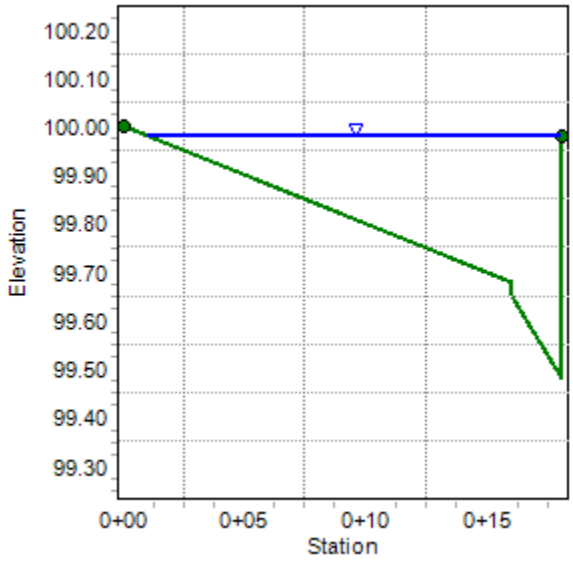
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.01700	ft/ft
Normal Depth	0.50	ft
Discharge	14.49	ft³/s

Cross Section Image



Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

100-Year Storm Event Calculation

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01700	ft/ft
Discharge	7.71	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	100.00
0+16	99.68
0+16	99.65
0+18	99.48
0+18	99.98
0+28	100.18

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 100.00)	(0+28, 100.18)	0.013

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.42	ft
Elevation Range	99.48 to 100.18 ft	
Flow Area	1.91	ft²
Wetted Perimeter	13.53	ft
Hydraulic Radius	0.14	ft
Top Width	13.11	ft
Normal Depth	0.42	ft

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

100-Year Storm Event Calculation

Results

Critical Depth		0.51	ft
Critical Slope		0.00452	ft/ft
Velocity		4.04	ft/s
Velocity Head		0.25	ft
Specific Energy		0.68	ft
Froude Number		1.87	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth		0.00	ft
Length		0.00	ft
Number Of Steps		0	

GVF Output Data

Upstream Depth		0.00	ft
Profile Description			
Profile Headloss		0.00	ft
Downstream Velocity		Infinity	ft/s
Upstream Velocity		Infinity	ft/s
Normal Depth		0.42	ft
Critical Depth		0.51	ft
Channel Slope		0.01700	ft/ft
Critical Slope		0.00452	ft/ft

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Cross Section for 100-Year Storm Event

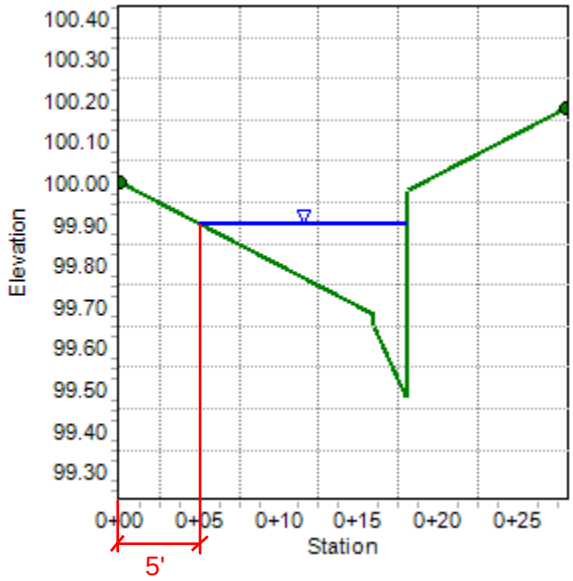
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01700	ft/ft
Normal Depth	0.42	ft
Discharge	7.71	ft³/s

Cross Section Image



Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Cross Section for Opposite Side of the Street - 100-Year Storm Event

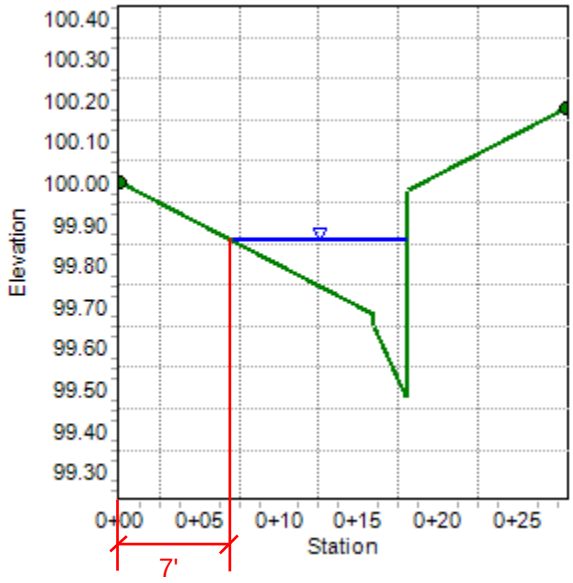
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01700	ft/ft
Normal Depth	0.38	ft
Discharge	5.07	ft³/s

Cross Section Image



Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

100-Year Max Capacity

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.01700	ft/ft
Normal Depth	0.70	ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	100.00
0+16	99.68
0+16	99.65
0+18	99.48
0+18	99.98
0+28	100.18

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 100.00)	(0+28, 100.18)	0.013

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Discharge	47.63	ft³/s
Elevation Range	99.48 to 100.18 ft	
Flow Area	7.69	ft²
Wetted Perimeter	28.67	ft
Hydraulic Radius	0.27	ft
Top Width	28.00	ft
Normal Depth	0.70	ft

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

100-Year Max Capacity

Results

Critical Depth		0.87	ft
Critical Slope		0.00338	ft/ft
Velocity		6.20	ft/s
Velocity Head		0.60	ft
Specific Energy		1.30	ft
Froude Number		2.08	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth		0.00	ft
Length		0.00	ft
Number Of Steps		0	

GVF Output Data

Upstream Depth		0.00	ft
Profile Description			
Profile Headloss		0.00	ft
Downstream Velocity		Infinity	ft/s
Upstream Velocity		Infinity	ft/s
Normal Depth		0.70	ft
Critical Depth		0.87	ft
Channel Slope		0.01700	ft/ft
Critical Slope		0.00338	ft/ft

Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Cross Section for 100-Year Max Capacity

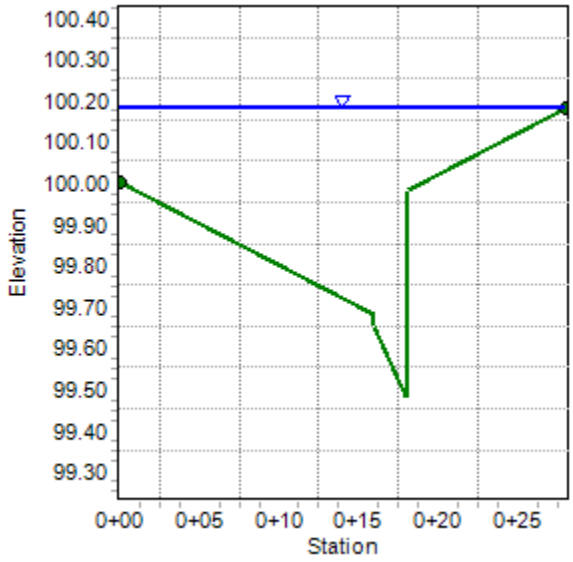
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.01700	ft/ft
Normal Depth	0.70	ft
Discharge	47.63	ft³/s

Cross Section Image



Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Triangular Channel Capacity

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Normal Depth	1.50	ft
Left Side Slope	1.00	ft/ft (H:V)
Right Side Slope	1.00	ft/ft (H:V)

Results

Discharge	11.91	ft³/s
Flow Area	2.25	ft²
Wetted Perimeter	4.24	ft
Hydraulic Radius	0.53	ft
Top Width	3.00	ft
Critical Depth	1.55	ft
Critical Slope	0.00426	ft/ft
Velocity	5.30	ft/s
Velocity Head	0.44	ft
Specific Energy	1.94	ft
Froude Number	1.08	
Flow Type	Supercritical	

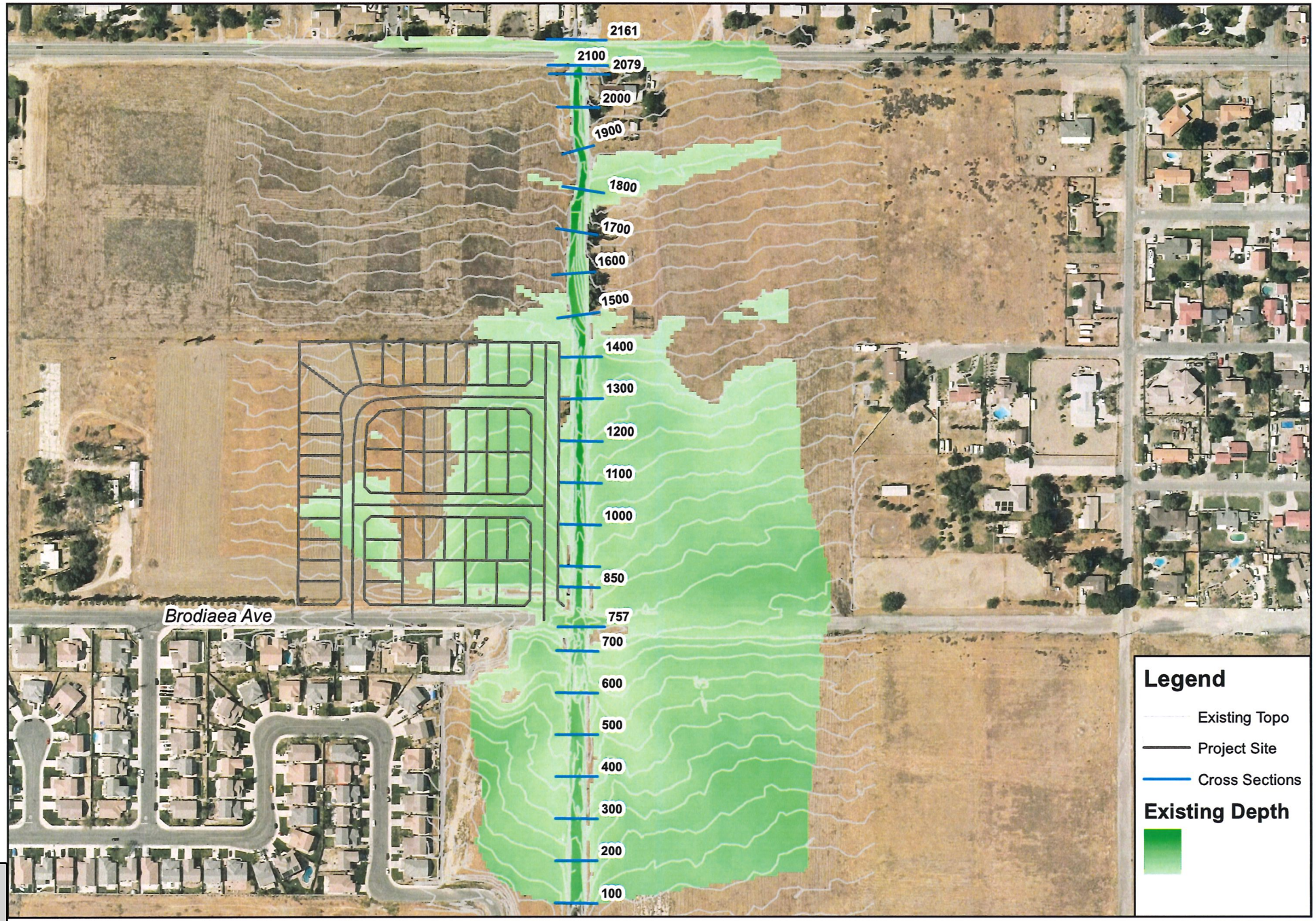
GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.50	ft
Critical Depth	1.55	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00426	ft/ft

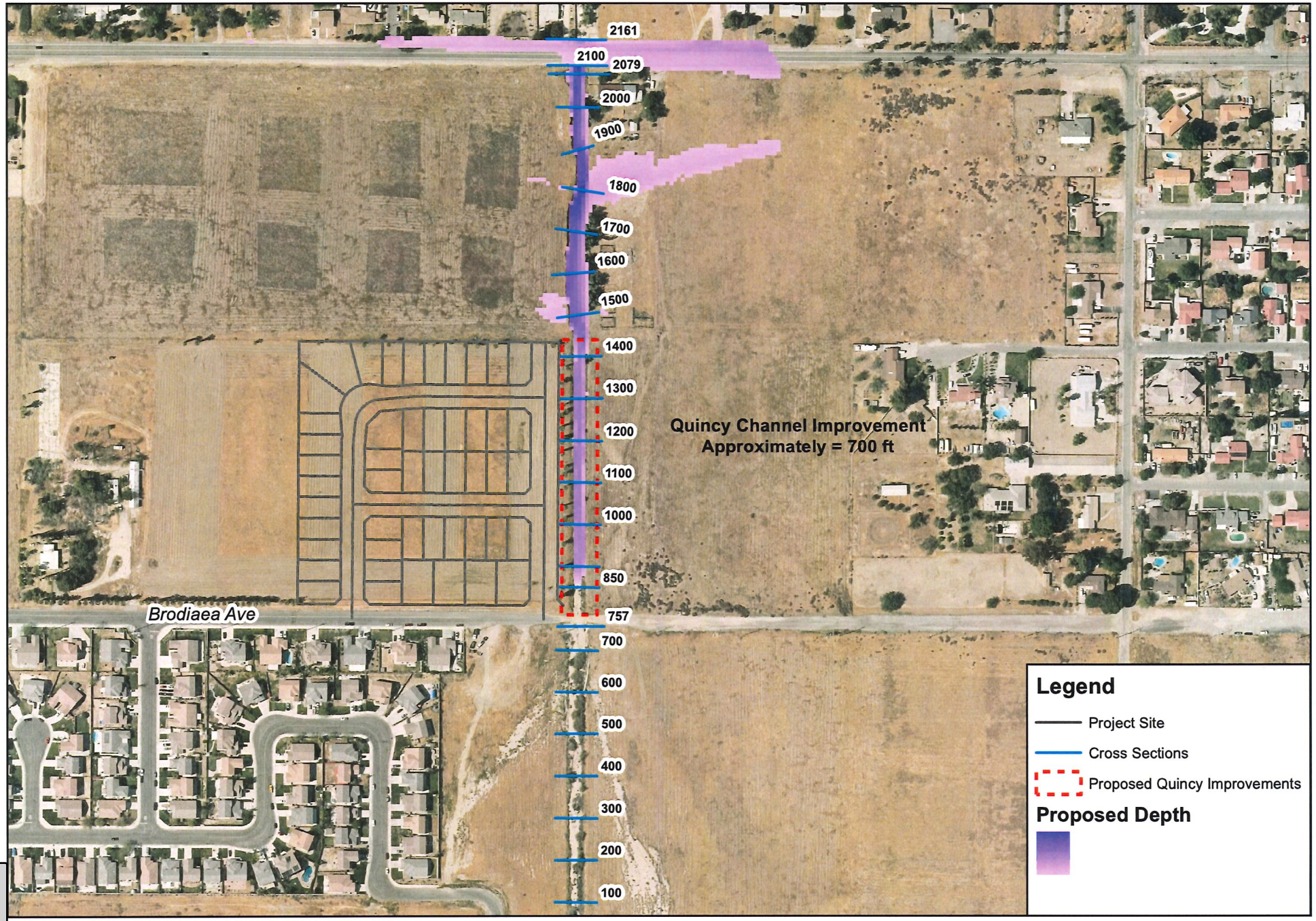
Attachment: Project 2_Prelim Hydro Report (9-12-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



Michael Baker INTERNATIONAL

Moreno Valley

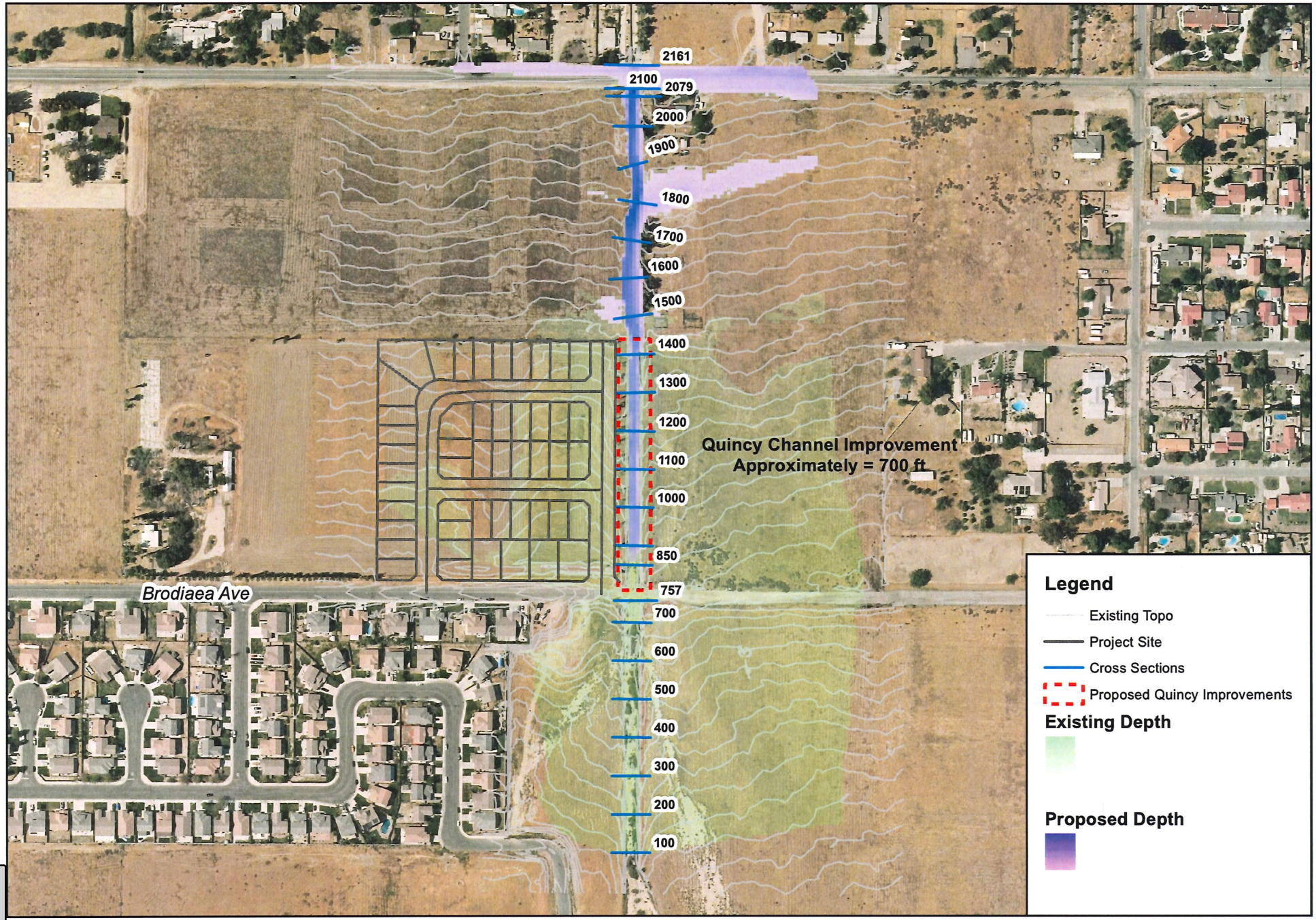
Existing Condition



Michael Baker INTERNATIONAL

Moreno Valley

Proposed Condition



Michael Baker INTERNATIONAL

Moreno Valley

Flood Comparison

Attachment: Project 2_Hydro Maps+ Calcs MBI ND H-2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Hydraulics Comparison

		Existing			Proposed			
River Sta	Profile	Min Ch El	W.S. Elev	Max Chl Dpth	Min Ch El	W.S. Elev	Max Chl Dpth	WSE Delta
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
2161	MPD	1607.31	1614.58	7.27	1607.31	1614.58	7.27	0
2100	MPD	1610.56	1611.98	1.59	1610.56	1611.98	1.59	0
2079	MPD	1603.98	1610.16	6.18	1603.98	1610.16	6.18	0
2000	MPD	1602.9	1608.81	5.91	1602.9	1608.81	5.91	0
1900	MPD	1601.35	1607.11	5.76	1601.35	1607.13	5.78	0.02
1800	MPD	1599.8	1606.55	6.75	1599.8	1606.58	6.78	0.03
1700	MPD	1596.95	1602.44	5.49	1596.95	1602.43	5.48	-0.01
1600	MPD	1595.66	1601.05	5.39	1595.66	1601.08	5.41	0.03
1500	MPD	1594.49	1599.7	5.21	1594.49	1599.7	5.21	0
1400	MPD	1592.71	1598.75	6.04	1591.74	1596.11	4.37	-2.64
1300	MPD	1591.13	1596.69	5.56	1590.26	1594.62	4.36	-2.07
1200	MPD	1589.47	1595.92	6.45	1588.8	1593.11	4.31	-2.81
1100	MPD	1588.29	1594.01	5.72	1587.34	1591.69	4.35	-2.32
1000	MPD	1586.96	1592.61	5.65	1586	1590.36	4.36	-2.25
900	MPD	1586.19	1591.31	5.12	1584.75	1589.11	4.36	-2.2
850	MPD	1585.38	1590.25	4.86	1581.4	1584.58	3.18	-5.67
835	Culvert							
757	MPD	1583.94	1588.08	4.14	1570.67	1576.5	5.83	-11.58
700	MPD	1582.42	1586.31	3.89	1570.44	1575.95	5.51	-10.36
600	MPD	1580.98	1584.27	3.29	1570	1575.14	5.14	-9.13
500	MPD	1579.21	1583.01	3.8	1569.25	1574.94	5.69	-8.07
400	MPD	1577.72	1581.71	3.99	1568.7	1573.95	5.25	-7.76
300	MPD	1576.38	1580.54	4.16	1568	1572.81	4.81	-7.73
200	MPD	1575.07	1579.31	4.24	1567	1571.98	4.98	-7.33
100	MPD	1573.73	1577.96	4.23	1566	1570.51	4.51	-7.45

Attachment: Project 2_Hydro Maps+ Calcs MBI ND H-2 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table 1

Off-Site Project Traffic Noise Level Increases (Existing Conditions)

Road	Adjacent Existing Land Use[1]	Existing ADT Volumes		CNEL at Adjacent Land Use (dBA)[4]			Noise-Sensitive Land Use?	Threshold Exceeded?[5]
		Without Project[2]	With Project[3]	Without Project	With Project	Project Addition		
Brodiaea Avenue	Residential	2.8	3.2	60.2	60.8	0.6	Yes	No

[1] Source: Google Earth aerial imagery.

[2] Based on an existing ADT traffic count taken by Counts Unlimited, Inc. on September 2017 on Brodiaea Avenue west of Heacock Street.

[3] Based on the combined Brodiaea Residential Trip Generation Summary (2018) and the existing count data from Brodiaea Avenue.

[4] Calculated based on the Federal Highway Administration traffic noise prediction model, RD-77-108, based on California Vehicle Noise Emission Levels.

[5] Does the Project off-site traffic noise level increase exceed the Federal Interagency Committee on Noise (FICON) threshold for Project-related increases of 3 dBA CNEL when the without Project noise level is between 60 to 65 dBA CNEL at existing sensitive land uses?

"ADT" = average daily traffic

Attachment: Project 2_Noise Tables UC April 2018 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

URBAN CROSSROADS

260 E. Baker St. | Suite 200 | Costa Mesa, CA 92626 | (949) 660-1994
urbanxroads.com

Attachment: Project 2_Trip Gen Memo Letter (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

September 4, 2018

c/o Mr. Daniel C. Pocius
Frontier Communities
8300 Utica Avenue, Suite 300
Rancho Cucamonga, CA 91730

SUBJECT: BRODIAEA (TTM 37544) TRIP GENERATION EVALUATION

Dear Mr. Daniel C. Pocius:

The firm of Urban Crossroads, Inc. is pleased to submit the following Trip Generation Evaluation for the proposed Brodiaea (TTM 37544) development (referred to as "Project") located in the City of Moreno Valley.

PROJECT DESCRIPTION

The Project is approximately 9.0 acres and is currently zoned for R-3 development (3 dwelling unit per acre or 27 units) and is proposing a zone change to R-10 (up to 10 dwelling units per acre). The Project is proposing development of up to 47 single-family detached residential dwelling units.

PROJECT TRIP GENERATION

Trip generation represents the amount of traffic which is both attracted to and produced by a development. Determining traffic generation for a specific project is therefore based upon forecasting the amount of traffic that is expected to be both attracted to and produced by the specific land uses being proposed for a given development. The trip generation rates used for this assessment are based upon information collected by the Institute of Transportation Engineers (ITE) as provided in their Trip Generation Manual (10th Edition, 2017). The ITE Trip Generation Manual is a nationally recognized source for estimating site-specific trip generation.

PROPOSED PROJECT: R-10 SINGLE FAMILY DETACHED RESIDENTIAL

The development of 47 single family detached residential dwelling units is proposed. Trip generation rates and the daily and peak hour trip generation for proposed Project are also shown in Table 1. The proposed Project is anticipated to generate a net total of approximately 444 trip-ends per day with 36 AM peak hour trips and 48 PM peak hour trips.

Attachment: Project 2_Trip Gen Memo Letter (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TABLE 1: PROPOSED PROJECT TRIP GENERATION SUMMARY

Land Use	ITE LU Code	Units[2]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Project Trip Generation Rates[1]									
Single Family Detached Residential	210	DU	0.19	0.56	0.74	0.62	0.37	0.99	9.44
Project	**Quantity**	**Units[2]**	**AM Peak Hour**			**PM Peak Hour**			**Daily**
			In	**Out**	**Total**	**In**	**Out**	**Total**	
Project Trip Generation Summary									
Brodieaea Residential	47	DU	9	27	36	30	18	48	444

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] DU = Dwelling Units

CURRENTLY APPROVED LAND USE: R-3 SINGLE FAMILY DETACHED RESIDENTIAL

Based on the existing zoning of R-3 and the allowable density for R-3 developments (3 dwelling unit per acre), the development of 27 single family detached residential dwelling units is currently approved. Table 2 summarizes the resulting trip generation estimates based on the currently approved zoning (R-3 residential development). The currently approved zoning is anticipated to generate a net total of approximately 255 trip-ends per day with 20 AM peak hour trips and 27 PM peak hour trips.

TABLE 2: CURRENTLY APPROVED LAND USE TRIP GENERATION SUMMARY

Land Use	ITE LU Code	Units[2]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Project Trip Generation Rates[1]									
Single Family Detached Residential	210	DU	0.19	0.56	0.74	0.62	0.37	0.99	9.44
Project	**Quantity**	**Units[2]**	**AM Peak Hour**			**PM Peak Hour**			**Daily**
			In	**Out**	**Total**	**In**	**Out**	**Total**	
Project Trip Generation Summary									
Currently Approved Land Use (R-3)	27	DU	5	15	20	17	10	27	255

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] DU = Dwelling Units

TRIP GENERATION COMPARISON

As shown in Table 3, the development of the proposed Project is anticipated to generate 189 more trip-ends per day with 16 more AM peak hour trips and 21 more PM peak hour trips as compared to the currently approved zoning. However, no additional analysis is necessary based on the City's Traffic Impact Analysis Preparation Guide (August 2007) as the Project is anticipated to generate fewer than

50 peak hour trips. Typically, single family residential tracts of less than 100 lots are typically exempt from Traffic Impact Analysis requirements.

TABLE 3: TRIP GENERATION COMPARISON

Land Use	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	
Trip Generation Comparison							
Currently Proposed[1]	9	27	36	30	18	48	444
Currently Adopted Zoning (R3)[2]	5	15	20	17	10	27	255
***VARIANCE*[3]**	***4***	***12***	***16***	***13***	***8***	***21***	***189***

[1] Currently proposed Project (see Table 1).

[2] Trip generation based on currently adopted zoning (see Table 2).

[3] Variance = Currently Proposed - Currently Adopted Zoning

If you have any questions, please contact me directly at (949) 336-5987.

Respectfully submitted,

URBAN CROSSROADS, INC.

Haseeb Qureshi,
Senior Associate

Attachment: Project 2_Trip Gen Memo Letter (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

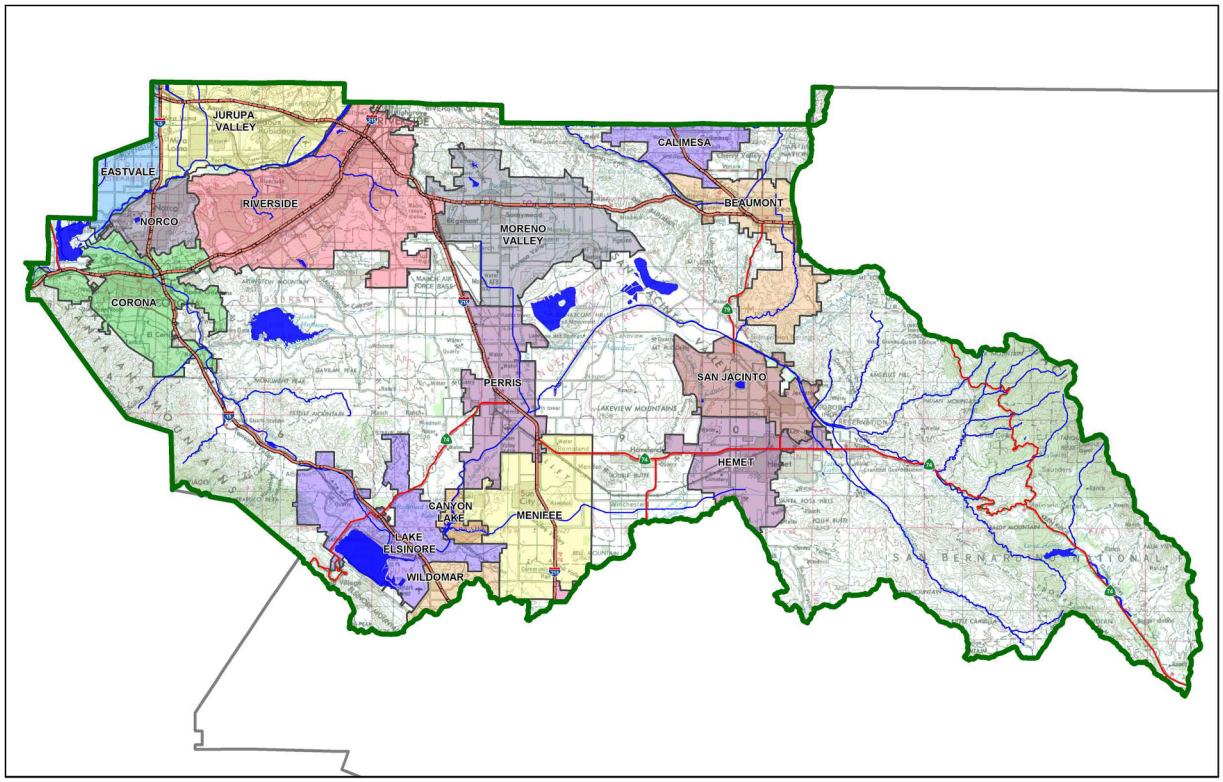
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Brodiaea Moreno Valley 26 (TTM 37544)

Development No: PEN18-0092

Design Review/Case No: LWQ18-0018



☒ **Preliminary**
☐ **Final**

Original Date Prepared: April 24, 2018

Revision Date(s): September 25, 2018

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**

Contact Information:

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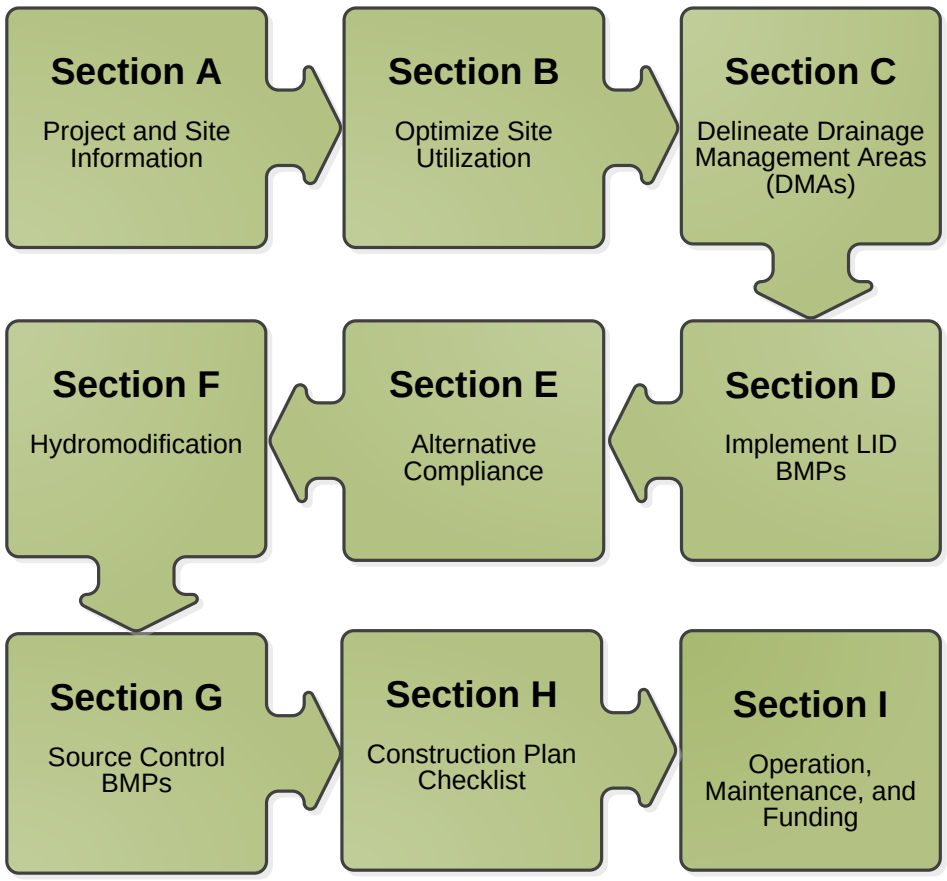
Prepared by: Jared Bernard, PE #77740
Michael Baker International
5 Hutton Centre Drive, Suite 500
Santa Ana, CA 92707
(949) 472-3434

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for Frontier Communities by Michael Baker International for the Brodiaea Moreno Valley 26 project.

This WQMP is intended to comply with the requirements of Riverside County for R8-2010-0033 which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under City of Moreno Valley Water Quality Ordinance (Municipal Code Section 8.10).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature

9/25/18
Date

Andrew Wennerstrom
Owner's Printed Name

Director of Planning
Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature

9-26-18
Date

Jared Bernard
Preparer's Printed Name

Civil Engineer
Preparer's Title/Position

Preparer's Licensure:

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California

County of San Bernardino} *ss.*

On September 25, 2018 before me, Melissa Vallone, Notary Public, personally appeared Andrew Wennerstrom, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

MELISSA VALLONE
Commission # 2139027
Notary Public - California
Orange County
My Comm. Expires Jan 2, 2020

Signature Melissa Vallone

Melissa Vallone, Notary Public, # 2139027
(My Commission Expires Jan. 2, 2020)

(seal)

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Residential
Planning Area:	N/A
Community Name:	N/A
Development Name:	TBD
	The project is proposing to redevelop the existing site into approximately 45 single family residences.
PROJECT LOCATION	
Latitude & Longitude (DMS): 33.9147, -117.1666	
Project Watershed and Sub-Watershed: Santa Ana Watershed, Perris Valley Sub-watershed	
APN(s): 478080014	
Map Book and Page No.: Thomas Brothers Page 718	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Residential
Proposed or Potential SIC Code(s)	6552
Area of Impervious Project Footprint (SF)	229,000
Total Area of proposed Impervious Surfaces within the Project Limits (SF)/or Replacement	229,000
Does the project consist of offsite road improvements?	☒ Y ☐ N
Does the project propose to construct unpaved roads?	☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?	☐ Y ☒ N
EXISTING SITE CHARACTERISTICS	
Total area of existing Impervious Surfaces within the project limits (SF)	0
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	N/A
Are there any natural hydrologic features on the project site?	☐ Y ☒ N
Is a Geotechnical Report attached?	☒ Y ☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	
What is the Water Quality Design Storm Depth for the project?	0.67 Inches

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Canyon Lake (Railroad Canyon Reservoir)	Nutrients, Pathogens	AGR, GWR, MUN, REC1, REC2, WARM, WILD	N/A
San Jacinto River (Reaches 1 and 3)	Nutrients, Organic Enrichment, Low Dissolved Oxygen, PCBs, Sedimentation/Siltation	MUN, AGR, GWR, REC1, REC2, WARM, WILD	N/A
Lake Elsinore	Nutrients, Organic Enrichment, Low Dissolved Oxygen, PCBs, Sedimentation/Siltation	MUN, REC1, REC2, WARM, WILD	N/A

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☒ Y	☐ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☒ Y	☐ N
US Army Corps of Engineers, CWA Section 404 Permit	☒ Y	☐ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)* Grading Permit, Building Permit	☒ Y	☐ N

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

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Section B: Optimize Site Utilization (LID Principles)

Site Optimization

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

Currently, site is split up between two drainage areas (A & B) with runoff sheet flowing to the southern project boundary. With there being a high point within Brodiaea Ave, drainage Areas A & B flows to the east and west respectively within the street. Regarding the proposed condition, a majority of the site will drain towards the south west within the site to ensure that onsite runoff is treated through bioretention BMPS. A portion of the site will drain to the south and be treated by infiltration trench BMP. The entire project site drainage will be directed via storm drain into the improved Quincy Channel. This proposed drainage pattern does not fully resemble the existing condition (see WQMP map in Appendix 1). Offsite flows that are intercepted by the proposed development will be directed East to Quincy Channel via storm drain. All onsite flows not retained by treatment facilities will be conveyed east to Quincy Channel. Downstream drainage infrastructure for drainage running west along Brodiaea Ave is not adequate from a master drainage plan standpoint. Therefore, Riverside County Flood Control District (RCFCD) has agreed to consider redirecting flow from project site and property north of project site to future Quincy Channel. RCFCD shall provide conditions to allow for this diversion.

Did you identify and protect existing vegetation? If so, how? If not, why?

Existing vegetation was identified during a site investigation. The site is currently an un-developed site with sparse vegetation throughout the site. The proposed site will not allow for the existing vegetation to remain. Ornamental vegetation has been included where possible and the LID requirements will be met as much as possible.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

Yes, the existing infiltration capacity is being preserved with the implementation of an infiltration trench where natural infiltration is feasible. The existing infiltration capacity was analyzed during a geotechnical investigation (percolation testing) and summarized in a report conducted by Geotek, Inc. (Appendix 3). Infiltration is feasible on the southeast corner since the in-situ infiltration rate is 4.0 inches per hour. The "Water Quality Management Plan, A Guidance Document of the Santa Ana Region of Riverside County" requires a minimum infiltration rate of 1.6 inches per hour. This minimum requirement is based on a typical infiltration basin depth of 5 feet with a drawdown time of 72 hours and factor of safety of two. Where the rates are less than 1.6 inches per hour, infiltration is not feasible and could not be preserved. When calculating the depth for the reservoir layer, three is used for the factor of safety to determine the layer depth based on infiltration.

Percolation test was performed in the vicinity of the proposed infiltration trench BMP. Because test was not performed at its exact location, proposed development's Final WQMP should perform an in-situ test at the infiltration trench's final location and depth to confirm that the percolation rate meet's the BMP's minimum requirements. If the tested rate does not meet the minimum, modifications to the BMP may be warranted to increase infiltration. This may include changes in depth and/or addition of a drywell.

Did you identify and minimize impervious area? If so, how? If not, why?

Yes, impervious areas were minimized and limited to the areas needed for the residential development and meet the minimum code requirements for parking and paved traveled ways. Pervious area has been optimized in the remaining areas.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

Runoff within the residential lots will flow through pervious areas before ultimately it outlets to the local streets throughout the site. Since drainage is directed in towards the site, it was not possible to direct runoff into the site's adjacent pervious areas. Overall, drainage within the lots will be dispersed over pervious areas but any rainfall that lands within the right of way will be contained within impervious areas.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)[1]	Area (Sq. Ft.)	DMA Type
DMA 1	Mixed Surface Types	126,772	Building Roof, Ornamental Landscaping, Sidewalks, and Hardscape
DMA 2	Mixed Surface Types	236,034	Building Roof, Ornamental Landscaping, Sidewalks, and Hardscape
DMA 3	Mixed Surface Types	28,917	Building Roof, Ornamental Landscaping, Sidewalks, and Hardscape

[1]Reference Table 2-1 in the WQMP Guidance Document to populate this column

Table C.2 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA 1	Bioretention Basin
DMA 2	Bioretention Basin
DMA 3	Infiltration Trench

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☐ Y ☒ N

If yes has been checked, Infiltration BMPs shall not be used for the site. If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		X
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?	X	
If Yes, list affected DMAs: DMA 1, 2		
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		X
Describe here:		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

D.2 Harvest and Use Assessment

Please check what applies*:*

☐ Reclaimed water will be used for the non-potable water demands for the project.

☐Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If neither of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: 2.90 Acres

Type of Landscaping (Conservation Design or Active Turf): Active Turf

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 5.63 Acres

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: 0.65 Acre/Acre

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: 3.66 Acres

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
3.66 Acres	2.90 Acres

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: 180 Toilet Users

Project Type: Residential

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 5.62 Acres

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-1 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: 111 Toilet Users/Acre

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users: 624 Toilet Users

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	Projected number of toilet users (Step 1)
624	180

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

N/A

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: N/A

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: N/A

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-3 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-3: N/A

Step 4: Multiply the unit value obtained from Step 4 by the total of impervious areas from Step 3 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: N/A

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required non-potable use (Step 4)	**Projected average daily use (Step 1)**
N/A	N/A

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment, unless a site-specific analysis has been completed that demonstrates technical infeasibility as noted in D.3 below.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

✓ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA 1	☐	☐	☒	☐	☐
DMA 2	☐	☐	☒	☐	☐
DMA 3	☒	☐	☐	☐	☐

For those DMAs where LID BMPs are not feasible, provide a brief narrative below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section E below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First**,** calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second**,** design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperviousness Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Bioretention Basin*		
	[A]		[B]	[C]	[A] x [C]			
1	*49,301*	Roofs	*1*	*0.89*	*43,977*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
1	*25,820*	*Concrete or Asphalt*	*1*	*.89*	*23,031*			
1	*51,651*	*Ornamental Landscaping*	*.1*	*.11*	*5,705*			
	$A_T = \Sigma[A]$ ***126,772***				$\Sigma = [D]$ 72,713	[E] 0.67	$[F] = \frac{[D] \times [E]}{12}$ 4,060	[G] ***4,060***

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Table D.4 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperviousness Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Modular Wetland System 1*		
	[A]		[B]	[C]	[A] x [C]			
2	*54,622*	Roofs	*1*	*0.89*	*48,723*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
2	*66,412*	*Concrete or Asphalt*	*1*	*0.89*	*59,240*			
2	*115,000*	*Ornamental Landscaping*	*.1*	*.11*	*12,703*			
	$A_T = \Sigma[A]$ ***236,034***				Σ= [D] 120,665	[E] 0.67	[F] $= \frac{[D] \times [E]}{12}$ 6,737	[G] ***6,902***

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Table D.5 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperviousness Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Modular Wetland System 2*		
	[A]		[B]	[C]	[A] x [C]			
3	*2,942*	Roofs	*1*	*0.89*	*2,624*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
3	*13,240*	*Concrete or Asphalt*	*1*	*0.89*	*11,810*			
3	*12,735*	*Ornamental Landscaping*	*.1*	*.11*	*1,407*			
	$A_T = \Sigma[A]$ ***28,917***				Σ= [D] 15,841	[E] 0.67	[F] $= \frac{[D] \times [E]}{12}$ 884.5	[G] ***885***

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

✓ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- *Or* -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

E.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☒ Detached Residential Development	P	N	P	P	N	P	P	P
☐ Attached Residential Development	P	N	P	P	N	P	P	P(2)
☐ Commercial/Industrial Development	P(3)	P	P(1)	P(1)	P(5)	P(1)	P	P
☐ Automotive Repair Shops	N	P	N	N	P(4, 5)	N	P	P
☐ Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☐ Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☐ Parking Lots (>5,000 ft^2)	P(6)	P	P(1)	P(1)	P(4)	P(1)	P	P
☐ Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	☒	☐	☒	☒	☐	☒	☒	☒

P = Potential

N = Not Potential

(1) A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

(2) A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

(3) A potential Pollutant is land use involving animal waste

(4) Specifically petroleum hydrocarbons

(5) Specifically solvents

(6) Bacterial indicators are routinely detected in pavement runoff

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

E.2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
N/A	
Total Credit Percentage[1]	

[1]Cannot Exceed 50%
[2]Obtain corresponding data from Table 3-8 in the WQMP Guidance Document

E.3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	DMA Area (square feet) [A]	Post-Project Surface Type	Effective Impervious Fraction, I_f [B]	DMA Runoff Factor [C]	DMA Area x Runoff Factor [A] x [C]		*Enter BMP Name / Identifier Here*		
						Design Storm Depth (in)	*Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*
	A_T = Σ[A]				Σ= [D]	[E]	$[F] = \frac{[D]x[E]}{[G]}$	[F] X (1-[H])	[I]

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12
[H] is from the Total Credit Percentage as Calculated from Table E.2 above
[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

E.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]
N/A		

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.
[2] Cross Reference Table E.1 above to populate this column.
[3] As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration			
Volume (Cubic Feet)			

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Sensitivity Maps.

Does the project qualify for this HCOC Exemption? ☒ Y ☐ N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

Canyon Lake and Lake Elsinore are adequate sumps so the project qualifies for HCOC Exemption 3.

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Be sure to include all pertinent documentation used in your analysis of the items a, b or c in Appendix 7.

Section G: Source Control BMPs

Source control BMPs include permanent, structural features that may be required in your project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. ***Identify Pollutant Sources*:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.

2. ***Note Locations on Project-Specific WQMP Exhibit*:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.

3. ***Prepare a Table and Narrative*:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.

4. ***Identify Operational Source Control BMPs:*** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
On-site Storm Drain Inlets	-All inlets will be marked with the words "Only Rain Down the Storm Drain" or similar.	-Maintain and periodically repaint or replace inlet markers -Stormwater pollution prevention information will be provided to new site owners, lessees, or operators -See Fact Sheet SC-44 in Appendix 10
Landscape/Outdoor Pesticide Use	-Preserve existing native trees, shrubs, and ground cover to the maximum extent possible -Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that	-Maintain landscaping using minimum or no pesticides -Reference Educational Fact Sheet "What you should know for Landscaping and Gardening" in Appendix 10

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

	can contribute to stormwater pollution. -Consider using pest-resistant plants, especially adjacent to hardscape -Plants appropriate to site conditions will be selected	

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)
1	Bioretention Basin 1	33.9142°, -117.1671° (Appendix 1)
2	Bioretention Basin 2	33.9141°, -117.1682° (Appendix 1)
3	Infiltration Basin	33.9138°, -117.1657° (Appendix 1)

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism:

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

☒ Y ☐ N

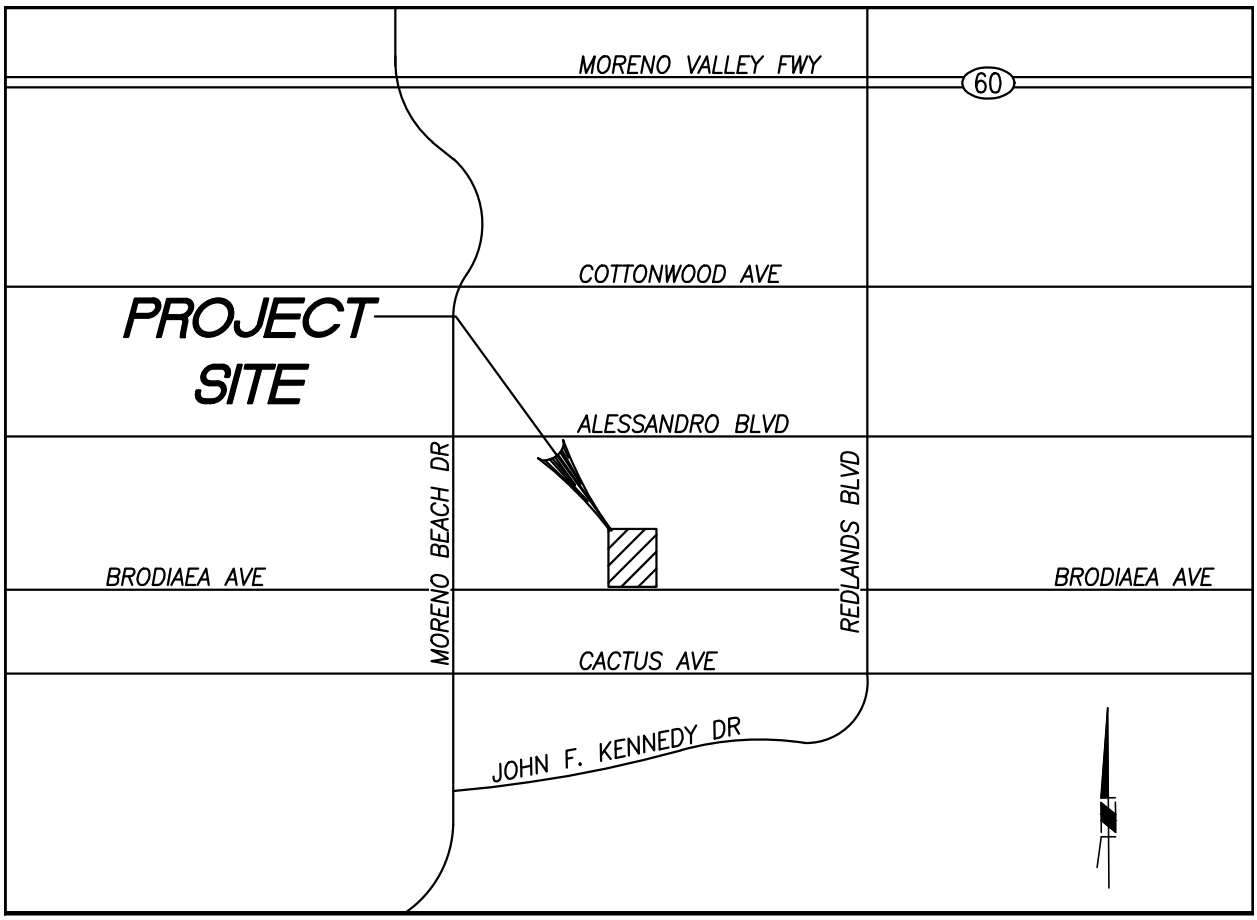
Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendix 1: Maps and Site Plans

Location Map, Vicinity Map, WQMP Site Plan and Receiving Waters Map

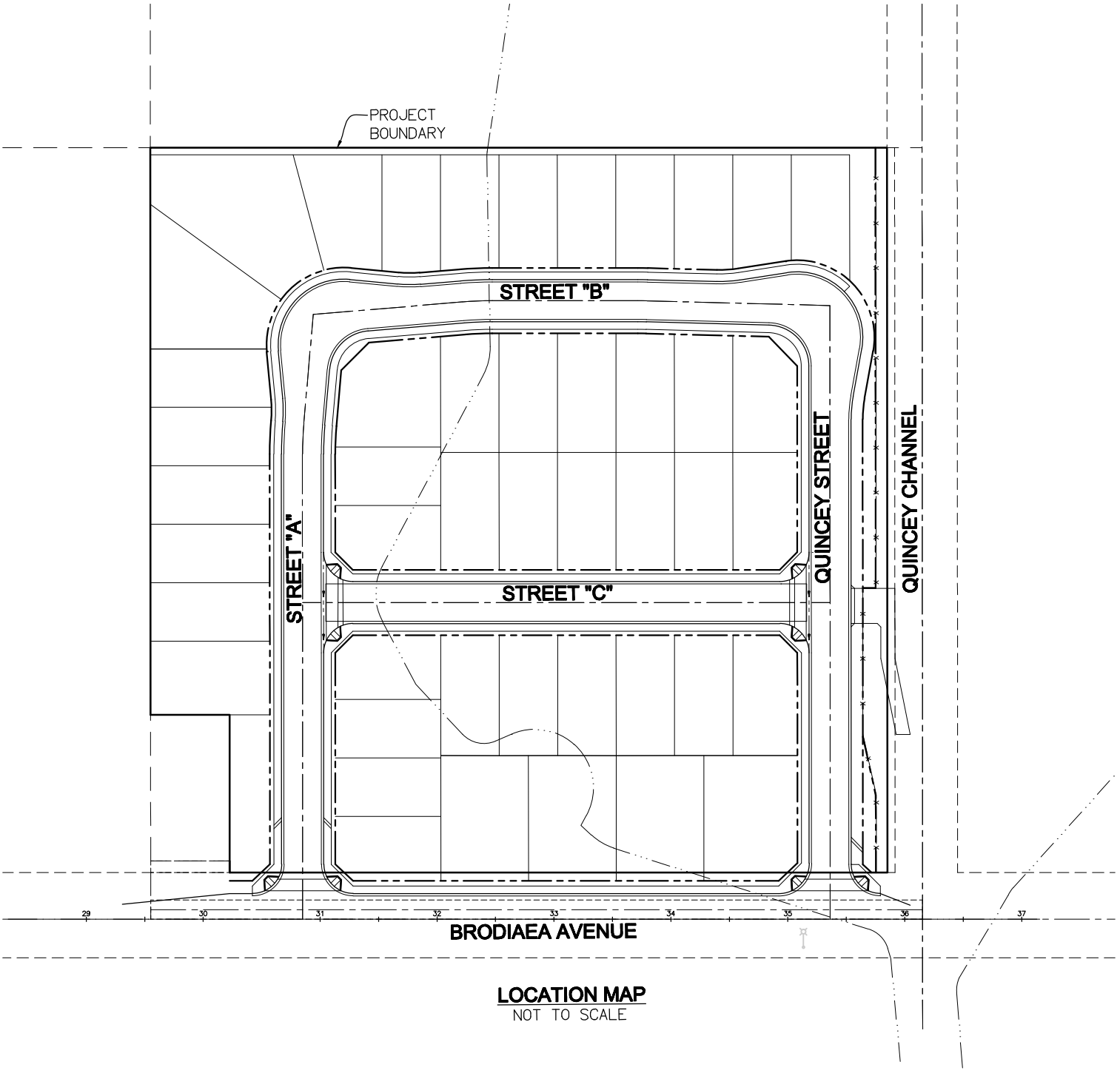
Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



VICINITY MAP

NOT TO SCALE

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



LOCATION MAP
NOT TO SCALE

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

E.1.aw

R 07 W | R 06 W | R 05 W | R 04 W | R 03 W | R 02 W | R 01 W | R 01 E | R 02 E | R 03 E | R 04 E | R 05 E

T 01 S | T 02 S | T 03 S | T 04 S | T 05 S | T 06 S | T 07 S | T 08 S

06	05	04	03	02	01
07	08	09	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

0.85 MiraLoma
0.61 RiversideNorth
0.68 PigeonPass
0.54 RiversideSouth
SITE
0.66 MorenoEast
0.85 Beaumont
0.88 PradoDam
0.51 Woodcrest
0.68 PerrisReservoir
0.50 LakeMathews
0.87 VistaGrandeGS
0.70 SanJacintoNWS
1.18 Idyllwild
0.58 SunCity
0.68 Winchester
0.70 ElsinoreNWS
1.11 ElCarisoStation
0.90 HurkeyCreek
0.77 WildomarLaCresta
0.52 SkinnerLake
0.65 Anza
0.77 SantaRosaPlateau
1.00 TemeculaNWS
0.64 AguangaValley

Santa Ana River Watershed

Santa Margarita Watershed

CORONA | NORCO | EASTVALE | JURUPA VALLEY | RIVERSIDE | MORENO VALLEY | CALIMESA | BEAUMONT | PERRIS | SAN JACINTO | HEMET | CANYON LAKE | LAKE ELSINORE | MENIFEE | WILDOMAR | MURRIETA | TEMECULA

N

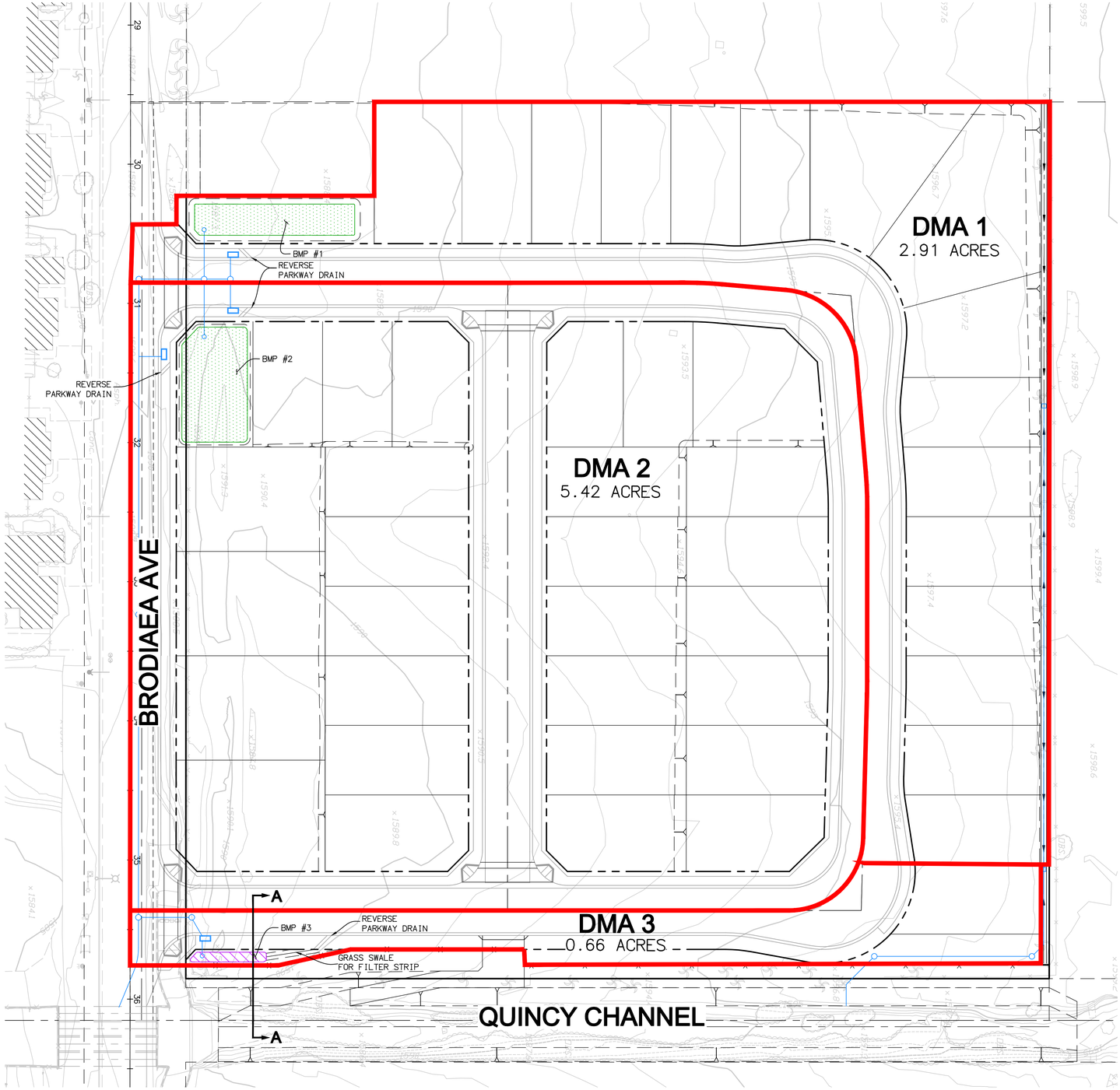
Rain Gage Locations

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Isohyetal Map for the 85th Percentile 24 hour Storm Event

July 2011

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



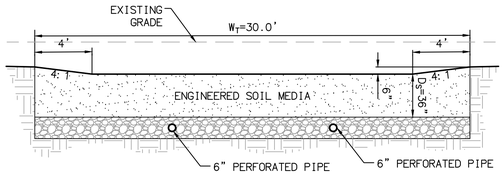
LEGEND:

- BIORETENTION BASIN
- INFILTRATION TRENCH
- DRAINAGE AREA BOUNDARY
- PROPOSED STORM DRAIN LINE

LAND USE			
DMA	SURFACE TYPE	AREA (SF)	I_F
1	ROOF	49,301	1
	CONCRETE OR ASPHALT	25,820	1
	ORNAMENTAL LANDSCAPING	51,651	0.10
2	ROOF	54,622	1
	CONCRETE OR ASPHALT	66,412	1
	ORNAMENTAL LANDSCAPING	115,000	0.10
3	ROOF	2,942	1
	CONCRETE OR ASPHALT	13,240	1
	ORNAMENTAL LANDSCAPING	12,735	0.10

AREA SUMMARY:

IMPERVIOUS AREA:	212,337 SF
PERVIOUS AREA:	179,386 SF
TOTAL PROJECT AREA:	391,723 SF



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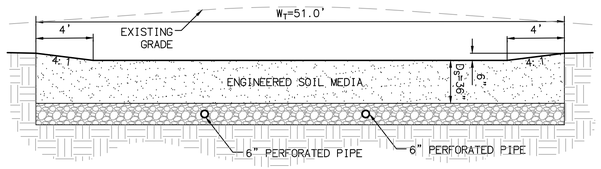
NTS



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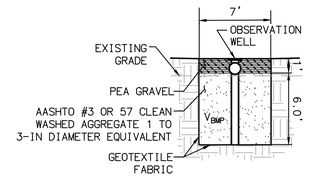
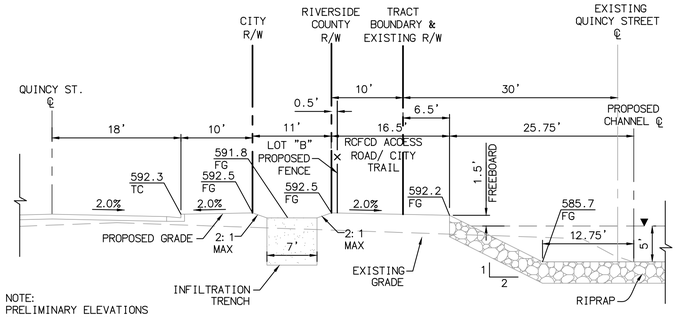
NTS



BMP #3
NTS



NOTE:
PRELIMINARY ELEVATIONS SHOWN ARE FROM SECTION LOCATION ONLY

SECTION A-A
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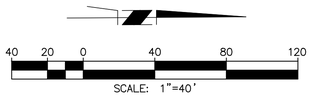

SCALE: 1"=40'

JOB NO.:	161595
SCALE:	1" = 50'
DATE:	9/21/18
DESIGNED BY:	JMB

Michael Baker INTERNATIONAL
5 Hutton Centre Drive, Suite 500
Santa Ana CA 92707
Phone: (949) 472-3505
MBAKERINTL.COM

WATER QUALITY
PROPOSED CONDITION
BRODIAEA AVENUE

CITY OF MORENO VALLEY

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)
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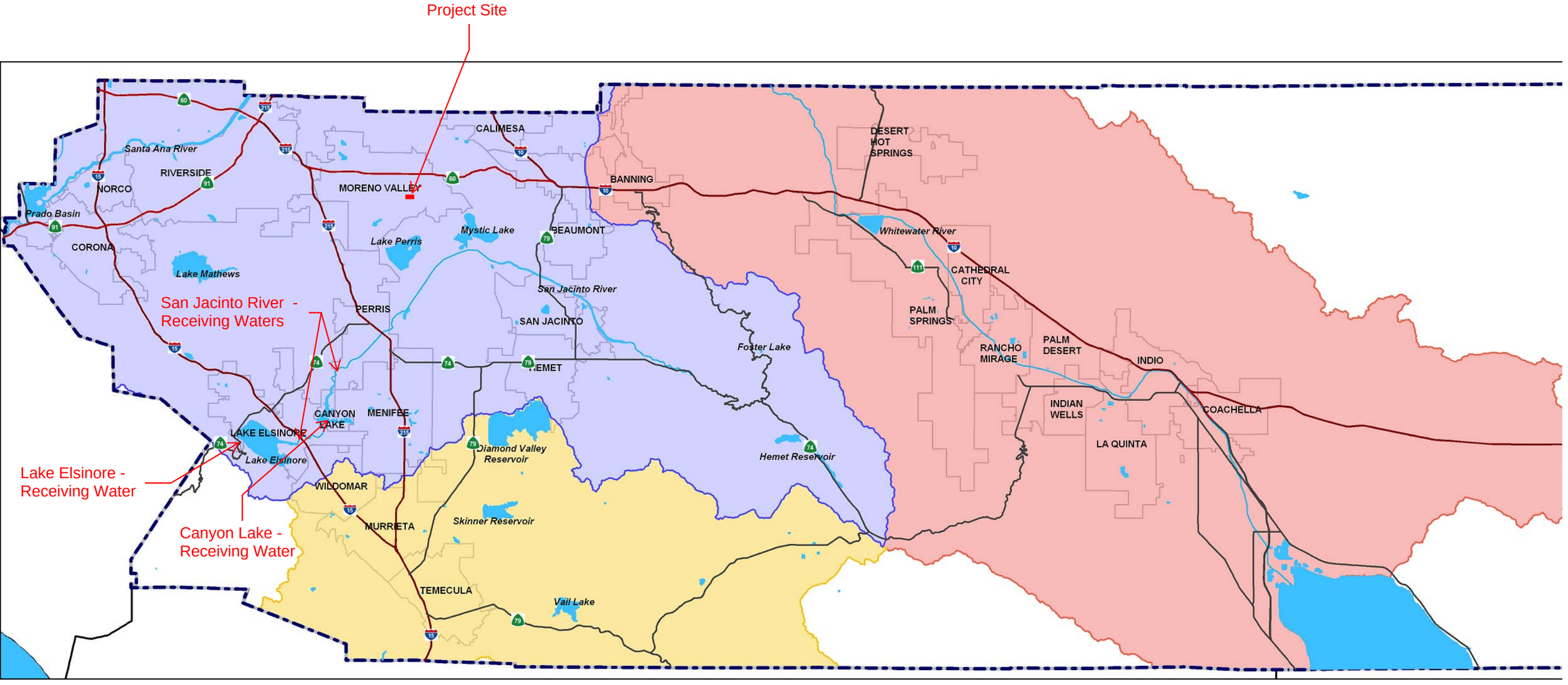


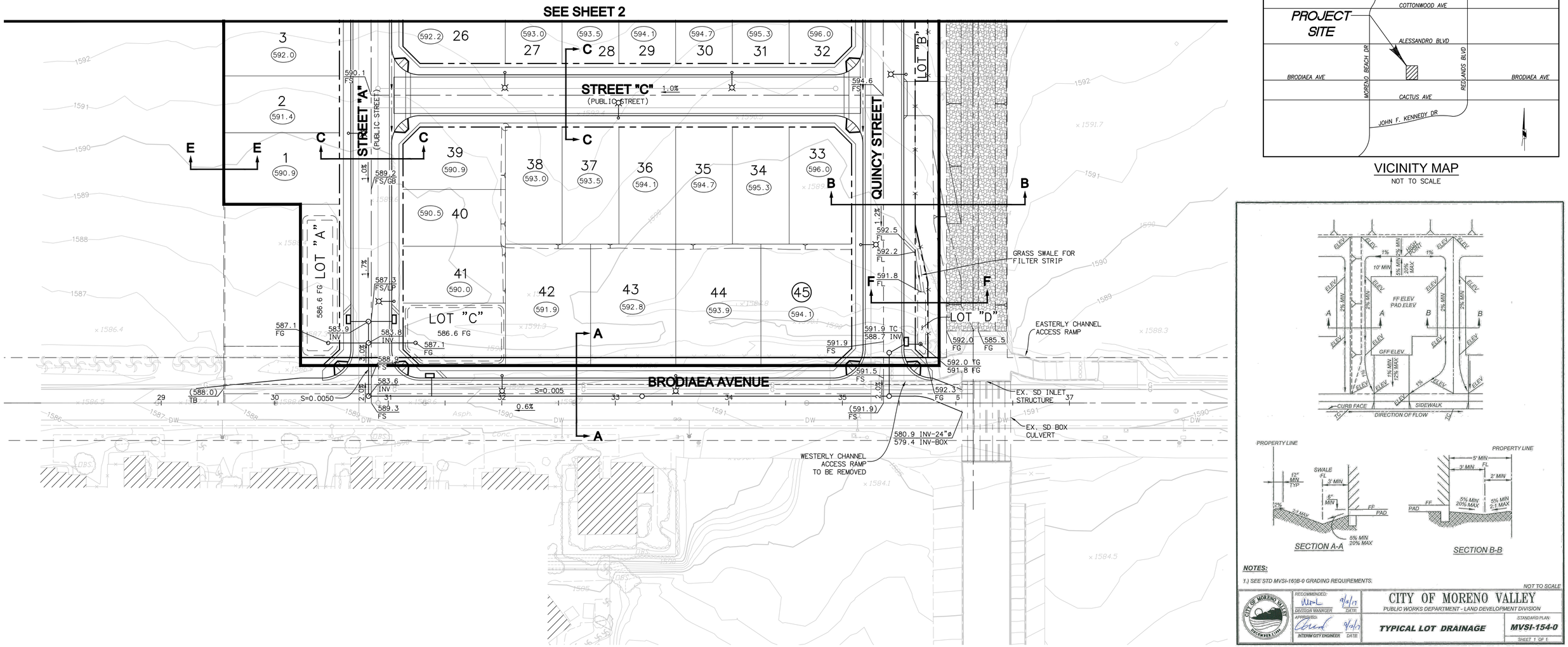
Receiving Waters Map

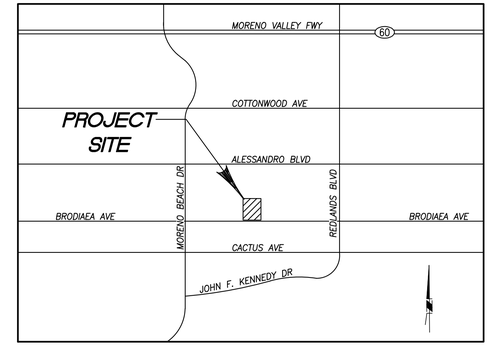
Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendix 2: Construction Plans

Grading and Drainage Plans

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)





VICINITY MAP
NOT TO SCALE

SECTION A-A

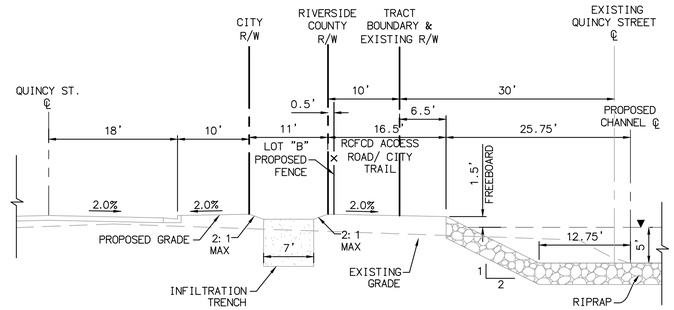
SECTION B-B

NOTES:

1.) SEE STD MVSI-169B-0 GRADING REQUIREMENTS.

NOT TO SCALE

CITY OF MORENO VALLEY	CITY OF MORENO VALLEY PUBLIC WORKS DEPARTMENT - LAND DEVELOPMENT DIVISION	
RECOMMENDED: DIVISION MANAGER DATE 9/2/17	TYPICAL LOT DRAINAGE	STANDARD PLAN: MVSI-154-0
APPROVED: INTERIM CITY ENGINEER DATE 9/2/17		SHEET 1 OF 1



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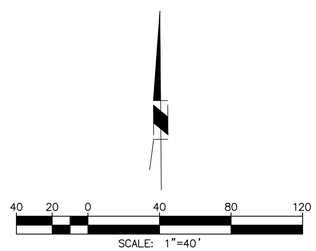

SCALE: 1"=40'

DIGALERT
DIAL TOLL FREE
1-800-227-2600
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

ANY UNDERGROUND UTILITIES OR STRUCTURES SHOWN ON THESE PLANS WERE PLOTTED FROM CITY RECORDS. NO ADDITIONAL UTILITY OR SUBSTRUCTURE RESEARCH HAS BEEN PERFORMED. THE CONTRACTOR SHALL DETERMINE THE EXISTENCE AND THE TRUE HORIZONTAL AND VERTICAL LOCATION AND SIZE OF ANY UNDERGROUND UTILITIES OR STRUCTURES AND SHALL BE RESPONSIBLE FOR PROTECTION, ADJUSTMENT, OR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES SHOWN OR NOT SHOWN HEREON. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR NOTIFYING U.S.A./DIG ALERT AT 1-800-227-2600 FOR UNDERGROUND UTILITY MARKING AT LEAST 48 HOURS PRIOR TO COMMENCING ANY CONSTRUCTION. CONSTRUCTION SHALL NOT COMMENCE PRIOR TO SAID UNDERGROUND UTILITY MARKING.

REGISTERED PROFESSIONAL ENGINEER
JARED BERNARD
No. 77740
CIVIL
STATE OF CALIFORNIA

Michael Baker
INTERNATIONAL
5 Hutton Centre Drive, Suite 500, Santa Ana, CA 92707
Phone: (949) 472-3505 · MBAKERINTL.COM

REVISIONS

Nº	DATE	BY	DESCRIPTION

DEVELOPER:
FRONTIER ENTERPRISES
CONTACT: MELISSA VALLONE
2151 E. CONVENTION CENTER WAY
ONTARIO, CA
951-354-8040
MVALLONE@FRONTEIR-ENTERPRISE.COM

TTM 37544
PRELIMINARY GRADING PLAN

TRACT NO.
CITY CASE NO.
DATE: 09/12/18
SHEET 1 of 2

Attachment: Project 2. Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)
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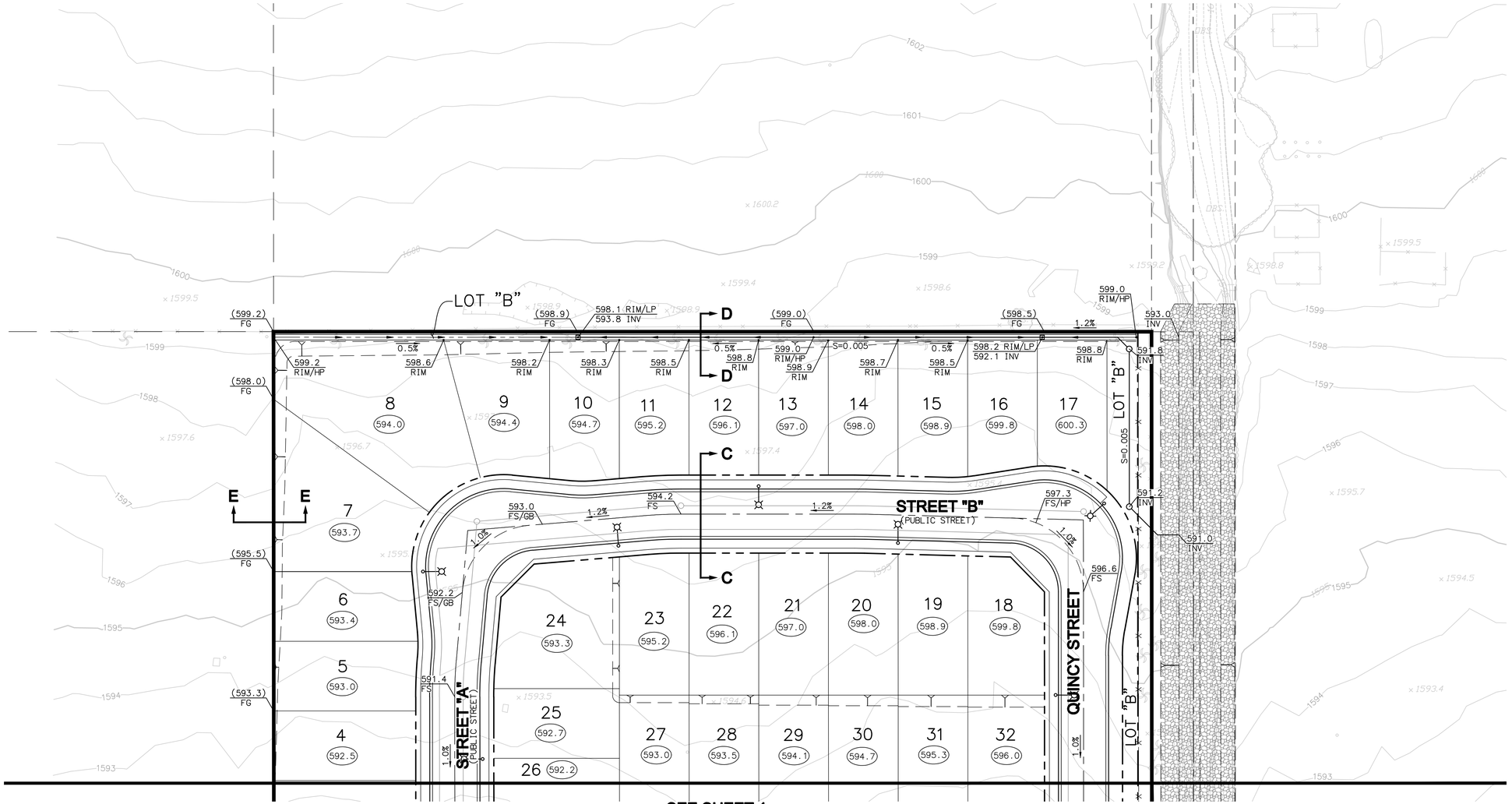
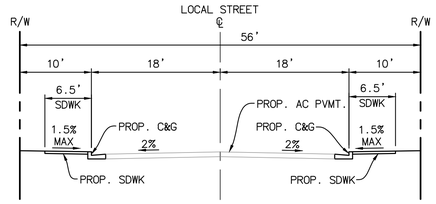


SEE SHEET 1



NOTE: STREET DESIGN
PER STD. MVSI-107A

SECTION C-C

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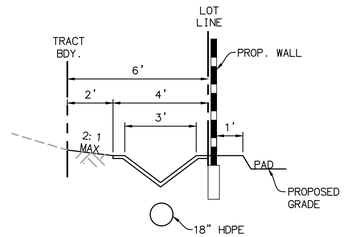

SECTION D-D

NOT TO SCALE

SECTION E-E

NOT TO SCALE

NOTE: STREET DESIGN
PER STD. MVSI-106B

SECTION A-A

SCALE: 1"=10'

NOTE: STREET DESIGN
PER STD. MVSI-107A

SECTION B-B

SCALE: 1"=10'

DIGALERT
DIAL TOLL FREE
1-800-227-2600
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

ANY UNDERGROUND UTILITIES OR STRUCTURES SHOWN ON THESE PLANS WERE PLOTTED FROM CITY RECORDS. NO ADDITIONAL UTILITY OR SUBSTRUCTURE RESEARCH HAS BEEN PERFORMED. THE CONTRACTOR SHALL DETERMINE THE EXISTENCE AND THE TRUE HORIZONTAL AND VERTICAL LOCATION AND SIZE OF ANY UNDERGROUND UTILITIES OR STRUCTURES AND SHALL BE RESPONSIBLE FOR PROTECTION, ADJUSTMENT, OR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES SHOWN OR NOT SHOWN HEREON. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR NOTIFYING U.S.A./DIG ALERT AT 1-800-227-2600 FOR UNDERGROUND UTILITY MARKING AT LEAST 48 HOURS PRIOR TO COMMENCING ANY CONSTRUCTION. CONSTRUCTION SHALL NOT COMMENCE PRIOR TO SAID UNDERGROUND UTILITY MARKING.

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REVISIONS

N°	DATE	BY	DESCRIPTION
1			
2			
3			
4			
5			
6			

DEVELOPER:
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CONTACT: MELISSA VALLONE
2151 E. CONVENTION CENTER WAY
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TTM 37544
PRELIMINARY GRADING PLAN

TRACT NO.
CITY CASE NO.
DATE: 09/12/18
SHEET 2 of 2

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Attachment: Project 2. Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)
Packet Pg. 3058

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

GEOTECHNICAL EVALUATION AND INFILTRATION STUDY

FOR

PROPOSED RESIDENTIAL DEVELOPMENT

APN 478-080-013

CITY OF MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA

PREPARED FOR

FRONTIER ENTERPRISES
8300 UTICA AVENUE, SUITE 300
RANCHO CUCAMONGA, CALIFORNIA 91730

PREPARED BY

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PROJECT NO. 1132-CR3 FEBRUARY 12, 2014

GEOTEK

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February 12, 2014
Project No. 1132-CR3

Frontier Enterprises
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Rancho Cucamonga, California 91730

Attention: Mr. Lonnie Ellisor

Subject: Geotechnical Evaluation and Infiltration Study
Proposed Residential Development
APN 478-080-013
City of Moreno Valley, Riverside County, California

Dear Mr. Ellisor:

We are pleased to provide herein the results of our Geotechnical Evaluation and Infiltration Study for the subject project located in the City of Moreno Valley, Riverside County, California. This report presents the results of our evaluation and discussion of our findings. In our opinion, site development appears feasible from a geotechnical viewpoint. Site development and grading plans should be reviewed by this firm as they become available, as it will be necessary to provide appropriate recommendations for intended specific site development as those plans become refined.

The opportunity to be of service is sincerely appreciated. If you should have any questions, please do not hesitate to call our office.

Respectfully submitted,
GeoTek, Inc.

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Distribution: (1) Addressee via email
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1. PURPOSE AND SCOPE OF SERVICES

The purpose of this study was to evaluate the general geotechnical conditions on the site. Services provided for this study included the following:

- Research and review of available geologic and geotechnical data, and general information pertinent to the site,
- Site exploration consisting of the excavation, logging and sampling of four (4) exploratory borings by a geologist from our firm,
- Laboratory testing of soil samples collected during the field investigation,
- Evaluation of near-surface water infiltration potential at the project site,
- Review and evaluation of site seismicity, and
- Compilation of this geotechnical report which presents our findings and a general summary of pertinent site geotechnical conditions relevant for site development.

2. SITE DESCRIPTION AND PROPOSED DEVELOPMENT

2.1 SITE DESCRIPTION

The subject project site is located northwest of the intersection of Quincy Street and Brodiaea Avenue in the City of Moreno Valley, Riverside County, California (see Figure 1). The square-shaped property is comprised of roughly 9 acres of vacant land. The property is bounded by Brodiaea Avenue followed by an existing residential development to the south, vacant land to the north and west, and Quincy Street followed by vacant land to the east.

The site is relatively flat with total relief across the site on the order of roughly fifteen feet, with surface drainage generally directed toward the south. Topographically, the property ranges from approximately 1,580 to approximately 1,595 feet above mean sea level (msl). Figure 2, to the rear of the text of this report, shows historic topographic contours of the site and site area.

2.2 PROPOSED DEVELOPMENT

It is our understanding that proposed development will consist of single-family residential structures and associated streets. For this evaluation it was assumed that the structures will be one (1)- to two (2)-story, wood-framed residences situated atop slab-on-ground

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foundations. As site development planning progresses and plans become available, the plans should be provided to GeoTek for review and comment.

3. FIELD EXPLORATION AND LABORATORY TESTING

3.1 FIELD EXPLORATION

Field exploration was conducted on January 22, 2014 and consisted of excavating four (4) exploratory borings, one (1) to a maximum depth of approximately 51.5 feet. Approximate locations of the exploratory borings are shown on the Boring Location Map (see Figure 3). A geologist from our firm logged the excavations and collected samples for use in the laboratory testing. The logs of the exploratory borings are included in Appendix A.

3.2 LABORATORY TESTING

Laboratory testing was performed on selected soil samples collected during the field exploration. The purpose of the laboratory testing was to help confirm the field classification of the soil materials encountered and to evaluate their physical and chemical properties for use in the engineering design and analysis. Results of the laboratory testing program, along with a brief description and relevant information regarding testing procedures, are included in Appendix B.

4. GEOLOGIC AND SOILS CONDITIONS

4.1 REGIONAL SETTING

The subject property is situated in the Peninsular Ranges geomorphic province. The Peninsular Ranges province is one of the largest geomorphic units in western North America. Basically, it extends roughly 975 miles from the north and northeasterly adjacent the Transverse Ranges geomorphic province to the tip of Baja California. This province varies in width from about 30 to 100 miles. It is bounded on the west by the Pacific Ocean, on the south by the Gulf of California and on the east by the Colorado Desert Province.

The Peninsular Ranges are essentially a series of northwest-southeast oriented fault blocks. Several major fault zones are found in this province. The Elsinore Fault zone and the San Jacinto Fault zones trend northwest-southeast and are found in the near the middle of the province. The San Andreas Fault zone borders the northeasterly margin of the province.

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More specific to the subject property, the site is located in an area geologically mapped to be underlain by Quaternary age alluvial fan deposits (Dibblee, 2003). No faults are shown in the immediate site vicinity on the maps reviewed for the area.

4.2 GENERAL SOIL CONDITIONS

A brief description of the earth materials encountered during our subsurface exploration is presented in the following section. Based on our site reconnaissance, field observations, our exploratory excavations and review of published geologic maps the subject site area is locally underlain by alluvial deposits. Although not encountered during our subsurface exploration, localized accumulations of undocumented artificial fill materials may exist onsite.

4.2.1 Alluvial Deposits

Alluvial deposits were observed to underlie the project site at the explored locations. The alluvial deposits encountered generally consist of sandy silt, silty sand and clayey sand, which is mostly gray brown to red brown, dry to slightly moist, and medium dense to dense (see logs in Appendix A).

Based on the results of the laboratory testing performed on a sample of the near surface onsite materials, these near surface alluvial materials indicated a "very low" expansion potential ($0 \leq EI \leq 20$) when tested and classified in accordance with ASTM D 4829. It is likely that most of the onsite materials encountered during grading and construction will have a "very low" expansion potential. Test results are shown in Appendix B.

4.3 SURFACE WATER AND GROUNDWATER

4.3.1 Surface Water

Surface water was not observed during our site visit. If encountered during earthwork construction, surface water on this site is the result of precipitation or possibly some minor surface run-off from immediately surrounding properties. Overall site area drainage is generally in a southerly direction, as directed by site topography. Provisions for surface drainage will need to be accounted for by the project civil engineer.

4.3.2 Groundwater

Groundwater was not encountered in any of our exploratory borings excavated for the herein evaluation. Perched groundwater or localized seepage can occur due to variations in rainfall, irrigation practices, and other factors not evident at the time of this investigation.

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4.4 FAULTING AND SEISMICITY

The geologic structure of the entire southern California area is dominated mainly by northwest-trending faults associated with the San Andreas system. The site is in a seismically active region. No active or potentially active fault is known to exist at this site nor is the site situated within an *"Alquist-Priolo"* Earthquake Fault Zone or a Special Studies Zone (CGS, 1974; Bryant and Hart, 2007). No faults are identified on geologic maps readily available and reviewed by this firm for the immediate study area. The County of Riverside has designated the site as having a "moderate" potential for liquefaction, as being "susceptible" to subsidence and not within a Riverside county designated fault zone.

4.4.1 Seismic Design Parameters

The site is located at approximately 33.9148 Latitude and -117.1665 Longitude. Site spectral accelerations (Ss and S_1), for 0.2 and 1.0 second periods for a Class "D" site, were determined from the USGS Website, Earthquake Hazards Program, U.S. Seismic Design Maps for Risk-Targeted Maximum Considered Earthquake (MCE_R) Ground Motion Response Accelerations for the Conterminous 48 States by Latitude/Longitude. The results are presented in the following table:

SITE SEISMIC PARAMETERS	
Mapped 0.2 sec Period Spectral Acceleration, S_s	1.992g
Mapped 1.0 sec Period Spectral Acceleration, S_1	0.891g
Site Coefficient for Site Class "D", F_a	1.0
Site Coefficient for Site Class "D", F_v	1.5
Maximum Considered Earthquake Spectral Response Acceleration for 0.2 Second, S_{MS}	1.992g
Maximum Considered Earthquake Spectral Response Acceleration for 1.0 Second, S_{M1}	1.336g
5% Damped Design Spectral Response Acceleration Parameter at 0.2 Second, S_{DS}	1.328g
5% Damped Design Spectral Response Acceleration Parameter at 1 second, S_{D1}	0.891g

4.5 LIQUEFACTION/SEISMIC SETTLEMENT

Liquefaction describes a phenomenon in which cyclic stresses, produced by earthquake-induced ground motion, create excess pore pressures in relatively cohesionless soils. These soils may thereby acquire a high degree of mobility, which can lead to lateral movement, sliding, consolidation and settlement of loose sediments, sand boils and other damaging deformations. This phenomenon occurs only below the water table, but, after liquefaction has

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developed, the effects can propagate upward into overlying non-saturated soil as excess pore water dissipates.

The factors known to influence liquefaction potential include soil type and grain size, relative density, groundwater level, confining pressures, and both intensity and duration of ground shaking. In general, materials that are susceptible to liquefaction are loose, saturated granular soils having low fines content under low confining pressures.

The liquefaction potential on this site is considered to be low due to the lack of a shallow groundwater table.

4.6 OTHER SEISMIC HAZARDS

Evidence of ancient landslides or slope instabilities at this site was not observed during our investigation as the topography of the site is relatively flat. Thus, the potential for landslides is considered negligible.

The potential for secondary seismic hazards such as seiche and tsunami are considered to be remote due to site elevation and distance from an open body of water.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 GENERAL

Development of the site appears feasible from a geotechnical viewpoint. Specific recommendations for site development provided herein will need to be further evaluated when development plans are provided for our review.

5.2 EARTHWORK CONSIDERATIONS

5.2.1 General

Earthwork and grading should be performed in accordance with the applicable grading ordinances of City of Moreno Valley, the 2013 California Building Code (CBC), and recommendations contained in this report. The Grading Guidelines included in Appendix D outline general procedures and do not anticipate all site specific situations. In the event of conflict, the recommendations presented in the text of this report should supersede those contained in Appendix D.

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5.2.2 Site Clearing and Preparation

Site preparation should start with demolition/razing of any existing improvements and removal of deleterious materials and vegetation. These materials should be properly disposed of offsite. Any existing underground improvements, utilities and trench backfill should also be removed or be further evaluated as part of site development operations.

5.2.3 Remedial Grading

Prior to placement of fill materials, the upper loose and compressible materials should be removed for structural site areas. Additionally, all undocumented artificial fill materials should be removed for structural site areas (if encountered). The lateral extent of removals beyond the outside edge of all settlement sensitive structures/foundations should minimally be equivalent to that vertically removed. Depending on actual field conditions encountered during grading, locally deeper and/or shallower areas of removal may be necessary.

Removal depths a minimum of five (5) feet across the site are recommended. At a minimum, removal bottoms in alluvial areas should extend down to relatively uniform material which is not visibly porous. Removal bottoms should also be tested to have a minimum in-place relative compaction of at least 85%, at optimum moisture content or above.

At a minimum, any proposed cut lots and the cut portion(s) of any transition building pad areas should be overexcavated a minimum of three (3) feet below existing grades or a minimum of one (1) foot below the bottom of the deepest proposed footing, whichever is deeper, if not already mitigated by the removal recommendations provided above. Overexcavations should extend a minimum of five (5) feet outside the proposed building envelope(s). The intent of the recommended overexcavation is to support the improvements on engineered fill with relatively uniform engineering characteristics and decrease the potential for future differential settlement.

The bottom of all removals should be scarified to a minimum depth of eight (8) inches, brought to at or above optimum moisture content, and then compacted to minimum project standards prior to fill placement. The remedial excavation bottoms of should be observed by a GeoTek representative prior to scarification. The resultant voids from remedial grading/overexcavation should be filled with materials placed in accordance with Section 5.2.4 Engineered Fill of this report.

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5.2.4 Engineered Fill

Onsite materials are generally considered suitable for reuse as engineered fill provided they are free from vegetation, roots, and rock/concrete or hard lumps greater than six (6) inches in maximum dimension. The earthwork contractor should have the proposed excavated and stockpiled materials to be used as engineered fill at this project approved by the soils engineer prior to placement.

Engineered fill materials should be moisture conditioned to above optimum moisture content and compacted in horizontal lifts not exceeding eight (8) inches in loose thickness to a minimum relative compaction of 90% as determined in accordance with laboratory test procedure ASTM D 1557.

If fill is being placed on slopes steeper than 5:1 (h:v), the fill should be properly benched into the existing slopes and a sufficient size keyway shall be constructed in accordance with the recommendations of the soils engineer.

5.2.5 Excavatability and Oversized Materials

The alluvial materials should excavate easily using conventional heavy equipment in good working condition and modern earthmoving methods. Oversized materials (larger than six (6) inches in dimension) were not encountered during this investigation and are not anticipated to be encountered during rough grading. If encountered, placement of such materials may require special handing. No oversized rocks should be placed within the building footprint or street areas. Oversized materials may be placed in open space, landscape areas, if acceptable to the local agency. Alternatively, the rocks should be reduced in size, removed from the site, or handled as discussed in Appendix D.

Additional recommendations may be necessary based on exposed conditions during earthwork construction. General grading guidelines are included in Appendix D at the back of this report.

5.2.6 Shrinkage and Bulking

Several factors will impact earthwork balancing on the site, including shrinkage, subsidence, trench spoil from utilities and footing excavations, as well as the accuracy of topography.

Shrinkage and subsidence are primarily dependent upon the degree of compactive effort achieved during construction, depth of fill and underlying site conditions. For planning purposes, a shrinkage factor of up to 5 to 15 percent may be considered for the

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materials requiring removal and recompaction. Subsidence on the order of approximately 0.2 foot may occur. Site balance areas should be available in order to adjust project grades, depending on actual field conditions at the conclusion of site earthwork construction.

5.2.7 Trench Excavations and Backfill

Temporary excavations within the onsite materials should be stable at 1:1 inclinations for short durations during construction, and where cuts do not exceed 10 feet in height. Temporary cuts to a maximum height of 4 feet can be excavated vertically.

Trench excavations should conform to Cal-OSHA regulations. The contractor should have a competent person, per OSHA requirements, on site during construction to observe conditions and to make the appropriate recommendations.

Utility trench backfill should be compacted to at least 90% relative compaction (as determined per ASTM D 1557). Under-slab trenches should also be compacted to project specifications. Where applicable, based on jurisdictional requirements, the top 12 inches of backfill below subgrade for road pavements should be compacted to at least 95 percent relative compaction. Onsite materials may not be suitable for use as bedding material, but should be suitable as backfill provided particles larger than 6± inches are removed.

Compaction should be achieved with a mechanical compaction device. Ponding or jetting of trench backfill is not recommended. If backfill soils have dried out, they should be thoroughly moisture conditioned prior to placement in trenches.

5.3 DESIGN RECOMMENDATIONS

5.3.1 Foundation Design Criteria

Preliminary foundation design criteria, in general conformance with the 2013 CBC, are presented herein. These are typical design criteria and are not intended to supersede the design by the structural engineer.

Based on the results of our recent testing, the anticipated onsite soils near subgrade may be preliminary classified as having an expansion potential "very low" ($0 \leq EI \leq 20$) in accordance with ASTM D 4829. Presented below are foundation design parameters for the proposed single-family residences.

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Foundations should be designed in accordance with the *2013 California Building Code* (CBC).

Additional testing of the soils should be performed during construction to evaluate the as-graded conditions. Final foundation recommendations will be based on the as-graded soils conditions.

MINIMUM DESIGN REQUIREMENTS

DESIGN PARAMETER	0≤EI≤20
Foundation Depth or Minimum Perimeter Beam Depth (inches below lowest adjacent grade)	One-Story Exterior Footing – 12" One-Story Interior Footing – 12" Two-Story Exterior Footing – 18" Two-Story Interior Footing – 18"
Minimum Foundation Width	One-Story - 12" Two-Story – 15"
Minimum Slab Thickness (actual)	4"
Minimum Slab Reinforcing	No. 3 rebar 24" on-center, placed in the middle 1/3 of the slab
Minimum Footing Reinforcement	Two (2) No. 4 Reinforcing Bars- one (1) top and one (1) bottom
Presaturation of Subgrade Soil (Percent of Optimum/Depth in Inches)	100% to a depth of 12 inches

It should be noted that the above recommendations are based on soil support characteristics only. The structural engineer should design the slab and beam reinforcement based on actual loading conditions. If it is desired to utilize post-tensioned foundations, then those recommendations can be provided at the appropriate time.

5.3.1.1 An allowable bearing capacity of 1500 pounds per square foot (psf) may be used for design of continuous and perimeter footings 12 inches deep and 12 inches wide, and pad footings 24 inches square and 12 inches deep. This value may be increased by 200 pounds per square foot for each additional 12 inches in depth and 100 pounds per square foot for each additional 12 inches in width to a maximum value of 2000 psf. Additionally, an increase of one-third may be applied when considering short-term live loads (e.g. seismic and wind loads).

5.3.1.2 Based on our experience in the area, foundations may experience a total settlement of approximately one (1) inch as a result of structural loading. Differential settlement of up to one-half of the total settlement over a horizontal distance of 40 feet could result from structural loading. The foundation engineer should incorporate these settlement estimates from the structural loads into the design of the slab, as appropriate.

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5.3.1.3 The passive earth pressure may be computed as an equivalent fluid having a density of 150 psf per foot of depth, to a maximum earth pressure of 2,000 psf for footings founded on engineered fill. A coefficient of friction between soil and concrete of 0.30 may be used with dead load forces. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third.

5.3.1.4 A grade beam, a minimum of 12 inches wide and 12 inches deep, should be utilized across large entrances. The base of the grade beam should be at the same elevation as the bottom of the adjoining footings.

5.3.1.5 A moisture and vapor retarding system should be placed below slabs-on-grade where moisture migration through the slab is undesirable. Guidelines for these are provided in the 2013 California Green Building Standards Code (CALGreen) Section 4.505.2 and the 2013 CBC Section 1907.1 It should be realized that the effectiveness of the vapor retarding membrane can be adversely impacted as a result of construction related punctures (e.g. stake penetrations, tears, punctures from walking on the aggregate layer, etc.). These occurrences should be limited as much as possible during construction.

Thicker membranes are generally more resistant to accidental puncture that thinner ones. Products specifically designed for use as moisture/vapor retarders may also be more puncture resistant. Although the CBC specifies a 6 mil vapor retarder membrane, it is GeoTek's opinion that a minimum 10 mil membrane with joints properly overlapped and sealed should be considered, unless otherwise specified by the slab design professional.

Moisture and vapor retarding systems are intended to provide a certain level of resistance to vapor and moisture transmission through the concrete, but do not eliminate it. The acceptable level of moisture transmission through the slab is to a large extent based on the type of flooring used and environmental conditions. Ultimately, the vapor retarding system should be comprised of suitable elements to limit migration of water and reduce transmission of water vapor through the slab to acceptable levels. The selected elements should have suitable properties (i.e. thickness, composition, strength and permeance) to achieve the desired performance level. Consideration should be given to consulting with an individual possessing specific expertise in this area for additional evaluation.

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5.3.1.6 We recommend that control joints be placed in two directions spaced approximately 24 to 36 times the thickness of the slab in inches. These joints are a widely accepted means to control cracks and should be reviewed by the project structural engineer.

5.3.2 Miscellaneous Foundation Recommendations

5.3.2.1 To minimize moisture penetration beneath the slab on grade areas, utility trenches should be backfilled with engineered fill, lean concrete or concrete slurry where they intercept the perimeter footing or thickened slab edge.

5.3.2.2 Isolated exterior footings should be tied back to the main foundation system in two orthogonal directions.

5.3.2.3 Soils from the footing excavations should not be placed in the slab-on-grade areas unless properly compacted and tested. The excavations should be free of loose/sloughed materials and be neatly trimmed at the time of concrete placement.

5.3.2.4 Unsuitable soil removals along the property lines will likely be restricted due to adjacent improvements. Special considerations will be required for foundation elements in these areas. Such considerations may include deepening of foundations, reduced bearing capacity, or other measures. This issue should be further evaluated once site plans become available.

5.3.3 Foundation Set Backs

Where applicable, the following setbacks should apply to all foundations. Any improvements not conforming to these setbacks may be subject to lateral movements and/or differential settlements:

- The outside bottom edge of all footings should be set back a minimum of H/3 (where H is the slope height) from the face of any descending slope. The setback should be at least 7 feet and need not exceed 40 feet.
- The bottom of all footings for structures near retaining walls should be deepened so as to extend below a 1:1 projection upward from the bottom inside edge of the wall stem. This applies to the existing retaining walls along the perimeter, if they are to remain.
- The bottom of any existing foundations for structures should be deepened so as to extend below a 1:1 projection upward from the bottom of the nearest excavation.

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5.3.4 Soil Corrosivity

The soil resistivity at this site was tested in the laboratory on a sample collected during the field investigation. The results of the testing indicate that the onsite soils are considered "moderately corrosive" to buried metal in accordance with current standards used by corrosion engineers. These characteristics are considered typical of soils commonly found in southern California. We recommend that a corrosion engineer be consulted to provide recommendations for protection of buried metal at this site.

5.3.5 Soil Sulfate Content

The sulfate content was determined in the laboratory for onsite soil sample. The results indicate that the water soluble sulfate range is less than 0.1 percent by weight, which is considered "not applicable" (negligible) as per Table 4.2.1 of ACI 318.

5.4 RETAINING WALL DESIGN AND CONSTRUCTION

5.4.1 General Design Criteria

Recommendations presented herein may apply to typical masonry or concrete vertical retaining walls to a maximum height of 10 feet. Additional review and recommendations should be requested for higher walls.

Retaining wall foundations embedded a minimum of 18 inches into engineered fill or dense formational materials should be designed using an allowable bearing capacity of 1500 psf. An increase of one-third may be applied when considering short-term live loads (e.g. seismic and wind loads). The passive earth pressure may be computed as an equivalent fluid having a density of 200 psf per foot of depth, to a maximum earth pressure of 2,000 psf. A coefficient of friction between soil and concrete of 0.25 may be used with dead load forces. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third.

An equivalent fluid pressure approach may be used to compute the horizontal active pressure against the wall. The appropriate fluid unit weights are given in the table below for specific slope gradients of retained materials.

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Surface Slope of Retained Materials (H:V)	Equivalent Fluid Pressure (PCF) Select Backfill*
Level	35
2:1	55

*Select backfill should consist of imported sand other approved materials with an SE>30 and an EI≤20.

The above equivalent fluid weights do not include other superimposed loading conditions such as expansive soil, vehicular traffic, structures, seismic conditions or adverse geologic conditions.

Additional lateral forces can be induced on retaining walls during an earthquake. For level backfill and a Site Class "D", the minimum earthquake-induced force (F_{eq}) should be $10H^2$ (lbs/linear foot of wall) for cantilever walls. This force can be assumed to act at a distance of 0.6H above the base of the wall, where "H" is the height of the retaining wall measured from the base of the footing (in feet).

5.4.2 Wall Backfill and Drainage

Wall backfill should include a minimum one (1) foot wide section of ¾ to 1-inch clean crushed rock (or approved equivalent). The rock should be placed immediately adjacent to the back of wall and extend up from the backdrain to within approximately 12 inches of finish grade. The upper 12 inches should consist of compacted onsite materials. If the walls are designed using the "select" backfill design parameters, then the "select" materials shall be placed within the active zone as defined by a 1:1 (H:V) projection from the back of the retaining wall footing up to the retained surface behind the wall. Presence of other materials might necessitate revision to the parameters provided and modification of wall designs.

The backfill materials should be placed in lifts no greater than eight (8) inches in thickness and compacted at 90% relative compaction in accordance with ASTM Test Method D 1557. Proper surface drainage needs to be provided and maintained. Water should not be allowed to pond behind retaining walls. Waterproofing of site walls should be performed where moisture migration through the wall is undesirable.

Retaining walls should be provided with an adequate pipe and gravel back drain system to reduce the potential for hydrostatic pressures to develop. A 4-inch diameter perforated collector pipe (Schedule 40 PVC, or approved equivalent) in a minimum of one cubic foot per lineal foot of 3/8 to one inch clean crushed rock or equivalent, wrapped in filter fabric should be placed near the bottom of the backfill and be directed (via a solid outlet pipe) to an

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appropriate disposal area. Maximum horizontal spacing between drain outlets should be 100 feet.

Walls from two (2) to four (4) feet in height may be drained using localized gravel packs behind weep holes at 10 feet maximum spacing (e.g. approximately 1.5 cubic feet of gravel in a woven plastic bag). Weep holes should be provided or the head joints omitted in the first course of block extended above the ground surface. However, nuisance water may still collect in front of the wall.

Drain outlets should be maintained over the life of the project and should not be obstructed or plugged by adjacent improvements.

5.4.3 Restrained Retaining Walls

Any retaining wall that will be restrained prior to placing backfill or walls that have male or reentrant corners should be designed for at-rest soil conditions using an equivalent fluid pressure of 60 pcf (select backfill), plus any applicable surcharge loading. For areas having male or reentrant corners, the restrained wall design should extend a minimum distance equal to twice the height of the wall laterally from the corner, or as otherwise determined by the structural engineer.

5.5 CONCRETE CONSTRUCTION

5.5.1 General

Concrete construction should follow the 2013 CBC and ACI guidelines regarding design, mix placement and curing of the concrete. If desired, we could provide quality control testing of the concrete during construction.

5.5.2 Concrete Mix Design

As indicated in Section 5.3.5, no special concrete mix design is required by Code to resist sulfate attack based on the existing test results. However, additional testing should be performed during grading so that specific recommendations can be formulated based on the as-graded conditions.

5.5.3 Concrete Flatwork

Exterior concrete flatwork (patios, walkways, driveways, etc.) is often some of the most visible aspects of site development. They are typically given the least level of quality control, being considered "non-structural" components. Cracking of these features is fairly common due to

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

various factors. While cracking is not usually detrimental, it is unsightly. We suggest that the same standards of care be applied to these features as to the structure itself.

Flatwork may consist of 4 inch thick concrete and the use of reinforcement is suggested. The project structural engineer should provide final design recommendations.

5.5.4 Concrete Performance

Concrete cracks should be expected. These cracks can vary from sizes that are essentially unnoticeable to more than 1/8 inch in width. Most cracks in concrete while unsightly do not significantly impact long-term performance. While it is possible to take measures (proper concrete mix, placement, curing, control joints, etc.) to reduce the extent and size of cracks that occur, some cracking will occur despite the best efforts to minimize it. Concrete undergoes chemical processes that are dependent on a wide range of variables, which are difficult, at best, to control. Concrete, while seemingly a stable material, also is subject to internal expansion and contraction due to external changes over time.

One of the simplest means to control cracking is to provide weakened control joints for cracking to occur along. These do not prevent cracks from developing; they simply provide a relief point for the stresses that develop. These joints are a widely accepted means to control cracks but are not always effective. Control joints are more effective the more closely spaced they are. GeoTek suggests that control joints be placed in two directions and located a distance apart roughly equal to 24 to 36 times the slab thickness.

5.6 INFILTRATION STUDY

Percolation testing was performed in a test hole located in the southeastern portion of the site The infiltration testing was completed in general conformance with ASTM D 3385 using a double ring infiltrometer device in the excavation. A representative from our firm conducted the actual infiltration testing.

The slowest/most conservative infiltration rate of four (4) inches per hour was measured for the test hole, after the infiltration rate had generally stabilized. A copy of the infiltration test field data is included in Appendix C.

Over the lifetime of the disposal area, the infiltration rates may be affected by silt build up and biological activities, as well as local variations in near surface soil conditions. Additionally, both remedial and design cut and/or fill grading will be required to construct the proposed improvements. Consideration should be given to re-evaluating the site infiltration rates at the completion of grading.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

5.7 POST CONSTRUCTION CONSIDERATIONS

5.7.1 Landscape Maintenance and Planting

Water has been shown to weaken the inherent strength of soil, and slope stability is significantly reduced by overly wet conditions. Positive surface drainage away from graded slopes should be maintained and only the amount of irrigation necessary to sustain plant life should be provided for planted slopes. Controlling surface drainage and runoff, and maintaining a suitable vegetation cover can minimize erosion. Plants selected for landscaping should be lightweight, deep-rooted types that require little water and are capable of surviving the prevailing climate.

Overwatering should be avoided. The soils should be maintained in a solid to semi-solid state as defined by the materials Atterberg Limits. Care should be taken when adding soil amendments to avoid excessive watering. Leaching as a method of soil preparation prior to planting is not recommended. An abatement program to control ground-burrowing rodents should be implemented and maintained. This is critical as burrowing rodents can decreased the long-term performance of slopes.

It is common for planting to be placed adjacent to structures in planter or lawn areas. This will result in the introduction of water into the ground adjacent to the foundation. This type of landscaping should be avoided. If used, then extreme care should be exercised with regard to the irrigation and drainage in these areas. Waterproofing of the foundation and/or subdrains may be warranted and advisable. We could discuss these issues, if desired, when plans are made available.

5.7.2 Drainage

The need to maintain proper surface drainage and subsurface systems cannot be overly emphasized. Positive site drainage should be maintained at all times. Drainage should not flow uncontrolled down any descending slope. Water should be directed away from foundations and not allowed to pond or seep into the ground. Pad drainage should be directed toward approved area(s) and not be blocked by other improvements.

It is the owner's responsibility to maintain and clean drainage devices on or contiguous to their lot. In order to be effective, maintenance should be conducted on a regular and routine schedule and necessary corrections made prior to each rainy season.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

5.8 PLAN REVIEW AND CONSTRUCTION OBSERVATIONS

We recommend that site grading, specifications, retaining wall plans and foundation plans be reviewed by this office prior to construction to check for conformance with the recommendations of this report. Additional recommendations may be necessary based on these reviews. We also recommend that GeoTek representatives be present during site grading and foundation construction to check for proper implementation of the geotechnical recommendations. The owner/developer should have GeoTek's representative perform at least the following duties:

- Observe site clearing and grubbing operations for proper removal of unsuitable materials.
- Observe and test bottom of removals prior to fill placement.
- Evaluate the suitability of on-site and import materials for fill placement, and collect soil samples for laboratory testing when necessary.
- Observe the fill for uniformity during placement including utility trenches.
- Test the fill for field density and relative compaction.
- Observe and probe foundation excavations to confirm suitability of bearing materials.

If requested, a construction observation and compaction report can be provided by GeoTek, which can comply with the requirements of the governmental agencies having jurisdiction over the project. We recommend that these agencies be notified prior to commencement of construction so that necessary grading permits can be obtained.

6. LIMITATIONS

It is the intent of this report to aid in the design and construction of the proposed development. Implementation of the advice presented in Section 5 of this report is intended to reduce risk associated with construction projects. The professional opinions and geotechnical advice contained in this report are not intended to imply total performance of the project or guarantee that unusual or variable conditions will not be discovered during or after construction.

The scope of our evaluation is limited to the area explored that is shown on the Boring Location Map (Figure 2). This evaluation does not and should in no way be construed to encompass any areas beyond the specific area of proposed construction as indicated to us by the client. Further, no evaluation of any existing site improvements is included. The scope is

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

based on our understanding of the project and the client's needs, our proposal (Proposal No. P3-1201213) dated December 5, 2013 and geotechnical engineering standards normally used on similar projects in this region.

The materials observed on the project site appear to be representative of the area; however, soil and bedrock materials vary in character between excavations and natural outcrops or conditions exposed during site construction. Site conditions may vary due to seasonal changes or other factors. GeoTek, Inc. assumes no responsibility or liability for work, testing or recommendations performed or provided by others.

Since our recommendations are based on the site conditions observed and encountered, and laboratory testing, our conclusions and recommendations are professional opinions that are limited to the extent of the available data. Observations during construction are important to allow for any change in recommendations found to be warranted. These opinions have been derived in accordance with current standards of practice and no warranty is expressed or implied. Standards of practice are subject to change with time.

7. SELECTED REFERENCES

Bryant, W.A., and Hart, E.W., 2007, Fault Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zones Maps, California Geological Survey: Special Publication 42.

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_____, 1998, Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada: International Conference of Building Officials.

_____, 2008, "Guidelines for Evaluating and Mitigating Seismic Hazards in California," Special Publication 117A.

Dibblee, Jr., T.W., 2003, "Geologic Map of the Sunnymead/South ½ of Redlands Quadrangles, San Bernardino and Riverside Counties, California," Dibblee Geology Center Map #DF-110, map scale 1:24000.

GeoTek, Inc., In-house proprietary information.

Seismic Design Values for Buildings (http://geohazards.usgs.gov/designmaps/us/application.php).

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Frontier Enterprises
APN 478-080-013
City of Moreno Valley
Riverside County, California

GeoTek Project No. 1132-CR3

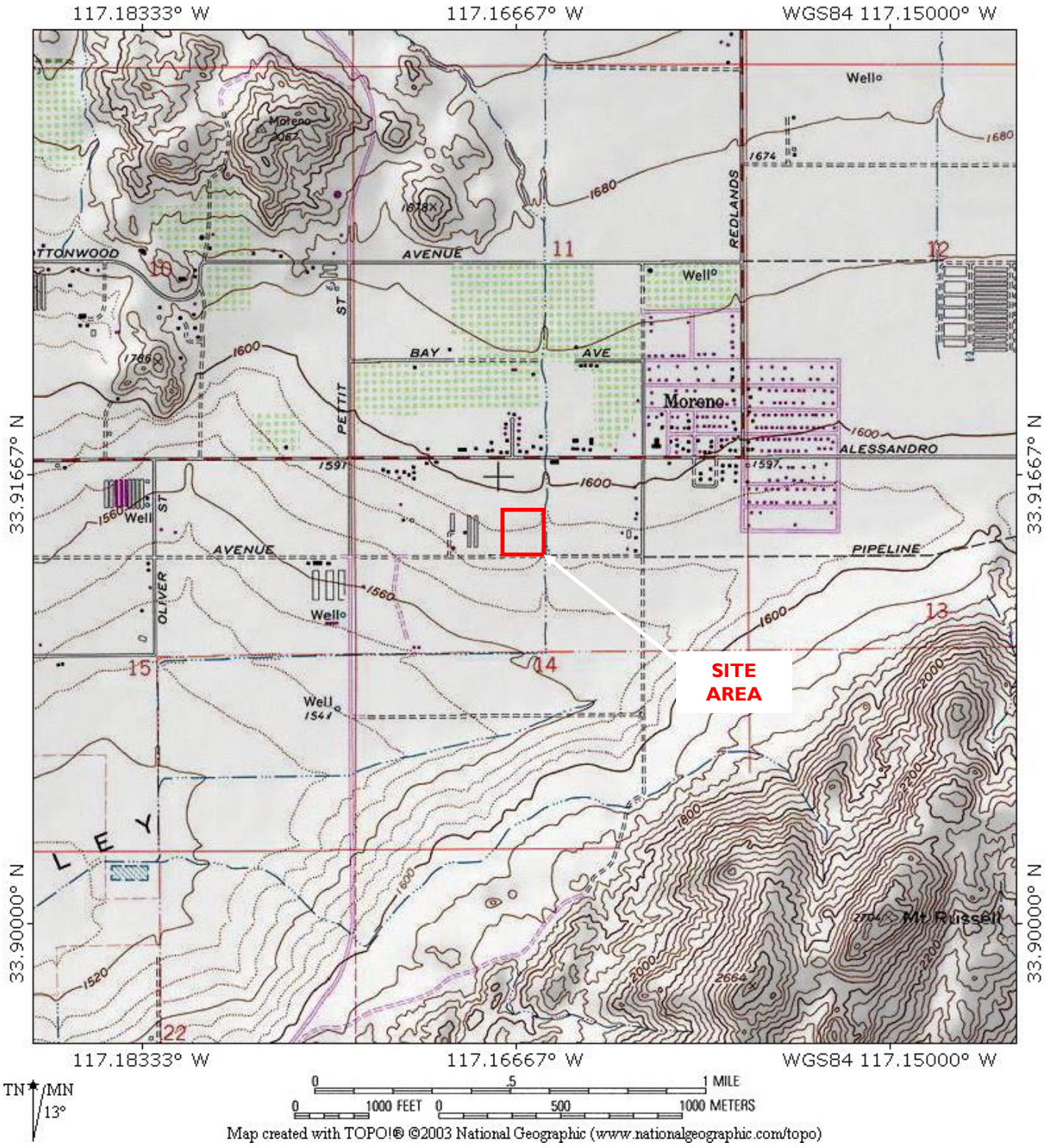
N

Figure 1

Site Location Map

GEOTEK

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



Frontier Enterprises
APN 478-080-013
City of Moreno Valley
Riverside County, California

GeoTek Project No. 1132-CR3

Figure 2

General Site Topography Map

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Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Frontier Enterprises
APN 478-080-013
City of Moreno Valley
County of Riverside, California

GeoTek Project No. 1132-CR3

N

Figure 3

Boring Location Map

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Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX A

LOGS OF EXPLORATORY BORINGS

APN 478-080-013
City of Moreno Valley, California
Project No. 1132-CR3

GEOTEK

A - FIELD TESTING AND SAMPLING PROCEDURES

The Modified Split-Barrel Sampler (Ring)

The Ring sampler is driven into the ground in accordance with ASTM Test Method D 3550. The sampler, with an external diameter of 3.0 inches, is lined with 1-inch long, thin brass rings with inside diameters of approximately 2.4 inches. The sampler is typically driven into the ground 12 or 18 inches with a 140-pound hammer free falling from a height of 30 inches. Blow counts are recorded for every 6 inches of penetration as indicated on the log of boring. The samples are removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

Bulk Samples (Large)

These samples are normally large bags of representative earth materials over 20 pounds in weight collected from the field by means of hand digging or exploratory cuttings.

B - BORING LOG LEGEND

The following abbreviations and symbols often appear in the classification and description of soil and rock on the logs of borings:

SOILS

USCS	Unified Soil Classification System
f-c	Fine to coarse
f-m	Fine to medium

GEOLOGIC

B: Attitudes	Bedding: strike/dip
J: Attitudes	Joint: strike/dip
C:	Contact line
……..	Dashed line denotes USCS material change
_____	Solid Line denotes unit / formational change
_____	Thick solid line denotes end of boring

(Additional denotations and symbols are provided on the log of boring)

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Frontier Enterprises	**DRILLER:**	2R Drilling	**LOGGED BY:**	AMS
PROJECT NAME:	Quincy Street/Brodiaea Avenue	**DRILL METHOD:**	8" Hollow Stem	**OPERATOR:**	Jeff
PROJECT NO.:	1132-CR3	**HAMMER:**	Auto 140#/30"	**RIG TYPE:**	CME 75
LOCATION:	See Boring Location Map			**DATE:**	1/22/2014

BORING NO.: B-1

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Alluvium:			SH, MD, EI, SR
	Ring	2 8 8	B1-1	ML	2': Fine sandy SILT, light gray brown, dry, soft, porous	5.7	88.2	
5	Ring	4 7 9	B1-2		5': SAME	7.6	85.5	
10	Ring	5 9 12	B1-3		10': SAME, firm to stiff, no visible porosity	7.5	87.6	HC
15	Ring	24 50	B1-4	SC	15': Clayey silty f-c SAND, red brown, slightly moist, dense			
20	Ring	18 32 50-5"	B1-5	SM	20': Silty fine SAND, light gray brown, slightly moist, dense			
25								
30	Ring	11 14 21	B1-6		30': SAME			

LEGEND

Sample type: Ring, SPT, Small Bulk, Large Bulk, No Recovery, Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Frontier Enterprises	**DRILLER:**	2R Drilling	**LOGGED BY:**	AMS
PROJECT NAME:	Quincy Street/Brodiaea Avenue	**DRILL METHOD:**	8" Hollow Stem	**OPERATOR:**	Jeff
PROJECT NO.:	1132-CR3	**HAMMER:**	Auto 140#/30"	**RIG TYPE:**	CME 75
LOCATION:	See Boring Location Map			**DATE:**	1/22/2014

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	BORING NO.: B-1 (continued) / MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Alluvium (continued)			
40	■	18 23 36	B1-7	SM	40': Silty fine SAND, light gray brown, slightly moist, dense			
50	■	20 30 50	B1-8	SM	50': Silty fine SAND, red brown, slightly moist, dense			
					BORING TERMINATED AT 51.5 FEET No groundwater encountered Boring backfilled with cuttings			

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Frontier Enterprises	**DRILLER:**	2R Drilling	**LOGGED BY:**	AMS
PROJECT NAME:	Quincy Street/Brodiaea Avenue	**DRILL METHOD:**	8" Hollow Stem	**OPERATOR:**	Jeff
PROJECT NO.:	1132-CR3	**HAMMER:**	Auto 140#/30"	**RIG TYPE:**	CME 75
LOCATION:	See Boring Location Map			**DATE:**	1/22/2014

BORING NO.: B-2

Depth (ft)	Sample Type	Blows/ 6 in	Sample Number	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Water Content (%)	Dry Density (pcf)	Others
					Alluvium:			
	■	6 7 9	B2-1	ML	2': Fine sandy SILT, light gray brown, dry, soft	5.1	101.1	
5	■	7 7 9	B2-2		5': SAME, slightly moist, firm	7.4	108.6	
10	■	5 7 8	B2-3	SM	10': Silty fine SAND, light gray brown, slightly moist, medium dense	7.1	101.2	
15	■	9 12 21	B2-4	SC	15': Silty clayey SAND, red brown, slightly moist, dense			
20	■	23 50	B2-5		20': SAME			
					BORING TERMINATED AT 21 FEET No groundwater encountered Boring backfilled with cuttings			
25								
30								

LEGEND

Sample type: ■ ---Ring ■ ---SPT ▨ ---Small Bulk ▩ ---Large Bulk □ ---No Recovery ▽ ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Frontier Enterprises	**DRILLER:**	2R Drilling	**LOGGED BY:**	AMS
PROJECT NAME:	Quincy Street/Brodiaea Avenue	**DRILL METHOD:**	8" Hollow Stem	**OPERATOR:**	Jeff
PROJECT NO.:	1132-CR3	**HAMMER:**	Auto 140#/30"	**RIG TYPE:**	CME 75
LOCATION:	See Boring Location Map			**DATE:**	1/22/2014

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	BORING NO.: B-3 / MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Alluvium:			
	Ring	6 5 7	B3-1	ML	2': Fine sandy SILT, light gray brown, dry, soft	7.4	102.2	
5	Ring	4 6 6	B3-2	SM	5': Silty fine SAND, light gray brown, slightly moist to moist, medium dense	12.4	105.9	
10	Ring	3 6 7	B3-3	SM	10': SAME	9.7	106.2	
15	Ring	8 18 27	B3-4	SC	15': Silty clayey SAND, red brown, slightly moist, dense			
20	Ring	17 25 28	B3-5	SM	20': Silty f-c SAND, light red brown to light brown, slightly moist, dense			
25					**BORING TERMINATED AT 21.5 FEET** No groundwater encountered Boring backfilled with cuttings			
30								

LEGEND

Sample type: Ring; SPT; Small Bulk; Large Bulk; No Recovery; Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Frontier Enterprises	**DRILLER:**	2R Drilling	**LOGGED BY:**	AMS
PROJECT NAME:	Quincy Street/Brodiaea Avenue	**DRILL METHOD:**	8" Hollow Stem	**OPERATOR:**	Jeff
PROJECT NO.:	1132-CR3	**HAMMER:**	Auto 140#/30"	**RIG TYPE:**	CME 75
LOCATION:	See Boring Location Map			**DATE:**	1/22/2014

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	BORING NO.: B-4 / MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Alluvium:			
	■	5 8 10	B4-1	SM	2': Silty fine SAND, light gray brown, slightly moist, medium dense	6.7	101.5	
5	■	6 7 8	B4-2		5': SAME	5.2	106.7	HC
10	■	6 8 10	B4-3		10': SAME	8.7	108.0	
15	■	7 15 26	B4-4	SC	15': Silty clayey SAND, red brown, slightly moist, dense			
20	■	12 20 38	B4-5	SM	20': Silty f-c SAND, light yellow brown, slightly moist, dense			
25					**BORING TERMINATED AT 21.5 FEET** No groundwater encountered Boring backfilled with cuttings			
30								

LEGEND

Sample type: ■ ---Ring ▮ ---SPT ▨ ---Small Bulk ▩ ---Large Bulk □ ---No Recovery ▽ ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX B

RESULTS OF LABORATORY TESTING

APN 478-080-013
City of Moreno Valley, California
Project No. 1132-CR3

GEOTEK

SUMMARY OF LABORATORY TESTING

Classification

Soils were classified visually in general accordance to the Unified Soil Classification System (ASTM Test Method D 2487). The soil classifications are shown on the logs of exploratory test borings in Appendix A.

Moisture-Density Relations

Laboratory testing was performed on a selected sample collected during the recent subsurface exploration. The laboratory maximum dry density and optimum moisture content for the sample tested was determined in general accordance with test method ASTM Test Method D 1557. The results are included herein.

Expansion Index

Expansion Index testing was performed in general accordance with ASTM Test Method D 4829. The test results are included herein.

Consolidation

Consolidation testing was performed on selected samples of the site soils according to ASTM Test Method D 2435. The results of this testing is presented herein.

Direct Shear Test

Shear testing was performed on a remolded sample of the site soil materials in general accordance with ASTM Test Method D 3080. The test results are included herein.

Sulfate Content, Resistivity and Chloride Content

Testing to determine the water-soluble sulfate content was performed by others in general accordance with California Test No. 417. Resistivity testing was completed by others in general accordance with California Test 643. Testing to determine the chloride content was performed by others in general accordance with California Test No. 422. The results of the testing are included herein.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

GEOTEK

MOISTURE/DENSITY RELATIONSHIP

Client: Frontier Enterprises
Project: Quincy/Brodiaea
Location: Moreno Valley
Material Type: Brown Sandy Silt
Material Supplier:
Material Source:
Sample Location: B-1 @ 0-5'

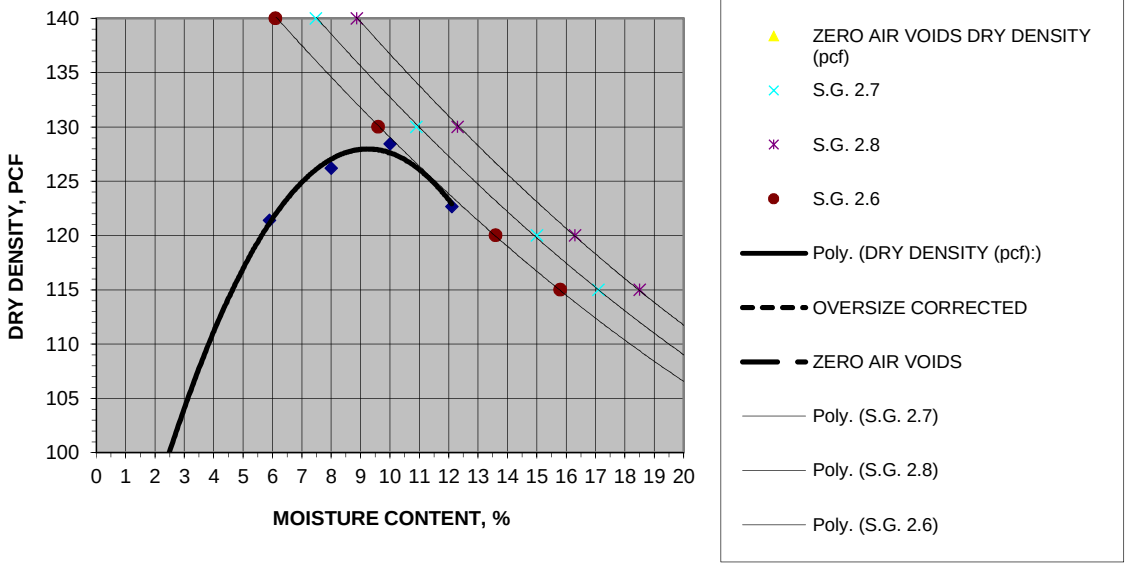
Job No.: 1132-CR3
Lab No.: Corona

Sampled By: AMS
Received By: DI
Tested By: DI
Reviewed By: AMS

Date Sampled: 22-Jan-14
Date Received: 22-Jan-14
Date Tested: 30-Jan-14
Date Reviewed: 11-Feb-14

Test Procedure: ASTM 1557 **Method:** A
Oversized Material (%): 3.2 **Correction Required:** [ ] yes [x] no

MOISTURE/DENSITY RELATIONSHIP CURVE



MOISTURE DENSITY RELATIONSHIP VALUES

Maximum Dry Density, pcf	127.5	**@ Optimum Moisture, %**	9.5
Corrected Maximum Dry Density, pcf		**@ Optimum Moisture, %**	

MATERIAL DESCRIPTION

Grain Size Distribution:

	% Gravel (retained on No. 4)
	% Sand (Passing No. 4, Retained on No. 200)
	% Silt and Clay (Passing No. 200)

Atterberg Limits:

	Liquid Limit, %
	Plastic Limit, %
	Plasticity Index, %

Classification:
Unified Soils Classification:
AASHTO Soils Classification:

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

GEOTEK

EXPANSION INDEX TEST

(ASTM D4829)

Client:	1132-CR3	***Tested/ Checked By:***	DI Lab No Corona
Project Number:	Frontier Enterprises	***Date Tested:***	2/4/2014
Project Location:	Moreno Valley	***Sample Source:***	B-1 @ 0-5'
		Sample Description:	Brown Silty Sand

Ring #:_____ Ring Dia. : 4.01" Ring Ht.1"

Loading weight: 5516. grams

DENSITY DETERMINATION

A	Weight of compacted sample & ring (gm)	767.1
B	Weight of ring (gm)	363.8
C	Net weight of sample (gm)	403.3
D	Wet Density, lb / ft3 (C*0.3016)	121.6
E	Dry Density, lb / ft3 (D/1.F)	**112.1**

SATURATION DETERMINATION

F	Moisture Content, %	8.5
G	Specific Gravity, assumed	2.6
H	Unit Wt. of Water @ 20°C, (pcf)	62.3
I	% Saturation	**50**

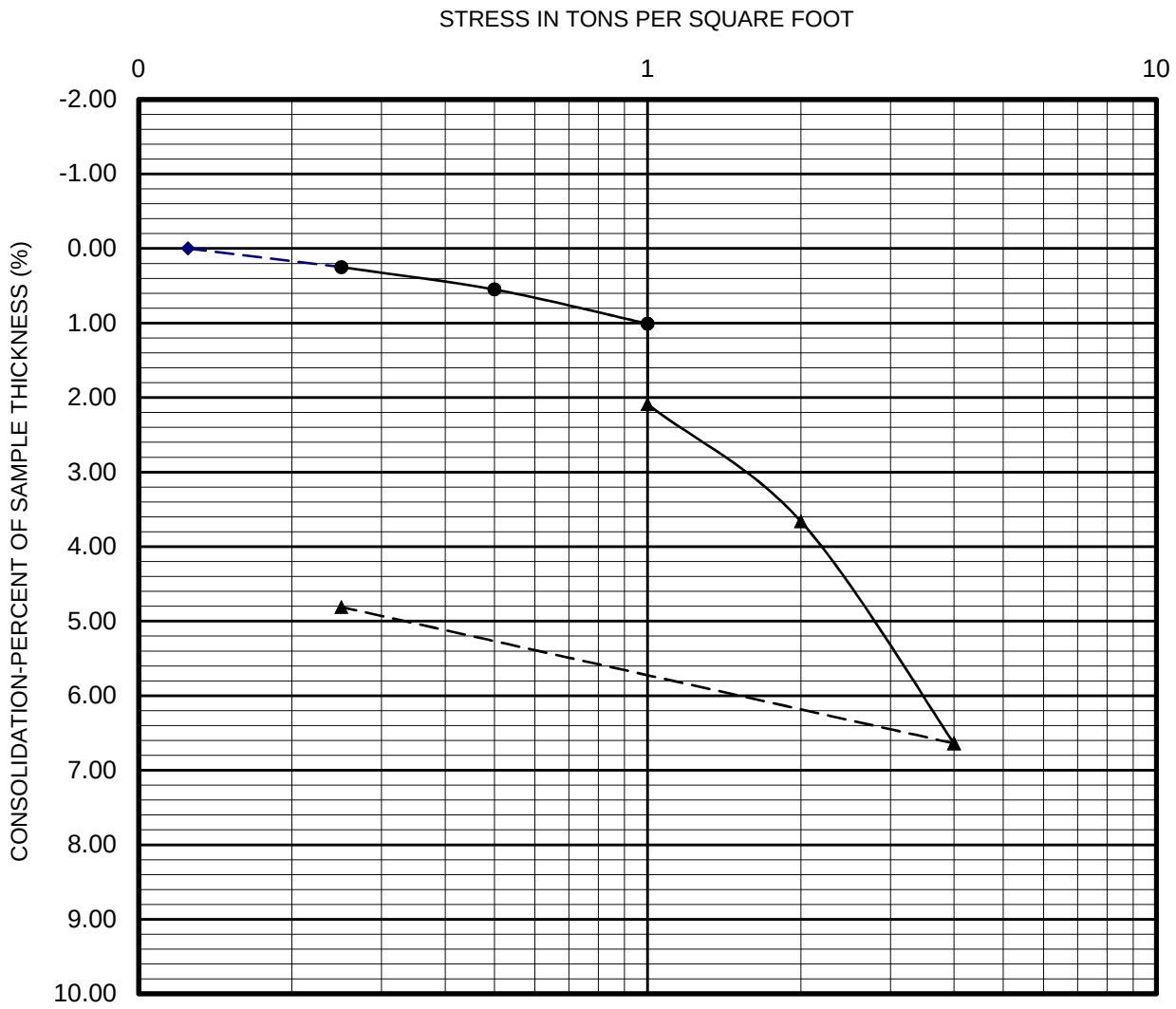
READINGS

DATE	TIME	READING	
2/4/2014	11:00	0.1790	Initial
	11:10	0.1790	10 min/Dry
	11:11	0.1790	1 min/Wet
	11:16	0.1820	5 min/Wet
2/5/2014	4:07	0.1860	Random
	5:12	0.1860	Final

FINAL MOISTURE

Weight of wet sample & tare	Weight of dry sample & tare	Tare	% Moisture
402.0	344.8		**16.6%**

EXPANSION INDEX = 7



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

GEOTEK

CHECKED BY: AMS	Lab: DI
PROJECT NO.: 1132-CR3	02/14

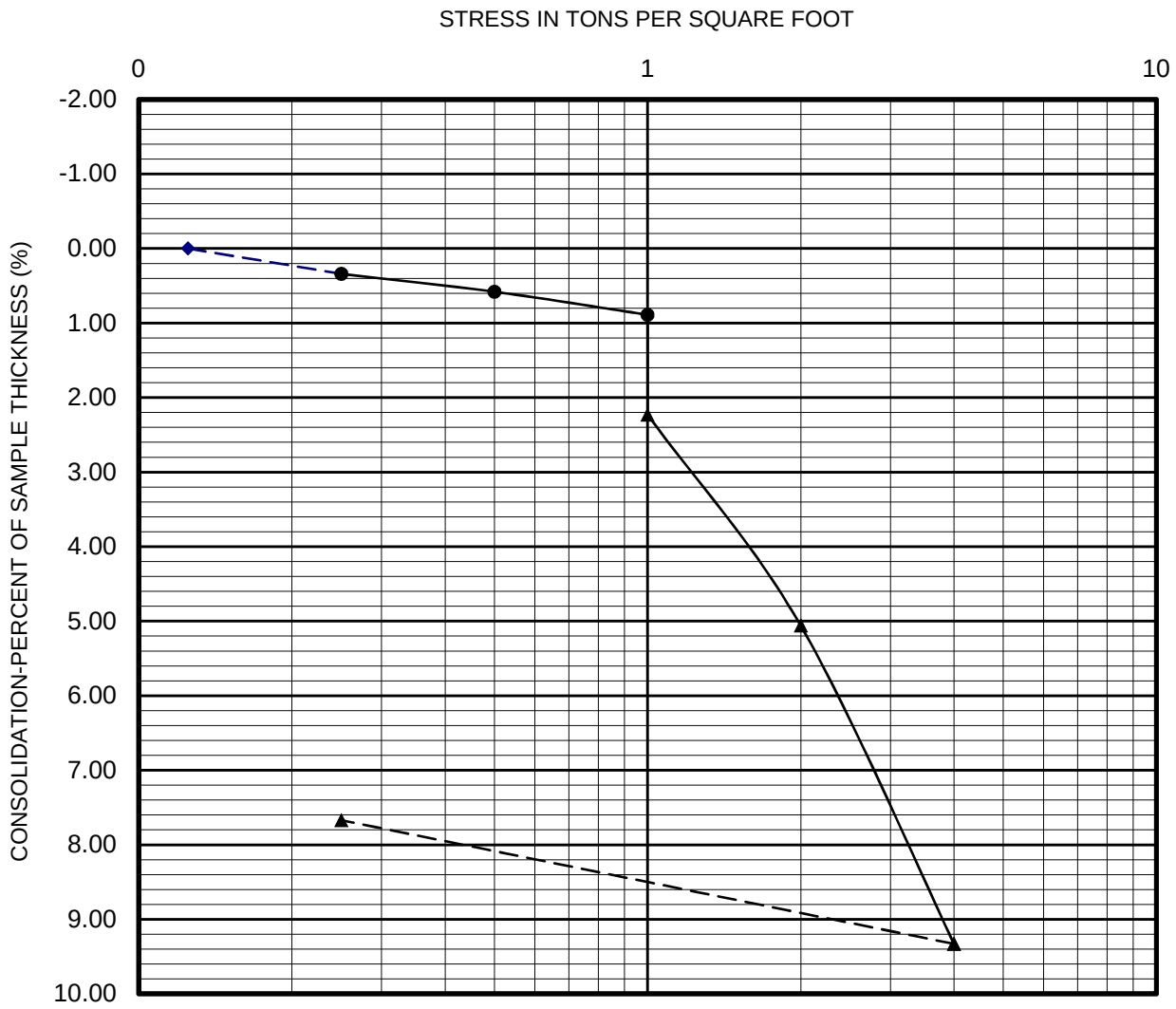
CONSOLIDATION REPORT

Sample: B-1 @ 10'

Quincy Street/Brodiaea Avenue
Moreno Valley, California

Plate C-1

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

GEOTEK

CHECKED BY: AMS	Lab: DI
PROJECT NO.: 1132-CR3	02/14

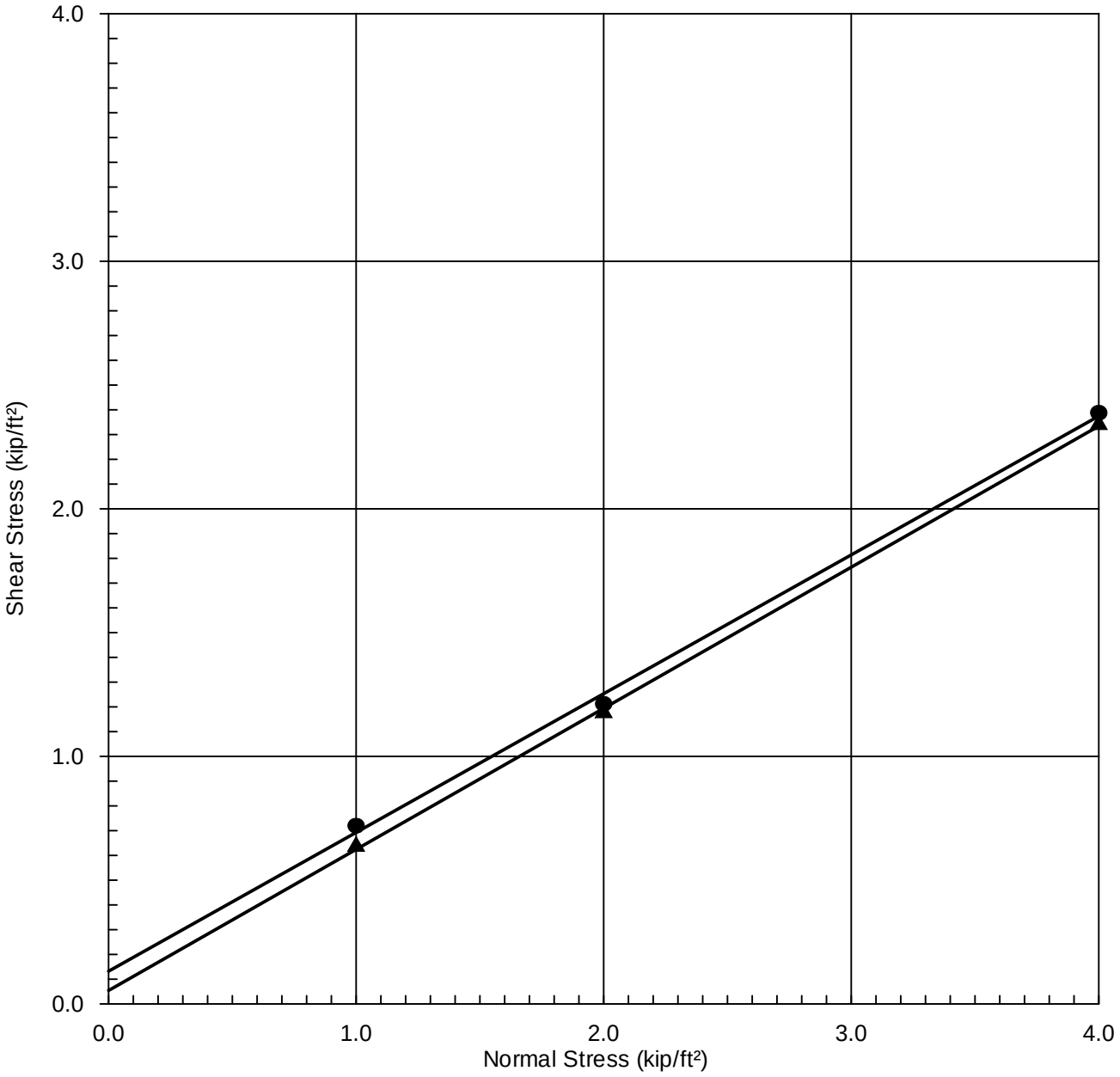
CONSOLIDATION REPORT

Sample: B-4 @ 5'

Quincy Street/Brodiaea Avenue
Moreno Valley, California

Plate C-2

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



Boring No. : B-1
Depth (ft.) : 0 - 5
Sample : Remolded
Moisture : Saturated

ULTIMATE STRENGTH PARAMETERS

Cohesion(C) = 50 psf
Friction (ϕ) = 29.5°

PEAK STRENGTH PARAMETERS

Cohesion(C) = 130 psf
Friction (ϕ) = 29°

Project Name: Geotek (1132-CR3)

Project No.: 10-2700

TGR
Geotechnical
Environmental
Hydrogeology
Material Testing
Construction Inspection

TGR GEOTECHNICAL
3037 S. HARBOR BLVD
SANTA ANA, CA 92704
P 714.641.7189 F 714.641.7190
WWW.TGRGEOTECH.COM

DIRECT SHEAR TEST RESULTS
(ASTM D 3080)

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Cal Land Engineering, Inc.
dba Quartech Consultants
Geotechnical, Environmental, and Civil Engineering

GeoTek, Inc.
710 East Parkridge Avenue, Suite 105
Corona, California 92879

Client: Frontier
W.O.: 1132-CR3
Project: Moreno Valley

Date: January 31, 2014
QCI Project No.: 14-167-01N
Summarized by: KA

Corrosivity Test Results

Sample ID	Depth (Feet)	pH CT-532 (643)	Chloride CT-422 (ppm)	Sulfate CT-417 (% By Weight)	Resistivity CT-532 (643) (ohm-cm)
B-1	0-5’	8.44	106	0.0025	2,950

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX C

INFILTRATION TEST DATA

APN 478-080-013
City of Moreno Valley, California
Project No. 1132-CR3

GEOTEK

SE CORNER BRODIAEA AVENUE AT QUINCY STREET

1132-CR3 FRONTIER

DOUBLE RING INFILTROMETER TEST DATA

Project Name and Test Location:		Liquid Used:	TAP WATER
Trench No.:	4	Ground Temperature:	
Tested by:	DVG	Liquid Level Mainted by Using:	
Date of Testing:	2/6/14	Penetration of Rings Into Soil (in.):	4 6
Water Table Depth:		USCS Classification:	

TRIAL NO.	START/END	TIME	ELAPSED TIME (Min.)	FLOW READINGS: INNER RING (in.)	FLOW READINGS: RING FLOW (water added in ml)	FLOW READINGS: ANNULAR READING (in.)	FLOW READINGS: SPACE FLOW (water added in ml)	LIQUID TEMP. (F)	INFILTRATION RATE: INNER (in./hr.)	INFILTRATION RATE: ANNULAR (in./hr.)	REMARKS
1	S	5:17	0:00	10.0		12.0		72			
	E	5:27	10:00	9.0	1853	11.0	5560		6.0	6.0	
2	S	5:29	0:00	10.0		12.0					
	E	5:39	10:15	9.0	1853	11.0	5560		5.9	5.9	
3	S	5:41	0:00	10.0		12.0					
	E	5:52	10:30	9.0	1853	11.0	5560		5.7	5.7	
4	S	5:54	0:00	10.0		12.0					
	E	6:05	10:45	9.0	1853	11.0	5560		5.6	5.6	
5	S	6:07	0:00	10.0		12.0					
	E	6:18	11:00	9.0	1853	11.0	5560		5.5	5.5	
6	S	6:20	0:00	10.0		12.0					
	E	6:31	11:15	9.0	1853	11.0	5560		5.3	5.3	
7	S	6:33	0:00	10.0		12.0					
	E	6:45	11:30	9.0	1853	11.0	5560		5.2	5.2	
8	S	6:47	0:00	10.0		12.0					
	E	6:59	11:45	9.0	1853		5560		5.1	5.1	
9	S	7:01	0:00	10.0		12.0					
	E	7:13	12.00	9.0	1853	11.0	5560		5.0	5.0	
10	S	7:15	0:00	10.0		12.0					
	E	7:45	30:00	7.5	4633	9 1/2	13900		5.0	5.0	
11	S	7:50	0:00	10.0		12.0					
	E	8:20	30:00	7.5	4633	9 1/2	13900		5.0	5.0	
12	S	8:25	0:00	10.0		12.0					
	E	8:55	30:00	7.5	4633	9 1/2	13900		5.0	5.0	
13	S	9:00	0:00	10.0		12.0					
	E	9:30	30:00	7 5/8	4111	9 1/2	13900		4.75	5.0	
14	S	9:35	0:00	10.0		12.0					
	E	10:05	30:00	7 3/4	4170	9 5/8	13205		4.5	5.0	
15	S	10:10	0:00	10.0		12.0					
	E	10:40	30:00	7 7/8	3938	9 3/4	12510		4.25	4.5	
16	S	10:45	0:00	10.0		12.0					
	E	11:15	30:00	7 7/8	3938	9 3/4	12510		4.25	4.5	
17	S	11:20	0:00	10.0		12.0					
	E	11:50	30:00	8.0	3707	9 3/4	12510		4.0	4.5	
18	S	11:55	0:00	10.0		12.0					
	E	12:25	30:00	8.0	3707	9 3/4	12510		4.0	4.5	
19	S	12:30	0:00	10.0		12.0					
	E	1:00	30:00	8.0	3707	9 3/4	12510	72	4.0	4.5	

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX D

GENERAL EARTHWORK GRADING GUIDELINES

APN 478-080-013
City of Moreno Valley, California
Project No. 1132-CR3

GEOTEK

GENERAL GRADING GUIDELINES

Guidelines presented herein are intended to address general construction procedures for earthwork construction. Specific situations and conditions often arise which cannot reasonably be discussed in general guidelines, when anticipated these are discussed in the text of the report. Often unanticipated conditions are encountered which may necessitate modification or changes to these guidelines. It is our hope that these will assist the contractor to more efficiently complete the project by providing a reasonable understanding of the procedures that would be expected during earthwork and the testing and observation used to evaluate those procedures.

General

Grading should be performed to at least the minimum requirements of governing agencies, Chapters 18 and 33 of the Uniform Building Code, CBC (2013) and the guidelines presented below.

Preconstruction Meeting

A preconstruction meeting should be held prior to site earthwork. Any questions the contractor has regarding our recommendations, general site conditions, apparent discrepancies between reported and actual conditions and/or differences in procedures the contractor intends to use should be brought up at that meeting. The contractor (including the main onsite representative) should review our report and these guidelines in advance of the meeting. Any comments the contractor may have regarding these guidelines should be brought up at that meeting.

Grading Observation and Testing

1. Observation of the fill placement should be provided by our representative during grading. Verbal communication during the course of each day will be used to inform the contractor of test results. The contractor should receive a copy of the "Daily Field Report" indicating results of field density tests that day. If our representative does not provide the contractor with these reports, our office should be notified.
2. Testing and observation procedures are, by their nature, specific to the work or area observed and location of the tests taken, variability may occur in other locations. The contractor is responsible for the uniformity of the grading operations; our observations and test results are intended to evaluate the contractor's overall level of efforts during grading. The contractor's personnel are the only individuals participating in all aspect of site work. Compaction testing and observation should not be considered as relieving the contractor's responsibility to properly compact the fill.
3. Cleanouts, processed ground to receive fill, key excavations, and subdrains should be observed by our representative prior to placing any fill. It will be the contractor's responsibility to notify our representative or office when such areas are ready for observation.
4. Density tests may be made on the surface material to receive fill, as considered warranted by this firm.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

5. In general, density tests would be made at maximum intervals of two feet of fill height or every 1,000 cubic yards of fill placed. Criteria will vary depending on soil conditions and size of the fill. More frequent testing may be performed. In any case, an adequate number of field density tests should be made to evaluate the required compaction and moisture content is generally being obtained.
6. Laboratory testing to support field test procedures will be performed, as considered warranted, based on conditions encountered (e.g. change of material sources, types, etc.) Every effort will be made to process samples in the laboratory as quickly as possible and in progress construction projects are our first priority. However, laboratory workloads may cause in delays and some soils may require a **minimum of 48 to 72 hours to complete test procedures**. Whenever possible, our representative(s) should be informed in advance of operational changes that might result in different source areas for materials.
7. Procedures for testing of fill slopes are as follows:
   a) Density tests should be taken periodically during grading on the flat surface of the fill, three to five feet horizontally from the face of the slope.
   b) If a method other than over building and cutting back to the compacted core is to be employed, slope compaction testing during construction should include testing the outer six inches to three feet in the slope face to determine if the required compaction is being achieved.
8. Finish grade testing of slopes and pad surfaces should be performed after construction is complete.

Site Clearing

1. All vegetation, and other deleterious materials, should be removed from the site. If material is not immediately removed from the site it should be stockpiled in a designated area(s) well outside of all current work areas and delineated with flagging or other means. Site clearing should be performed in advance of any grading in a specific area.
2. Efforts should be made by the contractor to remove all organic or other deleterious material from the fill, as even the most diligent efforts may result in the incorporation of some materials. This is especially important when grading is occurring near the natural grade. All equipment operators should be aware of these efforts. Laborers may be required as root pickers.
3. Nonorganic debris or concrete may be placed in deeper fill areas provided the procedures used are observed and found acceptable by our representative.

Treatment of Existing Ground

1. Following site clearing, all surficial deposits of alluvium and colluvium as well as weathered or creep effected bedrock, should be removed unless otherwise specifically indicated in the text of this report.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

2. In some cases, removal may be recommended to a specified depth (e.g. flat sites where partial alluvial removals may be sufficient). The contractor should not exceed these depths unless directed otherwise by our representative.
3. Groundwater existing in alluvial areas may make excavation difficult. Deeper removals than indicated in the text of the report may be necessary due to saturation during winter months.
4. Subsequent to removals, the natural ground should be processed to a depth of six inches, moistened to near optimum moisture conditions and compacted to fill standards.
5. Exploratory back hoe or dozer trenches still remaining after site removal should be excavated and filled with compacted fill if they can be located.

Fill Placement

1. Unless otherwise indicated, all site soil and bedrock may be reused for compacted fill; however, some special processing or handling may be required (see text of report).
2. Material used in the compacting process should be evenly spread, moisture conditioned, processed, and compacted in thin lifts six (6) to eight (8) inches in compacted thickness to obtain a uniformly dense layer. The fill should be placed and compacted on a nearly horizontal plane, unless otherwise found acceptable by our representative.
3. If the moisture content or relative density varies from that recommended by this firm, the contractor should rework the fill until it is in accordance with the following:
   a) Moisture content of the fill should be at or above optimum moisture. Moisture should be evenly distributed without wet and dry pockets. Pre-watering of cut or removal areas should be considered in addition to watering during fill placement, particularly in clay or dry surficial soils. The ability of the contractor to obtain the proper moisture content will control production rates.
   b) Each six-inch layer should be compacted to at least 90 percent of the maximum dry density in compliance with the testing method specified by the controlling governmental agency. In most cases, the testing method is ASTM Test Designation D 1557.
4. Rock fragments less than eight inches in diameter may be utilized in the fill, provided:
   a) They are not placed in concentrated pockets;
   b) There is a sufficient percentage of fine-grained material to surround the rocks;
   c) The distribution of the rocks is observed by, and acceptable to, our representative.
5. Rocks exceeding eight (8) inches in diameter should be taken off site, broken into smaller fragments, or placed in accordance with recommendations of this firm in areas designated suitable for rock disposal. On projects where significant large quantities of oversized materials are anticipated, alternate guidelines for placement may be included. If significant oversize materials are encountered during construction, these guidelines should be requested.
6. In clay soil, dry or large chunks or blocks are common. If in excess of eight (8) inches minimum dimension, then they are considered as oversized. Sheepsfoot compactors or other suitable

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

methods should be used to break up blocks. When dry, they should be moisture conditioned to provide a uniform condition with the surrounding fill.

Slope Construction

1. The contractor should obtain a minimum relative compaction of 90 percent out to the finished slope face of fill slopes. This may be achieved by either overbuilding the slope and cutting back to the compacted core, or by direct compaction of the slope face with suitable equipment.
2. Slopes trimmed to the compacted core should be overbuilt by at least three (3) feet with compaction efforts out to the edge of the false slope. Failure to properly compact the outer edge results in trimming not exposing the compacted core and additional compaction after trimming may be necessary.
3. If fill slopes are built "at grade" using direct compaction methods, then the slope construction should be performed so that a constant gradient is maintained throughout construction. Soil should not be "spilled" over the slope face nor should slopes be "pushed out" to obtain grades. Compaction equipment should compact each lift along the immediate top of slope. Slopes should be back rolled or otherwise compacted at approximately every 4 feet vertically as the slope is built.
4. Corners and bends in slopes should have special attention during construction as these are the most difficult areas to obtain proper compaction.
5. Cut slopes should be cut to the finished surface. Excessive undercutting and smoothing of the face with fill may necessitate stabilization.

UTILITY TRENCH CONSTRUCTION AND BACKFILL

Utility trench excavation and backfill is the contractors responsibility. The geotechnical consultant typically provides periodic observation and testing of these operations. While efforts are made to make sufficient observations and tests to verify that the contractors' methods and procedures are adequate to achieve proper compaction, it is typically impractical to observe all backfill procedures. As such, it is critical that the contractor use consistent backfill procedures.

Compaction methods vary for trench compaction and experience indicates many methods can be successful. However, procedures that "worked" on previous projects may or may not prove effective on a given site. The contractor(s) should outline the procedures proposed, so that we may discuss them **prior** to construction. We will offer comments based on our knowledge of site conditions and experience.

1. Utility trench backfill in slopes, structural areas, in streets and beneath flat work or hardscape should be brought to at least optimum moisture and compacted to at least 90 percent of the laboratory standard. Soil should be moisture conditioned prior to placing in the trench.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

2. Flooding and jetting are not typically recommended or acceptable for native soils. Flooding or jetting may be used with select sand having a Sand Equivalent (SE) of 30 or higher. This is typically limited to the following uses:
   a) shallow (12 + inches) under slab interior trenches and,
   b) as bedding in pipe zone.

   The water should be allowed to dissipate prior to pouring slabs or completing trench compaction.
3. Care should be taken not to place soils at high moisture content within the upper three feet of the trench backfill in street areas, as overly wet soils may impact subgrade preparation. Moisture may be reduced to 2% below optimum moisture in areas to be paved within the upper three feet below sub grade.
4. Sand backfill should not be allowed in exterior trenches adjacent to and within an area extending below a 1:1 projection from the outside bottom edge of a footing, unless it is similar to the surrounding soil.
5. Trench compaction testing is generally at the discretion of the geotechnical consultant. Testing frequency will be based on trench depth and the contractors procedures. A probing rod would be used to assess the consistency of compaction between tested areas and untested areas. If zones are found that are considered less compact than other areas, this would be brought to the contractors attention.

JOB SAFETY

General

Personnel safety is a primary concern on all job sites. The following summaries are safety considerations for use by all our employees on multi-employer construction sites. On ground personnel are at highest risk of injury and possible fatality on grading construction projects. The company recognizes that construction activities will vary on each site and that job site safety is the contractor's responsibility. However, it is, imperative that all personnel be safety conscious to avoid accidents and potential injury.

In an effort to minimize risks associated with geotechnical testing and observation, the following precautions are to be implemented for the safety of our field personnel on grading and construction projects.

1. Safety Meetings: Our field personnel are directed to attend the contractor's regularly scheduled safety meetings.
2. Safety Vests: Safety vests are provided for and are to be worn by our personnel while on the job site.
3. Safety Flags: Safety flags are provided to our field technicians; one is to be affixed to the vehicle when on site, the other is to be placed atop the spoil pile on all test pits.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

In the event that the contractor's representative observes any of our personnel not following the above, we request that it be brought to the attention of our office.

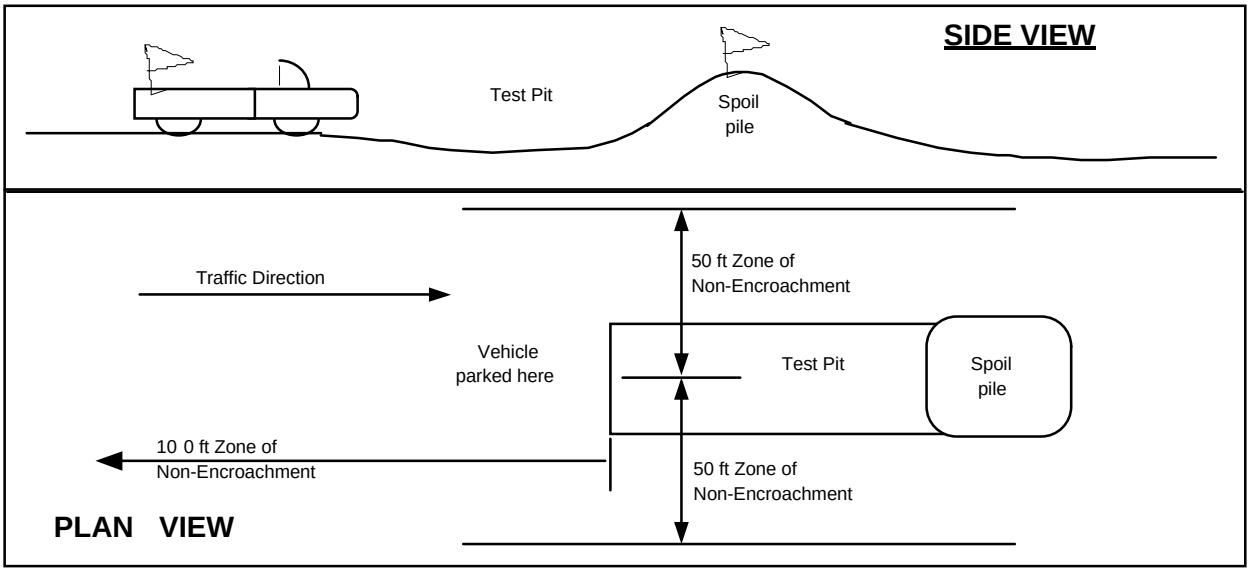
Test Pits Location, Orientation and Clearance

The technician is responsible for selecting test pit locations. The primary concern is the technician's safety. However, it is necessary to take sufficient tests at various locations to obtain a representative sampling of the fill. As such, efforts will be made to coordinate locations with the grading contractors authorized representatives (e.g. dump man, operator, supervisor, grade checker, etc.), and to select locations following or behind the established traffic pattern, preferably outside of current traffic. The contractors authorized representative should direct excavation of the pit and safety during the test period. Again, safety is the paramount concern.

Test pits should be excavated so that the spoil pile is placed away from oncoming traffic. The technician's vehicle is to be placed next to the test pit, opposite the spoil pile. This necessitates that the fill be maintained in a drivable condition. Alternatively, the contractor may opt to park a piece of equipment in front of test pits, particularly in small fill areas or those with limited access.

A zone of non-encroachment should be established for all test pits (see diagram below). No grading equipment should enter this zone during the test procedure. The zone should extend outward to the sides approximately 50 feet from the center of the test pit and 100 feet in the direction of traffic flow. This zone is established both for safety and to avoid excessive ground vibration, which typically decreases test results.

TEST PIT SAFETY PLAN



Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Slope Tests

When taking slope tests, the technician should park their vehicle directly above or below the test location on the slope. The contractor's representative should effectively keep all equipment at a safe operation distance (e.g. 50 feet) away from the slope during testing.

The technician is directed to withdraw from the active portion of the fill as soon as possible following testing. The technician's vehicle should be parked at the perimeter of the fill in a highly visible location.

Trench Safety

It is the contractor's responsibility to provide safe access into trenches where compaction testing is needed. Trenches for all utilities should be excavated in accordance with CAL-OSHA and any other applicable safety standards. Safe conditions will be required to enable compaction testing of the trench backfill.

All utility trench excavations in excess of 5 feet deep, which a person enters, are to be shored or laid back. Trench access should be provided in accordance with OSHA standards. Our personnel are directed not to enter any trench by being lowered or "riding down" on the equipment.

Our personnel are directed not to enter any excavation which;

1. is 5 feet or deeper unless shored or laid back,
2. exit points or ladders are not provided,
3. displays any evidence of instability, has any loose rock or other debris which could fall into the trench, or
4. displays any other evidence of any unsafe conditions regardless of depth.

If the contractor fails to provide safe access to trenches for compaction testing, our company policy requires that the soil technician withdraws and notifies their supervisor. The contractors representative will then be contacted in an effort to effect a solution. All backfill not tested due to safety concerns or other reasons is subject to reprocessing and/or removal.

Procedures

In the event that the technician's safety is jeopardized or compromised as a result of the contractor's failure to comply with any of the above, the technician is directed to inform both the developer's and contractor's representatives. If the condition is not rectified, the technician is required, by company policy, to immediately withdraw and notify their supervisor. The contractor's representative will then be contacted in an effort to effect a solution. No further testing will be performed until the situation is rectified. Any fill placed in the interim can be considered unacceptable and subject to reprocessing, recompaction or removal.

In the event that the soil technician does not comply with the above or other established safety guidelines, we request that the contractor bring this to technicians attention and notify our project

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

manager or office. Effective communication and coordination between the contractors' representative and the field technician(s) is strongly encouraged in order to implement the above safety program and safety in general.

The safety procedures outlined above should be discussed at the contractor's safety meetings. This will serve to inform and remind equipment operators of these safety procedures particularly the zone of non-encroachment.

The safety procedures outlined above should be discussed at the contractor's safety meetings. This will serve to inform and remind equipment operators of these safety procedures particularly the zone of non-encroachment.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

GeoTek, Inc.
1548 North Maple Street, Corona, California 92880
(951) 710-1160 Office (951) 710-1167 Fax www.geotekusa.com

April 4, 2018
Project No. 1132-CR3

Frontier Enterprises
2151 East Convention Center Way, Suite 100
Ontario, California 91764

Attention: Ms. Camille Thomas-McGee

Subject: Infiltration Evaluation
Proposed Storm Water Infiltration Area
Assessor's Parcel Number (APN) 478-080-013
Moreno Valley, Riverside County, California

References: See Page 4

Dear Ms. Thomas-McGee:

As requested and authorized, GeoTek, Inc. (GeoTek) has performed an infiltration evaluation at the subject property. The intent of this study is to evaluate the infiltration properties of the underlying soils within a proposed storm water infiltration area as indicated to us by the project civil engineer, Michael Baker International. This report presents the results of the testing completed by GeoTek.

Site and Project Description

The subject project is located northwest of the intersection of Quincy Street and Brodiaea Avenue in the city of Moreno Valley, Riverside County, California. The site consists of approximately 9 acres and is generally undeveloped and vacant land.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Two percolation test borings (Borings I-1 and I-2) were excavated in the southwest portion of the site where the proposed storm water infiltration area is to be constructed. These percolation borings were excavated to an approximate depth of six feet below the existing grades. The logs of the percolation borings are presented in Appendix A.

Groundwater was not encountered in any of the prior soil test borings excavated on the site to a maximum depth of 51.5 feet (GeoTek, 2014).

Infiltration Testing

Percolation testing was performed within each of the excavations within the lower 20 inches by a representative from our firm in general conformance with the referenced document (County of Riverside) and converted to an infiltration rate.

The infiltration rates are presented in the follow table for each of the borings after the rates had stabilized.

Test No.	Infiltration Rate (inches per hour)
I-1	1.26
I-2	1.20

Copies of the percolation data sheets and infiltration conversion sheets (Porchet Method) are included in Appendix B.

Over the lifetime of the storm water disposal areas, the infiltration rates may be affected by silt build up and biological activities, as well as local variations in near surface soil conditions. As per the *Design Handbook for Low Impact Development Best Management Practices,* a factor of safety of 3.0 should be applied to the infiltration rate.

LIMITATIONS

The materials observed on the project site appear to be representative of the area; however, soil materials vary in character between excavations and natural outcrops or conditions exposed during site construction. Site conditions may vary due to seasonal changes or other factors. GeoTek, Inc. assumes no responsibility or liability for work, testing or recommendations performed or provided by others.

Our conclusions and recommendations are professional opinions that are limited to the extent of the available data. Observations during construction are important to allow for any change in recommendations found to be warranted. These opinions have been derived in accordance

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

with current standards of practice and no warranty is expressed or implied. Standards of practice are subject to change with time.

The opportunity to be of service is sincerely appreciated. If you should have any questions, please do not hesitate to call our office.

Respectfully submitted,
GeoTek, Inc.

Edward H. LaMont
CEG 1892, Exp. 07/31/18
Principal Geologist

Robert R. Russell
GE 2042, Exp. 12/31/18
Senior Project Engineer

Anna M. Scott
Project Geologist

Enclosures: Figure 1 – Exploration Location Map
Appendix A – Logs of Exploratory Percolation Borings
Appendix B – Percolation Data Sheets and Conversion Sheets (Porchet Method)

Distribution: (1) Addressee via email (PDF file)

G:\Projects\1101 to 1150\1132CR3 Frontier Enterprises Moreno Valley\Infiltration Evaluation\1132CR3 Infiltration Evaluation Moreno Valley 26.doc

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

REFERENCES

GeoTek, Inc., 2014, "Geotechnical Evaluation and Infiltration Study, Proposed Residential Development, Assessor's Parcel Numbes (APN) 478-080-013, City of Moreno Valley, Riverside County, California," Project No. 1132-CR3, dated February 12.

Riverside County Flood Control and Water Conservation District, 2011, "Design Handbook for Low Impact Development Best Management Practices, Appendix A – Infiltration Testing Guidelines," effective September 2011.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Frontier Enterprises
APN 478-080-013
Moreno Valley, Riverside County, California

GeoTek Project No. 1132-CR3

GEOTEK

Figure 1

Infiltration Test Location Map

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX A

LOGS OF EXPLORATORY PERCOLATION BORINGS

APN 478-080-013

Moreno Valley, Riverside County, California

Project No. 1132-CR3

GEOTEK

BORING LOG LEGEND

The following abbreviations and symbols often appear in the classification and description of soil and rock on the log of borings:

SOILS

USCS	Unified Soil Classification System
f-c	Fine to coarse
f-m	Fine to medium

GEOLOGIC

B: Attitudes	Bedding: strike/dip
J: Attitudes	Joint: strike/dip
C: Contact line	
……..	Dashed line denotes USCS material change
———	Solid Line denotes unit / formational change
———	Thick solid line denotes end of the boring

(Additional denotations and symbols are provided on the log of boring)

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Frontier Enterprises	**DRILLER:**	2R Drilling	**LOGGED BY:**	DRW
PROJECT NAME:	Quincy Street/Brodiaea Avenue	**DRILL METHOD:**	8" Hollow Stem	**OPERATOR:**	Jerry
PROJECT NO.:	1132-CR3	**HAMMER:**	Auto 140#/30"	**RIG TYPE:**	CME 75
LOCATION:	See Boring Location Map			**DATE:**	3/30/2018

BORING NO.: I-1

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
5				ML	**Alluvium:** Fine sandy SILT, light grayish brown, dry to slightly moist, porous, trace coarse grained sand			
					BORING TERMINATED AT 6 FEET No groundwater encountered			
10								
15								
20								
25								
30								

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Frontier Enterprises	**DRILLER:**	2R Drilling	**LOGGED BY:**	DRW
PROJECT NAME:	Quincy Street/Brodiaea Avenue	**DRILL METHOD:**	8" Hollow Stem	**OPERATOR:**	Jerry
PROJECT NO.:	1132-CR3	**HAMMER:**	Auto 140#/30"	**RIG TYPE:**	CME 75
LOCATION:	See Boring Location Map			**DATE:**	3/30/2018

BORING NO.: I-2

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
5				ML	**Alluvium:** Fine sandy SILT, light gray, dry to slightly moist, trace coarse grained sand			
					BORING TERMINATED AT 6 FEET No groundwater encountered			
10								
15								
20								
25								
30								

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

APPENDIX B

PERCOLATION DATA SHEETS AND CONVERSION SHEETS

APN 478-080-013

Moreno Valley, Riverside County, California

Project No. 1132-CR3

GEOTEK

PERCOLATION DATA SHEET

Project: APN 478-080-013 **Job No.:** 1132-CR3

Test Hole No.: I-1 **Tested by:** DVG **Date:** 03/31/2018

Depth of Hole As Drilled: 72 inches **Before Test:** 72 inches **After Test:** 72 inches

Reading No.	Time	Time Interval (Min)	Total Depth of Hole (Inches)	Initial Water Level (Inches)	Final Water Level (Inches)	Δ In Water Level (Inches)	Rate (Minutes per Inch)	Comments
	7:10 AM		72	20				
	7:35 AM	25			13.25	6.75	3.7	
	7:37 AM		72	20				
	8:02 AM	25			13.25	7	3.7	
	8:04 AM		72	20				
	8:34 AM	30			13	7.00	4.3	
	8:36 AM		72	20				
	9:06 AM	30			13	7	4.3	
	9:08 AM		72	20				
	9:38 AM	30			13.25	7	4.4	
	9:40 AM		72	20				
	10:10 AM	30			13.25	7	4.4	
	10:12 AM		72	20				
	10:42 AM	30			13.25	7	4.4	
	10:44 AM		72	20				
	11:14 AM	30			13.5	6.5	4.6	
	11:16 AM		72	20				
	11:46 AM	30			13.5	6.5	4.6	
	11:48 AM		72	20				
	12:18 PM	30			13.75	6.25	4.8	
	12:20 PM		72	20				
	12:50 PM	30			13	7	4.3	
	12:52 PM		72	20				
	1:22 PM	30			14	6	5.0	
	1:24 PM		72	20				
	1:54 PM	30			14	6	5.0	
	1:56 PM		72	20				
	2:26 PM	30			14	6	5.0	

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

PERCOLATION DATA SHEET

Project: APN 478-080-013 **Job No.:** 1132-CR3

Test Hole No.: I-2 **Tested by:** DVG **Date:** 03/31/2018

Depth of Hole As Drilled: 72 inches **Before Test:** 72 inches **After Test:** 72 inches

Reading No.	Time	Time Interval (Min)	Total Depth of Hole (Inches)	Initial Water Level (Inches)	Final Water Level (Inches)	Δ In Water Level (Inches)	Rate (Minutes per Inch)	Comments
	8:50 AM		72	20				
	9:15 AM	25			13.5	6.5	3.8	
	9:17 AM		72	20				
	9:42 AM	25			13.5	7	3.8	
	9:44 AM		72	20				
	10:14 AM	30			13.25	6.75	4.4	
	10:16 AM		72	20				
	10:46 AM	30			13.25	7	4.4	
	10:48 AM		72	20				
	11:18 AM	30			13.25	7	4.4	
	11:20 AM		72	20				
	11:50 AM	30			13.5	7	4.6	
	11:52 AM		72	20				
	12:22 PM	30			13.50	7	4.6	
	12:24 PM		72	20				
	12:54 PM	30			13.75	6.25	4.8	
	12:56 PM		72	20				
	1:26 PM	30			13.75	6.25	4.8	
	1:28 PM		72	20				
	1:58 PM	30			14	6	5.0	
	2:00 PM		72	20				
	2:30 PM	30			14	6	5.0	
	2:32 PM		72	20				
	3:02 PM	30			14	6	5.0	
	3:04 PM		72	20				
	3:34 PM	30			14.25	5.75	5.2	
	3:36 PM		72	20				
	4:06 PM	30			14.25	5.75	5.2	

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Client:	**Frontier Enterprises**
Project:	**Moreno Valley 26**
Project No:	**1132-CR3**
Date:	**3/31/2018**

Boring No. **I-1**

Percolation Rate (Porchet Method)

Time Interval, Δt =	30
Final Depth to Water, D_F =	58
Test Hole Radius, r =	4
Initial Depth to Water, D_O =	52
Total Test Hole Depth, D_T =	72

Equation - $I_t = \dfrac{\Delta H\ (60r)}{\Delta t\ (r+2H_{avg})}$

$H_O = D_T - D_O$ =	20
$H_F = D_T - D_F$ =	14
$\Delta H = \Delta D = H_O - H_F$ =	6
$H_{avg} = (H_O+H_F)/2$ =	17

I_t = 1.26 **Inches per Hour**

GEOTEK

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Client:	**Frontier Enterprises**
Project:	**Moreno Valley 26**
Project No:	**1132-CR3**
Date:	**3/31/2018**

Boring No. **I-2**

Percolation Rate (Porchet Method)

Time Interval, Δt =	30
Final Depth to Water, D_F =	57.75
Test Hole Radius, r =	4
Initial Depth to Water, D_O =	52
Total Test Hole Depth, D_T =	72

Equation - $I_t = \dfrac{\Delta H\ (60r)}{\Delta t\ (r+2H_{avg})}$

$H_O = D_T - D_O$ =	20
$H_F = D_T - D_F$ =	14.25
$\Delta H = \Delta D = H_O - H_F$ =	5.75
$H_{avg} = (H_O+H_F)/2$ =	17.125

I_t = 1.20 **Inches per Hour**

GEOTEK

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

LID Infeasibility Analysis

The infiltration rates were analyzed during a geotechnical investigation (percolation testing) and is summarized in a report conducted by Geotek, Inc. (Appendix 3). Infiltration is feasible for DMA 3 due to the infiltration rate being 4 inches per hour, which is greater than the required 1.6 inches per hour. The infiltration rate recorded for DMA 1 is 1.26 and 1.20 in the approximate location of the bioretention basin. This is less than the required 1.6 inches per hour, therefore infiltration is not feasible at the location of the bioretention basin located in DMA 1.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Santa Ana Watershed - BMP Design Volume, V_{BMP}

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: Michael Baker International — Date: 9/10/2018
Designed by: Jessica Leyva — Case No:
Company Project Number/Name: Brodiaea Moreno Valley

BMP Identification

BMP NAME / ID: Bioretention Basin 1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.67 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Design Storm Depth (in)	Design Capture Volume, V_{BMP} (cubic feet)	Proposed Volume on Plans (cubic feet)
1	49301	Roofs	1	0.89	43976.5			
1	25820	Concrete or Asphalt	1	0.892	23031.4			
1	51651	Ornamental Landscaping	0.1	0.110458	5705.3			
	126772	Total			72713.2	0.67	4059.8	4094

Notes:

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Bioretention Facility - Design Procedure (Rev. 06-2014)	BMP ID 1	Legend:	Required Entries / Calculated Cells

Company Name: Michael Baker International — Date: 9/10/2018

Designed by: Jessica Leyva — County/City Case No.:

Design Volume

Enter the area tributary to this feature — A_{TRIB} = 2.9 acres

Enter V_{BMP} determined from Section 4.3 of this Handbook — V_{BMP} = 4,060 ft^3

Type of Bioretention Facility Design

(●) Side slopes required (parallel to parking spaces or adjacent to walkways)

( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer — d_S = 3.0 ft

Top Width of Bioretention Facility, excluding curb — w_T = 30.0 ft

Total Effective Depth, d_E

$d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$ — d_E = 1.78 ft

Minimum Surface Area, A_m

$$A_M\,(ft^2) = \frac{V_{BMP}\,(ft^3)}{d_E\,(ft)}$$

A_M = 2,286 ft^2

Proposed Surface Area — A= 2,300 ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility — z = 4 :1

Diameter of Underdrain — 6 inches

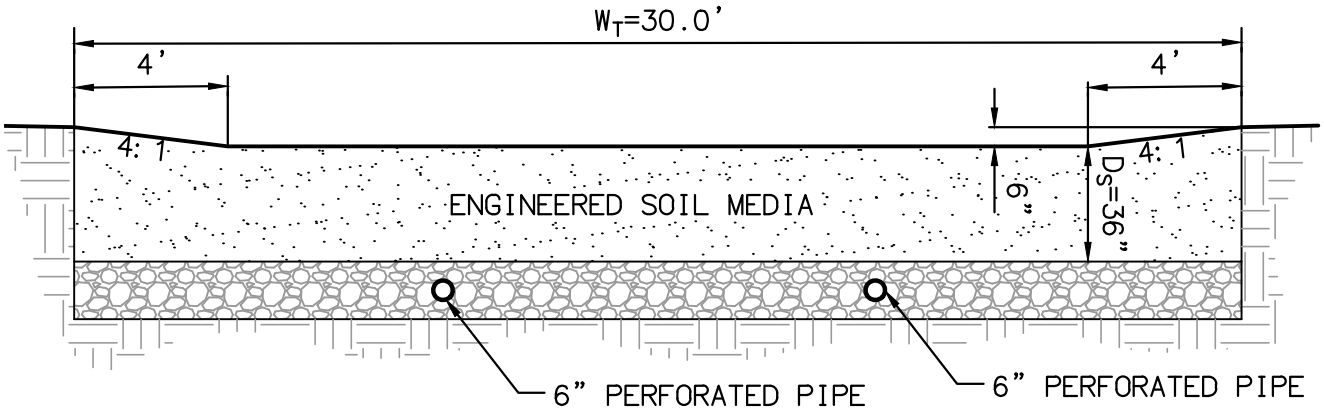
Longitudinal Slope of Site (3% maximum) — 0 %

6" Check Dam Spacing — 0 feet

Describe Landscaping:

Notes:

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



BMP #1
BMP DETAILS
NOT TO SCALE

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Santa Ana Watershed - BMP Design Volume, V_{BMP}

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	Michael Baker International	Date	9/10/2018
Designed by	Jessica Leyva	Case No	
Company Project Number/Name	Brodiaea Moreno Valley		

BMP Identification

BMP NAME / ID: Bioretention Basin 2

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.67 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
2	*54622*	*Roofs*	*1*	*0.89*	*48722.8*			
2	*66412*	*Concrete or Asphalt*	*1*	*0.892*	*59239.5*			
2	*115000*	*Ornamental Landscaping*	*0.1*	*0.110458*	*12702.7*			
	236034	**Total**			**120665**	**0.67**	***6737.1***	***6902***

Notes:

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Bioretention Facility - Design Procedure (Rev. 06-2014)	BMP ID: 2	Legend:	Required Entries / Calculated Cells

Company Name: Michael Baker International — Date: 9/10/2018

Designed by: Jessica Leyva — County/City Case No.:

Design Volume

Enter the area tributary to this feature — A_{TRIB} = 5.42 acres

Enter V_{BMP} determined from Section 4.3 of this Handbook — V_{BMP} = 6,737 ft^3

Type of Bioretention Facility Design

(●) Side slopes required (parallel to parking spaces or adjacent to walkways)

( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer — d_S = 3.0 ft

Top Width of Bioretention Facility, excluding curb — w_T = 51.0 ft

Total Effective Depth, d_E

$d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$ — d_E = 1.79 ft

Minimum Surface Area, A_m

$$A_M\,(ft^2) = \frac{V_{BMP}\,(ft^3)}{d_E\,(ft)}$$

A_M = 3,772 ft^2

Proposed Surface Area — A= 3,800 ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility — z = 4 :1

Diameter of Underdrain — 6 inches

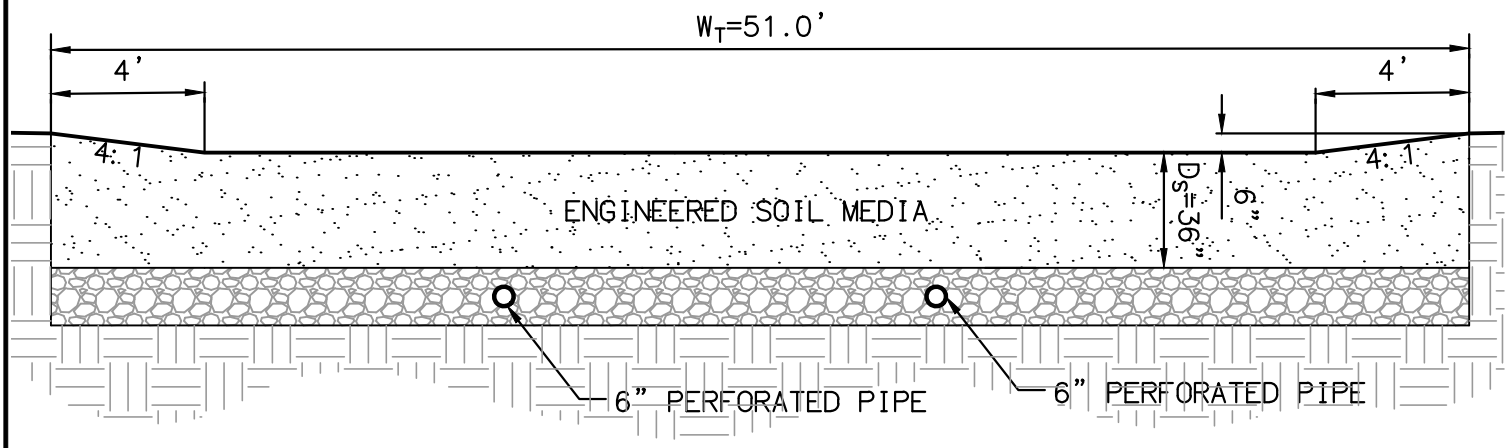
Longitudinal Slope of Site (3% maximum) — 0 %

6" Check Dam Spacing — 0 feet

Describe Landscaping:

Notes:

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



BMP #2
BMP DETAILS
NOT TO SCALE

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Santa Ana Watershed - BMP Design Volume, V_{BMP}

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	Michael Baker International	Date	9/10/2018
Designed by	Jessica Leyva	Case No	
Company Project Number/Name	Brodiaea Moreno Valley		

BMP Identification

BMP NAME / ID: Infiltration Trench - BMP 3

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.67 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Design Storm Depth (in)	Design Capture Volume, V_{BMP} (cubic feet)	Proposed Volume on Plans (cubic feet)
3	2942	Roofs	1	0.89	2624.3			
3	13240	Concrete or Asphalt	1	0.892	11810.1			
3	12735	Ornamental Landscaping	0.1	0.110458	1406.7			
	28917	Total			15841.1	0.67	884.5	885

Notes:

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Infiltration Trench - Design Procedure	BMP ID 3	Legend:	Required Entries / Calculated Cells

Company Name:	Michael Baker International	Date:	9/10/2018
Designed by:	Jessica Leyva	County/City Case No.:	

Design Volume

Enter the area tributary to this feature, Max = 10 acres	A_t=	1	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	885	ft^3

Calculate Maximium Depth of the Reservoir Layer

Enter Infiltration rate	I =	4.0	in/hr
Enter Factor of Safety, FS (unitless)	FS =	3	
Obtain from Table 1, Appendix A: "Infiltration Testing" of this BMP Handbook			
	n =	40	%
Calculate D_1. $D_1 = \frac{I\ (in/hr) \times 72\ hrs}{12\ (in/ft) \times (n/100) \times FS}$	D_1 =	20.00	ft
Enter depth to historic high groundwater mark (measured from finished grade)		22	ft
Enter depth to top of bedrock or impermeable layer (measured from finished grade)		22	ft
D_2 is the smaller of: Depth to groundwater - 11 ft; & Depth to impermeable layer - 6 ft	D_2 =	10.5	ft
D_{MAX} is the smaller value of D_1 and D_2, must be less than or equal to 8 feet.	D_{MAX}=	8.0	ft

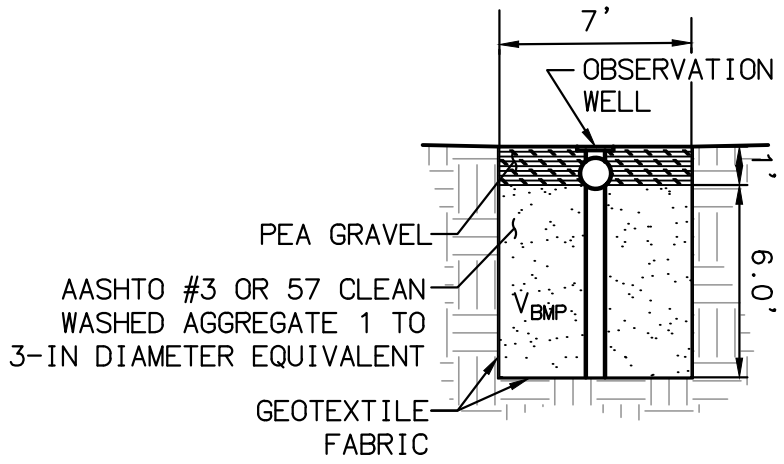
Trench Sizing

Enter proposed reservoir layer depth D_R, must be ≤ D_{MAX}	D_R =	6.00	ft
Calculate the design depth of water, d_W			
Design $d_W = (D_R) \times (n/100)$	Design d_W=	2.40	ft
Minimum Surface Area, A_S $A_S = \frac{V_{BMP}}{d_W}$	A_S =	369	ft^2
Proposed Design Surface Area	A_D =	369	ft^2
Minimum Width = D_R + 1 foot pea gravel		7.00	ft
Sediment Control Provided? (Use pulldown)		Yes	
Geotechnical report attached? (Use pulldown)		Yes	

If the trench has been designed correctly, there should be no error messages on the spreadsheet.

Notes: Boring at B-4 per geotechnical report went to a depth of 21.5' and did not encounter bedrock or groundwater.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



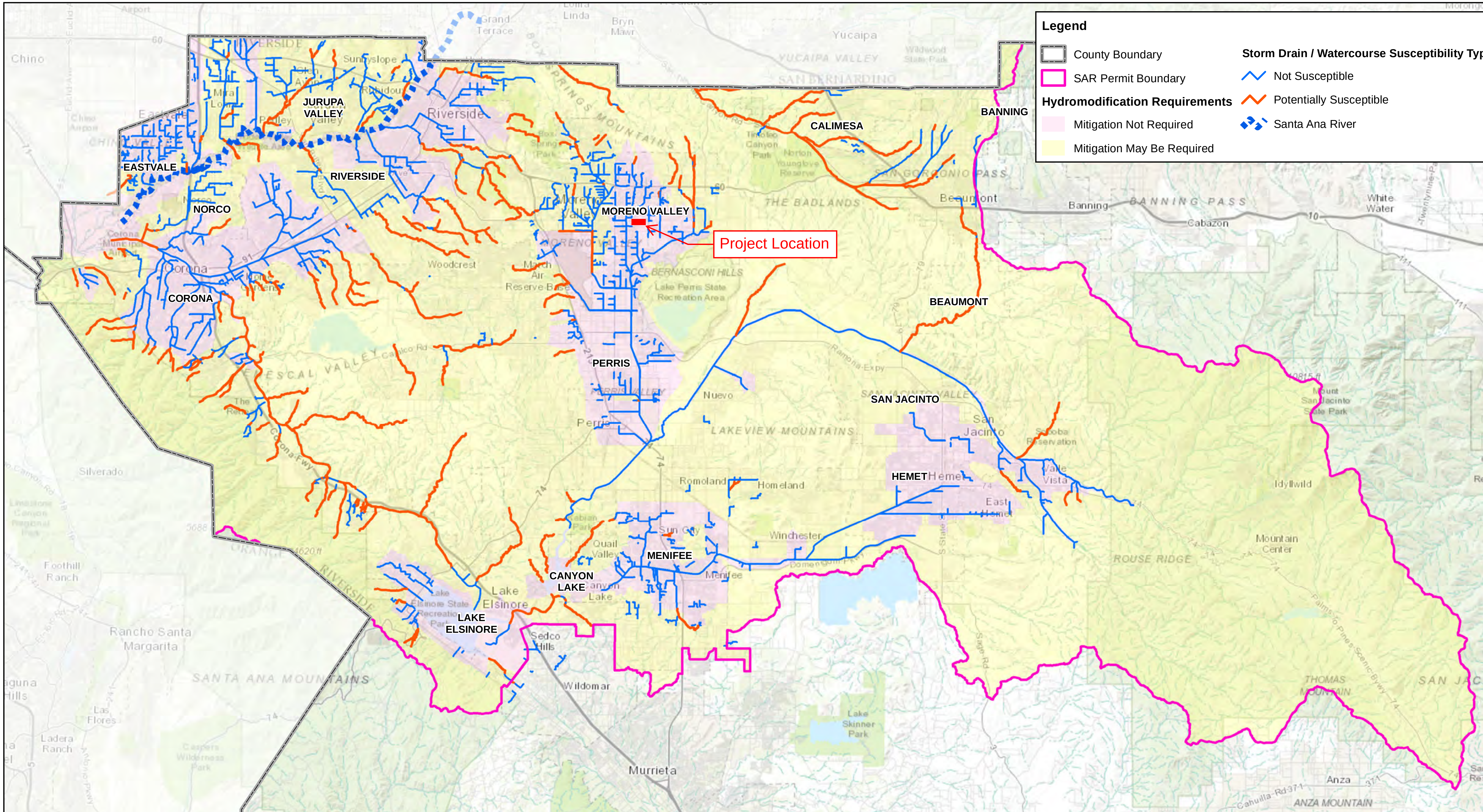
BMP #3
BMP DETAILS
NOT TO SCALE

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)



N

0 2.5 5 10 Miles

Updated February 2017

HCOC Applicability Map
SAR Permittees

Map 2

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

How to use this worksheet (also see instructions in Section G of the WQMP Template):

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your WQMP Exhibit.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in your WQMP. Use the format shown in Table G.1on page 23 of this WQMP Template. Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs for those shown here.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ A. **On-site storm drain inlets**	☒ **Locations of inlets.**	☒ **Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.**	☒ **Maintain and periodically repaint or replace inlet markings.** ☒ **Provide stormwater pollution prevention information to new site owners, lessees, or operators.** ☒ **See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** ☒ **Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."**
☐ B. **Interior floor drains and elevator shaft sump pumps**		☐ **State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.**	☐ **Inspect and maintain drains to preven blockages and overflow.**
☐ C. **Interior parking garages**		☐ **State that parking garage floor drains will be plumbed to the sanitary sewer.**	☐ **Inspect and maintain drains to preven blockages and overflow.**

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☐ D1. **Need for future indoor & structural pest control**		☐ **Note building design features that discourage entry of pests.**	☐ **Provide Integrated Pest Management information to owners, lessees, and operators.**
☒ D2. **Landscape/ Outdoor Pesticide Use**	☐ **Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained.** ☐ **Show self-retaining landscape areas, if any.** ☒ **Show stormwater treatment and hydrograph modification management BMPs. (See instructions in Chapter 3, Step 5 and guidance in Chapter 5.)**	**State that final landscape plans will accomplish all of the following.** ☒ **Preserve existing native trees, shrubs, and ground cover to the maximum extent possible.** ☒ **Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.** ☐ **Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.** ☒ **Consider using pest-resistant plants, especially adjacent to hardscape.** **To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.**	☒ **Maintain landscaping using minimum or no pesticides.** ☒ **See applicable operational BMPs in "What you should know for…..Landscape and Gardening"** at http://rcflood.org/stormwater/**Error! Hyperlink reference not valid.** ☒ **Provide IPM information to new owners, lessees and operators.**

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❑ E. **Pools, spas, ponds, decorative fountains, and other water features.**	❑ **Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)**	**If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.**	❑ **See applicable operational BMPs in** "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at http://rcflood.org/stormwater/
❑ F. **Food service**	❑ **For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment.** ❑ **On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.**	❑ **Describe the location and features of the designated cleaning area.** ❑ **Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.**	❑ **See the brochure, "**The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://rcflood.org/stormwater/ **Provide this brochure to new site owners, lessees, and operators.**
☒ G. **Refuse areas**	☒ **Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas.** ☒ **If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area.** ☒ **Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.**	☒ **State how site refuse will be handled and provide supporting detail to what is shown on plans.** ☒ **State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.**	☒ **State how the following will be implemented:** **Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at** www.cabmphandbooks.com

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❑ H. **Industrial processes.**	❑ **Show process area.**	❑ **If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."**	❑ **See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at http://rcflood.org/stormwater/

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☒ I. **Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)**	☒ **Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area.** ☒ **Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults.** ☒ **Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.**	**Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains.** **Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for:** ▪ **Hazardous Waste Generation** ▪ **Hazardous Materials Release Response and Inventory** ▪ **California Accidental Release (CalARP)** ▪ **Aboveground Storage Tank** ▪ **Uniform Fire Code Article 80 Section 103(b) & (c) 1991** ▪ **Underground Storage Tank** www.cchealth.org/groups/hazmat/	☒ **See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

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❑ J. **Vehicle and Equipment Cleaning**	❑ **Show on drawings as appropriate:** **(1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.** **(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use).** **(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.** **(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.**	❑ **If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.**	**Describe operational measures to implement the following (if applicable):** ❑ **Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system.** Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/ ❑ **Car dealerships and similar may rinse cars with water only.**

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❑ K. **Vehicle/Equipment Repair and Maintenance**	❑ **Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater.** ❑ **Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.** ❑ **Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.**	❑ **State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.** ❑ **State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.** ❑ **State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.**	**In the Stormwater Control Plan, note that all of the following restrictions apply to use the site:** ❑ **No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains.** ❑ **No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.** ❑ **No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.** Refer to "Automotive Maintenance & Ca Care Best Management Practices for Aut Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http://rcflood.org/stormwater/ Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/

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STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

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❑ L. **Fuel Dispensing Areas**	❑ **Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable.** ❑ **Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.**		❑ **The property owner shall dry sweep the fueling area routinely.** ❑ **See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

[6] **The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.**

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❑ M. **Loading Docks**	❑ **Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer.** ❑ **Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation.** ❑ **Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.**		❑ **Move loaded and unloaded items indoors as soon as possible.** ❑ **See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

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☐ N. **Fire Sprinkler Test Water**		☐ **Provide a means to drain fire sprinkler test water to the sanitary sewer.**	☐ **See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**
O. **Miscellaneous Drain or Wash Water or Other Sources** ☐ **Boiler drain lines** ☐ **Condensate drain lines** ☐ **Rooftop equipment** ☐ **Drainage sumps** ☒ **Roofing, gutters, and trim.** ☐ **Other sources**		☐ **Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system.** ☐ **Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system.** ☐ **Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment.** ☐ **Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.** ☒ **Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.** **Include controls for other sources as specified by local reviewer.**	

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☒ P. **Plazas, sidewalks, and parking lots.**			☒ **Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain**

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Biotreatment MP-20

General Description

Biotreatment systems are manufactured BMPs that mimic treatment provided by natural systems with a smaller footprint. Physical straining, biological and chemical reactions in the mulch, root zone, and soil matrix, and infiltration into the underlying subsoil are the main treatment processes. Biotreatment cells reduce peak discharge and runoff volume by detaining water through surface ponding, storage in soil and gravel layers, and evapotranspiration. They can be designed to incorporate infiltration to underlying soils and/or an underdrain system that collects treated stormwater and directs it to the storm drain.

Examples of biotreatment systems include manufactured wetlands and planter box biofilters that can incorporate a wide range of vegetation from grasses to trees.

Inspection/Maintenance Considerations

To maintain treatment performance longevity, pretreatment systems should be installed at sites with high loads of sediment, trash, and floatables. If pretreatment is provided then maintenance consideration must be given to remove accumulated materials.

Biotreatment systems require frequent landscaping maintenance, including harvesting of wetland vegetation and planter box irrigation in dry climates. Maintenance tasks may be conducted by a landscaping contractor, who may already be hired at the site. Refer to TC-21, Constructed Wetland, TC-32, Bioretention, and specific manufacturer recommendations for more information.

Advanced BMPs Covered

Maintenance Concerns

- *Vegetation/Landscape Maintenance*
- *Mulch and Planting Media Replacement*
- *Clogged Soil or Outlet Structures*
- *Invasive/Exotic Plant Species*
- *Vector Control*

Targeted Constituents*	
Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

**Removal Effectiveness varies for different manufacturer designs. See New Development and Redevelopment Handbook-Section 5 for more information.*

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Biotreatment MP-20

Inspection Activities	Suggested Frequency
☐ Inspect during the dry season to determine if irrigation of plants is necessary.	As needed
☐ Inspect to ensure vegetation is well established. If not, either prepare soil and reseed or replace with alternative species. Install erosion control blanket if necessary. ☐ Check for debris and litter, and areas of sediment accumulation. ☐ Inspect health of trees and shrubs.	Semi-annual
☐ Inspect to verify that invasive species of wetland plants is not occurring.	Annual
Maintenance Activities	**Suggested Frequency**
☐ Water plants daily for at least 2 weeks.	At project completion
☐ Remove litter and debris.	Monthly
☐ Remove sediment. ☐ Remulch void areas. ☐ Treat diseased trees and shrubs. ☐ Mow turf areas. ☐ Repair erosion at inflow points. ☐ Repair outflow structures. ☐ Unclog underdrain. ☐ Regulate soil pH regulation. ☐ Repair undercut areas, erosion to banks, and bottom as required. ☐ Make structural changes or repairs as needed to eliminate pools of water that stand longer than 96 hrs to prevent mosquito production, particularly during the warmer months of the year. Identify and eliminate sources of non-stormwater runoff that feed standing water pools. Contact the local mosquito and vector control agency if mosquito breeding is observed or suspected.	As needed
☐ Remove and replace dead and diseased vegetation.	Semi-annual
☐ Add mulch. ☐ Replace tree stakes and wires. ☐ Supplement wetland plants if a significant portion have not established (at least 50% of the surface area). ☐ Remove nuisance plant species.	Annual
☐ Mulch should be replaced every 2 to 3 years or when bare spots appear or infiltration rates are reduced. Remulch prior to the wet season.	Every 2-3 years, or as needed
☐ Harvest plant species if vegetation becomes too thick causing flow backup and flooding. More frequent plant harvesting may be required by local vector control agencies.	5- to 7-year maintenance (or more frequently as required)

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Biotreatment MP-20

References

California Department of Transportation. *Treatment BMP Technology Report (CTSW-RT-09-239.06),* April, 2010. http://www.dot.ca.gov/hq/env/stormwater/pdf/CTSW-RT-09-239-06.pdf.

California Stormwater Quality Association. *Stormwater Best Management Practice Handbook, New Development and Redevelopment*, 2003. https://www.casqa.org/resources/bmp-handbooks/new-development-redevelopment-bmp-handbook.

Orange County Stormwater Program. Technical Guidance Document BMP Fact Sheets. http://media.ocgov.com/gov/pw/watersheds/documents/wqmp/tgd/technical_guidance_document_bmp_fact_sheets.asp.

Ventura Countywide Stormwater Quality Management Program. *Technical Guidance Manual for Stormwater Quality Control Measures*, May, 2010. http://www.vcstormwater.org/documents/workproducts/technicalguidancemanual/201orevisions/Ventura%20Technical%20Guidance%20Document_5-6-10.pdf.

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BG-40 Landscape Maintenance

Photo Credit: Geoff Brosseau

Description

This category includes businesses that provide landscaping and landscape maintenance/gardening services.

Pollutant Sources

The following are sources of pollutants:

- Selecting plants or landscape design,
- Installing new landscaping,
- Maintaining landscapes,
- Using pesticides and fertilizers, and
- Using gas-powered equipment.

Pollutants can include:

- Nutrients (fertilizers, yard wastes),
- Pesticides,
- Heavy metals (copper, lead, and zinc),
- Hydrocarbons (fuels, oils and grease), and
- Sediments.

Approach

Minimize the potential for stormwater pollution and the need for resources/controls (water, pesticides, fertilizers) by creating and maintaining landscapes in a way that is compatible with the local soils, climate, and amount of rain and sun. Make stormwater pollution prevention BMPs a part of standard operating procedures and the employee training program.

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BG-40 Landscape Maintenance

Provide employee education materials in the first language of employees, as necessary.

Source Control BMPs

The best management practices are listed by activity or area.

Landscape Design	☐ Specify native, low maintenance, and insectary (attract beneficial insects) plants and landscape designs. ☐ Design zoned, water-efficient irrigation systems using technologies such drip irrigation, soaker hoses, or microspray systems. Landscape design should be consistent with the local Water Efficient Landscape Ordinance. See the following website for a list of local ordinances: ftp://ftp.water.ca.gov/Model-Water-Efficient-Landscape-Ordinance/Local-Ordinances/ ☐ Do not landscape riparian areas, except to remove non-native plants and replace them with native riparian landscaping. ☐ Replant with native species where possible when landscaping or building an ornamental pond. Do not assume something is native because you have seen it in your area. Contact the local nursery for information or visit the California Exotic Pest Plant Council website (www.caleppc.org).
Landscape Installation	☐ Protect stockpiles and landscaping materials from wind and rain by storing them under tarps or secured plastic sheeting. ☐ Schedule grading and excavation projects during dry weather. ☐ Divert runoff from exposed soils or lower its velocity by leveling and terracing. ☐ Use temporary check dams or ditches to divert runoff away from storm drains. ☐ Protect storm drains with sandbags or other sediment controls. ☐ Revegetation is an excellent form of erosion control for any site. Keep soils covered with vegetation or temporary cover material (mulch) to control erosion. ☐ Check plant roots before buying a plant. Do not buy plants with roots are that kinked or circling around the container. Do not buy plants with soft, rotten, or deformed root crowns. ☐ Do not pile soil around the plant any higher than the root crown.
Landscape Maintenance	Yard Waste ☐ Allow leaf drop to become part of the mulch layer in tree, shrub, and groundcover areas. ☐ Keep lawn mower blades sharp, and grasscycle.

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BG-40 Landscape Maintenance

	◻ Grasscycle – leave grass clippings on the lawn when mowing. Once cut, grass clippings first dehydrate, and then decompose, quickly disappearing from view. Proper mowing is required for successful grasscycling. Cut grass when the surface is dry, and keep mower blades sharp. Follow the "1/3 Rule": mow the lawn often enough so that no more than 1/3 of the length of the grass blade is cut in any one mowing. Frequent mowing will produce short clippings that will not cover up the grass surface. The lawn may have to be cut every seven days when the lawn is growing fast but only every 7 to 14 days when the lawn is growing slowly. ◻ Do not leave clippings on pavement or sidewalks where they can wash off into the street, gutter, or storm drain. ◻ Collect lawn and garden clippings, pruning waste, and tree trimmings. Chip if necessary, and compost or take to the local municipal yard waste recycling/composting facility. ◻ In communities with curbside pick-up of yard waste, place clippings and pruning waste at the curb in approved bags or containers. No curbside pickup of yard waste is available for commercial properties. ◻ Do not blow or rake leaves or other yard waste into the street, or place yard waste in gutters or on dirt shoulders, unless it is being piled up for recycling (allowed by some municipalities). After pick-up, sweep up any leaves, litter, or residue in gutters or on street. Fertilizing and Pruning ◻ Perform soil analysis seasonally to determine actual fertilization need and application rates. ◻ Fertilize garden areas with a mulch of leaves, bark, or composted manure and/or garden waste. ◻ Apply chemical fertilizer only as needed, when plants can best use it, and when the potential for it being carried away by runoff is low. Make sure the fertilizer spreader is calibrated. ◻ Prune plants sparingly, if at all. A healthy plant – one that is native to the area and growing under the right conditions – should not need pruning, except when it is not in the right location (where safety or liability is a concern). Watering ◻ Use soil probes to determine soil moisture depth, overall moisture levels, and the need to adjust irrigation schedules. ◻ Check sprinklers regularly. Adjust as needed to minimize or eliminate overspray onto impervious surfaces. Replace broken sprinklers or lines.

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BG-40 Landscape Maintenance

Pest and Weed Control

- Obtain appropriate licenses for pest control and pesticides. Contact the Department of Pesticide Regulation for more information.
- Become trained in and offer customers less-toxic pest control or Integrated Pest Management (IPM).
- The label on a pesticide container is a legal document. Use a pesticide only as instructed on the label.
- Store pesticides, fertilizers, and other chemicals indoors or in a shed or storage cabinet.
- Use pesticides sparingly, according to instructions on the label. Rinse empty containers, and use rinsewater as product.
- Dispose of rinsed, empty containers in the trash. Dispose of unused pesticides as hazardous waste.
- To control weeds, use drip irrigation and mulch. Hand-pull weeds including roots or cut down to ground. Repeat cutting before they flower, grow new leaves, or go to seed. Use herbicides containing pelargonic acid or herbicidal soap as a last resort.

Handling Gasoline

- Use only containers approved by a nationally recognized testing lab, such as Underwriters Laboratories (UL). Keep the container tightly sealed. Containers should be fitted with a spout to allow pouring without spilling and to minimize the generation of vapors.
- Fill cautiously. Always use a funnel and/or spout to prevent spilling or splashing when fueling power mowers, blowers, and all other gas-powered equipment.
- Avoid spilling gasoline on the ground, especially near wells. If a spill occurs use kitty litter, saw dust, or an absorbent towel to soak up the spill, then dispose of it properly.
- Store carefully. Gasoline moves quickly through soil and into groundwater, therefore, store and use gasoline and fuel equipment as far away from your drinking water well as possible. Be certain to keep a closed cap on the gasoline container. Store at ground level, not on a shelf to minimize the danger of falling and spilling.
- Do not dispose of gasoline down the drain, into surface water, onto the ground, or in the trash. Contact the local municipality for directions on proper disposal of excess or old gasoline. Transport old gas in an approved gasoline container.

Working Near Waterbodies

- Do not dump lawn clippings, other yard waste, or soil along creek banks or in creeks.

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BG-40 Landscape Maintenance

	☐ Do not store stockpiles of materials (soil, mulch) along creek banks. These piles can erode over time into a creek. ☐ Do not spray pesticides or fertilizers by creeks. ☐ Do not over water near streams. The excess water may carry pesticides, fertilizers, sediments, and anything else in its path directly into the creek.

Treatment Control BMPs

Not applicable.

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BG-40 Landscape Maintenance

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Non-Stormwater Discharges SC-10

Description

Non-stormwater discharges (NSWDs) are flows that do not consist entirely of stormwater. Some non-stormwater discharges do not include pollutants and may be discharged to the storm drain if local regulations allow. These include uncontaminated groundwater and natural springs. There are also some non-stormwater discharges that typically do not contain pollutants and may be discharged to the storm drain with conditions. These include: potable water sources, fire hydrant flushing, air conditioner condensate, landscape irrigation drainage and landscape watering, emergency firefighting, etc. as discussed in Section 2.

However there are certain non-stormwater discharges that pose an environmental concern. These discharges may originate from illegal dumping of industrial material or wastes and illegal connections such as internal floor drains, appliances, industrial processes, sinks, and toilets that are illegally connected to the nearby storm drainage system through on-site drainage and piping. These unauthorized discharges (examples of which may include: process waste waters, cooling waters, wash waters, and sanitary wastewater) can carry substances such as paint, oil, fuel and other automotive fluids, chemicals and other pollutants into storm drains.

Non-stormwater discharges will need to be addressed through a combination of detection and elimination. The ultimate goal is to effectively eliminate unauthorized non-stormwater discharges to the stormwater drainage system through implementation of measures to detect, correct, and enforce against illicit connections and illegal discharges of

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*
■ *Product Substitution*

Targeted Constituents	
Sediment	
Nutrients	✓
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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Non-Stormwater Discharges SC-10

pollutants on streets and into the storm drain system and downstream water bodies.

Approach

Initially the Discharger must make an assessment of non-stormwater discharges to determine which types must be eliminated or addressed through BMPs. The focus of the following approach is the elimination of unauthorized non-stormwater discharges. See other BMP Fact Sheets for activity-specific pollution prevention procedures.

General Pollution Prevention Protocols

- Implement waste management controls described in SC-34 Waste Handling and Disposal.
- Develop clear protocols and lines of communication for effectively prohibiting non-stormwater discharges, especially those that are not classified as hazardous. These are often not responded to as effectively as they need to be.
- Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" or similar stenciled or demarcated next to them to warn against ignorant or unintentional dumping of pollutants into the storm drainage system.
- Manage and control sources of water such as hose bibs, faucets, wash racks, irrigation heads, etc. Identify hoses and faucets in the SWPPP, and post signage for appropriate use.

Non-Stormwater Discharge Investigation Protocols

Identifying the sources of non-stormwater discharges requires the Discharger to conduct an investigation of the facility at regular intervals. There are several categories of non-stormwater discharges:

- Visible, easily identifiable discharges, typically generated as surface runoff, such as uncontained surface runoff from vehicle or equipment washing; and
- Non-visible, (e.g., subsurface) discharges into the site drainage system through a variety of pathways that are not obvious.

The approach to detecting and eliminating non-stormwater discharges will vary considerably, as discussed below:

Visible and identifiable discharges

- Conduct routine inspections of the facilities and of each major activity area and identify visible evidence of unauthorized non-stormwater discharges. This may include:
  - ✓ Visual observations of actual discharges occurring;

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- ✓ Evidence of surface staining, discoloring etc. that indicates that discharges have occurred;
- ✓ Pools of water in low lying areas when a rain event has not occurred; and
- ✓ Discussions with operations personnel to understand practices that may lead to unauthorized discharges.

- ☐ If evidence of non-stormwater discharges is discovered:
  - ✓ Document the location and circumstances using Worksheets 5 and 6 (Section 2 of the manual), including digital photos;
  - ✓ Identify and implement any quick remedy or corrective action (e.g., moving uncovered containers inside or to a proper location); and
  - ✓ Develop a plan to eliminate the discharge. Consult the appropriate activity-specific BMP Fact Sheet for alternative approaches to manage and eliminate the discharge.
- ☐ Consult the appropriate activity-specific BMP Fact Sheet for alternative approaches to manage and eliminate the discharge. Make sure the facility SWPPP is up-to-date and includes applicable BMPs to address the non-stormwater discharge.

Other Illegal Discharges (Non visible)

Illicit Connections

- ☐ Locate discharges from the industrial storm drainage system to the municipal storm drain system through review of "as-built" piping schematics.
- ☐ Isolate problem areas and plug illicit discharge points.
- ☐ Locate and evaluate discharges to the storm drain system.
- ☐ Visual Inspection and Inventory:
  - ✓ Inventory and inspect each discharge point during dry weather.
  - ✓ Keep in mind that drainage from a storm event can continue for a day or two following the end of a storm and groundwater may infiltrate the underground stormwater collection system.
  - ✓ Non-stormwater discharges are often intermittent and may require periodic inspections.

Review Infield Piping

- ☐ A review of the "as-built" piping schematic is a way to determine if there are any connections to the stormwater collection system.

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- Inspect the path of loading/unloading area drain inlets and floor drains in older buildings.

- Never assume storm drains are connected to the sanitary sewer system.

Monitoring for investigation/detection of illegal discharges

- If a suspected illegal or unknown discharge is detected, monitoring of the discharge may help identify the content and/or suggest the source. This may be done with a field screening analysis, flow meter measurements, or by collecting a sample for laboratory analysis. Section 5 and Appendix D describe the necessary field equipment and procedures for field investigations.

- Investigative monitoring may be conducted over time. For example if, a discharge is intermittent, then monitoring might be conducted to determine the timing of the discharge to determine the source.

- Investigative monitoring may be conducted over a spatial area. For example, if a discharge is observed in a pipe, then monitoring might be conducted at accessible upstream locations in order to pinpoint the source of the discharge.

- Generally, investigative monitoring requiring collection of samples and submittal for lab analysis requires proper planning and specially trained staff.

Smoke Testing

Smoke testing of wastewater and stormwater collection systems is used to detect connections between the two piping systems. Smoke testing is generally performed at a downstream location and the smoke is forced upstream using blowers to create positive pressure. The advantage to smoke testing is that it can potentially identify multiple potential discharge sources at once.

- Smoke testing uses a harmless, non-toxic smoke cartridges developed specifically for this purpose.

- Smoke testing requires specialized equipment (e.g., cartridges, blowers) and is generally only appropriate for specially trained staff.

- A Standard Operating Procedure (SOP) for smoke testing is highly desirable. The SOP should address the following elements:

  - ✓ Proper planning and notification of nearby residents and emergency services is necessary since introducing smoke into the system may result in false alarms;

  - ✓ During dry weather, the stormwater collection system is filled with smoke and then traced back to sources;

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Non-Stormwater Discharges SC-10

- ✓ Temporary isolation of segments of pipe using sand bags is often needed to force the smoke into leaking pipes; and
- ✓ The appearance of smoke in a waste vent pipe, at a sewer manhole, or even the base of a toilet indicates that there may be a connection between the sanitary and storm water systems.

- Most municipal wastewater agencies will have necessary staff and equipment to conduct smoke testing and they should be contacted if cross connections with the sanitary sewer are suspected. See SC-44 Drainage System Maintenance for more information.

Dye Testing

- Dye testing is typically performed when there is a suspected specific pollutant source and location (i.e., leaking sanitary sewer) and there is evidence of dry weather flows in the stormwater collection system.
- Dye is released at a probable upstream source location, either the facility's sanitary or process wastewater system. The dye must be released with a sufficient volume of water to flush the system.
- Operators then visually examine the downstream discharge points from the stormwater collection system for the presence of the dye.
- Dye testing can be performed informally using commercially available products in order to conduct an initial investigation for fairly obvious cross-connections.
- More detailed dye testing should be performed by properly trained staff and follow SOPs. Specialized equipment such as fluorometers may be necessary to detect low concentrations of dye.
- Most municipal wastewater agencies will have necessary staff and equipment to conduct dye testing and they should be contacted if cross connections with the sanitary sewer are suspected.

TV Inspection of Drainage System

- Closed Circuit Television (CCTV) can be employed to visually identify illicit connections to the industrial storm drainage system. Two types of CCTV systems are available: (1) a small specially designed camera that can be manually pushed on a stiff cable through storm drains to observe the interior of the piping, or (2) a larger remote operated video camera on treads or wheels that can be guided through storm drains to view the interior of the pipe.
- CCTV systems often include a high-pressure water jet and camera on a flexible cable. The water jet cleans debris and biofilm off the inside of pipes so the camera can take video images of the pipe condition.

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- CCTV units can detect large cracks and other defects such as offsets in pipe ends caused by root intrusions or shifting substrate.
- CCTV can also be used to detect dye introduced into the sanitary sewer.
- CCTV inspections require specialized equipment and properly trained staff and are generally best left to specialized contractors or municipal public works staff.

Illegal Dumping

- Substances illegally dumped on streets and into the storm drain systems and creeks may include paints, used oil and other automotive fluids, construction debris, chemicals, fresh concrete, leaves, grass clippings, and pet wastes. These wastes can cause stormwater and receiving water quality problems as well as clog the storm drain system itself.
- Establish a system for tracking incidents. The system should be designed to identify the following:
  - ✓ Illegal dumping hot spots;
  - ✓ Types and quantities (in some cases) of wastes;
  - ✓ Patterns in time of occurrence (time of day/night, month, or year);
  - ✓ Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills);
  - ✓ An anonymous tip/reporting mechanism; and
  - ✓ Evidence of responsible parties (e.g., tagging, encampments, etc.).
- One of the keys to success of reducing or eliminating illegal dumping is increasing the number of people at the facility who are aware of the problem and who have the tools to at least identify the incident, if not correct it. Therefore, train field staff to recognize and report the incidents.

Once a site has been cleaned:

- Post "No Dumping" signs with a phone number for reporting dumping and disposal.
- Landscaping and beautification efforts of hot spots may also discourage future dumping, as well as provide open space and increase property values.
- Lighting or barriers may also be needed to discourage future dumping.
- See fact sheet SC-11 Spill Prevention, Control, and Cleanup.

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Non-Stormwater Discharges SC-10

Inspection

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- Conduct field investigations of the industrial storm drain system for potential sources of non-stormwater discharges.
- Pro-actively conduct investigations of high priority areas. Based on historical data, prioritize specific geographic areas and/or incident type for pro-active investigations.

Spill and Leak Prevention and Response

- On paved surfaces, clean up spills with as little water as possible. Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to a certified laundry (rags) or disposed of as hazardous waste.
- Never hose down or bury dry material spills. Sweep up the material and dispose of properly.
- Use adsorbent materials on small spills rather than hosing down the spill. Remove the adsorbent materials promptly and dispose of properly.
- For larger spills, a private spill cleanup company or Hazmat team may be necessary.
- See SC-11 Spill Prevention Control and Cleanup.

Employee Training Program

- Training of technical staff in identifying and documenting illegal dumping incidents is required. The frequency of training must be presented in the SWPPP, and depends on site-specific industrial materials and activities.
- Consider posting a quick reference table near storm drains to reinforce training.
- Train employees to identify non-stormwater discharges and report discharges to the appropriate departments.
- Educate employees about spill prevention and cleanup.
- Well-trained employees can reduce human errors that lead to accidental releases or spills. The employee should have the tools and knowledge to immediately begin cleaning up a spill should one occur. Employees should be familiar with the Spill Prevention Control and Countermeasure Plan. Employees should be able to identify work/jobs with high potential for spills and suggest methods to reduce possibility.
- Determine and implement appropriate outreach efforts to reduce non-permissible non-stormwater discharges.

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- Conduct spill response drills annually (if no events occurred) in order to evaluate the effectiveness of the plan.
- When a responsible party is identified, educate the party on the impacts of his or her actions.

Quality Assurance and Record Keeping

Performance Evaluation

- Annually review internal investigation results; assess whether goals were met and what changes or improvements are necessary.
- Obtain feedback from personnel assigned to respond to, or inspect for, illicit connections and illegal dumping incidents.
- Develop document and data management procedures.
- A database is useful for defining and tracking the magnitude and location of the problem.
- Report prohibited non-stormwater discharges observed during the course of normal daily activities so they can be investigated, contained, and cleaned up or eliminated.
- Document that non-stormwater discharges have been eliminated by recording tests performed, methods used, dates of testing, and any on-site drainage points observed.
- Annually document and report the results of the program.
- Maintain documentation of illicit connection and illegal dumping incidents, including significant conditionally exempt discharges that are not properly managed.
- Document training activities.

Potential Limitations and Work-Arounds

Some facilities may have space constraints, limited staffing and time limitations that may preclude implementation of BMPs. Provided below are typical limitations and recommended "work-arounds."

- Many facilities do not have accurate, up-to-date 'as-built' plans or drawings which may be necessary in order to conduct non-stormwater discharge assessments.
  - ✓ Online tools such as Google Earth™ can provide an aerial view of the facility and may be useful in understanding drainage patterns and potential sources of non-stormwater discharges
  - ✓ Local municipal jurisdictions may have useful drainage systems maps.

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- Video surveillance cameras are commonly used to secure the perimeter of industrial facilities against break-ins and theft. These surveillance systems may also be useful for capturing illegal dumping activities. Minor, temporary adjustments to the field of view of existing surveillance camera systems to target known or suspected problem areas may be a cost-effective way of capturing illegal dumping activities and identifying the perpetrators.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Capital facility cost requirements may be minimal unless cross-connections to storm drains are detected.
- Indoor floor drains may require re-plumbing if cross-connections are detected.
- Leaky sanitary sewers will require repair or replacement which can have significant costs depending on the size and industrial activity at the facility.

Maintenance (including administrative and staffing)

- The primary effort is for staff time and depends on how aggressively a program is implemented.
- Costs for containment, and disposal of any leak or discharge is borne by the Discharger.
- Illicit connections can be difficult to locate especially if there is groundwater infiltration.
- Illegal dumping and illicit connection violations requires technical staff to detect and investigate them.

Supplemental Information

Permit Requirements

The IGP authorizes certain Non-Storm Water Discharges (NSWDs) provided BMPs are included in the SWPPP and implemented to:

- Reduce or prevent the contact of authorized NSWDs with materials or equipment that are potential sources of pollutants;
- Reduce, to the extent practicable, the flow or volume of authorized NSWDs;
- Ensure that authorized NSWDs do not contain quantities of pollutants that cause or contribute to an exceedance of a water quality standards (WQS); and,

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- Reduce or prevent discharges of pollutants in authorized NSWDs in a manner that reflects best industry practice considering technological availability and economic practicability and achievability."

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Waste Handling & Disposal SC-34

Description

Improper storage and handling of solid wastes can allow toxic compounds, oils and greases, heavy metals, nutrients, suspended solids, and other pollutants to enter stormwater runoff. The discharge of pollutants to stormwater from waste handling and disposal can be prevented and reduced by tracking waste generation, storage, and disposal; reducing waste generation and disposal through source reduction, reuse, and recycling; and preventing run-on and runoff.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- ☐ Accomplish reduction in the amount of waste generated using the following source controls:
  - ✓ Production planning and sequencing;
  - ✓ Process or equipment modification;
  - ✓ Raw material substitution or elimination;
  - ✓ Loss prevention and housekeeping;
  - ✓ Waste segregation and separation; and
  - ✓ Close loop recycling.
- ☐ Establish a material tracking system to increase awareness about material usage. This may reduce spills and minimize contamination, thus reducing the amount of waste produced.
- ☐ Recycle materials whenever possible.

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*
■ *Product Substitution*

Targeted Constituents	
Sediment	
Nutrients	
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	✓
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	✓
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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Waste Handling & Disposal SC-34

- Use the entire product before disposing of the container.
- To the extent possible, store wastes under cover or indoors after ensuring all safety concerns such as fire hazard and ventilation are addressed.
- Provide containers for each waste stream at each work station. Allow time after shift to clean area.

Good Housekeeping

- Cover storage containers with leak proof lids or some other means. If waste is not in containers, cover all waste piles (plastic tarps are acceptable coverage) and prevent stormwater run-on and runoff with a berm. The waste containers or piles must be covered except when in use.
- Use drip pans or absorbent materials whenever grease containers are emptied by vacuum trucks or other means. Grease cannot be left on the ground. Collected grease must be properly disposed of as garbage.
- Dispose of rinse and wash water from cleaning waste containers into a sanitary sewer if allowed by the local sewer authority. Do not discharge wash water to the street or storm drain. Clean in a designated wash area that drains to a clarifier.
- Transfer waste from damaged containers into safe containers.
- Take special care when loading or unloading wastes to minimize losses. Loading systems can be used to minimize spills and fugitive emission losses such as dust or mist. Vacuum transfer systems can minimize waste loss.
- Keep the waste management area clean at all times by sweeping and cleaning up spills immediately.
- Use dry methods when possible (e.g., sweeping, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Stencil or demarcate storm drains on the facility's property with prohibitive message regarding waste disposal.
- Cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropylene or hypalon.
- If possible, move the activity indoor after ensuring all safety concerns such as fire hazard and ventilation are addressed.

Preventative Maintenance

- Prevent stormwater run-on from entering the waste management area by enclosing the area or building a berm around the area.
- Prevent waste materials from directly contacting rain.

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Waste Handling & Disposal SC-34

- Cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropylene or hypalon.
- Cover the area with a permanent roof if feasible.
- Cover dumpsters to prevent rain from washing waste out of holes or cracks in the bottom of the dumpster.
- Check waste containers weekly for leaks and to ensure that lids are on tightly. Replace any that are leaking, corroded, or otherwise deteriorating.
- Sweep and clean the waste management area regularly. Use dry methods when possible (e.g., sweeping, vacuuming, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Inspect and replace faulty pumps or hoses regularly to minimize the potential of releases and spills.
- Repair leaking equipment including valves, lines, seals, or pumps promptly.

Spill Response and Prevention Procedures

- Keep your spill prevention and plan up-to-date.
- Have an emergency plan, equipment and trained personnel ready at all times to deal immediately with major spills.
- Collect all spilled liquids and properly dispose of them.
- Store and maintain appropriate spill cleanup materials in a location known to all near the designated wash area.
- Ensure that vehicles transporting waste have spill prevention equipment that can prevent spills during transport. Spill prevention equipment includes:
  - ✓ Vehicles equipped with baffles for liquid waste; and
  - ✓ Trucks with sealed gates and spill guards for solid waste.

Material Handling and Waste Management

Litter Control

- Post "No Littering" signs and enforce anti-litter laws.
- Provide a sufficient number of litter receptacles for the facility.
- Clean out and cover litter receptacles frequently to prevent spillage.

Waste Collection

- Keep waste collection areas clean.

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Waste Handling & Disposal SC-34

- Inspect solid waste containers for structural damage regularly. Repair or replace damaged containers as necessary.
- Secure solid waste containers; containers must be closed tightly when not in use.
- Do not fill waste containers with washout water or any other liquid.
- Ensure that only appropriate solid wastes are added to the solid waste container. Certain wastes such as hazardous wastes, appliances, fluorescent lamps, pesticides, etc., may not be disposed of in solid waste containers (see chemical/ hazardous waste collection section below).
- Do not mix wastes; this can cause chemical reactions, make recycling impossible, and complicate disposal. Affix labels to all waste containers.

Chemical/Hazardous Wastes

- Select designated hazardous waste collection areas on-site.
- Store hazardous materials and wastes in covered containers and protect them from vandalism.
- Place hazardous waste containers in secondary containment.
- Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.
- Hazardous waste cannot be reused or recycled; it must be disposed of by a licensed hazardous waste hauler.

Employee Training Program

- Educate employees about pollution prevention measures and goals.
- Train employees how to properly handle and dispose of waste using the source control BMPs described above.
- Train employees and subcontractors in proper hazardous waste management.
- Use a training log or similar method to document training.
- Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.

Quality Assurance and Record Keeping

- Keep accurate maintenance logs that document minimum BMP activities performed for waste handling and disposal, types and quantities of waste disposed of, and any improvement actions.
- Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.

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Waste Handling & Disposal SC-34

- Establish procedures to complete logs and file them in the central office.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Capital costs will vary substantially depending on the size of the facility and the types of waste handled. Significant capital costs may be associated with reducing wastes by modifying processes or implementing closed-loop recycling.
- Many facilities will already have indoor covered areas where waste materials will be stored and will require no additional capital expenditures for providing cover.
- If outdoor storage of wastes is required, construction of berms or other means to prevent stormwater run-on and runoff may require appropriate constructed systems for containment.
- Capital investments will likely be required at some sites if adequate cover and containment facilities do not exist and can vary significantly depending upon site conditions.

Maintenance

- Check waste containers weekly for leaks and to ensure that lids are on tightly. Replace any that are leaking, corroded, or otherwise deteriorating.
- Sweep and clean the waste management area regularly. Use dry methods when possible (e.g., sweeping, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Inspect and replace faulty pumps or hoses regularly to minimize the potential of releases and spills.
- Repair leaking equipment including valves, lines, seals, or pumps promptly.

References and Resources

Minnesota Pollution Control Agency, *Industrial Stormwater Best Management Practices Guidebook*. Available online at: http://www.pca.state.mn.us/index.php/view-document.html?gid=10557.

New Jersey Department of Environmental Protection, 2013. *Basic Industrial Stormwater General Permit Guidance Document NJPDES General Permit No NJ0088315,* Revised. Available online at: http://www.nj.gov/dep/dwq/pdf/5G2_guidance_color.pdf.

Orange County Stormwater Program, Best Management Practices for Industrial/Commercial Business Activities. Available online at: http://ocwatersheds.com/documents/bmp/industrialcommercialbusinessesactivities

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Waste Handling & Disposal SC-34

Oregon Department of Environmental Quality, 2013. *Industrial Stormwater Best Management Practices Manual- BMP 26 Fueling and Liquid Loading/Unloading Operations*. Available online at: http://www.deq.state.or.us/wq/wqpermit/docs/IndBMP021413.pdf.

Sacramento Stormwater Management Program. *Best Management Practices for Industrial Storm Water Pollution Control*. Available online at: http://www.msa.saccounty.net/sactostormwater/documents/guides/industrial-BMP-manual.pdf.

Sacramento County Environmental Management Stormwater Program: Best Management Practices. Available online at: http://www.emd.saccounty.net/EnvHealth/Stormwater/Stormwater-BMPs.html.

Santa Clara Valley Urban Runoff Pollution Prevention Program. http://www.scvurppp-w2k.com/

US EPA. National Pollutant Discharge Elimination System – Industrial Fact Sheet Series for Activities Covered by EPA's Multi Sector General Permit. Available online at: http://cfpub.epa.gov/npdes/stormwater/swsectors.cfm.

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Safer Alternative Products SC-35

Description

Promote the use of less harmful products and products that contain little or no TMDL and 303(d) list pollutants. Alternatives exist for most product classes including chemical fertilizers, pesticides, cleaning solutions, janitorial chemicals, automotive and paint products, and consumables (batteries, fluorescent lamps).

Approach

Pattern a new program after the many established programs around the state and country. Integrate this best management practice as much as possible with existing programs at your facility.

Develop a comprehensive program based on:

- The "Precautionary Principle," which is an alternative to the "Risk Assessment" model that says it's acceptable to use a potentially harmful product until physical evidence of its harmful effects are established and deemed too costly from an environmental or public health perspective. For instance, a risk assessment approach might say it's acceptable to use a pesticide until there is direct proof of an environmental impact. The Precautionary Principle approach is used to evaluate whether a given product is safe, whether it is really necessary, and whether alternative products would perform just as well.
- Environmentally Preferable Purchasing Program to minimize the purchase of products containing hazardous ingredients used in the facility's custodial services, fleet maintenance, and facility maintenance in favor of using alternate products that pose less risk to employees and to the environment.
- Integrated Pest Management (IPM) or Less-Toxic Pesticide Program, which uses a pest management approach that minimizes the use of toxic chemicals and gets rid of pests

Objectives
■ *Educate*
■ *Reduce/Minimize*
■ *Product Substitution*

Targeted Constituents	
Sediment	
Nutrients	✓
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	
Preventative Maintenance	
Spill and Leak Prevention and Response	
Material Handling & Waste Management	
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	

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Safer Alternative Products SC-35

by methods that pose a lower risk to employees, the public, and the environment.

- Energy Efficiency Program including no-cost and low-cost energy conservation and efficiency actions that can reduce both energy consumption and electricity bills, along with long-term energy efficiency investments.

Consider the following mechanisms for developing and implementing a comprehensive program:

- Policies
- Procedures
  - ✓ Standard operating procedures (SOPs);
  - ✓ Purchasing guidelines and procedures; and
  - ✓ Bid packages (services and supplies).
- Materials
  - ✓ Preferred or approved product and supplier lists;
  - ✓ Product and supplier evaluation criteria;
  - ✓ Training sessions and manuals; and
  - ✓ Fact sheets for employees.

Implement this BMP in conjunction with the Vehicle and Equipment Management fact sheets (SC-20 – SC-22) and SC-41 Building and Grounds Maintenance.

Employee Training Program

- Employees who handle potentially harmful materials should be trained in the use of safer alternatives.
- Purchasing departments should be trained on safer alternative products and encouraged to procure less hazardous materials and products that contain little or no harmful substances or TMDL pollutants.
- Employees and contractors / service providers can both be educated about safer alternatives by using information developed by a number of organizations including the references and resources provided in this fact sheet.

Potential Limitations and Work-Arounds

Some facilities may have space constraints, limited staffing and time limitations that may preclude implementation of BMPs. Provided below are typical limitations and recommended "work-arounds"

- Alternative products may not be available, suitable, or effective in every case.

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- ✓ Minimize use of hazardous/harmful products if no alternative product is available.

Regulatory Considerations

This BMP has no regulatory requirements unless local/municipal ordinance applies. Existing regulations already encourage facilities to reduce the use of hazardous materials through incentives such as reduced:

- Specialized equipment storage and handling requirements;
- Storm water runoff sampling requirements;
- Training and licensing requirements; and
- Record keeping and reporting requirements.

Cost Considerations

- The primary cost is for staff time to: 1) develop new policies and procedures and 2) educate purchasing departments and employees who handle potentially harmful materials about the availability, procurement, and use of safer alternatives.
- Some alternative products may be slightly more expensive than conventional products.

Supplemental Information

The following discussion provides some general information on safer alternatives. More specific information on particular hazardous materials and the available alternatives may be found in the references and resources listed below.

- Automotive products – Less toxic alternatives are not available for many automotive products, especially engine fluids. But there are alternatives to grease lubricants, car polishes, degreasers, and windshield washer solution. Refined motor oil is also available.
- Vehicle/Trailer lubrication – Fifth wheel bearings on trucks require routine lubrication. Adhesive lubricants are available to replace typical chassis grease.
- Cleaners – Vegetables-based or citrus-based soaps are available to replace petroleum-based soaps/detergents.
- Paint products – Water-based paints, wood preservatives, stains, and finishes with low VOC content are available.
- Pesticides – Specific alternative products or methods exist to control most insects, fungi, and weeds.
- Chemical Fertilizers – Compost and soil amendments are natural alternatives.
- Consumables – Manufacturers have either reduced or are in the process of reducing the amount of heavy metals in consumables such as batteries and fluorescent lamps.

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All fluorescent lamps contain mercury, however low-mercury containing lamps are now available from most hardware and lighting stores. Fluorescent lamps are also more energy efficient than the average incandescent lamp.

- Janitorial chemicals – Even biodegradable soap can harm fish and wildlife before it biodegrades. Biodegradable does not mean non-toxic. Safer products and procedures are available for floor stripping and cleaning, as well as carpet, glass, metal, and restroom cleaning and disinfecting. Use paper products with post-consumer recycled content and implement electric had dryers.

Examples

There are a number of business and trade associations, and communities with effective programs. Some of the more prominent are listed below in the references and resources section.

References and Resources

Note: Many of these references provide alternative products for materials that typically are used inside and disposed to the sanitary sewer as well as alternatives to products that usually end up in the storm drain.

General Sustainable Practices and Pollution Prevention Including Pollutant-Specific Information

California Department of Toxic Substances Control, http://www.dtsc.ca.gov/PollutionPrevention/GreenTechnology/Index.cfm.

CalRecycle, http://www.calrecycle.ca.gov/Business/Regulated.htm.

City of Santa Monica Office of Sustainability and Environment, http://www.smgov.net/departments/ose/.

City of Palo Alto, http:// www.city.palo-alto.ca.us/cleanbay.

City and County of San Francisco, Department of the Environment, http://www.sfenvironment.org/toxics-health/greener-business-practices.

Green Business Program, http://www.greenbiz.ca.gov/GRlocal.html .

Product Stewardship Institute, http://www.productstewardship.us/index.cfm.

Sacramento Clean Water Business Partners. http://www.sacstormwater.org/CleanWaterBusinessPartners/CleanWaterBusinessPartners.html.

USEPA. National Pollutant Discharge Elimination System (NPDES) Stormwater Discharges From Industrial Facilities, http://cfpub.epa.gov/npdes/stormwater/indust.cfm.

USEPA Region IX Pollution Prevention Program, http://www.epa.gov/region9/waste/p2/business.html.

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Western Sustainability and Pollution Prevention Network, http://wsppn.org/.

Metals (mercury, copper)

National Electrical Manufacturers Association – Environmental Stewardship, http://www.nema.org/Policy/Environmental-Stewardship/pages/default.aspx.

Sustainable Conservation, http://www.suscon.org.

Auto Recycling Project

Brake Pad Partnership

Pesticides and Chemical Fertilizers

Bio-Integral Resource Center, http://www.birc.org.

California Department of Pesticide Regulation, http://www.cdpr.ca.gov/dprprograms.htm.

University of California Statewide IPM Program, http://www.ipm.ucdavis.edu/default.html.

Dioxins

Bay Area Dioxins Project, http://www.abag.ca.gov/bayarea/dioxin/project_materials.htm.

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Parking Area Maintenance SC-43

Description

Parking lots can contribute a number of substances, such as trash, suspended solids, hydrocarbons, oil and grease, and heavy metals that can enter receiving waters through stormwater runoff or non-stormwater discharges. The protocols in this fact sheet are intended to prevent or reduce the discharge of pollutants from parking areas and include using good housekeeping practices, following appropriate cleaning BMPs, and training employees.

BMPs for other outdoor areas on site (loading/unloading, material storage, and equipment operations) are described in SC-30 through SC-33.

Approach

The goal of this program is to ensure stormwater pollution prevention practices are considered when conducting activities on or around parking areas to reduce potential for pollutant discharge to receiving waters. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- ☐ Encourage advanced designs and maintenance strategies for impervious parking lots. Refer to the treatment control BMP fact sheets in this manual for additional information.
- ☐ Keep accurate maintenance logs to evaluate BMP implementation.

Good Housekeeping

- ☐ Keep all parking areas clean and orderly. Remove debris, litter, and sediments in a timely fashion.
- ☐ Post "No Littering" signs and enforce anti-litter laws.

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*
■ *Product Substitution*

Targeted Constituents	
Sediment	✓
Nutrients	
Trash	✓
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	✓
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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Parking Area Maintenance SC-43

- ☐ Provide an adequate number of litter receptacles.
- ☐ Clean out and cover litter receptacles frequently to prevent spillage.

Preventative Maintenance

Inspection

Have designated personnel conduct inspections of parking facilities and stormwater conveyance systems associated with parking facilities on a regular basis.

- ☐ Inspect cleaning equipment/sweepers for leaks on a regular basis.

Surface Cleaning

- ☐ Use dry cleaning methods (e.g., sweeping, vacuuming) to prevent the discharge of pollutants into the stormwater conveyance system if possible.
- ☐ Establish frequency of public parking lot sweeping based on usage and field observations of waste accumulation.
- ☐ Sweep all parking lots at least once before the onset of the wet season.
- ☐ Dispose of parking lot sweeping debris and dirt at a landfill.
- ☐ Follow the procedures below if water is used to clean surfaces:
  - ✓ Block the storm drain or contain runoff.
  - ✓ Collect and pump wash water to the sanitary sewer or discharge to a pervious surface. Do not allow wash water to enter storm drains.
- ☐ Follow the procedures below when cleaning heavy oily deposits:
  - ✓ Clean oily spots with absorbent materials.
  - ✓ Use a screen or filter fabric over inlet, then wash surfaces.
  - ✓ Do not allow discharges to the storm drain.
  - ✓ Vacuum/pump discharges to a tank or discharge to sanitary sewer.
  - ✓ Dispose of spilled materials and absorbents appropriately.

Surface Repair

- ☐ Check local ordinance for SUSMP/LID ordinance.
- ☐ Preheat, transfer or load hot bituminous material away from storm drain inlets.
- ☐ Apply concrete, asphalt, and seal coat during dry weather to prevent contamination from contacting stormwater runoff.
- ☐ Cover and seal nearby storm drain inlets where applicable (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc. Leave covers in

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place until job is complete and all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal.

- Use only as much water as necessary for dust control during sweeping to avoid runoff.
- Catch drips from paving equipment that is not in use with pans or absorbent material placed under the machines. Dispose of collected material and absorbents properly.

Spill Response and Prevention Procedures

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Place a stockpile of spill cleanup materials where it will be readily accessible or at a central location.
- Clean up fluid spills immediately with absorbent rags or material.
- Dispose of spilled material and absorbents properly.

Employee Training Program

- Provide regular training to field employees and/or contractors regarding cleaning of paved areas and proper operation of equipment.
- Train employees and contractors in proper techniques for spill containment and cleanup.
- Use a training log or similar method to document training.

Quality Assurance and Record Keeping

- Keep accurate maintenance logs that document minimum BMP activities performed for parking area maintenance, types and quantities of waste disposed of, and any improvement actions.
- Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.
- Establish procedures to complete logs and file them in the central office.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Capital investments may be required at some sites to purchase sweeping equipment, train sweeper operators, install oil/water/sand separators, or implement advanced BMPs. These costs can vary significantly depending upon site conditions and the amount of BMPs required.

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Parking Area Maintenance SC-43

Maintenance

- Sweep and clean parking lots regularly to minimize pollutant transport into storm drains from stormwater runoff.
- Clean out oil/water/sand separators regularly, especially after heavy storms.
- Maintain advanced BMPs such as vegetated swales, infiltration trenches, or detention basins as appropriate. Refer to the treatment control fact sheets for more information.

Supplemental Information

Advanced BMPs

Some parking areas may require advanced BMPs to further reduce pollutants in stormwater runoff, and a few examples are listed below. Refer to the Treatment Control Fact Sheets and the New Development and Redevelopment Manual for more information.

- When possible, direct sheet runoff to flow into biofilters (vegetated strip and swale) and/or infiltration devices.
- Utilize sand filters or oleophilic collectors for oily waste in low quantities.
- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable hardscape.

References and Resources

City of Seattle, Seattle Public Utilities Department of Planning and Development, 2009. *Stormwater Manual Vol. 1 Source Control Technical Requirements Manual.*

California Stormwater Quality Association, 2003. *New Development and Redevelopment Stormwater Best Management Practice Handbook*. Available online at: https://www.casqa.org/resources/bmp-handbooks/new-development-redevelopment-bmp-handbook.

Kennedy/Jenks Consultants, 2007. *The Truckee Meadows Industrial and Commercial Storm Water Best Management Practices Handbook*. Available online at: http://www.cityofsparks.us/sites/default/files/assets/documents/env-control/construction/TM-I-C_BMP_Handbook_2-07-final.pdf.

Orange County Stormwater Program, Best Management Practices for Industrial/Commercial Business Activities. Available online at: http://ocwatersheds.com/documents/bmp/industrialcommercialbusinessesactivities.

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Parking Area Maintenance SC-43

Pollution from Surface Cleaning Folder, 1996, 2003. Bay Area Stormwater Management Agencies Association. Available online at: http://basmaa.org/Portals/0/documents/pdf/Pollution%20from%20Surface%20Cleaning.pdf.

Sacramento Stormwater Management Program. *Best Management Practices for Industrial Storm Water Pollution Control*. Available online at: http://www.msa.saccounty.net/sactostormwater/documents/guides/industrial-BMP-manual.pdf.

The Storm Water Managers Resource Center, http://www.stormwatercenter.net.

US EPA. *Post-Construction Stormwater Management in New Development and Redevelopment*. BMP Fact Sheets. Available online at: http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=min_measure&min_measure_id=5.

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Drainage System Maintenance SC-44

Description

As a consequence of its function, the stormwater drainage facilities on site convey stormwater that may contain certain pollutants either to the offsite conveyance system that collects and transports urban runoff and stormwater, or directly to receiving waters. The protocols in this fact sheet are intended to reduce pollutants leaving the site to the offsite drainage infrastructure or to receiving waters through proper on-site conveyance system operation and maintenance. The targeted constituents will vary depending on site characteristics and operations.

Approach

Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- ☐ Maintain catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis to remove pollutants, reduce high pollutant concentrations during the first flush of storms, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.
- ☐ Develop and follow a site specific drainage system maintenance plan that describes maintenance locations, methods, required equipment, water sources, sediment collection areas, disposal requirements, and any other pertinent information.

Good Housekeeping

Illicit Connections and Discharges

- ☐ Look for evidence of illegal discharges or illicit connections during routine maintenance of conveyance system and drainage structures:

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*

Targeted Constituents	
Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	✓
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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Drainage System Maintenance SC-44

- ✓ Identify evidence of spills such as paints, discoloring, odors, etc.
- ✓ Record locations of apparent illegal discharges/illicit connections.
- ✓ Track flows back to potential discharges and conduct aboveground inspections. This can be done through visual inspection of upgradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
- ✓ Eliminate the discharge once the origin of flow is established.

- ☐ Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" or similar stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- ☐ Refer to fact sheet SC-10 Non-Stormwater Discharges for additional information.

Illegal Dumping

- ☐ Inspect and clean up hot spots and other storm drainage areas regularly where illegal dumping and disposal occurs.
- ☐ Establish a system for tracking incidents. The system should be designed to identify the following:
  - ✓ Illegal dumping hot spots;
  - ✓ Types and quantities (in some cases) of wastes;
  - ✓ Patterns in time of occurrence (time of day/night, month, or year);
  - ✓ Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills); and
  - ✓ Responsible parties.
- ☐ Post "No Dumping" signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- ☐ Refer to fact sheet SC-10 Non-Stormwater Discharges for additional information.

Preventative Maintenance

Catch Basins/Inlet Structures

- ☐ Staff should regularly inspect facilities to ensure compliance with the following:
  - ✓ Immediate repair of any deterioration threatening structural integrity.
  - ✓ Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.

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- Clean catch basins, storm drain inlets, and other conveyance structures before the wet season to remove sediments and debris accumulated during the summer.
- Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Prioritize storm drain inlets; clean and repair as needed.
- Keep accurate logs of the number of catch basins cleaned.
- Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- Dewater the wastes if necessary with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed. Do not dewater near a storm drain or stream.

Storm Drain Conveyance System

- Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- Collect and pump flushed effluent to the sanitary sewer for treatment whenever possible.

Pump Stations

- Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- Do not allow discharge to reach the storm drain system when cleaning a storm drain pump station or other facility.
- Conduct routine maintenance at each pump station.
- Inspect, clean, and repair as necessary all outlet structures prior to the wet season.

Open Channel

- Modify storm channel characteristics to improve channel hydraulics, increase pollutant removals, and enhance channel/creek aesthetic and habitat value.
- Conduct channel modification/improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural state of any river, stream, or lake in California, must enter into a Steam or Lake Alteration Agreement with the Department of Fish and Wildlife. The developer-applicant should also contact local governments (city, county, special districts), other state agencies (SWRCB, RWQCB, Department of Forestry, Department of Water Resources), and Army Corps of Engineers and USFWS.

Spill Response and Prevention Procedures

- Keep your spill prevention control plan up-to-date.

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- Investigate all reports of spills, leaks, and/or illegal dumping promptly.
- Place a stockpile of spill cleanup materials where it will be readily accessible or at a central location.
- Clean up all spills and leaks using "dry" methods (with absorbent materials and/or rags) or dig up, remove, and properly dispose of contaminated soil.

Employee Training Program

- Educate employees about pollution prevention measures and goals.
- Train employees how to properly handle and dispose of waste using the source control BMPs described above.
- Train employees and subcontractors in proper hazardous waste management.
- Use a training log or similar method to document training.
- Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
- Have staff involved in detection and removal of illicit connections trained in the following:
  - ✓ OSHA-required Health and Safety Training (29 CFR 1910.120) plus annual refresher training (as needed).
  - ✓ OSHA Confined Space Entry training (Cal-OSHA Confined Space, Title 8 and Federal OSHA 29 CFR 1910.146).
  - ✓ Procedural training (field screening, sampling, smoke/dye testing, TV inspection).

Quality Assurance and Record Keeping

- Keep accurate maintenance logs that document minimum BMP activities performed for drainage system maintenance, types and quantities of waste disposed of, and any improvement actions.
- Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.
- Keep accurate logs of illicit connections, illicit discharges, and illegal dumping into the storm drain system including how wastes were cleaned up and disposed.
- Establish procedures to complete logs and file them in the central office.

Potential Limitations and Work-Arounds

Provided below are typical limitations and recommended "work-arounds" for drainage system maintenance:

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Drainage System Maintenance SC-44

- Clean-up activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. Trade-offs may exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.

  ✓ Perform all maintenance onsite and do not flush accumulated material downstream to private property or riparian habitats.

- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, and liquid/sediment disposal.

  ✓ Develop and follow a site specific drainage system maintenance plan that describes maintenance locations, methods, required equipment, water sources, sediment collection areas, disposal requirements, and any other pertinent information.

- Regulations may include adoption of substantial penalties for illegal dumping and disposal.

  ✓ Do not dump illegal materials anywhere onsite.

  ✓ Identify illicit connections, illicit discharge, and illegal dumping.

  ✓ Cleanup spills immediately and properly dispose of wastes.

- Local municipal codes may include sections prohibiting discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the sanitary sewer system.

  ✓ Collect all materials and pollutants accumulated in drainage system and dispose of according to local regulations.

  ✓ Install debris excluders in areas with a trash TMDL.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Capital costs will vary substantially depending on the size of the facility and characteristics of the drainage system. Significant capital costs may be associated with purchasing water trucks, vacuum trucks, and any other necessary cleaning equipment or improving the drainage infrastructure to reduce the potential .

- Developing and implementing a site specific drainage system maintenance plan will require additional capital if a similar program is not already in place.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Drainage System Maintenance SC-44

Maintenance

- Two-person teams may be required to clean catch basins with vactor trucks.
- Teams of at least two people plus administrative personnel are required to identify illicit discharges, depending on the complexity of the storm sewer system.
- Arrangements must be made for proper disposal of collected wastes.
- Technical staff are required to detect and investigate illegal dumping violations.
- Methods used for illicit connection detection (smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors, such as the level of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary.

Supplemental Information

Storm Drain Flushing

Flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in storm drainage systems. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as an open channel, another point where flushing will be initiated, or the sanitary sewer and the treatment facilities, thus preventing re-suspension and overflow of a portion of the solids during storm events. Flushing prevents "plug flow" discharges of concentrated pollutant loadings and sediments. Deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, thereby releasing the backed up water and resulting in the cleaning of the storm drain segment.

To further reduce impacts of stormwater pollution, a second inflatable device placed well downstream may be used to recollect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to recollect the flushed waters.

It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65-75% for organics and 55-65% for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used if allowed or that fire hydrant line flushing coincide with storm sewer flushing.

Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Drainage System Maintenance SC-44

References and Resources

City of Seattle, Seattle Public Utilities Department of Planning and Development, 2009. *Stormwater Manual Vol. 1 Source Control Technical Requirements Manual.*

Knox County Tennessee *Stormwater Management Manual* Chapter 5 Drainage System Maintenance, 2008. Available online at: http://www.knoxcounty.org/stormwater/manual/Volume%201/knoxco_swmm_v1_chap5_jan2008.pdf.

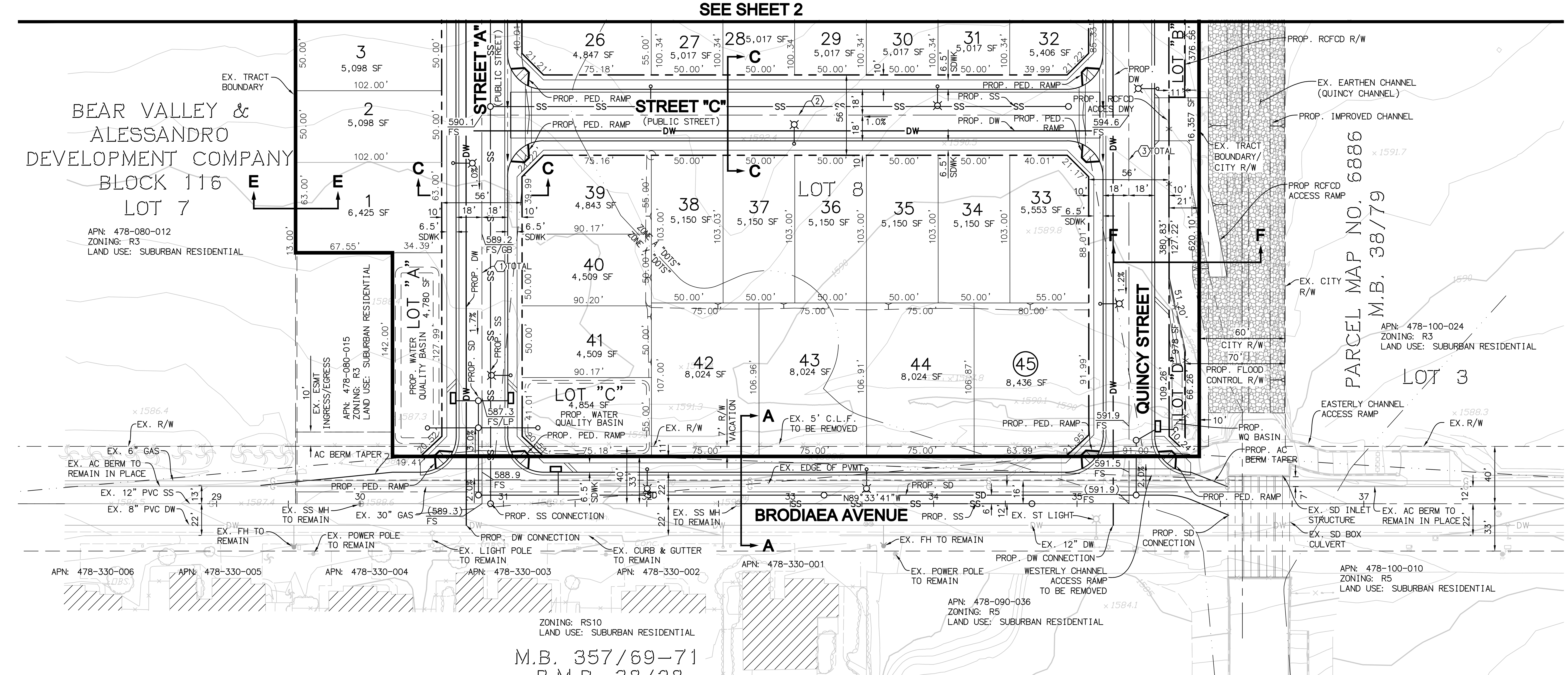
US EPA. Storm Drain System Cleaning, 2012. Available online at: http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=102.

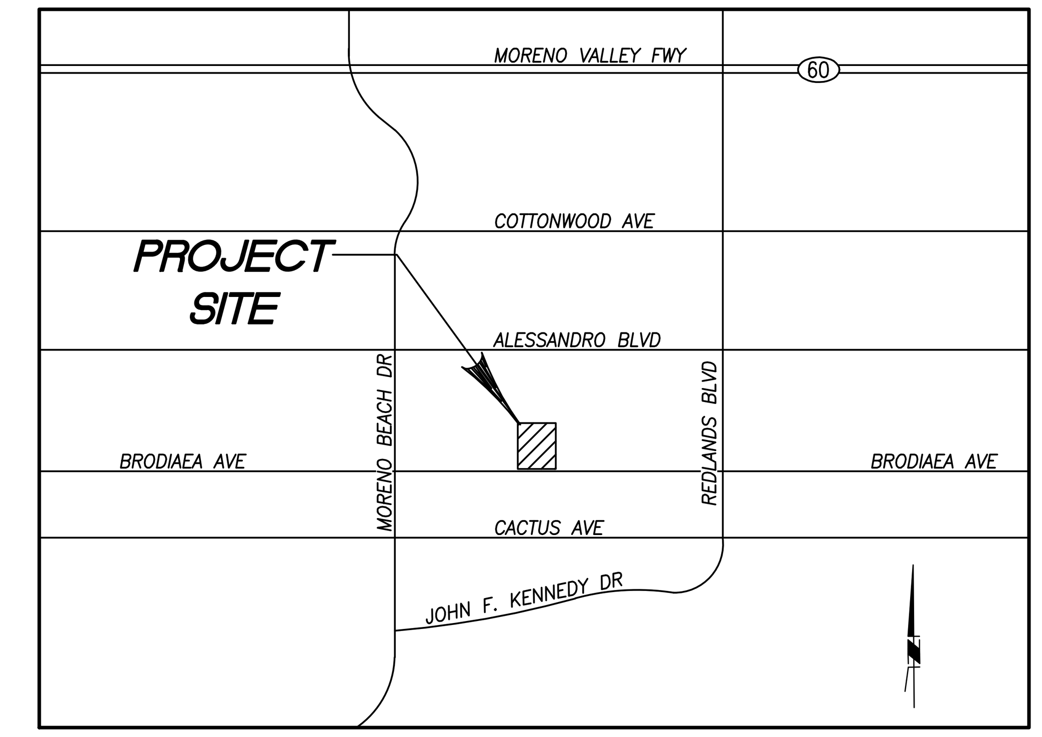
Attachment: Project 2_Prelim WQMP (9-25-18) (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TENTATIVE TRACT MAP 37544

APN: 478-080-014

SEE SHEET 2





VICINITY MAP

NOT TO SCALE

LOT SUMMARY:

SUBAREA LOT NUMBER	CONCEPT PLAN LAND USE	AREA ACREAGE
LOT 1	RESIDENTIAL	0.147
LOT 2	RESIDENTIAL	0.117
LOT 3	RESIDENTIAL	0.117
LOT 4	RESIDENTIAL	0.117
LOT 5	RESIDENTIAL	0.118
LOT 6	RESIDENTIAL	0.116
LOT 7	RESIDENTIAL	0.204
LOT 8	RESIDENTIAL	0.274
LOT 9	RESIDENTIAL	0.141
LOT 10	RESIDENTIAL	0.115
LOT 11	RESIDENTIAL	0.112
LOT 12	RESIDENTIAL	0.111
LOT 13	RESIDENTIAL	0.111
LOT 14	RESIDENTIAL	0.111
LOT 15	RESIDENTIAL	0.113
LOT 16	RESIDENTIAL	0.108
LOT 17	RESIDENTIAL	0.109
LOT 18	RESIDENTIAL	0.118
LOT 19	RESIDENTIAL	0.115
LOT 20	RESIDENTIAL	0.117
LOT 21	RESIDENTIAL	0.117
LOT 22	RESIDENTIAL	0.117
LOT 23	RESIDENTIAL	0.116
LOT 24	RESIDENTIAL	0.176
LOT 25	RESIDENTIAL	0.103
LOT 26	RESIDENTIAL	0.111
LOT 27	RESIDENTIAL	0.115
LOT 28	RESIDENTIAL	0.115
LOT 29	RESIDENTIAL	0.115
LOT 30	RESIDENTIAL	0.115
LOT 31	RESIDENTIAL	0.115
LOT 32	RESIDENTIAL	0.124
LOT 33	RESIDENTIAL	0.127
LOT 34	RESIDENTIAL	0.118
LOT 35	RESIDENTIAL	0.118
LOT 36	RESIDENTIAL	0.118
LOT 37	RESIDENTIAL	0.118
LOT 38	RESIDENTIAL	0.118
LOT 39	RESIDENTIAL	0.111
LOT 40	RESIDENTIAL	0.104
LOT 41	RESIDENTIAL	0.104
LOT 42	RESIDENTIAL	0.184
LOT 43	RESIDENTIAL	0.184
LOT 44	RESIDENTIAL	0.184
LOT 45	RESIDENTIAL	0.194
LOT A	OPEN SPACE	0.110
LOT B	OPEN SPACE	0.376
LOT C	OPEN SPACE	0.111
LOT D	OPEN SPACE	0.023
--	PROPOSED PUBLIC STREET	2.414
TOTAL		8.846

GENERAL NOTES:

1. SITE ADDRESS: NORTHWEST CORNER OF BRODIAEA AVE AND QUNICY CHANNEL (STREET), MORENO VALLEY, CA
2. SITE ACREAGE:
   GROSS: 8.846 ACRES
   NET: 5.811 ACRES
3. EXISTING ZONING: R3
4. PROPOSED ZONING: RS10
5. GENERAL LAND USE: SUBURBAN RESIDENTIAL
6. EARTHWORK: 15,900 CY CUT
   17,200 CY FILL
   1,300 CY IMPORT
7. TOPOGRAPHY SOURCE:
8. TOTAL STREET LENGTH: 2,081 L.F.
9. SCHOOL DISTRICT: MORENO VALLEY UNIFIED

FLOOD ZONE NOTE

THE SUBJECT PROPERTY IS DESIGNATED AS FEMA ZONE A "DOTS": SPECIAL FLOOD ZONE HAZARD AREA (SFHA) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD. NO BASE FLOOD ELEVATION DETERMINED.

AND FEMA FLOOD ZONE X "DOTS": OTHER FLOOD AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD.

AS SHOWN ON:
FLOOD INSURANCE RATE MAP NO. 06065C0770G
COMMUNITY: CITY OF MORENO VALLEY
NUMBER: 065074
PANEL: 0770 OF 3805
DATE: AUGUST 28, 2008.

(SOURCE: https://msc.fema.gov)

AMENITY NOTE

THE PROJECT PROPOSES A LINEAR PARK AND WALKING TRAIL THAT WILL RUN THE ENTIRE LENGTH OF THE PROJECT ALONG QUINCY CHANNEL WITH AMENITIES TO INCLUDE: MEANDERING TRAIL, BENCHES, EXERCISE STATIONS, AND LANDSCAPE. TRAIL SHALL BE MAINTAINED BY THE CITY. AMENITIES AND LANDSCAPING WITHIN LOT "B" SHALL BE MAINTAINED BY THE HOA.

LEGAL DESCRIPTION

PARCEL 1:

LOT 8 IN BLOCK 116 OF MAP NO. 1 OF BEAR VALLEY AND ALESSANDRO DEVELOPMENT COMPANY, AS SHOWN BY MAP ON FILE IN BOOK 11 PAGE(S) 10 OF MAPS, RECORDS OF SAN BERNARDINO COUNTY, CALIFORNIA.

EXCEPT THAT PORTION DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF SAID LOT 8, SAID POINT BEING ON THE NORTHERLY LINE OF BRODIAEA STREET, AS SHOWN ON SAID MAP; THENCE EASTERLY ALONG THE SOUTHERLY LINE OF SAID LOT, 67.6 FEET; THENCE NORTHERLY AND PARALLEL WITH THE WESTERLY LINE OS SAID LOT, 135 FEET; THENCE WESTERLY AND PARALLEL WITH THE SOUTHERLY LINE OF SAID LOT, 67.6 FEET; THENCE SOUTHERLY ALONG THE WESTERLY LINE OF SAID LOT, 135 FEET TO THE POINT OF BEGINNING.

APN: 478-080-014

SYMBOLS LEGEND

- TOP/TOE OF SLOPE
- TRACT BOUNDARY
- EASEMENT
- CENTERLINE
- RETAINING WALL
- LINE OF SIGHT
- FLOOD ZONE LINE
- PROPOSED PROPERTY LINE
- RIGHT OF WAY
- EXISTING RIGHT OF WAY
- SLOPE
- SS — SANITARY SEWER
- SD — STORM DRAIN
- DW — DOMESTIC WATER
- EXISTING STREET LIGHT
- CATCH BASIN
- FIRE HYDRANT
- SCE TRANSFORMER LOCATION.
- DOUBLE DETECTOR CHECK
- AC CONDENSER
- PROPOSED ST LIGHT

ABBREVIATIONS

AC	ASPHALT CONCRETE
℄	CENTER LINE
C.L.F.	CHAIN LINK FENCE
CONC.	CONCRETE
CY	CUBIC YARD
DW	DOMESTIC WATER
ESMT.	EASEMENT
EX.	EXISTING
FH	FIRE HYDRANT
MH	MANHOLE
MWS	MODULAR WETLAND SYSTEM
RCFCD	RIVERSIDE COUNTY FLOOD CONTROL DISTRICT
PED.	PEDESTRIAN
PVC	POLYVINYL CHLORIDE
PROP.	PROPOSED
PVMT.	PAVEMENT
R/W	RIGHT OF WAY
SCE	SOUTHERN CALIFORNIA EDISON
SD	STORM DRAIN
SDWK	SIDEWALK
SF	SQUARE FEET
SS	SANITARY SEWER
WQ	WATER QUALITY

LINE/CURVE DATA TABLE

	NO	BEARING/DELTA	RADIUS	LENGTH	TANGENT
TOTAL	1	N00°24'18"E	--	398.03'	--
	2	N89°33'41"W	--	456.00'	--
TOTAL	3	N00°24'18"E	--	525.07'	--

40 20 0 40 80 120

SCALE: 1"=40'

DIGALERT
DIAL TOLL FREE
1-800-227-2600
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

ANY UNDERGROUND UTILITIES OR STRUCTURES SHOWN ON THESE PLANS WERE PLOTTED FROM CITY RECORDS. NO ADDITIONAL UTILITY OR SUBSTRUCTURE RESEARCH HAS BEEN PERFORMED. THE CONTRACTOR SHALL DETERMINE THE EXISTENCE AND THE TRUE HORIZONTAL AND VERTICAL LOCATION AND SIZE OF ANY UNDERGROUND UTILITIES OR STRUCTURES AND SHALL BE RESPONSIBLE FOR PROTECTION, ADJUSTMENT, OR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES SHOWN OR NOT SHOWN HEREON. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR NOTIFYING U.S.A./DIG ALERT AT 1-800-227-2600 FOR UNDERGROUND UTILITY MARKING AT LEAST 48 HOURS PRIOR TO COMMENCING ANY CONSTRUCTION. CONSTRUCTION SHALL NOT COMMENCE PRIOR TO SAID UNDERGROUND UTILITY MARKING.

REGISTERED PROFESSIONAL ENGINEER
JARED BERNARD
No. 77740
CIVIL
STATE OF CALIFORNIA

Michael Baker
INTERNATIONAL
5 Hutton Centre Drive, Suite 500, Santa Ana, CA 92707
Phone: (949) 472-3505 · MBAKERINTL.COM

REVISIONS			
N°.	DATE	BY	DESCRIPTION
△			
△			
△			
△			
△			
△			

DEVELOPER:
FRONTIER ENTERPRISES

CONTACT: MELISSA VALLONE
2151 E. CONVENTION CENTER WAY
ONTARIO, CA
951-354-8040
MVALLONE@FRONTEIR-ENTERPRISE.COM

TENTATIVE TRACT MAP 37544

TRACT NO.

CITY CASE NO.

DATE: 11/15/18

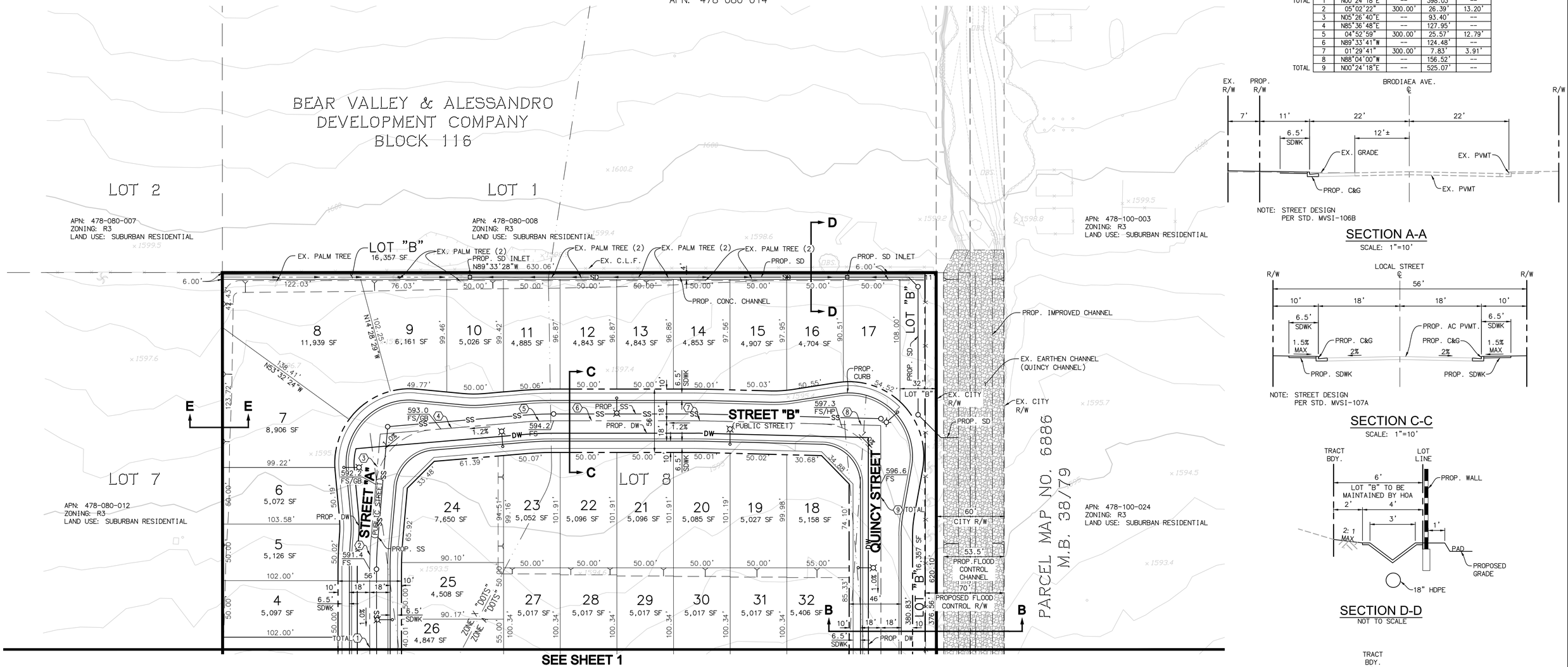
SHEET 1 of 2

H:\PDATA\161595\CADD\LAND\DLV\TTM\161595-TTM-01.DWG JARED.BERNARD 11/15/18 1:52 pm

Attachment: Project 2_Tentative Tract Map 37544 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

TENTATIVE TRACT MAP 37544

APN: 478-080-014



LINE/CURVE DATA					
	Ⓝ	BEARING/DELTA	RADIUS	LENGTH	TANGENT
TOTAL	1	N00°24'18"E	--	398.03'	--
	2	05°02'22"	300.00'	26.39'	13.20'
	3	N05°26'40"E	--	93.40'	--
	4	N85°36'48"E	--	127.95'	--
	5	04°52'59"	300.00'	25.57'	12.79'
	6	N89°33'41"W	--	124.48'	--
	7	01°29'41"	300.00'	7.83'	3.91'
	8	N88°04'00"W	--	156.52'	--
TOTAL	9	N00°24'18"E	--	525.07'	--

NOTE: STREET DESIGN
PER STD. MVSI-106B

SECTION A-A

SCALE: 1"=10'

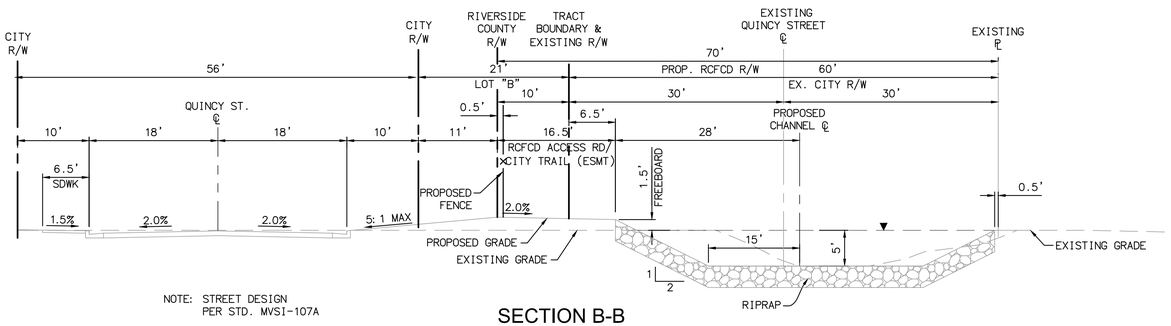
NOTE: STREET DESIGN
PER STD. MVSI-107A

SECTION C-C

SCALE: 1"=10'

SECTION D-D

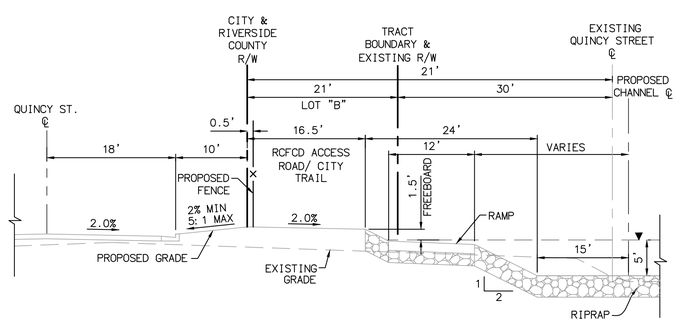
NOT TO SCALE



NOTE: STREET DESIGN
PER STD. MVSI-107A

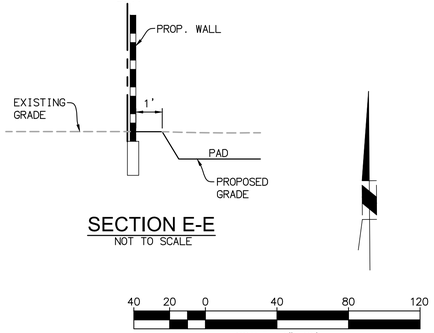
SECTION B-B

SCALE: 1"=10'



SECTION F-F

SCALE: 1"=10'



SECTION E-E

NOT TO SCALE

40 20 0 40 80 120

SCALE: 1"=40'

DIGALERT
DIAL TOLL FREE
1-800-227-2600
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

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REGISTERED PROFESSIONAL ENGINEER
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REVISIONS			
Nº	DATE	BY	DESCRIPTION
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DEVELOPER:
FRONTIER ENTERPRISES
CONTACT: MELISSA VALLONE
2151 E. CONVENTION CENTER WAY
ONTARIO, CA
951-354-8040
MVALLONE@FRONTEIR-ENTERPRISE.COM

TENTATIVE TRACT MAP 37544

TRACT NO.
CITY CASE NO.
DATE: 11/15/18
SHEET 2 of 2

H:\PDATA\161595\CADD\LAND\DLV\TTM\161595-TTM-02.DWG JARED.BERNARD 11/15/18 1:53 pm
Attachment: Project 2, Tentative Tract Map 37544 (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

This may affect your property

Notice of PUBLIC HEARING

Notice is hereby given that a Public Hearing will be held by the City Council of the City of Moreno Valley on the following item(s):

Project: PEN18-0092 Tentative Tract Map 37544
PEN18-0053 General Plan Amendment
PEN18-0054 Change of Zone
Applicant: FH II, LLC.
Owner: FH II, LLC.
Representative: Melissa Vallone
APN: 478-080-014

Location: Northwest corner of Brodiaea Avenue and Quincy Street, easterly of Moreno Beach Drive

Proposal: The Project consists of a proposed Tentative Tract Map (No. 37544) for the subdivision of 45 single-family residential units and associated improvements, including, but not limited to, improvements to Quincy Channel, streets and utility infrastructure on approximately 8.85 acres of land. The Project includes a General Plan Amendment to change the Land Use Designation from Residential 3 (maximum 3 units/acre) to Residential 10 (maximum 10 units/acre), and a Change of Zone to change the Zoning Designation from R3 (maximum 3 units/acre) to RS10 (maximum 10 units/acre). Approval of this Project will require adoption of a Mitigated Negative Declaration (MND).

Environmental Determination: Mitigated Negative Declaration (Circulated September 25, 2018 through October 24, 2018)

Council District: 3

Any person interested in any listed proposal can contact the Community Development Department, Planning Division, at 14177 Frederick St., Moreno Valley, California, during normal business hours (7:30 a.m. to 5:30 p.m., Monday through Thursday and Fridays from 7:30 a.m. to 4:30 p.m.), or may telephone (951) 413-3206 for further information. The associated documents will be available for public inspection at the above address. In the case of Public Hearing items, any person may also appear and be heard in support of or opposition to the project or recommendation of adoption of the Environmental Determination at the time of the Hearing. The City Council, at the Hearing or during deliberations, could approve changes or alternatives to the proposal.

If you challenge these items in court, you may be limited to raising only those items you or someone else raised at the Public Hearing described in this notice, or in written correspondence delivered to the City Council at, or prior to the Public Hearing.

LOCATION N

CITY COUNCIL HEARING

City Council Chamber, City Hall
14177 Frederick Street
Moreno Valley, Calif. 92553

DATE AND TIME: December 11, 2018 at 6:00 p.m.
CONTACT PLANNER: Chris Ormsby
PHONE: (951) 413-3229

Upon request and in compliance with the Americans with Disabilities Ac of 1990, any person with a disability who requires a modification o accommodation in order to participate in a meeting should direct suc request to Guy Pegan, ADA Coordinator, at 951.413.3120 at least 4 hours before the meeting. The 48-hour notification will enable the City t make reasonable arrangements to ensure accessibility to this meeting.

Attachment: Project 2_Public Hearing Notice (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

POR. NW 1/4 SEC. 14, T.3S., R.3W.
POR. NE 1/4 SEC. 15

TRA 021-011
021-010

478-08
11-12

ALESSANDRO BLVD

N

2
07
9.10 AC ML

1
08
8.69 AC ML

ST

03
2.09 AC ML

4
02
6.58 AC ML

300'

300'

478-10

116

TRA
TRA

021-010
021-011

478-08

6
POR PAR 4
03
04
05
4.69 AC ML

7
12
9.40 AC

8
14
8.76 AC ML

QUINCY

15

PM 67/86

PAR 1
22
3.76 AC GR

PAR 2
23
3.29 AC GR

PAR 3
24
1.26 AC ML

PAR 4
25
1.10 AC ML

LOT A
LOT B
LOT C
LOT D
LOT E
LOT F
LOT G

478-32

478-33

478-44

BRODIAEA

PEONY CIRCLE
LOT N

ANNALEIGH COURT
MARYKNOLL COURT
MORNINGSIDE DRIVE
ARBORGLENN DRIVE
ARBORGLENN DRIVE
ARBORGLENN DRIVE

QUINCY STREET
QUINCY CHANNEL
BOTTLEBRUSH WAY
LARKSONG WAY
LOT O

PAR 2
31
1.14 AC GR

PAR 4
19
2.18 AC ML

PAR 3
18
3.16 AC ML

PAR 1
26
2.94 AC NT

PAR 2
27
1.87 AC NT

PAR 1
20
1.20 AC ML

PAR 2
21
1.00 AC ML

PAR 1
24

PAR 2
25

PAR 3
28
1.81 AC NT

PAR 4
29
1.81 AC NT

ADSHAW CIRCLE
McCLOUD DR
LOT A
LOT B
LOT C
LOT D
LOT E
LOT F
LOT H
LOT W
LOT Z

TUS AVENUE

Map Reference *
PM 53/35 PARCEL MAP NO. 11496
MB 11/10 - 0 S.B. BEAR VALLEY AND ALESSANDRO DEV. CO.
PM 36/96 PARCEL MAP NO 8115
PM 38/28 PARCEL MAP NO 8114
PM 55/84 PARCEL MAP NO 11822
PM 96/16 PARCEL MAP NO 16636
PM 96/57-58 PARCEL MAP NO. 17535
PM 148/33-34 PARCEL MAP NO. 22460

Feb 2018

Date *	Old Number *	New Number *
2/1/1975	9	11,ST
10/1/1977	10	12-15
2/1/1978	8	16-19
12/1/1978	16	20-21
5/1/1979	14	22-23
10/1/1981	17	24-25
10/1/1981	6	26-29
2/1/1988	13	30-31
6/1/2004	2	32-33
6/1/2004	3,32	34
6/1/2004	1	35,36
6/1/2004	33,35	37
6/1/2004	34	PG 32
6/1/2004	37	PG 33
1/4/2018	35,100-10	38
1/4/2018	7,100-34	39
1/4/2018	38	PG 44
1/4/2018	39	PG 45

Attachment: Project 2_Radius Map for Noticing (3321 : Centerpointe Commerce Center, and Brodiaea Residential Project, TTM 37544)

Report to City Council

TO: Mayor and City Council

FROM: Richard J. Sandzimier, Community Development Director

AGENDA DATE: December 11, 2018

TITLE: A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT OF A DONUT STORE / CONVENIENCE STORE WITH GASOLINE SALES AND CAR WASH LOCATED AT THE NORTHEAST CORNER OF PERRIS BOULEVARD AND COTTONWOOD AVENUE

RECOMMENDED ACTION

Recommendations: That the City Council:

1. ADOPT Resolution No. 2018-XX: A Resolution of the City Council of the City of Moreno Valley CERTIFYING the Mitigated Negative Declaration prepared for the Yum Yum Donuts Moreno Valley project, inclusive of all related applications on file with the Community Development Department, incorporated herein by this reference, whereby the Mitigated Negative Declaration has been completed in compliance with the California Environmental Quality Act, and the information and findings contained in the Mitigated Negative Declaration reflects the City's independent judgment and analysis; and ADOPTING the Mitigation Monitoring and Reporting Program prepared for the Yum Yum Donuts Moreno Valley project; and

2. ADOPT Resolution No. 2018-XX approving the request by Yum Yum Donuts for a General Plan Amendment (PEN16-0086), from Residential/Office (R/O) to Commercial (C) for a 1.77-acre site located at the northeast corner of Perris Boulevard and Cottonwood Avenue, based on the findings in the Resolution, the Revised General Plan Land Use Map; and

3. INTRODUCE and conduct the first reading by title only of Ordinance No. 2018-XX approving the request of Yum Yum Donuts for a Zone Change (PEN16-0087) from Office Commercial (OC) to Community Commercial (CC) for a 1.77-acre site located at the northeast corner of Perris Boulevard and Cottonwood Avenue,

as described in the Ordinance, based on the findings in the Ordinance, and the revised Zoning Atlas; and

4. ADOPT Resolution No. 2018-XX: A Resolution of the City Council of the City of Moreno Valley approving the request of Yum Yum Donuts for a Conditional Use Permit PEN16-0088 for a convenience store with gasoline sales, carwash, and alcohol beer and wine sales for a 1.77-acre site located at the northeast corner of Perris Boulevard and Cottonwood Avenue, based on the findings contained in this Resolution, and subject to the conditions of approval included as Exhibit A; and

5. SCHEDULE the introduced Ordinance for second reading and final action for the next regular City Council meeting.

SUMMARY

This report recommends that the City Council convene a Public Hearing and consider the recommendations to approve a General Plan Amendment to change the General Plan land use designation from Residential/Office (R/O) to Commercial (C), a Zone Change to change the zoning from Office Commercial (OC) to Community Commercial (CC), and a Conditional Use Permit for a service station with a canopy for eight fuel pump stations, and a 5,815 square foot donut store / convenience store with beer and wine sales, and a 900 square foot automated car wash on a 1.77-acre site located at the northeast corner of Perris Boulevard and Cottonwood Avenue.

DISCUSSION

Advisory Board/Commission Recommendation

The Planning Commission, at its July 26, 2018 meeting, held a public hearing and recommended that the City Council certify the Mitigated Negative Declaration, adopt a Mitigation Monitoring Reporting Program, and to approve the General Plan Amendment, Change of Zone and the Conditional Use Permit applications for the project. There were two members of the public who commented on the project but did not express opposition to the project.

There was discussion at the hearing regarding the hours of operation for the car wash and the noise attenuation measures to reduce noise impacts from the operation of the car wash. The Planning Commission was supportive of the project as designed and conditioned. Staff added standard conditions of approval to require the project to participate in the City's programs to promote local hiring and participate in programs available to new businesses.

Background

Following the July 26, 2018 Planning Commission meeting, the applicant met with a concerned resident to discuss the project and specific concerns with proximity of an

existing high pressured gas line running along Cottonwood Avenue. The applicant agreed to take the time to prepare a Health Risk Assessment which concluded that any potential impacts resulting from toxic air contaminant emissions from the proposed gas station would be less than significant and no mitigation is needed. This conclusion is consistent with the determination of the existing air quality study and re-affirms the conclusions of the staff recommended Mitigated Negative Declaration. The applicant also made minor change to the site design of the project by relocating the underground fuel storage tanks further north near the northwest corner of the site and increased the depth of the landscape setback along Alessandro Boulevard; both modifications have been reviewed by and are acceptable to staff.

Project

This project proposes to develop a 1.77-acre site located at the northeast corner of Perris Boulevard and Cottonwood Avenue with a service station with a canopy for eight pump stations, and a 5,815 square foot donut store / convenience store with beer and wine sales, and a 900 square foot automated car wash. The proposed use requires approval of a General Plan Amendment and Zone Change.

General Plan Amendment

The General Plan Amendment will change the existing designation from Residential/Office (R/O) to Commercial (C). The properties to the immediate north and south with frontage on Perris Boulevard on the east side of Perris Boulevard also have a General Plan land use designation of R/O. The properties across the street to the west side of Perris Boulevard have a Commercial designation. The properties located farther east, west, northeast and southeast have an R5 designation.

Land Use Change Discussion

The City's first General Plan in 1988, designated the site as Office. The project site is designated as Residential/Office in the current General Plan adopted in 2006. There have been no prior development approvals for a project on the site, and no development activity over the last 30 years. The commercial center to the west was developed more than twenty-five years ago. The proposed project may help to revitalize economic activity along Perris Boulevard.

Although the proposed change in the General Plan designation and zoning for the site is a departure from the established General Plan land use and zoning pattern for properties on the east side of Perris Boulevard, there are commercially designated properties on the east side of Perris Boulevard, both north of Fir Avenue and south of Bay Avenue.

Zone Change

The project site and the adjoining vacant parcels to the north are currently zoned Office Commercial (OC). The applicant is requesting a Zone Change to Community

Commercial to allow for the service station and convenience store to occur as the primary standalone land uses on the site, which would be inconsistent with the current zoning that limits retail facilities to be supportive to major business developments. If the Change of Zone is approved, the service station use and the convenience store with beer and wine sales would be allowed with approval of a Conditional Use Permit.

Conditional Use Permit

The City's Municipal Code allows for service stations and convenience stores in the Community Commercial zone; however, when located within 300 feet of existing residences or a residential zoning district such allowance requires approval of a Conditional Use Permit. The project will include a canopy for eight fueling pump stations, a 5,815 square foot donut store / convenience store, and a 900 square foot automated carwash.

The applicant is also requesting approval for the sale of beer and wine from the convenience store under a Type 20 license, which would need to be subsequently secured by the applicant through the California Department of Alcohol Beverage Control. Per City zoning regulations, the sale of alcohol at the convenience store also requires approval of a Conditional Use Permit due to the proximity of existing residences.

The canopy and gas pumps are located near the southwest corner of the project site as far as possible from residences with the convenience store located near the southeast corner to serve as a buffer to the existing homes to the east. The car wash tunnel is located along the site's northern property line and will be separated from the adjacent residences to the east by an eight (8) foot tall decorative block wall. The wall will also help attenuate any potential impacts from noise from the operation of the car wash. However, other mitigation measures will apply to the design of the car wash as described in the Initial Study and Mitigation Monitoring and Reporting Program. In addition, the car wash tunnel is required to install doors that will close when the car wash is in use.

A Conditional Use Permit allows the City to impose special development requirements to ensure that certain uses will not be detrimental to surroundings. Conditional uses may be appropriate at one location but not at another because of the potential for impacts on surrounding properties. The following summarizes the project design elements that will minimize impacts on residential uses.

A. A 20 to 32-foot-wide landscape setback is provided between the rear of the convenience store and the residential property line with the exception of the tapering of the driveway apron in proximity to Cottonwood Avenue. There will be an eight-foot block wall between the project site and the nearest residences.
B. The canopy for the gasoline station is approximately 150 feet from the property line and buffered from residential uses by the building.
C. The trash enclosure for the project is located approximately 42 feet from the residential property line. The trash enclosure will be approximately 87 feet from

the nearest residence. The Code requirement is to be located a minimum of 45 feet from any residential structure. The trash enclosure would be fully screened and include a covered roof.

D. Access doors for employees are limited to two doors on the east side of the building toward the residential.

Access/Parking

The primary access to the proposed development will be from driveways on Perris Boulevard and Cottonwood Avenue. The driveway on Perris Boulevard is limited to right-in and right-out turning movements due to the center median in Perris Boulevard. The driveway on Cottonwood Avenue will have full access subject to approval of a revised roadway striping concept for Cottonwood Avenue near the intersection of Perris Boulevard and Cottonwood Avenue.

Design/Landscaping

The project has been designed to satisfy the City's design and landscape standards. The landscape elements of the project include the landscape setback areas along Perris Boulevard and Cottonwood Avenue, street trees, parking lot landscaping, and landscape treatments along the perimeter of the site and within the bio-retention basin.

Environmental

Helix Environmental Planning, Inc. prepared an Initial Study in compliance with California Environmental Quality Act (CEQA) Guidelines. The Initial Study examined the potential of the proposed project to have an impact on the environment. The Initial Study provides information in support of the findings for a Mitigated Negative Declaration. Studies prepared for this project included a traffic study, an air quality study/greenhouse gas analysis, a cultural resource assessment, a preliminary hydrology study, a geotechnical study, a general biological assessment and burrowing owl study, and a Preliminary Water Quality Management Plan.

Following the Planning Commission's recommendation to approve the project, the applicant met with a concerned resident to discuss the project. The applicant agreed to take the time to prepare a Health Risk Assessment for the project. This study examined the potential incremental excess cancer risk for the closest existing residents, off-site workers, and students. The study concluded that all estimated incremental excess cancer risks would be below the South Coast Air Quality Management District's (SCAQMD) threshold of 10 in 1 million. Therefore, impacts resulting from TAC emissions from the proposed gas station would be less than significant and no mitigation is needed. A copy of this study has been included as an attachment to the staff report (Attachment 21). The conclusions of the study are consistent with the existing air quality study and re-affirm the conclusions of the Mitigated Negative Declaration.

Project impacts were found to be less than significant for most categories in the Initial Study checklist. However, mitigation measures have been introduced to reduce impacts to a less than significant level for Traffic and Noise. Additionally, while not required to reduce an impact, mitigation measures for Cultural Resources have been included for the project to ensure compliance with City General Plan policies and other requirements related to Cultural Resources. The Mitigation Monitoring Program prepared for this project will ensure implementation of the mitigation measures (see Attachment 5).

ALTERNATIVES

1. Conduct a public hearing on this project, and take actions to certify the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program, and approve the General Plan Amendment, Change of Zone and Conditional Use Permit applications, consistent with the recommendations of the Planning Commission. *Staff recommends this alternative.*

2. Conduct a public hearing on this project, and do not approve the applications for this project. This action would retain the existing Residential Office land use designation and the existing OC zone for the project site, and would not certify the Mitigated Negative Declaration, or approve the conditional use permit application. *Staff does not recommend this alternative.*

NOTIFICATION

The public notice for this project was mailed on November 29, 2018 to all property owners of record within 300' of the project site and other individuals or agencies that requested this information. The public hearing notice for the project was also posted on the project site on November 29, 2018 and a notice was published in the Press Enterprise on November 30, 2018. Staff has received no public inquiries in response to the noticing efforts.

The required noticing for the Mitigated Negative Declaration was completed in advance of the Planning Commission public hearing.

PREPARATION OF STAFF REPORT

Prepared By:
Jeff Bradshaw
Associate Planner

Department Head Approval:
Richard J. Sandzimier
Community Development Director

Concurred By:
Patty Nevins
Planning Official

CITY COUNCIL GOALS

Positive Environment. Create a positive environment for the development of Moreno Valley's future.

Community Image, Neighborhood Pride and Cleanliness. Promote a sense of community pride and foster an excellent image about our City by developing and executing programs which will result in quality development, enhanced neighborhood preservation efforts, including home rehabilitation and neighborhood restoration.

CITY COUNCIL STRATEGIC PRIORITIES

1. **Economic Development**
2. **Public Safety**
3. **Library**
4. **Infrastructure**
5. **Beautification, Community Engagement, and Quality of Life**
6. **Youth Programs**

Objective 1.1: Proactively attract high-quality businesses.

Objective 1.3: Promote local hiring through the expansion of local, quality, high paying jobs, and workforce development efforts.

Objective 1.5: Showcase Moreno Valley's unique assets.

Objective 1.9: Ensure the City's General Plan articulates the vision for how Moreno Valley wants to evolve over time, and provides an orderly and predictable process through which this vision is developed and implemented, including new attention to economic development, sustainability, public health, and innovation.

ATTACHMENTS

1. Public Hearing Notice
2. Radius Map
3. Resolution 2018-XX - Mitigated Negative Declaration
4. Exhibit A to Resolution 2018-XX - Mitigated Negative Declaration
5. Exhibit B to Resolution 2018-XX - Mitigation Monitoring Program
6. Resolution 2018-XX - General Plan Amendment
7. Exhibit A to Resolution 2018-XX - General Plan Amendment Map
8. Ordinance 2018-XX - Zone Change
9. Exhibit A to Resolution 2018-XX - Zone Change Map
10. Resolution 2018-XX - Conditional Use Permit
11. Exhibit A to Resolution 2018-XX - Conditional Use Permit
12. Architectural Rendering
13. Project Plans

14. Project Location Map
15. Air Quality and Green House Gas Study
16. Cultural Resources Assessment
17. Traffic Impact Study
18. Traffic Study - Cottonwood Memorandum
19. Noise Study
20. Health Risk Assessment
21. Planning Commission Minutes - July 26, 2018 meeting

APPROVALS

Budget Officer Approval	✓ Approved	11/29/18 8:44 AM
City Attorney Approval	✓ Approved	12/06/18 7:41 AM
City Manager Approval	✓ Approved	12/06/18 11:14 AM

Notice of PUBLIC HEARING

This may affect your property. Please read.

Notice is hereby given that a Public Hearing will be held by the City Council of the City of Moreno Valley on the following item(s):

CASES: PEN16-0086 – General Plan Amendment
PEN16-0087 – Zone Change
PEN16-0088 – Conditional Use Permit

APPLICANT: Yum Yum Donuts

OWNER: Yum Yum Donuts

REPRESENTATIVE: A&S Engineering, Inc.

LOCATION: Northeast corner of Perris Boulevard and Cottonwood Avenue

PROPOSAL: The applicant proposes to develop a 1.77 acre site which is currently zoned Office Commercial (OC) with a gas station. The proposed use is not permitted in the OC zone. Applications for this project include a General Plan Amendment to change the land use from Office to Commercial; a Zone Change to change the zoning from Office Commercial (OC) to Community Commercial (CC); and a Conditional Use Permit for a service station with a canopy for eight pump stations, a 5,815 square foot convenience store with alcohol sales and a donut shop and a 900 square foot automated carwash. The project as proposed requires a lot line adjustment. The applicant has made minor changes to the site design to relocate the underground storage tanks further to the north and to increase the landscape setback along Alessandro Boulevard.

ENVIRONMENTAL DETERMINATION: Mitigated Negative Declaration

COUNCIL DISTRICT: 3

Any person interested in any listed proposal can contact the Community Development Department, Planning Division, at 14177 Frederick St., Moreno Valley, California, during normal business hours (7:30 a.m. to 5:30 p.m., Monday through Thursday and Fridays from 7:30 a.m. to 4:30 p.m.), or may telephone (951) 413-3206 for further information. The associated documents will be available for public inspection at the above address.

In the case of Public Hearing items, any person may also appear and be heard in support of or opposition to the project or recommendation of adoption of the Environmental Determination at the time of the Hearing.

The City Council, at the Hearing or during deliberations, could approve changes or alternatives to the proposal.

If you challenge any of these items in court, you may be limited to raising only those items you or someone else raised at the Public Hearing described in this notice, or in written correspondence delivered to the City Council at, or prior to, the Public Hearing.

LOCATION **N** ↑

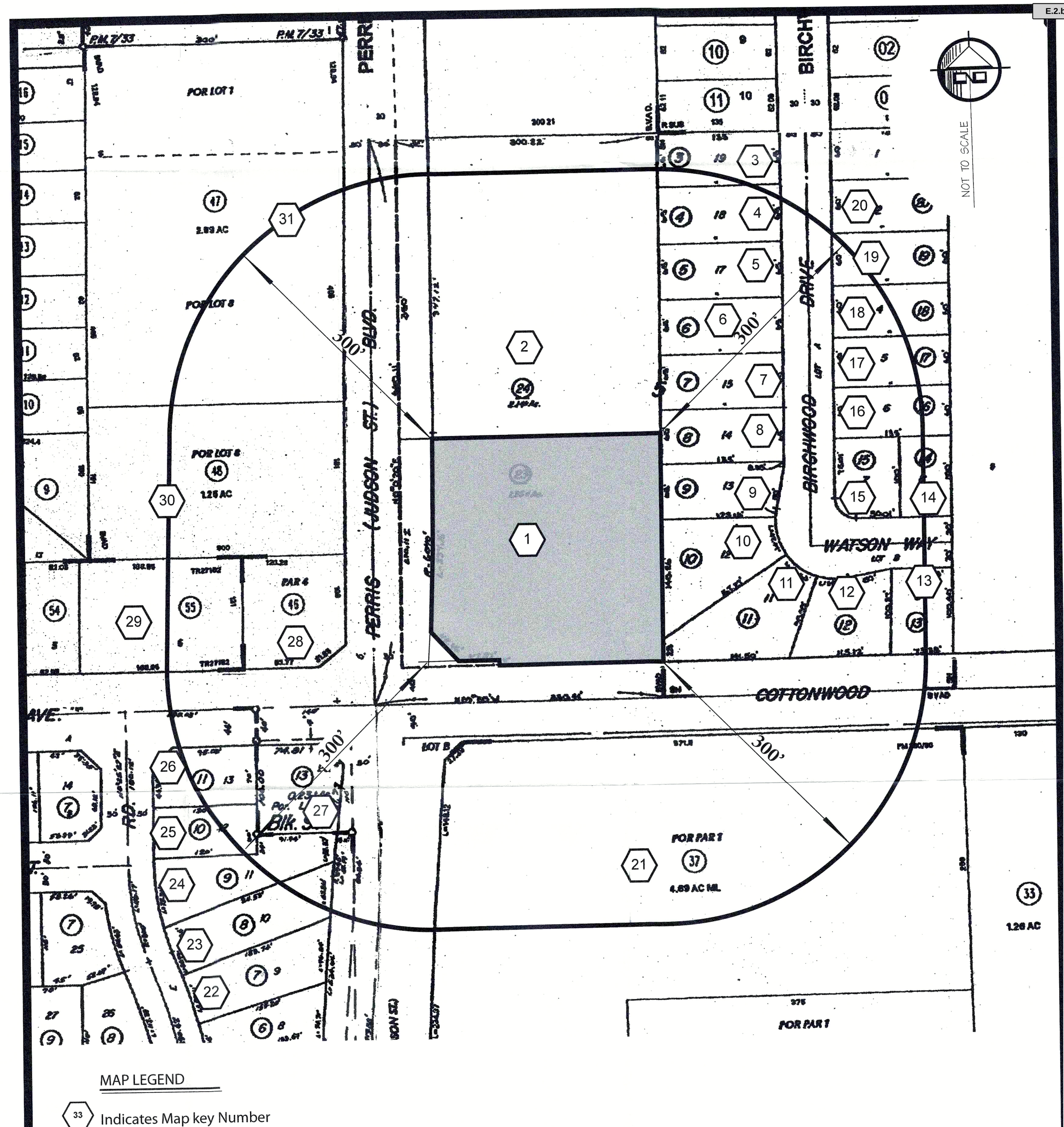
CITY COUNCIL HEARING

City Council Chamber, City Hall
14177 Frederick Street
Moreno Valley, Calif. 92553

DATE AND TIME: December 11, 2018 at 6 PM
CONTACT PLANNER: Jeff Bradshaw
PHONE: (951) 413-3224

Upon request and in compliance with the Americans with Disabilities Act of 1990, any person with a disability who requires a modification or accommodation in order to participate in a meeting should direct such request to Guy Pegan, ADA Coordinator, at 951.413.3120 at least 48 hours before the meeting. The 48-hour notification will enable the City to make reasonable arrangements to ensure accessibility to this meeting.

Attachment: Public Hearing Notice [Revision 3] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT



MAP LEGEND

33 Indicates Map key Number

174 Indicates Assessor's Parcel Number

RADIUS MAPS
Data Management Services for Government and Business
211 South State College Blvd. No. 515
Anaheim, California 92806
(888) 272-3487

Public Notification Boundary

For

N.E. Cor. Perris Blvd. & Cottonwood Ave.

Moreno Valley CA 92553

APN 479-140-023

May 7, 2015

JN 15082

Attachment: Radius Map (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT OF A DONUT STOR)

RESOLUTION NO. 2018-XX

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY CERTIFYING THE MITIGATED NEGATIVE DECLARATION AND APPROVING THE MITIGATION MONITORING AND REPORTING PROGRAM FOR THE YUM YUM DONUTS MORENO VALLEY PROJECT (PEN16-0086, PEN16-0087 and PEN16-0088).

WHEREAS, the applicant, Yum Yum Donuts, filed applications for the Yum Yum Donuts Moreno Valley Project ("Project"), which includes General Plan Amendment PEN16-0086, Zone Change PEN16-0087 and Conditional Use Permit PEN16-0088. The Project shall not be approved unless the Final Mitigated Negative Declaration is certified and approved; and

WHEREAS, the applications for the Project have been evaluated in accordance with established City of Moreno Valley (City) procedures, and with consideration of the General Plan and other applicable regulations; and

WHEREAS, an Initial Study, supporting technical studies, and Mitigated Negative Declaration for the Project were prepared, consistent with the California Environmental Quality Act (CEQA). The California Environmental Quality Act (CEQA) is a statewide environmental law contained in Public Resources Code §§21000-21177. CEQA applies to most public agency decisions to carry out, authorize, or approve actions that have the potential to affect the environment. CEQA requires that public agencies analyze and acknowledge the environmental consequences of their discretionary actions and consider alternatives and mitigation measures that could avoid or reduce significant adverse impacts to the environment when avoidance or reduction is feasible. The CEQA compliance process provides public agencies and the general public an opportunity to comment on a proposed project's environmental effects; and

WHEREAS, a 20-day public review period of the Initial Study and Mitigated Negative Declaration commenced on July 7, 2018 and concluded on July 26, 2018. The public Notice of Intent to adopt the Mitigated Negative Declaration was mailed to interested parties, public agencies as well as published in the local newspaper on July 7, 2018 and filed with the Riverside County Clerk; and

WHEREAS, the City, in conducting its own independent analysis of the Final Mitigated Negative Declaration, determined that a Mitigated Negative Declaration is an appropriate environmental determination for the Project as there is substantial evidence that demonstrates the Project with mitigation would not result in any significant environmental impacts; and

WHEREAS, a Mitigation Monitoring and Reporting Program (MMRP) has been prepared in accordance with CEQA Guidelines, and is designed to ensure compliance

Attachment: Resolution 2018-XX - Mitigated Negative Declaration [Revision 2] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE,

with the identified mitigation measures outlined in the Final Mitigated Negative Declaration through Project implementation; and

WHEREAS, the City of Moreno Valley, Community Development Department, located at 14177 Frederick Street, Moreno Valley, California 92552 is the custodian of documents and other materials that constitute the record of proceedings upon which the decision to adopt the Mitigated Negative Declaration is based; and

WHEREAS, the Planning Commission reviewed all environmental documentation for the project and recommended that the City Council adopt a Mitigated Negative Declaration and approved the Mitigation Monitoring Program for the project; and

WHEREAS, the City Council considered the Initial Study prepared for the Project for the purpose of compliance with the California Environmental Quality Act (CEQA), and based on the Initial Study including all supporting technical evidence, it was determined that the project impacts are expected to be less than significant with mitigation, and approval of a Mitigated Negative Declaration is an appropriate environmental determination for the Project; and

WHEREAS, all legal prerequisites to the adoption of this Resolution have occurred.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

A. This City Council specifically finds that all of the facts set forth above in this Resolution are true and correct.

B. Based upon substantial evidence presented to this City Council during the above-referenced meeting on December 11, 2018, including written and oral staff reports, and the record from the public hearing, this City Council finds as follows:

1. Independent Judgment and Analysis - City staff coordinated the preparation of the Initial Study / Mitigated Negative Declaration and related technical studies with Helix Environmental Planning, Inc., for the Project. The documents were properly circulated for public review in accordance with the California Environmental Quality Act Guidelines. The Mitigated Negative Declaration/Initial Study has been completed along with the Mitigation Monitoring and Reporting Program (MMRP) to ensure compliance with all mitigation through project implementation. All environmental documents that comprise the Mitigated Negative Declaration, including all technical studies, were independently reviewed by the City. On the basis of the whole record, there is no substantial evidence that the Project as designed, conditioned and mitigated, will have a significant effect on the environment. The Mitigated Negative Declaration prepared and completed, in accordance with the CEQA Guidelines, reflects the independent judgment and analysis of the City.

Attachment: Resolution 2018-XX - Mitigated Negative Declaration [Revision 2] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE,

BE IT FURTHER RESOLVED that the City Council HEREBY ADOPTS Resolution No. 2018-XX, and:

1. CERTIFIES that the Mitigated Negative Declaration prepared for General Plan Amendment PEN16-0086, Zone Change PEN16-0087 and Conditional Use Permit PEN16-0088 on file with the Community Development Department, incorporated herein by this reference, has been completed in compliance with the California Environmental Quality Act, that the City Council reviewed and considered the information contained in the Mitigated Negative Declaration and that the document reflects the City's independent judgment and analysis; attached hereto as Exhibit A and

2. APPROVES the Mitigation Monitoring Program prepared for Conditional Use Permit PEN16-0088, attached hereto as Exhibit B.

APPROVED AND ADOPTED this 11th day of December, 2018.

_____
Mayor of the City of Moreno Valley

ATTEST:

_____
City Clerk

APPROVED AS TO FORM:

_____
City Attorney

Attachment: Resolution 2018-XX - Mitigated Negative Declaration [Revision 2] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE,

RESOLUTION JURAT

STATE OF CALIFORNIA)

COUNTY OF RIVERSIDE) ss.

CITY OF MORENO VALLEY)

I, Pat Jacquez-Nares, City Clerk of the City of Moreno Valley, California, do hereby certify that Resolution No. 2018-XX was duly and regularly adopted by the City Council of the City of Moreno Valley at a special meeting thereof held on the 11h day of December, 2018 by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

(Council Members, Mayor Pro Tem and Mayor)

_____

CITY CLERK

(SEAL)

Attachment: Exhibit A to Resolution 2018-XX - Mitigated Negative Declaration (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE,

INITIAL STUDY/ ENVIRONMENTAL CHECKLIST FORM CITY OF MORENO VALLEY

1. Project Title: Yum Yum Donuts Moreno Valley Project (PEN16-0086, PEN16-0087, PEN16-0088)

2. Lead Agency Name and Address: City of Moreno Valley Community & Economic Development Department, Planning Division, 14177 Frederick Street, Moreno Valley, CA 92552

3. Contact Person and Phone Number: Jeff Bradshaw, Associate Planner (951) 413-3224

4. Project Location: Northeastern corner of the intersection of Perris Boulevard and Cottonwood Avenue

5. Project Sponsor's Name and Address: A & S Engineering, 28405 Sand Canyon Road, Suite "B", Canyon Country, CA 91387

6. General Plan Designation: Existing designation is Office; proposed designation is Commercial

7. Zoning: Existing zoning is Office Commercial (OC); proposed zoning is Community Commercial (CC)

8. Description of the Project: The Yum Yum Donuts Moreno Valley Project (project) is located at the corner of Perris Boulevard and Cottonwood Avenue in the City of Moreno Valley (City; see Figure 1, *Regional Location*, and Figure 2, *Aerial Photograph*). The project site is composed of Assessor's Parcel Numbers (APNs) 479-140-023-2, 479-140-024-3, and 479-131-012-4. The project proposes to develop a vacant lot for a 5,515-square foot Yum Yum Donuts restaurant and convenience store with car wash and gas station (see Figure 3, *Site Plan*). Sixteen gas pumps through eight dispensers would be provided; a 5,075-square foot steel canopy would be installed above the gas pumps. The car wash structure would be ~~900~~756 square feet with an adjacent ~~400~~336-square foot equipment room. In addition, two underground storage tanks would be installed near~~in~~ the ~~southwest~~ northwest corner of the project site to provide gas for the gas station. The gas station and convenience store would be in operation for 24 hours a day, while the car wash would be in operation from 7 a.m. to 10 p.m.

   The project would include a General Plan Amendment (PEN16-0086) from Office to Commercial, a Zone Change (PEN16-0087) from Office Commercial (OC) to Community Commercial (CC), and Conditional Use Permit (PEN16-0088) for a service station and convenience store. The applicant proposes to sell beer and wine; the Conditional Use Permit is also required for the proposed alcohol sales.

   The majority of the project site would be paved, and 28 vehicle parking spaces and 2 bicycle parking spaces would be provided. Access to the project site would be provided from driveways on both Perris Boulevard and Cottonwood Avenue. The project would include a monument sign. A trash enclosure with concrete masonry unit wall would be provided adjacent to the restaurant and

convenience store. In addition, an 8-foot-high decorative block wall would be installed at the eastern property line; this wall would extend as far north as the northern edge of the car wash building.

Additional improvements would include signs at the access points; air, water, and vacuum units for vehicles; curb and sidewalk improvements; fire hydrant installation; storm drain improvements; and landscaping throughout the site.

The southern portion of the project site contains a gas line easement for a high pressure 30-inch gas main for Southern California Gas (SoCalGas), shown on Figure 3 under Item 46. This area of the project site would involve landscaping and minor sidewalk components; excavation would only be anticipated to occur at a depth of approximately 12 inches in this area.

Construction is anticipated to begin in January 2019 and last six months. Site preparation activities would begin in January to be followed by grading in February. Both activities would involve approximately 200 cubic yards of soil export. Building construction would begin in March 2019.

9. Surrounding Land Uses and Setting: Adjacent to the project site are single-family residences to the east;~~,~~ a commercial development across Perris Boulevard to the west;~~,~~ a church, St. Christopher Parish (which also includes a preschool), across Cottonwood Avenue to the south; and a vacant lot to the north. The vicinity of the project site is generally occupied by single-family residential neighborhoods and schools.

10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement): N/A

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has this consultation begun?

    The City contacted applicable Tribes traditionally and culturally affiliated with the area in September 2015 for AB 52 consultation and in September 2016 for SB 18 consultation. The responding Tribes were the San Manuel Band of Mission Indians and Soboba Band of Luiseño Indians. The Soboba Band of Luiseño Indians was the only tribe to request consultation. The cultural resource mitigation measures, described further below, have been reviewed and accepted by the Soboba Band of Luiseño Indians.

Attachment: Exhibit A to Resolution 2018-XX - Mitigated Negative Declaration (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE,

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below (■) would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" or "Less than Significant With Mitigation Incorporated" as indicated by the checklist on the following pages.

	Aesthetics		Greenhouse Gas Emissions		Population/Housing
	Agricultural Resources		Hazards & Hazardous Materials		Public Services
	Air Quality		Hydrology/Water Quality		Recreation
	Biological Resources		Land Use/Planning	■	Transportation/Traffic
■	Cultural Resources		Mineral Resources	■	Tribal Cultural Resources
	Geology/Soils	■	Noise		Utilities/Service Systems
				■	Mandatory Findings of Significance

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	
I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.	■
I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.	
I find that the proposed project MAY have a "potential significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.	
I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.	

Signature Date

Printed Name For

Attachment: Exhibit A to Resolution 2018-XX - Mitigated Negative Declaration (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE,

EVALUATION OF ENVIRONMENTAL IMPACTS

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Potentially Significant Unless Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analysis," as described in (5) below, may be cross-referenced).

5) Earlier analysis may be used where, pursuant to the tiering, program EIR, or other California Environmental Quality Act (CEQA) process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063 (c) (3) (d). In this case, a brief discussion should identify the following:

   (a) Earlier Analysis Used. Identify and state where they are available for review.

   (b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   (c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g. general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The analysis of each issue should identify: (a) the significance criteria or threshold used to evaluate each question; and (b) the mitigation measure identified, if any, to reduce the impact to less than significance.

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

I. **AESTHETICS.** Would the project:

a) Have a substantial adverse effect on a scenic vista?				■

Source: City of Moreno Valley General Plan Conservation Element, City of Moreno Valley General Plan (Figure 7-2, Major Scenic Resources)

The project site is located within Moreno Valley, which lies within a relatively flat valley floor surrounded by rugged hills and mountains. Topographic features of Moreno Valley that provide vistas include the Box Springs Mountains and Reche Canyon to the north, Moreno Peak in the middle of the City, the Badlands to the east and the Mount Russell area to the south. According to General Plan Figure 7-2, the project site is not located within a view corridor for the Box Springs Mountains, Reche Canyon, Moreno Peak, the Badlands, or Mount Russell (City 2006a). Therefore, implementation of the proposed project would not have a substantial effect on a scenic vista and no impacts would occur.

b) Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?				■

Source: California Scenic Highway Program (California Department of Transportation [Caltrans] Mapping System); City of Moreno Valley General Plan Conservation Element; City of Moreno Valley General Plan (Figure 7-2, Major Scenic Resources)

There are no State-designated or eligible scenic highways within the City. The project site is located approximately 12 miles north of Highway 74, which is the only facility within the project vicinity that is designated as a State-eligible scenic highway. The project site is located approximately one mile south of State Route 60 and three miles west of Moreno Beach Drive, which the City of Moreno Valley General Plan Figure 7-2 identifies as "Scenic Routes." Due to the distance and intervening topography and development, the project would not be visible from State Highway 74, State Route 60, or Moreno Beach Drive. Accordingly, implementation of the proposed project would not have a substantial effect on scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway corridor. No impacts would occur.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?			■	

Implementation of the proposed project would convert land that was previously vacant and undeveloped to a commercial development with a restaurant/convenience store building, car wash, equipment room, fuel station canopy, parking lot, landscaping, exterior lighting, walls, signage, and public street improvements. The project site is located in a portion of the City that has been mostly developed with residential and commercial uses, with some vacant land remaining in the area. The design of the development would be consistent with the commercial uses located across Perris Boulevard, as well as the site's proposed General Plan Amendment land use designation change from Office to Commercial and the Zone Change from Office Commercial (OC) to Community Commercial (CC). In addition, project signage would be consistent with City of Moreno Valley Municipal Code requirements. Therefore, although the project would develop a vacant lot, it would not substantially degrade the existing visual character or quality of the site or its surroundings and impacts would be less than significant.

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d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			■	

Source: City of Moreno Valley Municipal Code Chapter 9.08.100

The project site does not contain artificial light sources or sources of glare under existing conditions. The proposed project would include exterior lighting associated with the restaurant/convenience store, car wash, fuel station canopy, and parking lot. The proposed project would be required to adhere to the lighting requirements as set forth in the City Municipal Code. Municipal Code Chapter 9.08.100 specifies that all outdoor lighting associated with nonresidential uses shall be fully shielded and directed away from surrounding residential uses to reduce glare and light trespass and shall not exceed one-quarter-foot-candle minimum maintained lighting, measured from within five feet of any property line. Furthermore, the City's Municipal Code specifies that exterior lighting shall not blink, flash, or oscillate or be of unusually high intensity or brightness. The project would be required to demonstrate compliance with these requirements to the City prior to issuance of building permits. Project compliance with the lighting requirements of the City Municipal Code would ensure that the proposed project would not produce a new source of substantial light or glare from artificial lighting sources that would adversely affect day or nighttime views in the area. Therefore, impacts from lighting and glare would be less than significant.

II. **AGRICULTURE RESOURCES**: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:

a) Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency to non-agricultural use?				■

Source: California Department of Conservation, California Important Farmland Finder

According to mapping available from the California Department of Conservation California Important Farmland Finder, the project site is mapped within an area defined as "Urban and Built-Up Land," and does not support agricultural uses. The project site does not contain lands mapped by the State Department of Conservation as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. As such, the project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use, and no impact would occur.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				■

Source: City of Moreno Valley General Plan FEIR; Moreno Valley Map Viewer

No land within the City, including the project site, is under a Williamson contract (City 2006b, pp. 5.8-6). The project site is proposing a Zone Change to Community Commercial (CC) from Office Commercial (OC) and a General Plan Amendment land use designation change from Office to Commercial. Surrounding land uses are residential, commercial, and office. Accordingly, because the project site is not located on or adjacent to land zoned for agricultural use and is also not subject to a Williamson Act contract, the proposed project has no potential to conflict with existing zoning for agricultural use or a Williamson Act contract. Therefore, no impact would occur.

c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				■

Source: California Department of Conservation, California Important Farmland Finder

As previously discussed under Item II(a), the project site is located within land classified as "Urban and Built-Up" by the California Department of Conservation and does not support agricultural uses. Therefore, the project would not convert Farmland to a non-agricultural use, and no impacts would occur.

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III. **AIR QUALITY:** Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan?				■

Source: South Coast Air Quality Management District (SCAQMD) 2016 Air Quality Management Plan

The project site is located in Riverside County, in the South Coast Air Basin (SCAB), where the SCAQMD is the agency principally responsible for comprehensive air pollution control. A regional agency, the SCAQMD works directly with the Southern California Association of Governments (SCAG), County transportation commissions, and local governments, and cooperates actively with all federal and State government agencies. The SCAQMD develops rules and regulations; establishes permitting requirements for stationary sources; inspects emissions sources; and enforces such measures through educational programs or fines, when necessary.

The SCAQMD is directly responsible for reducing emissions from stationary (area and point), mobile, and indirect sources. It has responded to this requirement by preparing a sequence of Air Quality Management Plans (AQMPs). An AQMP establishes a program of rules and regulations directed at attaining the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS). The regional plan applicable to the proposed project is the SCAQMD's AQMP.

On March 3, 2017, the SCAQMD adopted the 2016 AQMP, which is a regional and multi-agency effort (SCAQMD, California Air Resources Board [CARB], SCAG, and United States Environmental Protection Agency [USEPA]). The 2016 AQMP represents a comprehensive analysis of emissions, meteorology, atmospheric chemistry, regional growth projections, and the impact of existing control measures. The plan seeks to achieve multiple goals in partnership with other entities promoting reductions in criteria pollutant, greenhouse gases, and toxic risk, as well as efficiencies in energy use, transportation, and goods movement (SCAQMD 2017a).

The main purpose of an AQMP is to bring an area into compliance with the requirements of federal and State air quality standards. For a project to be consistent with the AQMP, the pollutants emitted from the project should not (1) exceed the SCAQMD CEQA air quality significance thresholds or (2) conflict with or exceed the assumptions in the AQMP. As shown below under Item III(b), pollutant emissions from the proposed project would be less than the SCAQMD thresholds and would not result in a significant impact. Further, as the proposed project would be consistent with the site's proposed changes to the land use designation (from Office to Commercial) and zoning designation (from Office Commercial [OC] to Community Commercial [CC]), it would not result in development that may not have been anticipated in the AQMP. Therefore, the project would not conflict with the applicable AQMP, and no impacts would occur.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.			■	

Sources: SCAQMD Air Quality Significance Thresholds; SCAQMD Air 2016 Air Quality Management Plan; Air Quality and Greenhouse Gas Emissions Technical Report (HELIX 2018a; Appendix A); Traffic Impact Study (Kimley-Horn and Associates 2016; Appendix B)

The SCAQMD establishes significance thresholds to assess the regional impact of project-related air pollutant emissions in the SCAQMD. Table 1, *SCAQMD Criteria Pollutant Significant Mass Emissions Significance Thresholds*, summarizes the SCAQMD's mass emissions thresholds, which are presented for both long-term operational and short-term construction emissions. A project with emissions rates below these thresholds is considered to have a less-than-significant effect on air quality.

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Table 1
SCAQMD CRITERIA POLLUTANT SIGNIFICANT MASS EMISSIONS SIGNIFICANCE THRESHOLDS

Criteria Pollutant	Emission Threshold (pounds per day)	
	Construction	Operation
Volatile Organic Compounds (VOC)	75	55
Oxides of Nitrogen (NO_X)	100	55
Carbon Monoxide (CO)	550	550
Particulate Matter (PM_{10})	150	150
Particulate Matter ($PM_{2.5}$)	55	55
Oxides of Sulfur (SO_X)	150	150
Lead	3	3

Source: SCAQMD 2015

Construction Impacts

The proposed project would result in construction emissions during site preparation, grading, underground utility installation, building construction, paving, and architectural coating activities. These emissions would be limited and short term. Construction emissions include those associated with the transport of construction materials and equipment to the site, and emissions associated with equipment operation and soil movement at the site. Other construction-related emissions would occur as a result of workers' vehicles traveling to and from the project site for construction activities. Criteria pollutant and ozone precursor emissions from project construction are assessed using the California Emissions Estimator Model (CalEEMod), Version 2016.3.2. CalEEMod is a computer model developed by SCAQMD with the input of several air quality management and pollution control districts to estimate criteria air pollutant emissions from various urban land uses. CalEEMod has the ability to calculate both mobile (i.e., vehicular) and area or stationary source emissions (SCAQMD 2013). Dust control by watering was assumed, consistent with the requirements of SCAQMD Rule 403 (SCAQMD 1976). A complete listing of the assumptions used in the analysis and model output is provided in Appendix A.

Maximum daily emissions during the peak work day are shown in Table 2, *Maximum Daily Construction Emissions*. As shown in Table 2, all criteria pollutant emissions would not exceed the respective screening thresholds. In addition, actual emissions could be less than those forecasted due to the conservative nature of the assumptions incorporated into the CalEEMod program regarding phasing. If construction is delayed or occurs over a longer time period, emissions could be reduced because of (1) a more modern and cleaner-burning construction equipment fleet mix and/or (2) a less intensive buildout schedule (i.e., fewer daily emissions occurring over a longer time interval). Therefore, construction-related air quality impacts would be less than significant.

Table 2
MAXIMUM DAILY CONSTRUCTION EMISSIONS

Phase	Pollutant Emissions (pounds per day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Site Preparation	1	9	4	<0.5	1	<0.5
Grading	1	9	8	<0.5	1	1
Underground Utilities	<0.5	2	2	<0.5	<0.5	<0.5
Building Construction	1	10	8	<0.5	1	1
Paving	1	8	8	<0.5	1	1
Architectural Coating	12	2	2	<0.5	<0.5	<0.5
Maximum Daily Emissions[1]	**12**	**11**	**11**	**<0.5**	**1**	**1**
SCAQMD Regional Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Significant Impact?	***No***	***No***	***No***	***No***	***No***	***No***

Source: CalEEMod (output data is provided in Appendix A).
[1] Except for ROG, maximum daily emissions occur when Grading and Underground Utilities phases overlap.
Note: Totals may not sum due to rounding.

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Operational Impacts

Operational impacts were estimated using CalEEMod. Operational sources of emissions include area, energy, and transportation. Operational emissions from area sources include the use of consumer products, engine emissions from landscape maintenance equipment, and volatile organic compound (VOC) emissions from repainting of buildings.

Operational emissions from mobile source emissions are associated with project-related vehicle trip generation and trip length. Based on the Traffic Impact Study (TIS; Kimley-Horn and Associates, Inc. 2016), the project would generate 2,445 daily trips, 72 morning peak hour trips, 98 evening peak hour trips, and 138 Sunday peak hour trips. CalEEMod default vehicle speeds, trip purpose, and distance were used. The results of the CalEEMod calculations for project operations are shown in Table 3, *Maximum Daily Operational Emissions*.

Table 3
MAXIMUM DAILY OPERATIONAL EMISSIONS

Phase	Pollutant Emissions (pounds per day)					
	ROG	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Area	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Energy	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Mobile	3	24	22	<0.5	<0.5	1
Total Daily Emissions	**4**	**24**	**22**	**<0.5**	**<0.5**	**1**
SCAQMD Regional Thresholds	*55*	*55*	*550*	*150*	*150*	*55*
Significant Impact?	***No***	***No***	***No***	***No***	***No***	***No***

Source: CalEEMod (output data is provided in Appendix A).

As shown in Table 3, maximum daily operational emissions generated by the project would be below the screening level thresholds for criteria pollutants. Therefore, operational-related air quality impacts would be less than significant.

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			■	

Source: SCAQMD 2016 AQMP

The SCAQMD's approach for assessing cumulative impacts is based on the AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the Federal and State Clean Air Acts. As discussed under Item III(a), the proposed project would be consistent with the AQMP, which is intended to bring the SCAB into attainment for all criteria pollutants. In addition, construction and operational emissions calculated for the proposed project would be lower than the applicable SCAQMD daily significance thresholds that are designed to assist the region in attaining the applicable State and national ambient air quality standards. Therefore, cumulative impacts would be less than significant.

d) Expose sensitive receptors to substantial pollutant concentrations?			■	

Source: Air Quality and Greenhouse Gas Emissions Technical Report (HELIX 2018a; Appendix A); Traffic Impact Study (Kimley-Horn and Associates 2016); Health Risk Assessment (HELIX 2018b; Appendix C); Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (OEHHA 2015); Gasoline Service Station Industrywide Risk Assessment Guidelines (CAPCOA 1997); Air Quality and Land Use Handbook (CARB 2005); Risk Assessment Procedure for Rules 1401, 1401.1, and 212 (SCAQMD 2017b)

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Construction Impacts

Criteria Pollutants

The localized effects from the on-site portion of daily construction emissions were evaluated at sensitive receptor locations potentially impacted by the project according to the SCAQMD's localized significant threshold (LST) method. Consistent with the LST guidelines, when quantifying mass emissions for localized analysis, only emissions that occur on site are considered. Emissions related to off-site delivery/haul truck activity and construction worker trips are not considered in the evaluation of construction-related localized impacts, as these do not contribute to emissions generated on a project site. The closest sensitive receptors are the single-family residences located adjacent to the east of the project site. Therefore, the LSTs for receptors located at 82 feet (25 meters) are used. As shown in Table 4, *Maximum Localized Construction Emissions*, localized emissions for all criteria pollutants would remain below their respective SCAQMD LSTs. There would be a less-than-significant impact and no mitigation is required.

Table 4
MAXIMUM LOCALIZED DAILY CONSTRUCTION EMISSIONS

Phase	Pollutant Emissions (pounds per day)			
	NO_X	**CO**	**PM_{10}**	**$PM_{2.5}$**
Site Preparation	9	4	<0.5	<0.5
Grading	9	8	1	1
Underground Utilities	2	2	<0.5	<0.5
Building Construction	10	8	1	1
Paving	8	7	<0.5	<0.5
Architectural Coating	2	2	<0.5	<0.5
Maximum Daily Emissions[1]	**11**	**10**	**1**	**1**
SCAQMD Localized Thresholds	*270*	*1,577*	*13*	*8*
Significant Impact?	***No***	***No***	***No***	***No***

Source: CalEEMod (output data is provided in Appendix A).
[1] Maximum daily emissions occur when Grading and Underground Utilities phases overlap.
Note: Totals may not sum due to rounding.

Toxic Air Contaminants

The greatest potential for toxic air contaminants (TAC) emissions during construction would be related to diesel particulate matter (DPM) associated with heavy equipment operations during earth-moving activities. The SCAQMD does not consider diesel-related cancer risks from construction equipment to be an issue due to the short-term nature of construction activities. Construction activities associated with the proposed project would be sporadic, transitory, and short-term in nature (i.e., less than one year). The assessment of cancer risk is typically based on a 30-year exposure duration. Because exposure to diesel exhaust would be well below 30 years, construction of the proposed project is not anticipated to result in an elevated cancer risk to exposed persons due to the short-term nature of construction. As such, project-related TAC emission impacts during construction would not be significant and no mitigation is required.

Operational Impacts

Carbon Monoxide Hotspots

Carbon monoxide (CO) concentration is a direct function of motor vehicle activity (e.g., idling time and traffic flow conditions) particularly during peak commute hours and meteorological conditions. Under specific meteorological conditions (e.g., stable conditions that result in poor dispersion), CO concentrations may reach unhealthy levels with respect to local sensitive land uses such as residential areas, schools, and hospitals. As a result, the SCAQMD recommends analysis of CO emissions at the local and regional levels.

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A CO hotspot is an area of localized CO pollution that is caused by severe vehicle congestion on major roadways, typically near intersections. If a project increases average delay at signalized intersections operating at Level of Service (LOS) E or F or causes an intersection that would operate at LOS D or better without the project to operate at LOS E or F with the project, a quantitative screening is required.

According to the project traffic study (Kimley-Horn and Associates, Inc. 2016), four of the intersections evaluated would meet these criteria, indicating that there would be a potential CO hotspot and a quantitative screening is required. The four intersections and their projected LOS include: Perris Boulevard at Atwood Avenue, which would operate at LOS E (AM) and F (PM/Sun); the unsignalized intersection of Cottonwood Avenue at Crape Myrtle Drive, which would operate at LOS F in the AM and E on Sunday; Perris Boulevard at Alessandro Boulevard, which would operate at LOS E in PM peak hours; and the Perris Boulevard Driveway, which would operate at LOS F during AM, PM and Sunday peak hours.

In the 2003 SCAQMD AQMP, the SCAQMD modeled the four highest volume intersections in the SCAB to determine the highest potential for a CO hotspot in the SCAB. By 2004, all intersections were estimated to fall below all CO standards. Due to the high level of urbanization in the Los Angeles area where the highest volume intersections are located and due to the continuing reduction in vehicle CO emissions, background CO concentrations are expected to be lower in the City than any of the intersections analyzed in the 2003 SCAQMD AQMP analysis. When qualitatively comparing the CO modeling locations in the 2003 AQMP to those in the project area, several factors can be used to demonstrate that the project area can be expected to have lower CO concentrations than in the attainment plan, including traffic demand.

As shown in Table 14 of the Air Quality and Greenhouse Gas Emissions Technical Report (HELIX 2018a; *Appendix A*), traffic volumes at the project-affected intersections are less than the maximum traffic volumes in the AQMP modeled intersections, therefore CO concentrations would be less than those modeled for the AQMP intersections. There would be no exposure of sensitive receptors to a project-generated CO hotspot and impacts would be less than significant.

Toxic Air Contaminants

Activities at gasoline dispensing facilities can release TACs into the air, including the organic compounds benzene, toluene, and xylene. Benzene is a potent carcinogen and is one of the highest risk air pollutants regulated by CARB. The only identified pathway of exposure for air quality health risks from benzene is inhalation. Toluene and xylenes are not considered carcinogens, but they can contribute to chronic health conditions.

The new fuel facility would be required to obtain an authority to construct (ATC) and permit to operate (PTO) approval from the SCAQMD, which would review the facility design and location for compliance with SCAQMD standards for criteria pollutants and air quality. All tanks and dispensers would be equipped with the latest Phase I and Phase II Enhanced Vapor Recovery (EVR) air pollution control equipment technology per ~~CARB regulations and associated Executive Orders~~SCAQMD Rule 461. The Phase I EVR equipment controls the vapors in the return path from the tanks back to the tanker truck during offloading filling operations and have a minimum required efficiency of 98 percent. ~~Phase I EVR systems are 98 percent effective in controlling fugitive emissions from escaping into the environment.~~ The Phase II EVR equipment, which also includes "in-station diagnostics," controls and monitors the vapors in the return path from the vehicles back to the tanks and have a minimum required efficiency of 95 percent~~.~~. ~~Phase II EVR systems are 95 percent effective in controlling fugitive emissions from escaping into the environment. Therefore, operations expected to occur at the proposed project would not emit a significant quantity of toxic chemicals.~~

While gasoline dispensing facilities account for a small part of total benzene emissions in the state, near-source exposures from large facilities (more than 3.6 million gallons per year throughput) can be significant (CARB 2005). Per the project applicant, a conservative (highest anticipated) estimate of the project's gasoline throughput would be 6 million gallons per year. Therefore, potential health risks to nearby sensitive receptors from the emission of toxic chemicals during operations at the proposed fueling facility were analyzed in accordance with the SCAQMD's Risk Assessment Procedures for Rules 1401, 1401.1 and 212 (SCAQMD 2017b~~)~~), the California Air Pollution Control Officers' (CAPCOA) Gasoline Service Station Industrywide Risk Assessment Guidelines (CAPCOA 1997), and the Office of Environmental Health Hazard Assessment (OEHHA) Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (OEHHA 2015).

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According to the SCAQMD (2017b) procedures, benzene is the most important substance driving the risk in the gasoline service stations. Therefore, only the localized concentrations of benzene, and the associated increase in cancer risk, were analyzed in the Health Risk Assessment (HRA) for the project (HELIX 2018b).

Localized concentrations of benzene were modeled using Lakes AERMOD View version 9.6.1. The Lakes program utilizes the EPA AERMOD gaussian air dispersion model. The emissions of benzene were modeled in accordance with SCAQMD (2017) gasoline dispensing station risk assessment procedure. The locations of fuel sources were set at the center of the gas station pump canopy indicated on the project site plan. Downwash from the project's buildings was also inputted into the model. The modeling inputs and assumptions are included in Appendix B of Appendix C.

Health risks were analyzed under two criteria: individual cancer risk and cancer burden (overall population cancer risk). Health risks resulting from localized concentration of benzene were estimated using the CARB Hotspots Analysis and Reporting Program (HARP), Air Dispersion Modeling and Risk Tool (ADMRT) version 18159.

For the residential individual cancer risk, an exposure duration of 30 years was selected in accordance with the OEHHA (2015) guidelines. The model conservatively assumes that residents would be standing and breathing at the point of the property line closest to the gas station every day between 17 to 21 hours per day (depending on the age group) for 30 years. For off-site worker individual cancer risk, an exposure duration of 25 years was selected with an assumption of 8 hours per day of exposure, 5 days per week of exposure, in accordance with the OEHHA guidelines. For individual cancer risk at the school, an exposure duration of 8 hours per day, 5 days per week, for 3 years (starting at age 3) was selected. The resulting estimated individual cancer risk from exposure to benzene would be an increase of 5.3 in 1 million for the maximum exposed individual resident, 0.2 in 1 million for the maximum exposed individual off-site worker, and 0.1 in 1 million for the maximum exposed individual student. This increased risk is less than the SCAQMD (2015) threshold of 10 in 1 million. As described above, this is a highly conservative value due to the modeling assumption of a resident standing at the property line for 17 to 21 hours per day for 30 years, and because a high fuel throughput was assumed for the project compared to similar gas stations.

Cancer burden evaluates an overall population's increased cancer risk and is defined as the increases in cancer cases in the population due TAC exposure from a project. Cancer burden is calculated differently from individual cancer risk. Per OEHHA, cancer burden uses a 70-year exposure (instead of 30 years) to evaluate population-wide cancer risk, and the cancer burden only evaluates residential exposure (not schools or parks) (OEHHA 2015). The cancer burden is calculated by multiplying the number of people exposed by the cancer risk of the maximum individual exposed resident (from a 70-year exposure), which is 7.1×10^{-6}. For this project, the number of people exposed would be the number of people living in the residences within the 1 in 1 million increased cancer risk isopleth (risk contour). There are 29 single-family residences within or touching this isopleth. While the number of people living at these residences is unknown, even assuming 10 people per household, the cancer burden would be a 0.002 increase in cancer cases of the population, much less than SCAQMD (2015) threshold of 0.5 increase in cancer cases of the population. Therefore, the impact of TAC emissions resulting from long-term operation of the gasoline dispensing station would be less than significant.

Other long-term operational emissions include toxic substances such as cleaning agents in use on site. Compliance with State and federal handling regulations would ensure that emissions remain below a level of significance. The use of such substances such as cleaning agents is regulated by the 1990 Federal Clean Air Act Amendments as well as State-adopted regulations for the chemical composition of consumer products. As such, project-related TAC emission impacts during operation would be less than significant.

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e) Create objectionable odors affecting a substantial number of people?			■	

The Air Quality Section of the City General Plan's Environmental Impact Report (EIR; City 2006b) provides guidance for defining objectionable odors. For construction activities, odors would be short-term in nature and are subject to SCAQMD Rule 402 *Nuisance* (CARB 2018) and may be reported to the AQMD. In addition, impacts related to construction odors are limited to the number of people living and working near the source. The nearest residences are located adjacent to the east of the project. While some components of asphalt and diesel emissions are considered TACs, construction activities would be temporary and transitory and associated odors would not be unfamiliar and would cease upon construction completion. Therefore, odor impacts from construction of the project would be less than significant due to the duration of exposure.

Common sources of operational odor complaints include sewage treatment plants, landfills, recycling facilities, and agricultural uses. The proposed project, a donut restaurant and convenience store with a fueling station and car wash, would not include any of these uses. The fueling station would emit odors during operation in the form of diesel exhaust from vehicles and operation of the fueling pumps. The increase in odor emission, however, would be minimal, as vehicle exhaust is already prevalent in the area due to its proximity to busy roadways such as Perris Boulevard and Cottonwood Avenue.

Solid waste generated by the proposed on-site uses would be collected by a contracted waste hauler, ensuring that odors resulting from on-site waste would be managed and collected in a manner to prevent the proliferation of odors. Operational odor impacts would be less than significant.

IV. **BIOLOGICAL RESOURCES**. Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U. S. Fish and Wildlife Service?				■

The project site is surrounded by urbanized development. The site itself consists of heavily disturbed vacant lots with non-native, ruderal (weedy), herbaceous vegetation typical of fallow, vacant lots in urbanized areas of the region. The site is currently subject to regular disturbance associated with noise and lighting from the surrounding developed areas and roadways; maintenance activities; and pedestrian and vehicle use. Wildlife species with the potential to use the site are expected to be limited to common, non-sensitive wildlife typical of urbanized areas. The site is not within a burrowing owl special survey area (Western Riverside County Conservation Authority 2018). No wetlands as defined by Section 404 of the Clean Water Act occur on the site or would be directly impacted by the proposed project. No sensitive natural communities (including riparian habitat), sensitive plant or animal species, potential jurisdictional waters and wetlands (federally protected or otherwise), or other sensitive biological resources are known to occur on the site. Impacts to sensitive habitat, wetlands, or natural communities would not occur.

b) Have a substantially adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U. S. Wildlife Service?				■

See Item IV(a). No riparian habitat or sensitive natural communities are present on the project site, and no impacts would occur.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				■

See Items IV(a) and IV(b). No streams, drainages, vernal pools, or wetlands are present within the site. Therefore, the project would have no impact on federally protected wetlands.

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Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established native resident migratory wildlife corridors, or impede the use of native wildlife nursery sites?				■

The project site is located in an area that has undergone significant disturbance and is surrounded by urbanized development. It does not serve as a wildlife corridor or nursery site. Therefore, no impacts would occur.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				■

See Items IV(a) and IV(b). The project site is a disturbed parcel in a mostly urbanized area of the city. The site does not contain sensitive biological resources or native tree species subject to tree preservation ordinances. Therefore, no impacts would occur.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan?				■

The project area is located within the Riverside County Multiple Species Habitat Conservation Plan (MSHCP). The proposed project would not conflict with the MSHCP, or any other known local, regional, or state habitat conservations plans as the project site does not contain sensitive plant or animal species, vernal pools, or sensitive natural communities. In addition, the site is not within a burrowing owl special survey area or proposed conservation area (Western Riverside County Conservation Authority 2018). The project will be conditioned to pay required Stephen's kangaroo rat mitigation fees and will also be subject to impact fees to support the implementation for the MSHCP as provided for by City ordinance. Therefore, no impacts to the MSHCP or other habitat conservation area would occur.

V. **CULTURAL RESOURCES**. Would the project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?				■

Source: Cultural Resources Survey Report for the Proposed Yum Yum Donuts Project (HELIX 2017; Appendix ~~C~~D)

HELIX conducted a record search of the California Historical Resources Information System (CHRIS) at the Eastern Information Center (EIC) on September 25, 2017. The records search covered a one-mile radius around the project area and included archaeological and historical resources, locations and citations for previous cultural resources studies, and a review of the state Office of Historic Preservation (OHP) historic properties directory. The records search indicated the presence of six previously recorded cultural resources within a one-mile radius of the project site, all of which are historic. None of the resources is located within the project site.

According to §15064.5 of the State CEQA Guidelines, a substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resource would be materially impaired. Because no historical resources are present on site, the proposed project would not result in an adverse change in the significance of an historical resource. Therefore, no impacts to historical resources would occur.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?		■		

Source: Cultural Resources Survey Report for the Proposed Yum Yum Donuts Project (HELIX 2017; Appendix ~~C~~D)

As discussed under Item V(a), a records search was conducted for a one-mile radius around the project area and indicated that there are no recorded archaeological resources within the project site.

HELIX contacted the Native American Heritage Commission (NAHC) on September 25, 2017 for a Sacred Lands File search and list of Native American contacts for the project area. The NAHC indicated in a response dated September 27, 2017 that no known sacred lands or Native American cultural resources are within the project area. Letters were sent on October 2, 2017 to Native American representatives and interested parties identified by the NAHC. Eight responses have been received to date.

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The Pala Band of Mission Indians responded on October 4, 2017, that the project is not within the boundaries of the territory that the Tribe considers its Traditional Use Area and defers to the wishes of Tribes in closer proximity to the project area. The San Manuel Band of Mission Indians responded on October 5, 2017, that the proposed project area is within the Serrano ancestral territory and as such is of interest to the Tribe. However, due to the nature and location of the proposed project, they do not have concerns with the project's implementation, as planned, at this time. The Viejas Band of Kumeyaay Indians responded on October 5, 2017 that the project site has little cultural significance or ties to the Tribe and recommended that the Tribes closest to the area are contacted. They do, however, wish to be informed of any inadvertent discoveries of cultural artifacts, cremation sites, or human remains in order to have the opportunity to reevaluate their participation in the government-to-government consultation process. The Agua Caliente Band of Cahuilla Indians replied on October 19, 2017, that the project area is within the boundaries of the Tribe's Traditional Use Area; however, they defer to Soboba. The Pauma Band of Luiseño Indians responded on October 23, 2017, that they are unaware of any specific cultural resources within the project area. They would like to receive a copy of the cultural report once it is finalized. The Augustine Band of Cahuilla Indians responded on October 23, 2017, that they are unaware of specific cultural resources within the project area.

The Soboba Band of Luiseño Indians responded on November 2, 2017, that the project area is considered sensitive by the people of Soboba, as there are existing cultural sites in the surrounding areas. The Tribe indicates that they will discuss specifics in direct consultation with the lead agency. As such, they request the following:

- To initiate a consultation with the project proponents and lead agency.
- The transfer of information to the Soboba Band of Luiseño Indians regarding the progress of this project should be done as soon as new developments occur.
- Soboba Band of Luiseño Indians continues to act as a consulting tribal entity for this project.
- Working in and around traditional use areas intensifies the possibility of encountering cultural resources during the construction/excavation phase. For this reason the Soboba Band of Luiseño Indians requests that Native American Monitor(s) from the Soboba Band of Luiseño Indians Cultural Resource Department be present during any ground disturbing proceedings, including surveys and archaeological testing.
- Request that proper procedures be taken and requests of the tribe be honored.

The Rincon Band of Luiseño Indians responded on November 2, 2017. The project location is within the territory of the Luiseño people and within Rincon's specific area of Historic interest. The tribe is unaware of any known cultural resources within or near the project area. They requested a copy of the cultural resources report and records search results.

A pedestrian survey of the project site was conducted on September 28, 2017 by a HELIX archaeologist and Native American monitor from the Soboba Band of Luiseño Indians. No cultural material was observed within the archaeological survey area; however, the project area was found to be overlain by fill soils with modern asphalt and debris intermixed, and the original ground surface could not be observed. Additionally, the project site is located within alluvial soils, where there is a potential for buried cultural resources.

Although no archaeological resources have been recorded or identified within the project site, the potential to discover resources on site exists based on the presence of alluvial soils and cultural sensitivity of the area. As such, impacts would be potentially significant, and mitigation measures CR-1 through CR-6 have been identified to reduce the significance of cultural resource impacts.

Mitigation Measure CR-1: Prior to the issuance of a grading permit, the Developer shall retain a professional archaeologist to conduct monitoring of all mass grading and trenching activities. The Project Archaeologist shall have the authority to temporarily redirect earthmoving activities in the event that suspected archaeological resources are unearthed during Project construction. The Project Archaeologist, in consultation with the Consulting Tribe(s), the contractor, and the City, shall develop a Cultural Resources Management Plan (CRMP) in consultation pursuant to the definition in AB52 to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the project site. A consulting tribe is defined as a tribe that initiated the AB 52 tribal consultation process for the Project, has not opted out of the AB52 consultation process, and has completed AB 52 consultation with the City as provided for in Cal Pub Res Code Section 21080.3.2(b)(1) of AB52. Details in the Plan shall include:

a. Project grading and development scheduling;

b. The Project archeologist and the Consulting Tribes(s) as defined in CR-1 shall attend the pre-grading meeting with the City, the construction manager and any contractors and will conduct a mandatory Cultural Resources Worker Sensitivity

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Training to those in attendance. The Training will include a brief review of the cultural sensitivity of the Project and the surrounding area; what resources could potentially be identified during earthmoving activities; the requirements of the monitoring program; the protocols that apply in the event inadvertent discoveries of cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated; and any other appropriate protocols. All new construction personnel that will conduct earthwork or grading activities that begin work on the Project following the initial Training must take the Cultural Sensitivity Training prior to beginning work and the Project archaeologist and Consulting Tribe(s) shall make themselves available to provide the training on an as-needed basis;

c. The protocols and stipulations that the contractor, City, Consulting Tribe(s) and Project archaeologist will follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits that shall be subject to a cultural resources evaluation.

Mitigation Measure CR-2: Prior to the issuance of a grading permit, the Developer shall secure agreements with the Soboba Band of Luiseño Indians for tribal monitoring. The Developer is also required to provide a minimum of 30 days advance notice to the tribes of all mass grading and trenching activities. The Native American Tribal Representatives shall have the authority to temporarily halt and redirect earth moving activities in the affected area in the event that suspected archaeological resources are unearthed. If the Native American Tribal Representatives suspect that an archaeological resource may have been unearthed, the Project Archaeologist or the Tribal Representatives shall immediately redirect grading operations in a 100-foot radius around the find to allow identification and evaluation of the suspected resource. In consultation with the Native American Tribal Representatives, the Project Archaeologist shall evaluate the suspected resource and make a determination of significance pursuant to California Public Resources Code Section 21083.2.

Mitigation Measure CR-3: In the event that Native American cultural resources are discovered during the course of grading (inadvertent discoveries), the following procedures shall be carried out for final disposition of the discoveries:

a. One or more of the following treatments, in order of preference, shall be employed with the tribes. Evidence of such shall be provided to the City of Moreno Valley Planning Department:

   i. Preservation-In-Place of the cultural resources, if feasible. Preservation in place means avoiding the resources, leaving them in the place they were found with no development affecting the integrity of the resources.

   ii. Onsite reburial of the discovered items as detailed in the treatment plan required pursuant to Mitigation Measure CR-1. This shall include measures and provisions to protect the future reburial area from any future impacts in perpetuity. Reburial shall not occur until all legally required cataloging and basic recordation have been completed. No recordation of sacred items is permitted without the written consent of all Consulting Native American Tribal Governments as defined in CR-1.

Mitigation Measure CR-4: The City shall verify that the following note is included on the Grading Plan:

> "If any suspected archaeological resources are discovered during ground-disturbing activities and the Project Archaeologist or Native American Tribal Representatives are not present, the construction supervisor is obligated to halt work in a 100-foot radius around the find and call the Project Archaeologist and the Tribal Representatives to the site to assess the significance of the find."

Mitigation Measure CR-5: If potential historic or cultural resources are uncovered during excavation or construction activities at the project site, work in the affected area must cease immediately and a qualified person meeting the Secretary of the Interior's standards (36 CFR 61), Tribal Representatives, and all site monitors per the Mitigation Measures, shall be consulted by the City to evaluate the find, and as appropriate recommend alternative measures to avoid, minimize or mitigate negative effects on the historic, or prehistoric resource. Determinations and recommendations by the consultant shall be immediately submitted to the Planning Division for consideration, and implemented as deemed appropriate by the Community Development Director, in consultation with the State Historic Preservation Officer (SHPO) and any and all Consulting Native American Tribes as defined in CR-1 before any further work commences in the affected area.

Mitigation Measure CR-6: If human remains are discovered, no further disturbance shall occur in the affected area until the County Coroner has made necessary findings as to origin. If the County Coroner determines that the remains are potentially Native American, the California Native American Heritage Commission shall be notified within 5-days of the published finding to be given

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a reasonable opportunity to identify the "most likely descendant". The "most likely descendant" shall then make recommendations, and engage in consultations concerning the treatment of the remains (California Public Resources Code 5097.98). (GP Objective 23.3, CEQA).

Adherence to mitigation measures CR-1 through CR-6 would reduce impacts to cultural resources to a less-than-significant level.

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		■		

Source: City of Moreno Valley General Plan FEIR, Chapter 5.10 – Cultural Resources; County of Riverside General Plan

The project site is identified by the City's General Plan FEIR Figure 5.10-3 as having a "Low Potential" to contain unique paleontological resources. However, the County of Riverside General Plan (Figure OS-8) identifies the project site as having a "high" sensitivity to contain paleontological resources. To be conservative, this analysis is based on the conclusion from the County's General Plan and assumes that the alluvial soils underlying the project site have a high sensitivity for paleontological resources.

Project construction may involve excavation greater than four feet below the ground surface. Therefore, there is a potential to uncover fossils that may be buried beneath the surface of the site and impacts would be potentially significant. Mitigation measure PR-1 has been identified to reduce the significance of paleontological resource impacts.

Mitigation Measure PR-1: Prior to construction involving excavation four feet or more below existing surface grade, the construction contractor shall provide evidence that a qualified paleontologist has been retained, and that the paleontologist(s) shall be present during all grading and other significant ground-disturbing activities that reach four feet or more below existing surface grade. In the event fossiliferous deposits are encountered, the following measures shall be implemented:

- Monitoring shall be conducted by qualified paleontological monitor(s) of excavation in areas identified as likely to contain paleontological resources, including very old alluvial fan deposits. Paleontological monitors shall be equipped to salvage fossils as they are unearthed, to avoid construction delays, and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors shall be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring may be reduced if the potentially fossiliferous units are determined upon exposure and examination by qualified paleontological personnel to have low potential to contain fossil resources.
- Paleontological monitoring of any earthmoving shall be conducted by a monitor, under direct guidance of a qualified paleontologist. Earthmoving in areas of the parcel where previously undisturbed sediments are buried, but not otherwise disturbed, will not be monitored.
- If too few fossil remains are found after 50 percent of the planned-for earthmoving has been completed, monitoring can be reduced or discontinued in those areas at the Project paleontologist's direction.
- Recovered specimens shall be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates.
- Specimens shall be identified and curated into a professional, fully accredited museum repository with permanent retrievable storage. The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities.
- A report of findings with and appended itemized inventory of specimens shall be prepared. The report and inventory, when submitted to the City along with confirmation of the curation of recovered of recovered specimens into an established, accredited museum repository, will signify completion of the program to mitigate impacts to paleontological resources.

Adherence to mitigation measure PR-1 would reduce impacts to paleontological resources to a less-than-significant level.

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d) Disturb any human remains, including those interred outside of formal cemeteries?		■		

Source: Cultural Resources Survey Report for the Proposed Yum Yum Donuts Project (HELIX 2017; Appendix ~~C~~D)

The project site does not contain a known cemetery. While not anticipated, the possibility to encounter human remains exists, and impacts are assessed as potentially significant. In the unlikely event that human remains are discovered during project excavation or other ground disturbing activities, the project would implement mitigation measure CR-6, described above, to reduce impacts to a less than significant level.

VI. **GEOLOGY AND SOILS**. Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving:				
(i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			■	

Source: City of Moreno Valley General Plan Safety Element; City of Moreno Valley General Plan FEIR, Chapter 5.6 – Geology and Soils; California Department of Conservation "California Geological Survey Information Warehouse: Regulatory Maps"

The project site is located within a seismically active region and is within an Alquist-Priolo earthquake fault zone (California Department of Conservation 2015). The nearest mapped fault, however, is the San Jacinto Fault, which is located approximately six miles east of the project site as mapped on City of Moreno Valley General Plan FEIR Figure 5.6-2, *Seismic Hazards*. Because there are no faults located on the project site, the potential for the proposed project to expose people or structures to substantial adverse effects, including the risk of loss, injury or death involving ground rupture is considered low, and impacts would be less than significant.

(ii) Strong seismic ground shaking?			■	

Source: City of Moreno Valley General Plan Safety Element; City of Moreno Valley General Plan FEIR, Chapter 5.6 – Geology and Soils; Geotechnical Investigation (Southern California Soil & Testing, Inc. 2016)

As discussed above under Item VI(a)(i), the project site is located in a seismically active area of southern California and is expected to experience moderate to severe ground-shaking during the lifetime of the proposed project. As a mandatory condition of project approval, the project would be required to construct the proposed buildings in accordance with the California Building Standards Code (CBSC), also known as California Code of Regulations (CCR), Title 24 (Part 2), and the City of Moreno Valley Building Code, which is based on the CBSC with local amendments. The CBSC and City of Moreno Valley Building Code provide standards that must be met to safeguard life or limb, health, property, and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures, and have been specifically tailored for California earthquake conditions. With mandatory compliance with these standards, the project would not expose people or structures to substantial adverse effects, including loss, injury or death, involving seismic ground shaking, and impacts would be less than significant.

(iii) Seismic-related ground failure, including liquefaction?			■	

Source: City of Moreno Valley General Plan FEIR, Chapter 5.6 – Geology and Soils

Liquefaction occurs when loose, unconsolidated, water-laden soils are subject to shaking, causing the soils to lose cohesion and behave as a liquid. According to General Plan FEIR Figure 5.6-2, the project site is not located in an area with the potential for liquefaction. In addition, as described above in Item VI(a)(ii), the City would require that the property be developed in accordance with the latest applicable seismic safety guidelines, including the standard requirements of the CBSC and the City of Moreno Valley Building Code. Therefore, the project's impacts related to exposing people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving seismic-related ground failure, including liquefaction, would be less than significant.

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(iv) Landslides?				■

Source: City of Moreno Valley General Plan; City of Moreno Valley General Plan FEIR, Chapter 5.6 – Geology and Soils; County of Riverside General Plan EIR Section 4.12

The City of Moreno Valley General Plan identifies the Badlands area of the City as having a potential for landslides. The project site is located approximately five miles from the Badlands area and is in a flat area lacking steep slopes. Therefore, the project site is not at risk of landslides and no related impacts would occur.

(b) Result in substantial soil erosion or the loss of topsoil?			■	

Source: Web Soil Survey, U.S. Department of Agriculture

On-site soils include Hanford coarse sandy loam (HcC) and Pachappa fine sandy loam (PaC2), each of which comprises approximately half the area of the site (U.S. Department of Agriculture 2017). Development of the vacant site would involve grading and soil movement, which could result in erosion. Because the project site has an area greater than one acre, the proposed project is required to obtain a National Pollutant Discharge Elimination System (NPDES) permit. A Storm Water Pollution Prevention Plan (SWPPP) would also be required to address erosion and discharge impacts associated with the proposed on-site grading. In addition to preparation of a SWPPP, new development projects submitted to the City would be required to submit a project-specific Water Quality Management Plan (WQMP). The WQMP would identify measures to treat and/or limit the entry of contaminants into the storm drain system. The WQMP is required to be incorporated by reference or attached to the project's SWPPP as the Post-Construction Management Plan. Through compliance with the required permits and plans, the project would not result in substantial soil erosion or loss of topsoil, and impacts would be less than significant.

(c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			■	

See Items VI(a)(iii), VI(a)(iv), and VI(b). The project site has a low potential for liquefaction, landslides, and soil erosion. With compliance with the CBSC and the City of Moreno Valley Building Code design and engineering standards, impacts would be less than significant.

(d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			■	

Expansive soils generally have a significant amount of clay particles, which can give up water (shrink) or take on water (swell). The change in volume exerts stress on buildings and other loads placed on these soils. The extent of shrink/swell is influenced by the amount and kind of clay in the soil. The occurrence of these soils is often associated with geologic units having marginal stability. The distribution of expansive soils can be widely dispersed, and they can occur in hillside areas as well as low-lying alluvial basins.

The soil types discussed in Item VI(b) have a low shrink-swell potential due to their low clay content. Additionally, development of the proposed project site would be required to adhere to the CBSC and the City of Moreno Valley Building Code design and engineering standards. Impacts associated with this issue would therefore be less than significant.

(e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				■

The proposed project would be served by an existing wastewater disposal system and would not install septic tanks or alternative wastewater disposal systems on site. Therefore, no impact would occur.

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VII. **GREENHOUSE GAS EMISSIONS.** Would this project?				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			■	

Source: Air Quality and Greenhouse Gas Emissions Technical Report (HELIX 2018a; Appendix A); City Energy Efficiency and Climate Action Strategy (City 2012); SCAQMD Greenhouse Gas Interim CEQA Significance Thresholds

Global climate change refers to changes in average climatic conditions on Earth as a whole, including temperature, wind patterns, precipitation, and storms. Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone, and certain hydro-fluorocarbons. These gases, known as greenhouse gases (GHGs), allow solar radiation (sunlight) into the Earth's atmosphere, but prevent radiative heat from escaping, thus warming the Earth's atmosphere. GHGs are emitted by both natural processes and human activities. The accumulation of GHGs in the atmosphere regulates the Earth's temperature. Emissions of GHGs in excess of natural ambient concentrations are thought to be responsible for the enhancement of the greenhouse effect and contributing to what is termed "global warming," the trend of warming of the Earth's climate from anthropogenic activities.

GHGs vary widely in the power of their climatic effects; therefore, climate scientists have established a unit called global warming potential (GWP). The GWP of a gas is a measure of both potency and lifespan in the atmosphere as compared to CO_2. For example, since CH_4 and N_2O are approximately 25 and 298 times more powerful than CO_2, respectively, in their ability to trap heat in the atmosphere, they have GWPs of 25 and 298, respectively (CO_2 has a GWP of 1). Carbon dioxide equivalent (CO_2e) is a quantity that enables all GHG emissions to be considered as a group despite their varying GWP. The GWP of each GHG is multiplied by the prevalence of that gas to produce CO_2e.

The City's Energy Efficiency and Climate Action Strategy (CAS) has not implemented specific GHG significance thresholds (City 2012). The City is currently utilizing the SCAQMD's interim GHG significance threshold of 3,000 metric tons (MT) CO_2e per year of GHG emissions to determine significant impacts (SCAQMD 2008). This threshold is used to determine the significance of project GHG emissions.

Construction GHG emissions are generated by vehicle engine exhaust from construction equipment, on-road truck trips, and worker commuting trips. Construction GHG emissions were calculated using CalEEMod and the results are output in MT CO_2e. The estimated construction GHG emissions for the project are shown in Table 5, *Construction GHG Emissions*.

Table 5
CONSTRUCTION GHG EMISSIONS

Phase	Emissions (MT CO_2e)
Site Preparation	11
Grading	13
Underground Utilities	3
Building Construction	46
Paving	3
Architectural Coating	1
TOTAL CONSTRUCTION EMISSIONS[1]	**76**
Amortized Construction Emissions[2]	3

Source: CalEEMod (output data is provided in Appendix A).
[1] The total presented is the sum of the unrounded values.
[2] Construction emissions are amortized over 30 years in accordance with County guidance.

GHG emissions generated from construction activities are finite and for a relatively short-term period of time. Unlike the numerous opportunities available to reduce a project's long-term GHG emissions through design features, operational restrictions, use of green-building materials, etc., GHG emissions-reduction measures for construction equipment are relatively limited. Therefore, SCAQMD staff recommended that construction emissions be amortized over a 30-year project lifetime, so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies. As shown in Table 5, the 30-year amortized construction emissions would be 3 MT CO_2e/yr.

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During operations, area and indirect emissions sources associated with the proposed project would primarily result from electricity and natural gas consumption, water and wastewater transport, and solid waste generation. GHG emissions from electricity consumed on site by the proposed project would be generated off site by fuel combustion at the electricity provider. GHG emissions from water and wastewater transport are also indirect emissions resulting from the energy required to transport water from its source, and the energy required to treat wastewater and transport it to its treated discharge point. In addition, the project would generate mobile source emissions from motor vehicle trips. The various operational GHG emissions associated with the proposed project are shown in Table 6, *Annual Operational GHG Emissions*. The emissions include the amortized annual construction emissions anticipated for the project. As shown in the table, the proposed project's total annual GHG emissions resulting from operational activities would be 1,165 MT CO_2e per year. This value is less than the SCAQMD's 3,000 MT CO_2e per year interim threshold. Therefore, GHG emissions during project operation, including amortized construction emissions, would be less than significant.

Table 6
ANNUAL OPERATIONAL GHG EMISSIONS

Source	Emissions (MT CO_2e)
Area	<0.5
Energy	51
Mobile	1,092
Waste	13
Water	5
Operational Subtotal	1,162
Construction (Annualized over 30 years)	3
TOTAL OPERATIONAL EMISSIONS	**1,165**

Source: CalEEMod (output data is provided in Appendix A).
Note: Totals may not add up exactly due to rounding.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			■	

Source: Air Quality and Greenhouse Gas Emissions Technical Report (HELIX 2018a; Appendix A); City Energy Efficiency and Climate Action Strategy (City 2012)

There are numerous State plans, policies, and regulations adopted for the purpose of reducing GHG emissions. The principal overall State plan and policy is Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006. The quantitative goal of AB 32 is to reduce GHG emissions to 1990 levels by 2020. Senate Bill (SB) 32 would require further reductions of 40 percent below 1990 levels by 2030. Because of the project's operational year in 2018, the project aims to reach the quantitative goals set by AB 32. Statewide plans and regulations such as GHG emissions standards for vehicles (AB 1493), the Low Carbon Fuel Standard, and regulations requiring an increasing fraction of electricity to be generated from renewable sources are being implemented at the statewide level; as such, compliance at the project level is not addressed. Therefore, the proposed project would not conflict with those plans and regulations.

As previously discussed, the City CAS does not have GHG emission thresholds and therefore utilizes the significance thresholds set forth by the SCAQMD. As discussed under Item VII(a), the proposed project's increase in GHG emissions would be less than the SCAQMD's screening threshold; therefore, the project would be consistent with the City CAS. Implementation of the proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions, and impacts would be less than significant.

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VIII. **HAZARDS AND HAZARDOUS MATERIALS.** Would the project?				
a) Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?			■	

The project involves the construction and operation of fuel dispensers and underground storage tanks. The County of Riverside Health Department, Environmental Health Division, as the Certified Unified Program Agency (CUPA), would review the project to ensure the fuel dispensing system is designed in accordance with Federal and State Water Resources Control Board (SWRCB) standards for leak detection. The transport of fuel and tank filling operations would be conducted in compliance with applicable regulatory requirements. Other potentially hazardous materials associated with the fuel facility and/or car wash could be used and stored at the project site in accordance with regulatory requirements.

An existing 30-inch high pressure gas pipeline and easement for SoCalGas runs through the southern area of the project site. To avoid potential impacts related to placement of underground storage tanks in proximity to the pipeline, the project's tanks would be placed in the northern portion of the project site, at a distance of approximately 190 feet from the gas pipeline easement. In addition, in the easement area over the pipeline, project elements would be limited to minor improvements such as landscaping or sidewalk installation, which would excavate approximately 12 inches into the ground, and would therefore not have the potential to conflict with the pipeline. The area of the easement would be delineated on project plans for the contractor prior to construction.

~~Therefore~~Given the aforementioned, the project would not create a significant hazard to the public or the environment through routine use, transport, or disposal of hazardous materials, or from upset and accident condition involves the release of hazardous materials. Therefore, ~~associated~~ impacts would be less than significant.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			■	

See Item VIII(a). Construction and operation of the fuel facility, car wash, and restaurant/convenience store would be conducted in accordance with applicable regulatory requirements. In addition, the project has been designed to place underground storage tanks as far from the existing 30-inch gas pipeline as feasible, at a distance of 190 feet, and also place only minor improvements above the pipeline. Therefore~~, and~~ impacts from the upset and accident conditions involving the release of hazardous materials would be less than significant.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				■

Saint Christophers School is located to the south across Cottonwood Avenue, at a distance of 300 feet from the project site. As described under Item VIII(a), the project would comply with applicable regulatory requirements for hazardous materials, and project design would not pose a risk to the SoCalGas 30-inch gas pipeline in the area. Therefore, the project would not emit hazardous emissions or create significant hazards from hazardous materials within one-quarter mile of an existing or proposed school, and no impacts would occur.

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d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result would it create a significant hazard to the public or the environment?				■

Source: Department of Toxic Substance Control, Envirostor; State Water Resources Control Board, Geotracker

Pursuant to Government Code Section 65962.5, the Department of Toxic Substance Control's Envirostor and SWRCB Geotracker databases were searched for hazardous materials sites at or in proximity to the project site. The results of the searches indicated that no hazardous materials sites are located on or immediately adjacent to the project site. The closest listed site is located approximately 0.2 mile north of the project site at the intersection of Dracaea Avenue and Perris Boulevard. The site is associated with gasoline contamination and the case was closed in 2013. The site has no potential to have an adverse effect on the project site. As such, no impacts would occur.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				■

Source: City of Moreno Valley General Plan Safety Element Figure 6-5, Air Crash Hazards

The project site is located approximately 2.6 miles northeast of the nearest airport, March Air Reserve Base. According to City of Moreno Valley General Plan Figure 6-5, *Air Crash Hazards*, the project site is not located within an Accident Potential Zone or "Clear Zone" (i.e., high risk areas 3,000 feet from each end of the runway). Thus, because the project site is not located in an area identified as an Accident Potential Zone or a Clear Zone, implementation of the proposed project would not result in a safety hazard for people living or working in the project area, and no impacts would occur.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				■

There are no private airfields or airstrips in the vicinity of the project site. Therefore, there is no potential for the implementation of the project to result in a safety hazard for people residing or working in the project area and no impacts would occur.

g) Impair implementation of, or physically interfere with an adopted emergency response plan or emergency evacuation plan?			■	

The project site does not contain emergency facilities, nor does it serve as an emergency evacuation route. During construction and long-term operation, the proposed project would be required to maintain adequate emergency access for emergency vehicles, as required by the City. Because the proposed project would not interfere with an adopted emergency response or evacuation plan, impacts would be less than significant.

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				■

Source: City of Moreno Valley General Plan FEIR Section 5-5

According to City of Moreno Valley General Plan FEIR Figure 5.5-2, the project site is not located in an area of substantial or high fire risk. The surrounding area has either been developed or has vacant lots mostly devoid of vegetation. No wildlands are located on or adjacent to the project site. Therefore, implementation of the proposed project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. No impacts related to wildland fires would occur.

IX. **HYDROLOGY AND WATER QUALITY**. Would the project:				
a) Violate any water quality standards or waste discharge requirements?			■	

Construction of the project would involve grading, paving, utility installation, building construction, and landscaping installation, which would result in the generation of potential water quality pollutants such as silt, debris, chemicals, paints, and other solvents

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with the potential to affect water quality. The project would be constructed and operated consistent with all applicable regulations established by the Santa Ana Regional Water Quality Control Board (RWQCB), which includes compliance with relevant NPDES permitting requirements and adoption and implementation of a SWPPP. Construction Best Management Practices (BMPs) that may be implemented during construction include silt fences, gravel bag barriers, street sweeping, solid waste management, stabilized construction entrance/exit, water conservation practices, and spill prevention and control. Implementation of these or similar BMPs would reduce potentially adverse impacts of storm waters discharged from portions of the site affected by construction activities.

Long-term operation of the project may also generate water quality pollutants such as sediment, nutrients, heavy metals, organic compounds, trash and debris, oxygen-demanding substances, oils and grease, bacteria and viruses, and pesticides. As required by the City, the project proponent would prepare a WQMP. Post-construction BMPs would include using low-impact development such as the project's bio-retention basins, which allow for peak runoff retention and reduction of pollutant loads. Adoption and implementation of the required long term WQMP, which reflect the project's commitment to install and maintain appropriate stormwater structural facilities, as well as implement non-structural BMPs, would reduce potential long-term water quality impacts related to stormwater discharges to a less-than-significant level.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			■	

The proposed project would not require the use of groundwater. The project would increase the area of impervious surfaces on site through the development of a canopy structure, buildings, and a parking lot, which would reduce the amount of groundwater recharge. However, runoff from the proposed impervious surfaces would be directed into proposed on-site bio-retention basins, where it would be eventually conveyed to an area where it could infiltrate into the local groundwater basin. Therefore, the project would have a less than significant impact on groundwater supply and recharge.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?			■	

Source: Preliminary Hydrology Report prepared by Waber Consultants (2017; Appendix ~~D~~E)

The existing project site is relatively flat and sheet flows in a generally southeasterly direction towards Cottonwood Avenue. Upon implementation of the proposed project, the overall drainage direction would be similar to existing conditions, but would have the potential to generate more flow due to the increase in impervious surfaces (Waber Consultants 2017). The increased flow would be directed to vegetated bioretention basins located along the western, eastern, and southern portions of the site, which would accommodate the increased runoff.

The addition of impervious surfaces on site would decrease the amount of the exposed soil and would therefore reduce the potential for soil erosion and siltation to occur. Additionally, storm flows containing sediments would be captured by the bioretention basins, thus limiting erosion and siltation on- and off-site. Implementation of the proposed project would not alter the existing drainage pattern of the site in a manner which would result in substantial erosion or siltation on- or off-site, and impacts would be less than significant.

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or surface runoff in a manner which would result in flooding on or off site?			■	

Source: Preliminary Hydrology Report prepared by Waber Consultants (2017; Appendix ~~D~~E)

See IX(c). Although the project would add impervious surfaces to the site that would have the potential to increase flow, the bio-retention basins would accommodate the increased runoff. Implementation of the project would therefore not increase the rate or amount of surface runoff in a manner that would result in flooding on or off site. Flooding impacts would be less than significant.

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e) Create or contribute runoff which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			■	

Source: Preliminary Hydrology Report prepared by Waber Consultants (2017; Appendix ~~D~~E)

See IX(a), IX(c), and IX(d). Through the use of bioretention basins, and the implementation of a NPDES permit, SWPPP, BMPs, and a WQMP, implementation of the proposed project would not create or contribute runoff which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts would be less than significant.

f) Otherwise substantially degrade water quality?				■

No additional water quality impacts are anticipated beyond those described above under Items IX(a) through IX(e).

g) Place housing within a 100-year floodplain, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				■

Source: Federal Emergency Management Agency (FEMA 2008)

According to the FEMA Flood Insurance Rate Map for the area, the project site is not located within a 100-year floodplain. The project also does not include housing. Therefore, the project would not place housing within a 100-year floodplain, and no associated impact would occur.

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				■

See Item IX(g). The project would not place structures in a 100-year flood hazard area and no associated impact would occur.

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				■

Source: City of Moreno Valley General Plan FEIR Section 5.5 – Hazards

The nearest dam to the project site is at the Perris Reservoir, located approximately 4.7 miles south of the project site. According to City of Moreno Valley General Plan FEIR Figure 5.5-2, the project site is not located in an identified dam inundation area. Therefore, no impacts from the failure of a levee or dam would occur.

j) Inundation by seiche, tsunami, or mudflow?				■

The Pacific Ocean is located over 40 miles from the project site; therefore, the potential for tsunamis to impact the project site is extremely low. The nearest water body to the project site is the Perris Reservoir, which is located approximately 4.7 miles to the south. Due to this distance, a seiche in the Perris Reservoir would not impact the project site.

Mudflows are shallow, water-saturated landslides that travel rapidly down slopes carrying rocks, brush, and other debris. A mudflow occurs naturally as a result of heavy rainfall on a slope that contains loose soil or debris. There are no steep slopes in the vicinity of the project site, and no impacts from mudflows would occur.

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X. **LAND USE AND PLANNING**. Would the project:				
a) Physically divide an established community?				■
The project site consists of vacant and undeveloped land located in a developed area of the City. The property is proposed to be developed in accordance with the proposed zoning designation (Community Commercial [CC]) and land use designation (Commercial). Development of the project site as a gas station, car wash, restaurant, and convenience store would not physically disrupt or divide the arrangement of the established community. Therefore, no impacts related physical dividing a community would occur.				
b) Conflict with an applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				■
Source: City of Moreno Valley General Plan Land Use Map; City of Moreno Valley Zoning Map				
The project proposes to develop the property with a restaurant, convenience store, car wash and gas station which would be consistent with the proposed zoning designation of Community Commercial (CC) and the proposed land use designation of Commercial. Therefore, the project would not conflict with an applicable land use plan, policy, or regulation and no impact would occur.				
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				■
As described under the response to Item IV(f), the project area is located within the Riverside County MSHCP. The proposed project would not conflict with the MSHCP, or other known local, regional or State habitat conservations plans as the project site does not contain sensitive plant or animal species, vernal pools, or sensitive natural communities. In addition, the site is not within a burrowing owl special survey area or proposed conservation area (Western Riverside County Conservation Authority 2018). The project will be conditioned to pay required Stephen's kangaroo rat mitigation fees and will also be subject to impact fees to support the implementation for the MSHCP as provided for by City ordinance. Therefore, no impacts to the MSHCP would occur.				
XI. **MINERAL RESOURCES.** Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				■
Source: County of Riverside Open Space Element				
The County of Riverside General Plan identifies the project area as Mineral Resource Zone 3 (MRZ-3). MRZ-3 denotes that mineral deposits are likely to exist; however, the significance of the deposit is undetermined. The proposed project would occur in an area that has not been used for mining, is designated as residential/office, and is surrounded by other urban development where mining operations are not expected to occur. Therefore, no impacts would occur.				
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				■
See Item XI(a), above. No impacts related to mineral resource recovery would occur.				
XII. **NOISE.** Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?		■		
Source: City of Moreno Valley General Plan FEIR Chapter 5.4 - Noise; Moreno Valley Municipal Code, Chapter 11.80; Roadway Construction Noise Model; Noise Mitigation Analysis for the Proposed Yum Yum Donuts Car Wash (Landrum and Brown 2018; Appendix ~~E~~F)				

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Construction Noise Impacts

Construction noise impacts from general construction activities of the project would include noise generated from construction equipment involved in minor grading and building of the project structures. The loudest piece of equipment from this type of construction would be a backhoe used during grading and site preparation. According to the Roadway Construction Noise Model (RCNM; U.S. Department of Transportation [USDOT] 2008), at 130 feet (the approximate average distance of operating construction equipment to the nearest off-site noise sensitive land uses [NSLUs], the single-family residences adjacent to the eastern border of the project site), a backhoe would create a noise level of 65.3 A-weighted decibels (dBA) one-hour average sound level (L_{EQ}). Chapter 11.80 of the Moreno Valley Municipal Code states that any construction within the City shall only be completed between the hours of 7 a.m. to 7 p.m. Monday through Friday, excluding holidays and from 8 a.m. to 4 p.m. on Saturday, unless written approval is obtained from the City building official or City engineer. Construction activities would comply with the applicable hours; therefore, associated construction noise impacts from general construction activities would be less than significant.

Operational Noise Impacts

The City's Municipal Code sets exterior noise level standards for residential properties. The Code states that noise emitted from the proposed project shall not exceed 60 dBA at residential property lines during daytime hours (8 a.m. to 10 p.m.) and 55 dBA during nighttime hours (10 p.m. to 8 a.m.). Potential operational noise sources from the project include the car wash, mechanical equipment on the roof of the convenience store, and general noise from patrons of the site. The gas station and convenience store would be in operation for 24 hours a day, while the car wash would be in operation from 7 a.m. to 10 p.m. Therefore, ~~The proposed car wash would be the loudest source of operational noise and is expected to operate 24 hours a day. As such,~~ the proposed project would be required to comply with the 55 dBA nighttime noise level limit.

Mechanical Equipment

The main source of operational noise from mechanical equipment for the convenience store would be from the project's heating, ventilation, and air conditioning (HVAC) system. The HVAC system may be located as close as 35 feet from the nearest residential property line to the east. A typical commercial HVAC system is a 10-ton Carrier Centurion Model 50 PG03-12 with a sound rating of 80 dBA sound power (Appendix G, *HVAC Specifications*), which would result in a noise level of approximately 48.6 dBA L_{EQ} at a distance of 35 feet. This would be well below the 55--dBA nighttime limit, and impacts would be less than significant.

Patrons and Workers of the Project Site

Activities from patrons would include vehicle arrival, limited idling of the vehicle, occupants exiting the vehicle, door closure, conversations among passengers, occupants entering the vehicle, vehicle startup, and departure. While these activities may generate audible noise at adjacent properties, each noise event is of a short duration (e.g., a few seconds) that would have a minor effect on the project's overall noise levels. These activities would generally occur at the gas pump area of the site or in front of the convenience store, located 100 to 150 feet from the nearest residential property. Noise generated from the location would be attenuated due to distance, the convenience store building, and by the 8-foot high wall on the eastern edge of the property, such that noise levels at the property line would not exceed thresholds. Therefore, impacts would be less than significant.

Workers of the project site would use the trash enclosure, including opening and closing the enclosure, which is located at a distance of 30 feet from the residential property line. However, this noise would occur infrequently (e.g., a few times per day), would be attenuated due to the trash enclosure itself and the 8-foot high wall on the eastern edge of the property, and would therefore not generate noise levels that would exceed thresholds.

Car Wash

A noise analysis was prepared for the project's car wash. This analysis was prepared for a previous site plan where the car wash was located in the northeastern portion of the project site, with the structure oriented in an east--to--west direction and the opening of the car wash approximately 57 feet to the nearest residential property line. The orientation of the opening of the car wash was directly facing the residential property line.

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Subsequently, the proposed car wash location has been revised to be in the north-central portion of the project site (see Figure 3), with the structure oriented in a north--to--south direction, and the opening of the car wash is approximately 120 feet to the nearest residential property line. The orientation of the car wash opening is now at a 90-degree angle to the nearest residential property line, which means that noise would be reduced due to the angle compared to the analyzed car wash. In addition, the noise would also be decreased compared to the analyzed car wash due to the additional distance. For a conservative analysis, the results from the noise analysis of the original location of the car wash is used.

For modeling, the project's noise analysis used noise levels from a similar type of car wash at an Arco facility in San Diego, which would have a similar layout and equipment to the proposed project's car wash. The project's noise analysis determined that noise levels from the project's car wash at the nearest residential area would be 58.5 dBA, which would not exceed the daytime noise limit of 60 dBA ~~would exceed the nighttime noise limit~~ (Landrum & Brown 2018). As the car wash would operate~~s~~ from 7 a.m. to 10 p.m., however, the car wash would exceed nighttime noise limits of 55 dBA from 7 a.m. to 8 a.m. Therefore, noise levels would be potentially significant. Although noise levels at the revised car wash location would be lower than those analyzed and potentially below a level of significance, ~~M~~mitigation measure NOI-1 would still be implemented ~~has been identified~~ to reduce the significance of noise impacts.

Mitigation Measure NOI-1: Noise emitted from the proposed project shall not exceed 60 dBA at residential property lines during the daytime hours (8 a.m. to 10 p.m.) and 55 dBA during nighttime hours (10 p.m. to 8 a.m.). Measures to reduce noise levels include the following:

- An 8-foot noise barrier shall be constructed that meets or exceeds the barrier shown in Exhibit 5 of the project's noise report (Landrum & Brown 2018). The noise barrier must have a surface density of at least 3.5 pounds per square foot, and shall have no openings or gaps. The wall may be constructed of stud and stucco, 3/8-inch plate glass, 5/8-inch Plexiglas, any masonry material, or a combination of these materials. The wall shall extend as far north as the northern edge of the car wash building.

- The car wash shall be equipped with automatic doors at both the entrance end and exit ends that can close when a car is being washed and dried.

Analyzed noise levels from the car wash with an 8-foot wall at the property line, as described in mitigation measure NOI-1, would be 49.4 dBA at the residential property line, which is in compliance with the nighttime noise ordinance (Landrum & Brown 2018). In addition, as described above, due to the revised location at a further distance from the residential property line and the new orientation that does not directly face the residential property line, noise levels would be even lower than analyzed in the noise analysis. Therefore, the project would not expose persons to noise in excess of general plan or noise ordinance standards, and associated impacts would be less than significant.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			■	

The project may generate minor ground vibrations during construction from the use of heavy machinery. The use of this equipment would be intermittent and temporary, and no pile drivers or other construction equipment type known to create excessive ground vibrations would be required.

Gas station, convenience store, restaurant, and car wash use is not typically associated with groundborne vibration or noise. Fuel delivery diesel trucks can generate minor vibration levels, but not to the extent that would adversely affect people in the project area. Overall, the project would have a less-than-significant impact associated with exposing the surrounding properties, or customers or workers on-site, to excessive groundborne vibrations or groundborne noise levels.

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c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?		■		

Source: Noise Mitigation Analysis for the Proposed Yum Yum Donuts Car Wash (Landrum and Brown 2018; Appendix ~~E~~F); Traffic Impact Study (Kimley-Horn and Associates, Inc. 2016; Appendix B)

Operational noise impacts from the project include the car wash, mechanical equipment, patrons and workers of the site, and increased traffic on nearby roadways. As discussed in Item XII(a), operational noise from mechanical equipment and patrons/workers of the site would be less than significant. ~~o~~Operation of the car wash would result in a potentially significant noise impact at the nearest residential areas. Through implementation of mitigation measure NOI-1, impacts would be less than significant.

The project is estimated to generate 2,445 average daily trips (ADT). The two roadway segments immediately adjacent to the project site include Perris Boulevard and Cottonwood Avenue. According to the project's TIS, Perris Boulevard from Eucalyptus Avenue to Cottonwood Avenue currently supports 31,219 ADT and Cottonwood Avenue from Perris Boulevard to Kitching Street currently supports 8,294 ADT. In general, in order to generate a 3 dBA increase in traffic noise (which is generally considered the human threshold for perception of a noise increase), traffic volumes on a roadway would have to double. The project's addition of ADT to Perris Boulevard and Cottonwood Avenue would not double traffic volumes and therefore would not cause a 3 dBA increase in noise. Impacts from long-term traffic noise generated by the project would be less than significant.

d) A substantially temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			■	

See Item XII(a) above. Although construction of the proposed project would result in temporary increases in ambient noise, the project would comply with applicable noise regulations. Therefore, associated impacts would be less than significant.

e) For a project located within an airport land use plan, or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				■

Source: City of Moreno Valley General Plan FEIR

The closest airport, the March Air Reserve Base, is located approximately 2.6 miles southwest of the project site. According to General Plan FEIR Figure 5.4-1, the project site is located well outside of the 60 dBA CNEL noise contour for the airport and would not be subjected to excessive noise levels due to operations at the March Air Reserve Base. Therefore, the project would not expose people residing or working in the project area to excessive noise levels associated with a public airport, and no airport noise-related impacts would occur.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				■

The project site is not located near a private airfield or airstrip. Therefore, the proposed project has no potential to expose people to excessive noise levels associated with operations at a private airstrip, and no associated impacts would occur.

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XIII. **POPULATION AND HOUSING.** Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				■

The project involves the construction and operation of a restaurant, convenience store, fuel facility, and car wash. No residential uses or other land uses associated with directly impacting population growth are included as part of the project. The temporary construction jobs associated with the project are expected to be fulfilled by the existing local labor pool, and it is not anticipated that the project would result in indirect population growth. Additionally, the project would use existing utilities and infrastructure on-site, and would not result in off-site improvements that would drive job or population growth; therefore, no impacts associated with population growth inducement would occur.

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				■

The project site is vacant and would not displace existing housing. No impacts associated with housing displacement would occur.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				■

The project site is vacant and would not displace people. No impacts associated with displacement of people would occur.

XIV. **PUBLIC SERVICES**. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
a) Fire protection?			■	

Source: City of Moreno Valley General Plan Safety Element; City of Moreno Valley General Plan FEIR, Chapter 5.13-Public Services and Utilities; City of Moreno Valley Municipal Code, Chapter 3.42, Commercial and Development Impact Fees (Ordinance No. 695)

The City contracts with the Riverside County Fire Department to provide fire protection, fire prevention, and emergency services to its residents. The fire station nearest the project site is Station No. 99, located at 13400 Morrison Street, an approximate one and a half-mile driving distance east of the project site. The proposed project would increase the need for fire protection services within the City, but would not require the construction of new fire facilities to maintain acceptable service ratios, response times, or other performance objectives. The project would be required to adhere to all standards and conditions required by the City and the Riverside County Fire Department, including, but not limited to, restrictions on project design, imposition of construction standards, and payment of impact fees. Adherence to these standards would result in a less-than-significant impacts associated with the provision of fire protection.

b) Police protection?			■	

Source: Moreno Valley General Plan Safety Element; City of Moreno Valley General Plan FEIR, Chapter 5.13-Public Services and Utilities; City of Moreno Valley Municipal Code, Chapter 3.42, Commercial and Development Impact Fees (Ordinance No. 695)

The City contracts police services from the Riverside County Sheriff's Department. The Moreno Valley Police Department (MVPD) operates out of the Central Police Station, located at 22850 Calle San Juan de Los Lagos. The proposed project would incrementally increase the need for police protection services within the City. The proposed project would be required to adhere to all standards and conditions required by the City and the MVPD, including the payment of impact fees. While the proposed project would increase the need for police protection, it would not require the construction of new facilities to maintain acceptable service ratios, response times, or other performance objectives. Therefore, the proposed project would result in a less-than-significant impact associated with the provision of police protection.

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c) Schools?				■

The proposed project does not include uses that would generate school age children. As such, implementation of the proposed project would not place an increased demand on schools or require the construction of new schools, and no impacts would occur.

d) Parks?				■

The proposed project does not include uses that would increase population growth. As such, implementation of the proposed project would not place an increased demand on parks or require the construction of new parks, and no impacts would occur.

e) Other public facilities?				■

The proposed project does not include uses that would increase population growth. As such, implementation of the proposed project would not place an increased demand on other public facilities or require the construction of new facilities, and no impacts would occur.

XV. **RECREATION.**

a) Would the project increase the use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				■

See XIV(d), above. The proposed project would not increase the usage of parks and no impacts would occur.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				■

The project involves the construction and operation of a restaurant, convenience store, fuel facility, and car wash, and does not include recreational facilities or require the construction or expansion of recreational facilities. No impacts would occur.

XVI. **TRANSPORTATION/TRAFFIC.** Would the project:

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?		■		

Source: Traffic Impact Study (Kimley-Horn and Associates, Inc. 2016; Appendix ~~E~~F); Supplemental Traffic Assessment (Kimley Horn and Associates, Inc. 2017; back of Appendix ~~E~~F).

A TIS has been prepared for the proposed project (Kimley-Horn Associates, Inc. 2016). The study is summarized below.

Roadway segment and intersection operating conditions are typically described in terms of LOS. LOS is a scale used to indicate the quality of traffic flow on roadway segments and at intersections, with a range from LOS A (free flow, little congestion) to LOS F (forced flow, extreme congestion). Based upon City traffic study guidelines, a significant traffic impact under CEQA occurs when the addition of project traffic under the Existing Plus Project scenario causes an intersection or roadway that operates at an acceptable LOS under the Existing scenario to operate at an unacceptable LOS for Existing Plus Project conditions. Therefore, in this study, Existing Plus Project conditions are compared to Existing conditions to identify potentially significant, direct, project-related traffic impacts according to the following criteria:

- If an intersection operating at an acceptable LOS (LOS D or better) under Existing conditions and the addition of project traffic causes the intersection to operate at an unacceptable LOS (LOS E or F);

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- If an intersection is operating at an unacceptable LOS (LOS E or F) under Existing conditions and the addition of project traffic at the intersection is 50 or more peak hour trips; or
- If a roadway segment operating at an acceptable LOS (LOS D or better) under Existing conditions and the addition of project traffic causes the roadway to operate an unacceptable LOS (LOS E or F).

According to the TIS, the proposed project is expected to generate 2,445 ADT, including a total of 190 AM peak-hour trips, 222 PM peak-hour trips, and 312 Sunday peak-hour trips. After applying pass-by reductions (for vehicles that would be traveling in the area regardless of the proposed project facilities), the development is projected to generate a total of 72 AM peak-hour trips, 98 PM peak-hour trips, and 138 Sunday peak-hour trips.

Cumulative traffic forecasts were developed using existing traffic volumes, an annual ambient growth rate per year to the project's opening year (assumed to be 2020), and traffic generated from cumulative projects. The cumulative projects consist of projects within a 3.5-mile radius of the project site that have been approved but are not yet built or fully occupied, as well as projects that are in various stages of the application and approval process but have not yet been approved. The cumulative projects were assessed for their proximity to the project site and for their potential to generate traffic based on their approved or pending land uses. As part of the Cumulative scenario, the St. Christopher's Catholic Church on the southeast corner of the intersection of Perris Boulevard and Cottonwood Avenue are assumed to undergo an expansion. The existing driveway along Cottonwood Avenue will be eliminated as part of that expansion. The removal of the church's driveway was taken into consideration in the analysis of future conditions.

Roadway segment conditions are listed in Table 7, *Roadway Segment Conditions*, for the following scenarios: Existing, Existing Plus Project, Existing Plus Cumulative Projects, and Existing Plus Cumulative Projects Plus Project. As shown in the table, the study roadway segments currently operate at an acceptable LOS and are projected to continue to operate at an acceptable LOS under the Existing Plus Project scenario. Both roadway segments along Perris Boulevard are anticipated to operate deficiently under the Existing Plus Cumulative Projects scenario and the Existing Plus Cumulative Projects Plus Project scenario, which would be a potentially significant cumulative impact. The project's contribution to this impact would be minimal, with an increase of 0.02 volume/capacity ratio for each roadway segment. Per the City of Moreno Valley General Plan Roadway Network, Perris Boulevard is planned to be widened to add one lane in each direction, which will increase the daily roadway capacity to 56,300 vehicles, which would exceed the projected traffic levels. This lane addition can be accomplished within the existing curb-to-curb width. Through Mitigation Measure TRA-1, the project would contribute to the Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF) and the City of Moreno Valley Developer Impact Fee (DIF) program on a fair-share basis, and the project's cumulative impacts to roadway segments would be mitigated to less than significant.

Table 7
ROADWAY SEGMENT CONDITIONS

Roadway Segment	Existing		Existing Plus Project		Existing Plus Cumulative Projects		Existing Plus Cumulative Projects Plus Project	
	V/C[1]	LOS[2]	V/C	LOS	V/C	LOS	V/C	LOS
Perris Boulevard								
Eucalyptus Avenue to Cottonwood Avenue	0.83	D	0.86	D	**1.10**	**F**	**1.12**	**F**
Cottonwood Avenue to Alessandro Boulevard	0.72	C	0.74	C	**0.97**	**E**	**0.99**	**E**
Cottonwood Avenue								
Indian Street to Perris Boulevard	0.67	A	0.70	A	0.76	B	0.79	A
Perris Boulevard to Kitching Street	0.66	A	0.68	A	0.79	B	0.81	C

Source: Kimley-Horn and Associates, Inc. 2016
[1] V/C = Vehicle to Capacity ratio
[2] LOS = Level of Service
Bolded segments operate at an unacceptable LOS (LOS E or F)

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Intersection delays and corresponding LOS are listed in Table 8, *Intersection Conditions*. As shown in the table, in the Existing scenario all intersections currently operate at an acceptable LOS except the Cottonwood Avenue/Crape Myrtle Drive intersection during the AM peak hour. In the Existing Plus Project scenario, all intersections are projected to operate at an acceptable LOS except the Cottonwood Avenue/Crape Myrtle Drive intersection during the AM peak hour and the Perris Boulevard Driveway during the AM, PM, and Sunday peak hours. The project would contribute less than 10 peak hour trips to the Cottonwood Avenue/Crape Myrtle Drive intersection, which is below the 50 peak hour trip threshold, and direct impacts to this intersection would be less than significant. For the Perris Boulevard Driveway, the deficiency is not due to the relatively small amount of trips the project is adding to the exit, and instead caused by vehicles waiting to make a westbound left-turn out of the driveway onto Perris Boulevard, which have to cross multiple lanes of traffic on a busy roadway. In addition, the driveway on Perris Boulevard is consistent with Section 9.11.080 of the Moreno Valley Municipal Code for design parameters. The distance from the driveway to the intersection of Perris Boulevard and Cottonwood Avenue exceeds 350 feet when measured from the centerline of Cottonwood Avenue. The driveway is located at the far northern portion of the site, and aligns with the existing driveway on the west side of Perris Boulevard. The forecast delays would be experienced by patrons of the proposed project, rather than by travelers on public roadways. Therefore, the project's direct impacts at this intersection would be considered less than significant.

Regarding the cumulative scenarios, the following intersections are projected to operate at an unacceptable LOS under the Existing Plus Cumulative scenario:

- Perris Boulevard/Atwood Avenue (AM, PM, and Sunday peak hours)
- Cottonwood Avenue/Crape Myrtle Drive (AM peak hour)
- Perris Boulevard/Alessandro Boulevard (PM peak hour)
- Perris Boulevard Driveway (PM and Sunday peak hours)

With the addition of project traffic to the Cumulative Without Project scenario, the same intersections would operate at an unacceptable LOS:

- Perris Boulevard/Atwood Avenue (AM, PM, and Sunday peak hours)
- Cottonwood Avenue/Crape Myrtle Drive (AM and Sunday peak hours)
- Perris Boulevard/Alessandro Boulevard (PM peak hour)
- Perris Boulevard Driveway (AM, PM, and Sunday peak hours)

These intersections are forecasted to operate deficiently before the addition of project traffic. The deficiency at the Perris Boulevard Driveway in the Existing Plus Cumulative scenario is caused by egress vehicles from the shopping center to the west of the project site. In the Existing Plus Cumulative Plus Project scenario, the westbound approach at the driveway also operates deficiently. Due to the aforementioned reasons discussed above under the Existing Plus Project scenario, the project's contribution to cumulative impacts would be less than significant for this driveway.

With the exception of the Perris Boulevard/Alessandro Boulevard intersection, the deficient intersections are unsignalized. Due to the heavy traffic volumes anticipated in Opening Year 2020 as a result of growth and nearby projects, vehicles turning from minor streets onto Perris Boulevard are forecasted to encounter significant delays, regardless of their low volumes. A traffic signal warrant analysis was conducted for each of these intersections and, based on the low volumes, signalization was determined not to be warranted. The project's contribution to cumulative impacts at these intersections would be less than significant.

For the Perris Boulevard/Alessandro Boulevard intersection, planned improvements included in existing fee programs include an additional southbound left-turn lane and an additional northbound left-turn lane. Through Mitigation Measure TRA-1, the project would contribute to the Western Riverside Council of Governments (WRCOG) TUMF and the City's DIF program on a fair-share basis, and the project's contribution to cumulative impacts to this intersection would be mitigated to less than significant.

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Table 8
INTERSECTION CONDITIONS

Intersection	Existing		Existing Plus Project		Existing Plus Cumulative Projects		Existing Plus Cumulative Projects Plus Project	
	Delay[1]	LOS[2]	Delay	LOS	Delay	LOS	Delay	LOS
AM Peak Hour								
Perris Blvd/Eucalyptus Ave	19.9	B	20.1	C	27.7	C	28.0	C
Perris Blvd/Atwood Ave	23.8	C	24.3	C	**46.4**	**E**	**47.8**	**E**
Perris Blvd/Dracaea Ave	26.5	C	27.0	C	44.3	D	45.1	D
Cottonwood Ave/Indian St	23.1	C	23.4	C	27.9	C	28.4	C
Cottonwood Ave/Perris Blvd	26.1	C	27.1	C	35.6	D	37.0	D
Cottonwood Ave/Crape Myrtle Dr	**39.5**	**E**	**40.5**	**E**	**65.3**	**F**	**68.0**	**F**
Cottonwood Ave/Kitching St	25.3	C	25.6	C	30.4	C	29.0	C
Perris Blvd/Bay Ave	22.2	C	22.5	C	27.9	C	28.6	C
Perris Blvd/Alessandro Blvd	30.1	C	30.2	C	50.7	D	51.1	D
Perris Blvd Driveway	13.2	B	**224.4**	**F**	16.2	C	**1275.4**	**F**
Cottonwood Ave Driveway	17.5	C	22.3	C	--*	--*	18.4	C
PM Peak Hour								
Perris Blvd/Eucalyptus Ave	20.4	C	20.8	C	28.9	C	29.5	C
Perris Blvd/Atwood Ave	29.0	D	29.8	D	**79.7**	**F**	**85.3**	**F**
Perris Blvd/Dracaea Ave	18.0	B	18.2	B	26.0	C	26.6	C
Cottonwood Ave/Indian St	20.1	C	20.3	C	22.4	C	22.8	C
Cottonwood Ave/Perris Blvd	21.7	C	22.5	C	30.9	C	32.7	C
Cottonwood Ave/Crape Myrtle Dr	15.2	C	15.4	C	18.1	C	18.4	C
Cottonwood Ave/Kitching St	16.1	B	16.2	B	16.6	B	16.7	B
Perris Blvd/Bay Ave	16.4	B	16.7	B	18.2	B	18.7	B
Perris Blvd/Alessandro Blvd	35.3	D	35.6	D	**64.8**	**E**	**65.4**	**E**
Perris Blvd Driveway	34.8	D	**260.0**	**F**	**626.3**	**F**	**2499.9**	**F**
Cottonwood Ave Driveway	13.0	B	14.8	B	--*	--*	13.7	B
Sunday Peak Hour								
Perris Blvd/Eucalyptus Ave	16.6	B	16.9	B	18.7	B	19.1	B
Perris Blvd/Atwood Ave	27.4	D	28.5	D	**65.2**	**F**	**71.1**	**F**
Perris Blvd/Dracaea Ave	20.6	C	20.8	C	27.8	C	28.7	C
Cottonwood Ave/Indian St	18.1	B	18.2	B	19.9	B	20.2	C
Cottonwood Ave/Perris Blvd	23.1	C	24.6	C	34.4	C	37.7	D
Cottonwood Ave/Crape Myrtle Dr	22.3	C	23.1	C	34.2	D	**35.9**	**E**
Cottonwood Ave/Kitching St	16.9	B	17.0	B	17.8	B	18.1	B
Perris Blvd/Bay Ave	14.6	B	14.8	B	17.2	B	17.5	B
Perris Blvd/Alessandro Blvd	28.6	C	28.8	C	38.3	D	38.8	D
Perris Blvd Driveway	32.6	D	**498.3**	**F**	**397.9**	**F**	**2664.0**	**F**
Cottonwood Ave Driveway	17.4	C	24.5	C	--*	--*	14.3	B

Source: Kimley-Horn and Associates, Inc. 2016
[1] Delay = Second per vehicle
[2] LOS = Level of Service
* Church Driveway Removed
Bolded intersections operate at an unacceptable LOS (LOS E or F)

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The following mitigation measure is required:

Mitigation Measure TRA-1: Prior to issuance of the first building permit, the Project Applicant shall make a fair-share contribution in the funding of off-site improvements that are needed to serve acceptable cumulative traffic operations through the payment of the required Transportation Uniform Mitigation Fee (TUMF) fees in addition to the City of Moreno Valley Development Impact Fee (DIF). The fees shall be collected by the Western Riverside Council of Governments (WRCOG) for the TUMF and by the City of Moreno Valley for the DIF.

With implementation of mitigation measure TRA-1, the project would not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, and associated traffic impacts would be less than significant.

A Supplemental Traffic Assessment (Kimley-Horn and Associates, Inc.) was prepared for the TIA to analyze trip generation rates from the proposed zoning change from Office Commercial (OC) to Community Commercial (CC). A CC zone includes land uses such as a fast food restaurant with drive-through that is not included in an OC zone. The gas station with convenience market and car wash, which was analyzed above, is permissible under both zones. A fast-food restaurant with drive-through, which would have a generally small building footprint, would generate a similar or lower amount of traffic compared to a gas station with convenience market and car wash. For instance, in a case where a fast-food restaurant is 3,000 square-feet, a gas station with twelve pumps would generate significantly more traffic on a daily and peak hour basis. Therefore, the above analysis and mitigation would be the conservative analysis, and would be the applicable analysis for the proposed project.

b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?		■		

Source: Traffic Impact Study (Kimley-Horn and Associates, Inc. 2016; Appendix ~~E~~B); 2011 Riverside County Congestion Management Program

See Item XVI(a). Since the project would contribute to existing roadway and intersection deficiencies, it would cause potentially significant impacts to the performance of the circulation system and would have the potential to impact existing performance of the System of Highways and Principal Arterials governed by the Riverside County Congestion Management Plan (CMP). However, implementation of mitigation measure TRA-1 would reduce impacts to the performance of the circulation system, and subsequently would reduce conflicts with the Riverside County CMP to a less-than-significant level.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				■

The project site is located approximately 2.6 miles northeast of the nearest airport, March Air Reserve Base. The project site is not within the airport influence area of the airport. In addition, the proposed project would not include aviation components or structures where height would be an aviation concern and, therefore, would not affect air traffic patterns. No associated impacts would occur.

d) Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?				■

The project does not propose a design feature or incompatible uses that could substantially increase hazards. The project's driveways along Perris Boulevard and Cottonwood Avenue have been designed to allow safe ingress and egress in accordance with Section 9.11.080 of the City Municipal Code, which outlines design standards for driveways-. This includes siting the Perris Boulevard driveway 350 feet from the centerline of Cottonwood Avenue, and the Cottonwood Avenue driveway 250 feet from the centerline of Perris Boulevard, in accordance with Table 9.11.080-14 of the Municipal Code. In addition, consistent with City practices, operation of the driveways would be continually reviewed, and modifications would be made if hazardous conditions are present. Therefore, with compliance with City design standards, no associated impacts would occur.

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e) Result in inadequate emergency access?				■

Access to the site for emergency vehicles would be provided via the project driveways along Perris Boulevard and Cottonwood Avenue. The project would be subject to City review and approval for consistency with design requirements while acquiring building permits to ensure that no impediments to emergency access occur. No impacts would occur.

f) Conflict with adopted policies or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?				■

Source: City of Moreno Valley General Plan Circulation Element; City of Moreno Valley Bicycle Master Plan; Traffic Impact Study (Kimley-Horn and Associates, Inc. 2016; Appendix ~~E~~B).

Pedestrian access would be provided via project-installed sidewalks on Perris Boulevard and Cottonwood Avenue. No sidewalks currently exist along the project frontage; therefore, these project elements would represent improvements to pedestrian circulation in the area. A Class II bike lane is located along Cottonwood Boulevard (City 2014). The project would not interfere with the existing bike lane. Regarding mass transit, the Riverside County Transit Agency provides transit lines that run along the project frontage. Route 18 operates along Cottonwood Avenue and Route 19 operates along Perris Boulevard. A bus stop for Route 19 is located on the east side of Perris Boulevard along the project frontage. The project would incorporate a bus turnout to allow for the continued operation of the adjacent bus stop, as well as both bus routes. Implementation of the project would not conflict or interfere with policies contained in the Circulation Element of the City's General Plan regarding alternative transportation modes. Therefore, no impacts related to these issues would occur.

XVII. **TRIBAL CULTURAL RESOURCES.** Would the project:				
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or		■		
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.		■		

Tribal cultural resources (TCRs) are sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either included or determined to be eligible for inclusion in the California Register of Historical Resources or included in a local register of historical resources, as defined in subdivision (k) of Public Resources Code Section 5020.1, or determined to be significant pursuant to criteria set forth in Public Resources Code Section 5024.1. As discussed in Item V(b), the project would occur within an area sensitive for cultural resources, and therefore although there are no known TCRs on site the potential exists for encountering TCRs during ground-disturbing activities of project construction. As a result, project construction would be required to implement mitigation measures CR-1 through CR-6 to reduce potentially significant impacts to TCRs to less than significant.

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XVII. **UTILITIES AND SERVICE SYSTEMS.** Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?			■	

The proposed project would be required to comply with the applicable waste discharge prohibitions and water quality objectives established by the Santa Ana RWQCB. Treatment of wastewater generated by the project would be routine and would not exceed wastewater treatment requirements of the RWQCB. The Eastern Municipal Water District (EMWD) is the wastewater treatment provider for the project. The project would not exceed wastewater treatment capacity of the EMWD's Moreno Water Reclamation Facility. The project proponent would also be required to satisfy City and EMWD requirements related to the payment of fees and/or the provision of wastewater conveyance features, and installation and maintenance prior to the issuance of building permits. Adherence to these wastewater treatment requirements would result in a less than significant impact.

b) Require or result in construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			■	

Domestic water and wastewater services would be provided to the project site by EMWD. The proposed project would install connections to water and wastewater conveyance lines that exist beneath abutting public roadways. Except for small encroachments into adjacent public rights-of-way of paved streets to connect to existing lines and the construction of water and sewer lines on site, no physical disturbance for the installation of water or wastewater facilities would be required to service the proposed project. In addition, the project would not substantially increase the demand for water or wastewater treatment services and would not require the need for new or expanded water or wastewater treatment facilities; the project meets the existing zoning of the site and would not be adding additional population above what has been planned for by the EMWD. Adequate services are available to serve the project. Therefore, associated impacts would be less than significant.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			■	

The project would involve the construction of gutters, bio-retention basins, storm drain pipes, and storm drain outlet structures. The construction of stormwater drainage facilities proposed by the project would result in physical impacts to the surface and subsurface of the project site. These impacts are considered to be part of the project's construction phase and are evaluated throughout this Initial Study accordingly. The proposed drainage facilities are expected to be sufficient to convey post-development flows; therefore, the construction or expansion of additional off-site drainage facilities would not be required. Impacts associated with stormwater drainage facilities would be less than significant.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?			■	

Source: EMWD 2015 Urban Water Management Plan

The operation of the proposed car wash, restaurant, convenience store, and gas station would result in an increase in potable water demand from the local water purveyor, EMWD. However, the proposed project is consistent with the assumptions made in EMWD's 2015 Urban Water Management Plan, as the Project site is consistent with the existing land use and zoning designations that are used to calculate population projections. EMWD's 2015 Urban Water Management Plan concludes that the EMWD has sufficient water supplies available to serve planned land uses within its service area through at least 2040. In addition, the proposed project would not be subject to the provisions of Senate Bill (SB) 610, requiring a Water Supply Assessment, because the proposed project does not involve a use that would result in water demand equivalent to a residential development of more than 500 dwelling units. Therefore, impacts related to water supply would be less than significant.

e) Result in a determination by the wastewater treatment provider which serves or may serve the project determined that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			■	

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Please see Items XVII(a) and XVII(b). EWMD would have adequate capacity for the proposed project. Impacts related to wastewater treatment capacity would be less than significant.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			■	

Source: CalRecycle "Facility/site Summary Details"; CalRecycle "Estimated Solid Waste Generation Rates; USEPA "Construction Waste Management Guidance"

Implementation of the proposed project would generate an incremental increase in solid waste volumes requiring off-site disposal during short-term construction and long-term operational activities. The project would be required to comply with City of Moreno Valley Ordinance No. 706, which requires a minimum of 50 percent of all construction waste and debris to be recycled. Additionally, the project would be required to comply with mandatory waste reduction requirements as described below under Item XVII(g).

Solid waste generated by the proposed project would be disposed at the Badlands Sanitary Landfill, the Lamb Canyon Sanitary Landfill, and/or the El Sobrante Landfill. Existing capacities at each of these landfills are discussed below.

The Badlands Landfill has a permitted disposal capacity of 4,800 tons per day and a remaining capacity of 15,748,799 cubic yards (CalRecycle 2018a). The Badlands Landfill is estimated to reach capacity in the year 2022; however, future landfill expansion opportunities exist at this site. During December 2017, which is the most recent time period for which reporting data are available, the Badlands Landfill accepted 70,127 tons of waste for an average daily amount of 2,805 tons (Riverside County Waste Management Department [RCWMD] 2018a).

The Lamb Canyon Landfill has a permitted disposal capacity of 5,500 tons per day and has a remaining capacity of 19,242,950 cubic yards (CalRecycle 2018b). The Lamb Canyon Landfill is estimated to reach capacity in the year 2029; however, future landfill expansion opportunities exist at this site. During October of 2017, which is the most recent time period for which reporting data are available, the Lamb Canyon Landfill accepted 47,281 tons of waste for an average daily amount of 1,818 tons (RCWMD 2017).

The El Sobrante Landfill has a permitted disposal capacity of 16,054 tons per day and a remaining capacity of 145,530,000 tons (CalRecycle 2018c). The El Sobrante Landfill is estimated to reach capacity in the year 2045; however, future landfill expansion opportunities exist at this site. During December of 2017, which is the most recent time period for which reporting data are available, the El Sobrante Landfill accepted 275,530 tons of waste for an average daily amount of 11,021 tons (RCWMD 2018b).

For the proposed project, waste would be generated by the construction process, primarily consisting of discarded materials and packaging. Based on the total project site area to undergo construction of 18,825 square feet and the USEPA's construction waste generation factor of 2.5 pounds per square foot for commercial construction (USEPA 2007), approximately 24 tons of waste would be generated during the construction process.

Based on a daily waste generation factor of five pounds of waste per 1,000 square feet of building area per day obtained from CalRecycle, long-term, on-going operation of the proposed 5,515-square foot restaurant and convenience store would generate approximately 27.5 pounds of waste per day (CalRecycle 2016). At least 50 percent is required to be recycled pursuant to State law.

Solid waste generated by the proposed project would be disposed at the aforementioned El Sobrante Landfill, the Badlands Sanitary Landfill, and/or the Lamb Canyon Sanitary Landfill. Each of these landfills receive well below their maximum permitted daily disposal volume and have the potential for future expansion. The landfills have sufficient capacity to accept solid waste generated by the project's construction and operational phases; therefore, associated impacts would be less than significant.

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g) Comply with federal, state, and local statues and regulations related to solid waste?			■	

The project would be required to comply with the City of Moreno Valley's waste reduction programs, including recycling and other diversion programs to divert the amount of solid waste deposited in landfills. In addition, in accordance with the California Solid Waste Reuse and Recycling Act of 1991 (California Public Resources Code Section 42911), the proposed project would provide adequate areas for collecting and loading recyclable materials where solid waste is collected. The implementation of these programs would reduce the amount of solid waste generated by the proposed project and diverted to landfills, which in turn would aid in the extension of the life of affected disposal sites. The project would comply with all applicable solid waste statutes and regulations; therefore, solid waste impacts would be less than significant.

XVIII. **MANDATORY FINDINGS OF SIGNIFICANCE.**				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?		■		

The project does not have the potential to impact sensitive biological resources. It does have the potential to degrade the quality of the environment associated with cultural and paleontological resources. Mitigation measures CR-1 through CR-6 have been incorporated to reduce impacts to a less-than-significant level.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?		■		

The proposed project, in combination with past, present, and reasonably foreseeable projects, may contribute a significant cumulative traffic impact, as identified under Item XVI(a). With implementation of the proposed mitigation measure, the project would not result in significant, unavoidable, or adverse cumulative impacts to traffic. Therefore, the project's potential impacts are not considered cumulatively considerable.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			■	

As discussed throughout this document, it is not anticipated that project activities would create conditions that would significantly directly or indirectly impact human beings. In issue areas regarding adverse effects on human beings, either no impact or a less-than-significant impact would occur. For this reason, environmental effects that would cause substantial adverse effects on human beings would be less than significant.

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Attachment: Exhibit A to Resolution 2018-XX - Mitigated Negative Declaration (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE,

References

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PEN16-0086, PEN16-0087, PEN16-0088 (Yum Yum Donuts Moreno Valley Project)

Mitigation Monitoring and Reporting Program

Introduction

This Mitigation Monitoring and Reporting Program has been prepared for the use in implementing mitigation for the Mitigated Negative Declaration (MND) for the Yum Yum Donuts Moreno Valley Project (PEN16-0086, PEN16-0087, PEN16-0088). The program has been prepared in compliance with State law and the MND prepared for the project.

The California Environmental Quality Act (CEQA) requires adoption of a reporting or monitoring program for those measures places on a project to mitigated or avoid adverse effects on the environment (Public Resources Code Section 21081.6). The law states that the reporting or monitoring program shall be designed to ensure compliance during project implementation.

The monitoring program contains the following elements:

1. The mitigation measures are recorded with the action and procedure necessary to ensure compliance. In some instances, one action may be used to verify implementation of several mitigation measures.

2. A procedure for compliance and verification has been outlined for each action necessary. This procedure designates who will take action, what action will be taken and when, and to whom and when compliance will be reported.

3. The program has been designed to be flexible. As monitoring progresses, changes to compliance procedures may be necessary based upon recommendations by those responsible for the program. As changes are made, new monitoring compliance procedures are records will be developed and incorporated into the program.

Mitigation Monitoring and Responsibilities

As the Lead Agency, the City of Moreno Valley is responsible for ensuring full compliance with the mitigation measures adopted for the proposed project. The City will monitor and report on all mitigation activities. Mitigation measures will be implemented at different stages of development throughout the project. In this regards, the responsibilities for implementation have been assigned to the Applicant, Contractor, or a combination thereof. If during the course of project implementation, any of the mitigation measures identified herein cannot be successfully implemented, the City shall be immediately informed, and the City will then inform any affected responsible agencies. The City, in conjunction with any affected responsible agencies, will then determine if modification to the project is required and/or whether alternative mitigation is appropriate.

Attachment: Exhibit B to Resolution 2018-XX - Mitigation Monitoring Program (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE,

Mitigation Monitoring and Reporting Program Checklist

Project: Yum Yum Donuts Moreno Valley (PEN16-0086, PEN16-0087, PEN16-0088)

Applicant: A & S Engineering, 28405 Sand Canyon Road, Suite "B", Canyon Country, CA 91387

Date: November 1, 2018

Mitigation Measure No./ Implementation Action	Responsible for Monitoring	Monitoring Frequency	Timing of Verification	Method of Verification	Verified Date/Initials	Sanctions for Non-Compliance
Cultural Resources						
CR-1: Prior to the issuance of a grading permit, the Developer shall retain a professional archaeologist to conduct monitoring of all mass grading and trenching activities. The Project Archaeologist shall have the authority to temporarily redirect earthmoving activities in the event that suspected archaeological resources are unearthed during Project construction. The Project Archaeologist, in consultation with the Consulting Tribe(s), the contractor, and the City, shall develop a Cultural Resources Management Plan (CRMP) in consultation pursuant to the definition in AB52 to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the project site. A consulting tribe is defined as a tribe that initiated the AB 52 tribal consultation process for the Project, has not opted out of the AB52 consultation process, and has completed AB 52 consultation with the City as provided for in Cal Pub Res Code Section	City of Moreno Valley	Ongoing during construction	Prior to Certificate of Occupancy	Review of construction documents and on-site inspection		Withhold Certificate of Occupancy

Mitigation Measure No./ Implementation Action	Responsible for Monitoring	Monitoring Frequency	Timing of Verification	Method of Verification	Verified Date/Initials	Sanctions for Non-Compliance
21080.3.2(b)(1) of AB52. Details in the Plan shall include: a. Project grading and development scheduling; b. The Project archeologist and the Consulting Tribes(s) as defined in CR-1 shall attend the pre-grading meeting with the City, the construction manager and any contractors and will conduct a mandatory Cultural Resources Worker Sensitivity Training to those in attendance. The Training will include a brief review of the cultural sensitivity of the Project and the surrounding area; what resources could potentially be identified during earthmoving activities; the requirements of the monitoring program; the protocols that apply in the event inadvertent discoveries of cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated; and any other appropriate protocols. All new construction personnel that will conduct earthwork or grading activities that begin work on the Project following the initial Training must take the Cultural Sensitivity Training prior to beginning work and the Project archaeologist and Consulting Tribe(s) shall make						

Mitigation Measure No./ Implementation Action	Responsible for Monitoring	Monitoring Frequency	Timing of Verification	Method of Verification	Verified Date/Initials	Sanctions for Non-Compliance
themselves available to provide the training on an as-needed basis; c. The protocols and stipulations that the contractor, City, Consulting Tribe(s) and Project archaeologist will follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits that shall be subject to a cultural resources evaluation.						
CR-2: Prior to the issuance of a grading permit, the Developer shall secure agreements with the Soboba Band of Luiseño Indians for tribal monitoring. The Developer is also required to provide a minimum of 30 days advance notice to the tribes of all mass grading and trenching activities. The Native American Tribal Representatives shall have the authority to temporarily halt and redirect earth moving activities in the affected area in the event that suspected archaeological resources are unearthed. If the Native American Tribal Representatives suspect that an archaeological resource may have been unearthed, the Project Archaeologist or the Tribal Representatives shall immediately redirect grading operations in a 100-foot radius around the find to allow identification and evaluation of the suspected resource. In consultation with the Native American Tribal Representatives, the Project Archaeologist shall evaluate the suspected resource and make a determination of	City of Moreno Valley	Prior to and ongoing during construction	Prior to issuance of Grading Permit	Review of construction documents and on-site inspection		Withhold Grading Permit/Certificate of Occupancy

Mitigation Measure No./ Implementation Action	Responsible for Monitoring	Monitoring Frequency	Timing of Verification	Method of Verification	Verified Date/Initials	Sanctions for Non-Compliance
significance pursuant to California Public Resources Code Section 21083.2.						
CR-3: In the event that Native American cultural resources are discovered during the course of grading (inadvertent discoveries), the following procedures shall be carried out for final disposition of the discoveries: a. One or more of the following treatments, in order of preference, shall be employed with the tribes. Evidence of such shall be provided to the City of Moreno Valley Planning Department: i. Preservation-In-Place of the cultural resources, if feasible. Preservation in place means avoiding the resources, leaving them in the place they were found with no development affecting the integrity of the resources. ii. Onsite reburial of the discovered items as detailed in the treatment plan required pursuant to Mitigation Measure CR-1. This shall include measures and provisions to protect the future reburial area from any future impacts in perpetuity. Reburial shall not occur until all legally required cataloging and basic recordation have been completed. No recordation of	City of Moreno Valley	Ongoing during construction	Prior to Certificate of Occupancy	Review of construction documents and on-site inspection		Withhold Certificate of Occupancy

Attachment: Exhibit B to Resolution 2018-XX - Mitigation Monitoring Program (3257 : A GENERAL PLAN

Mitigation Measure No./ Implementation Action	Responsible for Monitoring	Monitoring Frequency	Timing of Verification	Method of Verification	Verified Date/Initials	Sanctions for Non-Compliance
sacred items is permitted without the written consent of all Consulting Native American Tribal Governments as defined in CR-1.						
CR-4: The City shall verify that the following note is included on the Grading Plan: "If any suspected archaeological resources are discovered during ground-disturbing activities and the Project Archaeologist or Native American Tribal Representatives are not present, the construction supervisor is obligated to halt work in a 100-foot radius around the find and call the Project Archaeologist and the Tribal Representatives to the site to assess the significance of the find."	City of Moreno Valley	Prior to construction	Prior to issuance of Grading Permit/Certificate of Occupancy	Review of construction documents		Withhold Grading Permit
CR-5: If potential historic or cultural resources are uncovered during excavation or construction activities at the project site, work in the affected area must cease immediately and a qualified person meeting the Secretary of the Interior's standards (36 CFR 61), Tribal Representatives, and all site monitors per the Mitigation Measures, shall be consulted by the City to evaluate the find, and as appropriate recommend alternative measures to avoid, minimize or mitigate negative effects on the historic, or prehistoric resource. Determinations and recommendations by the consultant shall be immediately submitted to the Planning Division for consideration, and	City of Moreno Valley	Ongoing during construction	Prior to Certificate of Occupancy	Review of construction documents and on-site inspection		Withhold Certificate of Occupancy

Mitigation Measure No./ Implementation Action	Responsible for Monitoring	Monitoring Frequency	Timing of Verification	Method of Verification	Verified Date/Initials	Sanctions for Non-Compliance
implemented as deemed appropriate by the Community Development Director, in consultation with the State Historic Preservation Officer (SHPO) and any and all Consulting Native American Tribes as defined in CR-1 before any further work commences in the affected area.						
CR-6: If human remains are discovered, no further disturbance shall occur in the affected area until the County Coroner has made necessary findings as to origin. If the County Coroner determines that the remains are potentially Native American, the California Native American Heritage Commission shall be notified within 5-days of the published finding to be given a reasonable opportunity to identify the "most likely descendant". The "most likely descendant" shall then make recommendations, and engage in consultations concerning the treatment of the remains (California Public Resources Code 5097.98). (GP Objective 23.3, CEQA).	City of Moreno Valley	Ongoing during construction	Prior to Certificate of Occupancy	Review of construction documents and on-site inspection		Withhold Certificate of Occupancy
PR-1: Prior to construction involving excavation four feet or more below existing surface grade, the construction contractor shall provide evidence that a qualified paleontologist has been retained, and that the paleontologist(s) shall be present during all grading and other significant ground-disturbing activities that reach four feet or more below existing surface grade. In the event fossiliferous deposits are	City of Moreno Valley	Prior to and ongoing during construction	Prior to issuance of Grading Permit/Certificate of Occupancy	Review of construction documents and on-site inspection		Withhold Grading Permit/Certificate of Occupancy

Mitigation Measure No./ Implementation Action	Responsible for Monitoring	Monitoring Frequency	Timing of Verification	Method of Verification	Verified Date/Initials	Sanctions for Non-Compliance
encountered, the following measures shall be implemented: • Monitoring shall be conducted by qualified paleontological monitor(s) of excavation in areas identified as likely to contain paleontological resources, including very old alluvial fan deposits. Paleontological monitors shall be equipped to salvage fossils as they are unearthed, to avoid construction delays, and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors shall be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring may be reduced if the potentially fossiliferous units are determined upon exposure and examination by qualified paleontological personnel to have low potential to contain fossil resources. • Paleontological monitoring of any earthmoving shall be conducted by a monitor, under direct guidance of a qualified paleontologist. Earthmoving in areas of the parcel where previously undisturbed sediments are buried, but not otherwise disturbed, will not be monitored.						

Mitigation Measure No./ Implementation Action	Responsible for Monitoring	Monitoring Frequency	Timing of Verification	Method of Verification	Verified Date/Initials	Sanctions for Non-Compliance
• If too few fossil remains are found after 50 percent of the planned-for earthmoving has been completed, monitoring can be reduced or discontinued in those areas at the Project paleontologist's direction. • Recovered specimens shall be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. • Specimens shall be identified and curated into a professional, fully accredited museum repository with permanent retrievable storage. The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. • A report of findings with and appended itemized inventory of specimens shall be prepared. The report and inventory, when submitted to the City along with confirmation of the curation of recovered of recovered specimens into an established, accredited museum repository, will signify completion of the program to mitigate impacts to paleontological resources.						

Mitigation Measure No./ Implementation Action	Responsible for Monitoring	Monitoring Frequency	Timing of Verification	Method of Verification	Verified Date/Initials	Sanctions for Non-Compliance
Noise						
NOI-1: Noise emitted from the proposed project shall not exceed 60 dBA at residential property lines during the daytime hours (8 a.m. to 10 p.m.) and 55 dBA during nighttime hours (10 p.m. to 8 a.m.). Measures to reduce noise levels include the following: • An 8-foot noise barrier shall be constructed that meets or exceeds the barrier shown in Exhibit 5 of the project's noise report (Landrum & Brown 2018). The noise barrier must have a surface density of at least 3.5 pounds per square foot, and shall have no openings or gaps. The wall may be constructed of stud and stucco, 3/8-inch plate glass, 5/8-inch Plexiglas, any masonry material, or a combination of these materials. The wall shall extend as far north as the northern edge of the car wash building. • The car wash equipment must be equipped with automatic doors at both the entrance and exit ends that can close when a car is being washed and dried.	City of Moreno Valley	Ongoing during construction	Prior to Certificate of Occupancy	Review of construction documents and on-site inspection		Withhold Certificate of Occupancy

Mitigation Measure No./ Implementation Action	Responsible for Monitoring	Monitoring Frequency	Timing of Verification	Method of Verification	Verified Date/Initials	Sanctions for Non-Compliance
Traffic/Transportation						
TRA-1: Prior to issuance of the first building permit, the Project Applicant shall make a fair-share contribution in the funding of off-site improvements that are needed to serve acceptable cumulative traffic operations through the payment of the required Transportation Uniform Mitigation Fee (TUMF) fees in addition to the City of Moreno Valley Development Impact Fee (DIF). The fees shall be collected by the Western Riverside Council of Governments (WRCOG) for the TUMF and by the City of Moreno Valley for the DIF.	City of Moreno Valley Transportation Engineering Division, Engineering and Planning Division	Ongoing during construction	Prior to Certificate of Occupancy	Review of construction documents and on-site inspection		Withhold Certificate of Occupancy

RESOLUTION NO. 2018-XX

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY APPROVING APPLICATION NO. PEN16-0086, AN AMENDMENT TO THE GENERAL PLAN LAND USE MAP, CHANGING THE LAND USE DESIGNATION FROM RESIDENTIAL/OFFICE (R/O) TO COMMERCIAL (C) FOR 1.77 ACRES LOCATED AT THE NORTHEAST CORNER OF PERRIS BOULEVARD AND COTTONWOOD AVENUE (ASSESSOR'S PARCEL NUMBER: 479-140-023).

WHEREAS, Yum Yum Donuts, filed Application No. PEN16-0086, requesting an amendment to the Moreno Valley General Plan Land Use Element, changing the land use designation of the proposed project site from Residential/Office (R/O) to Commercial (C), as described in the title of this resolution and the attached Exhibit A.

WHEREAS, the application has been evaluated in accordance with established City of Moreno Valley (City) procedures, and with consideration of the General Plan and other applicable regulations; and

WHEREAS, An Initial Study and Mitigated Negative Declaration have been prepared for the project consistent with the California Environmental Quality Act (CEQA) and based on a thorough analysis of potential environmental impacts, and the Mitigated Negative Declaration represents the City's independent judgment and analysis; and

WHEREAS, the Planning Commission of the City of Moreno Valley held a public hearing on July 26, 2018 to consider the subject application and all environmental documentation prepared for the project and recommended approval of the project by the City Council; and

WHEREAS**,** the public hearing notice for this project was published in the local newspaper on November 30, 2018. Public notice was sent to all property owners of record within 300 feet of the project site on November 29, 2018. The public hearing notice for this project was also posted on the project site on November 30, 2018;

WHEREAS, on December 11, 2018, the City Council held a public hearing to consider the application; and

WHEREAS, all legal prerequisites to the adoption of this Resolution have occurred; and

WHEREAS, pursuant to Government Code Section 66020(d)(1), NOTICE IS HEREBY GIVEN that this project is subject to certain fees, dedications, reservations and other exactions as provided herein.

Attachment: Resolution 2018-XX - General Plan Amendment [Revision 4] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

NOW, THEREFORE, BE IT RESOLVED, it is hereby found, determined and resolved by the City Council as follows:

A. This City Council hereby specifically finds that all of the facts set forth above in this Resolution are true and correct.

B. Based upon substantial evidence presented to this City Council during the above-referenced meeting on December 11, 2018, including written and oral staff reports, public testimony and the record from the public hearing, this City Council hereby specifically finds as follows:

1. Conformance with General Plan Policies – The proposed general plan amendment is consistent with the General Plan, and its goals, objectives, policies and programs.

   FACT: The Yum Yum Donuts Moreno Valley project includes three applications – a General Plan Amendment, a Zone Change, and Conditional Use Permit. The project proposes to develop a 1.77 acre site with a service station, convenience store with beer and wine sales and a donut shop, and a car wash.

   The project site is comprised of one parcel (Assessor's Parcel Number 479-140-023) with a current General Plan land use designation of Residential Office (R/O).

   Properties to the north and south with similar frontage on the east side of Perris Boulevard have a General Plan land use designation of R/O. The properties across the street to the west and to the north on the west side of Perris Boulevard have a Commercial designation.

   The request as submitted by the applicant is to amend the Land Use Map of the City's General Plan and change the land use designation for the 1.77-acre project site from Residential/Office to Commercial. This would make the project site consistent with commercial properties to the west, and properties on the east side of Perris Boulevard, north of Fir Avenue and south of Bay Avenue.

   General Plan Policy 2.4.1 states that the primary purpose of areas designated Commercial is to provide property for business purposes, including, but not limited to, retail stores, restaurants, banks, hotels, professional offices, personal services and repair services.

   With approval of the requested General Plan Amendment, the project as designed and conditioned will achieve the objectives of the City of Moreno Valley's General Plan for commercial land uses and will promote development of the undeveloped parcel.

Attachment: Resolution 2018-XX - General Plan Amendment [Revision 4] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

2. Health, Safety and Welfare – The proposed general plan amendment will not be detrimental to the public health, safety or welfare.

FACT: The proposed General Plan Amendment is a legislative action and will not result in any direct physical impacts; therefore, the action itself could not be detrimental to the public health, safety or welfare.

The development of the vacant 1.77 acres will be required to comply with the City's General Plan policies and land use designation and the City's Municipal Code. This will ensure that future development is consistent with the General Plan, zoning, and public health safety and welfare.

An Initial Study was prepared which assessed the potential of the proposed General Plan Amendment, to impact the environment. The Initial Study provided the documentation of the factual basis for the finding in the Mitigated Negative Declaration that the proposed General Plan Amendment will not have a significant effect on the environment. The City as the Lead Agency has prepared a Mitigated Negative Declaration (MND) pursuant to Sections 15070 et seq. of the State CEQA Guidelines. The preparation and review of the Initial Study / Mitigated Negative Declaration reflects the independent judgment of the City.

The Mitigated Negative Declaration has been considered by the City Council and there is no evidence that the proposed project will have a significant impact on public health or be materially injurious to surrounding properties of the environment as a whole.

BE IT FURTHER RESOLVED that the City Council HEREBY APPROVES Resolution No. 2018-XX, and thereby:

1. APPROVE General Plan Amendment Application No. PEN16-0086, based on the findings contained in this resolution, the General Plan Map attached hereto as Exhibit A.

APPROVED AND ADOPTED this 11th day of December, 2018.

_____
Mayor of the City of Moreno Valley

ATTEST:

_____
City Clerk

APPROVED AS TO FORM:

_____
City Attorney

RESOLUTION JURAT

STATE OF CALIFORNIA)

COUNTY OF RIVERSIDE) ss.

CITY OF MORENO VALLEY)

I, Pat Jacquez-Nares, City Clerk of the City of Moreno Valley, California, do hereby certify that Resolution No. 2018-XX was duly and regularly adopted by the City Council of the City of Moreno Valley at a special meeting thereof held on the 11th day of December, 2018 by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

(Council Members, Mayor Pro Tem and Mayor)

_____

CITY CLERK

(SEAL)

Attachment: Resolution 2018-XX - General Plan Amendment [Revision 4] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

GENERAL PLAN AMENDMENT

Application No. PEN16-0086
APNs: 479-140-023

N

Attachment: Exhibit A to Resolution 2018-XX - General Plan Amendment Map (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE,

Attachment: Ordinance 2018-XX - Zone Change [Revision 3] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL

ORDINANCE NO. 2018-XX

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, APPROVING ZONE CHANGE APPLICATION NO. PEN16-0087: AN AMENDMENT TO THE OFFICIAL ZONING ATLAS, CHANGING THE ZONING CLASSIFICATION FROM OFFICE COMMERCIAL (OC) TO COMMUNITY COMMERCIAL (CC) FOR APPROXIMATELY 1.77 ACRES LOCATED AT THE NORTHEAST CORNER OF PERRIS BOULEVARD AND COTTONWOOD AVENUE (ASSESSOR'S PARCEL NUMBER: 479-140-023).

The City Council of the City of Moreno Valley does ordain as follows:

SECTION 1 GENERAL:

1.1 The applicant, Yum Yum Donuts, has filed application PEN16-0087, requesting an amendment to Pages 71 and 85 of the Official Zoning Atlas to change the zoning classification for certain property as described in the title of this ordinance and the attached Exhibit A.

1.2 Pursuant to the provisions of the law, a public hearing was held before the City Council on December 11, 2018, for deliberations and decision.

1.3 The matter was fully discussed, and the public and other agencies were given opportunity to present testimony and documentation.

1.4 An Initial Study has been prepared for the project for the purpose of compliance with the California Environmental Quality Act (CEQA). Based on the Initial Study, it was determined that the project impacts are less than significant and approval of a Mitigated Negative Declaration is recommended.

SECTION 2 FINDINGS:

2.1 Based upon substantial evidence presented to this City Council during the above-referenced meeting on December 11, 2018, including written and oral staff reports, and the record from the public hearing, this City Council hereby specifically finds as follows:

1. Conformance with General Plan Policies – The proposed amendment is consistent with the General Plan, and its goals, objectives, policies and programs.

FACT: The project area for the proposed Zone Change includes one vacant parcel (APN: 479-140-023) totaling 1.77 acres. The current General Plan Land Use designation for the project area is Residential Office with an Office Commercial (OC) zoning designation.

This project proposes to change the zone from Office Commercial (OC) to Community Commercial (CC) to allow for development of a service station with a convenience store that includes alcohol sales. The proposed change would be consistent with CC zoning to the west and CC zoning on the east side of Perris Boulevard, north of Fir Avenue and south of Bay Avenue.

The proposed zone change from OC to CC is compatible with the site's proposed change to a Commercial General Plan land use designation. The proposed change is also consistent with the intent of General Plan Community Goal 2.1, to establish a pattern of land uses, which organizes future growth, minimizes conflicts between land uses, and which promotes the rational utilization of presently underdeveloped and undeveloped parcels.

2. Health, Safety and Welfare – The proposed amendment will not adversely affect the public health, safety or general welfare.

FACT: The proposed Zone Change is a legislative action and will not result in any direct physical impacts; therefore, the action itself could not be detrimental to the public health, safety or welfare. The proposed Zone Change is consistent with the applicant's request to change General Plan land use designation to Commercial.

Development of the vacant 1.77 acres will be required to comply with the City's General Plan policies and land use designation and the City's Municipal Code. This will ensure that future development is consistent with the General Plan, zoning, and public health safety and welfare.

An Initial Study was prepared which assessed the potential of the proposed Zone Change, to impact the environment. The Initial Study provided the documentation of the factual basis for the finding in the Mitigated Negative Declaration that the proposed project will not have a significant effect on the environment. The City as the Lead Agency has prepared a Mitigated Negative Declaration (MND) pursuant to Sections 15070 et seq. of the State CEQA Guidelines. The preparation and review of the Initial Study / Mitigated Negative Declaration reflects the independent judgment of the City.

The Mitigated Negative Declaration has been considered by the City Council and there is no evidence that the proposed project will have a

Attachment: Ordinance 2018-XX - Zone Change [Revision 3] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL

significant impact on public health or be materially injurious to surrounding properties of the environment as a whole.

3. Conformance with the Zoning Regulations – The proposed Zone Change is consistent with the purposes and intent of Title 9 of the City of Moreno Valley Municipal Code.

FACT: As proposed, the Change of Zone from OC to CC for the 1.77 acre project area is consistent with the purposes and intent of Title 9.

The proposed Zone Change to CC is compatible with the established zoning designations of the parcels located on the west side of Perris Boulevard and in proximity to the project site and along east side of Perris Boulevard north of Fir Avenue and south of Bay Avenue. at other prominent intersections along Perris Boulevard such as Alessandro Boulevard to the south and Dracaea Avenue to the north. The change from the existing OC to CC for the project area considers the land use patterns in this area of the community.

SECTION 3 AMENDMENT OF THE OFFICIAL ZONING ATLAS:

3.1 The City of Moreno Valley Official Zoning Atlas, as adopted by Ordinance No. 359, on April 14, 1992, of the City of Moreno Valley, and as amended thereafter from time to time by the City Council of the City of Moreno Valley, is further amended by placing in effect the zone or zone classification to Pages 71 and 85 of the Official Zoning Atlas as shown on the attached map marked “Exhibit A” and included herein by reference and on file in the office of the City Clerk).

SECTION 4 EFFECT OF ENACTMENT:

4.1 Except as specifically provided herein, nothing contained in this ordinance shall be deemed to modify or supersede any prior enactment of the City Council which addresses the same subject addressed herein.

SECTION 5. NOTICE OF ADOPTION:

Within fifteen days after the date of adoption hereof, the City Clerk shall certify to the adoption of this ordinance and cause it to be posted in three public places within the city.

SECTION 6. EFFECTIVE DATE:

This ordinance shall take effect thirty days after the date of its adoption.

APPROVED AND ADOPTED this _____ day of _____, _____.

_____

Mayor

ATTEST:

_____

City Clerk

APPROVED AS TO FORM:

_____

City Attorney

Attachment: Ordinance 2018-XX - Zone Change [Revision 3] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL

ORDINANCE JURAT

STATE OF CALIFORNIA)

COUNTY OF RIVERSIDE) ss.

CITY OF MORENO VALLEY)

I, Pat Jacquez-Nares, City Clerk of the City of Moreno Valley, California, do hereby certify that Ordinance No. YYYY-___ was duly and regularly adopted by the City Council of the City of Moreno Valley at a regular meeting thereof held on the _____ day of _____, 2018, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

(Council Members, Mayor Pro Tem and Mayor)

_____

CITY CLERK

(SEAL)

Attachment: Ordinance 2018-XX - Zone Change [Revision 3] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL

ZONE CHANGE

Application No. PEN16-0087
APNs: 479-140-023

N

Attachment: Exhibit A to Resolution 2018-XX - Zone Change Map (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

RESOLUTION NO. 2018-XX

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY APPROVING CONDITIONAL USE PERMIT APPLICATION PEN16-0088 FOR DEVELOPMENT OF A SERVICE STATION WITH DONUT STORE, A CONVENIENCE STORE TO INCLUDE BEER AND WINE SALES AND A CAR WASH ON 1.77 ACRES LOCATED AT THE NORTHEAST CORNER OF PERRIS BOULEVARD AND COTTONWOOD AVENUE SUBJECT TO APPROVAL OF A GENERAL PLAN AMENDMENT AND A ZONE CHANGE (ASSESSOR'S PARCEL NUMBERS 479-140-023).

WHEREAS, Yum Yum Donuts, has filed an application for the approval of Conditional Use Permit (CUP) PEN16-0088 for development of a service station as described in the title above; and

WHEREAS, the application has been evaluated in accordance with established City of Moreno Valley (City) procedures, and with consideration of the General Plan and other applicable regulations; and

WHEREAS, approval of the CUP for the proposed service station with a donut store, a convenience store to include beer and wine sales and a car wash is subject to approval of a General Plan Amendment from Residential Office to Commercial (case number PEN16-0086) and a Zone Change from Office Commercial (OC) to Community Commercial (CC) (case number PEN16-0087); and

WHEREAS, an Initial Study and Mitigated Negative Declaration have been prepared for the project consistent with the California Environmental Quality Act (CEQA) and based on a thorough analysis of potential environmental impacts. The Mitigated Negative Declaration represents the City's independent judgment and analysis; and

WHEREAS, the Planning Commission of the City of Moreno Valley held a public hearing on July 26, 2018 to consider the subject application and all environmental documentation prepared for the project and recommended approval of the project by the City Council; and

WHEREAS**,** the public hearing notice for this project was published in the local newspaper on November 30, 2018. Public notice was sent to all property owners of record within 300 feet of the project site on November 29, 2018. The public hearing notice for this project was also posted on the project site on November 30, 2018;

WHEREAS, on December 11, 2018, the City Council held a public hearing to consider the application; and

Attachment: Resolution 2018-XX - Conditional Use Permit [Revision 3] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

WHEREAS, all legal prerequisites to the adoption of this Resolution have occurred; and

WHEREAS, pursuant to Government Code Section 66020(d)(1), NOTICE IS HEREBY GIVEN that this project is subject to certain fees, dedications, reservations and other exactions as provided herein.

NOW, THEREFORE, BE IT RESOLVED, it is hereby found, determined and resolved by the City Council as follows:

A. This City Council hereby specifically finds that all of the facts set forth above in this Resolution are true and correct.

B. Based upon substantial evidence presented to this City Council during the above-referenced meeting on December 11, 2018, including written and oral staff reports, public testimony and the record from the public hearing, this City Council hereby specifically finds as follows:

1. Conformance with General Plan Policies – The proposed use is consistent with the General Plan, and its goals, objectives, policies and programs.

   FACT: With the adoption of the proposed General Plan Amendment, the proposed land uses will be consistent with the goals and policies of the General Plan. The project as designed and conditioned will achieve the objectives of the City of Moreno Valley's General Plan for commercial land uses and will promote development of the undeveloped parcel.

   General Plan Policy 2.4.1 states that the primary purpose of areas designated Commercial is to provide property for business purposes, including, but not limited to, retail stores, restaurants, banks, hotels, professional offices, personal services and repair services.

2. Conformance with Zoning Regulations – The proposed use complies with all applicable zoning and other regulations.

   FACT: With the approval of the proposed Zone Change to Community Commercial (CC), beer and wine sales in conjunction with a convenience store are permitted in the CC zone with approval of a Conditional Use Permit.

   The project is designed in accordance with the provisions of Chapter 9.04 Commercial Districts, Chapter 9.09.200 Service Stations, and Chapter 9.16.150 Commercial Design Guidelines of the City's Municipal Code.

   With approval of the requested Zone Change, the project as designed and conditioned would comply with all applicable zoning and other regulations

Attachment: Resolution 2018-XX - Conditional Use Permit [Revision 3] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

3. Health, Safety and Welfare – The proposed use will not be detrimental to the public health, safety or welfare or materially injurious to properties or improvements in the vicinity.

FACT: The proposed Conditional Use Permit as designed and conditioned will provide acceptable levels of protection from natural and man-made hazards to life, health, and property consistent with General Plan Goal 9.6.1. The project site is located approximately one and one half mile south of the Sunnymead Fire Station. Therefore, adequate emergency services can be provided to the site consistent with General Plan Goal 9.6.2.

The proposed project as designed and conditioned will result in a development that will minimize the potential for loss of life and protect residents, workers, and visitors to the City from physical injury and property damage due to seismic ground shaking and flooding as provided for in General Plan Objective 6.1 and General Plan Objective 6.2.

The project as designed is consistent with the City's Municipal Code Section 9.09.200 Service Stations and will satisfy all City requirements related to light and noise. Planning staff worked with Helix Environmental Planning Inc. in the preparation of an Initial Study and Mitigated Negative Declaration in accordance with the provisions of the California Environmental Quality Act (CEQA) based on a thorough analysis of potential environmental impacts. The project as designed and conditioned and with the implementation of mitigation measures will not result in significant impacts to the environment. The Mitigated Negative Declaration represents the City's independent judgment and analysis.

4. Location, Design and Operation – The location, design and operation of the proposed project will be compatible with existing and planned land uses in the vicinity.

FACT: Municipal Code Section 9.04.020 Commercial Districts states that the primary purpose of the community commercial (CC) district is to provide for the general shopping needs of area residents and workers with a variety of business, retail, personal and related or similar services. These uses must be compatible with the surrounding residential communities. With approval of the requested General Plan Amendment and Zone Change, the project as designed and conditioned, and with implementation of mitigation measures, the Conditional Use Permit for the project is compatible with existing and proposed land uses in the vicinity.

Attachment: Resolution 2018-XX - Conditional Use Permit [Revision 3] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

FEES, DEDICATIONS, RESERVATIONS, AND OTHER EXACTIONS

1. FEES

Impact, mitigation and other fees are due and payable under currently applicable ordinances and resolutions. These fees may include but are not limited to: Development Impact Fee, Transportation Uniform Mitigation Fee (TUMF), Multi-species Habitat Conservation Plan (MSHCP) Mitigation Fee, Stephens Kangaroo Habitat Conservation Fee, Underground Utilities in lieu Fee, Area Drainage Plan Fee, Bridge and Thoroughfare Mitigation fee (Future) and Traffic Signal Mitigation Fee. The final amount of fees payable is dependent upon information provided by the applicant and will be determined at the time the fees become due and payable.

Unless otherwise provided for by this Resolution, all impact fees shall be calculated and collected at the time and in the manner provided in Chapter 3.32 of the City of Moreno Valley Municipal Code or as so provided in the applicable ordinances and resolutions. The City expressly reserves the right to amend the fees and the fee calculations consistent with applicable law.

2. DEDICATIONS, RESERVATIONS, AND OTHER EXACTIONS

The adopted Conditions of Approval for PEN16-0088, incorporated herein by reference, may include dedications, reservations, and exactions pursuant to Government Code Section 66020 (d) (1).

3. CITY RIGHT TO MODIFY/ADJUST; PROTEST LIMITATIONS

The City expressly reserves the right to establish, modify or adjust any fee, dedication, reservation or other exaction to the extent permitted and as authorized by law.

Pursuant to Government Code Section 66020(d)(1), NOTICE IS FURTHER GIVEN that the 90 day period to protest the imposition of any impact fee, dedication, reservation, or other exaction described in this Resolution begins on the effective date of this Resolution and any such protest must be in a manner that complies with Government Code Section 66020(a) and failure to timely follow this procedure will bar any subsequent legal action to attack, review, set aside, void or annul imposition.

The right to protest the fees, dedications, reservations, or other exactions does not apply to planning, zoning, grading, or other similar application processing fees or service fees in connection with this project and it does not apply to any fees, dedication, reservations, or other exactions of which a notice has been given

Attachment: Resolution 2018-XX - Conditional Use Permit [Revision 3] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

similar to this, nor does it revive challenges to any fees for which the applicable statute of limitations has previously expired.

BE IT FURTHER RESOLVED that the City Council HEREBY APPROVES Resolution No. 2018-XX, and thereby:

1. APPROVE Conditional Use Permit Application No. PEN16-0088, based on the findings contained in this resolution, and the conditions of approval attached hereto as Exhibit A and

APPROVED AND ADOPTED this 11th day of December, 2018.

_____
Mayor of the City of Moreno Valley

ATTEST:

_____
City Clerk

APPROVED AS TO FORM:

_____
City Attorney

Attachment: Resolution 2018-XX - Conditional Use Permit [Revision 3] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

RESOLUTION JURAT

STATE OF CALIFORNIA)

COUNTY OF RIVERSIDE) ss.

CITY OF MORENO VALLEY)

I, Pat Jacquez-Nares, City Clerk of the City of Moreno Valley, California, do hereby certify that Resolution No. 2018-XX was duly and regularly adopted by the City Council of the City of Moreno Valley at a special meeting thereof held on the 11th day of December, 2018 by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

(Council Members, Mayor Pro Tem and Mayor)

_____

CITY CLERK

(SEAL)

Attachment: Resolution 2018-XX - Conditional Use Permit [Revision 3] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

CITY OF MORENO VALLEY
CONDITIONS OF APPROVAL
Conditional Use Permit (PEN16-0088)

EFFECTIVE DATE:
EXPIRATION DATE:

COMMUNITY DEVELOPMENT DEPARTMENT

Planning Division

1. Conditional Use Permit PEN16-0088 is approved for development of a 1.77 acre site with a service station to include a canopy with eight (8) pump islands, a 5,815 square foot donut store / convenience store and a 900 square foot automated car wash. The convenience store is also approved for beer and wine sales. The hours of operation for the car wash shall be 8 am to 10 pm.

2. Any expansion to this use or exterior alterations will require the submittal of a separate application(s) and shall be reviewed and approved under separate permit(s). (MC 9.02.080)

3. The developer, or the developer's successor-in-interest, shall be responsible for maintaining any undeveloped portion of the site in a manner that provides for the control of weeds, erosion and dust. (MC 9.02.030)

4. This approval shall expire three years after the approval date of this project unless used or extended as provided for by the City of Moreno Valley Municipal Code. (MC 9.02.230)

5. In the event the use hereby permitted ceases operation for a period of one (1) year or more, or as defined in the current Municipal Code, this permit may be revoked in accordance with provisions of the Municipal Code.

6. All landscaped areas shall be maintained in a healthy and thriving condition, free from weeds, trash and debris. (MC 9.02.030)

7. The site shall be developed in accordance with the approved plans on file in the Community Development Department - Planning Division, the Municipal Code regulations, General Plan, and the conditions contained herein. Prior to any use of the project site or business activity being commenced thereon, all Conditions of Approval shall be completed to the satisfaction of the Planning Official. (MC 9.14.020)

8. Any signs indicated on the submitted plans are not included with this approval. Any

Attachment: Exhibit A to Resolution 2018-XX - Conditional Use Permit (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

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signs, whether permanent (e.g. wall, monument) or temporary (e.g. banner, flag), require separate application and approval by the Planning Division. No signs are permitted in the public right of way. (MC 9.12)

9. All site plans, grading plans, landscape and irrigation plans, fence/wall plans, lighting plans and street improvement plans shall be coordinated for consistency with this approval.

10. A change or modification to the land use or the approved site plans may require a separate approval. Prior to any change or modification, the property owner shall contact the City of Moreno Valley Community Development Department to determine if a separate approval is required.

Special Conditions

11. The following Mitigation Measures apply to this project:

CR-1: Prior to the issuance of a grading permit, the City shall retain a professional archaeologist to conduct monitoring of all mass grading and trenching activities. The Project Archaeologist shall have the authority to temporarily redirect earthmoving activities in the event that suspected archaeological resources are unearthed during Project construction. The Project Archaeologist, in consultation with the Consulting Tribe(s), the contractor, and the City, shall develop a Cultural Resources Management Plan (CRMP) in consultation pursuant to the definition in AB52 to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the project site. A consulting tribe is defined as a tribe that initiated the AB 52 tribal consultation process for the Project, has not opted out of the AB52 consultation process, and has completed AB 52 consultation with the City as provided for in Cal Pub Res Code Section 21080.3.2(b)(1) of AB52. Details in the Plan shall include:

a. Project grading and development scheduling;

b. The Project archeologist and the Consulting Tribes(s) as defined in CR-1 shall attend the pre-grading meeting with the City, the construction manager and any contractors and will conduct a mandatory Cultural Resources Worker Sensitivity Training to those in attendance. The Training will include a brief review of the cultural sensitivity of the Project and the surrounding area; what resources could potentially be identified during earthmoving activities; the requirements of the monitoring program; the protocols that apply in the event inadvertent discoveries of cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated; and any other appropriate protocols. All new construction personnel that will conduct earthwork or grading activities that begin work on the Project following the initial Training must take the Cultural Sensitivity Training prior to beginning work and the Project

Attachment: Exhibit A to Resolution 2018-XX - Conditional Use Permit (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

archaeologist and Consulting Tribe(s) shall make themselves available to provide the training on an as-needed basis;

c. The protocols and stipulations that the contractor, City, Consulting Tribe(s) and Project archaeologist will follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits that shall be subject to a cultural resources evaluation.

CR-2: Prior to the issuance of a grading permit, the City of Moreno Valley shall secure agreements with the Soboba Band of Luiseno Indians for tribal monitoring. The City is also required to provide a minimum of 30 days advance notice to the tribes of all mass grading and trenching activities. The Native American Tribal Representatives shall have the authority to temporarily halt and redirect earth moving activities in the affected area in the event that suspected archaeological resources are unearthed. If the Native American Tribal Representatives suspect that an archaeological resource may have been unearthed, the Project Archaeologist or the Tribal Representatives shall immediately redirect grading operations in a 100-foot radius around the find to allow identification and evaluation of the suspected resource. In consultation with the Native American Tribal Representatives, the Project Archaeologist shall evaluate the suspected resource and make a determination of significance pursuant to California Public Resources Code Section 21083.2.

12. NOI-1: Noise emitted from the proposed project shall not exceed 60 dBA at residential property lines during the daytime hours (8 a.m. to 10 p.m.) and 55 dBA during nighttime hours (10 p.m. to 8 a.m.). Measures to reduce noise levels include the following:
• An 8-foot noise barrier shall be constructed that meets or exceeds the barrier shown in Exhibit 5 of the project's noise report (Landrum & Brown 2018). The noise barrier must have a surface density of at least 3.5 pounds per square foot, and shall have no openings or gaps. The wall may be constructed of stud and stucco, 3/8-inch plate glass, 5/8-inch Plexiglas, any masonry material, or a combination of these materials.
• The car wash equipment must be equipped with automatic doors at both the entrance and exit ends that can close when a car is being washed and dried.

13. CR-3: In the event that Native American cultural resources are discovered during the course of grading (inadvertent discoveries), the following procedures shall be carried out for final disposition of the discoveries:
a) One or more of the following treatments, in order of preference, shall be employed with the tribes. Evidence of such shall be provided to the City of Moreno Valley Planning Department:
i. Preservation-In-Place of the cultural resources, if feasible. Preservation in place means avoiding the resources, leaving them in the place they were found with no development affecting the integrity of the resources.

Attachment: Exhibit A to Resolution 2018-XX - Conditional Use Permit (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

ii. Onsite reburial of the discovered items as detailed in the treatment plan required pursuant to Mitigation Measure CR-1. This shall include measures and provisions to protect the future reburial area from any future impacts in perpetuity. Reburial shall not occur until all legally required cataloging and basic recordation have been completed. No recordation of sacred items is permitted without the written consent of all Consulting Native American Tribal Governments as defined in CR-1.

CR-4: The City shall verify that the following note is included on the Grading Plan:

"If any suspected archaeological resources are discovered during ground-disturbing activities and the Project Archaeologist or Native American Tribal Representatives are not present, the construction supervisor is obligated to halt work in a 100-foot radius around the find and call the Project Archaeologist and the Tribal Representatives to the site to assess the significance of the find."

CR-5: If potential historic or cultural resources are uncovered during excavation or construction activities at the project site, work in the affected area must cease immediately and a qualified person meeting the Secretary of the Interior's standards (36 CFR 61), Tribal Representatives, and all site monitors per the Mitigation Measures, shall be consulted by the City to evaluate the fin

14. TRA-1: Prior to issuance of the first building permit, the Project Applicant shall make a fair-share contribution in the funding of off-site improvements that are needed to serve acceptable cumulative traffic operations through the payment of the required Transportation Uniform Mitigation Fee (TUMF) fees in addition to the City of Moreno Valley Development Impact Fee (DIF). The fees shall be collected by the Western Riverside Council of Governments (WRCOG) for the TUMF and by the City of Moreno Valley for the DIF.

15. CR-6: If human remains are discovered, no further disturbance shall occur in the affected area until the County Coroner has made necessary findings as to origin. If the County Coroner determines that the remains are potentially Native American, the California Native American Heritage Commission shall be notified within 5-days of the published finding to be given a reasonable opportunity to identify the "most likely descendant". The "most likely descendant" shall then make recommendations, and engage in consultations concerning the treatment of the remains (California Public Resources Code 5097.98). (GP Objective 23.3, CEQA).

Prior to Grading Permit

16. Prior to issuance of any grading permit, all Conditions of Approval and Mitigation Measures shall be completed to the satisfaction of the Community Development Direct and shall be printed on the grading plans.

17. Prior to the issuance of grading permits, decorative (e.g. colored/scored concrete or as approve by the Planning Official) pedestrian pathways across circulation aisles/paths shall be provided throughout the development to connect dwellings with open spaces and/or recreational uses or commercial/industrial buildings with open space and/or parking. and/or the public right-of-way. The pathways shall be shown on the precise grading plan. (GP Objective 46.8, DG)

18. Prior to approval of any grading permits, landscape and irrigation plans for any median enhancements or construction shall be reviewed and approved by to the Planning Division.

19. Prior to issuance of any grading permits, mitigation measures contained in the Mitigation Monitoring Program approved with this project shall be implemented as provided therein. A mitigation monitoring fee, as provided by City ordinance, shall be paid by the applicant within 30 days of project approval. No City permit or approval shall be issued until such fee is paid. (CEQA)

20. Prior to issuance of grading permits, the developer shall pay the applicable Stephens' Kangaroo Rat (SKR) Habitat Conservation Plan mitigation fee. (Ord)

21. Within thirty (30) days prior to any grading or other land disturbance, a pre-construction survey for Burrowing Owls shall be conducted pursuant to the established guidelines of Multiple Species Habitat Conservation Plan. The pre-construction survey shall be submitted to the Planning Division prior to any disturbance of the site and/or grading permit issuance.

22. Prior to the issuance of grading permits, the site plan and grading plans shall show decorative hardscape (e.g. colored concrete, stamped concrete, pavers or as approved by the Planning Official) consistent and compatible with the design, color and materials of the proposed development for all driveway ingress/egress locations of the project.

23. Prior to issuance of grading permits, the developer shall submit wall/fence plans to the Planning Division for review and approval as follows:

    A. An eight (8) foot high solid decorative block perimeter wall with pilasters and a cap shall be required adjacent to all residential zoned areas.

    B. 3-foot high decorative wall, solid hedge or berm shall be placed in any setback areas between a public right of way and a parking lot for screening.

    C. Any proposed retaining walls shall also be decorative in nature, while the combination of retaining and other walls on top shall not exceed the height requirement.

Attachment: Exhibit A to Resolution 2018-XX - Conditional Use Permit (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

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D. An eight (8) foot tall decorative block wall with pilasters shall be required along the northern property line to the depth of the west elevation of the car wash building.

24. Prior to the issuance of grading permits, a temporary project identification sign shall be erected on the site in a secure and visible manner. The sign shall be conspicuously posted at the site and remain in place until occupancy of the project. The sign shall include the following:

a. The name (if applicable) and address of the development.
b. The developer's name, address, and a 24-hour emergency telephone number.

25. Prior to issuance of grading permits, the location of the trash enclosure shall be included on the plans.

Prior to Building Permit

26. Prior to issuance of any building, all Conditions of Approval and Mitigation Measures shall be completed to the satisfaction of the Community Development Director and shall be printed on the building plans.

27. Prior to the issuance of building permits, the developer shall provide documentation that contact was made to the U.S. Postal Service to determine the appropriate type and location of mailboxes.

28. Prior to the issuance of building permits, proposed covered trash enclosures shall be included in the Planning review of the Fence and Wall plan or separate Planning submittal. The trash enclosure(s), including the roof materials, shall be compatible with the architecture, color and materials of the building(s) design. Trash enclosure areas shall include landscaping on three sides. Approved design plans shall be included in a Building submittal (Fence and Wall or building design plans). (GP Objective 43.6, DG)

29. Prior to issuance of any building permits, final landscaping and irrigation plans shall be submitted for review and approved by the Planning Division. After the third plan check review for landscape plans, an additional plan check fee shall apply. The plans shall be prepared in accordance with the City's Landscape Requirements and shall include:

A. A three (3) foot high decorative wall, solid hedge or berm shall be placed in any setback areas between a public right of way and a parking lot for screening.

B. Finger and end planters with required step outs and curbing shall be provided every 12 parking stalls as well as at the terminus of each aisle.

C. Drought tolerant landscape shall be used. Sod shall be limited to gathering areas.

D. Street trees shall be provided every 40 feet on center in the right of way.

E. On-site trees shall be planted at an equivalent of one (1) tree per thirty (30) linear feet of the perimeter of a parking lot and per thirty linear feet of a building dimension for the portions of the building visible from a parking lot or right of way. Trees may be massed for pleasing aesthetic effects.

F. Enhanced landscaping shall be provided at all driveway entries and street corner locations The review of all utility boxes, transformers etc. shall be coordinated to provide adequate screening from public view.

G. Landscaping on three sides of any trash enclosure.

H. All site perimeter and parking lot landscape and irrigation shall be installed prior to the release of building final or certificate of any occupancy permits for the site.

30. Prior to issuance of building permits, the Planning Division shall review and approve the location and method of enclosure or screening of transformer cabinets, commercial gas meters and back flow preventers as shown on the final working drawings. Location and screening shall comply with the following criteria: transformer cabinets and commercial gas meters shall not be located within required setbacks and shall be screened from public view either by architectural treatment or landscaping; multiple electrical meters shall be fully enclosed and incorporated into the overall architectural design of the building(s); back-flow preventers shall be screened by landscaping. (GP Objective 43.30)

31. Prior to issuance of a building permit, the developer/property owner or developer's successor-in-interest shall pay all applicable impact fees due at permit issuance, including but not limited to Multi-species Habitat Conservation Plan (MSHCP) mitigation fees. (Ord)

32. Prior to building final, the developer/owner or developer's/owner's successor-in-interest shall pay all applicable impact fees, including but not limited to Transportation Uniform Mitigation fees (TUMF), and the City's adopted Development Impact Fees. (Ord)

33. Prior to or at building plan check submittal, the elevation plans shall include decorative lighting sconces on all sides of the buildings of the complex facing a parking lot, courtyard or plaza, or public right of way or open space to provide up-lighting and shadowing on the structures. Include drawings of the sconce

Attachment: Exhibit A to Resolution 2018-XX - Conditional Use Permit (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

details for each building within the elevation plans, approved by the Planning Division prior to building permit issuance.

34. Prior to or at building plan check submittal, two copies of a detailed, on-site, computer generated, point-by-point comparison lighting plan, including exterior building, parking lot, and landscaping lighting, shall be submitted to the Planning Division for review and approval prior to the issuance of a building permit. The lighting plan shall be generated on the plot plan and shall be integrated with the final landscape plan. The plan shall indicate the manufacturer's specifications for light fixtures used, shall include style, illumination, location, height and method of shielding per the City's Municipal Code requirements. After the third plan check review for lighting plans, an additional plan check fee will apply. (MC 9.08.100, 9.16.280)

35. Prior to issuance of building permits, screening details shall be addressed on the building plans for roof top equipment submitted for Planning Division review and approval through the building plan check process. All equipment shall be completely screened so as not to be visible from public view, and the screening shall be an integral part of the building.

Prior to Building Final or Occupancy

36. Prior to building final, all required landscaping and irrigation shall be installed per plan, certified by the Landscape Architect and inspected by the Planning Division. (MC 9.03.040, MC 9.17).

37. Prior to building final, Planning approved/stamped landscape plans shall be provided to the Community Development Department – Planning Division on a CD disk.

38. Prior to building final, all required and proposed fences and walls shall be constructed according to the approved plans on file in the Planning Division. (MC 9.080.070).

39. Prior to building final or Certificate of Occupancy, all Conditions of Approval and Mitigation Measures shall be completed to the satisfaction of the Community Development Director.

ECONOMIC DEVELOPMENT DEPARTMENT (EDD)

40. New Moreno Valley businesses may work with the Economic Development Department to coordinate job recruitment fairs.

41. New Moreno Valley businesses may adopt a "First Source" approach to

Attachment: Exhibit A to Resolution 2018-XX - Conditional Use Permit (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

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employee recruitment that gives notice of job openings to Moreno Valley residents for one week in advance of the public recruitment.

42. New Moreno Valley businesses are encouraged to hire local residents.

43. New Moreno Valley businesses are encouraged to provide a job fair flyer and/or web announcement to the City in advance of job recruitments, so that the City can assist in publicizing these events.

44. New Moreno Valley businesses may utilize the workforce recruitment services provided by the Moreno Valley Employment Resource Center ("ERC").

    The ERC offers no cost assistance to businesses recruiting and training potential employees. Complimentary services include:

    • Job Announcements
    • Applicant testing / pre-screening
    • Interviewing
    • Job Fair support
    • Training space

FIRE DEPARTMENT

Fire Prevention Bureau

45. The Fire Prevention Bureau is required to set a minimum fire flow for the remodel or construction of all commercial buildings per CFC Appendix B and Table B105.1. The applicant/developer shall provide documentation to show there exists a water system capable of delivering 1500 gallons per minute for 2 hour(s) duration at 20-PSI residual operating pressure. (CFC 507.3, Appendix B)

46. Prior to issuance of Certificate of Occupancy or Building Final, the applicant/developer shall be responsible for obtaining underground and/or above ground tank permits for the storage of combustible liquids, flammable liquids, or any other hazardous materials from both the County of Riverside Community Health Agency Department of Environmental Health and the Fire Prevention Bureau. (CFC 105)

47. Prior to issuance of Certificate of Occupancy, approval shall be required from the County of Riverside Community Health Agency (Department of Environmental Health) and Moreno Valley Fire Prevention Bureau to maintain, store, use, handle materials, or conduct processes which produce conditions hazardous to life or property, and to install equipment used in connection with such activities. (CFC 105)

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48. Fire lanes and fire apparatus access roads shall have an unobstructed width of not less than twenty–four (24) feet for buildings below 35 feet in height and thirty (30) feet for buildings over 35 feet in height. An unobstructed vertical clearance of not less than thirteen (13) feet six (6) inches shall be provided. (CFC 503.2.1 and MVMC 8.36.060[E])

49. The minimum number of fire hydrants required, as well as the location and spacing of fire hydrants, shall comply with the C.F.C., MVMC, and NFPA 24. Fire hydrants shall be located no closer than 40 feet to a building. A fire hydrant shall be located within 50 feet of the fire department connection for buildings protected with a fire sprinkler system. The size and number of outlets required for the approved fire hydrants are (6" x 4" x 2 ½" x 2 ½") (CFC 507.5.1, 507.5.7, Appendix C, NFPA 24-7.2.3, MVMC 912.2.1)

50. Plans for private water mains supplying fire sprinkler systems and/or private fire hydrants shall be submitted to the Fire Prevention Bureau for approval. (CFC 105 and CFC 3312.1)

51. Prior to issuance of Certificate of Occupancy or Building Final, "Blue Reflective Markers" shall be installed to identify fire hydrant locations in accordance with City specifications. (CFC 509.1 and MVLT 440A-0 through MVLT 440C-0)

52. Prior to issuance of Building Permits, the applicant/developer shall submit water system plans to the Fire Prevention Bureau for review. Plans shall:

a. Be signed by a registered civil engineer or a certified fire protection engineer;
b. Contain a Fire Prevention Bureau approval signature block; and
c. Conform to hydrant type, location, spacing of new and existing hydrants and minimum fire flow required as determined by the Fire Prevention Bureau.

The required water system, including fire hydrants, shall be installed, made serviceable, and be accepted by the Moreno Valley Fire Department prior to beginning construction. They shall be maintained accessible.

53. Existing fire hydrants on public streets are allowed to be considered available. Existing fire hydrants on adjacent properties shall not be considered available unless fire apparatus access roads extend between properties and easements are established to prevent obstruction of such roads. (CFC 507, 501.3)

a. After the local water company signs the plans, the originals shall be presented to the Fire Prevention Bureau for signatures. The required water system, including fire hydrants, shall be installed, made serviceable, and be accepted by the Moreno Valley Fire Department prior to beginning construction. They shall be maintained accessible.

54. Prior to issuance of Certificate of Occupancy or Building Final, the applicant/developer shall install a fire sprinkler system based on square footage and type of construction, occupancy or use. Fire sprinkler plans shall be submitted to the Fire Prevention Bureau for approval prior to installation. (CFC Chapter 9, MVMC 8.36.100[D])

55. Prior to issuance of Certificate of Occupancy or Building Final, the applicant/developer shall install a fire alarm system monitored by an approved Underwriters Laboratory listed central station based on a requirement for monitoring the sprinkler system, occupancy or use. Fire alarm panel shall be accessible from exterior of building in an approved location. Plans shall be submitted to the Fire Prevention Bureau for approval prior to installation. (CFC Chapter 9 and MVMC 8.36.100)

56. Prior to issuance of Certificate of Occupancy or Building Final, all commercial buildings shall display street numbers in a prominent location on the street side. The numerals shall be a minimum of six inches in height. (CFC 505.1, MVMC 8.36.060[I])

57. Prior to issuance of Building Permits, the applicant/developer shall provide the Fire Prevention Bureau with an approved site plan for Fire Lanes and signage. (CFC 501.3)

58. The angle of approach and departure for any means of Fire Department access shall not exceed 1 ft drop in 20 ft (0.3 m drop in 6 m), and the design limitations of the fire apparatus of the Fire Department shall be subject to approval by the AHJ. (CFC 503 and MVMC 8.36.060)

59. The Fire Code Official is authorized to enforce the fire safety during construction requirements of Chapter 33. (CFC Chapter 33 & CBC Chapter 33)

60. The Fire Department emergency vehicular access road shall be (all weather surface) capable of sustaining an imposed load of 80,000 lbs. GVW, based on street standards approved by the Public Works Director and the Fire Prevention Bureau. The approved fire access road shall be in place during the time of construction. Temporary fire access roads shall be approved by the Fire Prevention Bureau. (CFC 501.4, and MV City Standard Engineering Plan 108d)

61. Fire Department access driveways over 150 feet in length shall have a turn-around as determined by the Fire Prevention Bureau capable of accommodating fire apparatus. (CFC 503 and MVMC 8.36.060, CFC 501.4)

62. All Fire Department access roads or driveways shall not exceed 12 percent grade. (CFC 503.2.7 and MVMC 8.36.060[G])

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63. Prior to issuance of a Certificate of Occupancy or Building Final, a "Knox Box Rapid Entry System" shall be provided. The Knox-Box shall be installed in an accessible location approved by the Fire Code Official. All exterior security emergency access gates shall be electronically operated and be provided with Knox key switches for access by emergency personnel. (CFC 506.1)

PUBLIC WORKS DEPARTMENT

Land Development

64. Aggregate slurry, as defined in Section 203-5 of Standard Specifications for Public Works Construction, may be required just prior to the end of the Project's construction of the public streets at the discretion of the City Engineer. If slurry is required, a slurry mix design shall be submitted for review and approved by the City Engineer. The latex additive shall be Ultra Pave 70 (for anionic) or Ultra Pave 65 K (for cationic) or an approved equal per the geotechnical report. The latex shall be added at the emulsion plant after weighing the asphalt and before the addition of mixing water. The latex shall be added at a rate of two to two-and-one-half (2 to 2½) parts to one-hundred (100) parts of emulsion by volume. Any existing striping shall be removed prior to slurry application and replaced per City standards.

65. The developer shall comply with all applicable City ordinances and resolutions including the City's Municipal Code (MC) and if subdividing land, the Government Code (GC) of the State of California, specifically Sections 66410 through 66499.58, said sections also referred to as the Subdivision Map Act (SMA). [MC 9.14.010]

66. The final approved conditions of approval (COAs) and any applicable Mitigation Measures issued by the Planning Division shall be photographically or electronically placed on mylar sheets and included in the Grading and Street Improvement plans.

67. The developer shall monitor, supervise and control all construction related activities, so as to prevent these activities from causing a public nuisance, including but not limited to, insuring strict adherence to the following:
(a) Removal of dirt, debris, or other construction material deposited on any public street no later than the end of each working day.
(b) Observance of working hours as stipulated on permits issued by the Land Development Division.
(c) The construction site shall accommodate the parking of all motor vehicles used by persons working at or providing deliveries to the site.
(d) All dust control measures per South Coast Air Quality Management District (SCAQMD) requirements during the grading operations.
Violation of any condition, restriction or prohibition set forth in these conditions shall subject the owner, applicant, developer or contractor(s) to remedy as noted in City

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Municipal Code 8.14.090. In addition, the City Engineer or Building Official may suspend all construction related activities for violation of any condition, restriction or prohibition set forth in these conditions until such time as it has been determined that all operations and activities are in conformance with these conditions.

68. If improvements associated with this project are not initiated within two (2) years of the date of approval of the Public Improvement Agreement (PIA), the City Engineer may require that the engineer's estimate for improvements associated with the project be modified to reflect current City construction costs in effect at the time of request for an extension of time for the PIA or issuance of a permit. [MC 9.14.210(B)(C)]

69. The developer shall protect downstream properties from damage caused by alteration of drainage patterns (i.e. concentration or diversion of flow, etc). Protection shall be provided by constructing adequate drainage facilities, including, but not limited to, modifying existing facilities or by securing a drainage easement. [MC 9.14.110]

70. The proposed private storm drain system may connect to the existing RCFC&WCD Line P-3. This connection may require a permit from RCFC&WCD prior to any storm drain construction. A storm drain manhole shall be placed at the right-of-way line to mark the beginning of the publicly maintained portion of this storm drain.

71. This project shall submit civil engineering design plans, reports and/or documents (prepared by a registered/licensed civil engineer) for review and approval by the City Engineer per the current submittal requirements, prior to the indicated threshold or as required by the City Engineer. The submittal consists of, but is not limited to, the following:

a. A Lot Line Adjustment (recordation prior to building permit issuance);
b. Rough grading w/ erosion control plan (prior to grading permit issuance);
c. Precise grading w/ erosion control plan (prior to building permit issuance);
d. Public improvement plan (e.g., street/storm drain w/ striping, prior to encroachment permit issuance;
e. Final drainage study (prior to grading plan approval);
f. Final WQMP (prior to grading plan approval);
g. Legal documents (e.g., easement(s), dedication(s), lot line adjustment, etc.) prior to building permit issuance;
h. As-Built revision for all plans (prior to Occupancy release);

72. Water quality best management practices (BMPs) designed to meet Water Quality Management Plan (WQMP) requirements for Industrial development shall not be used as a construction BMP. Water quality BMPs shall be maintained for the entire duration of the project construction and be used to treat runoff from those developed portions of the project. Water quality BMPs shall be protected from upstream

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construction related runoff by having proper best management practices in place and maintained. Water quality BMPs shall be graded per the approved design plans and once landscaping and irrigation has been installed, it and its maintenance shall be turned over to the property owner or an established Property Owner's Association (POA).

Prior to Grading Plan Approval

73. Resolution of all drainage issues shall be as approved by the City Engineer.

74. A final detailed drainage study (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer. The study shall include, but not be limited to: existing and proposed hydrologic conditions as well as hydraulic calculations for all drainage control devices and storm drain lines. The study shall analyze 1, 3, 6 and 24-hour duration events for the 2, 5, 10 and 100-year storm events [MC 9.14.110(A.1)]. A digital (pdf) copy of the approved drainage study shall be submitted to the Land Development Division.

75. A final project-specific Water Quality Management Plan (WQMP) shall be submitted for review and approved by the City Engineer, which:

a. Addresses Site Design Best Management Practices (BMPs) such as minimizing impervious areas, maximizing permeability, minimizes directly connected impervious areas to the City's street and storm drain systems, and conserves natural areas;

b. Incorporates Source Control BMPs and provides a detailed description of their implementation;

c. Describes the long-term operation and maintenance requirements for BMPs requiring maintenance; and

d. Describes the mechanism for funding the long-term operation and maintenance of the BMPs.

A copy of the latest version of the final WQMP template can be obtained on the City's Website or by contacting the Land Development Division. A digital (pdf) copy of the approved final project-specific Water Quality Management Plan (WQMP) shall be submitted to the Land Development Division.

76. The developer shall ensure compliance with the City Grading ordinance, these Conditions of Approval and the following criteria:

a. The project street and lot grading shall be designed in a manner that perpetuates the existing natural drainage patterns with respect to tributary drainage area and outlet points. Unless otherwise approved by the City Engineer, lot lines shall be located at the top of slopes.

b. Any grading that creates cut or fill slopes adjacent to the street shall provide erosion control, sight distance control, and slope easements as approved by the City Engineer.

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c. All improvement plans are substantially complete and appropriate clearance letters are provided to the City.

d. A soils/geotechnical report (addressing the soil's stability and geological conditions of the site) shall be submitted to the Land Development Division for review. A digital (pdf) copy of the soils/geotechnical report shall be submitted to the Land Development Division.

77. Grading plans (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal requirements.

78. The developer shall select Low Impact Development (LID) Best Management Practices (BMPs) designed per the latest version of the Water Quality Management Plan (WQMP) - a guidance document for the Santa Ana region of Riverside County.

79. The developer shall pay all remaining plan check fees.

80. A Storm Water Pollution Prevention Plan (SWPPP) shall be prepared in conformance with the State's current Construction Activities Storm Water General Permit. A copy of the current SWPPP shall be kept at the project site and be available for review upon request.

81. Any proposed trash enclosure(s) shall be dual bin (1 for trash and 1 for recycables) [MC 9.03.040 (G)]. The enclosure shall have a solid roof and appropriate drainage collection for water quality purposes. The architecture shall be approved by the Planning Division and any structural approvals shall be made by the Building & Safety Division.

82. For projects that will result in discharges of storm water associated with construction with a soil disturbance of one or more acres of land, the developer shall submit a Notice of Intent (NOI) and obtain a Waste Discharger's Identification number (WDID#) from the State Water Quality Control Board (SWQCB) which shall be noted on the grading plans.

83. Landscape & Irrigation plans (prepared by a registered/licensed civil engineer) for water quality BMPs shall be submitted for review and approved by the City Engineer per the current submittal requirements, if applicable.

<u>Prior to Grading Permit</u>

84. A receipt showing payment of the Area Drainage Plan (ADP) fee to Riverside County Flood Control and Water Conservation District shall be submitted. [MC 9.14.100(O)]

85. The developer shall pay current Development Impact Fees (DIF), adopted by the City Council. [Ord. 695 § 1.1 (part), 2005] [MC 3.38.030, 040, 050]

86. A digital (pdf) copy of all approved grading plans shall be submitted to the Land Development Division.

87. Security, in the form of a cash deposit (preferable), or letter of credit shall be submitted as a guarantee of the implementation and maintenance of erosion control measures. At least twenty-five (25) percent of the required security shall be in the form of a cash deposit with the City. [MC 8.21.160(H)]

88. Security, in the form of a cash deposit (preferable), or letter of credit shall be submitted as a guarantee of the completion of the grading operations for the project. [MC 8.21.070]

89. The developer shall pay all applicable inspection fees.

90. The developer shall pay current Transportation Uniform Mitigation Fees (TUMF) adopted by the City Council. [Ord. 835 § 2.1, 2012] [MC 3.44.060]

Prior to Improvement Plan Approval

91. The developer is required to bring any existing access ramps adjacent to and fronting the project to current ADA (Americans with Disabilities Act) requirements. However, when work is required in an intersection that involves or impacts existing access ramps, all access ramps in that intersection shall be retrofitted to comply with current ADA requirements, unless otherwise approved by the City Engineer.

92. The street improvement plans shall comply with current City policies, plans and applicable City standards (i.e. MVSI-160 series, etc.) throughout this project.

93. The hydrology study shall be designed to accept and properly convey all off-site drainage flowing onto or through the site. In the event that the City Engineer permits the use of streets for drainage purposes, the provisions of current City standards shall apply. Should the quantities exceed the street capacity or the use of streets be prohibited for drainage purposes, as in the case where one travel lane in each direction shall not be used for drainage conveyance for emergency vehicle access on streets classified as minor arterials and greater, the developer shall provide adequate facilities as approved by the City Engineer. [MC 9.14.110 A.2]

94. All public improvement plans (prepared by a licensed/registered civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal requirements.

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95. Any missing or deficient existing improvements along the project frontage within Cottonwood Avenue shall be constructed or secured for construction. The City Engineer may require the ultimate structural section for pavement to half-street width plus 18-feet or provide core test results confirming that existing pavement section is per current City Standards; additional signing & striping to accommodate increased traffic imposed by the development, etc.

96. For non-subdivision projects, all street dedications shall be free of encumbrances, irrevocably offered to the public and shall continue in force until the City accepts or abandons such offers, unless otherwise approved by the City Engineer.

97. All dry and wet utilities shall be shown on the plans and any crossings shall be potholed to determine actual location and elevation. Any conflicts shall be identified and addressed on the plans. The pothole survey data shall be submitted to Land Development with the public improvement plans for reference purposes only. The developer is responsible to coordinate with all affected utility companies and bear all costs of any utility relocation.

98. Perris Boulevard (110' RW / 86' CC) shall be constructed to half-width plus a raised landscaped median plus a 14-foot travel lane. The improvements shall consist of, but not be limited to, pavement, curb, gutter, sidewalk, streetlights, storm drain, catch basins, pavement transitions, dry and wet utilities, and undergrounding of overhead utilities less than 115,000 volts. The Developer shall construct pavement transitions joining existing and proposed edge of pavement beyond the northern tract boundary on Perris Boulevard. The developer shall dedicate additional right of way to meet the required street ROW width of 55-foot half street along the east side of Perris Boulevard, west side of the project property. Additional ROW shall be dedicated as noted in the City's Standard MVSI-161-0 for the bus turnout.

99. Cottonwood Avenue (88' RW/ 64' CC) shall be constructed to half-width plus a 12-foot travel lane. The improvements shall consist of, but not be limited to, pavement, curb, gutter, sidewalk, streetlights, storm drain, catch basins, pavement transitions, dry and wet utilities, and undergrounding of overhead utilities less than 115,000 volts. The developer shall dedicate additional right of way to meet the required street ROW width of 44-foot half street along the north side of Cottonwood Avenue, south side of the project property. A striping plan shall be included in the improvement plans and approved by the City Traffic Engineer.

100. Show & label a 4-foot right-of-way dedication for pedestrian sidewalk per current City Standard MVSI-112C-0 behind all proposed driveway locations.

Prior to Encroachment Permit

101. A digital (pdf) copy of all approved improvement plans shall be submitted to the

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Land Development Division.

102. All applicable inspection fees shall be paid.

103. For non-subdivision projects, execution of a Public Improvement Agreement (PIA) and/or security (in the form of a cash deposit or other approved means) may be required as determined by the City Engineer. [MC 9.14.220]

104. Any work performed within public right-of-way requires an encroachment permit.

Prior to Building Permit

105. An engineered-fill certification, rough grade certification and compaction report shall be submitted for review and approved by the City Engineer. A digital (pdf) copy of the approved compaction report shall be submitted to the Land Development Division. All pads shall meet pad elevations per approved grading plans as noted by the setting of "blue-top" markers installed by a registered land surveyor or licensed civil engineer.

106. For non-subdivision projects, the developer shall guarantee the completion of all related public improvements required for this project by executing a Public Improvement Agreement (PIA) with the City and posting the required security. [MC 9.14.220]

107. For Commercial/Industrial projects, the owner may have to secure coverage under the State's General Industrial Activities Storm Water Permit as issued by the State Water Resources Control Board.

108. For non-subdivision projects, all street dedications shall be free of encumbrances, irrevocably offered to the public and shall continue in force until the City accepts or abandons such offers, unless otherwise approved by the City Engineer.

109. A walk through with a Land Development Inspector shall be scheduled to inspect existing improvements within public right of way along project frontage. Any missing, damaged or substandard improvements including handicap access ramps that do not meet current City standards shall be required to be installed, replaced and/or repaired. The applicant shall post security to cover the cost of the repairs and complete the repairs within the time allowed in the public improvement agreement used to secure the improvements.

Prior to Occupancy

110. All outstanding fees shall be paid.

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111. All required as-built plans (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal requirements.

112. The final/precise grade certification shall be submitted for review and approved by the City Engineer.

113. For commercial, industrial and multi-family projects, in compliance with Proposition 218, the developer shall agree to approve the City of Moreno Valley NPDES Regulatory Rate Schedule that is in place at the time of certificate of occupancy issuance. Under the current permit for storm water activities required as part of the National Pollutant Discharge Elimination System (NPDES) as mandated by the Federal Clean Water Act, this project is subject to the following requirements:

a. Select one of the following options to meet the financial responsibility to provide storm water utilities services for the required continuous operation, maintenance, monitoring system evaluations and enhancements, remediation and/or replacement, all in accordance with Resolution No. 2002-46.

i. Participate in the mail ballot proceeding in compliance with Proposition 218, for the Common Interest, Commercial, Industrial and Quasi-Public Use NPDES Regulatory Rate Schedule and pay all associated costs with the ballot process; or

ii. Establish an endowment to cover future City costs as specified in the Common Interest, Commercial, Industrial and Quasi-Public Use NPDES Regulatory Rate Schedule.

b. Notify the Special Districts Division of the intent to request building permits 90 days prior to their issuance and the financial option selected. The financial option selected shall be in place prior to the issuance of certificate of occupancy. [California Government Code & Municipal Code]

114. The developer shall complete all public improvements in conformance with current City standards, except as noted in the Special Conditions, including but not limited to the following:

a. Street improvements including, but not limited to: pavement, base, curb and/or gutter, cross gutters, spandrel, sidewalks, drive approaches, pedestrian ramps, street lights, signing, striping, under sidewalk drains, landscaping and irrigation, medians, pavement tapers/transitions and traffic control devices as appropriate.

b. Storm drain facilities including, but not limited to: storm drain pipe, storm drain laterals, open channels, catch basins and local depressions.

c. City-owned utilities.

d. Sewer and water systems including, but not limited to: sanitary sewer, potable water and recycled water.

e. Under grounding of all existing and proposed utilities adjacent to and on-site. [MC 9.14.130]

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f. Relocation of overhead electrical utility lines including, but not limited to: electrical, cable and telephone.

115. For commercial, industrial and multi-family projects, a "Stormwater Treatment Device and Control Measure Access and Maintenance Covenant" shall be recorded to provide public notice of the maintenance requirements to be implemented per the approved final project-specific WQMP. A boilerplate copy of the "Stormwater Treatment Device and Control Measure Access and Maintenance Covenant" can be obtained by contacting the Land Development Division.

116. The applicant shall ensure the following, pursuant to Section XII. I. of the 2010 NPDES Permit:

a. Field verification that structural Site Design, Source Control and Treatment Control BMPs are designed, constructed and functional in accordance with the approved Final Water Quality Management Plan (WQMP).

b. Certification of best management practices (BMPs) from a state licensed civil engineer. An original WQMP BMP Certification shall be submitted for review and approved by the City Engineer.

117. The Developer shall comply with the following water quality related items:

a. Notify the Land Development Division prior to construction and installation of all structural BMPs so that an inspection can be performed.

b. Demonstrate that all structural BMPs described in the approved final project-specific WQMP have been constructed and installed in conformance with the approved plans and specifications;

c. Demonstrate that Developer is prepared to implement all non-structural BMPs described in the approved final project-specific WQMP; and

d. Demonstrate that an adequate number of copies of the approved final project-specific WQMP are available for future owners/occupants.

e. Clean and repair the water quality BMP's, including re-grading to approved civil drawing if necessary.

f. Obtain approval and complete installation of the irrigation and landscaping.

Special Districts Division

118. The parcel(s) associated with this project have been incorporated into the Moreno Valley Community Services District Zone A (Parks & Community Services) and Zone C (Arterial Street Lighting). All assessable parcels therein shall be subject to annual parcel taxes for Zone A and Zone C for operations and capital improvements.

119. The Developer, or the Developer's successors or assignees shall be responsible for all parkway and/or median landscape maintenance for a period of one (1) year commencing from the time all items of work have been completed to the satisfaction

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of Special Districts staff as per the City of Moreno Valley Public Works Department Landscape Design Guidelines, or until such time as the District accepts maintenance responsibilities.

120. Inspection fees for the monitoring of landscape installation associated with the City of Moreno Valley maintained parkways/medians are due prior to the required pre-construction meeting. (MC 3.32.040)

121. Plans for parkway, median, slope, and/or open space landscape areas designated in the project's Conditions of Approval for incorporation into a City Coordinated landscape maintenance program, shall be prepared and submitted in accordance with the City of Moreno Valley Public Works Department Landscape Design Guidelines. The guidelines are available on the City's website at www.moval.org/sd or from the Special Districts Division (951.413.3480 or specialdistricts@moval.org).

122. The ongoing maintenance of any landscaping required to be installed behind the curb shall be the responsibility of the property owner.

123. Plan check fees for review of parkway/median landscape plans for improvements that shall be maintained by the City of Moreno Valley are due upon the first plan submittal. (MC 3.32.040)

124. Street Light Authorization forms for all street lights that are conditioned to be installed as part of this project must be submitted to the Special Districts Division for approval, prior to street light installation. The Street Light Authorization form can be obtained from the utility company providing electric service to the project, either Moreno Valley Utility or Southern California Edison. For questions, contact the Special Districts Division at 951.413.3480 or specialdistricts@moval.org.

125. Prior to the issuance of the first building permit for this project, the Developer shall pay Advanced Energy fees for all applicable Residential and Arterial Street Lights required for this development. Payment shall be made to the City of Moreno Valley and collected by the Land Development Division. Fees are based upon the Advanced Energy fee rate in place at the time of payment, as set forth in the current Listing of City Fees, Charges, and Rates adopted by City Council. The Developer shall provide a copy of the receipt to the Special Districts Division (specialdistricts@moval.org). Any change in the project which may increase the number of street lights to be installed will require payment of additional Advanced Energy fees at the then current fee. Questions may be directed to the Special Districts Division at 951.413.3480 or specialdistricts@moval.org.

126. This project has been identified to potentially be included in the formation of a Map Act Area of Benefit Special District for the construction of major thoroughfares and/or freeway improvements. The property owner(s) shall participate in such

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District and pay any special tax, assessment, or fee levied upon the project property for such District. At the time of the public hearing to consider formation of the district, the property owner(s) will not protest the formation, but will retain the right to object any eventual assessment that is not equitable should the financial burden of the assessment not be reasonably proportionate to the benefit the affected property obtains from the improvements to be installed. The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org of its selected financial option when submitting an application for the first building permit to determine whether the development will be subjected to this condition. If subject to the condition, the special election requires a 90 day process in compliance with the provisions of Article 13C of the California Constitution. (Street & Highway Code, GP Objective 2.14.2, MC 9.14.100).

127. This project is conditioned for a proposed district to provide a funding source for the operation and maintenance of public improvements and/or services associated with new development in that territory. The Developer shall satisfy this condition with one of the options outlined below.

a. Participate in a special election for maintenance/services and pay all associated costs of the election process and formation, if any. Financing may be structured through a Community Facilities District, Landscape and Lighting Maintenance District, or other financing structure as determined by the City; or

b. Establish an endowment fund to cover the future maintenance and/or service costs.

The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org when submitting the application for building permit issuance. If the first building permit is pulled prior to formation of the district, this condition will not apply. If the district has been or is in the process of being formed the Developer must inform the Special Districts Division of its selected financing option (a. or b. above). The option for participating in a special election requires 90 days to complete the special election process. This allows adequate time to be in compliance with the provisions of Article 13C of the California Constitution.

The financial option selected shall be in place prior to the issuance of the first certificate of occupancy for the project.

128. This project is conditioned to provide a funding source for the following special financing program(s):

a. Street Lighting Services for capital improvements, energy charges, and maintenance.

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b. Landscape Maintenance Services for parkway, open space, and/or median landscaping on _____.

The Developer's responsibility is to provide a funding source for the capital improvements and the continued maintenance. The Developer shall satisfy this condition with one of the options below.

i. Participate in a special election (mail ballot proceeding) and pay all associated costs of the special election and formation, if any. Financing may be structured through a Community Services District zone, Community Facilities District, Landscape and Lighting Maintenance District, or other financing structure as determined by the City; or

ii. Establish a Property Owner's Association (POA) or Home Owner's Association (HOA) which will be responsible for any and all operation and maintenance costs

The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org of its selected financial option when submitting the application for building permit issuance. The option for participating in a special election requires approximately 90 days to complete the special election process. This allows adequate time to be in compliance with the provisions of Article 13C of the California Constitution.

The financial option selected shall be in place prior to the issuance of the first certificate of occupancy for the project and prior to acceptance of any improvements.

129. Commercial (BP) If Land Development, a Division of the Public Works Department, requires this project to supply a funding source necessary to provide for, but not limited to, stormwater utilities services for the continuous operation, remediation and/or replacement, monitoring, systems evaluations and enhancement of on-site facilities and performing annual inspections of the affected areas to ensure compliance with state mandated stormwater regulations, a funding source needs to be established. The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org of its selected financial option for the National Pollution Discharge Elimination System (NPDES) program when submitting the application for the first building permit issuance (see Land Development's related condition). Participating in a special election the process requires a 90 day period prior to the City's issuance of a building permit. This allows adequate time to be in compliance with the provisions of Article 13D of the California Constitution. (California Health and Safety Code Sections 5473 through 5473.8 (Ord. 708 Section 3.1, 2006) & City of Moreno Valley Municipal Code Title 3, Section 3.50.050.)

Attachment: Exhibit A to Resolution 2018-XX - Conditional Use Permit (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

130. For those areas to be maintained by the City and prior to the issuance of the first Building Permit, Planning Division (Community Development Department), Special Districts Division (the Public Works Department) and Transportation Division (the Public Works Department) shall review and approve the final median, parkway, slope, and/or open space landscape/irrigation plans as designated on the tentative map or in these Conditions of Approval prior to the issuance of the first Building Permit.

131. This project has been identified to be included in the formation of a Community Facilities District (Mello-Roos) for Public Safety services, including but not limited to Police, Fire Protection, Paramedic Services, Park Rangers, and Animal Control services. The property owner(s) shall not protest the formation; however, they retain the right to object to the rate and method of maximum special tax. In compliance with Proposition 218, the property owner shall agree to approve the mail ballot proceeding (special election) for either formation of the CFD or annexation into an existing district. The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org when submitting the application for building permit issuance to determine the requirement for participation. If the first building permit is pulled prior to formation of the district, this condition will not apply. If the condition applies, the special election will require a minimum of 90 days prior to issuance of the first building permit. This allows adequate time to be in compliance with the provisions of Article 13C of the California Constitution. (California Government Code Section 53313 et. seq.)

132. Parkway, open space, and/or median landscaping specified in the project's Conditions of Approval shall be constructed in compliance with the approved landscape plans and completed prior to the issuance of the first Certificate of Occupancy/Building Final for this project.

133. Landscape and irrigation plans for parkway, median, slope, and/or open space landscape areas designated to be maintained by the City shall be placed on compact disk (CD) in pdf format. The CD shall include "As Built" plans, revisions, and changes. The CD will become the property of the City of Moreno Valley and the Moreno Valley Community Services District.

Transportation Engineering Division

134. All proposed on-site traffic signing and striping should be accordance with the latest California Manual on Uniform Traffic Control Devices (CAMUTCD).

135. Conditions of approval may be modified and/or added if the project is altered from any approved plans.

136. Perris Boulevard is classified as a 6-Lane Divided Arterial (110'RW/86'CC) per

City Standard Plan No. MVSI-103C-0. Any improvements undertaken by this project shall be consistent with the City's standards for this facility.

137. Cottonwood Avenue is classified as a Minor Arterial (88'RW/64'CC) per City Standard Plan No. MVSI-105A-1. Any other improvements undertaken by this project shall be consistent with the City's standards for this facility.

138. The driveways shall conform to City of Moreno Valley Standard No. MVSI-112C-0 for Commercial Driveway Approaches. Access at the driveways shall be allowed as follows:

- Perris Boulevard driveway: right turn in/out only.
- Cottonwood driveway: full access. However, in the future, if the City determines that there is a significant traffic safety issue related to the full access driveway, then the City reserves the right to implement additional turning movement restrictions to mitigate the issue.

139. Prior to final approval of the landscape plans and construction plans for any type of fencing or monument sign, the project plans shall demonstrate that sight distance at the project driveway conforms to City Standard Plan No. MVSI-164A-0 through MVSI-164C-0. Trees, plants, shrubs, fence and monument sign shall not be located in an area that obstructs the drivers' line-of-sight.

140. Prior to the final approval of the street improvement plans, a signing and striping plan shall be prepared per City of Moreno Valley Standard Plans - Section 4 for all street segments along the project frontages. Signing and striping plans shall be prepared per the latest edition of the California Manual on Uniform Traffic Control Devices (CAMUTCD) and current City of Moreno Valley Standard Plans by a qualified registered civil or traffic engineer.

141. Prior to the final approval of the street improvement plans, a median improvement plan shall be prepared by a registered civil engineer for a raised concrete median along the project frontage on Perris Boulevard. Minimum vehicle storage length shall be 250 feet.

142. Prior to the final approval of the street improvement plans, a bus turnout shall be designed per the latest City of Moreno Valley Standard Plans for northbound traffic and shall be located on the east side of Perris Boulevard, between the project driveway and Cottonwood Avenue.

143. Prior to issuance of an encroachment permit for work within the public right-of-way, construction traffic control plans prepared by a qualified, registered Civil or Traffic Engineer shall be required for plan approval by the City Traffic Engineer.

144. Prior to issuance of Certificate of Occupancy, raised median improvement along

Attachment: Exhibit A to Resolution 2018-XX - Conditional Use Permit (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

the project frontage on Perris Boulevard shall be completed and fully operational per the approved plans to the satisfaction of the City Engineer. Median construction shall include but not be limited to: paving, concrete curbs, signing and striping. Exact requirements will be determined during the plan check process.

145. Prior to issuance of Certificate of Occupancy, a bus turnout shall be installed for northbound traffic and shall be located on the east side of Perris Boulevard, between the project driveway and Cottonwood Avenue.

146. Prior to issuance of Certificate of Occupancy, all signing and striping shall be installed per current City Standards and the approved plans.

Attachment: Exhibit A to Resolution 2018-XX - Conditional Use Permit (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

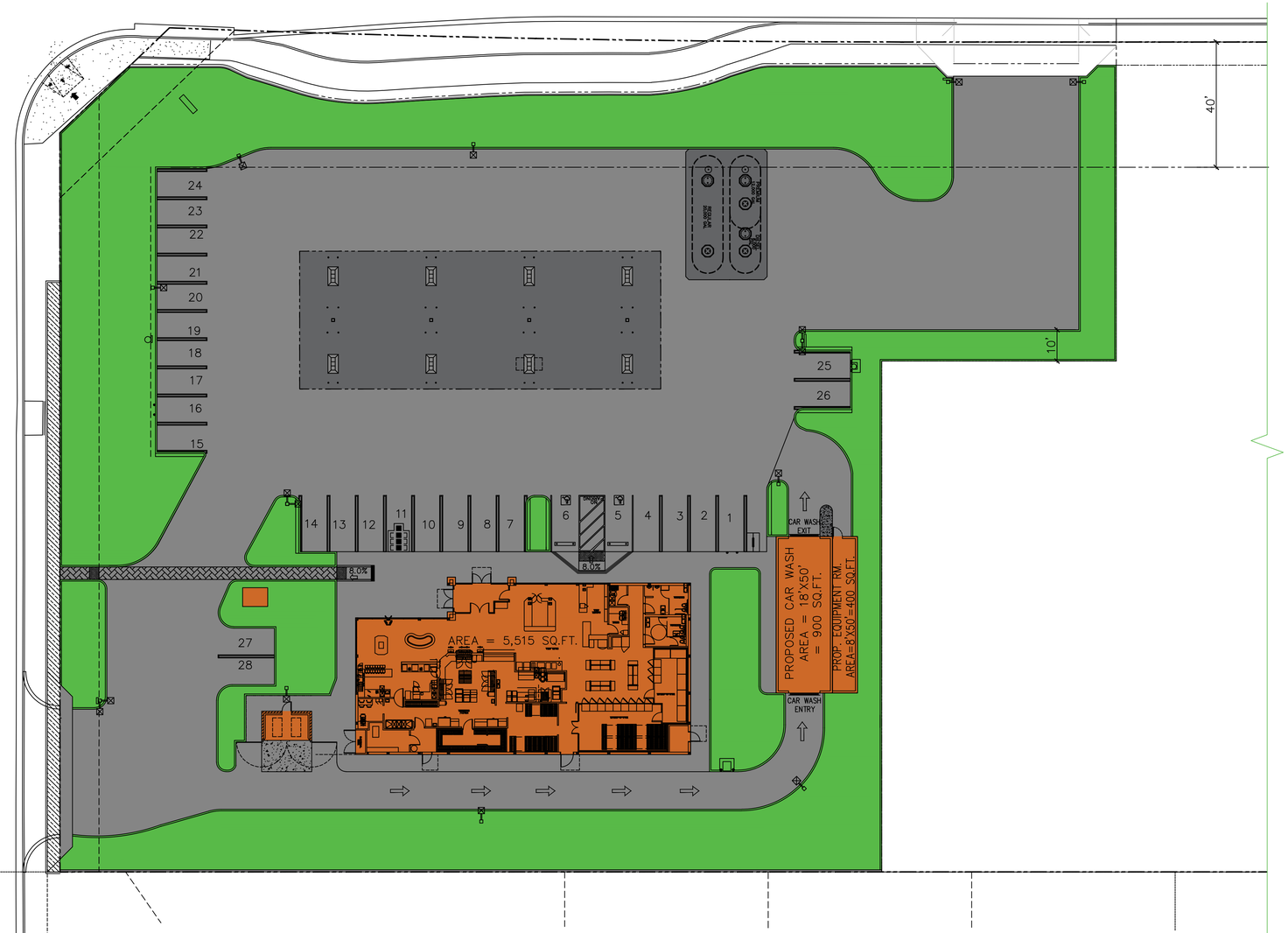
Attachment: Architectural Rendering (3257 : A GENERAL PLAN AMENDMENT, CHANGE

A & S Engineering, Inc.
Planning • Engineering • Construction Management
28405 Sand Canyon Rd. Suite B Canyon Country, CA 91387

WIN WIN
Corner of Perris Blvd. & Cottonwood Ave.
Moreno Valley, CA 92553

PERRIS BOULEVARD

COTTONWOOD AVENUE

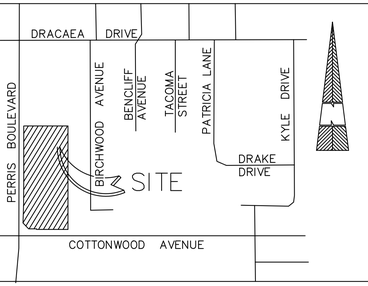


DIRECTIONAL ARROW/ GRAPHIC SCALE

20 0 20 40

GRAPHIC SCALE
1"=20'-0"

VICINITY MAP



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2 11/15/2018	ER
3 11/20/2018	ER
4 11/27/2018	ER
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PLANS PREPARED BY:
A & S ENGINEERING INC.
PLANNING ENGINEERING CONSTRUCTION MANAGEMENT
28405 SAND CANYON ROAD, SUITE B
CANYON COUNTRY, CA 91387
PHONE #: (661) 250-9300; FAX #: (661) 250-9333

YUM YUM DONUT

ADDRESS: 18830 SAN JOSE AVENUE, CITY OF INDUSTRY, CA 91748

STORE #: -
ADDRESS: CORNER OF PERRIS BLVD. & COTTONWOOD AVE.
MORENO VALLEY, CA 92553

DRAWN	HOSS FARZAD
CHECKED	HF
DATE	01-22-2016
SHT. TITLE	PROPOSED SITE PLAN
JOB NUMBER	-
SHEET	PS1

H:\YUM YUM DONUTS-MORENO VALLEY-CA

Attachment: Project Plans [Revision 1] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT OF A DONUT STOR)

North Elevation
Scale: NTS

West Elevation
Scale: NTS

East Elevation
Scale: NTS

South Elevation
Scale: NTS

Attachment: Project Plans [Revision 1] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

A & S Engineering, Inc.
Planning • Engineering • Construction Management
28405 Sand Canyon Rd. Suite B Canyon Country, CA 91387

Yum Yum Donuts
NEC Perris and Cottonwood
Moreno Valley CA

REVISIONS
NO. DATE BY

North Elevation
Scale: NTS

West Elevation
Scale: NTS

East Elevation
Scale: NTS

South Elevation
Scale: NTS

Attachment: Project Plans [Revision 1] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

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Yum Yum Donuts
NEC Perris and Cottonwood
Moreno Valley CA

REVISIONS
NO. DATE BY

POLICE DEPARTMENT REQUIREMENT:

1. ADDRESS NUMBERS SHOULD BE PLACED AT MULTIPLE LOCATIONS ON THE BUILDING, BE ILLUMINATED AND CLEARLY VISIBLE FROM THE STREET
2. ROOFTOP ADDRESSING OF ALL BUILDINGS.
3. THE PARKING LOT AND BUILDINGS SHOULD BE WELL LIT. MINIMIZE THE SHADOWS CAST BY LANDSCAPING AND TREES ON THE PROPERTY.
4. ALL LIGHTING AFFIXED TO THE EXTERIOR OF BUILDINGS LESS THAN 8 FEET HIGH SHALL BE VANDAL RESISTANT
5. ALL EXTERIOR DOORS SHALL HAVE A VANDAL RESISTANT LIGHT FIXTURE INSTALLED ABOVE THE DOOR. THE DOORS SHALL BE ILLUMINATED WITH A MINIMUM ONE FOOT CANDLE ILLUMINATION AT GROUND LEVEL, EVENLY DISPERSED.
6. ENSURE ANY TREES SURROUNDING BUILDING ROOFTOPS BE KEPT AT A DISTANCE TO PREVENT ROOF ACCESSIBILITY BY POTENTIAL BURGLARS. SINCE TREES ALSO ACT AS A NATURAL LADDER, THE BRANCHES MUST BE PRUNED TO HAVE AT LEAST SIX FOOT CLEARANCE FROM THE BUILDINGS.
7. MINIMIZE THE NUMBER OF WINDOWS ON THE BUSSINESSES SO CUSTOMERS CAN SEE OUT IN TO THE PARKING LOT WHILE INSIDE EATING. THIS WILL HELP PARKING LOT SECURITY BY GIVING PEOPLE THE OPPORTUNITY TO MAINTAIN VISUAL OF THEIR VEHICLES AND VALUABLES.
8. UPON COMPLETION OF CONSTRUTION, EACH BUILDING OR BUSSINESS SHALL HAVE AN ALARM SYSTEM THAT IS MONITORED BY A DESIGNATED PRIVATE ALARM COMPANY TO NOTIFY THE MORENO VALLEY POLICE DEPARTMENT OF ANY INTRUSION
9. SECURITY CAMARAS INSIDE THE BUSINESSES AND SEVERAL CAMERAS OUTSIUDE

FIRE DEPARTMENT REQUIREMENT:

F16. COMPLETE PLANS AND SPECIFICATIONS FOR FORE ALARM SYSTEMS, FIRE–EXTINGUISHING SYSTEMS (INCLUDING AUTOMATIC SPRINKLERS OF STANDPIPE SYSTEM). CLEAN AGENT SYSTEM (OR OTHER SPECIAL TYPES OF AUTOMATIC FIRE–EXTINGUISHING SYSTEMS), AS WELL AS OTHER FIRE PROTECTION SYSTEMS AND APPURTENANCES THERETO WILL BE SUBMITTED TO THE MORENO VALLEY FIRE PREVENTION BUREAU FOR REVIEW AND APPROVAL PRIOR TO SYSTEM INSTALLATION. SUBMITTALS WILL BE IN ACCORDANCE WITH CFC CHAPTER 9 AND ASSOCIATED ACCEPTED NATIONAL STANDARDS.

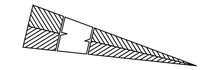
BUILDING SAFETY DIVISION COMMENT 8.

ANY CONSTRUCTION WITHIN THE CITY SHALL ONLY BE AS FOLLOWS:
MONDAY THROUGH FRIDAY (EXCEPT FOR HOLIDAYS WHICH OCCUR ON WEEKDAYS), SIX a.m. TO EIGHT p.m.
WEEKENDS AND HOLIDAYS (AS OBSERVED BY THE CITY AND DESCRIBED IN CHAPTER 2.55 OF THE MVMC), SEVEN A.M. TO EIGHT P.M., UNLESS WRITTEN APPROVAL IS OBTAINED FROM THE CITY BUILDING OFFICIAL OR CITY ENGINEER.

SCOPE OF WORK

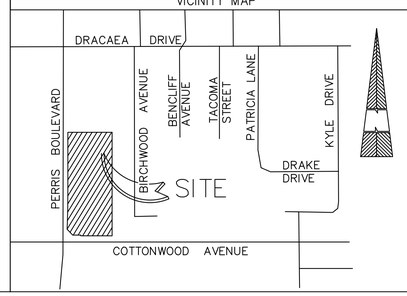
1. INSTALL 48" MINIMUM ACCESSIBLE ROUTE (MISSION RED, INTERLOCKING DECORATIVE PAVING) SLOPE NOT TO EXCEED 4.5% WITH MAXIMUM 2.0% CROSS SLOPE
2. CONSTRUCT 5,075.0 SQUARE FEET, 4–COLUMNS STEEL CANOPY PER PLAN & ELEVATIONS
3. CONSTRUCT 5,515.0 SQUARE FEET BUILDING PER PLAN & ELEVATIONS AND STRUCTURAL DRAWINGS
4. CONSTRUCT LANDSCAPE & PLANTING AREA PER PLAN & LANDSCAPE DRAWINGS.
5. INSTALL NEW MONUMENT SIGN WITH PRICE SIGN PER PLAN. SIGNS ARE UNDER SEPARATE PERMIT.
6. INSTALL MINIMUM 36" WIDE YELLOW COLOR DETECTABLE WARNING PER PLAN AND CBC FIGURE 11B–705.1
7. CONSTRUCT (2) DRIVEWAYS PER CITY OF MORENO VALLEY STANDARD PLAN MVS1–112C–0 (OLD 118–C)
8. CONSTRUCT 9'–4"X16'–0"X9'–0" HIGH STUCCO FINISH CMU TRASH ENCLOSURE WITH SOLID ROOF COVER & DOUBLE STEEL GATE PER PLAN AND CITY STANDARD PLAN MVGF–660A–0 OPTION 1
9. STRIPE (8)–2'–6"X6'–0" BICYCLE PARKING SPACES WITH REQUIRED BIKE U RACK PER PLAN
10. INSTALL YARD LIGHTS PER ELECTRICAL DRAWINGS
11. 4'–0" DEDICATION PER PLAN
12. INSTALL MAIN SWITCH BOARD INSIDE ENLOSURE MATCH BUILDING PER ELECTRICAL DRAWINGS.
13. PROPOSED LOCATION FOR UNDERGROUND STORAGE TANKS
14. 6'–0"X5'–0" CLEAR AND LEVEL AREA SLOPE NOT TO EXCEED 2.0% AT ANY DIRECTION. FLOOR NOT MORE THAN ½" LOWER THAN THE THRESHOLD
15. 5'–0"X5'–0" CLEAR AND LEVEL AREA SLOPE NOT TO EXCEED 2.0% AT ANY DIRECTION. FLOOR NOT MORE THAN ½" LOWER THAN THE THRESHOLD
16. STRIPE 18'–0"X26'–0" DISABILITY PARKING SPACE PER PLAN. SLOPE NOT TO EXCEED 2.0% AT ANY DIRECTION
17. INSTALL DISABILITY PARKING SIGNS PER PLAN
18. INSTALL ADDITIONAL SIGN AT EACH ENTRANCE TO OFF STREET PARKING FACILITIES OR IMMEDIATELY ADJACENT AND VISIBLE FROM EACH ACCESSIBLE STALL OR SPACE PER PLAN
19. INSTALL AIR AND WATER UNIT PER PLAN, WITH FREE SIGN ON UNIT
20. CONSTRUCT REINFORCED CONCRETE PAVING AT THE ENTIRE OF SITE PER SOIL REPORT AND CIVIL DRAWINGS
21. INSTALL FIRE HYDRANT PER FIRE DEPARTMENT REQUIREMENT (6"X4"X2.5"X2.5")
22. STRIPE STANDARD PARKING STALLS PER CITY STANDARD FIGURE 9.11.080–6
23. INSTALL CANISTER ON TOP OF ROOF
24. ELECTRICAL TRANSFORMER CONCRETE PAD SEE ELECTRICAL SITE PLAN, TRANSFORMER INSTALLATION BY UTILITY COMPANY
25. 30"X48" CLEAR AND LEVEL AREA, SLOPE NO TO EXCEED 2.0% AT ANY DIRECTION
26. CONSTRUCT CURB RAMP WITH CURB AT EACH SIDE. SLOPE NOT TO EXCEED 8.0% AND 2.0% CROSS SLOPE
27. CONSTRUCT CURB RAMP WITH FLARE AT EACH SIDE. SLOPE NOT TO EXCEED 8.0% AND 2.0% CROSS SLOPE SLOPE ON FLARE = 8.0% AS WELL
28. CONSTRUCT GROOVED BORDER 12" INCHES WIDE AT LEVEL SURFACE OF THE SIDEWALK AT TOP APPROXIMATELY ¾" INCH ON CENTER
29. CONSTRUCT 1,300.0 SQUARE FEET CAR WASH BUILDING & EQUIPMENT ROOM PER PLAN & ELEVATIONS AND STRUCTURAL DRAWINGS
30. INSTALL PRODUCTION DISPENSER TYPICAL OF 8 PER PLAN
31. CONSTRUCT REINFORCED CONCRETE SIDEWALK, SLOPE NOT TO EXCEED 2.0% AT ANY DIRECTION
32. INSTALL CAR WASH COIN BOX WITH GUARD POST AT EACH SIDE PER CAR WASH MANUFACTURER DRAWINGS
33. INSTALL (2) VACUUM PER MANUFACTURER REQUIREMENT
34. CONSTRUCT 8'–0" HIGH DECORATIVE BLOCK WALL ALONG REAR FACILITY PER PLAN
35. 40' ON CENTER PLANTINGS FOR STREET TREES. MINIMUM CONTAINER SIZE IS 24" BOX. THE STREET TREE FOR PERRIS BOULEVARD IS THE TULIP TREE AND THE STREET TREE FOR COTTONWOOD AVENUE IS THE JARACANDA.
36. NOT USED
37. CURB RAMP WITH FLARE AT BOTH SIDES WILL BE RECONSTRUCTED TO MEET CURRENT ACCESSIBILITY REQUIREMENTS WITH 8.33% SLOPE AND 2.0% CROSS SLOPE ON CURB RAMP 8.33% SLOPE ON FLARES WITH GROOVED BOARDER & 36" INCHES MINIMUM DETECTABLE WARNING
38. INSTALL SIGN FOR 9'–0"X18'–0" CARPOOL/VAN POOL LOW–EMITTING FUEL–EFFICIENT PARKING
39. INSTALL POLE WITH 208 / 240 V, 40 AMP GROUNDED AC OUTLET PER ELECTRICAL DRAWINGS
40. INSTALL 36" TALL BERM, OR HEDGE TO SCREEN THESE PARKING SPACES
41. CONSTRUCT CONCRETE SIDEWALK WITH CONCRETE CURB AND GUTTER ON COTTONWOOD AVENUE AND PERRIS BLVD PER CITY STANDARD
42. INSTALL 6" PLANTER CURB.
43. RELOCATE EXISTING POWER POLE.
44. NEW GUTTER.
45. NEW STREET LIGHT.
46. AN EASEMENT FOR PIPELINES AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED MAY 10, 1950 AS INSTRUMENT NO. 1417 OF OFFICIAL RECORDS. (THIS ITEM IS PLOTTED HEREON AND DOES AFFECT THE SUBJECT PROPERTY.)
47. AN EASEMENT FOR UNDERGROUND STORM DRAIN, INGRESS AND EGRESS AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED MAY 07, 1999 AS INSTRUMENT NO. 197495 OF OFFICIAL RECORDS. (THIS ITEM IS PLOTTED HEREON AND DOES AFFECT THE SUBJECT PROPERTY.)

DIRECTIONAL ARROW/ GRAPHIC SCALE



GRAPHIC SCALE: 1"=30'

VICINITY MAP



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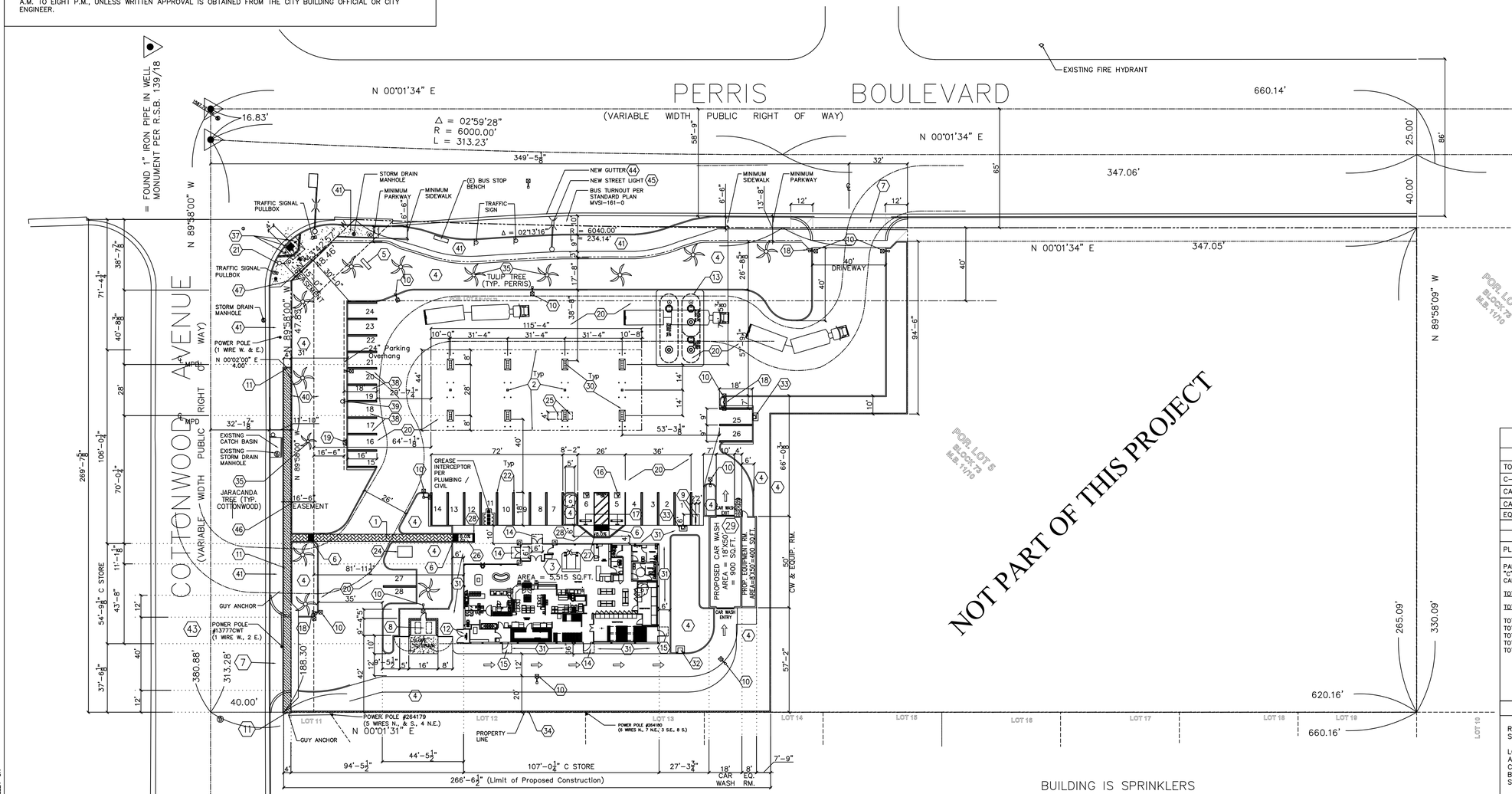


BUILDING IS SPRINKLERS

ALLOWABLE HEIGHT AND BUILDING AREA PER TABLE 503

ITEM	TYPE OF CONSTRUCTION	USE GROUP	MAX. AREA SQ. FT	MAX. HEIGHT FT.	MAX. HEIGHT PROVIDED	STORY PROVIDED	AREA PROVIDED SQ.FT.
C STORE	V–B	M	9,000	40	27'–0"	ONE	5,515.0
CANOPY	II–B	M	9,000	40	20'–6"	ONE	4,278.0
CAR WASH WITH EQPT. ROOM	V–B	B	9,000	40	15'–6"	ONE	1,300.0

SALES AREA	STOCK/UTILITY/CABINETS
1394.0 : 30 =47	4,121.0 : 300 =14

MAXIMUM ACCESS TRAVEL DISTANCE PER TABLE 1021.2(2) = 75 FEET
MAXIMUM ACCESS TRAVEL DISTANCE IS =61'–0"

MAXIMUM OCCUPANT LOAD PER TABLE 1015.01
A=49

TOTAL OCCUPANT LOAD = 61 3– EXIST DOORS PROVIDED

SITE INFORMATION

ITEM	SIZE	LOT %	AREA (SQ.FT.)
TOTAL LOT AREA	N/A	N/A	77,155= 1.77 AC
C–STORE	AS SHOWN	7.14	5,515.00
CANOPY	115'–4" x 44'–0"	6.57	5,075.00
CAR WASH	18'–0" x 50'–0"	1.17	900.00
EQUIPMENT ROOM	8'–0" x 50'–0"	0.52	400.00
PLANTER AREA	N/A	26.41	20,388.00

PARKING CALCULATIONS:
"C" STORE, 1:225, 5,515:225 = 24.5
CAR WASH, 1:250, 900:250 = 3.6

TOTAL PARKING REQUIRED = 28

TOTAL PARKING PROVIDED AS FOLLOWINGS = 28

TOTAL OF 4 (9'X16') W/ 2' O.H. FUEL EFFICIENT CARPOOL / VANPOOL PARKING =28X8%=3
TOTAL OF 2 (2'X6') BICYCLE PARKING = 28 X 5% = 2
TOTAL OF 2(18'X28') DISABILITY PARKING SPACE = 101 : 150 REQUIRED 5 PER TABLE 11B–208.2
TOTAL OF 16 (9'X18') STANDARD PARKING STALL
TOTAL OF 10 (9'X16') W/ 2' O.H. PARKING STALL (11 FUEL EFFICIENT PARKING INCLUDED)

APN 479–140–023
CASE NUMBER: PA15–0030

LEGAL DESCRIPTION

REAL PROPERTY IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

LOTS 4 AND 5 IN BLOCK 73 AS SHOWN BY MAP NO. 1 OF BEAR VALLEY AND ALESSANDRO DEVELOPMENT COMPANY, IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 11, PAGE 10 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY;

EXCEPT THE EASTERLY 330.00;

ALSO EXCEPT THAT PORTION CONVEYED TO THE COUNTY OF RIVERSIDE BY DEED RECORDED JULY 10, 1972 AS INSTRUMENT NO. 89941 OF OFFICIAL RECORDS.

APN: 479–140–023–2; 479–140–024–3; 479–131–012–4

THIS SURVEY IS FOR A PORTION OF LOT 5 OF THE ABOVE DESCRIPTION ONLY PER TITLE REPORT IDENTIFIED AS FIRST AMERICAN TITLE COMPANY, ORDER NO. LDT–4808606, DATED FEBRUARY 11, 2015.

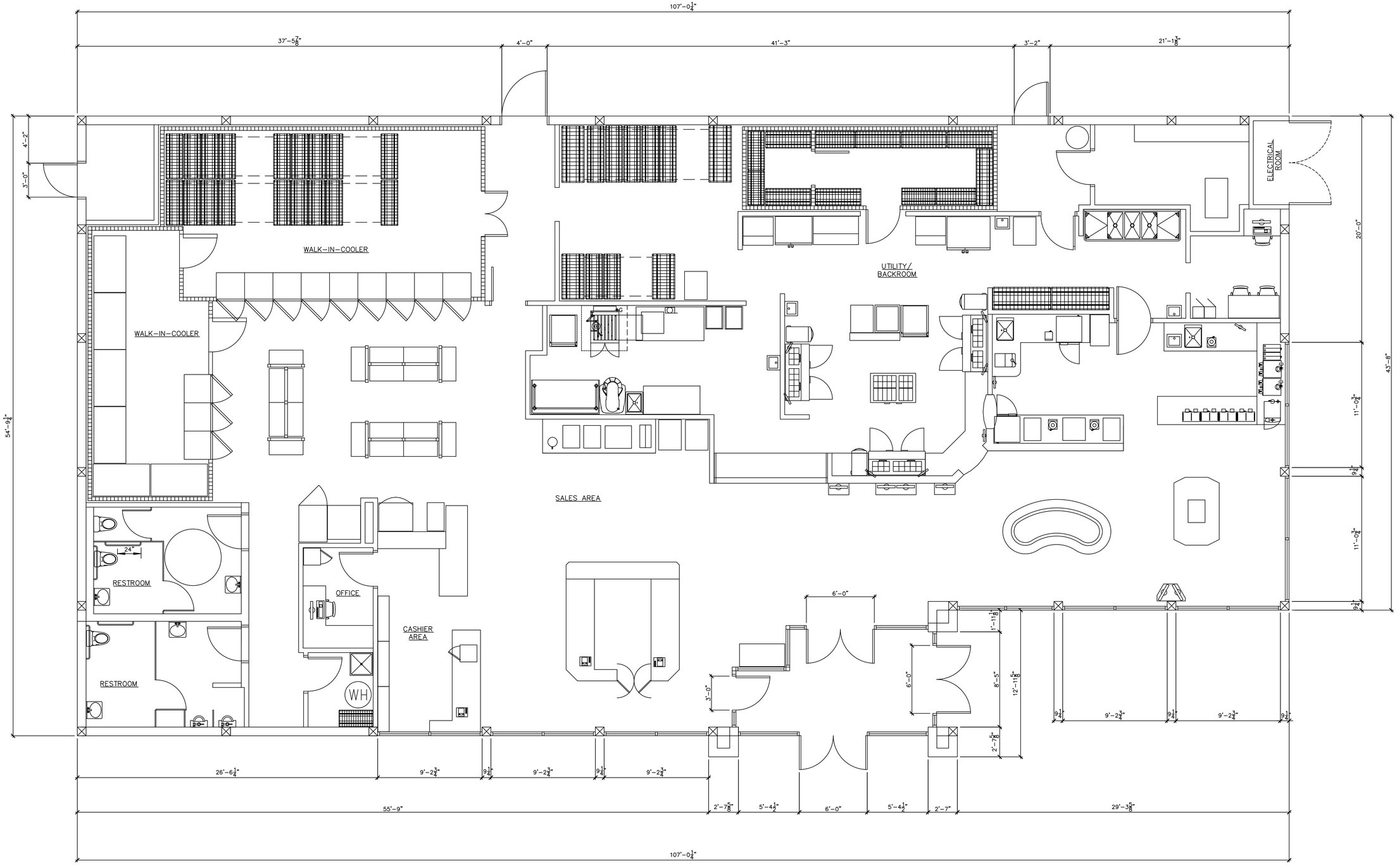
PLANS PREPARED BY:
A & S ENGINEERING INC.
PLANNING ENGINEERING CONSTRUCTION MANAGEMENT
28405 SAND CANYON ROAD, SUITE B
CANYON COUNTRY, CA 91387
PHONE #: (661) 250–9300; FAX #: (661) 250–9333

REGISTERED PROFESSIONAL ENGINEER — CIVIL — NO. 36475 EXP. 6–30–20 — STATE OF CALIFORNIA

YUM YUM DONUT
ADDRESS: 18830 SAN JOSE AVENUE, CITY OF INDUSTRY, CA 91748
STORE #: –
ADDRESS: CORNER OF PERRIS BLVD. & COTTONWOOD A.VE. MORENO VALLEY, CA 92553

DRAWN	HOSS FARZAD
CHECKED	HF
DATE	01–22–2016
SHT. TITLE	PROPOSED SITE PLAN
JOB NUMBER	–
SHEET	PS1

Attachment: Project Plans [Revision 1] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT OF A DONUT STOR)



PROPOSED FLOOR PLAN

SCALE : 1/4" = 1'-0"

REVISIONS	BY
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PLANS PREPARED BY:
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28405 SAND CANYON ROAD, SUITE B
CANYON COUNTRY, CA 91387
PHONE #: (661) 250-9300; FAX #: (661) 250-9333

REGISTERED PROFESSIONAL ENGINEER
GHADIR
NO. 36475
EXP. 6-30-20
CIVIL
STATE OF CALIFORNIA

YUM YUM DONUT

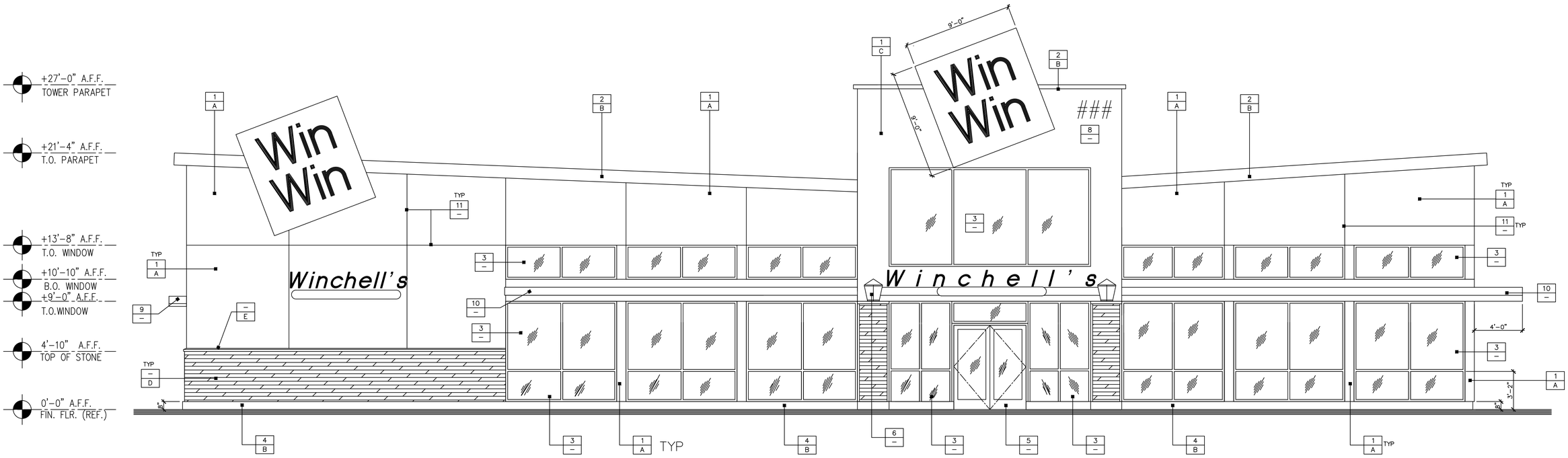
ADDRESS: 18830 EAST SAN JOSE AVENUE
CITY OF INDUSTRY, CA 91748

STORE #: -
ADDRESS: CORNER OF PERRIS BLVD & COTTONWOOD AVENUE
MORENO VALLEY, CA 92553

DRAWN	HOSS FARZAD
CHECKED	HF
DATE	07/07/2015
SHT. TITLE	PROPOSED FLOOR PLAN
JOB NUMBER	-
SHEET	A1

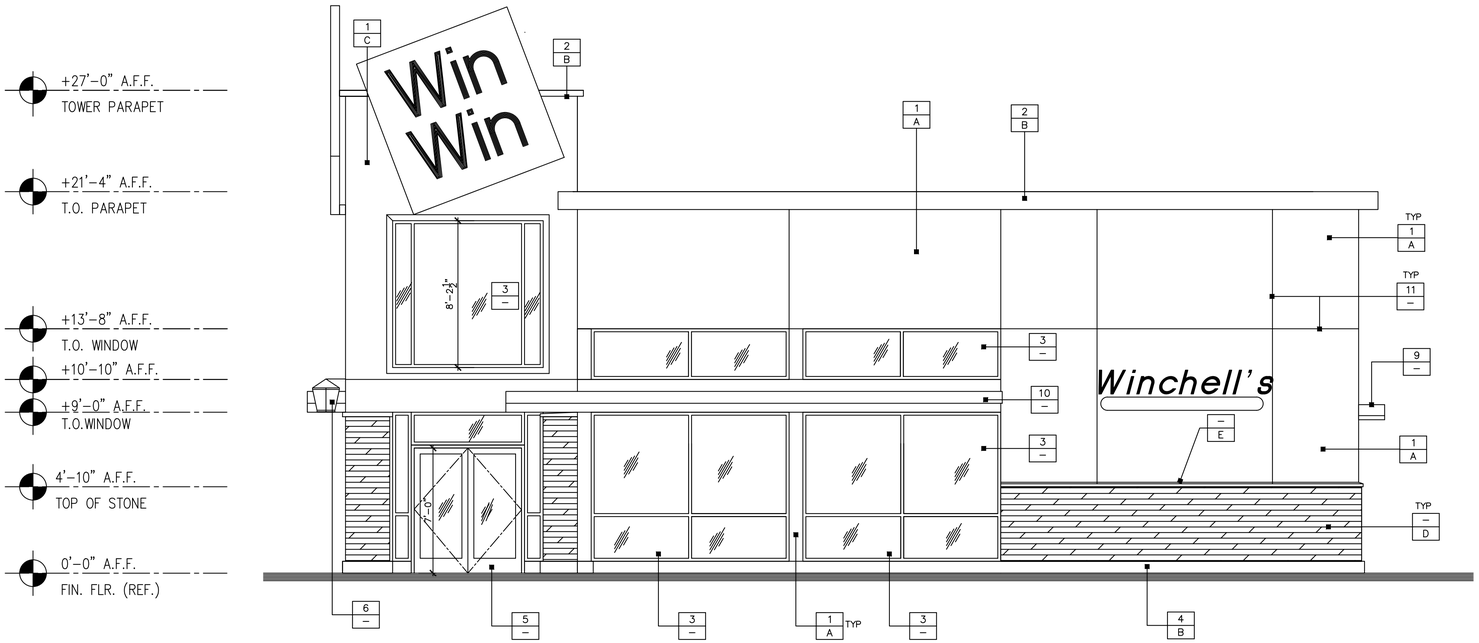
Attachment: Project Plans [Revision 1] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT OF A DONUT STOR)

H:\YUM YUM DONUTS N. SUNSET LA PUENTE CA



FRONT (EAST) ELEVATION

SCALE : $\frac{1}{4}$" = 1'-0"



RIGHT SIDE (NORTH) ELEVATION

SCALE : $\frac{1}{4}$" = 1'-0"

ELDORADO STONE / TRIM INSTALLATION ESR-1215, OCT. 1, 15 PER CBC 1405.6.2

A 2-INCH BY 2-INCH 0.0625-INCH CORROSION-RESISTANT WIRE MESH WITH TWO LAYERS OF WATER RESISTIVE BARRIER IN ACCORDANCE WITH SECTION 1404.2 SHALL BE APPLIED DIRECTLY TO WOOD STUDS SPACED A MAXIMUM OF 16 INCHES O.C. ON STUDS, THE MESH SHALL BE ATTACHED WITH 2-INCH-LONG CORROSION RESISTANT STEEL WIRE FURRING NAILS AT 4-INCHES O.C. PROVIDING A MINIMUM 1.125 INCH PENETRATION INTO EACH STUD AND WITH 8d COMMON NAILS AT 8 INCHES O.C. INTO TOP AND BOTTOM PLATES OR WITH EQUIVALENT WIRE TIES. THERE SHALL BE NOT LESS THAN A 0.1055-INCH CORROSION RESISTANT WIRE, OR APPROVED EQUAL, LOOPED THROUGH THE MESH FOR EVERY 2 SQUARE FEET OF STONE VENEER. THIS TIE SHALL BE A LOOP HAVING LEGS NOT LESS THAN 15 INCHES IN LENGTH, SO BENT THAT IT WILL LIE IN THE STONE VENEER MORTAR JOINT. THE LAST 2 INCHES OF EACH WIRE LEG SHALL HAVE A RIGHT ANGLE BEND. ONE INCH MINIMUM THICKNESS OF CEMENT GROUT SHALL BE PLACED BETWEEN THE BACKING AND THE STONE VENEER.

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3. ALL FASTENERS SHALL BE GALVANIZED.
4. STUCCO FINISH PER EXTERIOR MATERIALS
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SEALERS (REFER TO MANUFACTURER SPECIFICATION)

1. SEALANT AT ALL WALL AND ROOF PENETRATIONS.
2. SEALANT AT ALL WINDOWS AND DOOR FRAMES AT HEAD, SILL AND JAMB.

EXTERIOR MATERIALS

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2 –	20 GAUGE PARAPET WALL CAP FLASHING
3 –	GRAY COLOR TEMPERED SAFETY GLASS & ALUMINUM WINDOW FRAME
4 –	8" CONCRETE BASE
5 –	GRAY COLOR TEMPERED SAFETY STOREFRONT DOORS & FRAME
6 –	EXTERIOR WALL MOUNTED LIGHT FIXTURE, PROVINCIAL LANTERN 9" WIDE CURVED ARM SEE ELECTRICAL DRAWINGS
7 –	NOT USED
8 –	5" INCHES HIGH X 2 INCHES WIDE WITH 1/2" INCH STROKE BUILDING ADDRESS NUMBERS. VERIFY WITH FIRE INSPECTOR PRIOR TO INSTALLATION
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11 –	"CEMCO" STUCCO EXPANSION JOINT TYP.
12 –	INSULATED HOLLOW METAL DOOR FRAME AND DOOR

EXT. COLORS AND FINISHES

– A	PAINT – FRAZEE – 7750W BEACH BASKET
– B	PAINT – SHERWIN WILLIAMS – SW1105 TORTOISE
– C	PAINT – SHERWIN WILLIAMS – SW2185 TOWER TAN
– D	EL DORADO STONE – MOUNTAIN LEDGE – BUCKSKIN INSTALL PER SPEC. ON THIS DRAWING "ESR-1215"
– E	ELDORADO STONE – CHISELED EDGE WAINSCOT SILL – BUCKSKIN INSTALL PER SPEC. ON THIS DRAWING "ESR-1215"

REVISIONS	BY
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PLANS PREPARED BY:
A & S ENGINEERING INC.
PLANNING ENGINEERING CONSTRUCTION MANAGEMENT
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PHONE #: (661) 250-9300; FAX #: (661) 250-9333

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CITY OF INDUSTRY, CA 91748

STORE #: –
ADDRESS: CORNER OF PERRIS BLVD & COTTONWOOD AVENUE
MERONO VALLEY, CA 92553

DRAWN
HOSS FARZAD
CHECKED
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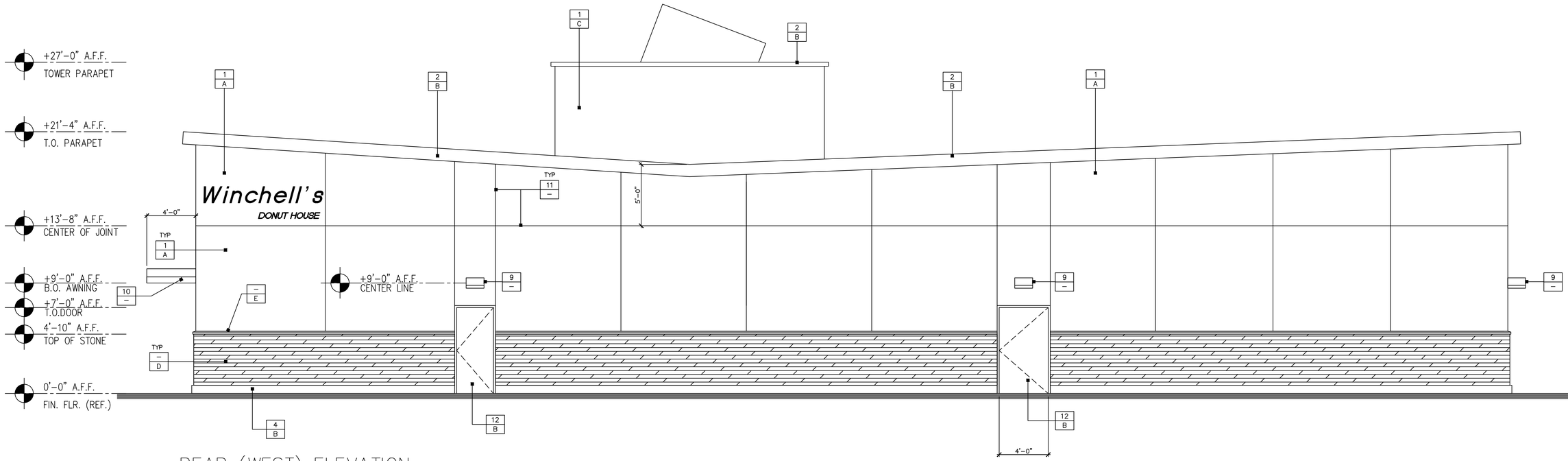
DATE
07/20/2015
SHT. TITLE
PROPOSED EXTERIOR BUILDING ELEVATIONS
JOB NUMBER
–
SHEET
A2.1

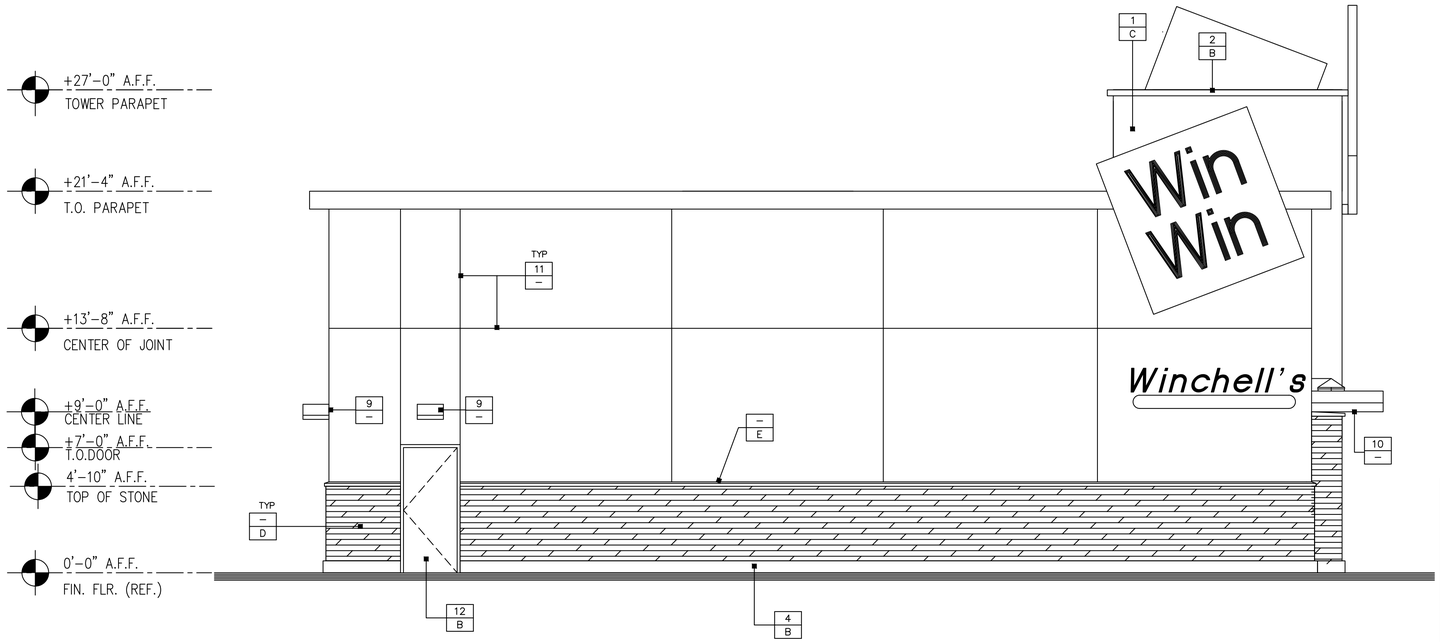
H:\YUM YUM DONUTS MORENO VALLEY CA

Attachment: Project Plans [Revision 1] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT OF A DONUT STOR)



REAR (WEST) ELEVATION

SCALE : $\frac{1}{4}$" = 1'-0"



LEFT SIDE (SOUTH) ELEVATION

SCALE : $\frac{1}{4}$" = 1'-0"

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07/20/2015
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JOB NUMBER
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SHEET
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H:\YUM YUM DONUTS MORENO VALLEY CA

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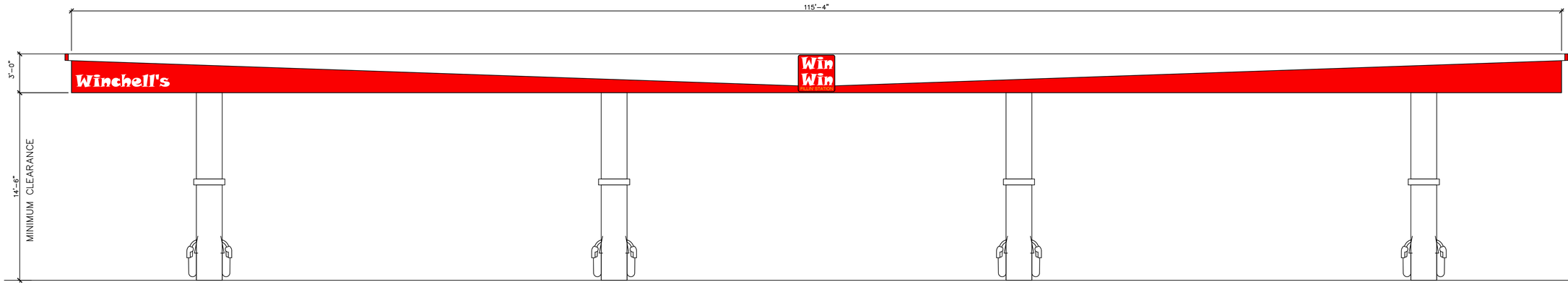
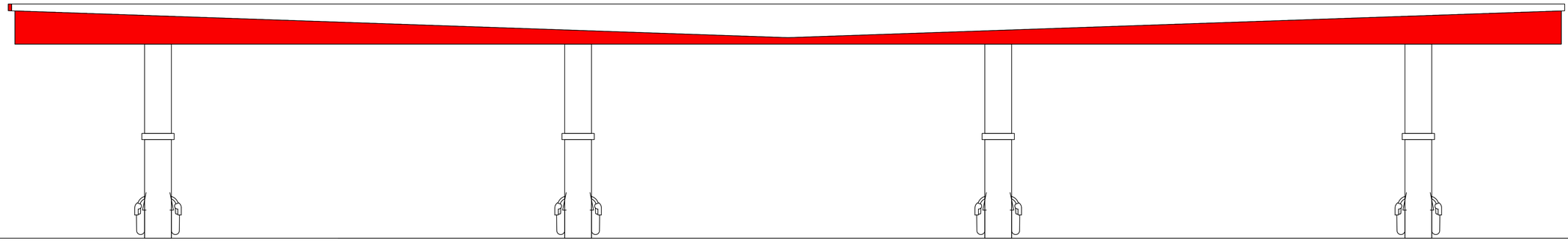


WEST ELEVATION
SCALE : 1/4" = 1'-0"



EAST ELEVATION
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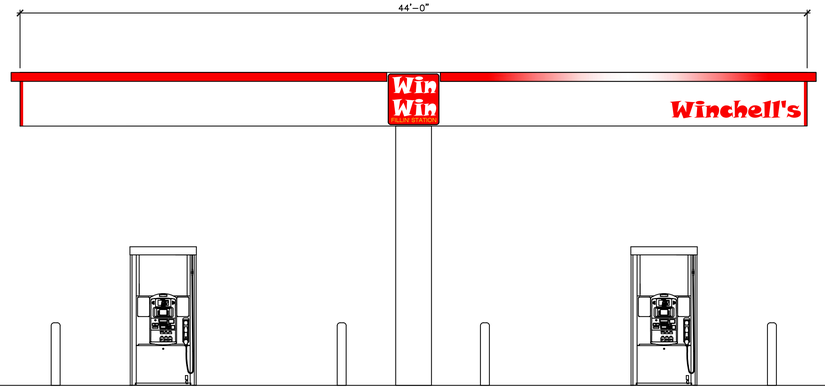
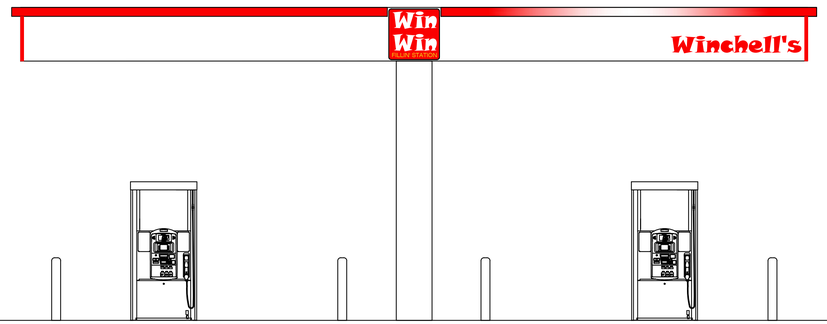


NORTH ELEVATION
SCALE : 1/4" = 1'-0"



SOUTH ELEVATION
SCALE : 1/4" = 1'-0"

REVISIONS	BY
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DRAWN	HOSS FARZAD
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DATE	04/10/2015
SHT. TITLE	PROPOSED CANOPY ELEVATIONS
JOB NUMBER	–
SHEET	A2.3

H:\YUM YUM DONUTS N. SUNSET La PUENTE CA

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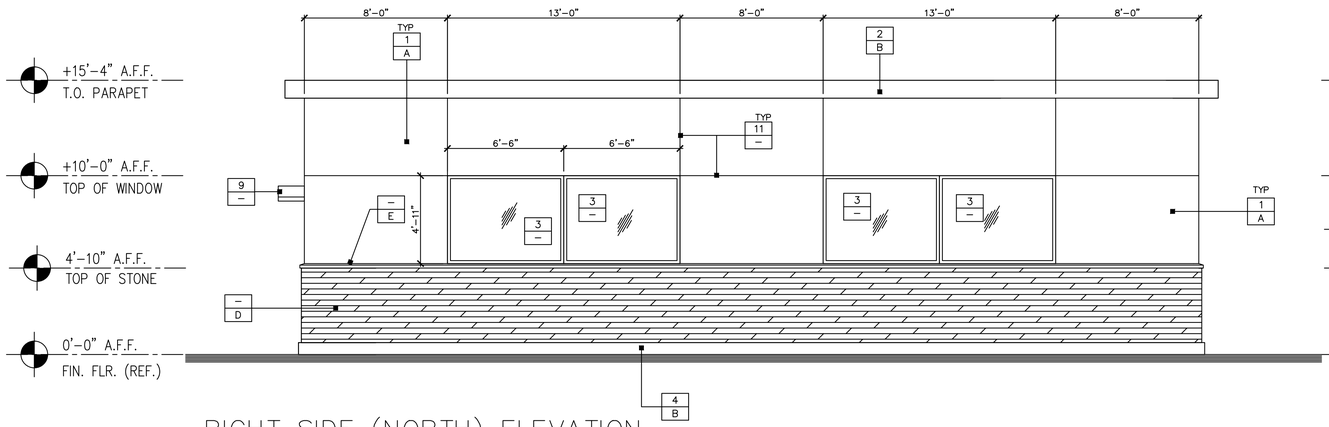
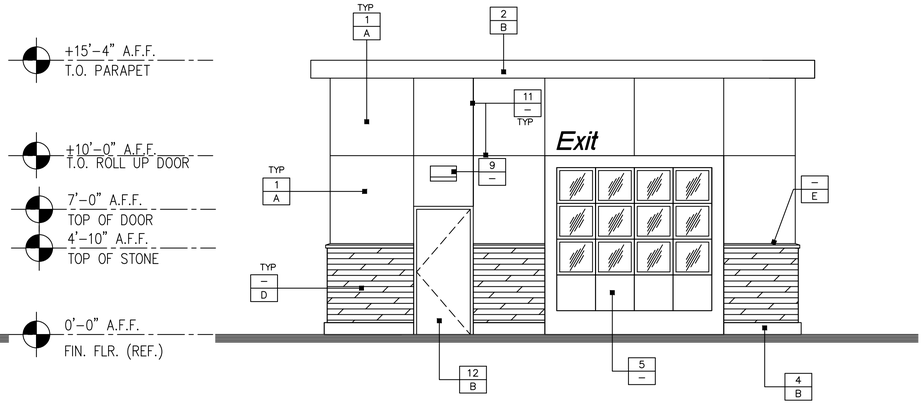


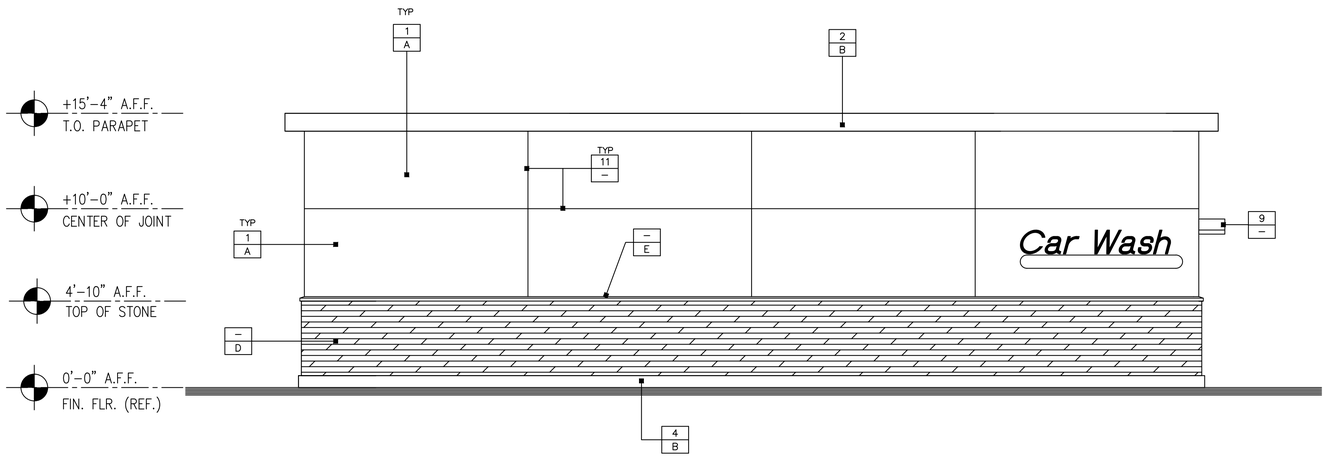
RIGHT SIDE (NORTH) ELEVATION

SCALE : 1/4" = 1'-0"



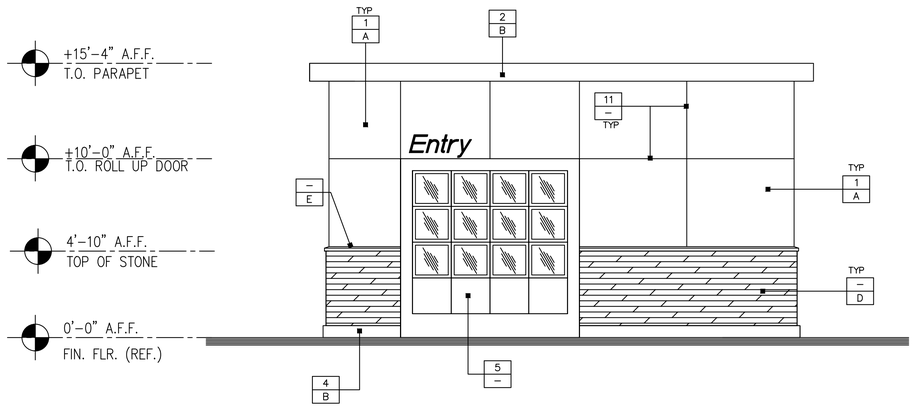
CAR WASH EXIT (EAST) ELEVATION

SCALE : 1/4" = 1'-0"



LEFT SIDE (SOUTH) ELEVATION

SCALE : 1/4" = 1'-0"



CAR WASH ENTRY (WEST) ELEVATION

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6 / –	EXTERIOR WALL MOUNTED LIGHT FIXTURE, PROVINCIAL LANTERN 9" WIDE CURVED ARM SEE ELECTRICAL DRAWINGS
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DRAWN	HOSS FARZAD
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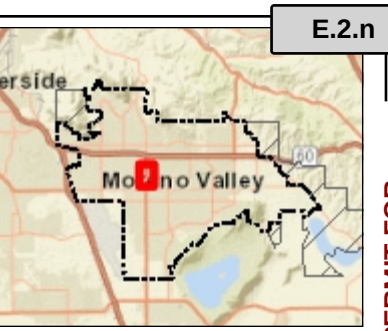
DATE	07/20/2015
SHT. TITLE	PROPOSED EXTERIOR CAR WASH ELEVATIONS
JOB NUMBER	–
SHEET	A2.4

Attachment: Project Plans [Revision 1] (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT OF A DONUT STOR)

H:\YUM YUM DONUTS N. SUNSET LA PUENTE CA

Location Map



Legend

Public Facilities
- Public Facilities
- Fire Stations

Parcels

City Boundary

Sphere of Influence

Notes

1,261.9 0 630.96 1,261.9 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere

Print Date: 7/12/2018

DISCLAIMER: The information shown on this map was compiled from the City of Moreno Valley GIS and Riverside County GIS. The land base and facility information on this map is for display purposes only and should not be relied upon without independent verification as to its accuracy. Riverside County and City of Moreno Valley will not be held responsible for any claims, losses or damages resulting from the use of this map.

Attachment: Project Location Map (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Attachment: Air Quality and Green House Gas Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE

Appendix A

Air Quality and Greenhouse Gas Emissions Technical Report

Attachment: Air Quality and Green House Gas Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE

Yum Yum Donuts Moreno Valley Project

Air Quality and Greenhouse Gas Emissions Technical Report

March 2018 | ASE-01

Prepared for:

A & S Engineering
28405 Sand Canyon Road, Suite "B"
Canyon County, CA 91387

Prepared by:

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

Attachment: Air Quality and Green House Gas Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE

Yum Yum Donuts Moreno Valley Project

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Canyon County, CA 91387

Prepared by:

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7578 El Cajon Boulevard
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March 2018 | ASE-01

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ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
ADT	average daily trips
AQMP	Air Quality Management Plan
C_2F_6	hexafluoroethane
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
CalEEMod	California Emissions Estimator Model
CALGreen	California Green Building Standards Code
CAP	Climate Action Plan
CARB	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CF_4	tetraflouromethane
CFC	chlorofluorocarbon
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
County	Riverside County
DPM	diesel particulate matter
EIR	Environmental Impact Report
EO	Executive Order
GHG	greenhouse gas
GWP	global warming potential
H_2S	hydrogen sulfide
HFC	hydrofluorocarbon
HI	Hazard Index
HRA	health risk assessment
I-	Interstate
IPCC	Intergovernmental Panel on Climate Change
LCFS	Low Carbon Fuel Standard
LOS	Level of Service
LST	localized significance threshold
mg/m^3	milligrams per cubic meter
MMT	million metric tons

Attachment: Air Quality and Green House Gas Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE

ACRONYMS AND ABBREVIATIONS (cont.)

MT	metric tons
mpg	miles per gallon
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NHTSA	National Highway Traffic Safety Administration
NO	nitrogen oxide
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NO_X	nitrogen oxides
O_3	ozone
Pb	lead
PFC	perfluorocarbon
PM	particulate matter
PM_{10}	particulate matter less than 10 microns
$PM_{2.5}$	particulate matter less than 2.5 microns
ppm	parts per million
ROG	reactive organic gas
RTP	Regional Transportation Plan
SB	Senate Bill
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SF_6	hexafluoride
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_X	sulfur oxides
SRA	source receptor area
TACs	toxic air contaminants
TIA	Transportation Impact Analysis
USEPA	U.S. Environmental Protection Agency
VMT	vehicle miles traveled
VOC	volatile organic compound

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EXECUTIVE SUMMARY

This report presents an assessment of potential air quality and greenhouse gas (GHG) emission impacts during construction and operation of the proposed Yum Yum Donuts Moreno Valley Project (project), located at the corner of Perris Boulevard and Cottonwood Avenue in the City of Moreno Valley (City).

The project would result in emissions of criteria air pollutants during construction and operation. Construction emissions include fugitive dust, heavy construction equipment exhaust, and vehicle trips associated with workers commuting to and from the site and trucks hauling materials. In accordance with South Coast Air Quality Management District (SCAQMD) Rule 403, fugitive dust control measures including the use of an on-site water truck to wet down active grading areas and roads at least twice daily are incorporated into the project design. Operational sources of emissions include area, on-site energy use, and transportation. Project emissions of criteria pollutants during construction and operation would remain below SCAQMD emissions thresholds.

The project would be consistent with air quality policies set forth by the SCAQMD as presented in the most recent Air Quality Management Plan.

Project-generated traffic would not result in a carbon monoxide hot spot. Construction and operation of the project would not result in exposure of sensitive receptors to significant quantities of toxic air contaminants (TACs). In addition, evaluation of potential odors from the project indicated that associated impacts would be less than significant.

Construction sources of GHG emissions include heavy construction equipment, worker vehicle miles traveled (VMT), and water use. Operational sources of GHG emissions include area, energy, transportation, water use, and solid waste. The project would be required to comply with the 2016 Title 24 Energy Code; the 2016 California Green Building Standards Code (CALGreen); the Assembly Bill (AB) 341 solid waste diversion target of 75 percent; reduction of potable water use by 20 percent when compared to the statewide average; low-flow water and bathroom fixtures; reduction of wastewater generation by 20 percent; weather-based irrigation systems; provide areas for storage and collection of recyclables and yard waste.

The project-related construction activities are estimated to generate 76 metric tons (MT) of carbon dioxide equivalent (CO_2e). Construction emissions are amortized over 30 years, such that the proposed construction activities would contribute an average of 3 MT per year of CO_2e emissions. The project-related operational and amortized construction GHG emissions for opening year are estimated to generate 1,165 MT CO_2e. Project emissions would not exceed the GHG screening threshold of 3,000 MT CO_2e established by the SCAQMD and adopted by the City Climate Action Strategy (CAS). Therefore, the project would be consistent with the City CAS and result in a less than significant impact related to GHG emissions.

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Attachment: Air Quality and Green House Gas Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE

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1.0 INTRODUCTION

This report presents an assessment of potential air quality and greenhouse gas (GHG) emissions impacts during construction and operation of the proposed Yum Yum Donuts Moreno Valley Project (project), located in the City of Moreno Valley (City) in Riverside County (County).

1.1 PROJECT LOCATION

The project site is located at the corner of Perris Boulevard and Cottonwood Avenue and is composed of Assessor's Parcel Numbers (APNs) 479-140-023-2, 479-140-024-3, and 479-131-012-4. Project site access would be provided via driveways on both Perris Boulevard and Cottonwood Avenue. Surrounding land uses include single-family residences to the east, a commercial area across Perris Boulevard to the west, a church across Cottonwood Avenue to the south, and a vacant lot to the north. Interstate (I-) 215 is located approximately 3.5 miles east of the project site (see Figure 1, *Regional Location*, and Figure 2, *Aerial Photograph*).

1.2 PROJECT DESCRIPTION

The project proposes to develop a 3.77-acre vacant lot for a 5,515-square foot Yum Yum Donuts restaurant and convenience market with a car wash and gas station. Sixteen gas pumps through eight production dispensers would be provided and a 5,075-square foot steel canopy would be constructed above. The car wash would be 900-square feet with an adjacent 400-square foot equipment room. Additionally, two underground storage tanks would be installed in the southeast corner of the project to provide gas. The majority of the project site would be paved and would provide 28 vehicle parking spaces and 2 bicycle parking spaces. Additional improvements include signs at the access points; air, water, and vacuum units for vehicles; curb and sidewalk improvements; fire hydrant installation; and storm drain improvements. Landscaping would be maintained throughout the site. See Figure 3, *Site Plan*, for details. The project would not require demolition, as the site is currently vacant and undeveloped.

1.3 CONSTRUCTION ACTIVITIES AND PHASING

Project construction is assumed to begin in January 2019 and be completed in June 2019, for a total construction period of six months. Construction activities include site preparation, grading, installation of underground utilities, construction of structures and paving and coating of the site. Grading and underground utilities installation are expected to overlap in February 2019. During grading, export of 200 cubic yards of soil is expected. Detailed construction phasing and equipment assumptions are summarized in Section 4.1, *Methodology*, and provided in Appendix A.

Attachment: Air Quality and Green House Gas Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE

2.0 REGULATORY SETTING

2.1 AIR QUALITY

2.1.1 Criteria Pollutants

Criteria pollutants are defined by state and federal law as a risk to the health and welfare of the general public. In general, air pollutants include the following compounds:

- Ozone (O_3)
- Reactive organic gases (ROGs) or volatile organic compounds (VOCs)
- Carbon monoxide (CO)
- Nitrogen dioxide (NO_2)
- Respirable particulate matter and fine particulate matter (PM_{10} and $PM_{2.5}$)
- Sulfur dioxide (SO_2)
- Lead (Pb)

The following specific descriptions of health effects for each of the air pollutants potentially associated with project construction and operation are based on information provided by the California Air Resources Board (CARB; 2009) and the U.S. Environmental Protection Agency (USEPA; 2017a).

Ozone. Ozone is considered a photochemical oxidant, which is a chemical that is formed when VOCs and nitrogen oxides (NO_X), both by-products of fuel combustion, react in the presence of ultraviolet light. Ozone is considered a respiratory irritant and prolonged exposure can reduce lung function, aggravate asthma, and increase susceptibility to respiratory infections. Children and those with existing respiratory diseases are at greatest risk from exposure to ozone.

Reactive Organic Gases. ROGs (also known as VOCs) are compounds composed primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of ROGs. Other sources of ROGs include evaporative emissions from paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. While ROGs can be a health concern indoors, CARB regulates ROGs outdoors mainly because of their ability to create photochemical smog under certain conditions.

Carbon Monoxide. CO is a by-product of fuel combustion. CO is an odorless, colorless gas. CO affects red blood cells in the body by binding to hemoglobin and reducing the amount of oxygen that can be carried to the body's organs and tissues. CO can cause health effects to those with cardiovascular disease and can also affect mental alertness and vision.

Nitrogen Dioxide. NO_2, a species of the aforementioned NO_X, is also a by-product of fuel combustion and is formed both directly as a product of combustion and in the atmosphere through the reaction of nitrogen oxide (NO) with oxygen. NO_2 is a respiratory irritant and may affect those with existing respiratory illness, including asthma. NO_2 can also increase the risk of respiratory illness.

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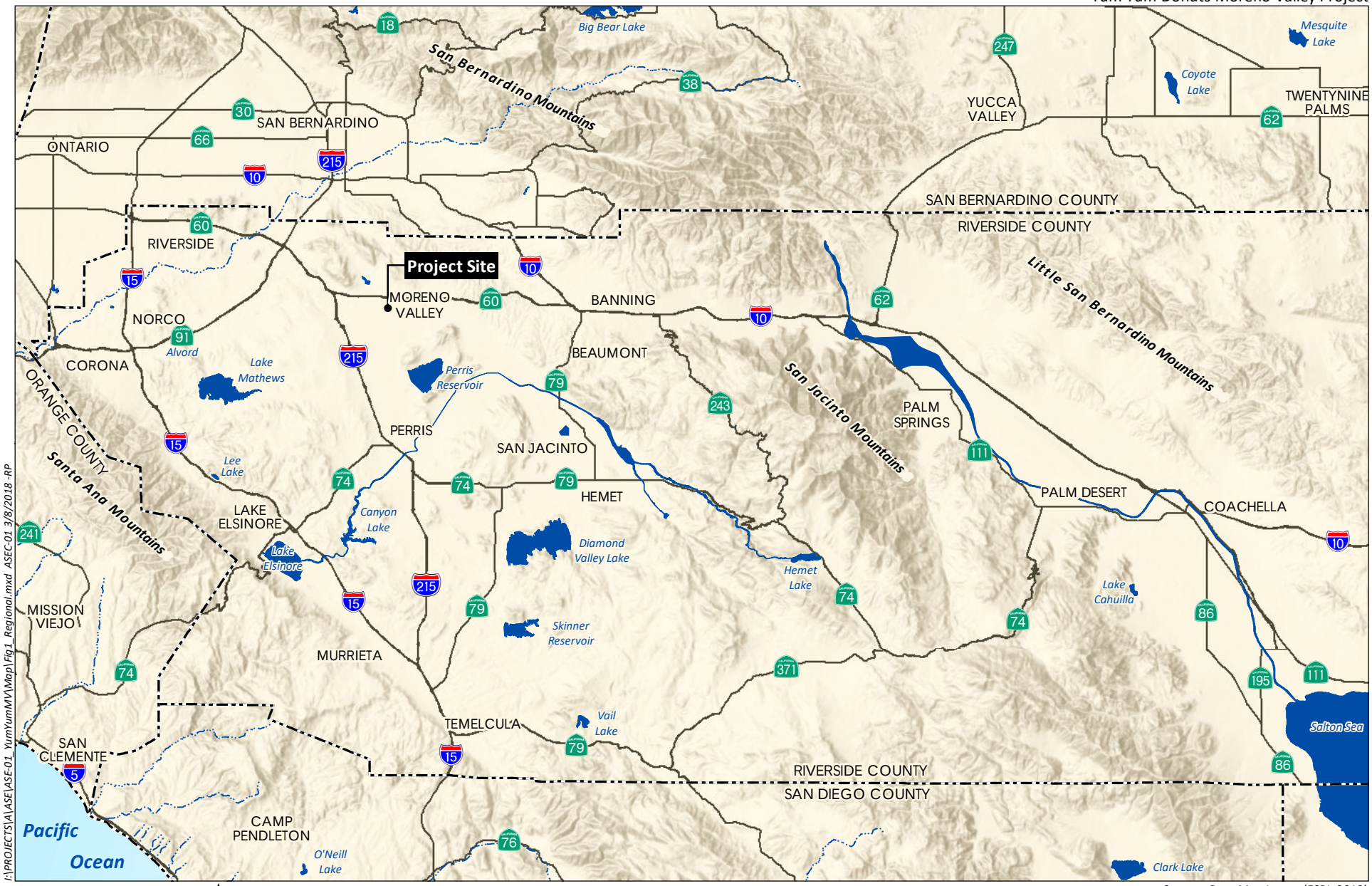
Yum Yum Donuts Moreno Valley Project



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0 10 Miles

Source: Base Map Layers (ESRI, 2013)

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Regional Location

Figure 1

Attachment: Air Quality and Green House Gas Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE

Yum Yum Donuts Moreno Valley Project

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0 100 Feet

Source: Base Map Layers (Eagle, 2014)

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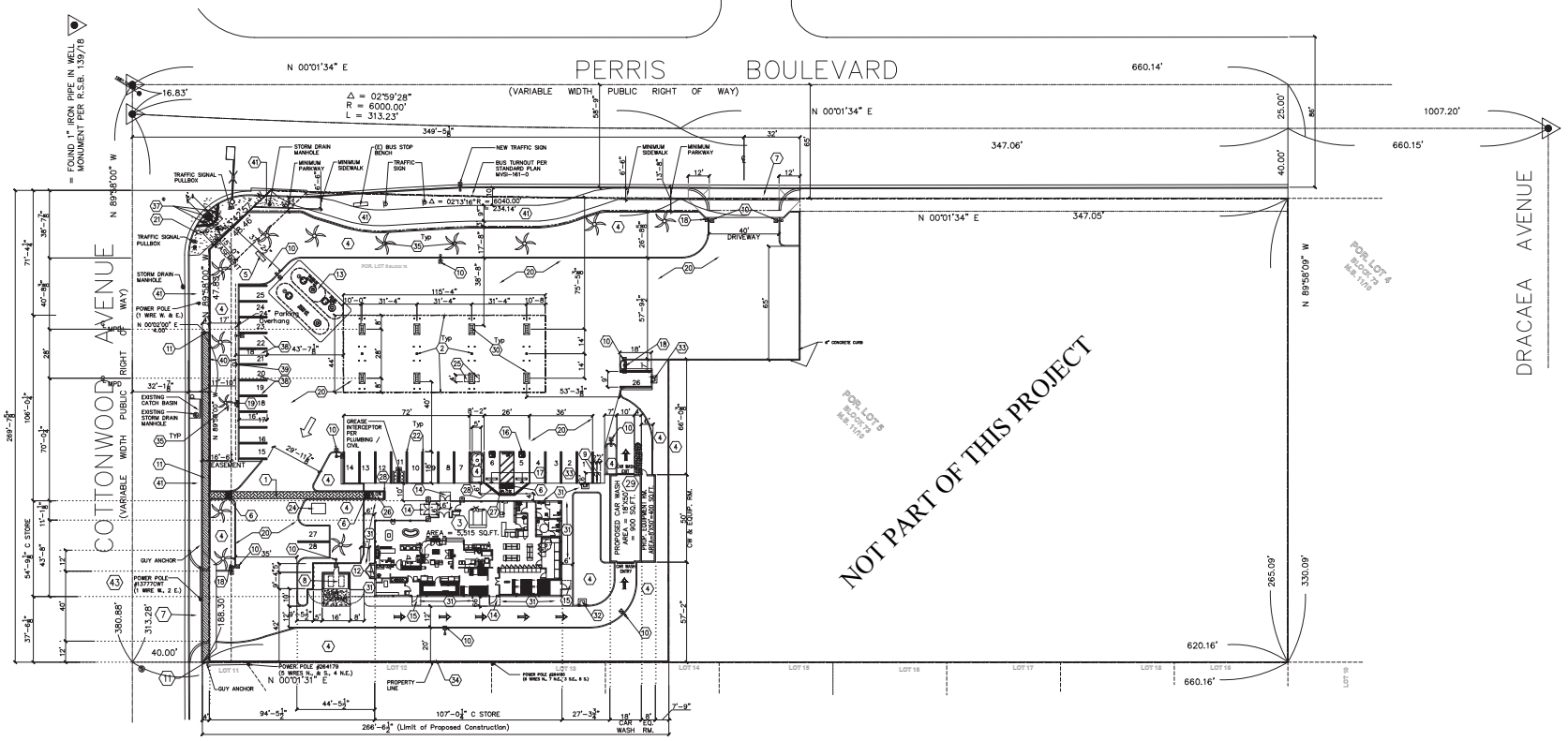
Aerial Photograph

Figure 2

Attachment: Air Quality and Green House Gas Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE

SCOPE OF WORK

1. INSTALL 48" MINIMUM ACCESSIBLE ROUTE (MISSION RED, INTERLOCKING DECORATIVE PAVING) SLOPE NOT TO EXCEED 4.5% WITH MAXIMUM 2.0% CROSS SLOPE
2. CONSTRUCT 5,075.0 SQUARE FEET, 4-COLUMNS STEEL CANOPY PER PLAN & ELEVATIONS
3. CONSTRUCT 5,515.0 SQUARE FEET BUILDING PER PLAN & ELEVATIONS AND STRUCTURAL DRAWINGS
4. CONSTRUCT LANDSCAPE & PLANTING AREA PER PLAN & LANDSCAPE DRAWINGS.
5. INSTALL NEW MONUMENT SIGN WITH PRICE SIGN PER PLAN. SIGNS ARE UNDER SEPARATE PERMIT.
6. INSTALL MINIMUM 36" WIDE YELLOW COLOR DETECTABLE WARNING PER PLAN AND CBC FIGURE 11B-705.1
7. CONSTRUCT (2) DRIVEWAYS PER CITY OF MORENO VALLEY STANDARD PLAN MVS1-112C-0 (OLD 118-C)
8. CONSTRUCT 9'-4"X16'-0"X9'-0" HIGH STUCCO FINISH CMU TRASH ENCLOSURE WITH SOLID ROOF COVER & DOUBLE STEEL GATE PER PLAN AND CITY STANDARD PLAN MVGF-660A-0 OPTION 1
9. STRIPE (8)-2'-6"X6'-0" BICYCLE PARKING SPACES WITH REQUIRED BIKE U RACK PER PLAN
10. INSTALL YARD LIGHTS PER ELECTRICAL DRAWINGS
11. 4'-0" DEDICATION PER PLAN
12. INSTALL MAIN SWITCH BOARD INSIDE ENLOSURE MATCH BUILDING PER ELECTRICAL DRAWINGS.
13. PROPOSED LOCATION FOR UNDERGROUND STORAGE TANKS
14. 6'-0"X5'-0" CLEAR AND LEVEL AREA SLOPE NOT TO EXCEED 2.0% AT ANY DIRECTION. FLOOR NOT MORE THAN ½" LOWER THAN THE THRESHOLD
15. 5'-0"X5'-0" CLEAR AND LEVEL AREA SLOPE NOT TO EXCEED 2.0% AT ANY DIRECTION. FLOOR NOT MORE THAN ½" LOWER THAN THE THRESHOLD
16. STRIPE 18'-0"X26'-0" DISABILITY PARKING SPACE PER PLAN. SLOPE NOT TO EXCEED 2.0% AT ANY DIRECTION
17. INSTALL DISABILITY PARKING SIGNS PER PLAN
18. INSTALL ADDITIONAL SIGN AT EACH ENTRANCE TO OFF STREET PARKING FACILITIES OR IMMEDIATELY ADJACENT AND VISIBLE FROM EACH ACCESSIBLE STALL OR SPACE PER PLAN
19. INSTALL AIR AND WATER UNIT PER PLAN, WITH FREE SIGN ON UNIT
20. CONSTRUCT REINFORCED CONCRETE PAVING AT THE ENTIRE OF SITE PER SOIL REPORT AND CIVIL DRAWINGS
21. INSTALL FIRE HYDRANT PER FIRE DEPARTMENT REQUIREMENT (6"X4"X2.5"X2.5")
22. STRIPE STANDARD PARKING STALLS PER CITY STANDARD FIGURE 9.11.080-6
23. INSTALL CANISTER ON TOP OF ROOF
24. ELECTRICAL TRANSFORMER CONCRETE PAD SEE ELECTRICAL SITE PLAN, TRANSFORMER INSTALLATION BY UTILITY COMPANY
25. 30"X48" CLEAR AND LEVEL AREA, SLOPE NO TO EXCEED 2.0% AT ANY DIRECTION
26. CONSTRUCT CURB RAMP WITH CURB AT EACH SIDE. SLOPE NOT TO EXCEED 8.0% AND 2.0% CROSS SLOPE
27. CONSTRUCT CURB RAMP WITH FLARE AT EACH SIDE. SLOPE NOT TO EXCEED 8.0% AND 2.0% CROSS SLOPE SLOPE ON FLARE = 8.0% AS WELL
28. CONSTRUCT GROOVED BORDER 12" INCHES WIDE AT LEVEL SURFACE OF THE SIDEWALK AT TOP APPROXIMATELY 2" INCH ON CENTER
29. CONSTRUCT 1,300.0 SQUARE FEET CAR WASH BUILDING & EQUIPMENT ROOM PER PLAN & ELEVATIONS AND STRUCTURAL DRAWINGS
30. INSTALL PRODUCTION DISPENSER TYPICAL OF 8 PER PLAN
31. CONSTRUCT REINFORCED CONCRETE SIDEWALK, SLOPE NOT TO EXCEED 2.0% AT ANY DIRECTION
32. INSTALL CAR WASH COIN BOX WITH GUARD POST AT EACH SIDE PER CAR WASH MANUFACTURER DRAWINGS
33. INSTALL (2) VACUUM PER MANUFACTURER REQUIREMENT
34. CONSTRUCT 8'-0" HIGH DECORATIVE BLOCK WALL ALONG REAR FACILITY PER PLAN
35. ONE FOOT MINIMUM, AND 2 FEET MAXIMUM STREET TREE PER NOTE #30 ON ATTACHED.
36. NOT USED
37. CURB RAMP WITH FLARE AT BOTH SIDES WILL BE RECONSTRUCTED TO MEET CURRENT ACCESSIBILITY REQUIREMENTS WITH 8.33% SLOPE AND 2.0% CROSS SLOPE ON CURB RAMP 8.33% SLOPE ON FLARES WITH GROOVED BOARDER & 36" INCHES MINIMUM DETECTABLE WARNING
38. INSTALL SIGN FOR 9'-0"X18'-0" CARPOOL/VAN POOL LOW-EMITTING FUEL-EFFICIENT PARKING
39. INSTALL POLE WITH 20B / 240 V, 40 AMP GROUNDED AC OUTLET PER ELECTRICAL DRAWINGS
40. INSTALL 36" TALL BERM, OR HEDGE TO SCREEN THESE PARKING SPACES
41. CONSTRUCT CONCRETE SIDEWALK WITH CONCRETE CURB AND GUTTER ON COTTONWOOD AVENUE AND PERRIS BLVD PER CITY STANDARD
42. INSTALL 6" PLANTER CURB.
43. RELOCATE EXISTING POWER POLE.



Source: A & S Engineering, 2018

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Site Plan

Figure 3

Respirable Particulate Matter and Fine Particulate Matter. Respirable particulate matter, or PM_{10}, refers to particulate matter with an aerodynamic diameter of 10 microns or less. Fine particulate matter, or $PM_{2.5}$, refers to particulate matter with an aerodynamic diameter of 2.5 microns or less. Particulate matter in these size ranges have been determined to have the potential to lodge in the lungs and contribute to respiratory problems. PM_{10} and $PM_{2.5}$ arise from a variety of sources, including road dust, diesel exhaust, fuel combustion, tire and brake wear, construction operations, and windblown dust. PM_{10} and $PM_{2.5}$ can increase susceptibility to respiratory infections and can aggravate existing respiratory diseases such as asthma and chronic bronchitis. $PM_{2.5}$ is considered to have the potential to lodge deeper in the lungs. Particulate matter originating from diesel exhaust, diesel particulate matter (DPM), discussed in further detail below, is classified a carcinogen by CARB.

Sulfur dioxide. SO_2 is a colorless, reactive gas that is produced from the burning of sulfur-containing fuels such as coal and oil and by other industrial processes. Generally, the highest concentrations of SO_2 are found near large industrial sources. SO_2 is a respiratory irritant that can cause narrowing of the airways leading to wheezing and shortness of breath. Long-term exposure to SO_2 can cause respiratory illness and aggravate existing cardiovascular disease.

Lead. Lead in the atmosphere occurs as particulate matter. With the phase-out of leaded gasoline, large manufacturing facilities are the sources of the largest amounts of lead emissions. Lead is also present in some aircraft and racing fuels. Lead has the potential to cause gastrointestinal, central nervous system, kidney, and blood diseases upon prolonged exposure. Lead is also classified as a probable human carcinogen. Because emissions of lead are found only in specialty fuels and projects that are permitted by the local air district, lead is not an air quality of concern for the proposed project.

2.1.2 Toxic Air Contaminants

Toxic air contaminants (TACs) are a diverse group of air pollutants that may cause or contribute to an increase in deaths or in serious illness or that may pose a present or potential hazard to human health. TACs include both organic and inorganic chemical substances that may be emitted from a variety of common sources, including gasoline stations, motor vehicles, dry cleaners, industrial operations, painting operations, and research and teaching facilities. One of the main sources of TACs in California is diesel engines which emit exhaust containing solid material known as diesel particulate matter (DPM) (CARB 2011). TACs are different than the criteria pollutants previously discussed because ambient air quality standards have not been established for TACs. TACs occurring at extremely low levels may still cause health effects, and it is typically difficult to identify levels of exposure that do not produce adverse health effects. TAC impacts are described by carcinogenic risk and by chronic (i.e., of long duration) and acute (i.e., severe but of short duration) adverse effects on human health.

2.1.3 Federal Air Quality Regulations

2.1.3.1 Federal Clean Air Act

Air quality is defined by ambient air concentrations of specific pollutants identified by the USEPA to be of concern with respect to health and welfare of the general public. The USEPA is responsible for enforcing the Federal Clean Air Act (CAA) of 1970 and its 1977 and 1990 Amendments. The CAA required the USEPA to establish National Ambient Air Quality Standards (NAAQS), which identify concentrations of pollutants in the ambient air below which no adverse effects on the public health and welfare are anticipated. In response, the USEPA established both primary and secondary standards for several

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criteria pollutants, which are introduced above. Table 1, *Ambient Air Quality Standards*, shows the federal and state ambient air quality standards for these pollutants.

The CAA allows states to adopt ambient air quality standards and other regulations provided they are at least as stringent as federal standards. CARB has established the more stringent California Ambient Air Quality Standards (CAAQS) for the six criteria pollutants through the California Clean Air Act of 1988, and also has established CAAQS for additional pollutants, including sulfates, hydrogen sulfide (H_2S), vinyl chloride, and visibility-reducing particles. Areas that do not meet the NAAQS or the CAAQS for a particular pollutant are considered to be "nonattainment areas" for that pollutant.

Table 1
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards	Federal Standards	
			Primary[1]	Secondary[2]
O_3	1 Hour	0.09 ppm (180 µg/m^3)	–	–
	8 Hour	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3)	Same as Primary
PM_{10}	24 Hour	50 µg/m^3	150 µg/m^3	Same as Primary
	AAM	20 µg/m^3	–	Same as Primary
$PM_{2.5}$	24 Hour	–	35 µg/m^3	Same as Primary
	AAM	12 µg/m^3	12.0 µg/m^3	15.0 µg/m^3
CO	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	–
	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	–
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)	–	–
NO_2	1 Hour	0.18 ppm (339 µg/m^3)	0.100 ppm (188 µg/m^3)	–
	AAM	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary
SO_2	1 Hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3)	–
	3 Hour	–	–	0.5 ppm (1,300 µg/m^3)
	24 Hour	0.04 ppm (105 µg/m^3)	–	–
Lead	30-day Avg.	1.5 µg/m^3	–	–
	Calendar Quarter	–	1.5 µg/m^3	Same as Primary
	Rolling 3-month Avg.	–	0.15 µg/m^3	

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Table 1 (cont.)
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards	
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per km – visibility ≥ 10 miles (0.07 per km – ≥30 miles for Lake Tahoe)	**No Federal Standards**
Sulfates	24 Hour	25 µg/m^3	
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m^3)	

Source: CARB 2016

[1] National Primary Standards: The levels of air quality necessary, within an adequate margin of safety, to protect the public health.

[2] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

O_3: ozone; ppm: parts per million; µg/m^3: micrograms per cubic meter; PM_{10}: particulate matter with an aerodynamic diameter of 10 microns or less;

AAM: Annual Arithmetic Mean; $PM_{2.5}$: fine particulate matter; CO: carbon monoxide; mg/m^3: milligrams per cubic meter; NO_2 nitrogen dioxide; SO_2: sulfur dioxide; km: kilometer; –: No Standard.

The USEPA has classified air basins (or portions thereof) as being in "attainment," "nonattainment," or "unclassified" for each criteria air pollutant, based on whether or not the NAAQS have been achieved. If an area is designated unclassified, it is because inadequate air quality data were available as a basis for a nonattainment or attainment designation. The project site is located within the South Coast Air Basin (SCAB) and, as such, is in an area designated a nonattainment area for certain pollutants that are regulated under the CAA. Table 2 of Section 2.2.3, *South Coast Air Basin Attainment Status*, lists the federal and state attainment status of the SCAB for the criteria pollutants. The USEPA classifies the SCAB as in attainment for CO, PM_{10}, NO_2, SO_2, and lead; in extreme nonattainment for 8-hour ozone; and in serious nonattainment for $PM_{2.5}$ with respect to federal air quality standards.

The CAA (and its subsequent amendments) requires each state to prepare an air quality control plan referred to as the State Implementation Plan (SIP). The CAA Amendments dictate that states containing areas violating the NAAQS revise their SIPs to include extra control measures to reduce air pollution. The SIP includes strategies and control measures to attain the NAAQS by deadlines established by the CAA. The SIP is periodically modified to reflect the latest emissions inventories, plans, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The USEPA has the responsibility to review all SIPs to determine whether they conform to the requirements of the CAA.

2.1.4 California Air Quality Regulations

2.1.4.1 California Clean Air Act

The federal CAA allows states to adopt ambient air quality standards and other regulations provided that they are at least as stringent as federal standards. CARB, a part of the California EPA (CalEPA), is responsible for the coordination and administration of both federal and state air pollution control

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programs within California, including setting the California Ambient Air Quality Standards (CAAQS). CARB also conducts research, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB also has primary responsibility for the development of California's SIP, for which it works closely with the federal government and the local air districts.

In addition to primary and secondary AAQS, the state has established a set of episode criteria for ozone, CO, NO_2, SO_2, and PM. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that actually threaten public health. Table 2, below, lists the state attainment status of the SCAB for the criteria pollutants. Under state designation, the SCAB is currently in attainment for CO, NO_2, SO_2, and lead; and in nonattainment for ozone, PM_{10}, and $PM_{2.5}$.

2.1.4.2 Toxic Air Contaminants

California's air toxics control program began in 1983 with the passage of the Toxic Air Contaminant Identification and Control Act, better known as AB 1807 or the Tanner Bill. When a compound becomes listed as a TAC under the Tanner process, the CARB normally establishes minimum statewide emission control measures to be adopted by local air pollution control districts (APCDs). Later legislative amendments (AB 2728) required the CARB to incorporate all 189 federal hazardous air pollutants (HAPs) into the state list of TACs.

Supplementing the Tanner process, AB 2588 – the Air Toxics "Hot Spots" Information and Assessment Act of 1987 – currently regulates over 600 air compounds, including all of the Tanner-designated TACs. Under AB 2588, specified facilities must quantify emissions of regulated air toxics and report them to the local APCD. If the APCD determines that a potentially significant public health risk is posed by a given facility, the facility is required to perform a health risk assessment (HRA) and notify the public in the affected area if the calculated risks exceed specified criteria.

On August 27, 1998, CARB formally identified PM emitted in both gaseous and particulate forms by diesel-fueled engines as a TAC (CARB 2010). The particles emitted by diesel engines are coated with chemicals, many of which have been identified by the USEPA as HAPs and by CARB as TACs. CARB's Scientific Advisory Committee has recommended a unit risk factor (URF) of 300 in 1 million over a 70-year exposure period for diesel particulate. In September 2000, the CARB approved the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (Diesel Risk Reduction Plan; CARB 2000). The Diesel Risk Reduction Plan outlined a comprehensive and ambitious program that included the development of numerous new control measures over the next several years aimed at substantially reducing emissions from new and existing on-road vehicles (e.g., heavy-duty trucks and buses), off-road equipment (e.g., graders, tractors, forklifts, sweepers, and boats), portable equipment (e.g., pumps), and stationary engines (e.g., stand-by power generators). These requirements are now in force on a statewide basis.

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2.1.5 Local Regulations

2.1.5.1 South Coast Air Quality Management District

The project is located in Riverside County. Air quality in the non-desert portion of Riverside County is regulated by the South Coast Air Quality Management District (SCAQMD). As a regional agency, the SCAQMD works directly with the Southern California Association of Governments (SCAG), County transportation commissions, and local governments and cooperates actively with all federal and state government agencies. The SCAQMD develops rules and regulations; establishes permitting requirements for stationary sources; inspects emissions sources; and enforces such measures through educational programs or fines, when necessary.

The SCAQMD is directly responsible for reducing emissions from stationary (area and point), mobile, and indirect sources. It has responded to this requirement by preparing a sequence of Air Quality Management Plans (AQMP).

On March 3, 2017, the SCAQMD adopted the 2016 AQMP, which is a regional and multi-agency effort (SCAQMD, CARB, SCAG, and USEPA). The 2016 AQMP represents a comprehensive analysis of emissions, meteorology, atmospheric chemistry, regional growth projections, and the impact of existing control measures. The plan seeks to achieve multiple goals in partnership with other entities promoting reductions in criteria pollutant, greenhouse gases, and toxic risk, as well as efficiencies in energy use, transportation, and goods movement (SCAQMD 2017).

The AQMP, in combination with those from all other California nonattainment areas with serious (or worse) air quality problems, is submitted to CARB, which develops the California State Implementation Plan (SIP). The SIP relies on the same information from SCAG to develop emission inventories and emission reduction strategies that are included in the attainment demonstration for the air basin. The current federal and state attainment status for the South Coast Air Basin (SCAB) is presented in Table 2, *South Coast Air Basin Attainment Status*.

Table 2
SOUTH COAST AIR BASIN ATTAINMENT STATUS

Criteria Pollutant	Federal Designation	State Designation
O_3 (1-hour)	(No federal standard)	Nonattainment
O_3 (8-hour)	Extreme Nonattainment	Nonattainment
CO	Attainment (Maintenance)	Attainment
PM_{10}	Attainment (Maintenance)	Nonattainment
$PM_{2.5}$	Serious Nonattainment	Nonattainment
NO_2	Attainment (Maintenance)	Attainment
SO_2	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	(No federal standard)	Attainment
Hydrogen Sulfide	(No federal standard)	Attainment
Visibility	(No federal standard)	Attainment

Source: SCAQMD 2016

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2.2 GREENHOUSE GASES

2.2.1 Climate Change Overview

Global climate change refers to changes in average climatic conditions on Earth including temperature, wind patterns, precipitation, and storms. Global temperatures are moderated by atmospheric gases. These gases are commonly referred to as greenhouse gases (GHGs) because they function like a greenhouse by letting sunlight in but preventing heat from escaping, thus warming the Earth's atmosphere.

GHGs are emitted by natural processes and human (anthropogenic) activities. Anthropogenic GHG emissions are primarily associated with: (1) the burning of fossil fuels during motorized transport, electricity generation, natural gas consumption, industrial activity, manufacturing, and other activities; (2) deforestation; (3) agricultural activity; and (4) solid waste decomposition.

The temperature record shows a decades-long trend of warming, with 2016 global surface temperatures ranking as the warmest year on record (National Aeronautics and Space Administration [NASA] 2016). The newest realize in long-term warming trends announced 2017 ranked the second warmest year with an increase of 1.62 degrees Fahrenheit compared to the 1950-1980 average (NASA 2018). GHG emissions from human activities are the most significant driver of observed climate change since the mid-20th century (Intergovernmental Panel on Climate Change [IPCC] 2013). The IPCC constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. The statistical models show a "high confidence" that temperature increase caused by anthropogenic GHG emissions could be kept to less than two degrees Celsius relative to pre-industrial levels if atmospheric concentrations are stabilized at about 450 parts per million (ppm) carbon dioxide equivalent (CO_2e) by the year 2100 (IPCC 2014).

2.2.2 Types of Greenhouse Gases

The GHGs defined under California's Assembly Bill (AB) 32 include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

Carbon dioxide. CO_2 is the most important and common anthropogenic GHG. CO_2 is an odorless, colorless GHG. Natural sources include the decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungi; evaporation from oceans; and volcanic outgassing. Anthropogenic sources of CO_2 include burning fuels, such as coal, oil, natural gas, and wood. Data from ice cores indicate that CO_2 concentrations remained steady prior to the current period for approximately 10,000 years. The atmospheric CO_2 concentration in 2010 was 390 ppm, 39 percent above the concentration at the start of the Industrial Revolution (about 280 ppm in 1750). As of October 2017, the CO_2 concentration exceeded 403 ppm, a 44 percent increase since 1750 (National Oceanic and Atmospheric Administration [NOAA] 2018).

Methane. CH_4 is the main component of natural gas used in homes. A natural source of methane is from the decay of organic matter. Geological deposits known as natural gas fields contain methane, which is extracted for fuel. Other sources are from decay of organic material in landfills, fermentation of manure, and cattle digestion.

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Nitrous oxide. N_2O is produced by both natural and human-related sources. N_2O is emitted during agricultural and industrial activities, as well as during the combustion of fossil fuels and solid waste. Primary human-related sources of N_2O are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic (fatty) acid production, and nitric acid production.

Hydrofluorocarbons. Fluorocarbons are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. Chlorofluorocarbons are nontoxic, nonflammable, insoluble, and chemically nonreactive in the troposphere (the level of air at Earth's surface). Chlorofluorocarbons were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone; therefore, their production was stopped as required by the 1989 Montreal Protocol.

Sulfur Hexafluoride. SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. SF_6 is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semi-conductor manufacturing, and as a tracer gas for leak detection.

GHGs have long atmospheric lifetimes that range from one year to several thousand years. Long atmospheric lifetimes allow for GHG emissions to disperse around the globe. Because GHG emissions vary widely in the power of their climatic effects, climate scientists have established a unit called global warming potential (GWP). The GWP of a gas is a measure of both potency and lifespan in the atmosphere as compared to CO_2. For example, because methane and N_2O are approximately 25 and 298 times more powerful than CO_2, respectively, in their ability to trap heat in the atmosphere, they have GWPs of 25 and 298, respectively (CO_2 has a GWP of 1). CO_2e is a quantity that enables all GHG emissions to be considered as a group despite their varying GWP. The GWP of each GHG is multiplied by the prevalence of that gas to produce CO_2e. The atmospheric lifetime and GWP of selected GHGs are summarized in Table 3, *Global Warming Potentials and Atmospheric Lifetimes*.

Table 3
GLOBAL WARMING POTENTIALS AND ATMOSPHERIC LIFETIMES

Greenhouse Gas	Atmospheric Lifetime (years)	Global Warming Potential (100-year time horizon)
Carbon Dioxide (CO_2)	50-200	1
Methane (CH_4)	12	25
Nitrous Oxide (N_2O)	114	298
HFC-134a	14	1,430
PFC: Tetraflouromethane (CF_4)	50,000	7,390
PFC: Hexafluoroethane (C_2F_6)	10,000	12,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

Source: IPCC 2007
HFC: hydrofluorocarbon; PFC: perfluorocarbon

2.2.3 Federal Greenhouse Gas Regulations

2.2.3.1 Federal Clean Air Act

The U.S. Supreme Court ruled on April 2, 2007, in *Massachusetts v. U.S. Environmental Protection Agency* (USEPA*)* that CO_2 is an air pollutant, as defined under the CAA, and that the USEPA has the

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authority to regulate emissions of GHGs. The USEPA announced that GHGs (including CO_2, CH_4, N_2O, HFC, PFC, and SF_6) threaten the public health and welfare of the American people. This action was a prerequisite to finalizing the USEPA's GHG emissions standards for light-duty vehicles, which were jointly proposed by the USEPA and the United States Department of Transportation's National Highway Traffic Safety Administration (NHTSA). The standards were established on April 1, 2010 for 2012 through 2016 model year vehicles and on October 15, 2012 for 2017 through 2025 model year vehicles (USEPA 2017b; USEPA and NHTSA 2012).

2.2.3.2 Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards

The USEPA and the NHTSA have been working together on developing a national program of regulations to reduce GHG emissions and to improve fuel economy of light-duty vehicles. The USEPA is finalizing the first-ever national GHG emissions standards under the CAA, and the NHTSA is finalizing Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act. On April 1, 2010, the USEPA and NHTSA announced a joint Final Rulemaking that established standards for 2012 through 2016 model year vehicles. This was followed up on October 15, 2012, when the agencies issued a Final Rulemaking with standards for model years 2017 through 2025. The rules require these vehicles to meet an estimated combined average emissions level of 250 grams per mile by 2016, decreasing to an average industry fleet-wide level of 163 grams per mile in model year 2025. The 2016 standard is equivalent to 35.5 miles per gallon (mpg), and the 2025 standard is equivalent to 54.5 mpg if the levels were achieved solely through improvements in fuel efficiency. The agencies expect, however, that a portion of these improvements will be made through improvements in air conditioning leakage and the use of alternative refrigerants that would not contribute to fuel economy. These standards would cut GHG emissions by an estimated 2 billion metric tons (MT) and 4 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2017–2025). The combined USEPA GHG emission standards and NHTSA CAFE standards resolve previously conflicting requirements under both federal programs and the standards of the State of California and other states that have adopted the California standards (USEPA 2017b; USEPA and NHTSA 2012).

2.2.4 California Greenhouse Gas Regulations

There are numerous State plans, policies, regulations, and laws related to GHG emissions and global climate change. Following is a discussion of some of these plans, policies, and regulations that (1) establish overall State policies and GHG emission reduction targets; (2) require State or local actions that result in direct or indirect GHG emission reductions for the proposed project; and (3) require California Environmental Quality Act (CEQA) analysis of GHG emissions.

2.2.4.1 California Code of Regulations, Title 24, Part 6

California Code of Regulations (CCR) Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. Energy-efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for water heating) results in GHG emissions.

The Title 24 standards are updated approximately every three years to allow consideration and possible incorporation of new energy efficiency technologies and methods. The latest update to the Title 24

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standards occurred in 2016 and went into effect on January 1, 2017. The 2016 update to the Building Energy Efficiency Standards focuses on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings. The most significant efficiency improvements to the residential Standards include improvements for attics, walls, water heating, and lighting. The Standards are divided into three basic sets. First, there is a basic set of mandatory requirements that apply to all buildings. Second, there is a set of performance standards – the energy budgets – that vary by climate zone (of which there are 16 in California) and building type; thus, the Standards are tailored to local conditions. Finally, the third set constitutes an alternative to the performance standards, which is a set of prescriptive packages that are basically a recipe or a checklist compliance approach.

2.2.4.2 California Green Building Standards Code

The California Green Building Standards Code (CALGreen; CCR Title 24, Part 11) is a code with mandatory requirements for new residential and nonresidential buildings (including industrial buildings) throughout California. The code is Part 11 of the California Building Standards Code in Title 24 of the CCR (California Building Standards Commission 2017). The current 2016 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings went into effect on January 1, 2017.

The development of CALGreen is intended to (1) cause a reduction in GHG emissions from buildings; (2) promote environmentally responsible, cost-effective, healthier places to live and work; (3) reduce energy and water consumption; and (4) respond to the directives by the Governor. In short, the code is established to reduce construction waste; make buildings more efficient in the use of materials and energy; and reduce environmental impact during and after construction.

CALGreen contains requirements for storm water control during construction; construction waste reduction; indoor water use reduction; material selection; natural resource conservation; site irrigation conservation; and more. The code provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. The code also requires building commissioning, which is a process for the verification that all building systems, like heating and cooling equipment and lighting systems, are functioning at their maximum efficiency.

2.2.4.3 Executive Order S-3-05

On June 1, 2005, Executive Order (EO) S-3-05 proclaimed that California is vulnerable to climate change impacts. It declared that increased temperatures could reduce snowpack in the Sierra Nevada, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To avoid or reduce climate change impacts, EO S-3-05 calls for a reduction in GHG emissions to the year 2000 level by 2010, to year 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

2.2.4.4 Assembly Bill 32 – Global Warming Solution Act of 2006

The California Global Warming Solutions Act of 2006, widely known as AB 32, requires that the CARB develop and enforce regulations for the reporting and verification of statewide GHG emissions. CARB is directed to set a GHG emission limit, based on 1990 levels, to be achieved by 2020. The bill requires CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG emission reductions.

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2.2.4.5 Executive Order B-30-15

On April 29, 2015, EO B-30-15 established a California GHG emission reduction target of 40 percent below 1990 levels by 2030. The EO aligns California's GHG emission reduction targets with those of leading international governments, including the 28 nation European Union. California is on track to meet or exceed the target of reducing greenhouse gas emissions to 1990 levels by 2020, as established in AB 32. California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the goal established by EO S-3-05 of reducing emissions 80 percent under 1990 levels by 2050.

2.2.4.6 Senate Bill 32

As a follow-up to AB 32 and in response to EO-B-30-15, Senate Bill (SB) 32 was passed by the California legislature in August 2016 to codify the EO's California GHG emission reduction target of 40 percent below 1990 levels by 2030.

2.2.4.7 Assembly Bill 1493 – Vehicular Emissions of Greenhouse Gases

AB 1493 (Pavley) requires that CARB develop and adopt regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty truck and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State." On September 24, 2009, CARB adopted amendments to the Pavley regulations that intend to reduce GHG emissions in new passenger vehicles from 2009 through 2016. The amendments bind California's enforcement of AB 1493 (starting in 2009), while providing vehicle manufacturers with new compliance flexibility. The amendments also prepare California to merge its rules with the federal CAFE rules for passenger vehicles (CARB 2013). In January 2012, CARB approved a new emissions-control program for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single packet of standards called Advanced Clean Cars (CARB 2013).

2.2.4.8 Assembly Bill 341

The state legislature enacted AB 341 (California Public Resource Code Section 42649.2), increasing the diversion target to 75 percent statewide. AB 341 requires all businesses and public entities that generate 4 cubic yards or more of waste per week to have a recycling program in place. The final regulation was approved by the Office of Administrative Law on May 7, 2012, and went into effect on July 1, 2012.

2.2.4.9 Executive Order S-01-07

This EO, signed by Governor Schwarzenegger on January 18, 2007, directs that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by the year 2020. It orders that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established for California and directs CARB to determine whether a LCFS can be adopted as a discrete early action measure pursuant to AB 32. CARB approved the LCFS as a discrete early action item with a regulation adopted and implemented in April 2010. Although challenged in 2011, the Ninth Circuit reversed the District Court's opinion and rejected arguments that implementing LCFS violates the interstate commerce clause in September 2013. CARB is therefore continuing to implement the LCFS statewide.

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2.2.4.10 Senate Bill 350

Approved by Governor Brown on October 7, 2015, SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. This will increase the use of Renewables Portfolio Standard eligible resources, including solar, wind, biomass, and geothermal. In addition, large utilities are required to develop and submit Integrated Resource Plans to detail how each entity will meet their customers resource needs, reduce greenhouse gas emissions, and increase the use of clean energy.

2.2.4.11 California Air Resources Board: Scoping Plan

On December 11, 2008, CARB adopted the Scoping Plan (CARB 2008) as directed by AB 32. The Scoping Plan proposes a set of actions designed to reduce overall GHG emissions in California to the levels required by AB 32. Measures applicable to development projects include those related to energy-efficiency building and appliance standards, the use of renewable sources for electricity generation, regional transportation targets, and green building strategy. Relative to transportation, the Scoping Plan includes nine measures or recommended actions related to reducing VMT and vehicle GHG emissions through fuel and efficiency measures. These measures would be implemented statewide rather than on a project by project basis.

CARB released the First Update to the Climate Change Scoping Plan in May 2014 to provide information on the development of measure-specific regulations and to adjust projections in consideration of the economic recession (CARB 2014). To determine the amount of GHG emission reductions needed to achieve the goal of AB 32 (i.e., 1990 levels by 2020) CARB developed a forecast of the AB 32 Baseline 2020 emissions, which is an estimate of the emissions expected to occur in the year 2020 if none of the foreseeable measures included in the Scoping Plan were implemented. CARB estimated the AB 32 Baseline 2020 to be 509 million metric tons (MMT) of CO_2e. The Scoping Plan's current estimate of the necessary GHG emission reductions is 78 MMT CO_2e (CARB 2014). This represents an approximately 15 percent reduction. CARB is forecasting that this would be achieved through the following reductions by sector: 25 MMT CO_2e for energy, 23 MMT CO_2e for transportation, 5 MMT CO_2e for high-GWP GHGs, and 2 MMT CO_2e for waste. The remaining 23 MMT CO_2e would be achieved through Cap-and-Trade Program reductions. This reduction is flexible—if CARB receives new information and changes the other sectors' reductions to be less than expected, the agency can increase the Cap-and-Trade reduction (and vice versa).

In response to EO B-30-15 and SB 32, all state agencies with jurisdiction over sources of GHG emissions were directed to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 targets. CARB was directed to update the Scoping Plan to reflect the 2030 target and, therefore, is moving forward with the update process. The mid-term target is critical to help frame the suite of policy measures, regulations, planning efforts, and investments in clean technologies and infrastructure needed to continue driving down emissions. CARB is moving forward with a second update to the Scoping Plan to reflect the 2030 target set by Executive Order B-30-15 and codified by SB 32. The 2017 Climate Change Scoping Plan Update, Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target, was adopted December 2017. The Scoping Plan Update establishes a proposed framework for California to meet a 40 percent reduction in GHGs by 2030 compared to 1990 levels. This is the most aggressive climate target in North America and aligns California with the rest of the world in flighting climate change. The Proposed Plan would continue to move California towards a sustainable future while shifting dependence away from fossil fuels. The Plan would build on the Cap-and-Trade

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Regulation, Low Carbon Fuel Standard program, and continue to increase the use of renewable energy through cleaner cars, trucks and freight movement, and reduce agricultural and waste methane emissions by utilizing it for energy needs. The Proposed Plan also addresses for the first time the GHG emissions from agriculture and forestry sectors along with other natural and working lands of California (CARB 2017a).

2.2.5 Local Regulations

2.2.5.1 South Coast Air Quality Management District

Beginning in April 2008, the SCAQMD convened a Working Group to provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents. On December 5, 2008, the SCAQMD Governing Board adopted its staff proposal for an interim CEQA GHG significance threshold of 10,000 MT CO_2e per year for projects where the SCAQMD is the lead agency. The policy objective for establishing this significance threshold and the recommended screening thresholds below is to capture projects that represent approximately 90 percent of GHG emissions from new sources (SCAQMD 2008). These projects would be subject to further analysis and the incorporation of measures to reduce GHG emissions.

In September 2010, the Working Group presented a revised tiered approach to determining GHG significance for residential and commercial projects (SCAQMD 2010). These proposals have not been considered by the SCAQMD Board.

At Tier 1, GHG emissions impacts would be less than significant if a project qualifies under a categorical or statutory CEQA exemption. For projects that do not meet the Tier 1 criteria, the GHG emissions impact would be less than significant at Tier 2 if a project is consistent with a previously adopted GHG reduction plan that meets specific requirements. At Tier 3, the Working Group proposes extending the 10,000 MT CO_2e per year screening threshold currently applicable to industrial projects where the SCAQMD is the lead agency (described above) to other lead agency industrial projects. For residential and commercial projects, the Working Group proposes a 3,000 MT CO_2e per year threshold for all land use types. A project with emissions less than the applicable screening value would be considered to have less than significant GHG emissions.

2.2.5.2 City of Moreno Valley

The City developed an Energy Efficiency and Climate Action Strategy (CAS) that was adopted in October 2012 (City 2012a). The Energy Efficiency and CAS (Strategy) establishes policies, practices, and strategies, to assist the City in energy and water conservation and reduction of GHG emissions. The program will encourage its community members to reduce their own GHG emissions through energy and water conservation by providing training and public awareness. The Strategy will help lead agencies to assess cumulative impacts of a project and provide a means for future projects to address GHG impacts under CEQA. A lead agency may conclude that a project's GHG impact is not cumulatively significant if the project demonstrates consistency with this CAS (CEQA Guidelines Section 15183.5[h][3]).

Following the state's adopted AB 32 GHG reduction target, the City set a goal to reduce emissions to 1990 levels by the year 2020. This target was calculated as a 15 percent decrease from 2007 levels, as recommended in the AB 32 Scoping Plan (2007 was the closet year to 2005 with best data available).

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The estimated business-as-usual emissions for the year 2020, based on population and housing growth projections associated with the assumptions used in the proposed General Plan, is 1,298,546 MT of CO_2e (City 2012b). To reach 15 percent below 2007 levels, the City must reduce GHG emissions to 798,693 MT of CO_2e by 2020. A community-wide emissions inventory was also calculated in 2010 which is the most current year with data available.

To reach the reduction target, the City is committed to incorporating sustainable features into the community. The Strategy includes measures that encourage energy efficiency and renewable energy in buildings, access to sustainable transportation, water conservation, and increased waste diversion. Through the CAS, the City has established goals and policies that incorporate environmental responsibility into its daily management of residential, commercial and industrial growth, education, energy and water use, air quality, transportation, waste reduction, economic development and open space and natural habitats to further their commitment. The development of the CAS may require the City's General Plan to be updated to reference the Strategy for direction on energy efficiency and GHG reduction.

3.0 EXISTING CONDITIONS

3.1 CLIMATE AND METEOROLOGY

The project site is in the SCAB, which consists of all or part of four counties: Los Angeles, San Bernardino, Riverside, and Orange. The distinctive climate of the SCAB is determined by its terrain and geographic location. The SCAB is a coastal plain with connecting broad valleys and low hills. It is bound by the Pacific Ocean to the southwest and high mountains around the rest of its perimeter. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light, average wind speeds.

The usually mild climatological pattern is interrupted occasionally by periods of extremely hot weather, winter storms, or Santa Ana winds. Winds in the project area are usually driven by the dominant land/sea breeze circulation system. Regional wind patterns are dominated by daytime onshore sea breezes. At night, the wind generally slows and reverses direction traveling toward the sea. Local canyons can also alter wind direction, with wind tending to flow parallel to the canyons. The vertical dispersion of air pollutants in the SCAB is hampered by the presence of persistent temperature inversions. High pressure systems, such as the semi-permanent high-pressure zone in which the SCAB is located, are characterized by an upper layer of dry air that warms as it descends, restricting the mobility of cooler marine-influenced air near the ground surface, and resulting in the formation of subsidence inversions. Such inversions restrict the vertical dispersion of air pollutants released into the marine layer and, together with strong sunlight, can produce worst-case conditions for the formation of photochemical smog. The basin-wide occurrence of inversions at 3,500 feet above mean sea level or less averages 191 days per year (SCAQMD 1993).

The annual average maximum temperature as measured at the Perris City climatic station, approximately 3 miles south of the project site, is 78.7°Farenheit (F). The highest monthly average maximum temperature (96.9°F) occurs in August, and the lowest monthly average minimum temperature (34.7°F) occurs in January. The average annual precipitation is approximately 10 inches (Western Regional Climate Center 2017).

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3.2 EXISTING AIR QUALITY

3.2.1 Criteria Pollutants

3.2.1.1 Attainment Designations

Attainment designations are discussed in Section 2.1 and Table 2. The SCAB is a federal and state nonattainment area for 8-hour ozone and $PM_{2.5}$. The SCAB is also a state nonattainment area for 1-hour ozone and PM_{10}.

3.2.1.2 Monitored Air Quality

The SCAQMD maintains monitoring stations to measure ambient concentrations of pollutants in the SCAB. The nearest monitoring station to the project site is the Perris monitoring station, which is located approximately 10 miles south of the project site. The Perris station monitors ozone and PM_{10}. The Lake Elsinore monitoring station, located approximately 20 miles southeast of the project site in the City of Lake Elsinore monitors NO_2 and $PM_{2.5}$. Table 4, *Air Quality Monitoring Data*, presents a summary of the ambient pollutant concentrations monitored at the Perris and Lake Elsinore air quality monitoring stations during the last three years (2014 through 2016) for which the SCAQMD has reported data.

Table 4
AIR QUALITY MONITORING DATA

Pollutant Standards	2014	2015	2016
Ozone (O_3) [Perris]			
Maximum concentration 1-hour period (ppm)	0.117	0.124	0.131
Maximum concentration 8-hour period (ppm)	0.094	0.102	0.098
Days above 1-hour state standard (>0.09 ppm)	16	25	23
Days above 8-hour state/federal standard (>0.070 ppm)	59	49	55
Nitrogen Dioxide (NO_2) [Lake Elsinore]			
Maximum 1-hour concentration (ppm)	0.045	0.047	0.051
Days above state 1-hour standard (0.18 ppm)	0	0	0
Days above federal 1-hour standard (0.100 ppm)	0	0	0
Suspended Particulates (PM_{10}) [Perris]			
Maximum 24-hour concentration (µg/m^3)	87.0	188.0	76.0
Days above state standard (>50 µg/m^3)	6	4	*
Days above federal standard (>150 µg/m^3)	0	1	0
Suspended Particulates ($PM_{2.5}$) [Lake Elsinore]			
Maximum 24-hour concentration (µg/m^3)	33.7	42.2	31.5
Days above federal standard (>35 µg/m^3)	0	*	0

Source: CARB 2017b
ppm = parts per million
* insufficient data available to determine the value

The 1- and 8-hour ozone standards were exceeded several times in each of the sample years. The state PM_{10} standard was exceeded 6 times in 2014 and 4 times in 2015. The federal PM_{10} standard was exceeded once in 2015.

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3.2.2 Greenhouse Gases

For 2012, total GHG emissions worldwide were estimated at 46,049 MMT CO_2e (World Resources Institute 2017). The U.S. contributed the second largest portion of GHG emissions (behind China) at 12 percent of global emissions, with 5,823 MMT CO_2e in 2012. On a national level in 2013, approximately 27 percent of GHG emissions are associated with transportation and about 31 percent are associated with electricity generation (USEPA 2015).

CARB performs statewide GHG inventories. The inventory is divided into six broad sectors; agriculture and forestry, commercial, electricity generation, industrial, residential, and transportation. Emissions are quantified in MMT CO_2e. Table 5, *California Greenhouse Gas Emissions by Sector*, shows the estimated statewide GHG emissions for the years 1990, 2000, 2010, and 2015 (CARB 2017d).

Table 5
CALIFORNIA GREENHOUSE GAS EMISSIONS BY SECTOR
(MMT CO_2e)

Sector	1990	2000	2010	2015
Agriculture and Forestry	23.6 (5%)	32.1 (7%)	34.5 (8%)	34.6 (8%)
Commercial	14.4 (3%)	15.0 (3%)	21.6 (5%)	22.2 (5%)
Electricity Generation	110.6 (26%)	105.2 (22%)	90.5 (20%)	84.1 (19%)
Industrial	103.0 (24%)	105.4 (22%)	102.7 (23%)	103.0 (23%)
Residential	29.7 (7%)	31.8 (7%)	32.2 (7%)	26.9 (6%)
Transportation	150.7 (35%)	178.1 (38%)	173.7 (38%)	169.4 (39%)
Unspecified Remaining	1.3 (<1%)	1.2 (<1%)	0.8 (<1%)	0.82(<1%)
TOTAL	**433.3**	**468.8**	**456.0**	**440.4**

Source: CARB 2007 and CARB 2017c

As shown in Table 5, statewide GHG emissions totaled 433 MMT CO_2e in 1990, 469 MMT CO_2e in 2000, 456 MMT CO_2e in 2010, and 440 MMT CO_2e in 2015. Transportation-related emissions consistently contribute the most GHG emissions, followed by electricity generation and industrial emissions.

The City prepared an emissions inventory as part of their CAS. The 2010 emissions inventory for the City is duplicated below in Table 6, *City of Moreno Valley Greenhouse Gas Emissions by Sector*. The sectors included in this inventory are somewhat different from those in the statewide inventory.

Table 6
CITY OF MORENO VALLEY GREENHOUSE GAS EMISSIONS
BY SECTOR (MT CO_2e [x 1,000])

Sector	2010
Transportation	514
Energy	277
Area Sources	69
Water and Wastewater	17
Solid Waste	44
TOTAL	**921**

Source: City 2012b

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Similar to the statewide emissions, transportation-related GHG emissions were the greatest contributor, with approximately 56 percent of GHG emissions for the City in 2010. Energy-related GHG emissions ranked second, with approximately 30 percent in 2010.

4.0 METHODOLOGY AND SIGNIFICANCE CRITERIA

4.1 METHODOLOGY

Criteria pollutant and GHG emissions were calculated using the California Emissions Estimator Model (CalEEMod), Version 2016.3.2. CalEEMod is a computer model used to estimate criteria air pollutant and GHG emissions resulting from construction and operation of land development projects throughout the state of California. CalEEMod was developed by the SCAMQD with the input of several air quality management and pollution control districts. The input data and subsequent construction and operation emission estimates for the proposed project are discussed below. CalEEMod output files are included in Appendix A.

4.1.1 Construction Emissions

As described above, construction emissions are assessed using the CalEEMod. CalEEMod contains OFFROAD2011 emission factors and EMFAC2014 emission factors from CARB's models for off-road equipment and on-road vehicles, respectively. The construction analysis included modeling of the projected construction equipment that would be used during each construction activity and quantities of earth and debris to be moved. The model calculates emissions of CO, PM_{10}, $PM_{2.5}$, SO_2, and the ozone precursors ROG and NO_X.

Construction input data for CalEEMod include, but are not limited to, (1) the anticipated start and finish dates of construction activity; (2) inventories of construction equipment to be used; (3) areas to be excavated and graded; and (4) volumes of materials to be exported from and imported to the project area. The analysis assessed maximum daily emissions from individual construction activities, including site preparation, grading, underground utility installation, building construction, paving, and architectural coating. Construction would require heavy equipment during site preparation, grading, trenching for underground infrastructure, building construction, and paving. Construction equipment estimates are based on detailed assumptions provided by A & S Engineering and CalEEMod defaults. Table 7, *Construction Equipment Assumptions*, presents a summary of the assumed equipment that would be involved in each phase of construction.

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Table 7
CONSTRUCTION EQUIPMENT ASSUMPTIONS

Construction Phase	Equipment	Number
Site Preparation	Graders	1
	Tractors/Loaders/Backhoes	1
Grading	Concrete/Industrial Saws	1
	Rubber Tired Dozers	1
	Tractors/Loaders/Backhoes	2
Underground Utilities Installation	Tractors/Loaders/Backhoes	1
Building Construction	Cranes	1
	Forklifts	2
	Tractors/Loaders/Backhoes	2
Paving	Pavers	1
	Cement and Mortar Mixers	4
	Rollers	1
	Tractors/Loaders/Backhoes	1
Architectural Coating	Air Compressors	1

Source: CalEEMod defaults and pers. communication with A & S Engineers.
Note: Output data, including equipment horsepower, is provided in Appendix A

The construction schedule was based on information provided by A & S Engineers. As shown in Table 8, *Anticipated Construction Schedule*, project development is assumed to start in January 2019 and projected to be complete June 2019. Grading and underground utilities installation will overlap for 20 days.

Table 8
ANTICIPATED CONSTRUCTION SCHEDULE

Construction Activity	Construction Period		
	Start	End	Number of Working Days
Site Preparation	1/1/2019	1/31/2019	23
Grading	2/1/2019	2/28/2019	20
Underground Utilities Installation	2/1/2019	2/28/2019	20
Building Construction	3/1/2019	6/14/2019	76
Paving	6/15/2019	6/21/2019	5
Architectural Coating	6/22/2019	6/28/2019	5

Source: Schedule provided by A & S Engineers.
Note: Output data is provided in Appendix A.

The quantity, duration, and the intensity of construction activity influence the amount of construction emissions and their related pollutant concentrations that occur at any one time. As such, the emission forecasts provided herein reflect a specific set of conservative assumptions based on the expected construction scenario wherein a relatively large amount of construction is occurring in a relatively intensive manner. Because of this conservative assumption, actual emissions could be less than those forecasted. If construction is delayed or occurs over a longer time period, emissions could be reduced because of (1) a more modern and cleaner-burning construction equipment fleet mix than incorporated in the CalEEMod, and/or (2) a less intensive buildout schedule (i.e., fewer daily emissions occurring over

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a longer time interval). A complete listing of the assumptions used in the analysis and model output is provided in Appendix A of this report.

CalEEMod has the capability to calculate reductions in construction emissions from the effects of dust control, diesel-engine classifications, and other selected emissions reduction measures. Emissions calculations assume application of water during grading and a 15-miles per hour (mph) speed limit on unpaved surfaces in compliance with SCAQMD Rule 403, Fugitive Dust. Based on CalEEMod, Version 2016.3.2, the control efficiency for watering two times per day is 55 percent.

CalEEMod estimates construction emissions for each year of construction activity based on the annual construction equipment profile and other factors determined as needed to complete all phases of construction by the target completion year. As such, each year of construction activity has varying quantities of GHG emissions. Per SCAQMD Guidance, total construction GHG emissions resulting from the project are amortized over 30 years and added to operational GHG emissions.

4.1.2 Operation Emissions

Operational impacts were estimated using CalEEMod. Operational sources of emissions include area, energy, transportation, water use, and solid waste. Operational emissions from area sources include the use of consumer products, engine emissions from landscape maintenance equipment, and VOC emissions from repainting of buildings.

Operational emissions from mobile source emissions are associated with project-related vehicle trip generation and trip length. Based on the Transportation Impact Analysis (TIA; Kimley-Horn and Associates, Inc. 2016), the project would generate 2,445 daily trips, 72 morning peak hour trips, 98 evening peak hour trips, and 138 Sunday peak hour trips. CalEEMod default vehicle speeds, trip purpose, and distance were used. Model output data sheets are included in Appendix A.

4.1.3 Localized Significance Threshold Methodology

As part of the SCAQMD's environmental justice program, more attention has been focused on localized air quality effects. In addition to the CEQA significance thresholds for mass daily emissions and regional conditions, the SCAQMD has established thresholds for ambient air quality (Table 9, *SCAQMD Air Quality Significance Thresholds*) to address localized impacts. Also, while regional impact analysis is based on attaining or maintaining regional emissions standards, localized impact analysis compares the concentration of a pollutant at a receptor site to a health-based standard.

SCAQMD staff then developed localized significance threshold (LST) methodology and mass rate look-up tables by source receptor area (SRA) that can be used by public agencies to determine whether a project may generate significant adverse localized air quality impacts. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard; they are developed based on the ambient concentrations of that pollutant for each SRA (SCAQMD 2009). The LST methodology translates the concentration standards into emissions thresholds that are a function of project site area, source to receptor distance, and the location within the SCAB. The LST methodology is recommended to be limited to projects of five acres or less and to avoid the need for complex dispersion modeling. For projects that exceed five acres, the five-acre LST look-up values can be used as a screening tool to determine which pollutants require detailed analysis (Sun 2017). The proposed project is located on a 3.77-acre lot and will therefore utilize

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the applicable five-acre LST values. If a project exceeds the LST look up values, then the SCAQMD recommends that project-specific localized air quality modeling be performed.

4.2 SIGNIFICANCE CRITERIA

4.2.1 Air Quality

The following significance thresholds are based on Appendix G of the state CEQA Guidelines. A significant impact is identified if the project would result in any of the following:

(1) Conflict with or obstruct implementation of the applicable air quality plan;

(2) Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

(3) Expose sensitive receptors to substantial pollutant concentrations;

(4) Result in a cumulatively-considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative standards for ozone precursors); or

(5) Create objectionable odors affecting a substantial number of people.

Appendix G of the State CEQA Guidelines states that the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. The SCAQMD has established significance thresholds to assess the regional and localized impacts of project-related air pollutant emissions. The significance thresholds are updated, as needed, to appropriately represent the most current technical information and attainment status in the SCAB. Table 9 presents the most current significance thresholds, including regional daily thresholds for short-term construction and long term operational emissions; maximum incremental cancer risk and hazard indices for TACs; and maximum ambient concentrations for exposure of sensitive receptors to localized pollutants. A project with daily emission rates, risk values, or concentrations below these thresholds is generally considered to have a less than significant effect on air quality.

Table 9
SCAQMD AIR QUALITY SIGNIFICANCE THRESHOLDS

Mass Daily Thresholds (pounds per day)		
Pollutant	**Construction**	**Operation**
VOC	75	55
NO_X	100	55
CO	550	550
PM_{10}	150	150
$PM_{2.5}$	55	55
SO_X	150	150
Lead	3	3

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Table 9 (cont.)
SCAQMD AIR QUALITY SIGNIFICANCE THRESHOLDS

Toxic Air Contaminants	
TACs	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)
Ambient Air Quality for Criteria Pollutants	
NO_2	1-hour average ≥ 0.18 ppm Annual average ≥ 0.03 ppm
CO	1-hour average ≥ 20.0 ppm (state) 8-hour average ≥ 9.0 ppm (state/federal)
PM_{10}	24-hour average ≥ 10.4 µg/m^3 (construction) 24-hour average ≥ 2.5 µg/m^3 (operation) Annual average ≥ 1.0 µg/m^3
$PM_{2.5}$	24-hour average ≥ 10.4 µg/m^3 (construction) 24-hour average ≥ 2.5 µg/m^3 (operation)
SO_2	1-hour average ≥ 0.075 ppm 24-hour average ≥ 0.04 ppm

Source: SCAQMD 2015
lbs/day: pounds per day; VOC: volatile organic compound; NOx: nitrogen oxides; CO: carbon monoxide; PM_{10}: respirable particulate matter with a diameter of 10 microns or less; $PM_{2.5}$: fine particulate matter with a diameter of 2.5 microns or less; SO_X: sulfur oxides; TACs: toxic air contaminants; GHG: greenhouse gas emissions; MT/yr: metric tons per year; CO_2e: carbon dioxide equivalent; NO_2: nitrogen dioxide; ppm: parts per million; µg/m^3: micrograms per cubic meter.

4.2.2 Greenhouse Gases

Given the relatively small levels of emissions generated by a typical development in relationship to the total amount of GHG emissions generated on a national or global basis, individual development projects are not expected to result in significant, direct impacts with respect to climate change. However, given the magnitude of the impact of GHG emissions on the global climate, GHG emissions from new development could result in significant, cumulative impacts with respect to climate change. Thus, the potential for a significant GHG impact is limited to cumulative impacts.

According to Appendix G of the CEQA Guidelines, a project would have a significant environmental impact if it would:

1. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

2. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?

There are no established federal, state, or local quantitative thresholds applicable to the project to determine the quantity of GHG emissions that may have a significant effect on the environment. CARB, the SCAQMD, and various cities and agencies have proposed, or adopted on an interim basis, thresholds of significance that require the implementation of GHG emission reduction measures. For the proposed project, the most appropriate screening threshold for determining GHG emissions is the SCAQMD proposed Tier 3 screening threshold (SCAQMD 2010); therefore, a significant impact would occur if the

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proposed project would exceed the SCAQMD proposed Tier 3 screening threshold of 3,000 MT CO_2e per year.

5.0 AIR QUALITY IMPACT ANALYSIS

This section evaluates potential direct impacts of the proposed project related to the air pollutant emissions. Project-level air quality modeling was completed as part of this analysis. Complete modeling results are included as Appendix A of this report.

5.1 CONSISTENCY WITH AIR QUALITY PLANS

SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties, and addresses regional issues relating to transportation, economy, community development, and environment. With regard to air quality planning, SCAG has prepared the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), a long-range transportation plan that uses growth forecasts to project trends out over a 20-year period to identify regional transportation strategies to address mobility needs. These growth forecasts form the basis for the land use and transportation control portions of the AQMP. These documents are utilized in the preparation of the air quality forecasts and consistency analysis included in the AQMP. Both the RTP/SCS and AQMP are based, in part, on projections originating with County and City General Plans.[1]

The proposed project is consistent with the City General Plan land use of *Office Commercial*. Because the project is consistent with the local general plan, pursuant to SCAQMD guidelines, the proposed project is considered consistent with the region's AQMP. As such, proposed project-related emissions are accounted for in the AQMP, which is crafted to bring the basin into attainment for all criteria pollutants. Accordingly, the proposed project would be consistent with the projections in the AQMP, thus resulting in a less than significant impact.

5.2 CONFORMANCE TO FEDERAL AND STATE AIR QUALITY STANDARDS

The project would generate criteria pollutants in the short term during construction and the long term during operation. To determine whether a project would result in emissions that would violate an air quality standard or contribute substantially to an existing or projected air quality violation, a project's emissions are evaluated based on the quantitative emission thresholds established by the SCAQMD (as shown in Table 9).

5.2.1 Construction

5.2.1.1 Project Emissions

The project's construction emissions were estimated using the CalEEMod model as described in Section 4.1.1. Project-specific input was based on general information provided in Section 1.0, assumptions provided by A & S Engineers, and default model settings to estimate reasonably conservative conditions. Additional details of phasing, selection of construction equipment, and other input parameters, including CalEEMod data, are included in Appendix A.

[1] SCAG serves as the federally designated metropolitan planning organization for the Southern California region.

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The results of the calculations for project construction are shown in Table 10, *Maximum Daily Construction Emissions*. The data are presented as the maximum anticipated daily emissions for comparison with the SCAQMD thresholds.

Table 10
MAXIMUM DAILY CONSTRUCTION EMISSIONS

Phase	Pollutant Emissions (pounds/day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Site Preparation	1	9	4	<0.5	1	<0.5
Grading	1	9	8	<0.5	1	1
Underground Utilities	<0.5	2	2	<0.5	<0.5	<0.5
Building Construction	1	10	8	<0.5	1	1
Paving	1	8	8	<0.5	1	1
Architectural Coating	12	2	2	<0.5	<0.5	<0.5
Maximum Daily Emissions[1]	**12**	**11**	**11**	**<0.5**	**1**	**<0.5**
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Significant Impact?	***No***	***No***	***No***	***No***	***No***	***No***

Source: CalEEMod (output data is provided in Appendix A)

[1] Maximum daily emissions of ROG emissions occur during architectural coating; all other maximum daily emissions occur when Grading and Underground Utilities phases overlap.

Note: Totals may not sum due to rounding.

As shown in Table 10, emissions of all criteria pollutants related to project construction would be below the SCAQMD significance thresholds. Therefore, direct impacts from criteria pollutants generated during construction would be less than significant and no mitigation would be required.

5.2.2 Operation

5.2.2.1 Project Emissions

The project's operational emissions were estimated using the CalEEMod model as described in Section 4.1.2. The CalEEMod model input was based on the current vehicle trip generation provided in the project's TIA (Kimley-Horn and Associates, Inc. 2016) and the building area. Operational emission calculations and model outputs are provided in Appendix A. Table 11, *Maximum Daily Operational Emissions*, presents the summary of operational emissions for the project.

Table 11
MAXIMUM DAILY OPERATIONAL EMISSIONS

Category	Pollutant Emissions (pounds per day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Area	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Energy	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Mobile	3	24	22	<0.5	<0.5	1
Total Daily Emissions	**4**	**24**	**22**	**<0.5**	**<0.5**	**1**
SCAQMD Thresholds	*55*	*55*	*550*	*150*	*150*	*55*
Significant Impact?	***No***	***No***	***No***	***No***	***No***	***No***

Source: CalEEMod (output data is provided in Appendix A)

Note: Totals may not sum due to rounding

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As shown in Table 11, project emissions during operation would not exceed the daily thresholds set by the SCAQMD. Therefore, impacts from criteria pollutants generated during project operation would be less than significant and no mitigation would be required.

5.3 CUMULATIVELY CONSIDERABLE NET INCREASE OF NONATTAINMENT CRITERIA POLLUTANTS

In accordance with CEQA Guidelines Section 15064(h)(3), the SCAQMD's approach for assessing cumulative impacts is based on the AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal and State Clean Air Acts. If a project is not consistent with the AQMP, which is intended to bring the SCAB into attainment for all criteria pollutants, that project can be considered cumulatively considerable. Additionally, if the mass regional emissions calculated for a project exceed the applicable SCAQMD daily significance thresholds that are designed to assist the region in attaining the applicable state and national ambient air quality standards, that project can be considered cumulatively considerable. As detailed in Section 5.2, Tables 10 and 11, construction and operational emissions would not exceed the SCAQMD regional significance thresholds for all criteria pollutants and would therefore not be cumulatively considerable.

For two or more projects within close proximity, that is, 1,640 feet (500 meters) or less from the same sensitive receptor, a local cumulative analysis must be performed. The onsite emissions from the related project must be added to the background concentration, which is then summed with the proposed project emissions for comparison to the SCAQMD LSTs or State and federal AAQS. If the related projects combine with the proposed project to result in an exceedance of the ambient standards, the project is considered cumulatively significant. There are no known projects within close proximity, defined as 1,640 feet (500 meters) or less, to the proposed project. Therefore, a local cumulative analysis is not required.

5.4 IMPACTS TO SENSITIVE RECEPTORS

5.4.1 Construction Activities

5.4.1.1 Criteria Pollutants

The localized effects from the on-site portion of daily construction emissions were evaluated at sensitive receptor locations potentially impacted by the project according to the SCAQMD's LST method, described above. Consistent with the LST guidelines, when quantifying mass emissions for localized analysis, only emissions that occur on site are considered. Emissions related to off-site delivery/haul truck activity and construction worker trips are not considered in the evaluation of construction-related localized impacts, as these do not contribute to emissions generated on a project site. The closest sensitive receptors are the single-family residences approximately 70 feet (21 meters) west of the project site. Therefore, the LSTs for receptors located at 82 feet (25 meters) are used. As shown in Table 12 below, localized emissions for all criteria pollutants would remain below their respective SCAQMD LSTs. There would be a less than significant impact and no mitigation is required.

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Table 12
MAXIMUM LOCALIZED DAILY CONSTRUCTION EMISSIONS

Phase	Pollutant Emissions (pounds/day)			
	NO_x	CO	PM_{10}	$PM_{2.5}$
Site Preparation	9	4	<0.5	<0.5
Grading	9	8	1	1
Underground Utilities	2	2	<0.5	<0.5
Building Construction	10	8	1	1
Paving	8	7	<0.5	<0.5
Architectural Coating	2	2	<0.5	<0.5
Maximum Daily Emissions[1]	**11**	**10**	**1**	**1**
SCAQMD Thresholds	*270*	*1,557*	*13*	*8*
Significant Impact?	***No***	***No***	***No***	***No***

Source: CalEEMod (output data is provided in Appendix A)
[1] Maximum daily emissions occur when Grading and Underground Utilities phases overlap.
Note: Totals may not sum due to rounding.

5.4.1.2 Toxic Air Contaminants

The greatest potential for TAC emissions during construction would be related to DPM associated with heavy equipment operations during earth-moving activities. The SCAQMD does not consider diesel-related cancer risks from construction equipment to be an issue due to the short-term nature of construction activities. Construction activities associated with the proposed project would be sporadic, transitory, and short term in nature (i.e., less than one year). The assessment of cancer risk is typically based on a 30-year exposure duration. Because exposure to diesel exhaust would be well below 30 years, construction of the proposed project is not anticipated to result in an elevated cancer risk to exposed persons due to the short-term nature of construction. As such, project-related TAC emission impacts during construction would not be significant and no mitigation is required.

5.4.2 Operational Activities

5.4.2.1 CO Hotspots

CO concentration is a direct function of motor vehicle activity (e.g., idling time and traffic flow conditions) particularly during peak commute hours and meteorological conditions. Under specific meteorological conditions (e.g., stable conditions that result in poor dispersion), CO concentrations may reach unhealthy levels with respect to local sensitive land uses such as residential areas, schools, and hospitals. As a result, the SCAQMD recommends analysis of CO emissions at the local and regional levels.

A CO hotspot is an area of localized CO pollution that is caused by severe vehicle congestion on major roadways, typically near intersections. If a project increases average delay at signalized intersections operating at Level of Service (LOS) E or F or causes an intersection that would operate at LOS D or better without the project to operate at LOS E or F with the project, a quantitative screening is required.

According to the project traffic analysis (Kimley-Horn and Associates, Inc. 2016), four of the intersections evaluated would meet these criteria, indicating that there would be a potential CO hotspot and a quantitative screening is required. The four intersections and their projected LOS include; Perris Boulevard at Atwood Avenue which would operate at LOS E (AM) and F (PM/Sun); the unsignalized

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intersection of Cottonwood Avenue at Crape Myrtle Drive which would operate at LOS F in the AM and E on Sunday; Perris Boulevard at Alessandro Boulevard which would operate at LOS E in PM peak hours; and the Perris Boulevard Driveway which would operate at LOS F during all AM, PM and Sunday peak hours.

In the 2003 SCAQMD AQMP, the SCAQMD modeled the four highest volume intersections in the SCAB to determine the highest potential for a CO hotspot in the SCAB. The results of the SCAQMD's analysis are provided in Table 13 and illustrate that no intersections would exceed the federal or State 1-hour standards or the federal 8-hour standard and one intersection would likely exceed the State 8-hour CO standard (Long Beach-Imperial) in 2003[2]. By 2004, all intersections were estimated to fall below all CO standards and be further reduced in 2005. This decrease over time is largely due to improved technologies and the use of progressively cleaner vehicles.

Table 13
CARBON MONOXIDE MODELING RESULTS FROM THE 2003 AIR QUALITY MANAGEMENT PLAN (PPM)

Intersection	Morning 1-Hour	Afternoon 1-Hour	Peak 1-Hour	2003 8-hour	2004 8-hour	2005 8-hour
Wilshire Ave at Veteran Ave	4.6	3.5	-	4.2	4.0	3.7
Sunset Ave at Highland Ave	4.0	4.5	-	3.9	3.7	3.5
La Cienega Blvd at Century Blvd	3.7	3.1	-	5.8	5.5	5.2
Long Beach Blvd at Imperial Hwy	3.0	3.1	1.2	9.3	8.8	8.4

Ppm: parts per million
Note: The federal 1-hour standard is 35 ppm, the State 1-hour standard is 20 ppm, the federal 8-hour standard is 9 ppm, and State 8-hour standard is 9.0 ppm.
Sources: SCAQMD 2003

Due to the high level of urbanization in the Los Angeles area where the highest volume intersections are located and due to the continuing reduction in vehicle CO emissions, background CO concentrations are expected to be lower in the City than any of the intersections in Table 13. When qualitatively comparing the CO modeling locations in the 2003 AQMP to those in the project area, several factors can be used to demonstrate that the project area can be expected to have lower CO concentrations than in the attainment plan. The factors considered are traffic demand, emission variables, site variables, and meteorological variables.

Table 14, *Traffic Volume Comparison*, provides a summary of the traffic volumes contained in the SCAQMD's modeling and the traffic volumes for the proposed Project for comparison.

[2] It should be noted that the federal 8-hour CO standard is 9 ppm and not 9.0 ppm. As such, all values less than 9.5 do not exceed the standard. Therefore, the 2003 concentration for Long Beach Blvd/Imperial Hwy of 9.3 is said to not exceed the federal 8-hour CO standard.

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Table 14
TRAFFIC VOLUME COMPARISON

Intersection		Eastbound (AM/PM)	Westbound (AM/PM)	Southbound (AM/PM)	Northbound (AM/PM)	TOTAL (AM/PM)
2003 AQMP	Wilshire Ave at Veteran Ave	4,951/2,069	1,830/3,317	721/1,400	560/933	**8,062/8,388**
	Sunset Ave at Highland Ave	1,417/1,764	1,342/1,540	2,304/1,832	1,551/2,238	**6,614/7,374**
	La Cienega Blvd at Century Blvd	2,540/2,243	1,890/2,728	1,384/2,029	821/1,674	**6,635/8,888**
	Long Beach Blvd at Imperial Hwy	1,217/2,020	1,760/1,400	479/944	756/1,150	**4,212/5,514**
Proposed Project	Perris Blvd at Atwood Ave	56/58	21/15	1311/1765	1531/1465	**2,919/3,303**
	Cottonwood Ave at Crape Myrtle Dr	373/424	532/343	1341/1706	1328/1376	**3,574/3,849**
	Perris Blvd at Alessandro Blvd	764/1842	1341/1136	1162/1427	1395/1255	**4,662/5,660**
	Perris Blvd Driveway	11/86	61/69	1334/1666	1480/1468	**2,886/3,289**

Source: SCAQMD 2003; Kimley-Horn and Associates, Inc. 2016.

As shown in Table 14, traffic volumes at the project-affected intersections are less than the maximum traffic volumes in the AQMP modeled intersections, therefore CO concentrations would be less than those modeled for the AQMP intersections. There would be no exposure of sensitive receptors to a project-generated CO hotspot and impacts would be less than significant.

5.4.2.2 Toxic Air Contaminants

The new fuel facility would require authority to construct (ATC) and permit to operate (PTO) approval from the SCAQMD, which will review the facility design and location for compliance with SCAQMD standards for criteria pollutants and air quality. All tanks and dispensers would be equipped with the latest Phase I and Phase II Enhanced Vapor Recovery (EVR) air pollution control equipment technology per CARB regulations and associated Executive Orders. The Phase I EVR equipment controls the vapors in the return path from the tanks back to the tanker truck during offloading filling operations. Phase I EVR systems are 98 percent effective in controlling fugitive emissions from escaping into the environment. The Phase II EVR equipment, which also includes "in-station diagnostics," controls and monitors the vapors in the return path from the vehicles back to the tanks. Phase II EVR systems are 95 percent effective in controlling fugitive emissions from escaping into the environment. Therefore, operations expected to occur at the proposed project would not emit a significant quantity of toxic chemicals.

Other long-term operational emissions include toxic substances such as cleaning agents in use on site, compliance with State and federal handling regulations would ensure that emissions remain below a level of significance. The use of such substances such as cleaning agents is regulated by the 1990 Federal Clean Air Act Amendments as well as State-adopted regulations for the chemical composition of consumer products. As such, project-related TAC emission impacts during operation would be less than significant and no mitigation is required.

Attachment: Air Quality and Green House Gas Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE

5.5 ODORS

The Air Quality Section of the City General Plan's Environmental Impact Report (EIR; City 2006) provides guidance for defining objectionable odors. For construction activities, odors would be short-term in nature and are subject to SCAQMD Rule 402 *Nuisance* (CARB 2018) and may be reported to the AQMD (City 2012c). In addition, construction odors are limited to the number of people living and working near the source. The nearest residences are located adjacent to the east of the project. While some components of asphalt and diesel emissions are considered toxic air contaminants, construction activities would be temporary and transitory and associated odors would not be unfamiliar and would cease upon construction completion. Therefore, odor impacts from construction of the project would be less than significant due to the duration of exposure.

Common sources of operational odor complaints include sewage treatment plants, landfills, recycling facilities, and agricultural uses. The proposed project, a donut restaurant and convenience store with a fueling station and car wash, would not include any of these uses. The fueling station would emit odors during operation in the form of diesel exhaust from vehicles and operation of the fueling pumps. The increase in odor emission, however, would be minimal, as vehicle exhaust is already prevalent in the area due to its proximity to busy roadways such as Perris Boulevard and Cottonwood Avenue.

Solid waste generated by the proposed on-site uses would be collected by a contracted waste hauler, ensuring that any odors resulting from on-site waste would be managed and collected in a manner to prevent the proliferation of odors. Operational odor impacts would be less than significant.

6.0 GREENHOUSE GAS IMPACT ANALYSIS

This section evaluates potential impacts of the proposed project related to the generation of GHG emissions. Complete modeling results are included as Appendix A of this report.

6.1 GREENHOUSE GAS EMISSIONS

6.1.1 Construction

Project construction GHG emissions were estimated using the CalEEMod model as described in Section 4.1. Project-specific input was based on general information provided in Section 1.0, information provided by A & S Engineers, and default model settings to estimate reasonably conservative conditions. Additional details of phasing, selection of construction equipment, and other input parameters, including CalEEMod data, are included in Appendix A.

Emissions of GHGs related to the construction of the project would be temporary. As shown in Table 15, *Estimated Construction GHG Emissions*, total GHG emissions associated with construction of the project are estimated at 76 MT CO_2e. For construction emissions, SCAQMD recommends that the emissions be amortized (i.e., averaged) over 30 years and added to operational emissions. Averaged over 30 years, the proposed construction activities would contribute approximately 3 MT CO_2e emissions per year.

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Table 15
ESTIMATED CONSTRUCTION GHG EMISSIONS

Phase	Emissions ($MT CO_2e$)
Site Preparation	11
Grading	13
Underground Utilities	3
Building Construction	46
Paving	3
Architectural Coating	1
TOTAL[1]	**76**
Amortized Construction Emissions[2]	3

Source: CalEEMod (output data is provided in Appendix A)

[1] The total presented is the sum of the unrounded values.

[2] Construction emissions are amortized over 30 years in accordance with SCAQMD guidance.

6.1.2 Operational Emissions

Operational sources of GHG emissions include: (1) area sources (landscaping equipment); (2) energy use; (3) vehicle use; (4) solid waste generation; and (5) water conveyance and treatment.

6.1.2.1 Area Source Emissions

Project area sources include emissions from use of consumer products, landscaping equipment, and VOC emissions from repainting buildings. GHG emissions associated with area sources were estimated using the CalEEMod default values for the project. The annual GHG emissions from area sources are estimated to be less than 0.5 MT CO_2e per year.

6.1.2.2 Energy Emissions

The project would use electricity for lighting, heating, and cooling. Electricity generation typically entails the combustion of fossil fuels, including natural gas and coal, which are then stored and transported to end users. A building's electricity use is thus associated with the off-site or indirect emission of GHGs at the source of electricity generation (power plant). Project electricity will be supplied by Southern California Edison. No natural gas would be used in the project.

With the implementation of energy-reducing project design features to comply with 2016 Title 24 standards, the annual GHG emissions from electricity consumption are estimated to be 51 MT CO_2e.

6.1.2.3 Vehicular (Mobile) Sources

Operational emissions from mobile source emissions are associated with project-related vehicle trip generation and trip length. Based on information from Traffic Impact Study prepared for the project (Kimley-Horn and Associates, Inc. 2016), after applying additional pass-by reductions, the project would generate 2,445 ADTs, 72 morning peak hour trips, 98 evening peak hours trips, and 138 Sunday trips. CalEEMod default vehicle speeds were used. The project would result in vehicle-related emissions of 1,092 MT CO_2e.

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6.1.2.4 Solid Waste Sources

Solid waste generated by the project would also contribute to GHG emissions. Treatment and disposal of solid waste produces emissions of methane. For the project calculations, a countywide average waste disposal rate was used and was obtained from the California Department of Resources Recycling and Recovery (CalRecycle). This analysis assumes that the countywide average already accounts for the 50 percent diversion requirement from AB 75. In 2012, the State legislature enacted AB 341, increasing the diversion target to 75 percent statewide by 2020. Therefore, a 25 percent diversion rate over the countywide average was applied to the project in this analysis. Using CalEEMod defaults and a 25 percent operational solid waste diversion rate in accordance AB 341 standards, GHG emissions from project-related solid waste would be 13 MT CO_2e per year.

6.1.2.5 Water Sources

Water-related GHG emissions are from the conveyance and treatment of water. The California Energy Commission's 2006 Refining Estimates of Water-Related Energy Use in California defines average energy values for water in southern California. These values are used in CalEEMod to establish default water-related emission factors. Using these defaults and a 20 percent reduction in potable water use and wastewater generation in accordance with CALGreen, the project's estimated GHG emissions related to water treatment and conveyance would be 5 MT CO_2e per year.

6.1.3 Other GHG Emission Sources

Ozone is also a GHG; however, unlike other GHGs, ozone in the troposphere is relatively short lived and therefore is not global in nature. According to CARB, it is difficult to make an accurate determination of the contribution of ozone precursors (NO_X and VOCs) to global warming (CARB 2006). Therefore, it is assumed that emission of ozone precursors associated with the project would not significantly contribute to climate change.

At present, there is a federal ban on chlorofluorocarbons (CFCs); therefore, it is assumed that the project would not generate emissions of this GHG. Implementation of the project may emit a small amount of HFC emissions from leakage, service of, and from disposal at the end of the life of refrigeration and air conditioning equipment. However, these emissions are not quantifiable and are assumed to be negligible. PFCs and sulfur hexafluoride are typically used in heavy-duty industrial manufacturing applications. The proposed project is a donut restaurant and convenience store with a fueling station and carwash and would not include heavy-duty industrial manufacturing applications. Therefore, it is not anticipated that the project would contribute significant emissions of these GHGs.

6.1.4 Summary

Table 16, *Total Estimated Operational GHG Emissions*, includes the total annual emissions for the project. The emissions include the amortized annual construction emissions anticipated for the project. Appendix A contains the CalEEMod output files for the project. As shown in Table 16, the project would result in annual GHG emissions of 1,165 MT CO_2e. This value is less than the SCAQMD's 3,000 MT CO_2e per year interim threshold. Therefore, GHG emissions during project operation, including amortized construction emissions, are less than significant.

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Table 16
TOTAL ESTIMATED OPERATIONAL GHG EMISSIONS

Emission Sources	Emissions (MT CO_2e)
	2019
Area Sources	<0.5
Energy Sources	51
Vehicular (Mobile) Sources	1,092
Solid Waste Sources	13
Water Sources	5
Operational Subtotal	*1,162*
Construction (Annualized over 30 years)	3
TOTAL OPERATIONAL EMISSIONS	**1,165**

Source: CalEEMod output data is provided in Appendix A
Note: Totals may not add up exactly due to rounding.

6.2 CONSISTENCY WITH LOCAL PLANS ADOPTED FOR THE PURPOSE OF REDUCING GHG EMISSIONS

There are numerous State plans, policies, and regulations adopted for the purpose of reducing GHG emissions. The principal overall State plan and policy is AB 32, the California Global Warming Solutions Act of 2006. The quantitative goal of AB 32 is to reduce GHG emissions to 1990 levels by 2020. SB 32 would require further reductions of 40 percent below 1990 levels by 2030. Because of the project's operational year in 2018, the project aims to reach the quantitative goals set by AB 32. Statewide plans and regulations such as GHG emissions standards for vehicles (AB 1493), the LCFS, and regulations requiring an increasing fraction of electricity to be generated from renewable sources are being implemented at the statewide level; as such, compliance at the project level is not addressed. Therefore, the proposed project does not conflict with those plans and regulations.

As previously discussed, the City CAS does not have GHG emission thresholds and therefore utilizes the significance thresholds set forth by the SCAQMD. The SCAQMD applies a screening threshold for Tier 3 of 3,000 MT of CO_2e per year. The proposed project's increase in GHG emissions would be less than the SCAQMD's screening threshold; therefore, the project would be consistent with the City CAS. Implementation of the proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. This would represent a less than significant impact.

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Appendix C

Cultural Resources Survey Report

HELIX Environmental Planning

Yum Yum Donuts Project

CULTURAL RESOURCES SURVEY REPORT

October 2017 | ASE-01

Stacie Wilson
Senior Archaeologist

Prepared for:

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Yum Yum Donuts Project

CULTURAL RESOURCES SURVEY REPORT FOR THE PROPOSED YUM YUM DONUTS PROJECT, CITY OF MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA

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October 2017 | ASE-01

National Archaeological Database Information

Authors:	Stacie Wilson
Firm:	HELIX Environmental Planning, Inc.
Client/Project:	A & S Engineering / Yum Yum Donuts Project
Report Date:	October 2017
Report Title:	Cultural Resources Survey Report for the Proposed Yum Yum Donuts Project, City of Moreno Valley, Riverside County, California
Type of Study:	Cultural Resources Survey
New Sites:	None
Updated Sites:	None
USGS Quad:	Sunnymead 7.5' Quadrangle
Acreage:	3.77 acres
Key Words:	Riverside County; Moreno Valley; Sunnymead; Perris Boulevard; no resources

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EXECUTIVE SUMMARY

HELIX Environmental Planning, Inc. (HELIX) was contracted by A & S Engineering to conduct a cultural resources study for the Yum Yum Donuts Project (project) in the City of Moreno Valley, California. A cultural resources study including a records search, Sacred Lands File search, Native American outreach, a review of historic aerial photographs and maps, and a field survey was completed. This report details the methods and results of the cultural resources study and has been prepared to comply with the California Environmental Quality Act (CEQA).

The records search conducted at the Eastern Information Center (EIC) indicated that 11 previous cultural resources studies have been conducted within one mile of the project area, none of which occurred within the project site. The records search results also indicated that a total of 6 cultural resources have been previously recorded within one mile of the project area; however, no sites have been recorded within the project site.

The field investigations included intensive pedestrian survey of the study area by a HELIX archaeologist and a Native American monitor on September 27, 2017. The survey did not result in the identification of any cultural material within the study area. As such, no impacts to cultural resources are anticipated. However, the project site was covered by fill material, and the original ground surface could not be observed. Additionally, the project site is located within alluvial soils, where there is a potential for buried cultural resources. Based on this, it is recommended that an archaeological and Native American monitoring program be implemented if grading or other ground disturbing activities (i.e., trenching for utilities) are to occur below the current layer of fill. The monitoring program would include attendance by the archaeologist and Native American monitor at a preconstruction meeting with the grading contractor and the presence of archaeological and Native American monitors during initial ground disturbing activities on site. Both archaeological and Native American monitors would have the authority to temporarily halt or redirect grading and other ground-disturbing activity in the event that cultural resources are encountered. If significant cultural material is encountered, the monitors will coordinate with the applicant and City staff to develop and implement appropriate mitigation measures.

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1.0 INTRODUCTION

1.1 PROJECT LOCATION AND DESCRIPTION

The Yum Yum Donuts Project (project) is located in the City of Moreno Valley (City) in northwestern Riverside County (Figure 1, *Regional Location*). The project is located northeast of March Air Force Base and northwest of Perris Reservoir within Section 8 of Township 3 South, Range 3 West, on the U.S. Geological Survey (USGS) 7.5' Sunnymead quadrangle (Figure 2, *Project Vicinity [USGS Topography]*). The 5.77-acre project area is located within Assessor Parcel Number (APN) 479-140-023 and 479-140-024, and is bordered by Perris Boulevard to the west and Cottonwood Avenue to the south (Figure 3, *Project Vicinity [Aerial Photograph]*). The project proposes to develop the property for commercial uses. A car wash, a convenience store, two office buildings, and a steel canopy are proposed within the study area. In addition, two underground storage tanks would be installed in the southeast corner of the project site.

1.2 REGULATORY FRAMEWORK

Cultural resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, and/or scientific importance. The California Environmental Quality Act (CEQA), Public Resources Code 21084.1 and CEQA Guidelines, California Code of Regulations Title 14 Section 15064.5 discuss significant cultural resources as "historical resources," and defines them as:

- resource(s) listed or determined eligible by the State Historical Resources Commission for listing in the California Register of Historical Resources (CRHR) (14 CCR Section 15064.5[a][1])
- resource(s) either listed in the NRHP [National Register of Historic Places] or in a "local register of historical resources" or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, unless "the preponderance of evidence demonstrates that it is not historically or culturally significant" (14 CCR Section 15064.5[a][2])
- resources determined by the Lead Agency to meet the criteria for listing on the CRHR (14 CCR Section 15064.5[a][3])

For listing in the CRHR, a historical resource must be significant at the local, state, or national level under one or more of the following four criteria:

A. It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;

B. It is associated with the lives of persons important to local, California, or national history;

C. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values;

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D. It has yielded or has the potential to yield information important to the prehistory or history of the local area, California, or the nation.

Under 14 CCR Section 15064.5(a)(4), a resource may also be considered a "historical resource" for the purposes of CEQA at the discretion of the lead agency.

All resources that are eligible for listing in the CRHR must have integrity, which is the authenticity of a historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance. Resources, therefore, must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association. In an archaeological deposit, integrity is assessed with reference to the preservation of material constituents and their culturally and historically meaningful spatial relationships. A resource must also be judged with reference to the particular criteria under which it is proposed for nomination.

California State Assembly Bill 52 (AB 52) revised PRC Section 21074 to include Tribal Cultural Resources (TCRs) as an area of CEQA environmental impact analysis. Further, per new PRC Section 21080.3, a CEQA lead agency must consult with any California Native American tribe that requests consultation and that is traditionally and culturally affiliated with the geographic area of a proposed project to identify resources of cultural or spiritual value to the tribe, even if such resources are already eligible as historical resources as a result of cultural resources studies.

1.2.1 City of Moreno Valley General Plan

The City's General Plan (2006) includes the following objective and related policies regarding cultural and historical resources as part of the Conservation Element (City of Moreno Valley 2006: 9-37):

Objective 7.6: Identify and preserve Moreno Valley's unique historical and archaeological resources for future generations.

Policies

7.6.1: Historical, cultural and archaeological resources shall be located and preserved, or mitigated consistent with their intrinsic value.

7.6.2: Implement appropriate mitigation measures to conserve cultural resources that are uncovered during excavation and construction activities.

7.6.3: Minimize damage to the integrity of historic structures when they are altered.

7.6.4: Encourage restoration and adaptive reuse of historical buildings worthy of preservation.

7.6.5: Encourage documentation of historic buildings when such buildings must be demolished.

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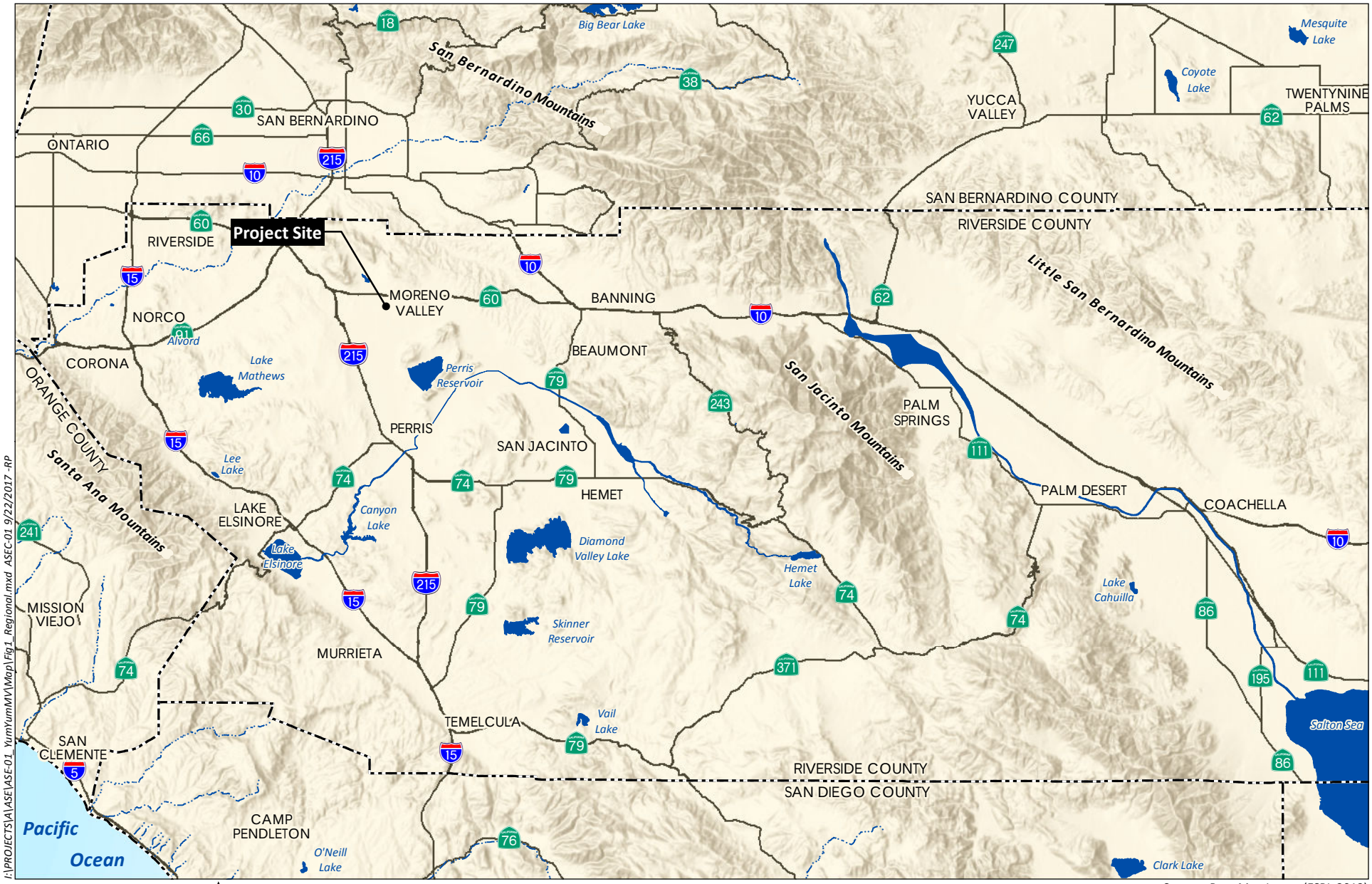
Yum Yum Donuts



I:\PROJECTS\A\ASE\ASE-01 YumYumMV\Map\Fig1 Regional.mxd ASEC-01 9/22/2017 -RP

0 10 Miles

Source: Base Map Layers (ESRI, 2013)

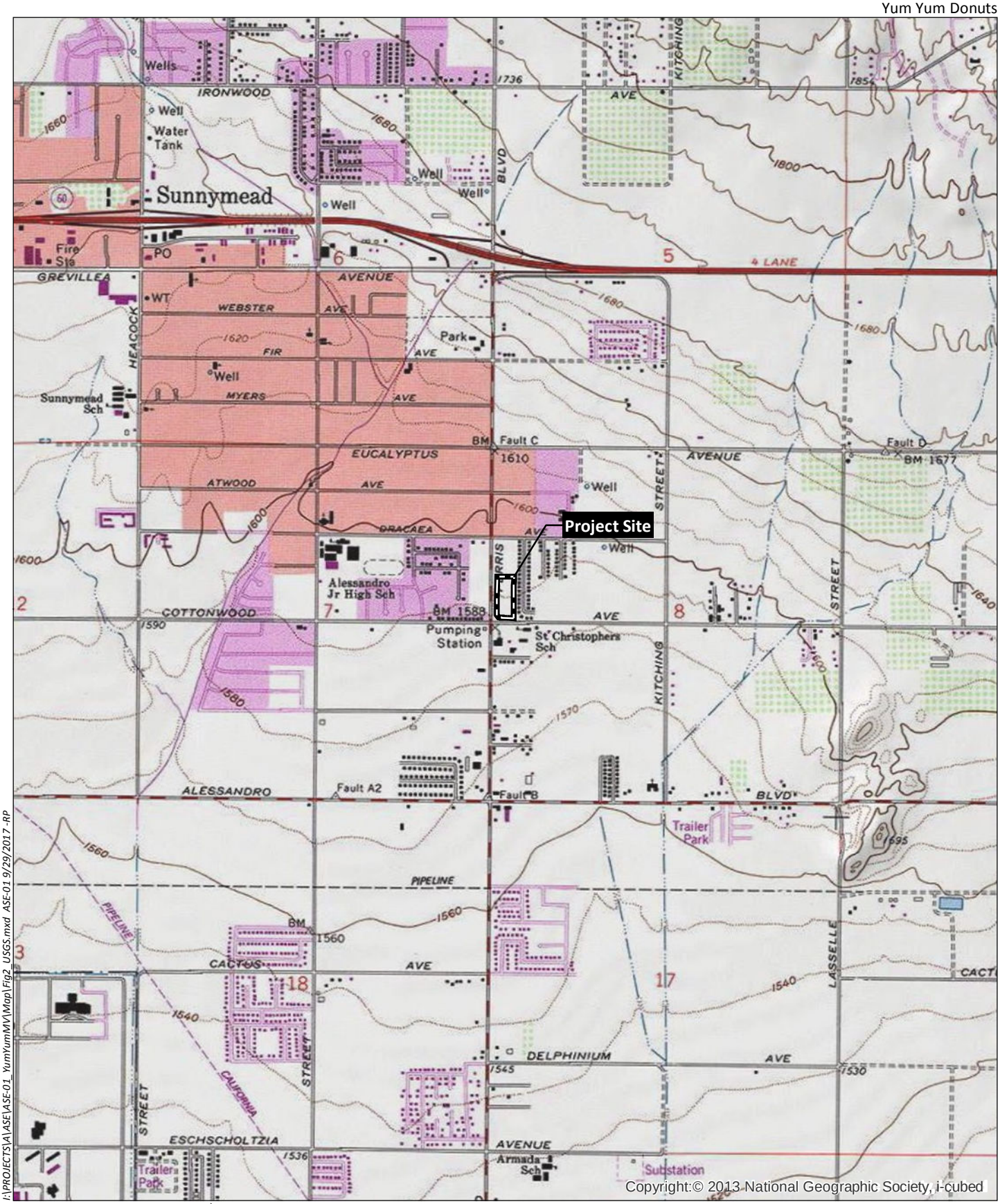
HELIX Environmental Planning

Regional Location

Figure 1

Attachment: Cultural Resources Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF

Yum Yum Donuts



Source: Base Map Layers (SanGIS, 2016)

0 2,000 Feet

I:\PROJECTS\A\ASE\ASE-01_YumYumMV\Map\Fig2_USGS.mxd ASE-01 9/29/2017 -RP

HELIX Environmental Planning

Project Vicinity (USGS Topography)

Figure 2

Attachment: Cultural Resources Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT

Yum Yum Donuts

I:\PROJECTS\A\ASE\ASE-01_YumYumMV\Map\Fig3_Aerial.mxd ASE-01 9/29/2017 - RP

0 50 Feet

Source: Base Map Layers (SanGIS, 2016)

HELIX Environmental Planning

Project Vicinity (Aerial Photograph)

Figure 3

Attachment: Cultural Resources Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT

1.3 PROJECT PERSONNEL

Stacie Wilson, M.S., RPA, conducted the field survey and is the primary author of this technical report. Christina Mills of the Soboba Band of Luiseño Indians was present for the pedestrian survey. Senior technical review was provided by Mary Robbins-Wade, M.A., RPA. Resumes for key project personnel are presented in Appendix A.

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2.0 PROJECT SETTING

2.1 NATURAL SETTING

The project area is in the Moreno Valley in the foothills of northwestern Riverside County. The Badlands and the San Bernardino and San Jacinto mountains lie to the east, the Santa Ana Mountains lie to the west, and the Box Spring Mountains are to the north. The climate of western Riverside County is characterized as semi-arid environment with low humidity and rainfall. Almost all rainfall occurs in the winter, but the region can also experience rare, intense summer thunderstorms. Wind is also a strong feature of this climatic regime, with dry winds in excess of 25 miles per hour in the late winter and early spring (National Oceanic and Atmospheric Administration [NOAA] 2014). Average monthly temperatures range from a December low of 53.6 degrees Fahrenheit (°F) to an August high of 79.0°F, and the average yearly rainfall is 9.97 inches (Weather Currents 2017). The property parcel is flat with an elevation of 1,590 feet above mean sea level (amsl). Various drainages in the vicinity would have made fresh water easily accessible to native populations living in the area.

Geologically, the project area is underlain by young alluvium in the southeastern portion of the study area and very old alluvium in the remainder of the project site (Morton and Matti 2001). The very old alluvium forms widespread deposits north and south of Moreno Valley, while the young alluvium is extensively developed in eastern Moreno Valley. The nearby hills south and west of the Valley are Mesozoic granitic formations, and the Badlands to the east are of undivided Pliocene nonmarine formations (Morton et al. 1999). Three soil series are mapped for the project site: Hanford coarse sandy loam (2 to 8 percent slopes), Pachappa fine sandy loam (2 to 8 percent slopes, eroded), and Ramona sandy loam (2 to 5 percent slopes, eroded). The Ramona sandy loam is found on the northern portion of the project site, Pachappa fine sandy loam is within the central portion, and Hanford coarse sandy loam is found in the southwestern area (Web Soil Survey n.d.). All three of the soil series are granite-derived alluviums found in alluvial fans and terraces that generally support wild oats, ripgut brome, soft chess, filaree, foxtail, mustard, and coast live oak (Bowman 1973). Native grassland species and coast live oak would have been used by native populations for food, medicine, tools, and ceremonial and other uses (Bean and Shipek 1978; Christenson 1990; Hedges and Beresford 1986). Many of the animal species living within these communities (such as rabbits, deer, small mammals, and birds) would have been used by native inhabitants as well.

2.2 CULTURAL SETTING

2.2.1 Prehistoric Period

Proposed dates for the earliest human occupation in California vary from around 20,000 years ago (Bada and Schroeder 1974; Carter 1957, 1978, 1980) to 10,000 years ago. Carter (1957, 1978, 1980), Minshall (1976) and others (e.g., Childers 1974; Davis 1968, 1973) have long argued for the presence of Pleistocene humans in California. However, these sites identified as "early man" are all controversial. The material from the sites is generally considered nonartifactual, and the investigative methodology is often questioned (Moratto 1984).

In southern California, three major time periods are commonly recognized for the prehistoric period: Early Prehistoric, Archaic, and Late Prehistoric. The best example of Early Prehistoric Period archaeological evidence in Southern California is in the San Dieguito complex of San Diego County,

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dating to over 9,000 years ago (Warren 1967; Warren et al. 2004). The San Dieguito Tradition is thought by most researchers to have an emphasis on big game hunting and coastal resources (Warren 1967). The material culture of the San Dieguito complex consists primarily of scrapers, scraper planes, choppers, large blades, and large projectile points. In some areas of California, the Early Prehistoric Period is often referred to as the Paleo-Indian period and is associated with the last Ice Age occurring during the Terminal Pleistocene (pre-10,000 years ago) and the Early Holocene, beginning circa 10,000 years ago (Erlandson 1994, 1997).

The Archaic Period, or Millingstone Horizon (Wallace 1955), dates from 7,000-8,600 to 1,300-3,000 years ago and is generally consistent with the Topanga complex of Los Angeles and the La Jolla complex of San Diego (Warren et al. 2004). The Millingstone Horizon is also referred to as the Encinitas Tradition (Warren 1968). The Encinitas tradition is generally "recognized by millingstone assemblages in shell middens, often near sloughs and lagoons" (Moratto 1984:147). According to Wallace, "a changeover from hunting to the collection of seed foods is clearly reflected in the archaeological record for the period between 6000 and 3000 B.C. The importance of seeds in the diet of the prehistoric peoples can be seen in the numbers of food-grinding implements present at their settlements" (Wallace 1978:28). Basin metates, manos, discoidals, a small number of Pinto series and Elko series points, and flexed burials are also characteristic. Most of the archaeological evidence for Archaic Period occupation in southern California is derived from sites located in near-coastal valleys, and around estuaries that are present along the San Diego coast (Warren et al. 2004). In the vicinity of the project, Archaic Period occupation is represented by a few diagnostic artifacts and one radiocarbon date of circa 2,200 years before present (B.P.) identified during archaeological excavations conducted for the Perris Reservoir project in Perris Valley (Bettinger 1974).

The Late Prehistoric period in southern California is characterized by the incursion of Uto-Aztecan - speaking people who occupied large portions of the Great Basin and an area stretching from southern Arizona and northwest and central Mexico into Nevada, Oregon, and Idaho (Miller 1986). The expansion of the Takic group into southern California is unrefined, but several scholars have hypothesized as to when and how the so-called "Uto Aztecan wedge" occurred. Sutton (2009) argues that the Takic group expanded into southern California from the San Joaquin Valley about 3,500 years ago. According to Moratto (1984), the Takic expansion into southern California occurred ca. 3,200 to 3,500 years ago. Golla (2007) suggests Uto-Aztecan speakers expanded into southern California at approximately 2,000 years ago. While the exact chronology of Takic-speaking groups' immigration to southern California remains uncertain, it is generally accepted that Native American population figures in the region substantially increased in the Late Prehistoric Period. In addition, the Late Prehistoric Period is marked by evidence of a number of new tool technologies and subsistence shifts in the archaeological record and is characterized by intensification of social, political, and technological systems. The changes include the production of pottery and the use of the bow and arrow for hunting instead of atlatl and dart, a reduction of shellfish gathering in some areas, an increase in the storage of foodstuffs such as acorns, and new traits such as the cremation of the dead (Gallegos 2002; McDonald and Eighmey 2004). After approximately A.D. 1600 a change occurred in settlement and subsistence patterns, and land use intensified in the San Jacinto and Perris valleys, which was reflected into the ethnohistoric period (Bean et al. 1991; Wilke 1974).

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2.2.2 Ethnohistory

While some ethnographers place the area of the project site in the traditional territory of the Luiseño people (see Kroeber 1925: Plate 57), others show it as within traditional Cahuilla territory (see Bean 1978; Bean and Shipek 1978). Most probably, this is a transitional area between the two related cultural groups. The Cahuilla and Luiseño are Takic-speaking people of the Uto-Aztecan linguistic stock (Bean and Vane 1979; Miller 1986). Kroeber and others have previously referred to these Takic-speaking people of the Uto-Aztecan linguistic stock as members of the Shoshonean language family (Kroeber 1925). While, some dispute the use of this terminology (e.g., Miller 1986), it is still commonly used to refer to these groups.

2.2.2.1 Cahuilla

The Cahuilla term *?ivi?lyu?atum* (or *īvīatim*) refers to those who speak the Cahuilla language and is also a recognition of a commonly shared cultural tradition (Bean 1972; Strong 1929). Prehistorically, the Cahuilla territory was topographically diverse, occupying elevations from 11,000 feet in the San Bernardino Mountains to below sea level at the Salton Sea (Bean 1978). The Cahuilla are thought to have been in part distinguished from other Shoshonean groups (the Luiseño, Serrano, and Gabrielino) by mountain ranges and plains, but they are known to have interacted regularly with these and other groups through trade, intermarriage, ritual, and war. Cahuilla villages were commonly situated within canyons extending into mountain ranges or on nearby alluvial fans, typically near sources of water and food (Bean 1978; Bean et al. 1991). The diverse habitat of the Cahuilla enabled a wide variety of plant and animal species to be used for food, goods manufacture, and medicine (Bean 1978).

2.2.2.2 Luiseño

The Late Prehistoric period is represented by the San Luis Rey complex in northern San Diego County and portions of Riverside County. The term Luiseño is derived from the Mission San Luis Rey and since Spanish-Mexican colonial times has been used in reference to those Takic-speaking people associated with the mission. The San Luis Rey (SLR) complex is divided into two phases: SLR I and SLR II. Elements of the SLR complex include small, triangular, pressure-flaked projectile points (generally Cottonwood series, but Desert Side-notched series also occurs); milling implements: mortars and pestles, manos and metates, and bedrock milling features; bone awls; Olivella shell beads; other stone and shell ornaments; and cremations (Meighan 1954; Moratto 1984; True et al. 1974). The later SLR II complex also includes several elements not found in the SLR I complex: "pottery vessels, cremation urns, red and black pictographs, and such nonaboriginal items as metal knives and glass beads" (Meighan 1954:223). SLR I was originally thought to date from A.D. 1400 to A.D. 1750, with SLR II dating between A.D. 1750 and A.D. 1850 (Meighan 1954). However, that division was based on the assumption that the Luiseño did not practice pottery manufacture until just prior to the arrival of the Spanish. The chronology has since been revised due to evidence that pottery may have been introduced to the Luiseño by their southern neighbors, the Kumeyaay, circa A.D. 1200-1600 (True et al. 1974).

2.2.3 Historical Background

Southern California's historic period began in September 1542 when Juan Rodriguez Cabrillo landed on Santa Catalina Island as part of his exploration expedition up the coast north of "New Spain." Although the impact of this initial contact did not usher in instant changes in the region, it marks the opening of the area to new contact, colonialism, and cultural shifts.

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2.2.3.1 Spanish Period

During the mid-18th century, Spain escalated its involvement in California from exploration to colonization (Weber 1992). In 1769, a Spanish expedition headed by Gaspar de Portolá and Junípero Serra traveled north from San Diego seeking suitable locations to establish military presidios and religious missions in order to extend the Spanish Empire into Alta California. The Presidio of San Diego and Mission San Diego de Alcalá were established in 1769 followed by the Presidio of Monterey and Mission San Carlos Borromeo de Carmelo in 1770 in northern California. The missions and presidios stood, literally and figuratively, as symbols of Spanish colonialism, importing new systems of labor, demographics, settlement, and economies to the area. Agriculture and animal husbandry were the main pursuits of the Missions.

The first documented Spanish contact in what is now Riverside County was by Spanish military captain Juan Bautista de Anza who led expeditions in 1774 and 1775 from Sonora to Monterey (Bolton 1930). Anza embarked on the initial expedition to explore a land route northward through California from Sonora, with the second expedition bringing settlers across the land route to strengthen the colonization of San Francisco (Rolle 1963). Anza's route led from the San Jacinto Mountains northwest through the San Jacinto Valley, which was named "San José" by Anza. Little documentation exists of Anza's route being used after the two expeditions, although it was likely used to bring Spanish supplies into the newly colonized Alta California (Lech 2004). In 1781, the Spanish government closed the route due to uprisings by the Yuman Indians. However, by that time, the missions were established and self-sufficient; thus, the need for Spanish supplies from Sonora had begun to diminish.

Although Riverside County proved to be too far inland to include any missions within its limits, Missions San Juan Capistrano and San Luis Rey de Francia, established in 1776 and 1798 respectively, claimed a large part of southwestern Riverside County. Due to the inland geographical location of the Cahuilla territory, the Spanish missions did not have as direct an effect on them as it did on the Luiseño who lived along the coast (Bean 1978). On the coast, the Luiseño were moved into the Mission environment where living conditions and diseases promoted the decline of the Luiseño population (Bean and Shipek 1978). However, throughout the Spanish Period, the influence of the Spanish progressively spread further from the coast and into the inland areas of southern California as Missions San Luis Rey and San Gabriel extended their influence into the surrounding regions and used the lands for grazing cattle and other animals.

In the 1810s, ranchos and mission outposts, called *asistencias*, were established near the project area, increasing the amount of Spanish contact in the region. An asistencia was established in Pala in 1818 and in San Bernardino in 1819. Additionally, Rancho San Jacinto was established for cattle grazing in the San Jacinto Valley (Bean and Vane 1980; Brigandi 1999). In 1820, Father Payeras, a senior mission official, promoted the idea that the San Bernardino and Pala *asistencias* be developed into full missions in order to establish an inland mission system (Lech 2004). However, Mexico won its independence from Spain in 1821, bringing an end to the Spanish Period in California.

2.2.3.2 Mexican Period

Although Mexico gained its independence from Spain in 1821, Spanish patterns of culture and influence remained for a time. The missions continued to operate as they had in the past, and laws governing the distribution of land were also retained in the 1820s. Following secularization of the missions in 1834, large ranchos were granted to prominent and well-connected individuals, ushering in the Rancho Era,

with the society making a transition from one dominated by the church and the military to a more civilian population, with people living on ranchos or in pueblos. With the numerous new ranchos in private hands, cattle ranching expanded and prevailed over agricultural activities.

In order to obtain a rancho, an applicant submitted a petition containing personal information and a land description and map (*diseño*). In 1835, Jose Antonio Estudillo of San Diego submitted a petition for the San Jacinto Rancho. Although Estudillo's petition was for four square leagues (approximately 30,000 acres), in 1842 he was granted close to the maximum size allowed of 11 square leagues (Lech 2004; State Lands Commission 1982). In 1845, Estudillo's son-in-law, Miguel de Pedrorena filed a petition for half of the San Jacinto Viejo Rancho and a small additional portion of land two miles to the northeast in the hills east of Lamb Canyon (Lech 2004). This portion, the northern half of the San Jacinto Viejo Rancho, became known as the San Jacinto Nuevo y Potrero Rancho, and is where the project is located.

During the Mexican period, the Cahuilla were increasingly influenced by Mexican culture. Some of the Cahuilla acquired Spanish names, learned Spanish, and adopted forms of Spanish subsistence, such as raising cattle, agriculture, and wage labor (Ward 1967; Bean 1978). Many Cahuilla worked seasonally for the Mexicans, traveling to and from their villages (Bean 1978).

2.2.3.3 American Period

American governance began in 1848, when Mexico signed the Treaty of Guadalupe Hidalgo, ceding California to the United States at the conclusion of the Mexican–American War.

California's acquisition by the United States substantially increased the growth of the population in California. The California gold rush, the end of the Civil War, and the passage of the Homestead Act implementing the United States' manifest destiny to occupy and exploit the North American continent brought many people to California after 1848. While the American system required that the newly acquired land be surveyed prior to settlement, the Treaty of Guadalupe Hidalgo bound the United States to honor the land claims of Mexican citizens who were granted ownership of ranchos by the Mexican government (Lech 2004). The Land Act of 1851 established a board of commissioners to review land grant claims, and land patents for the land grants were issued from 1876 to 1893. The San Jacinto Nuevo y Potrero Rancho land grant was patented in 1883 to Miguel Pedrorena, Maria Antonia Estudillo Pedrorena, Isabel Pedrorena, and Helena Pedrorena.

Initially southern California was divided into only two counties: Los Angeles and San Diego. In 1853, San Bernardino County was added, placing what is now Riverside County primarily within San Diego County and partially within San Bernardino County.

Southern California was developed by Americans and other immigrants who migrated to the western frontier in pursuit of gold and other mining, agriculture, trade, and land speculation (Lech 2004). This population growth of southern California during the early years of the American Period brought a need for mail and freight travel. In 1857, John Butterfield was awarded a six-year contract to transport mail twice a week between St. Louis, Missouri, and San Francisco, California (Helmich 2008). The Butterfield Stage Route used the same trail as the Sonora (or Southern Emigrant) Trail from Yuma through Warner Springs and Temecula, and then up through Temescal Valley to Chino, and then to Los Angeles. By the mid-nineteenth century, the Southern Emigrant Trail ran through western Riverside County in a similar alignment to the current I-15 freeway. The Butterfield Overland Stage route went through a major stop

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called “Alamos,” the Spanish word for cottonwoods, in Murrieta. Another branch of the Southern Emigrant Trail veered northward from Temecula to Box Springs near present-day Moreno Valley, roughly following the present-day route of I-215 (Lech 2004).

Local mail routes within southern California were also developed beginning in the 1850s, such as the line begun in 1852 by Phineas Banning between Los Angeles and San Diego (Stott 1968). In 1868, Tomlinson & Co. briefly operated a daily mail route from Tucson, Arizona to Los Angeles via San Diego and San Bernardino (Stott 1968), although after only four months the company had lost $12,000 and discontinued service (Mills 1957). In 1867, the U.S. Mail Company sent weekly stages that ran between San Diego and San Bernardino.

While stagecoaches were successful at transporting gold, people, and mail, the need for a railroad to California was imperative. In the 1850s, surveys were initiated by the federal government to determine a railroad route to the Pacific coast (Lech 2004). Although the first transcontinental railroad was completed in 1869 to northern California, in the 1870s the Southern Pacific Railroad Company, incorporated in 1865 and consolidated in 1870, began to construct a southern route that would traverse the state (Fickewirth 1992). In the early 1880s, the California Southern Railway, a subsidiary of the Atchison, Topeka and Santa Fe Railway (Santa Fe), was completed and allowed for travel through the Cajon Pass to Barstow to a junction of the Atlantic and Pacific Railroad and down to San Diego through western Riverside County. In 1887, Santa Fe officials consolidated their family of railroads in southern California, forming the California Central Railway. Although the California Southern remained an individual subsidiary at that time, it consolidated with the California Central Railway and the Redondo Beach Railway two years later 1889. The resulting corporation was the Southern California Railway Company, wholly owned by Santa Fe (Price 1988). In 1906 all of lines of Southern California Railway Company were deeded to the Atchison, Topeka and Santa Fe Railway Company.

The project area and the surrounding region developed along with the railroad. The trains were used to transport settlers into the area, creating a period of agricultural and land development, ultimately resulting in the establishment of Riverside County in 1893, formed from portions of San Bernardino and San Diego counties. Moreno Valley, which consisted of small, unincorporated communities, got its name from Frank E. Brown (“Moreno” in Spanish), who formed the Bear Valley Land and Water Company in 1883. Brown built a dam at Bear Valley and provided water to the Perris and Moreno communities until 1899, when he lost a legal suit, and thereby water rights, to the City of Redlands. This litigation and a period of natural drought devastated the local farming communities, forcing families to either move or abandon their homes in favor of better irrigated areas. The few who remained turned to “the dry farming of hay, grain, and grapes” (City of Moreno Valley, n.d.).

The community was revived in 1918, with the construction of March Field in anticipation of America’s entry into World War I. It began as a temporary base for training fighter pilots but was established as a permanent base and flight training school in the late 1920s. This led to a population boom in the Moreno Valley, with the Base supporting up to 85,000 troops at a time. The establishment of the Riverside International Raceway in 1958 and the Lake Perris Recreation Area in 1973 led to further population increases until the unincorporated communities of Moreno, Edgemont, and Sunnymead were combined into the City of Moreno Valley in 1984 (City of Moreno Valley, n.d.).

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3.0 ARCHIVAL RESEARCH AND CONTACT PROGRAM

3.1 RECORDS SEARCH

HELIX conducted a record search of the California Historical Resources Information System (CHRIS) at the Eastern Information Center (EIC) on September 25, 2017. The records search covered a one-mile radius around the project area and included archaeological and historical resources, locations and citations for previous cultural resources studies, and a review of the state Office of Historic Preservation (OHP) historic properties directory. The records search summary and map are included as Appendix A (Confidential Appendices, bound separately).

3.1.1 Previous Surveys

The records search results identified 11 previous cultural resource studies within the record search limits, none of which occurred within the project area (Table 1, *Previous Studies within One Mile of the Project Area*). Six of the studies were cultural resource inventories, record searches, or site visits; the remaining studies include an archaeological survey, a historical resource investigation, an architectural evaluation, and an environmental impact report. Only two of the studies, a historical resources investigation (Alexandrowicz 2006) and the California Living Moreno Valley Project (Hogan et al. 2011) identified resources within the search radius.

Table 1
PREVIOUS STUDIES WITHIN ONE MILE OF THE PROJECT AREA

Report Title	Author, Date	Report Type	Results
Environmental Impact Evaluation: Archaeology of Brodiaea Avenue, Pl 984, Water Systems Addition, Riverside County, California	Weaver, 1975	Environmental Impact Report	None in search radius
Cultural Resource Report on Tracts 12608, 12606-2 and 11410 Located in the Sunnymead Area, Riverside County, California	Scientific Resource Surveys, Inc., 1983	Cultural Resources Report	None
Cultural Resources Inventory for the City of Moreno Valley, Riverside County, California	McCarthy, 1987	Cultural Resources Inventory	None in search radius
Cultural Resource Assessment for AT&T Wireless Facility 950-031-029a Located at 24899 Alessandro Boulevard, City of Moreno Valley, Riverside County, California	Kyle, 2004	Cultural Resource Assessment	None
An Architectural Evaluation of Structures Located within Assessor Parcel Numbers 482-090-009-0, -010-0, and 033-0, within the City of Moreno Valley, Riverside County, California	McKenna et al., 2004	Architectural Evaluation	None

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Table 1 (cont.)
PREVIOUS STUDIES WITHIN ONE MILE OF THE PROJECT AREA

Report Title	Author, Date	Report Type	Results
An Archaeological Survey for the Alessandro Plaza Project, City of Moreno Valley, County of Riverside, California	Rosenberg and Smith, 2005	Archaeological Survey	None
An Historical Resources Identification Investigation of the Alessandro Pointe Project, Tract 34681, 25817 Alessandro Boulevard, City of Moreno Valley, Riverside County, California	Alexandrowicz, 2006	Historical Resources Investigation	P-33-015454
Letter Report: Cultural Resources Records Search and Site Visit for Royal Street Telecommunications, LLC Candidate LA2356b (Sunnymead Plaza), 24903 Sunnymead Boulevard, Moreno Valley, Riverside County, California	Bonner and Aislin-Kay, 2007	Record Search and Site Visit	None
Cultural Resources Search and Site Visit Results for T-Mobile USA Candidate IE24173-B	Bonner et al., 2011	Cultural Resources Search and Site Visit	None
Letter Report: Cultural Resources Records Search and Site Visit Results for T-Mobile USA Candidate IE24899-H (A Storage Place)	Bonner and Williams, 2011	Record Search and Site Visit	None
California Living Moreno Valley Project	Hogan et al., 2011	Unknown	P-33-007280, 33-007284, and 33-007289

3.1.2 Previously Recorded Sites

The EIC has a record of six previously recorded cultural resources within a one-mile radius of the project, but none have been recorded within the project area (Table 2, *Previously Recorded Resources within One Mile of the Project Area*). Two of the resources, P-33-007279 and 33-007280, are within a half mile of the project. All of the resources are historic, including five historic addresses of private residences displaying vernacular architecture and dating to between ca. 1880 and ca. 1920. The sixth resource, P-33-015454, is a historic site consisting of the remains of two private residences and associated structures and trash scatters.

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Table 2
PREVIOUSLY RECORDED RESOURCES WITHIN ONE MILE OF THE PROJECT AREA

Resource Number (P-37-#)	Resource Number (CA-RIV-#)	Description	Recorder, Date
007276	7276	Vernacular ranch house built ca. 1920	Warner, 1983
007279	7279	Vernacular ranch house built in 1896, home of Moreno Valley pioneer D.C. Hield	Warner, 1983
007280	7280	Historic Rosa More House, vernacular ranch house built ca. 1880	Warner, 1983
007284	7284	Vernacular wood framed house built ca. 1915	Warner, 1983
007289	7289	Vernacular ranch house built ca. 1915	Warner, 1983
015454	8149	Historic site consisting of the remains of two early to mid-20th Century residences with associated trash scatters	Alexandrowicz, 2006

3.1.3 Other Archival Research

Various additional archival sources were also consulted, including historic topographic maps and aerial imagery. The purpose of this research was to identify historic structures and land use in the area.

One building appears in the northwest corner of the project area on the 1901 USGS 30' Elsinore quadrangle, along with several roads in street grids and other buildings in the vicinity. The community of "Armada" is indicated two blocks south of the project site. On the 1942 (Department of the Army 15' Perris quadrangle) and 1953 (USGS 7.5' Perris quadrangle) historic topographic maps, several more buildings are shown in the project vicinity, as well as community structures, such as schools. Additionally, Cottonwood Avenue, running east-west along the southern border of the project site, is named. No buildings or structures are shown within the project site on historic topographic maps from 1942 (Department of the Army 15' Perris quadrangle), 1953 (USGS 7.5' Perris quadrangle), and historic aerial photographs available at historicaerials.com from 1966, 1967, and 1978 (NETR Online 2017). On the 1996 aerial photograph, the housing development located directly to the east of the project site is in place, and Perris Boulevard, located adjacent to the project on the west, is shown as a two-lane road. By 1997, aerial photographs show Perris Boulevard has being expanded into a four-lane road, and the project area looks as if grading had occurred, possibly with fill placed within the area prior to the grading.

3.2 NATIVE AMERICAN CONTACT PROGRAM

HELIX contacted the Native American Heritage Commission (NAHC) on September 25, 2017 for a Sacred Lands File search and list of Native American contacts for the project area. The NAHC indicated in a response dated September 27, 2017 that no known sacred lands or Native American cultural resources are within the project area. Letters were sent on October 2, 2017 to Native American representatives and interested parties identified by the NAHC. Two responses have been received to date. The Pala Band of Mission Indians responded on October 4, 2017, that the project is not within the boundaries of the territory that the tribe considers its Traditional Use Area and defers to the wishes of Tribes in closer proximity to the project area. The San Manuel Band of Mission Indians responded on October 5, 2017, that proposed project area is within the Serrano ancestral territory and as such, is of interest to the Tribe. However, due to the nature and location of the proposed project, they do not have any concerns

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with the project's implementation, as planned, at this time. If any additional responses are received, they will be forwarded to City staff. Native American correspondence is included as Appendix C (Confidential Appendices, bound separately).

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4.0 METHODS

4.1 SURVEY METHODOLOGY

A pedestrian survey of the project site was conducted on September 28, 2017 by HELIX senior archaeologist Stacie Wilson and Native American monitor, Christine Mills from the Soboba Band of Luiseño Indians. The project area was walked in transects spaced approximately 15 meters (m) apart.

Visibility was excellent for the project area (Plates 1 and 2). It was observed that fill had been overlain on the entirety of project site except for the eastern edge of the site along the property line next to the adjacent private residences. Based on the berm present along the east side of the project area, it is estimated that the fill is approximately three to four feet in height (Plate 3). The fill dirt contained gravel, asphalt chunks, and modern clay pipe fragments. The project area was devoid of vegetation except for a few small weeds.

Plate 1. Overview of the project area from northeast corner, view to the south.

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Plate 2. Overview of the project area from northwest corner, view to the south.

Plate 3. Overview of the berm located along the eastern border of project area, view to the south.

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5.0 RESULTS

No cultural material was observed within the archaeological survey area; however, as noted above, the project area is overlain by fill soils with modern asphalt and debris intermixed.

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6.0 SUMMARY AND MANAGEMENT RECOMMENDATIONS

A study was undertaken to identify cultural resources that are present in the Yum Yum Donuts Project Area and to determine the effects of the project on historical resources. The cultural resources survey did not identify any cultural resources within the project area; therefore, no impacts to cultural resources are anticipated. However, the project site was covered by fill material and the original ground surface could not be observed. Additionally, the project site is located within alluvial soils, where there is a potential for buried cultural resources. Based on this, it is recommended that an archaeological and Native American monitoring program be implemented if grading or other ground disturbing activities (i.e., trenching for utilities) are to occur below the current layer of fill. The monitoring program would include attendance by the archaeologist and Native American monitor at a preconstruction meeting with the grading contractor and the presence of archaeological and Native American monitors during initial ground disturbing activities on site. Both archaeological and Native American monitors would have the authority to temporarily halt or redirect grading and other ground-disturbing activity in the event that cultural resources are encountered. If significant cultural material is encountered, the monitors will coordinate with the applicant and City staff to develop and implement appropriate mitigation measures.

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Appendix A

Resume

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Stacie Wilson, RPA

Senior Archaeologist

HELIX Environmental Planning

Summary of Qualifications

Ms. Wilson has been professionally involved in cultural resources management for 14 years. She has served as principal investigator on numerous cultural resources management projects, and regularly coordinates with local, state, and federal agencies and Native American tribal representatives. She is skilled in project management, archaeological inventories and excavation, and report documentation and has broad experience on private, municipal, federal, utility, and renewable energy projects. She also is proficient at creating, organizing, and analyzing GIS data; technical skills include ArcGIS 10.4, Spatial Analyst, Geostatistical Analyst, and working with large datasets. Ms. Wilson is detail oriented and has strong organizational and coordination capabilities.

Selected Project Experience

The Lakes - Unit 4B & Unit 6 (2017). Senior Archaeologist for an approximately 130-acre construction monitoring project in Rancho Santa Fe. Provided cultural resources consultation support, arranged for archaeological and Native American monitors, and provided project status updates to the County. Work performed for Lennar Homes of California, with the County of San Diego as the lead agency.

El Cuervo Del Sur Phase II Mitigation Support (2016 - 2017). Principal Investigator for a cultural resources study for the El Cuervo Del Sur restoration site. Conducted as part of an as-needed contract with the City of San Diego, Transportation & Storm Water Department, the project proposed the creation of approximately 1.4 acres of wetland habitat. Duties included conducting background research, reviewing previous cultural resource surveys, conducting Native American outreach, and preparing reports. Work performed for the City of San Diego.

Emerald Drive Planned Residential Development Project (2016). Principal Investigator for a cultural resources study for a proposed residential development. Conducted as part of an as-needed contract with the City of Vista, the project proposed the subdivision of a 6.9-acre parcel into 27 single family detached lots. Duties included conducting background research, overseeing field survey and recording of cultural resources, Native American outreach and coordination, and report preparation. Work performed for the City of Vista.

Coastal Reliability Project (2016). Project Archaeologist and field director for a cultural resource survey of eight miles of transmission line located within

Education

Master of Science, Applied Geographical Information Science, Northern Arizona University, 2008

Bachelor of Arts, Anthropology, University of California, San Diego, 2001

Bachelor of Science, Biological Psychology, University of California, San Diego, 2001

Registrations/ Certifications

Register of Professional Archaeologists, 2016

Professional Affiliations

Society for California Archaeology

Society for American Archaeology

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the cities of San Diego and Del Mar. The project involved the reconfiguration, removal, and conversion of transmission lines. Duties included the oversight of pedestrian archaeological and historic architecture surveys and documentation of 45 cultural resources. Work performed for SDG&E, with California Public Utilities Commission as the lead agency.

Terramar Area Coastal Improvement Project (2015 - 2016). Task Lead for a cultural resources study of the Terramar Area Coastal Improvement Project. The project proposed to enhance the City of Carlsbad's Terramar community by improving safety, traffic, and coastal access by constructing new sidewalks and walking paths, creating more parking, improving road conditions, and building a buffer for bicyclists. Duties included oversight of the cultural resources records search, field survey, and archaeological documentation for the project. Work performed for the City of Carlsbad

County of San Diego Department of Parks and Recreation As-Needed Consulting Services (2012 - 2016). Cultural Resources Task Lead and Principal Investigator for as-needed CEQA and NEPA support. Duties included coordination of archaeological monitors, site assessments, survey, California Department of Parks and Recreation (DPR) documentation, and reporting efforts.

San Diego Gas & Electric (SDG&E) As-Needed Services (2011 - 2016). Cultural Resources Project Manager and Principal Investigator for cultural resources as-needed services for SDG&E pole replacement, operation and maintenance, transmission line planning, and other projects in San Diego and Imperial counties on private, local agency, and federal lands. Activities included task coordination and management of field survey, monitoring, and archaeological documentation for project task orders.

Otay Truck Route (2013 - 2014). Task Lead for a cultural resources study for the Otay Truck Route project. The Otay Truck Route fronts a portion of the U.S./Mexico international border in the Otay Mesa community of the City of San Diego. Duties included conducting an archaeological survey of approximately 18.4 acres, recording prehistoric and archaeological sites, and reporting efforts that included a Historic Property Survey Report, Archaeological Survey Report, and City of San Diego Archaeological Resource Report Form. The project proponent was the City of San Diego, with local assistance funding from the FHWA. The City of San Diego was the lead agency for CEQA compliance and (via delegated authority from the FHWA) Caltrans was the lead agency for NEPA.

Blythe and Palen Solar Power Projects (2009 - 2014). Field Archaeologist and GIS analyst for concentrated solar electric-generating facilities proposed on approximately 2,000-acre and 7,000-acre sites on U.S. Bureau of Land Management land in eastern Riverside County. The projects, under a fast-track American Recovery and Reinvestment Act of 2009 funding schedule, use parabolic trough solar thermal technology to produce electrical power using a steam turbine generator fed from a solar steam generator. Work included extensive resource and project GIS data management. Work performed for Solar Millennium, LCC, with the U.S. Bureau of Land Management as the lead agency.

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Appendix D

Preliminary Hydrology Report

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PRELIMINARY HYDROLOGY REPORT

For

YUM YUM MORENO VALLEY

NEC PERRIS BOULEVARD AND COTTONWOOD AVENUE

MORENO VALLEY, CA

Prepared For:

YUM YUM DONUT

18830 SAN JOSE AVENUE

INDUSTRY, CA. 91748

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November 2017

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1.0 Scope

Hydrologic calculations to evaluate surface runoff associated with 2- and 100-year hypothetical design storm frequency from the tributary drainage areas were performed based on the latest *Riverside County Flood Control and Water Conservation District* rational method. Hydrologic parameters used in the analysis, such as rainfall and soil classification are presented in the *Riverside County Hydrology Manual* (Hydrology Manual).

2.0 Project Description

2.1. Existing Conditions

The subject property is located at NEC of Cottonwood Avenue and Perris Boulevard in Moreno Valley, California. The existing site is a portion of an existing lot, Lot 5, that is approximately 3.77 acres. The site is approximately 1.61 acres and is the southern portion of Lot 5. It is an existing vacant lot and it is bounded by a vacant lot to the north, a residential development to the east, Perris Boulevard to the west, and Cottonwood Avenue to the south. The existing site is relatively flat and sheet flows in a generally southeasterly direction towards Cottonwood Avenue.

2.2. Proposed Conditions

The proposed project will include a gas station with a one-story mini-mart and a drive-thru, fuel dispenser area with overhead canopy, and a surface parking lot area.

Site has underlying soil with low infiltration rates per soil report. Therefore, the site is proposing a vegetated bioretention area along the western, eastern, and southern perimeter of the site.

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3.0 Hydrology

3.1 Methodology

The hydrologic calculations to determine the 2-year and 100-year peak flow rates were performed using the criteria in the *Riverside County Flood Control District and Riverside County Hydrology Manual*. The Rational Method is an empirical computation procedure for developing a peak runoff rate (discharge) for storms of a specific recurrence interval. Rational Method equations are based on the assumption that the peak flow rate is directly proportional to the drainage area, rainfall intensity, and a loss rate coefficient, which describes the effects of land use and soil type. The Rational Method flow rates were computed by generating a hydrologic "link-node" model, which divides the area into drainage subareas. Please see Appendix A for hydrology calculations.

3.2 Areas

Hydrology Maps are included in Appendix C of this report delineating the drainage subareas. Areas are provided in the maps in both square feet (SF) and acres (AC). AC units are used in the rational method calculations. Hydrology Maps are provided in Appendix C of this report.

3.3 Soil

When making estimates of storm water runoff it is assumed that infiltration is a loss for the storm event under consideration. The major affecting infiltration is the nature of the soil itself. The site is underlain by soil with slow infiltration rates. Therefore, Soil Type C was selected for the hydrology analysis.

3.4 Time of Concentration

The Time of Concentration (T_c) is the time required for runoff to flow from the most remote part of the drainage area to the point of interest. The T_c (minutes) is based on slope and runoff coefficient and it was obtained using the nomograph in Plate D-3 of the Hydrology Manual, and it is included in Appendix B of this report for reference.

3.5 Rainfall Intensity

The rainfall intensity is the rainfall in inches per hour (in/hr) for a duration equal to the T_c for a selected storm frequency. Intensity is dependent on precipitation and T_c. The time-averaged rainfall intensity for the 2- and 100-year storm event were obtained from the precipitation intensity curves using the regression equation in Plate D-4.1 of the Hydrology Manual. The regression equations determine the precipitation intensities corresponding to the time of concentrations and selected design frequency. Calculations of intensities are provided as part of the hydrology calculations and included in Appendix A.

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3.6 Hydrology

The peak rate runoff flow of the proposed site increases due to increase in impervious areas including roofs, drive aisles, and sidewalks. The existing and proposed flows were calculated using the Rational Method based on the site conditions discussed in Sections 2.1 and 2.2, respectively.

3.6.1 Existing Hydrology

The entire existing site sheet flows in a generally southerly direction towards the south side of the property. Runoff from the site eventually sheet flows onto Cottonwood Avenue to the south of the property. The existing flow for the different storm frequencies is outlined in Table 1 below.

Table 1 – Summary of Existing Flow

Subarea	Area		
	100-year	(sf)	(ac)
Area 1	3.65	75,175	1.73
Total	3.65	75,175	1.73

3.6.2 Proposed Hydrology

The proposed project site has been subdivided into subareas for runoff of storm water based on drainage patterns including ridge lines and low/confluence points. The drainage patterns include the roof surface runoff and ground surface runoff areas. Each subarea and the discharge point of each subarea is identified in the Proposed Hydrology Map. Flow for each subarea is outlined in Table 2 below:

Table 2 – Summary of Proposed Flows

Subarea	Area		
	100-year	(sf)	(ac)
Area 1	1.75	25,032	0.57
Area 2	2.50	34,536	0.79
Area 3	0.76	10,578	0.24
Total	5.01	70,146	1.6

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4.0 Conclusion

The overall drainage patterns in the proposed condition are similar to the existing condition in terms of the overall drainage direction. However, the proposed drainage patterns are divided into subareas as shown on the attached Hydrology Map – Proposed Condition. The subareas account for the ridges in the roof areas as well as the ground surfaces including the drive aisles, parking spaces, and landscape areas.

Due to increase in impervious areas, the proposed site generates more flow than the existing condition. Table 3 below summarizes the flows of the existing and proposed site.

Table 3 - Pre- and Post-Construction Flows

Storm Event	Existing Q (CFS)	Proposed Q (CFS)
100-yr	3.65	5.01

This site's runoff is mitigated by proposing a storm drain system that includes vegetated bioretention basins.

Appendix A – Hydrology Calculations

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HYDROLOGY CALCULATIONS
CORNER OF PERRIS BOULEVARD AND COTTONWOOD AVENUE

EXISTING AREA

$Q = CIA$

$A =$ 75,175 sf $=$ 1.73 acres

Soil Group = C (Plate C-1.17)

$T_c =$ 13.0 min (Plate D-3)

$I_{100} =$ 2.58 in/hr (Plate D-4.1)

$C_{100} =$ 0.82 in/hr (Plate D-5.3)

$Q_{100} =$ 3.65 cfs

Where
Q = proposed peak flows, cfs
A = total area, acres
C = coefficient of runoff
I = rainfall intensity (in/hr) corresponding to the time of concentration

T_c = duration, min

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HYDROLOGY CALCULATIONS
CORNER OF PERRIS BOULEVARD AND COTTONWOOD AVENUE

AREA-1

$Q = CIA$

$A =$ 25,032 sf $=$ 0.57 acres

Where
Q = proposed peak flows, cfs
A = total area, acres
C = coefficient of runoff
I = rainfall intensity (in/hr) corresponding to the time of concentration

Soil Group = C (Plate C-1.17)

$T_c =$ 7.4 min (Plate D-3) T_c = duration, min

$I_{100} =$ 3.42 in/hr (Plate D-4.1)

$C_{100} =$ 0.89 in/hr (Plate D-5.3)

$Q_{100} =$ 1.75 cfs

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HYDROLOGY CALCULATIONS
CORNER OF PERRIS BOULEVARD AND COTTONWOOD AVENUE

AREA-2

$Q = CIA$

$A =$ 34,536 sf $=$ 0.79 acres

Where Q = proposed peak flows, cfs
A = total area, acres
C = coefficient of runoff
I = rainfall intensity (in/hr) corresponding to the time of concentration

Soil Group =	C	(Plate C-1.17)
T_c =	4.9 min	(Plate D-3)
I_{100} =	3.54 in/hr	(Plate D-4.1)
C_{100} =	0.89 in/hr	(Plate D-5.3)
Q_{100} =	2.50 cfs	

T_c = duration, min

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HYDROLOGY CALCULATIONS
CORNER OF PERRIS BOULEVARD AND COTTONWOOD AVENUE

AREA-3

$Q = CIA$

$A =$ 10,578 sf $=$ 0.24 acres

Soil Group = C (Plate C-1.17)

$T_c =$ 4.8 min (Plate D-3)

$I_{100} =$ 3.51 in/hr (Plate D-4.1)

$C_{100} =$ 0.89 in/hr (Plate D-5.3)

$Q_{100} =$ 0.76 cfs

Where
Q = proposed peak flows, cfs
A = total area, acres
C = coefficient of runoff
I = rainfall intensity (in/hr) corresponding to the time of concentration

T_c = duration, min

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HYDROLOGY CALCULATIONS
67670 CAREY ROAD, CATHEDRAL CITY

Proposed

Subarea	Area		
	100-year	(sf)	(ac)
Area 1	1.75	25,032	0.57
Area 2	2.50	34,536	0.79
Area 3	0.76	10,578	0.24
Total	5.01	70,146	1.61

Existing

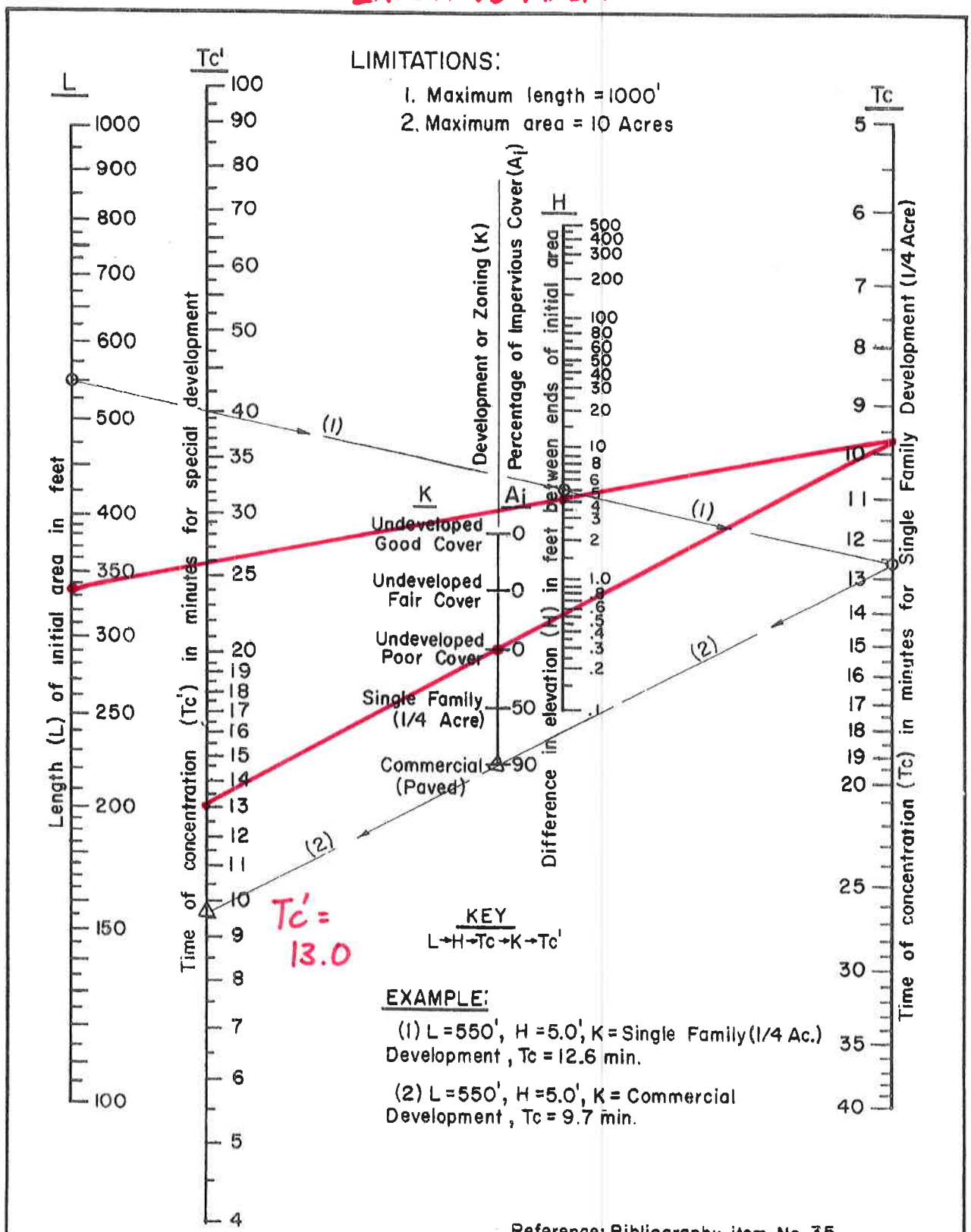
Area	Area		
	100-year	(sf)	(ac)
Area 1	3.65	75,175	1.73

Attachment: Cultural Resources Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT

Appendix B – Reference Figures and Tables

Attachment: Cultural Resources Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT

EXISTING AREA



Reference; Bibliography item No. 35.

RCFC & WCD
HYDROLOGY MANUAL

TIME OF CONCENTRATION FOR INITIAL SUBAREA

PLATE D-3

Attachment: Cultural Resources Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT

AREA 1

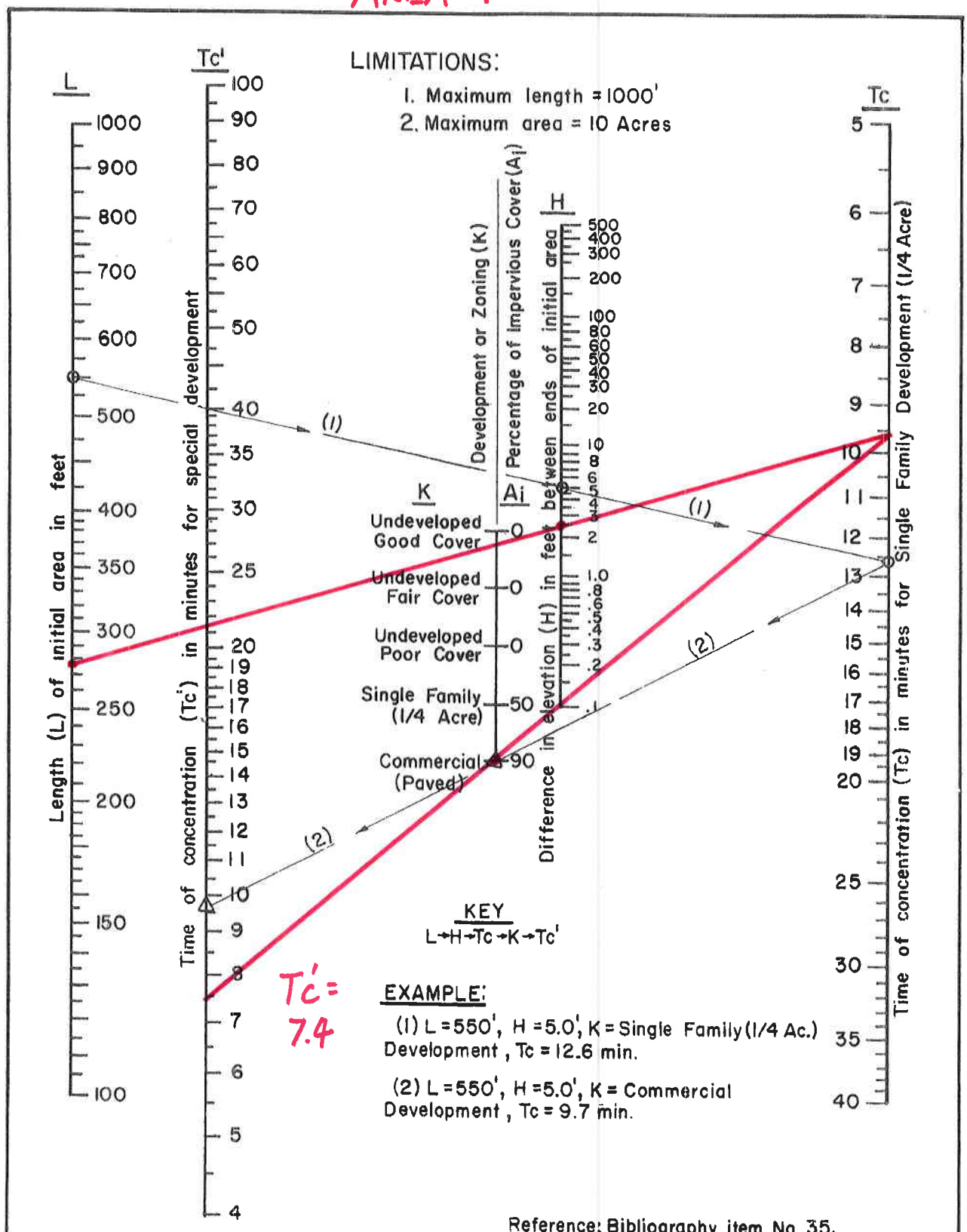


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PLATE D-3

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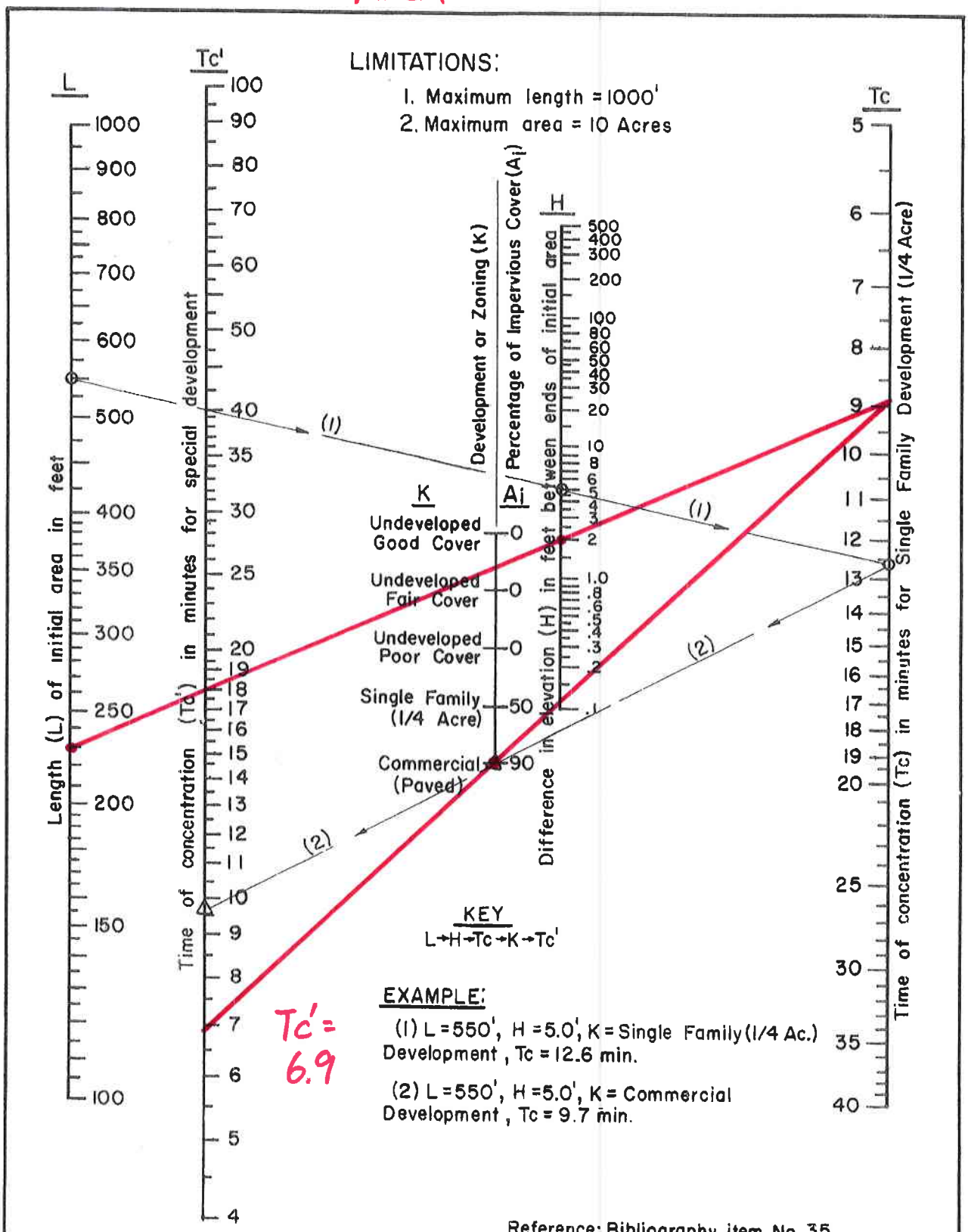
AREA 2



Reference: Bibliography item No. 35.

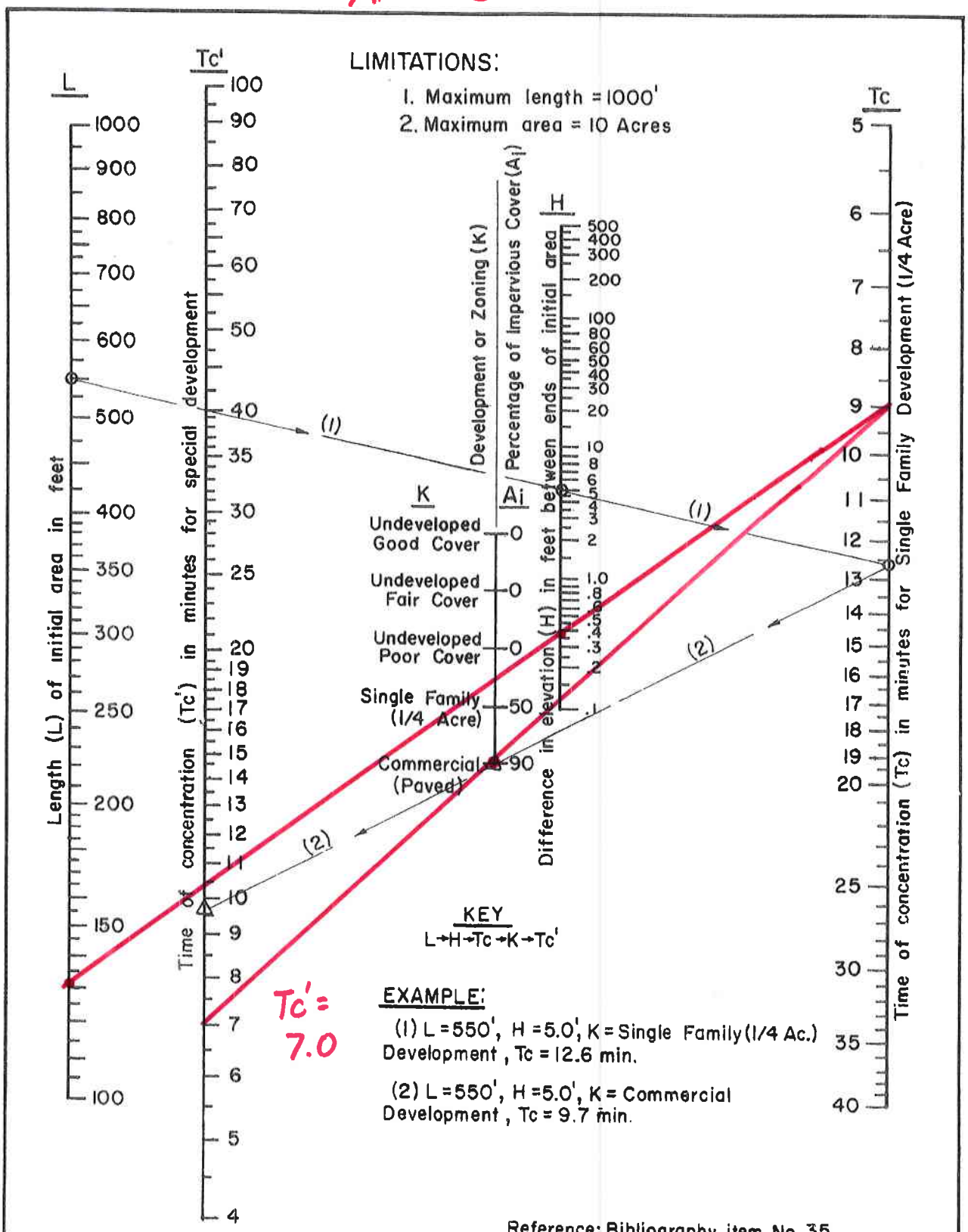
RCFC & WCD
HYDROLOGY MANUAL

TIME OF CONCENTRATION FOR INITIAL SUBAREA

PLATE D-3

Attachment: Cultural Resources Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT

AREA 3



Reference: Bibliography item No. 35.

RCFC & WCD
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Attachment: Cultural Resources Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT

Appendix E

Noise Mitigation Analysis

Attachment: Cultural Resources Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT

Noise Mitigation Analysis for The Proposed Yum Yum Donuts Car Wash City of Moreno Valley, California

Project #0110.0026.001.0001
February 14, 2018

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Attachment: Cultural Resources Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT

NOISE MITIGATION ANALYSIS FOR THE PROPOSED YUM YUM DONUTS CAR WASH CITY OF MORENO VALLEY

1.0 INTRODUCTION

A car wash is being proposed at the northeast corner of Perris Boulevard and Cottonwood Avenue in Moreno Valley, as shown in Exhibit 1. The car wash will be "self-serve" and is planned to be open 24 hours per day. The purpose of this report is to determine whether the noise levels from the proposed car wash will be consistent with the Noise Ordinance adopted by the City of Moreno Valley. The project calls for the addition of a tunnel-type car wash. The developer is planning to design and construct this car wash very similar to an existing car wash facility located in the City of San Diego. This report presents the results of the car wash noise measurements at the existing San Diego car wash, and determines whether that design is acceptable for the planned Yum Yum Donuts car wash in Moreno Valley.

The site plan is shown in Exhibit 2. The nearest residences are located directly to the east. Other residential areas are located much farther from the facility. The potential noise impacts on the nearest residential area are addressed in this report, and any required mitigation measures are identified.

2.0 BACKGROUND INFORMATION ON NOISE

Sound is technically described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dB higher than another is judged to be twice as loud; and 20 dB higher four times as loud; and so forth. Everyday sounds normally range from 30 dB (very quiet) to 100 dB (very loud).

Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear. Community noise levels are measured in terms of the "A-weighted decibel" abbreviated dBA. Exhibit 3 provides examples of various noises and their typical A-weighted noise level.

Two commonly used metrics to describe fluctuating noise levels are Leq and Lmax. These metrics are described below. The noise level limits set forth in the City's Noise Ordinance are specified in terms of these metrics.

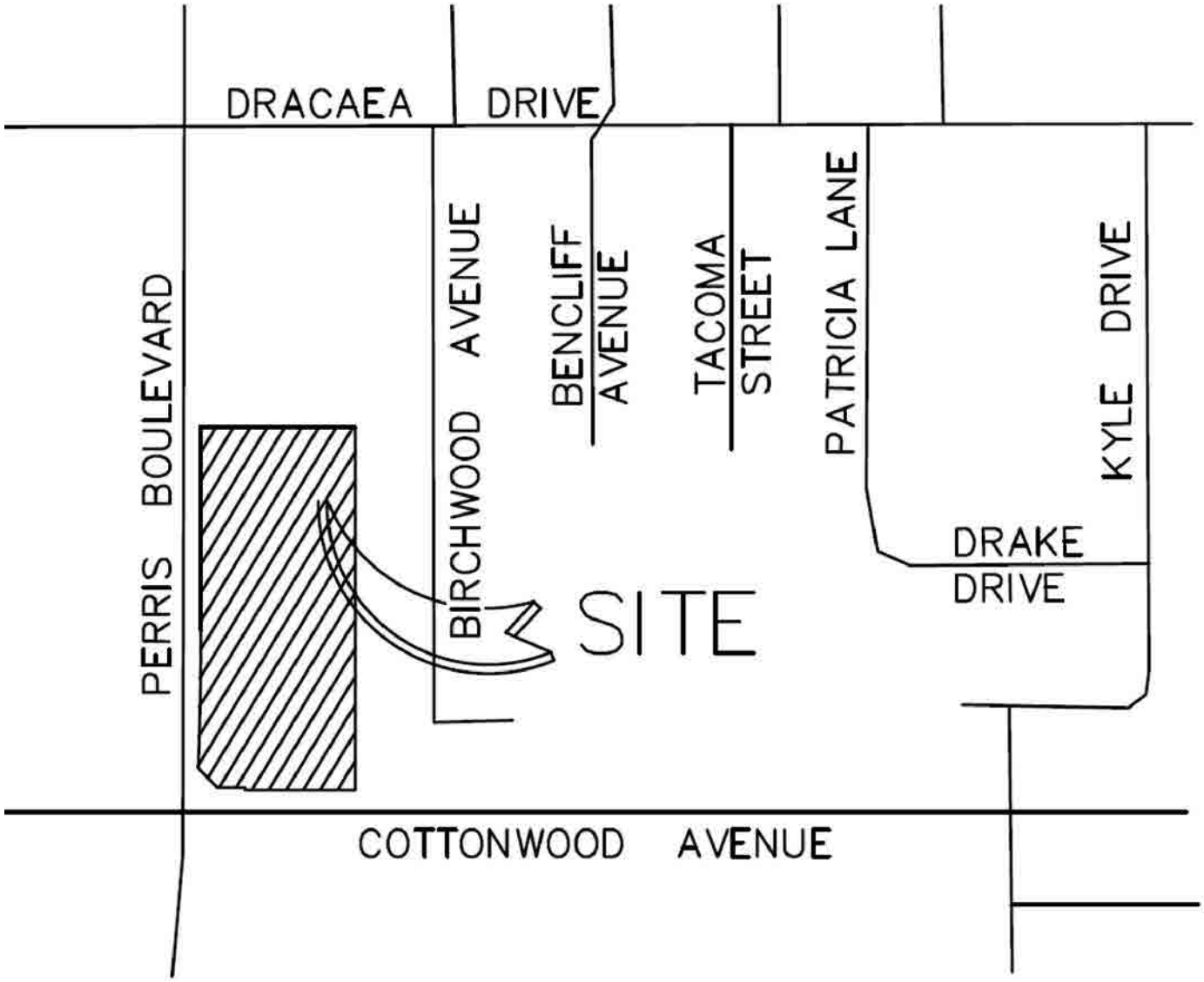


Exhibit 1

Vicinity Map

Attachment: Cultural Resources Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT

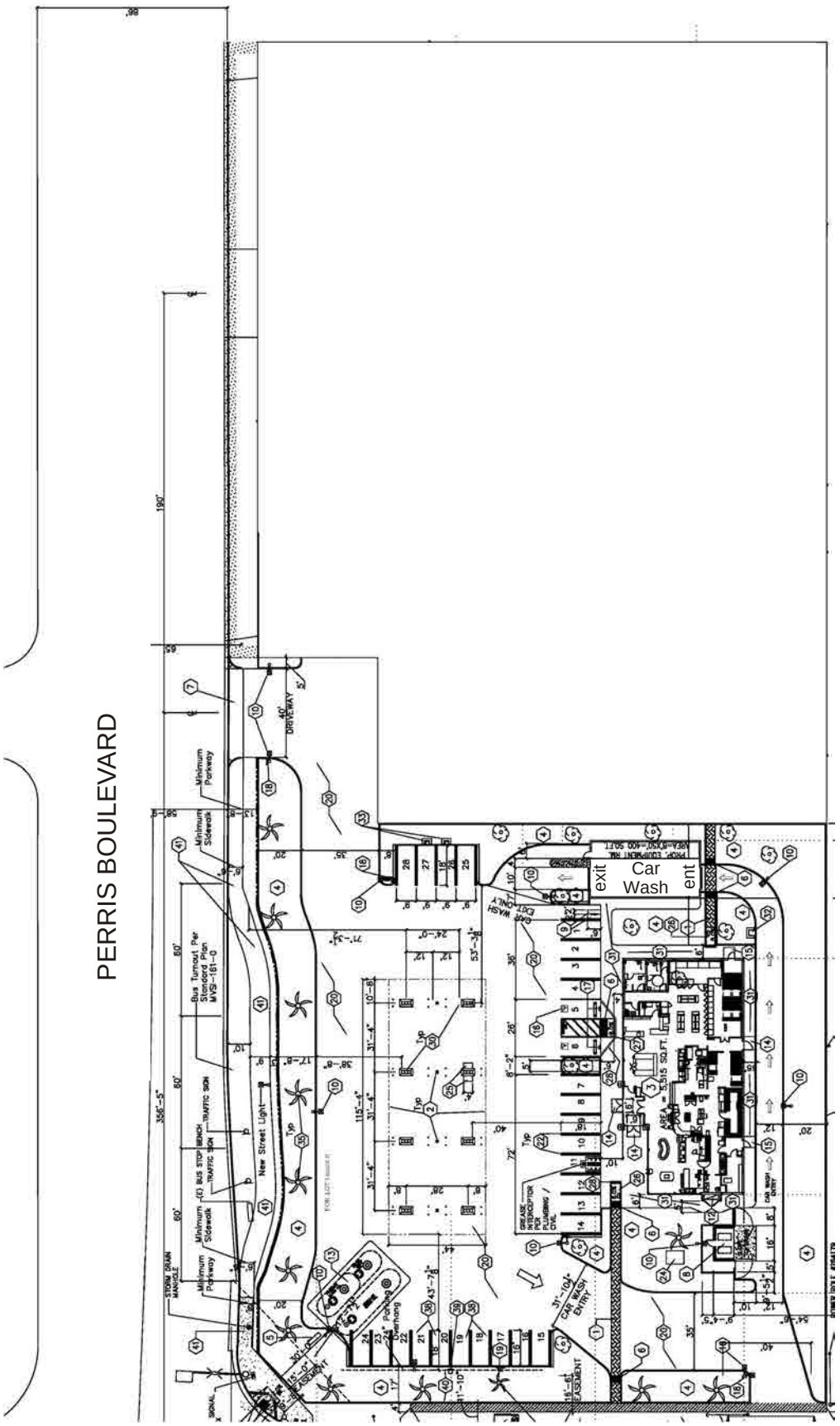
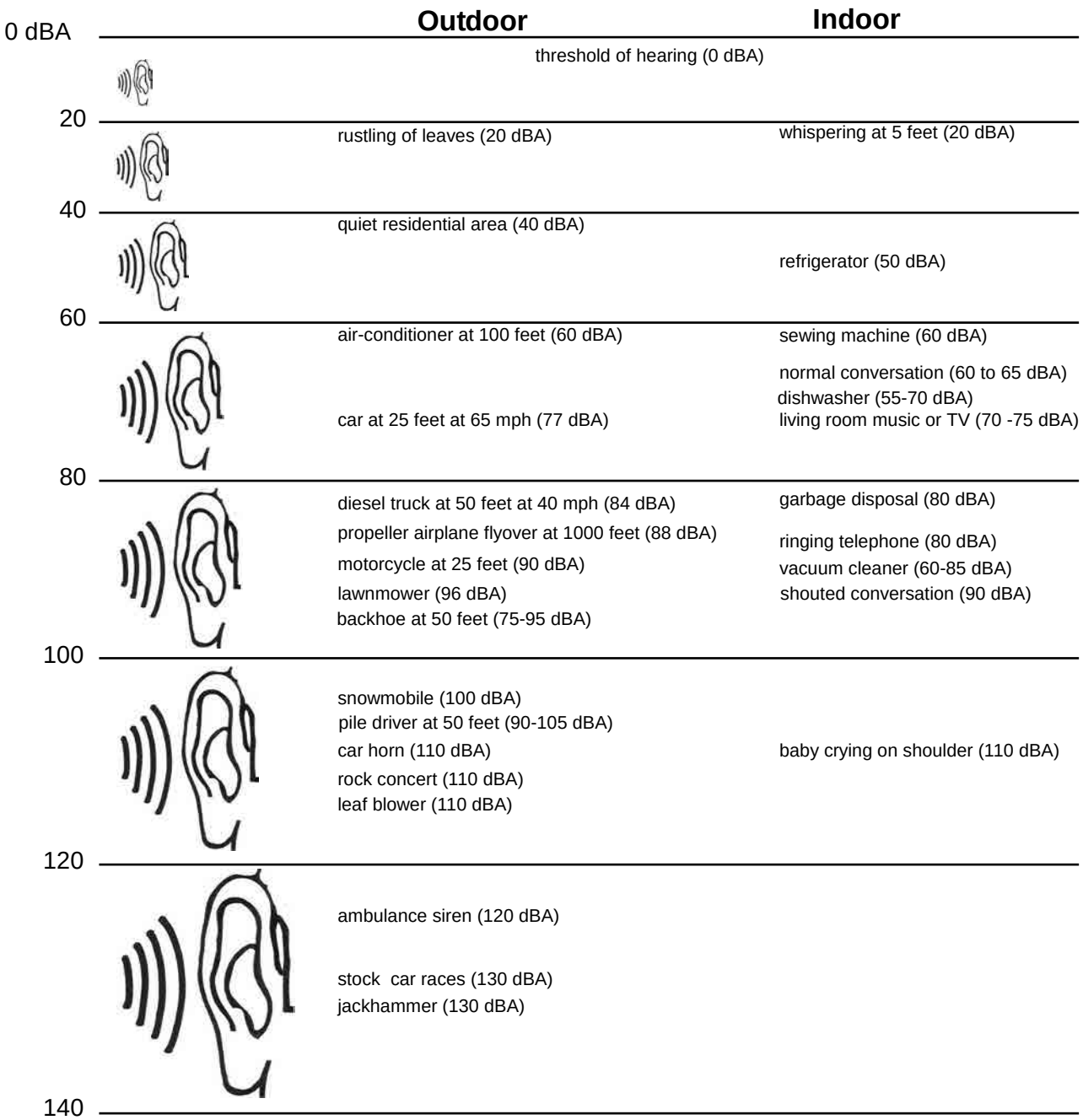


Exhibit 2
Site Plan

Attachment: Cultural Resources Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT



Sources: League for the Hard Of Hearing, www.lhh.org
Handbook of Noise Control, McGraw Hill, Edited by Cyril Harris, 1979
Measurements by Landrum & Brown

Exhibit 3

Typical A-Weighted Sound Levels

Attachment: Cultural Resources Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT

Leq is the sound level corresponding to a steady-state sound level that would contain the same total energy as the time-varying signal over a given sample period. Leq is the "energy" average noise level during the time period of the sample. It is the energy average of all the events and background noise levels that occur during that time period.

Lmax is the loudest sound level measured during the time period of the sample.

Sound levels decrease as a function of distance from the source as a result of wave divergence, atmospheric absorption and ground attenuation. As the sound wave travels away from the source, the sound energy is dispersed over a greater area, thereby dispersing the sound power of the wave. Intervening topography or sound walls can also have a substantial effect on the effective perceived noise levels.

Noise has been defined as unwanted sound and it is known to have several adverse effects on people. From these known effects of noise, criteria have been established to help protect the public health and safety and prevent disruption of certain human activities. These criteria are based on such known impacts of noise on people as hearing loss, speech interference, sleep interference, physiological responses and annoyance. Each of these potential noise impacts on people are briefly discussed in the following narratives:

HEARING LOSS is not a concern in community noise situations of this type. The potential for noise induced hearing loss is more commonly associated with occupational noise exposures in heavy industry or very noisy work environments. Noise levels in neighborhoods, even in very noisy airport environs, are not sufficiently loud to cause hearing loss.

SPEECH INTERFERENCE is one of the primary concerns in environmental noise problems. Normal conversational speech is in the range of 60 to 65 dBA, and any noise in this range or louder may interfere with speech. There are specific methods of describing speech interference as a function of distance between speaker and listener and voice level.

SLEEP INTERFERENCE is a major noise concern for traffic noise. Sleep disturbance studies have identified interior noise levels that have the potential to cause sleep disturbance. Note that sleep disturbance does not necessarily mean awakening from sleep, but can refer to altering the pattern and stages of sleep.

PHYSIOLOGICAL RESPONSES are those measurable effects of noise on people that are realized as changes in pulse rate, blood pressure, etc. While such effects can be induced and observed, the extent is not known to which these physiological responses cause harm or are signs of harm.

Attachment: Cultural Resources Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT

ANNOYANCE is the most difficult of all noise responses to describe. Annoyance is a very individual characteristic and can vary widely from person to person. What one person considers tolerable can be quite unbearable to another of equal hearing capability.

3.0 MORENO VALLEY NOISE ORDINANCE STANDARDS

Noise ordinances are designed to protect adjacent noise-sensitive land uses from non-transportation related noise sources operating on private property (e.g., manufacturing facilities, music, and mechanical equipment). Many communities have developed noise ordinances to control these types of non-transportation related noise.

The City's noise level limits for car wash noise are shown in Section 9.10.140 of the City's Noise Ordinance. These standards are given in terms of maximum allowable noise levels. Higher noise levels are permitted during the daytime hours (8 a.m. to 10 p.m.) than are during nighttime hours (10 p.m. to 8 a.m.). The City of Moreno Valley Noise Ordinance levels are contained in Table 1, and they show the acceptable levels at outdoor residential land uses during each time period. The Lmax criterion applies to the highest noise level experienced at the receptor site.

Table 1
CITY OF MORENO VALLEY
EXTERIOR NOISE ORDINANCE STANDARDS

		NOISE LEVEL NOT TO BE EXCEEDED	
LAND USE	NOISE METRIC	Daytime 8 a.m. to 10 p.m.	Nighttime 10 p.m. to 8 a.m.
Residential	Lmax	60 dBA	55 dBA

As the car wash is expected to operate 24 hours a day, the projected noise levels will be compared to the nighttime criteria, since meeting the nighttime criteria ensures that the daytime criteria will also be met. The City's Noise Ordinance does not contain any indoor noise standards. Therefore, compliance with the nighttime Lmax exterior standard in the Noise Ordinance is addressed.

Attachment: Cultural Resources Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT

Attachment: Cultural Resources Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT

4.0 PROJECTED CAR WASH NOISE LEVELS

The projected noise levels from the planned Yum Yum Donuts car wash are based on the measured noise levels at the existing Arco car wash facility at 3170 Carmel Valley Road in San Diego. This car wash is equipped with automatic doors at both the entrance and exit ends, and these doors are essential in reducing the noise levels from the car wash facility when they are closed. The noise levels at this facility were measured on August 12, 2016. Measurements were performed on-axis with the tunnel at a distance of 25 feet from the entrance end with both car wash doors closed. The measurements at this location were used to determine the noise levels at the nearest noise-sensitive receptors at the Moreno Valley site. The measurement site is shown in Exhibit 4. The car wash operations of interest (wash cycle, rinse cycle, and dry cycle) were measured. Truck passes in the parking lot passes were not able to be excluded from the measurements, and were edited out of the data in order to assess the car wash noise levels alone.

The sound level meter used for the measurements was a Brüel and Kjær Model 2236 sound level meter. This meter conforms to American National Standards Institute (ANSI) Type 1 specifications. The meter and calibrator are laboratory calibrated and certified annually with calibration traceable to the National Institute of Standards and Technology (NIST). The meter was field calibrated before and after the measurement period using a Brüel and Kjær Model 4231 acoustical calibrator. The measured Lmax was 65.7 dBA at a distance of 25 feet from the entrance end of the tunnel with the car wash doors closed.

Based upon the measured car wash source noise data and the proposed site plan, the noise level was calculated for the nearest observer at the adjacent residential area, at a distance of 57 feet from the entrance end of the tunnel. The resulting unmitigated noise level at the residential area is 58.5 dBA. This noise level would exceed the nighttime noise standard of 55 dBA. The developer plans to construct a 6-foot high masonry wall at the east property line. The wall will need to wrap around the northeast corner of the project and extend westward to the car wash tunnel. The required barrier location is shown in Exhibit 5. With this noise barrier, the resulting projected noise level is shown below in Table 2.

Table 2
PROJECTED NOISE LEVELS (dBA)

Location	**Projected Noise Level (Lmax)**	Comparison To Noise Level Limit
<u>With Yum Yum Donuts car wash designed like existing Arco facility and 6.0'-high noise barrier</u>		
Nearest Residence	**49.4**	Meets Ordinance

N

- Measurement Location

Exhibit 4

Existing Car Wash Measurement Locations

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Requires 6.0'-High Noise Barrier

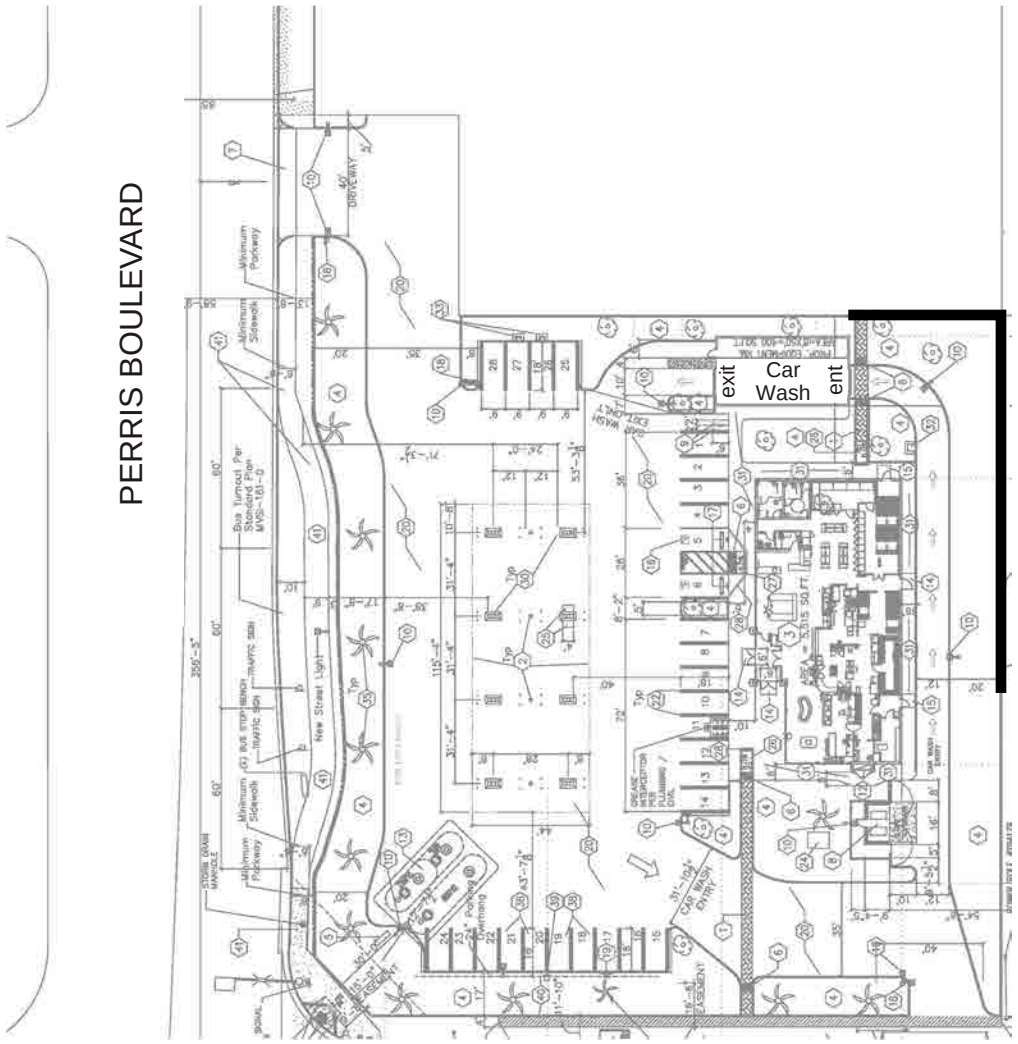

Exhibit 3

Required Noise Barrier

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The projected Lmax at the nearest residential receiver from the proposed car wash is 49.4 dBA. This meets the City's nighttime exterior Noise Ordinance limit of 55 dBA. The results of the analysis indicate that with the car wash designed like the existing Arco facility, the Lmax noise levels at all the nearest residential areas are projected to meet the daytime and nighttime Noise Ordinance limits. The proposed car wash must be designed, constructed, and operated the same as the existing Arco car wash in order for the noise level limits to be met. This includes such items as equipment types and locations, door types and configuration, and operational parameters such as when the doors open and close.

6.0 DESIGN MEASURES

Calculations have shown that with the car wash designed and operated like the existing Arco facility, the project will meet the City's daytime and nighttime Noise Ordinance limits. The following design items must be adhered to in order for the noise level limits to be met.

- The car wash equipment shall be the same as that used at the Arco facility, and placed in the same locations within the tunnel as at the Arco facility.

- The building design (walls and roof) shall be the same materials as used at the Arco facility.

- The roll-up doors shall be the same type, and shall be installed the same as the Arco facility.

- Both the entrance end and exit end doors need to be in the closed position when a car is being washed and dried.

- A noise barrier shall be constructed that meets or exceeds the barrier shown in Exhibit 5.

- The noise barrier must have a surface density of at least 3.5 pounds per square foot, and shall have no openings or gaps. The wall may be constructed of stud and stucco, 3/8-inch plate glass, 5/8-inch Plexiglas, any masonry material, or a combination of these materials.

With these design measures in place, the noise levels at the nearest homes will meet the City's daytime and nighttime Noise Ordinance limits.

Attachment: Cultural Resources Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT

APPENDIX

Calculation Spreadsheets

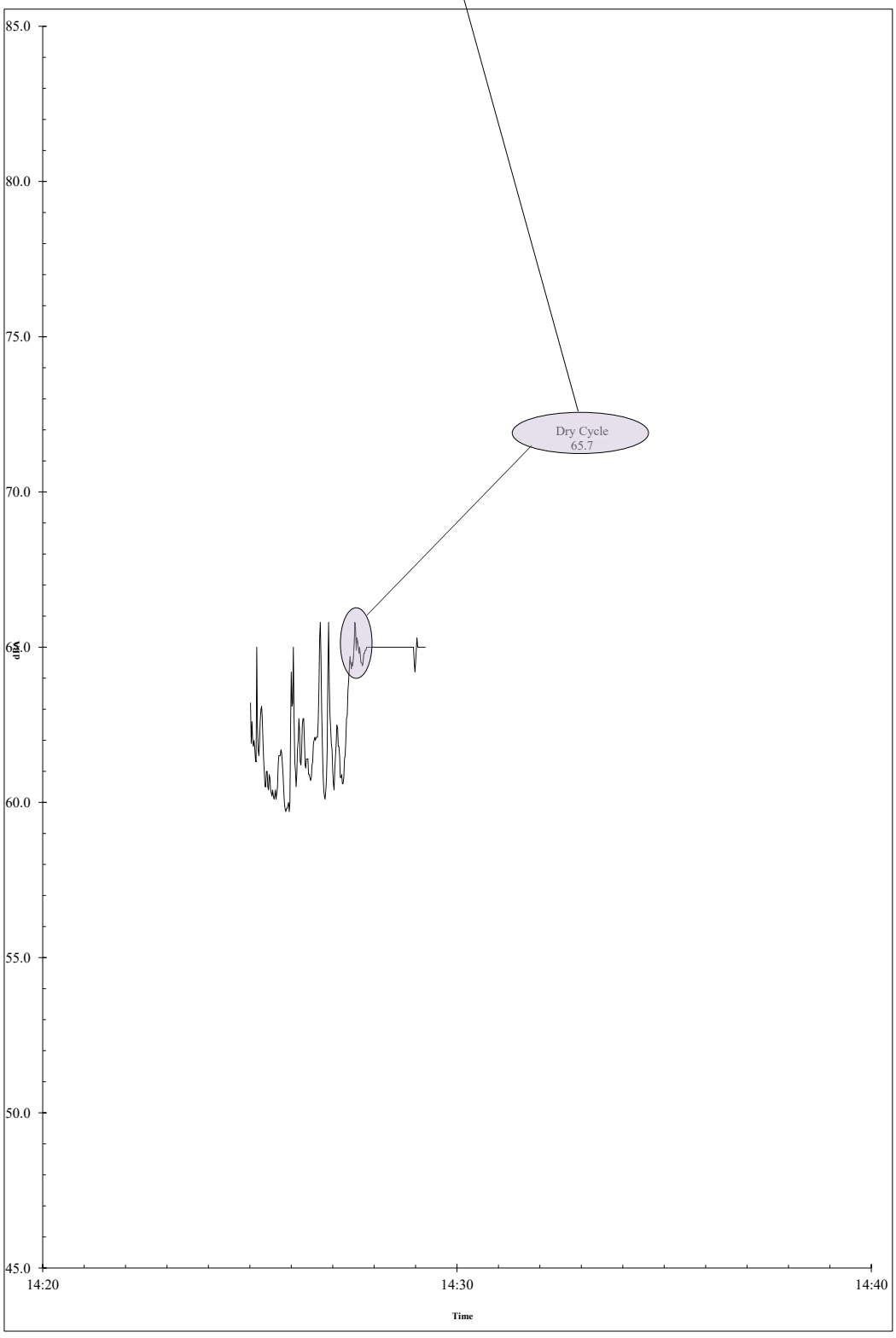
Attachment: Cultural Resources Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT

Arco Car Wash
3170 Carmel Valley Road
San Diego
25' from Entrance End, Doors Closed
8-12-16

Night STD = **55**

ref at 25' Distance, On-Axis

Metric	Level	at 57'	
LEQ	63.0		
Lmax	65.7	**58.5**	no wall
L1.7	65.3		
L8.3	65.0		
L25	#NUM!		
L50	62.7		
L90	60.4		
Lmin	59.7		



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Attachment: Cultural Resources Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF

Source: Arco Car Wash SD, Entrance End, Door Closed
Reference Frequency (Hz): 500

Nighttime Lmax Standard
55

Residential property to the east

Source Height	Source Elevation	Source Level	Reference Distance	Source to Barrier	Barrier Height	Barrier Elevation	Barrier to Receiver	Receiver Height	Receiver Elevation	Barrier Reduction	**Lmax (dBA)**
8	0	65.7	25	57	0.0	0	1	5	0	0.000	58.4
8	0	65.7	25	57	**6.0** planned	0	1	5	0	9.139	49.2

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Appendix B

Traffic Impact Study and Supplemental Traffic Assessment

TRAFFIC IMPACT STUDY
FOR THE
PERRIS BLVD/COTTONWOOD AVE PROJECT
IN THE CITY OF MORENO VALLEY

Prepared for:

A & S Engineering, Inc.

Prepared by:

Jason Melchor, PE
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Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

TRAFFIC IMPACT STUDY
FOR THE PERRIS BLVD/COTTONWOOD AVE PROJECT
IN THE CITY OF MORENO VALLEY

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TRAFFIC IMPACT STUDY
FOR THE PERRIS BLVD/COTTONWOOD AVE PROJECT
IN THE CITY OF MORENO VALLEY

INTRODUCTION

This traffic impact study has been prepared to evaluate the project-related traffic impacts associated with the proposed development of a Yum Yum Donut Shop and Gas Station with Car Wash within a vacant parcel located at the northeast corner of Perris Boulevard and Cottonwood Avenue in the City of Moreno Valley, California. The study assesses the project impact by providing an analysis of existing and future conditions, with and without project traffic. This document follows the assumptions established during discussions with the City of Moreno Valley staff and the approved Scoping Agreement. The approved Scoping Agreement is provided in *Appendix A*.

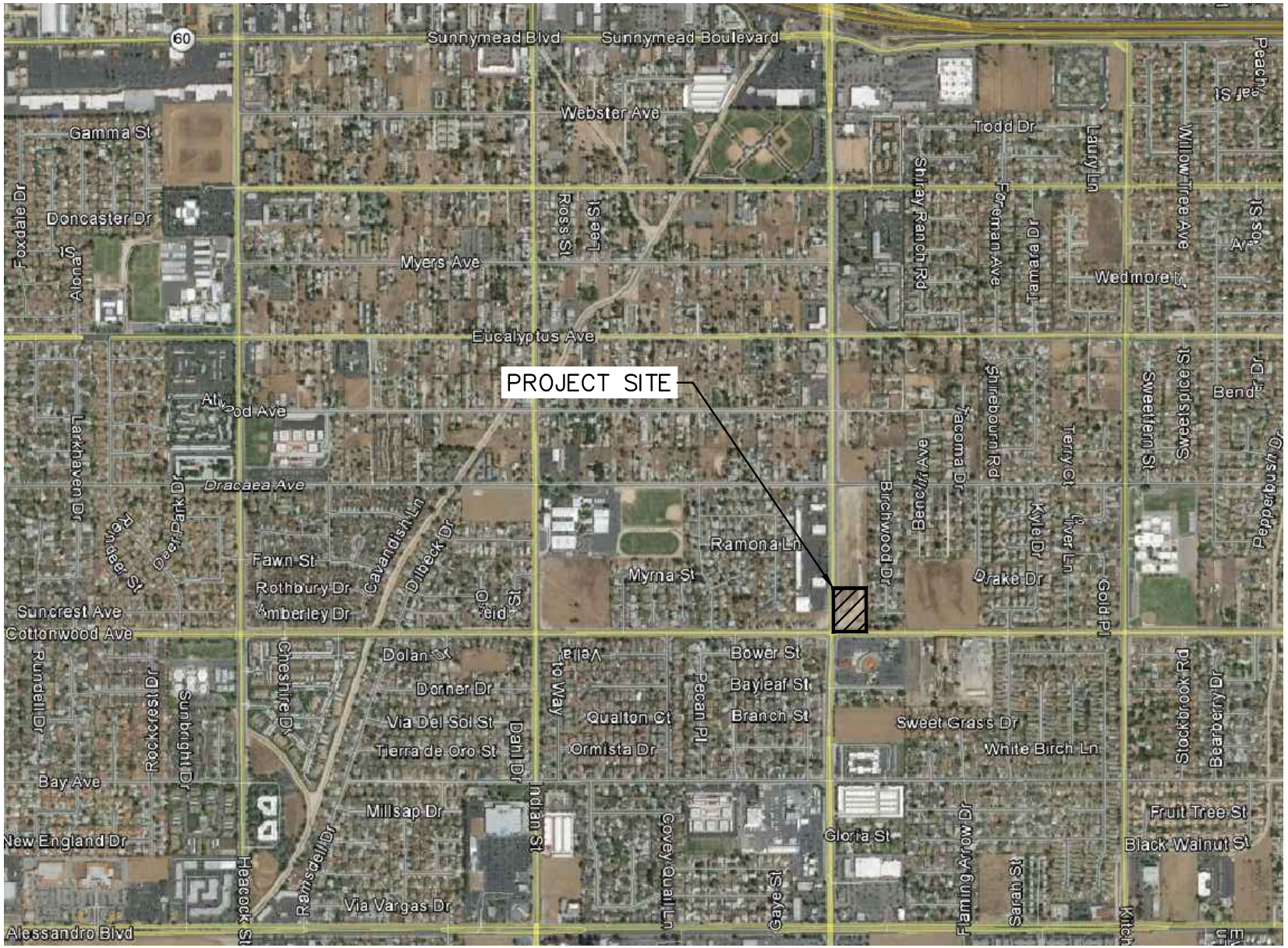
This report has been prepared in accordance with the City of Moreno Valley Traffic Impact Analysis Preparation Guide.

PROJECT DESCRIPTION

The proposed project, designated as Planning Case PA15-0030, will be developed on the northeast corner of Perris Boulevard and Cottonwood Avenue in the City of Moreno Valley. The project site location is shown in its regional setting on Figure 1. The project will involve development of a 16-pump gas station with a 5,515-square-foot building consisting of a donut shop/convenience market and a drive-through car wash. The project site is located in an Office Commerical (OC) zone based on the City of Moreno Valley Zoning Code, which allows the development of retail sales and service. The site is bounded to the south by Cottonwood Avenue, to the north by vacant parcels, to the west by Perris Boulevard, and to the east by residential land uses. Ingress and egress to the site will be provided via an unsignalized driveway on Perris Boulevard and an unsignalized driveway on Cottonwood Avenue. There is an existing church on Cottonwood Avenue across the street from the project. The project site plan is shown on Figure 2.

The project is anticipated to be completed in 2016. To be consistent with the analysis methodology detailed in the City's guidelines, a minimum five-year horizon was considered for the future conditions analysis. Therefore, a project opening year of 2020 was used in this study.

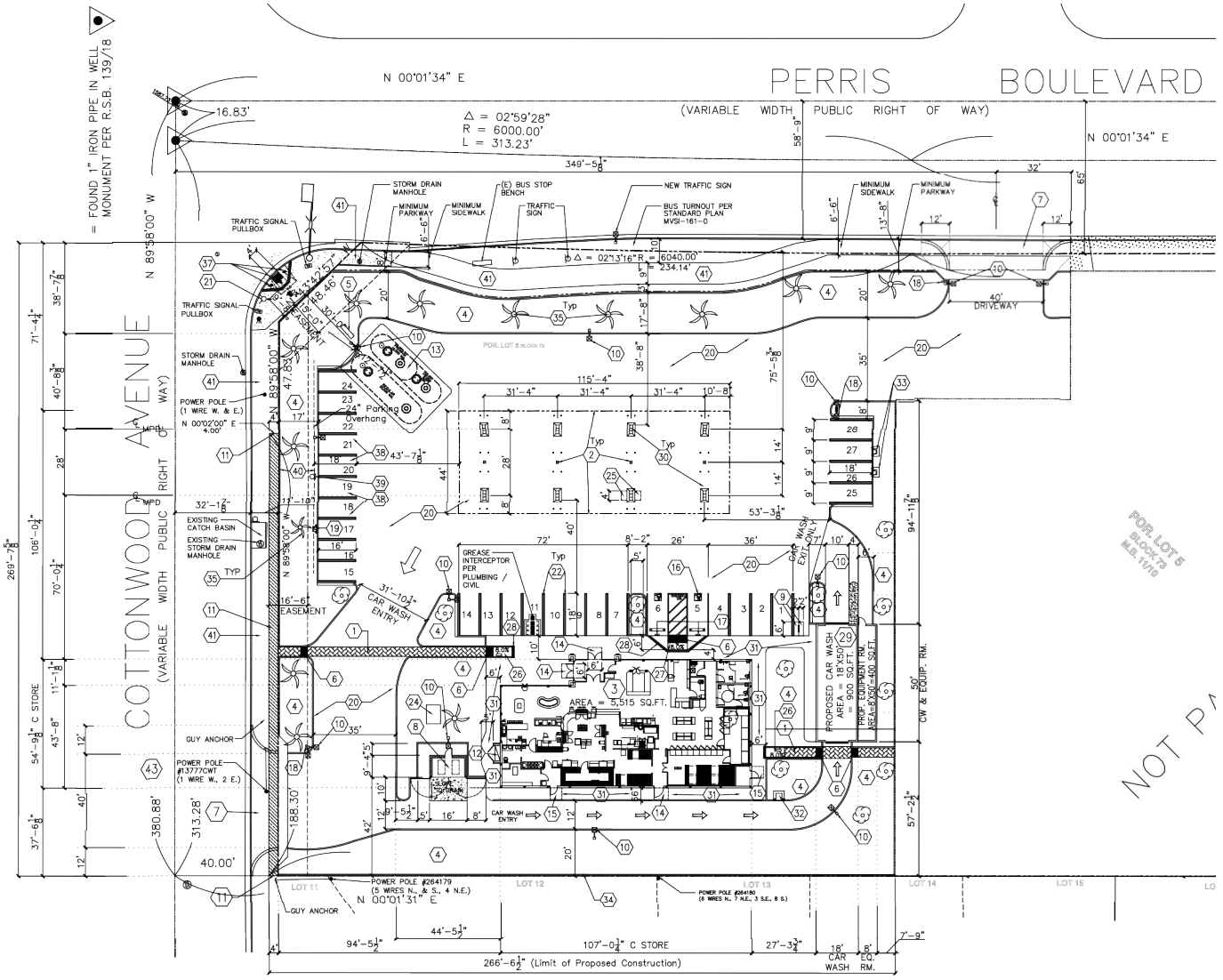
Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR



NOT TO SCALE

FIGURE 1
VICINITY MAP

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND



NOT TO SCALE

FIGURE 2
PROJECT SITE PLAN

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONA

Kimley»Horn

ANALYSIS SCENARIOS AND METHODOLOGY

Analysis Scenarios

The study area was determined with input from City Staff through the scoping process. The following study intersections were identified for evaluation:

Int. #	Study Intersection	Traffic Control	LOS Standard[1]
1	Perris Boulevard at Eucalyptus Avenue	Signalized	D
2	Perris Boulevard at Atwood Avenue	Unsignalized	D
3	Perris Boulevard at Dracaea Avenue	Signalized	D
4	Cottonwood Avenue at Indian Street	Signalized	C
5	Cottonwood Avenue at Perris Boulevard	Signalized	D
6	Cottonwood Avenue at Crape Myrtle Drive	Unsignalized	C
7	Cottonwood Avenue at Kitching Street	Signalized	C
8	Perris Boulevard at Bay Avenue	Signalized	D
9	Perris Boulevard at Alessandro Boulevard	Signalized	D
D1	Perris Boulevard Driveway	Unsignalized	D
D2	Cottonwood Avenue Driveway	Unsignalized	D

[1] The Level of Service (LOS) Standard is based on the City of Moreno Valley General Plan (July 2006)

The following roadway segments were also identified for evaluation:

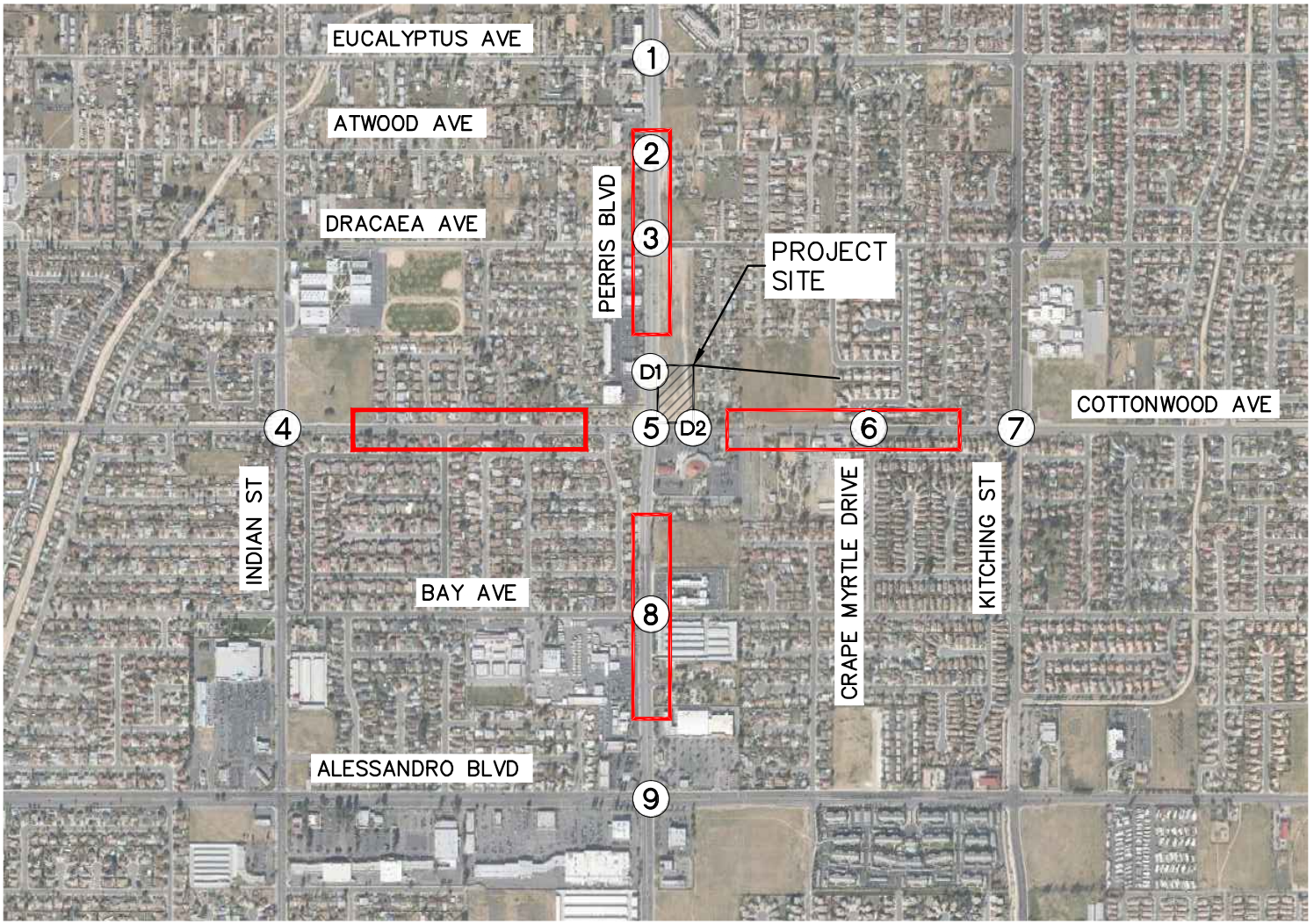
1. Perris Boulevard: Eucalyptus Avenue to Cottonwood Avenue
2. Perris Boulevard: Cottonwood Avenue to Alessandro Boulevard
3. Cottonwood Avenue: Indian Street to Perris Boulevard
4. Cottonwood Avenue: Perris Boulevard to Kitching Street

The location of the study intersections and roadway segments are shown on Figure 3. Based on the City's guidelines, this traffic analysis provides an evaluation of daily as well as morning and evening peak hour operations. Additionally, City staff identified the need to study Sunday noon conditions to account for traffic generated by the existing church adjacent to the project site. The analysis includes the following scenarios:

- Existing Conditions
- Existing With Project Conditions
- Cumulative (Opening Year 2020) Without Project
- Cumulative (Opening Year 2020) With Project

Any mitigation measures for the future conditions will be identified, if necessary.

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR



NOT TO SCALE

LEGEND:

X Study Intersection

Study Roadway

FIGURE 3
STUDY INTERSECTIONS AND ROADWAYS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

ANALYSIS METHODOLOGY

The Synchro 8 software (Trafficware) was used to analyze the peak hour operations of both signalized and unsignalized intersections. Synchro 8 uses the methodologies outlined in the 2010 *Highway Capacity Manual (HCM)*. Analysis assumptions presented in the City of Moreno Valley Traffic Impact Analysis Preparation Guide were used.

Signalized Intersections

The 2010 Highway Capacity Manual (HCM), published by the Transportation Research Board (TRB), establishes a system whereby highway facilities are rated for their ability to accommodate traffic volumes. The terminology "Level of Service" is used to provide a qualitative evaluation based on certain quantitative calculations, which are related to empirical values.

Level of Service (LOS) for signalized intersections is defined in terms of average vehicle delay, which is a measure of driver discomfort, frustration, fuel consumption, and loss of travel time. Specifically, LOS criteria are stated in terms of the average control delay per vehicle for the peak 15-minute period within the hour analyzed. The average control delay includes initial deceleration delay, queue move-up time, and final acceleration time in additional to the stop delay. The Level of Service criteria for the various LOS designations are summarized on the following chart.

LEVEL OF SERVICE (LOS) CRITERIA FOR SIGNALIZED INTERSECTIONS			
LOS	Control Delay (sec/veh)	V/C Ratio	Description
A	≤10.0	≤ 0.60	Operations with very low delay and most vehicles do not stop.
B	>10.0 – 20.0	0.61 – 0.70	Operations with good progression but with some restricted movement.
C	>20.0 – 35.0	0.71 – 0.80	Operations where a significant number of vehicles are stopping with some backup and light congestion.
D	>35.0 – 55.0	0.81 – 0.90	Operations where congestion is noticeable, longer delays occur, and many vehicles stop. The proportion of vehicles not stopping declines.
E	>55.0 – 80.0	0.91 – 1.00	Operations where there is significant delay, extensive queuing, and poor progression.
F	>80.0	> 1.00	Operations are unacceptable to most drivers, when the arrival rates exceed the capacity of the intersection.
Source: 2010 Highway Capacity Manual, Chapter 18, Page 18-6, Exhibit 18-4			

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Unsignalized Intersections

The Level of Service for unsignalized intersections is determined by the computed or measured control delay and is defined for each minor movement. The Level of Service criteria for unsignalized intersections, as described in the 2010 Highway Capacity Manual, are provided in the following chart.

LEVEL OF SERVICE (LOS) CRITERIA FOR UNSIGNALIZED INTERSECTIONS	
Level of Service	Control Delay (sec/veh)
A	0 - 10.0
B	>10.0 - 15.0
C	>15.0 - 25.0
D	>25.0 - 35.0
E	>35.0 - 50.0
F	>50.0
Note: The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches, or for the intersection as a whole. Source: 2010 Highway Capacity Manual, Chapter 19, Page 19-2, Exhibit 19-1	

Roadway Segments

In order to determine the project-related impacts on the study area roadway segments, the following roadway capacities, provided in the City of Moreno Valley Traffic Impact Analysis Preparation Guide, were used. Roadway capacities are provided in vehicles per day.

TYPE OF ROADWAY	LEVEL OF SERVICE FOR ROADWAY SEGMENTS				
	A	**B**	**C**	**D**	**E**
Six Lane Divided Arterial	33,900	39,400	45,000	50,600	56,300
Four Lane Divided Arterial	22,500	26,300	30,000	33,800	37,500
Four Lane Undivided Arterial	15,000	17,500	20,000	22,500	25,000
Two Lane Industrial Collector	7,500	8,800	10,000	11,300	12,500
Two Lane Undivided Residential	N/A	N/A	N/A	N/A	2,000

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Significant Impact Criteria

Based on the City of Moreno Traffic Impact Analysis Preparation Guide, significant impacts are defined by the California Environmental Quality Act (CEQA) under the following conditions:

- Existing traffic conditions exceed the General Plan target LOS.
- When cumulative traffic exceeds the target LOS, and impacts cannot be mitigated through the Transportation Uniform Mitigation Fee (TUMF) and/or the City of Moreno Valley Developer Impact Fee (DIF) network (or other funding mechanism), project conditions of approval, or other implementation mechanism.

EXISTING TRAFFIC CONDITIONS

This section summarizes the existing roadway circulation network, daily and peak-hour traffic volumes, and existing operating conditions and Level of Service at the study intersections and roadway segments.

Existing Street System

Regional access to the site will be provided by the SR-60 and the I-215 Freeways. The SR-60 Freeway is located approximately 1.0 mile to the north of the project site. The I-215 Freeway is located approximately 3.5 miles to the west of the project site.

Local access to the project vicinity is provided by several roadways. Roadway classifications were taken from the City of Moreno Valley General Plan Circulation Element. These roadway classifications are shown on Figure 4. Typical roadway cross sections corresponding to these classifications are shown on Figure 5.

Perris Boulevard is a four-lane divided roadway with two lanes in each direction and a two-way-left-turn median. Perris Boulevard has a width of 86 feet measured from curb to curb within the study area. The posted speed limit is 40 miles per hour. The street traverses the City of Moreno Valley in the north-south direction and is classified as a Divided Arterial in the City of Moreno Valley General Plan.

Cottonwood Avenue is a two-lane divided roadway with one lane in each direction and a two-way-left-turn median. Cottonwood Avenue has a width of 64 feet measured from curb to curb. The posted speed limit is 45 miles per hour throughout the study area. There is currently a bike lane striped in each direction. Based on the City of Moreno Valley Bicycle Master Plan, Cottonwood Avenue is designated as a Bicycle Boulevard. The street runs east-west and is classified as a Minor Arterial in the City of Moreno Valley General Plan.

Alessandro Boulevard is a six-lane divided roadway running east-west with three lanes in each direction and a two-way-left-turn median. At the intersection of Perris Boulevard, there is a raised median

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

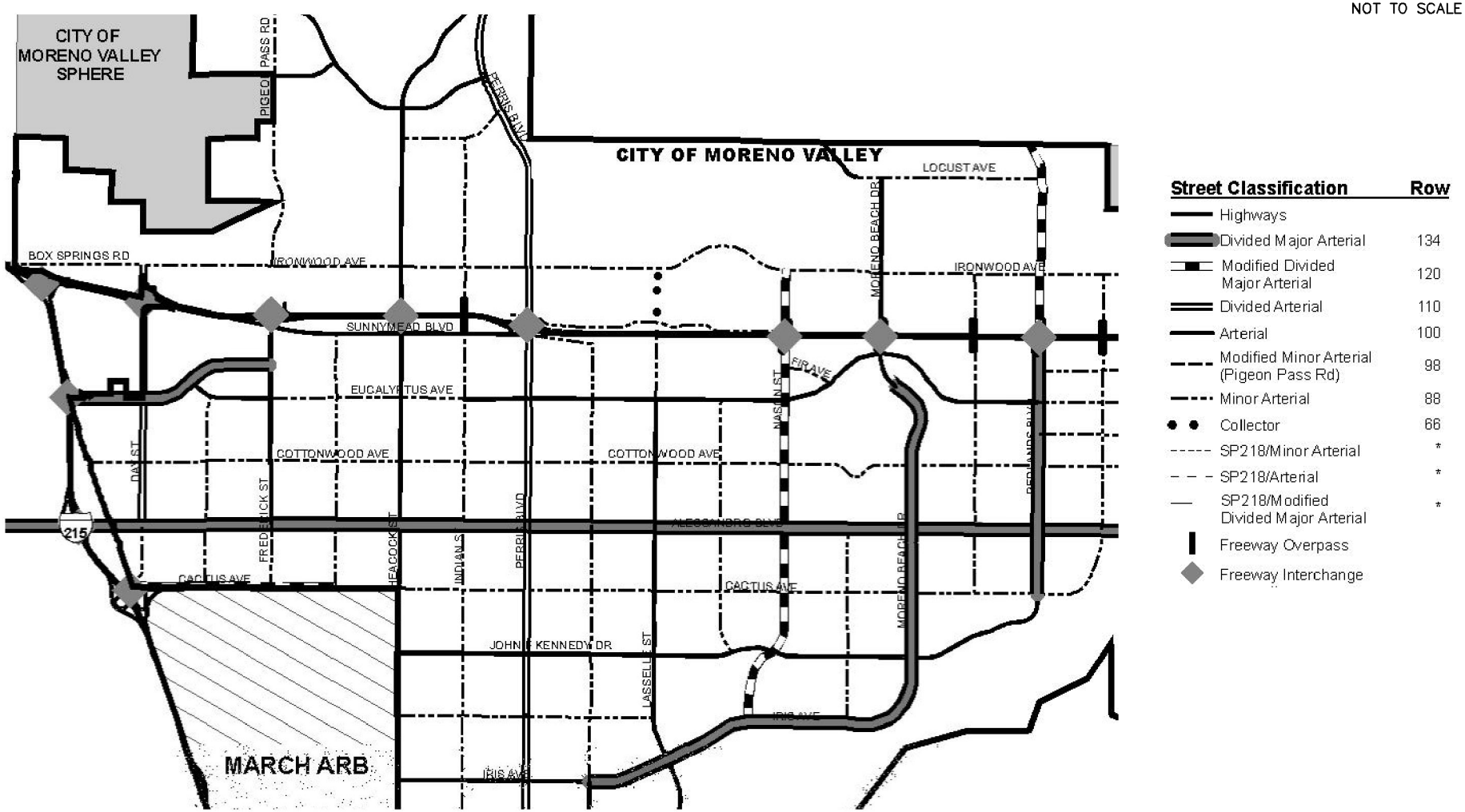

FIGURE 4
GENERAL PLAN ROADWAY NETWORK
SOURCE: CITY OF MORENO VALLEY GENERAL PLAN CIRCULATION ELEMENT

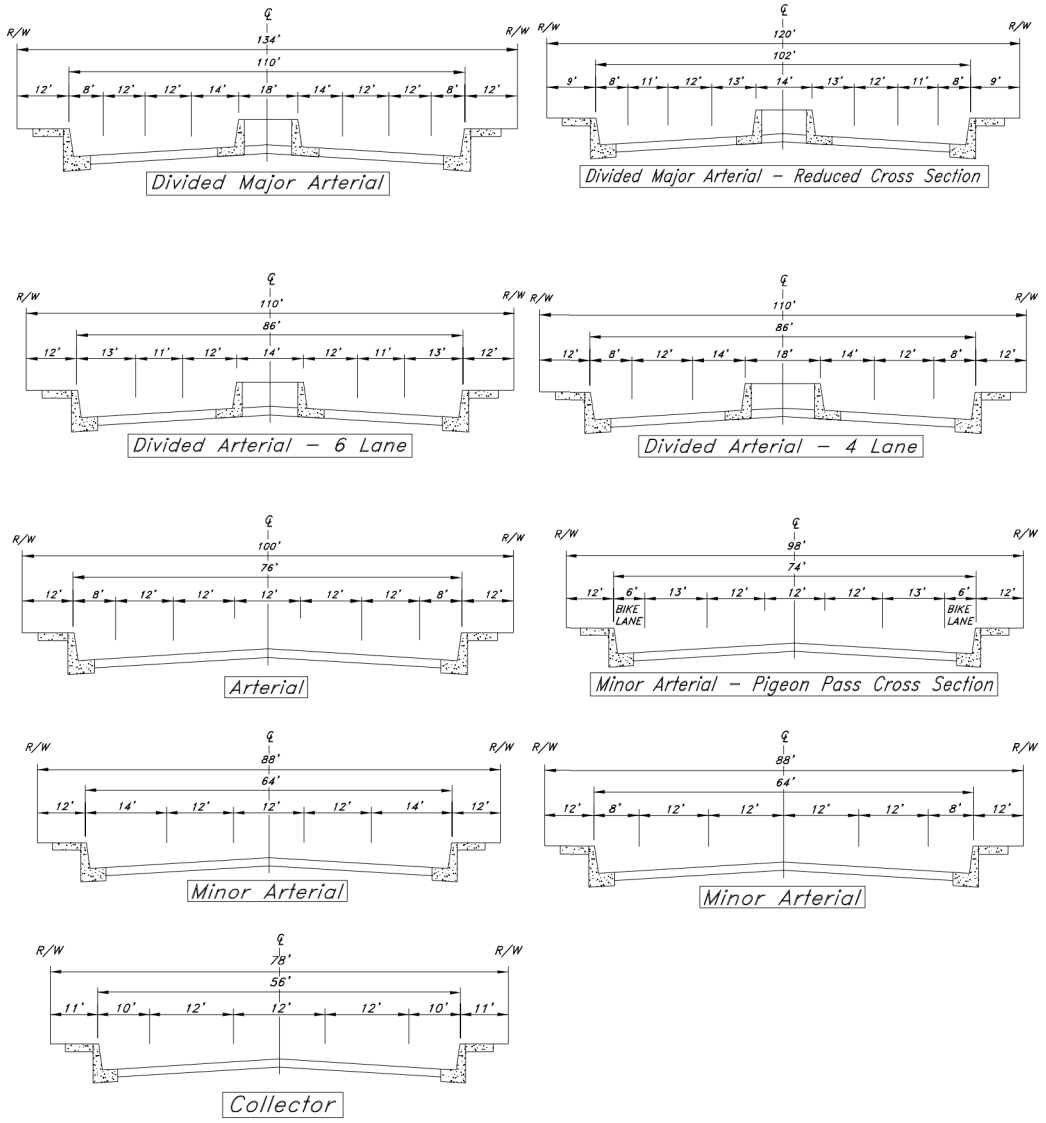

FIGURE 5
ROADWAY CROSS SECTIONS

SOURCE: CITY OF MORENO VALLEY GENERAL PLAN CIRCULATION ELEMENT

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

along Alessandro Boulevard. Alessandro Boulevard has a width of 110 feet measured from curb to curb. The posted speed limit is 45 miles per hour. The street is classified as a Divided Major Arterial in the City of Moreno Valley General Plan.

Existing Transit Services

Riverside Transit Agency Route 18 is a bus route that operates along Cottonwood Avenue within the project vicinity. Route 18 operates seven days a week and provides transportation services between Sunnymead Ranch and Moreno Valley College.

Riverside Transit Agency Route 19 is a bus route that currently operates along Perris Boulevard within the project vicinity. Route 19 operates seven days a week and provides transportation between the Moreno Valley Mall and the Perris Station Transit Center to the south of the project site.

Riverside Transit Agency Route 20 is a bus route that runs in the east-west direction along Alessandro Boulevard within the study area. Route 20 operates seven days a week and provides transportation between Magnolia Center in the City of Riverside and Moreno Valley College.

Truck Routes

Perris Boulevard is a designated truck route within the study area and provides access to the SR-60 Freeway to the north of the project site. Alessandro Boulevard is a truck route in the east-west direction along its entirety within the City of Moreno Valley limits.

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Existing Traffic Volumes

Existing morning peak period (7:00 to 9:00 AM) and evening peak period (4:00 to 6:00 PM) turning movement counts were collected for all study intersections, and 24-hour roadway volumes were collected for all study roadway segments. Sunday Noon counts (11:00 AM to 2:00 PM) were collected at all study intersections to coincide with peak traffic generated by the St. Christopher Catholic Church. The counts were completed in September, 2015, when area schools were in session.

The existing lane configurations and traffic control at the study intersections are shown in Figure 6. Existing peak hour turning movement volumes at the study intersections and daily volumes on study roadways are shown in Figure 7. Existing Sunday traffic volumes are shown in Figure 8. Peak hour intersection traffic count and daily roadway traffic count worksheets are provided in *Appendix B*.

Intersection Analysis – Existing Operating Conditions

The study intersections were analyzed in accordance with the analysis methodology described earlier in this report. Intersection Level of Service worksheets are provided in *Appendix C*. The Existing Conditions analysis results and Level of Service for the study intersections are presented in Table 1. Review of this table shows that all study intersections currently operate at LOS D or better during all peak hour periods, with the exception of the unsignalized intersection of Cottonwood Avenue at Crape Myrtle Drive. The intersection currently operates at a LOS E in the morning peak hour based on the worst-case approach. This worst-case delay is caused by 31 vehicles making a southbound left-turn movement from the minor street approach.

Roadway Segment Analysis – Existing Conditions

The study roadway segments were analyzed in accordance with the analysis methodology described earlier in this report. The Existing Conditions analysis results and Level of Service for the study roadway segments are presented in Table 2. As review of this table shows, all study roadway segments are currently operating at LOS D or better under Existing Conditions.

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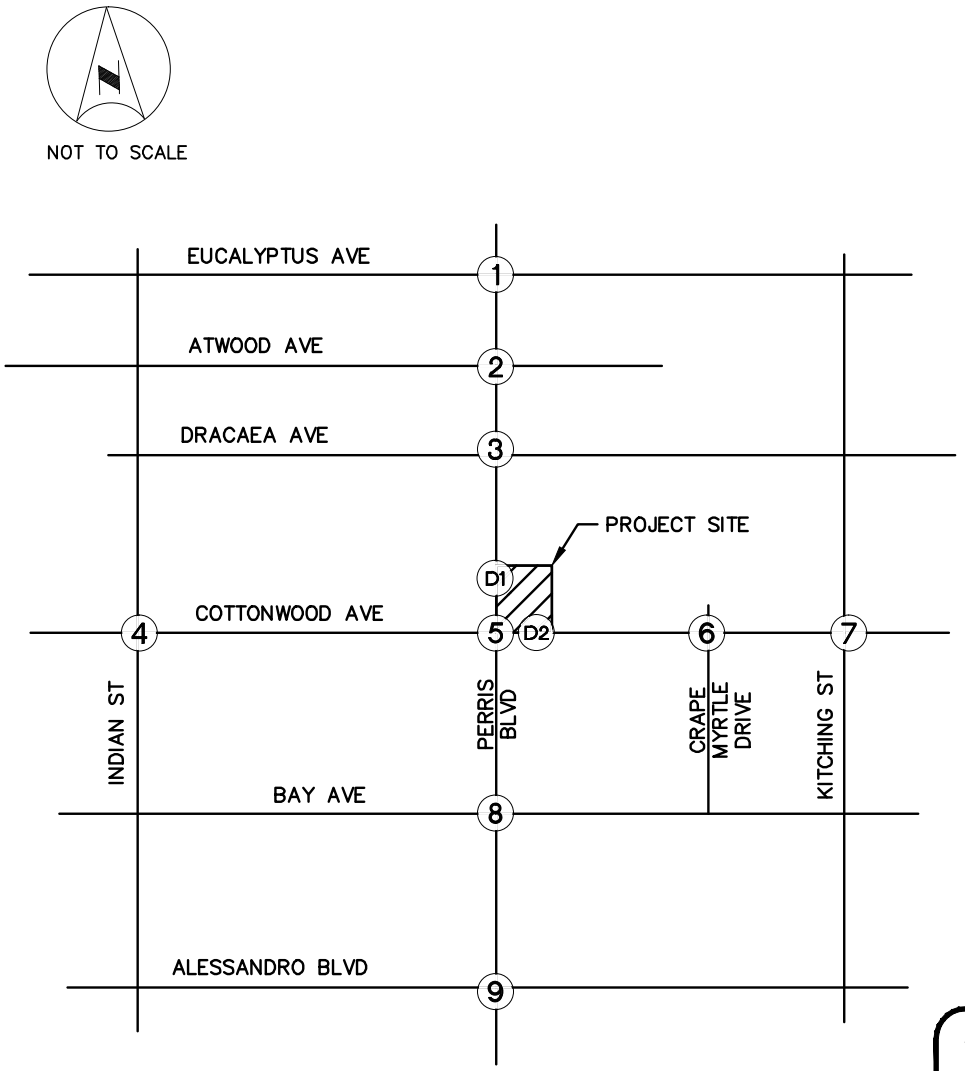
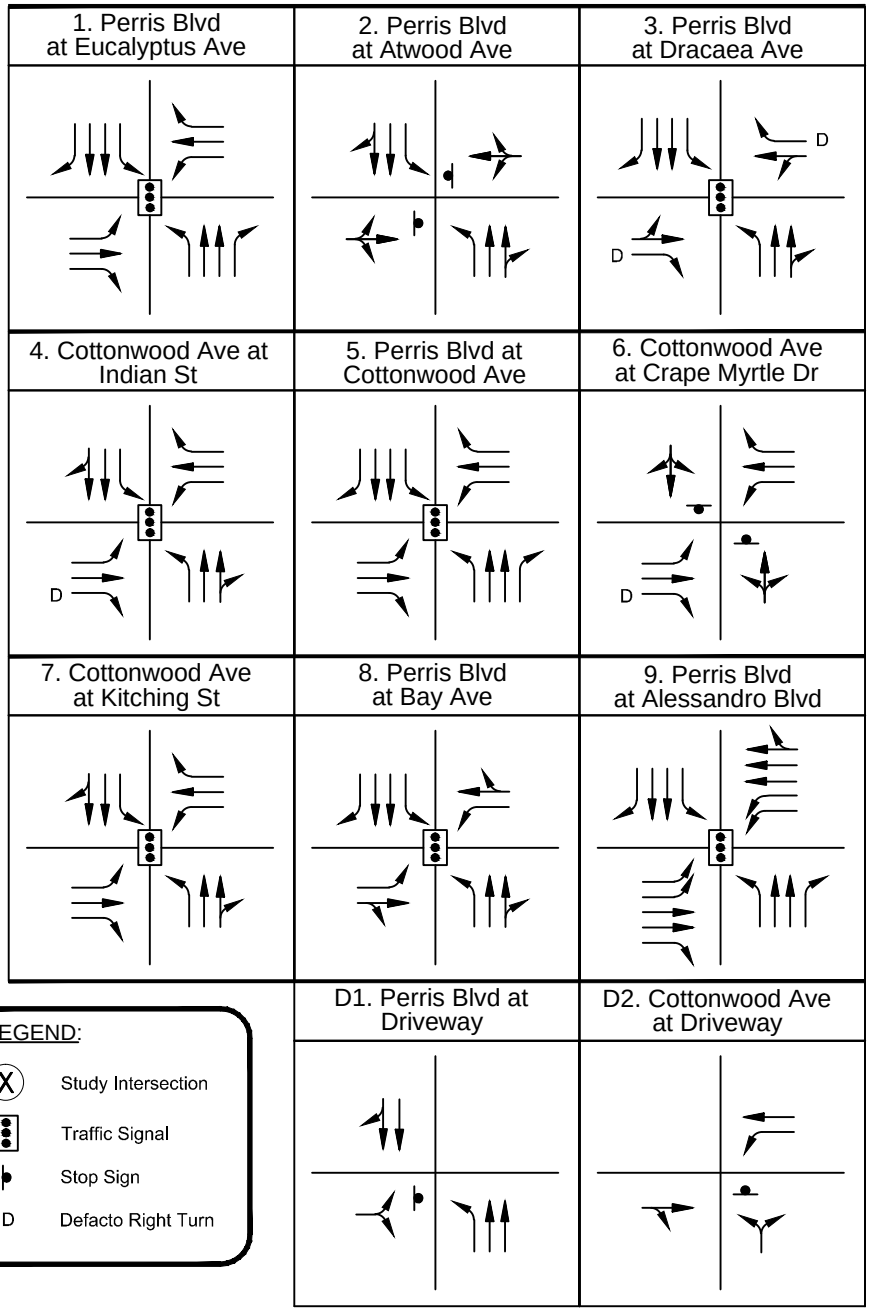
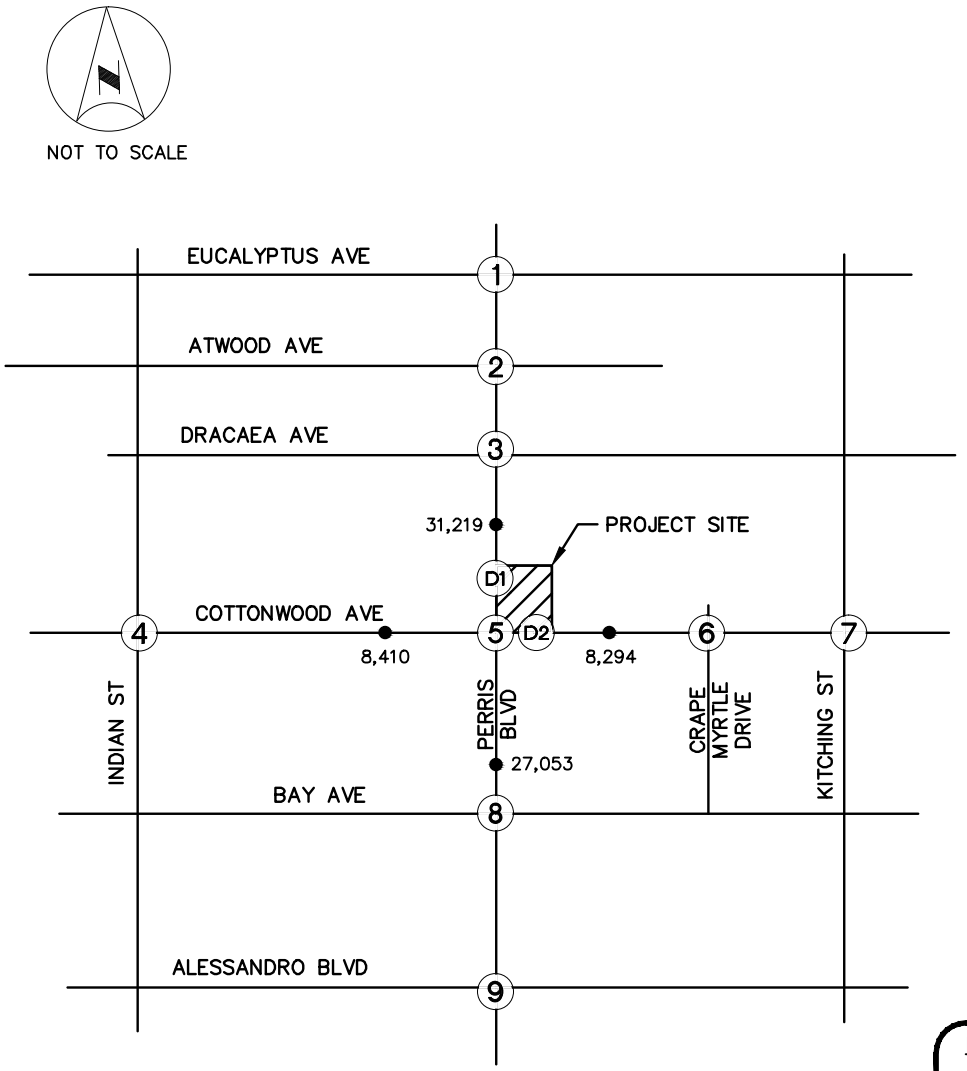


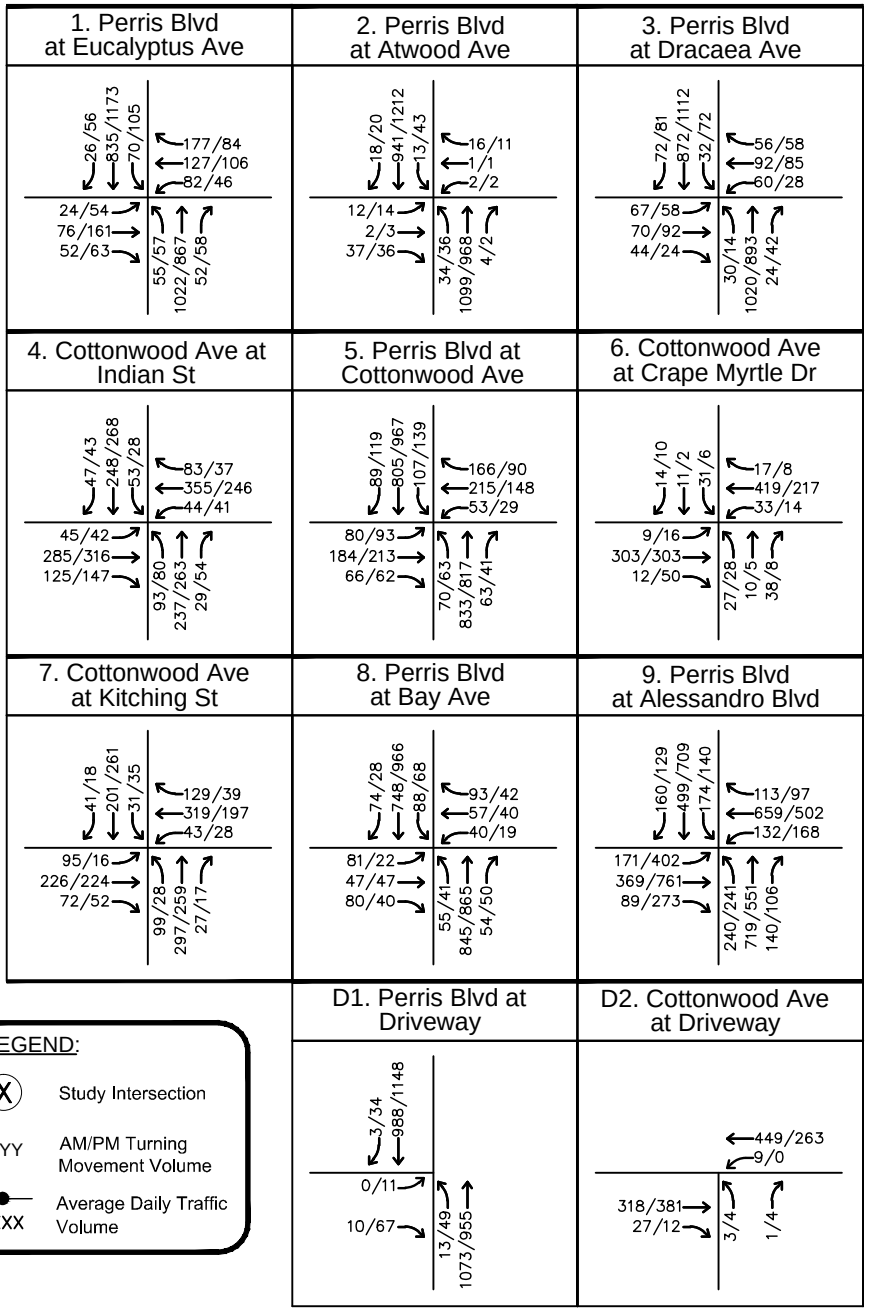


LEGEND:

- X — Study Intersection
- Traffic Signal
- Stop Sign
- D — Defacto Right Turn

FIGURE 6
EXISTING LANE CONFIGURATION AND TRAFFIC CONTROL





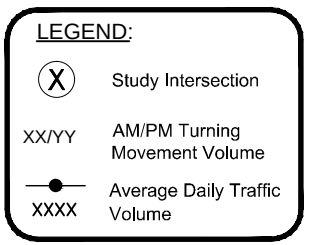
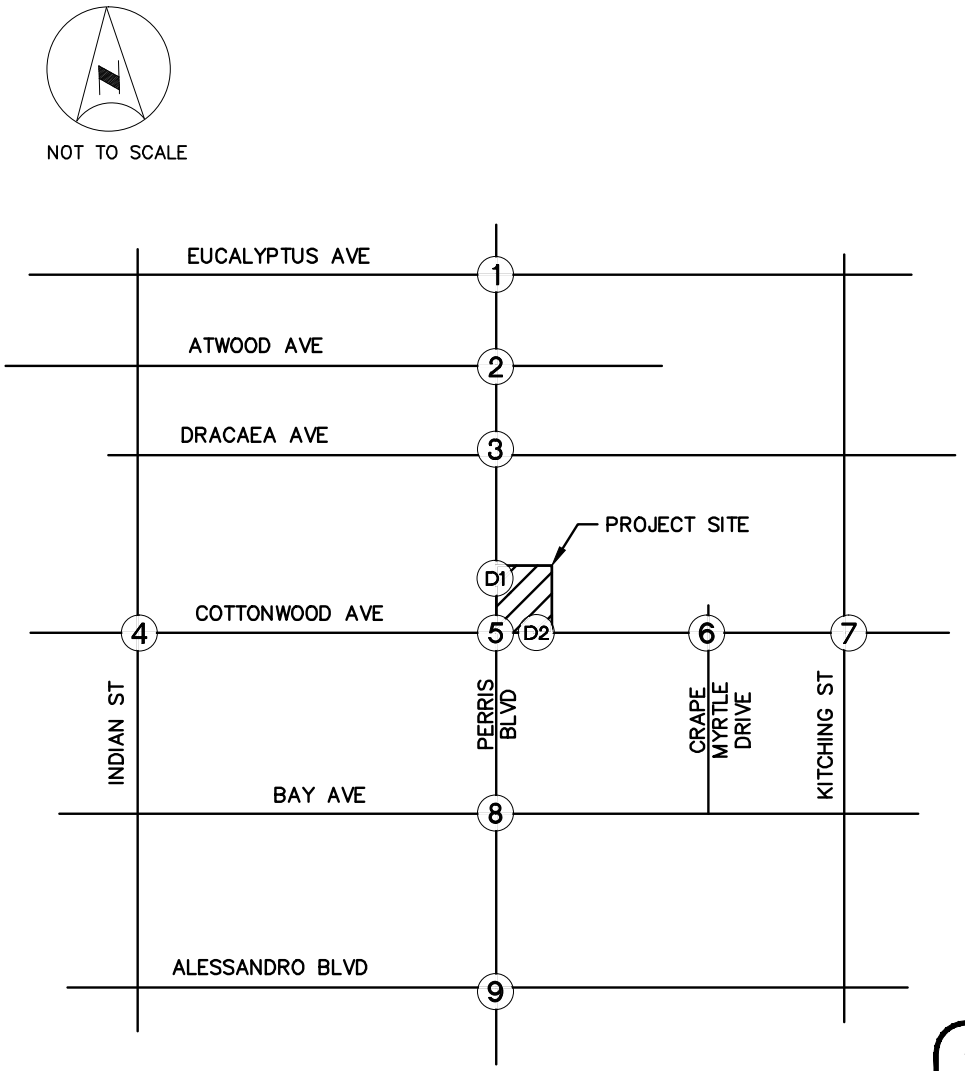
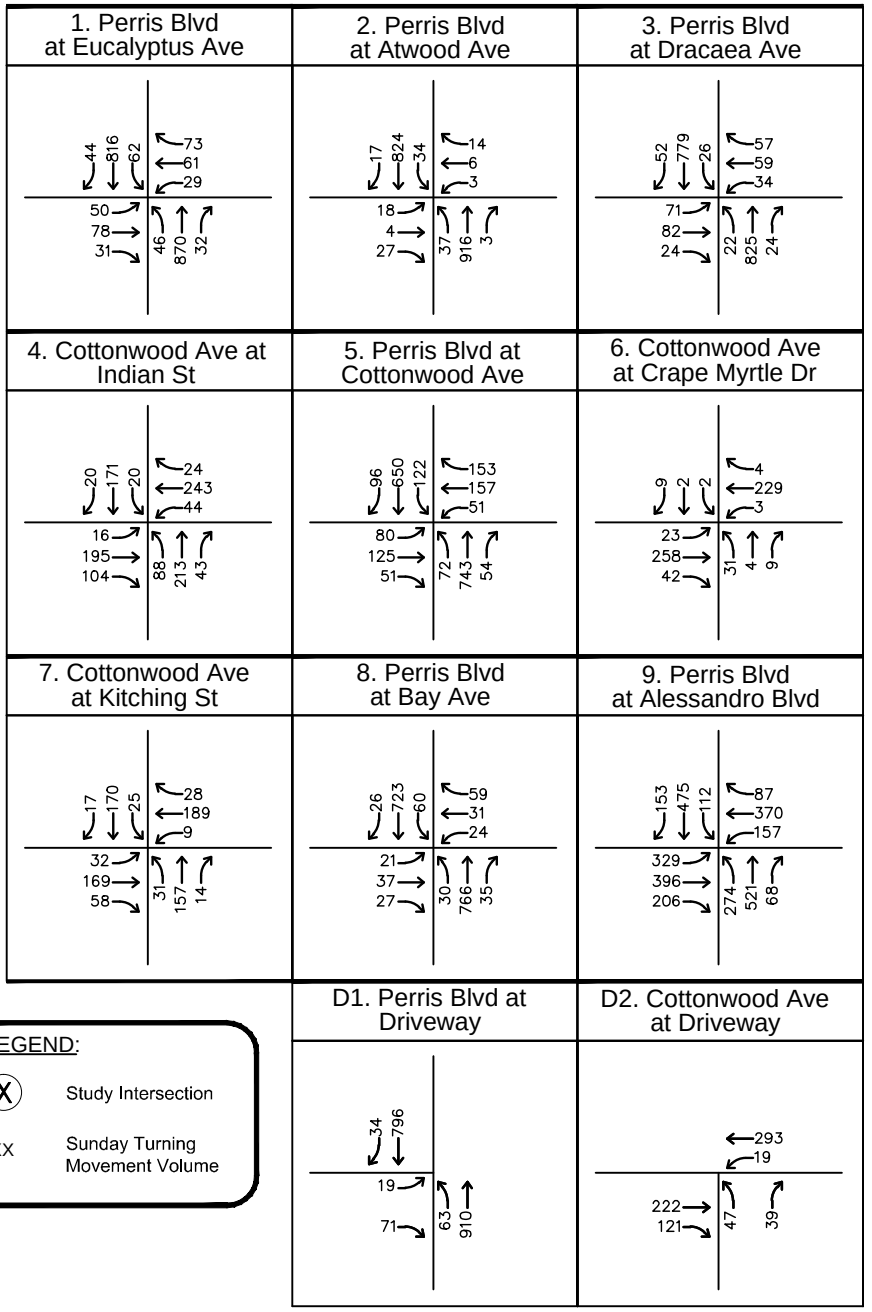


FIGURE 7
EXISTING TRAFFIC VOLUMES – WEEKDAY

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND





LEGEND:

X — Study Intersection

XX — Sunday Turning Movement Volume

FIGURE 8
EXISTING TRAFFIC VOLUMES – SUNDAY

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

TABLE 1
SUMMARY OF INTERSECTION OPERATION
EXISTING CONDITIONS

Int. #	Intersection	Intersection Control	Peak Hour	Existing Conditions	
				Delay (sec/veh)	LOS
1	Perris Boulevard at Eucalyptus Avenue	Signal	AM	19.9	B
			PM	20.4	C
			SUN	16.6	B
2	Perris Boulevard at Atwood Avenue	Unsignalized	AM	23.8	C
			PM	29.0	D
			SUN	27.4	D
3	Perris Boulevard at Dracaea Avenue	Signal	AM	26.5	C
			PM	18.0	B
			SUN	20.6	C
4	Cottonwood Avenue at Indian Street	Signal	AM	23.1	C
			PM	20.1	C
			SUN	18.1	B
5	Cottonwood Avenue at Perris Boulevard	Signal	AM	26.1	C
			PM	21.7	C
			SUN	23.1	C
6	Cottonwood Avenue at Crape Myrtle Drive	Unsignalized	AM	39.5	E
			PM	15.2	C
			SUN	22.3	C
7	Cottonwood Avenue at Kitching Street	Signal	AM	25.3	C
			PM	16.1	B
			SUN	16.9	B
8	Perris Boulevard at Bay Ave	Signal	AM	22.2	C
			PM	16.4	B
			SUN	14.6	B
9	Perris Boulevard at Alessandro Boulevard	Signal	AM	30.1	C
			PM	35.3	D
			SUN	28.6	C
D1	Perris Boulevard Driveway	Unsignalized	AM	13.2	B
			PM	34.8	D
			SUN	32.6	D
D2	Cottonwood Avenue Driveway	Unsignalized	AM	17.5	C
			PM	13.0	B
			SUN	17.4	C

Unsignalized Intersection Delay is reported for the worst approach

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

TABLE 2
SUMMARY OF ROADWAY OPERATIONS
EXISTING CONDITIONS

Roadway Segment	Roadway Classification	Roadway Capacity	ADT	V/C	LOS
Perris Boulevard: Eucalyptus Avenue to Cottonwood Avenue	4-Lane Divided Arterial	37,500	31,219	0.83	D
Perris Boulevard: Cottonwood Avenue to Alessandro Boulevard	4-Lane Divided Arterial	37,500	27,053	0.72	C
Cottonwood Avenue: Indian Street to Perris Boulevard	2-Lane Arterial	12,500	8,410	0.67	A
Cottonwood Avenue: Perris Boulevard to Kitching Street	2-Lane Arterial	12,500	8,294	0.66	A

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

Trip Generation

The trips expected to be generated by the project were calculated using trip generation rates published in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition (2012). Trip rates are based on ITE Land Use Category 946 – Gas Station with Convenience Market & Car Wash.

It is recognized that not all inbound and outbound trips to the proposed project will be "new" trips on the roadway system in the vicinity of the proposed project. Some trips to the project site will consist of "pass-by" trips -- motorists who are already traveling on the surrounding roadways from one place to another. Common pass-by trips for a gas station would be individuals who stop at the project site on the way to work, home, or school.

The ITE Trip Generation Handbook, 9th Edition (2012) was used to determine the pass-by factors for the Gas Station with Convenience Market & Car Wash. For the Gas Station component, a pass-by rate of 62% was applied to the morning peak hour, and a pass-by rate of 56% was applied to the evening peak hour. Since pass-by rates were not provided for the Sunday peak, the lower 56% from the evening peak hour was used for a conservative estimate. The trip generation assumptions were approved by City Staff in the Scoping Agreement.

Daily, morning peak hour, evening peak hour, and Sunday trip generation estimates are summarized on Table 3. The project is estimated to generate 2,445 daily trips, 190 morning peak hour trips, 222 evening peak hour trips, and 312 Sunday peak hour trips. After applying pass-by reductions, the development is projected to generate a net of 2,445 daily trips, 72 morning peak hour trips, 98 evening peak hour trips, and 138 Sunday peak hour trips.

Trip Distribution and Assignment

Project trip distribution and assignment assumptions for the proposed project were developed with approval from the City Traffic Engineering staff. The distribution and assignment assumptions took into account existing traffic patterns. Trip distribution assumptions are shown on Figure 9.

Based on the proposed project trip distribution, project trips were assigned through the study intersections. The resulting project-related traffic weekday and Sunday volumes at each study intersection and roadway are shown on Figure 10 and Figure 11, respectively. The volumes provided on Figure 10 and Figure 11 account for pass-by trips, which would typically be added to project driveways but not to non-adjacent study intersections; pass-by trips are assumed to be part of the existing flow of traffic until reaching the project site. A breakdown of non pass-by and pass-by trips can be found in *Appendix D*.

The trip assignment in this section is based on the existing roadway geometry. Additional access alternatives to account for the potential construction of raised medians on Perris Boulevard and Cottonwood Avenue are discussed in the *Project Access Alternatives* section of this report.

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

TABLE 3
SUMMARY OF PROJECT TRIP GENERATION

Land Use	ITE Code	Unit	Trip Generation Rates [1]									
			Daily	AM Peak Hour			PM Peak Hour			Sunday Noon [3]		
				In	Out	Total	In	Out	Total	In	Out	Total
Gasoline Station w/ Conv. Mkt. & Car Wash	946	Fueling Position	152.84	6.04	5.80	11.84	7.07	6.79	13.86	9.73	9.73	19.46

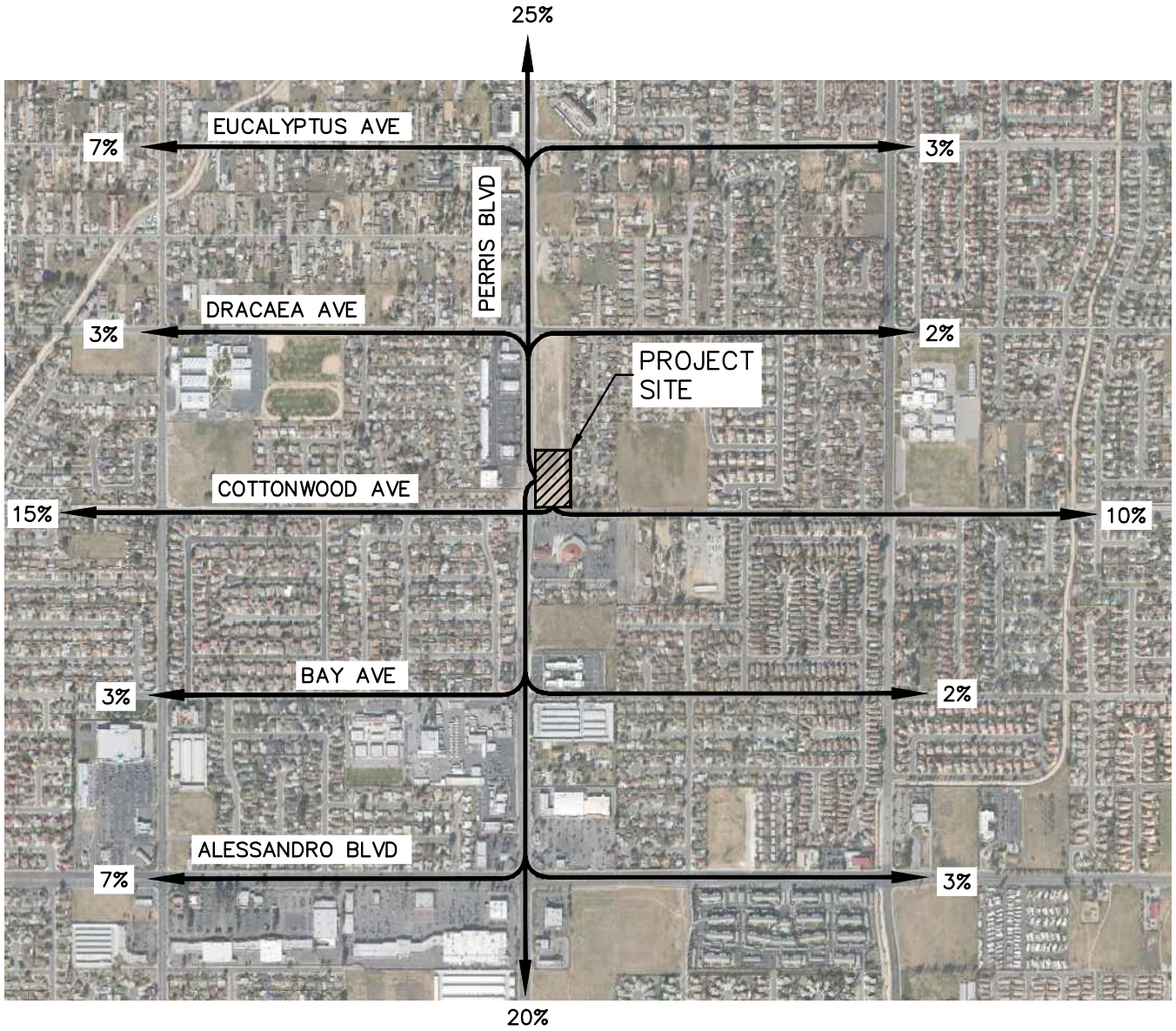
Land Use	Quantity	Unit	Trip Generation Estimates									
			Daily	AM Peak Hour			PM Peak Hour			Sunday Noon		
				In	Out	Total	In	Out	Total	In	Out	Total
Gasoline Station w/ Conv. Mkt. & Car Wash	16	Fueling Position	2,445	97	93	190	113	109	222	156	156	312
- Pass-by Trips (AM 62%, PM 56%) [2]			-	-60	-58	-118	-63	-61	-124	-87	-87	-174
Total Project Trips			2,445	37	35	72	50	48	98	68	68	138

[1] Source: Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition

[2] Source: ITE Trip Generation Manual - Volume 1: User's Guide and Handbook. A pass-by rate of 56% was used for Sunday trips.

[3] Sunday Peak Hour trips were calculated based on ITE rates for the Saturday Peak Hour of Generator.

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND



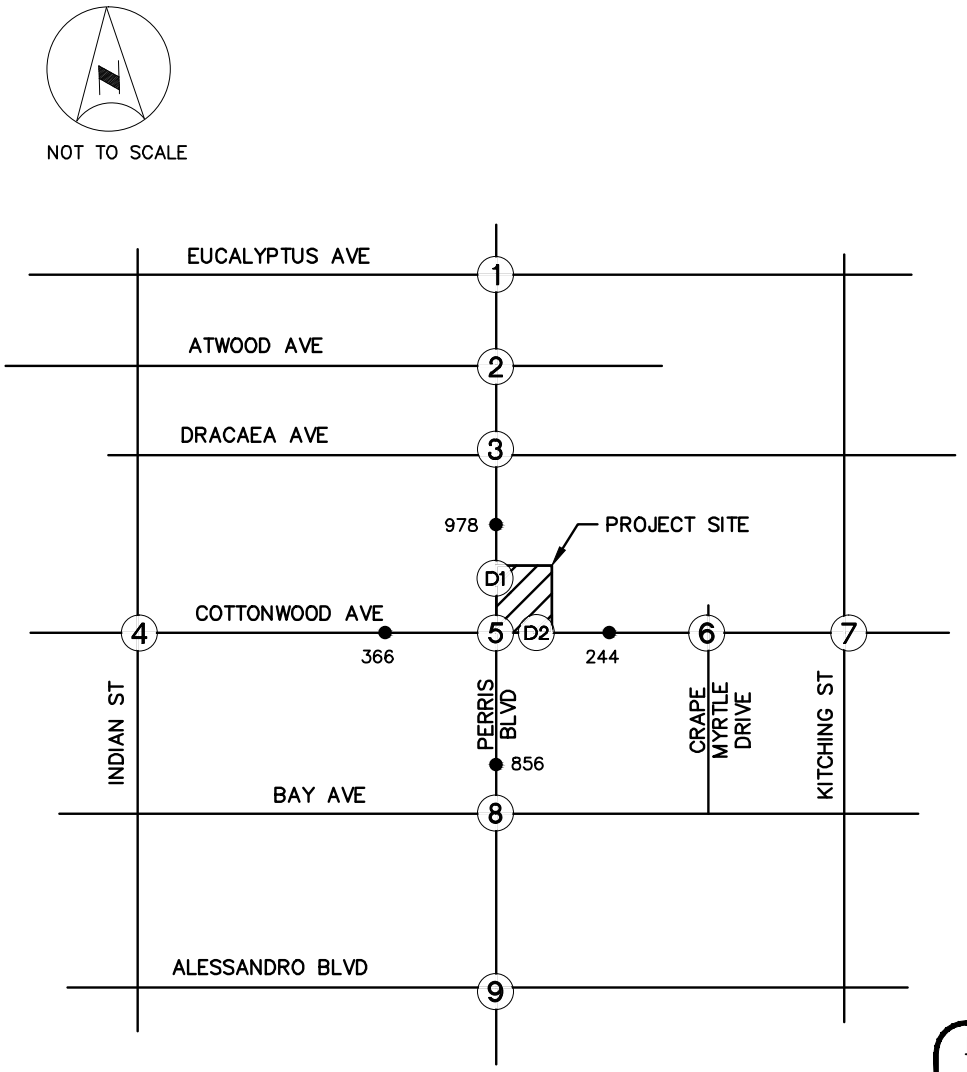
NOT TO SCALE

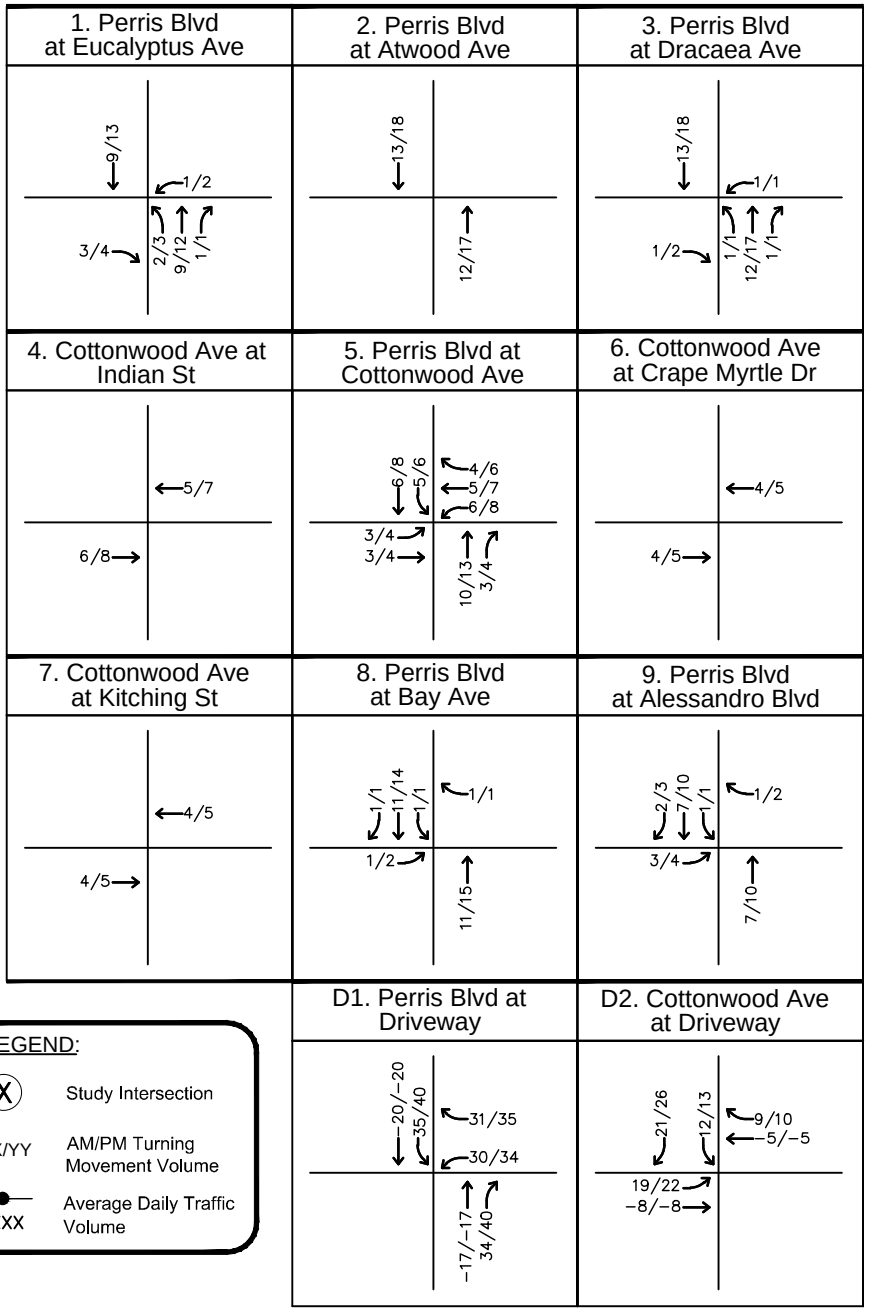
LEGEND:

XX% TRIP PERCENTAGE

FIGURE 9
TRIP DISTRIBUTION ASSUMPTIONS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND



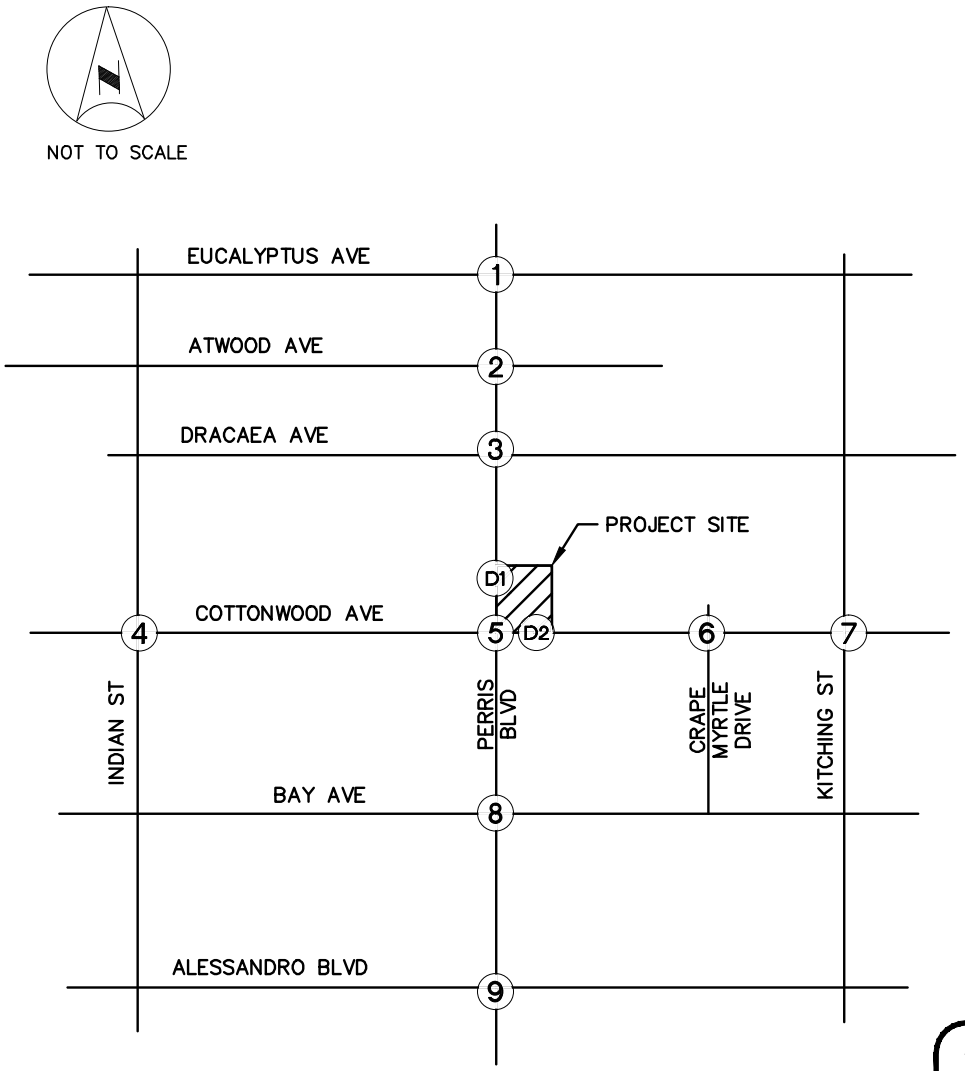


LEGEND:

X	Study Intersection
XX/YY	AM/PM Turning Movement Volume
XXXX	Average Daily Traffic Volume

FIGURE 10
PROJECT TRAFFIC – WEEKDAY TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND



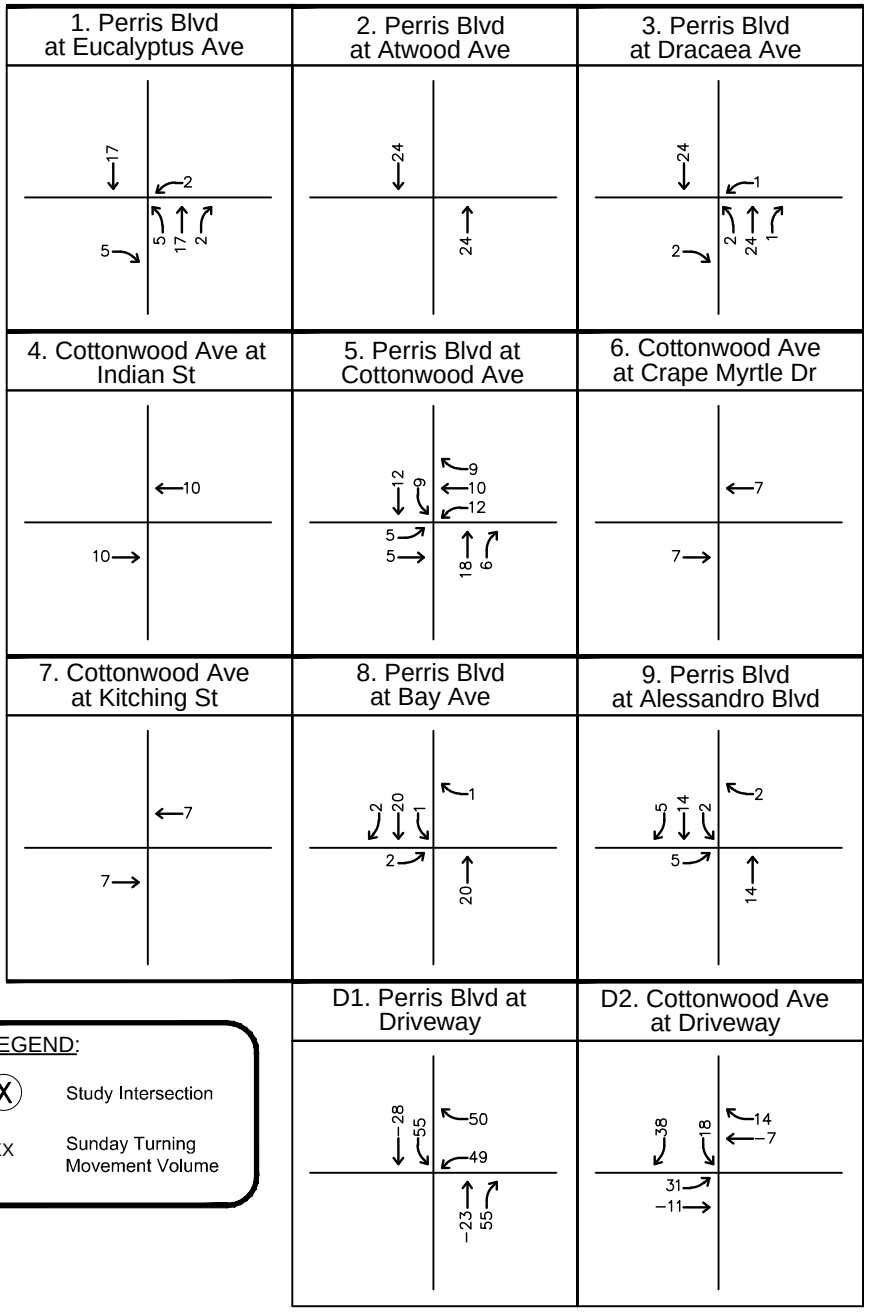


FIGURE 11
PROJECT TRAFFIC – SUNDAY TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

EXISTING WITH PROJECT CONDITIONS

The Existing With Project analysis provides a summary of the impacts associated with adding project-related trips to existing traffic volumes. The Existing With Project scenario is a hypothetical scenario which assumes that the Project would be fully implemented at the present time and full absorption of Project traffic on the existing circulation system.

Intersection Analysis – Existing With Project

Existing With Project weekday and Sunday peak hour traffic volumes are shown on Figure 12 and Figure 13, respectively. The intersection analysis was conducted for the Existing With Project scenario, and the results are presented on Table 4. Intersection analysis worksheets are provided in *Appendix C*. Review of this table indicates that all study intersections will operate at acceptable Level of Service, with the exception of the following:

- Cottonwood Avenue at Crape Myrtle Drive (AM LOS E) – Southbound Approach
- Perris Boulevard Driveway (AM LOS F, PM LOS F, Sunday LOS F) – Westbound Approach

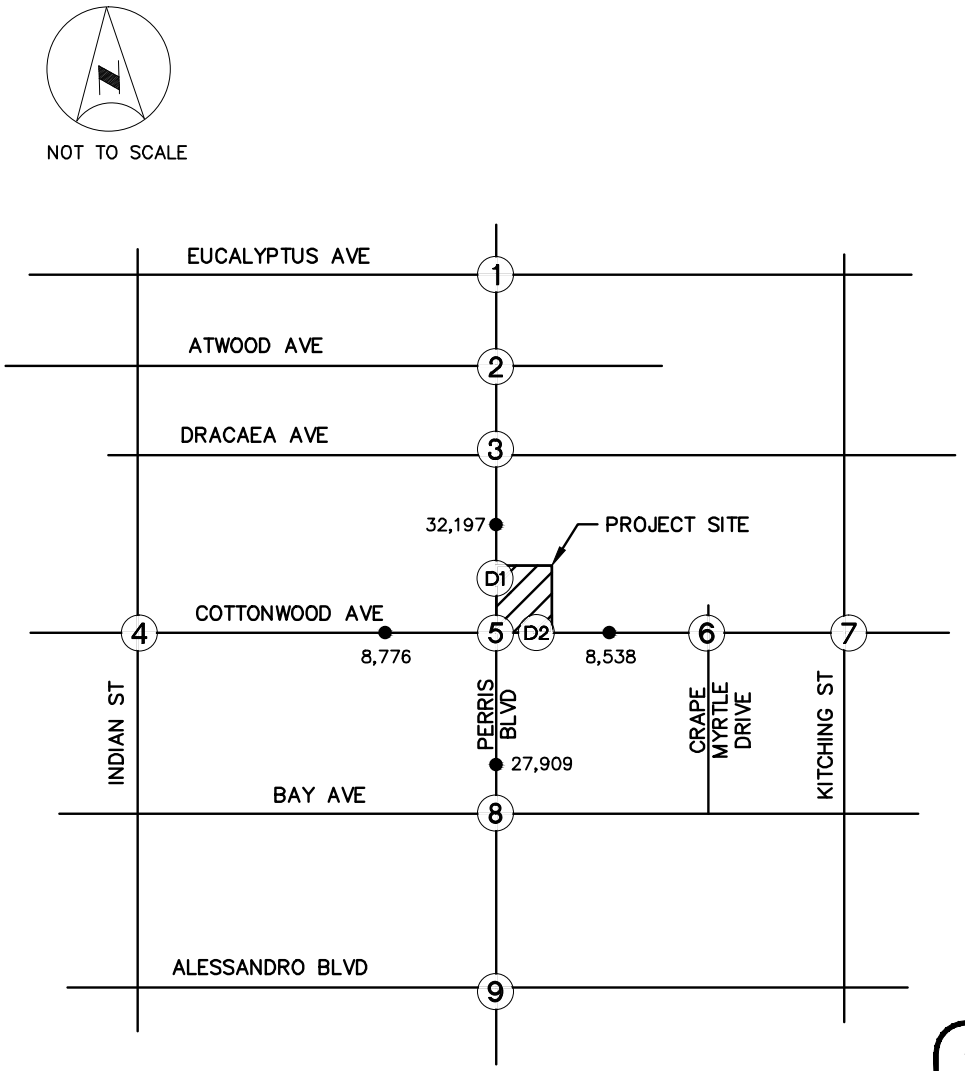
The intersection of Cottonwood Avenue at Crape Myrtle Drive is unsignalized and is shown to already operate deficiently in Existing Conditions. The deficiency is caused by the low volumes turning from the minor street approach.

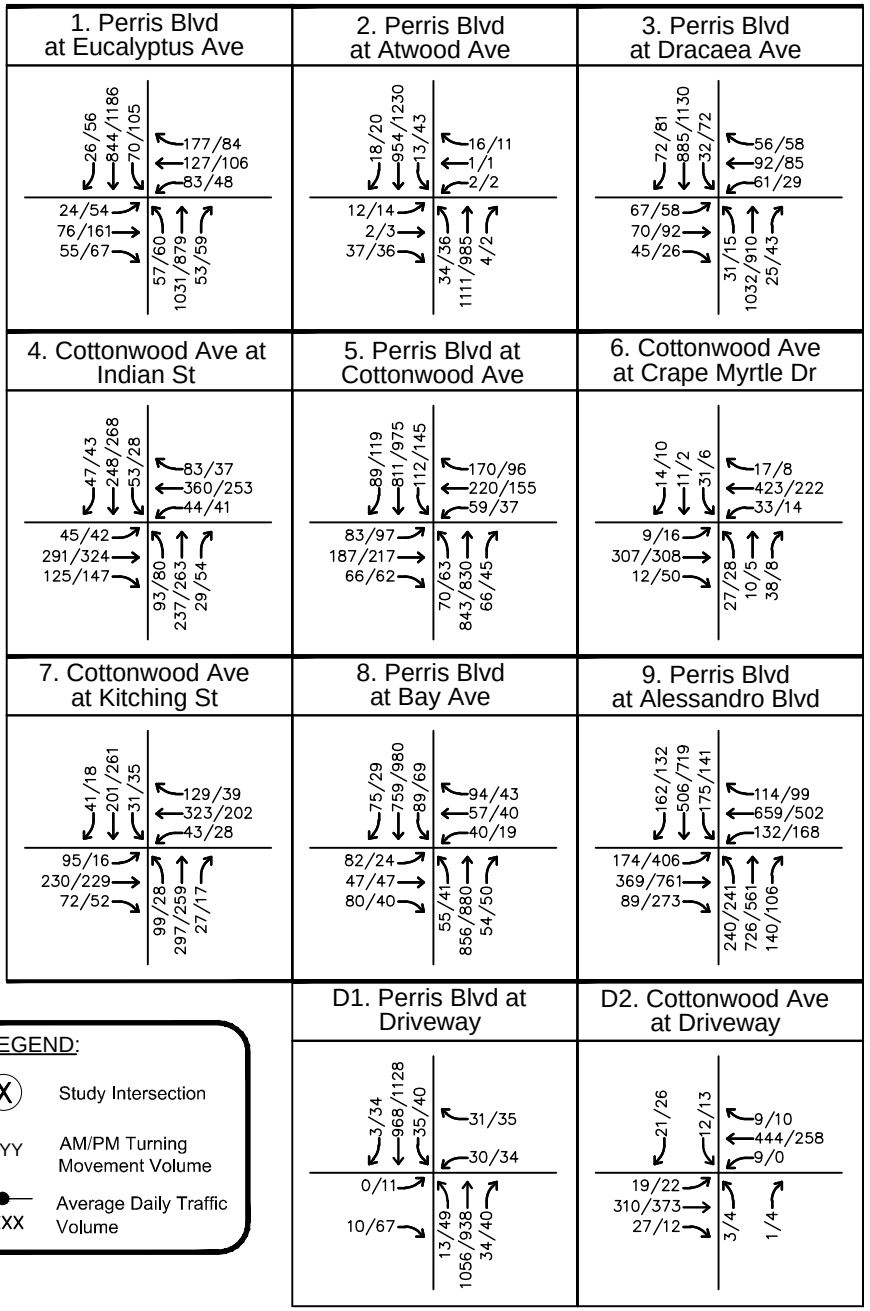
The Perris Boulevard Driveway is unsignalized. The LOS F delay would be experienced by vehicles making a westbound left-turn out of the driveway onto Perris Boulevard.

Roadway Segment Analysis – Existing With Project

Existing With Project daily roadway segment volumes are shown on Figure 12, shown previously. The daily roadway segment analysis was conducted for the Existing With Project scenario, and the results are presented in Table 5. Review of this table indicates that all study roadway segments will continue to operate at Level of Service D or better with the addition of project traffic.

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR



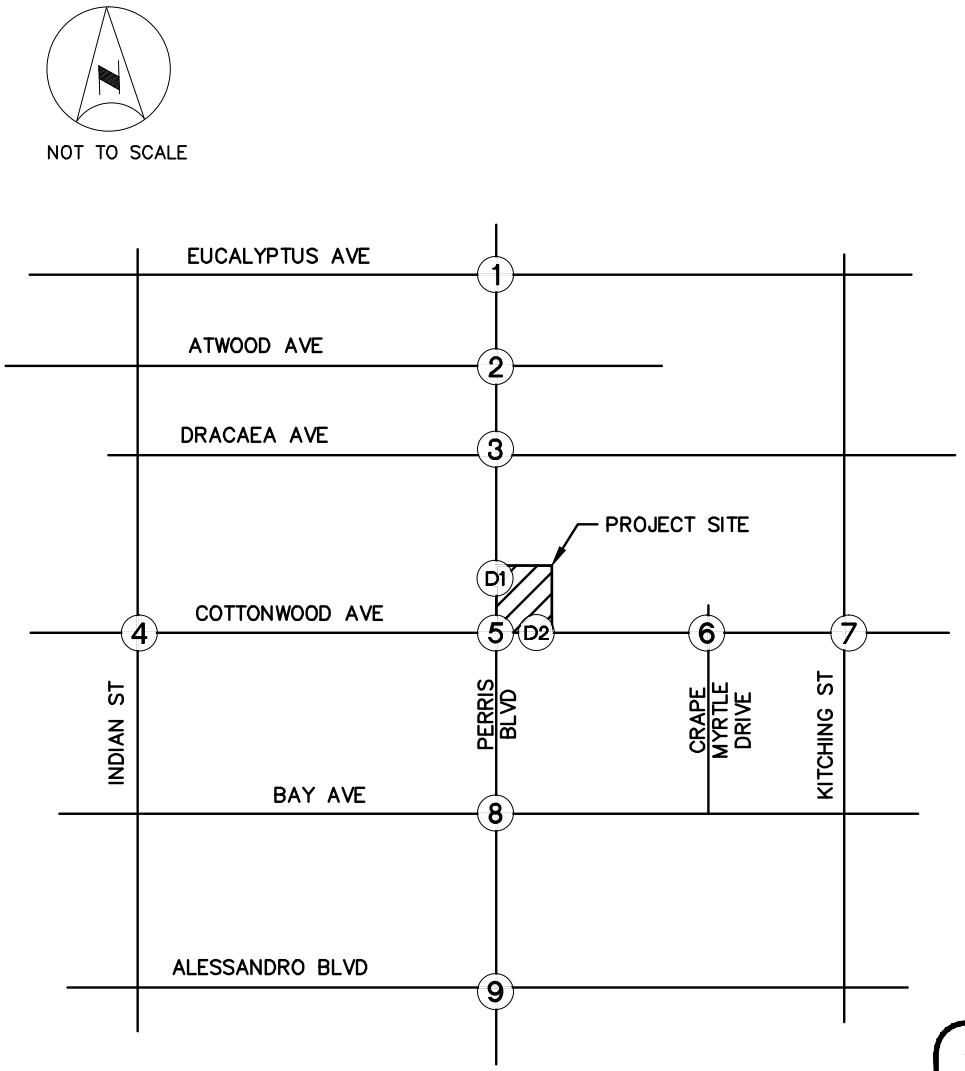


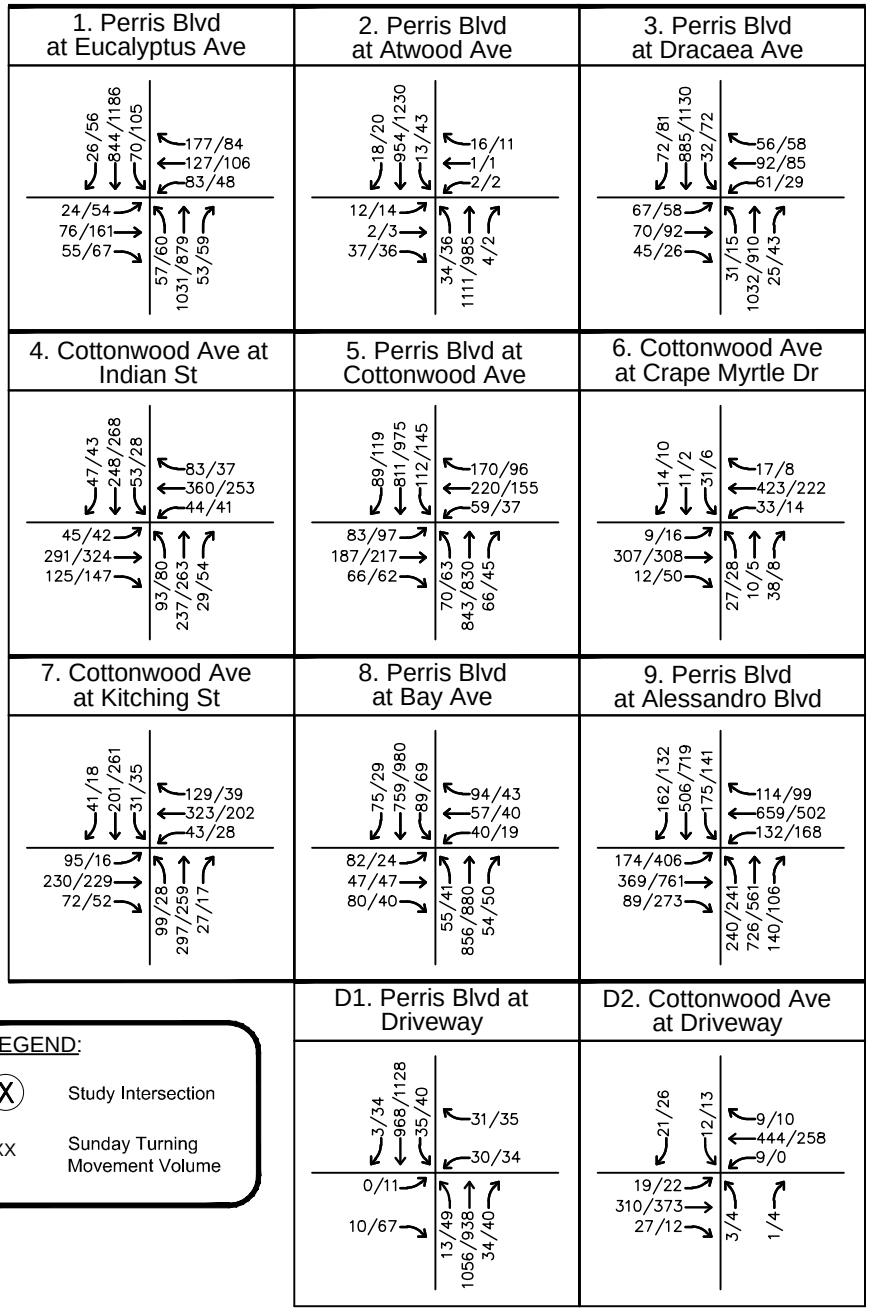
LEGEND:

- (X) Study Intersection
- XX/YY — AM/PM Turning Movement Volume
- XXXX — Average Daily Traffic Volume

FIGURE 12
EXISTING WITH PROJECT
TRAFFIC VOLUMES – WEEKDAY

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND





LEGEND:

X — Study Intersection

XX — Sunday Turning Movement Volume

FIGURE 13
EXISTING WITH PROJECT
TRAFFIC VOLUMES – SUNDAY

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

TABLE 4
SUMMARY OF INTERSECTION OPERATIONS
EXISTING WITH PROJECT CONDITIONS

Int. #	Intersection	Peak Hour	Existing Conditions		Existing With Project Conditions		Project Impact
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
1	Perris Boulevard at Eucalyptus Avenue	AM	19.9	B	20.1	C	0.2
		PM	20.4	C	20.8	C	0.4
		SUN	16.6	B	16.9	B	0.3
2	Perris Boulevard at Atwood Avenue	AM	23.8	C	24.3	C	0.5
		PM	29.0	D	29.8	D	0.8
		SUN	27.4	D	28.5	D	1.1
3	Perris Boulevard at Dracaea Avenue	AM	26.5	C	27.0	C	0.5
		PM	18.0	B	18.2	B	0.2
		SUN	20.6	C	20.8	C	0.2
4	Cottonwood Avenue at Indian Street	AM	23.1	C	23.4	C	0.3
		PM	20.1	C	20.3	C	0.2
		SUN	18.1	B	18.2	B	0.1
5	Cottonwood Avenue at Perris Boulevard	AM	26.1	C	27.1	C	1.0
		PM	21.7	C	22.5	C	0.8
		SUN	23.1	C	24.6	C	1.5
6	Cottonwood Avenue at Crape Myrtle Drive	AM	39.5	E	40.5	E	1.0
		PM	15.2	C	15.4	C	0.2
		SUN	22.3	C	23.1	C	0.8
7	Cottonwood Avenue at Kitching Street	AM	25.3	C	25.6	C	0.3
		PM	16.1	B	16.2	B	0.1
		SUN	16.9	B	17.0	B	0.1
8	Perris Boulevard at Bay Ave	AM	22.2	C	22.5	C	0.3
		PM	16.4	B	16.7	B	0.3
		SUN	14.6	B	14.8	B	0.2
9	Perris Boulevard at Alessandro Boulevard	AM	30.1	C	30.2	C	0.1
		PM	35.3	D	35.6	D	0.3
		SUN	28.6	C	28.8	C	0.2
D1	Perris Boulevard Driveway	AM	13.2	B	224.4	F	211.2
		PM	34.8	D	260.0	F	225.2
		SUN	32.6	D	498.3	F	465.7
D2	Cottonwood Avenue Driveway	AM	17.5	C	22.3	C	4.8
		PM	13.0	B	14.8	B	1.8
		SUN	17.4	C	24.5	C	7.1

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

TABLE 5
SUMMARY OF ROADWAY OPERATIONS
EXISTING WITH PROJECT CONDITIONS

Roadway Segment	Roadway Classification	Roadway Capacity	ADT	V/C	LOS
Perris Boulevard: Eucalyptus Avenue to Cottonwood Avenue	4-Lane Divided Arterial	37,500	32,197	0.86	D
Perris Boulevard: Cottonwood Avenue to Alessandro Boulevard	4-Lane Divided Arterial	37,500	27,909	0.74	C
Cottonwood Avenue: Indian Street to Perris Boulevard	2-Lane Arterial	12,500	8,776	0.70	A
Cottonwood Avenue: Perris Boulevard to Kitching Street	2-Lane Arterial	12,500	8,538	0.68	A

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

FUTURE CONDITIONS

Cumulative (Opening Year 2020) Without Project

Cumulative Without Project traffic forecasts were developed using the following "build-up" forecasting method:

- Existing traffic volumes, plus
- An annual ambient growth rate of 2% per year to Opening Year 2020, plus
- Cumulative projects traffic
    - Cumulative projects consist of projects that have been approved but are not yet built or fully occupied, as well as projects that are in various stages of the application and approval process, but have not yet been approved. These projects are considered to be "reasonably foreseeable," and must therefore be included in the Cumulative Projects analysis.

Cumulative Project information was obtained from the City of Moreno Valley Planning and Economic Development Department at the start of the study process. Cumulative projects within a 3.5 mile radius of the project site were considered. For the purpose of this traffic study, the projects were assessed for their proximity to the project site and for their potential to generate traffic based on their approved or pending land uses. Therefore, not all projects are anticipated to affect the study area. A summary of the Cumulative Projects is provided on Table 6. The location of the Cumulative Projects in relation to the project site is shown on Figure 14. Cumulative weekday and Sunday project-related trips at study intersections and roadways are shown on Figure 15 and Figure 16, respectively.

As part of the Cumulative scenario, the St. Christopher's Catholic Church on the southeast corner of the intersection of Perris Boulevard and Cottonwood Avenue will undergo an expansion. The existing driveway along Cottonwood Avenue will be eliminated as part of that expansion. The removal of the church's driveway was taken into consideration in the analysis of future conditions.

Ambient growth and project-related trips for the Cumulative Projects were added to the study intersections and roadways. Cumulative Without Project weekday and Sunday traffic volumes are shown on Figure 17 and Figure 18, respectively.

Intersection Analysis – Cumulative (Opening Year 2020) Without Project

The study intersections were analyzed with the annual growth and traffic from the Cumulative Projects. Intersection Level of Service worksheets are provided in *Appendix D*. The Cumulative Without Project analysis results and Level of Service for the study intersections are presented in Table 7.

Review of this table shows that, with the addition Cumulative Projects traffic and an ambient traffic growth rate, the following intersections would operate at an unacceptable Level of Service:

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

TABLE 6
SUMMARY OF CUMULATIVE PROJECTS

Map #	Builder/Applicant	Quantity	Unit	Trip Generation Estimates [1]									
				Daily	AM Peak Hour			PM Peak Hour			Weekend		
					In	Out	Total	In	Out	Total	In	Out	Total
Single-Family Residential Development													
1	TR 34151 Moreno Valley Property Investment LLC	37	DU	352	7	21	28	23	14	37	17	15	32
2	TR 28860 Professor's Fund IV, LLC	9	DU	86	2	5	7	6	3	9	4	4	8
3	TR 36760 Mission Pacific Land Co.	189	DU	1,799	36	106	142	119	70	189	86	76	162
4	TR 31297 Randy McFarland	7	DU	67	1	4	5	4	3	7	3	3	6
5	TR 31305 Richland Communities, Inc.	87	DU	828	16	49	65	55	32	87	40	35	75
6	TR 34112 SKG Pacific Enterprises Inc.	63	DU	600	12	35	47	40	23	63	29	25	54
7	TR 31517 Professor Prop Six/Winchester Associates	83	DU	790	16	47	63	52	31	83	38	34	72
8	TR 31621 Skyline Homes	12	DU	114	2	7	9	8	4	12	5	5	10
9	TR 32126 Salvador Torres	35	DU	333	7	20	27	22	13	35	16	14	30
10	TR 32194 Arman Pezeshifar	32	DU	305	6	18	24	20	12	32	15	13	28
11	TR 32218 Granite Capital/Winchesters Associates, Inc.	63	DU	600	12	35	47	40	23	63	29	25	54
12	TR 32284 Joe Anderson	32	DU	305	6	18	24	20	12	32	15	13	28
13	TR 32408 Sandstone, Inc.	80	DU	762	15	45	60	50	30	80	36	32	68
14	TR 32505 DR Horton	72	DU	685	14	41	55	45	27	72	33	29	62
15	TR 32548 Gabel, Cook and Associates	107	DU	1,019	20	60	80	67	40	107	49	43	92
16	TR 32645 Winchester Associates	53	DU	505	10	30	40	33	20	53	24	21	45
17	TR 32716 Bob Rogers	57	DU	543	11	32	43	36	21	57	26	23	49
18	TR 32978 Focus Estates	19	DU	181	4	11	15	12	7	19	9	8	17
19	TR 33024 Adam Wislar	8	DU	76	2	5	7	5	3	8	4	3	7
20	TR 27251 RSI	156	DU	1,485	29	88	117	98	58	156	71	63	134
21	TR 33388 SCH Development, LLC	16	DU	152	3	9	12	10	6	16	7	6	13
22	TR 32844 Winchester Associates	105	DU	1,000	20	59	79	66	39	105	48	42	90
23	TR 33810 David Boyle Engineering	16	DU	152	3	9	12	10	6	16	7	6	13
24	TR 33963 Rance Garrett	31	DU	295	6	17	23	20	11	31	14	13	27
25	TR 34043 RM3 Building and Development	12	DU	114	2	7	9	8	4	12	5	5	10
26	TR 34748 Rados	135	DU	1,285	25	76	101	85	50	135	62	55	117
27	TR 35663 OFA	12	DU	114	2	7	9	8	4	12	5	5	10
28	TR 32835 Beazer Homes	274	DU	2,608	52	154	206	173	101	274	125	111	236
29	TR 30268 Pacific Communities	83	DU	790	16	47	63	52	31	83	38	34	72
30	TR 31618 Frontier Homes	56	DU	533	11	32	43	35	21	56	26	23	49
31	TR 31494 Winchester Associates	12	DU	114	2	7	9	8	4	12	5	5	10
32	TR 32715 GFR-Trinity	30	DU	286	6	17	23	19	11	30	14	12	26
33	TR 33256 Granite Homes	79	DU	752	15	44	59	50	29	79	36	32	68
34	TR 32711 Issac Genah	9	DU	86	2	5	7	6	3	9	4	4	8
35	TR 31789 GFR	24	DU	228	5	14	19	15	9	24	11	10	21
36	TR 35429 Ralph Liu	54	DU	514	10	30	40	34	20	54	25	22	47
37	TR 22180 MPLC Legacy 140 Partners, LP	543	DU	5,169	102	306	408	342	201	543	247	219	466
38	TR 36436 CV Communities	159	DU	1,514	30	90	120	100	59	159	72	64	136
39	TR 36401 Continental East Fund III, LLC	92	DU	876	17	52	69	58	34	92	42	37	79
40	TR 36598 Habitat for Humanity	8	DU	76	2	5	7	5	3	8	4	3	7
41	TR 36761 Right Solutions, LLC	8	DU	76	2	5	7	5	3	8	4	3	7
42	TR 31592 CV Communities	139	DU	1,323	26	78	104	88	51	139	63	56	119
43	TR 36708 Nova Homes	127	DU	1,209	24	72	96	80	47	127	58	51	109
44	TR 29920 MVR Properties, LLC	299	DU	2,846	56	168	224	188	111	299	136	121	257
45	TR 36882 Frontier Homes	40	DU	381	8	23	31	25	15	40	18	16	34
46	TR 36719 Kuo Ming Lee	34	DU	324	6	19	25	21	13	34	15	14	29

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

TABLE 6
SUMMARY OF CUMULATIVE PROJECTS (CONTINUED)

47	TR 29920 Pacific Communities	98	DU	933	18	55	73	62	36	98	45	40	85
Multi-Family Residential Development													
48	TR 31814 Jesse Huizar	60	DU	399	6	24	30	24	13	37	15	15	30
49	TR 32215 Winchester Associates "Scottish Village"	194	DU	1,290	20	79	99	78	42	120	49	49	98
50	TR 32756 Jimmy Lee	24	DU	160	2	10	12	10	5	15	6	6	12
51	TR 32917 Continental East Fund	227	DU	1,510	23	93	116	91	49	140	58	58	116
52	TR 33417 Jimmy Lee	60	DU	399	6	24	30	24	13	37	15	15	30
53	TR 33607 TL Group Corp.	52	DU	346	5	21	26	21	11	32	13	13	26
54	TR 33771 Jian Qiang Liu	12	DU	80	1	5	6	5	3	8	3	3	6
55	TR 34216 Creative Design Associates	39	DU	259	4	16	20	16	8	24	10	10	20
56	TR 34681 Perris Pacific Company	49	DU	326	5	20	25	20	11	31	12	12	24
57	TR 34988 Status Properties	271	DU	1,802	28	111	139	109	59	168	69	69	138
58	TR 35369 Tason Myers Property	12	DU	80	1	5	6	5	3	8	3	3	6
59	TR 35663 Jimmy Lee	12	DU	80	1	5	6	5	3	8	3	3	6
60	TR 35769 Michael Chen	16	DU	106	2	7	9	6	3	9	4	4	8
61	TR 34544 Cottonwood 939, LLC	84	DU	559	9	34	43	34	18	52	21	21	42
62	PA 09-0006 Jim Nydam	15	DU	100	2	6	8	6	3	9	4	4	8
63	PA 13-0006 Rancho Belago Developers, Inc.	141	DU	938	14	58	72	57	31	88	36	36	72
64	PA 14-0027 Tilak Chopra	40	DU	266	4	16	20	16	9	25	10	10	20
65	TR 35304 Jimmy Lee	12	DU	80	1	5	6	5	3	8	3	3	6
66	PA 14-0028 MV Bella Vista GP, LLC	220	DU	1,463	22	90	112	89	48	137	56	56	112
67	PA 14-0042 Latso SC Inc.	112	DU	745	11	46	57	45	24	69	29	29	58
68	TR 32142 GHA	66	DU	439	7	27	34	27	14	41	17	17	34
Medical/Office Development													
69	TownGate Square	170.000	KSF	1,875	233	32	265	43	210	253	44	51	95
70	Olivewood Plaza	22.758	KSF	251	31	4	35	6	28	34	6	7	13
71	Riverside County Office Building	52.000	KSF	574	71	10	81	13	64	77	13	16	29
72	Fresenius Medical Care	12.000	KSF	434	23	6	29	12	31	43	3	4	7
73	Riverside University Medical Center	34.749	KSF	1,255	66	17	83	35	89	124	9	11	20
74	Kaiser Permanente (Emergeny room Exp.)	8.500	KSF	307	16	4	20	9	22	31	2	3	5
Commercial Development													
75	Alessandro & Lasselle	140.000	KSF	5,978	83	51	134	249	270	519	36	42	78
76	Rancho Belago Plaza	14.000	KSF	598	8	5	13	25	27	52	4	4	8
77	South Moreno Valley Walmart [2]	-	-	9,625	218	170	388	411	423	834	543	543	1,086
81	St. Christopher Catholic Church Expansion[3]	3.200	KSF	-	-	-	-	-	-	-	56	58	114
Industrial/Job Development													
78	Centerpointe Business Park	1,734.030	KSF	11,843	1,165	257	1,422	310	1,165	1,475	161	117	278
79	Moreno Valley Industrial Area	3,509.496	KSF	23,970	2,358	519	2,877	628	2,358	2,986	326	236	562
80	SR-60 Business Park	3,079.928	KSF	21,036	2,070	456	2,526	551	2,070	2,621	286	207	493

Note: [1] Source: Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition
[2] Source: Moreno Valley Walmart Traffic Impact Analysis, Urban Crossroads, Inc. March 2015 (Revised).
[3] Source: St Christopher Catholic Church Master Plan Traffic Impact Study, Federhart & Associates, October 2012

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

NOT TO SCALE

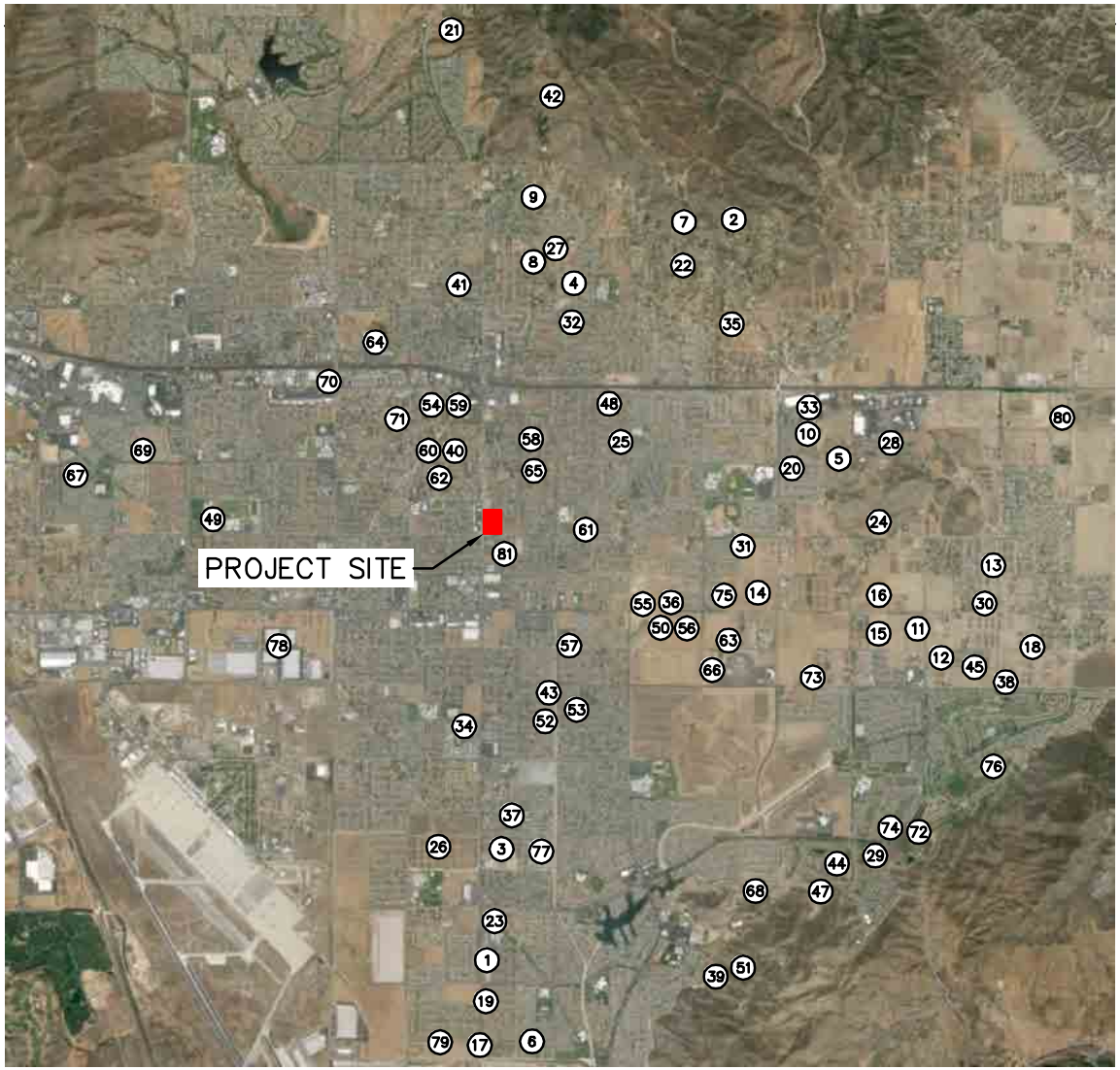
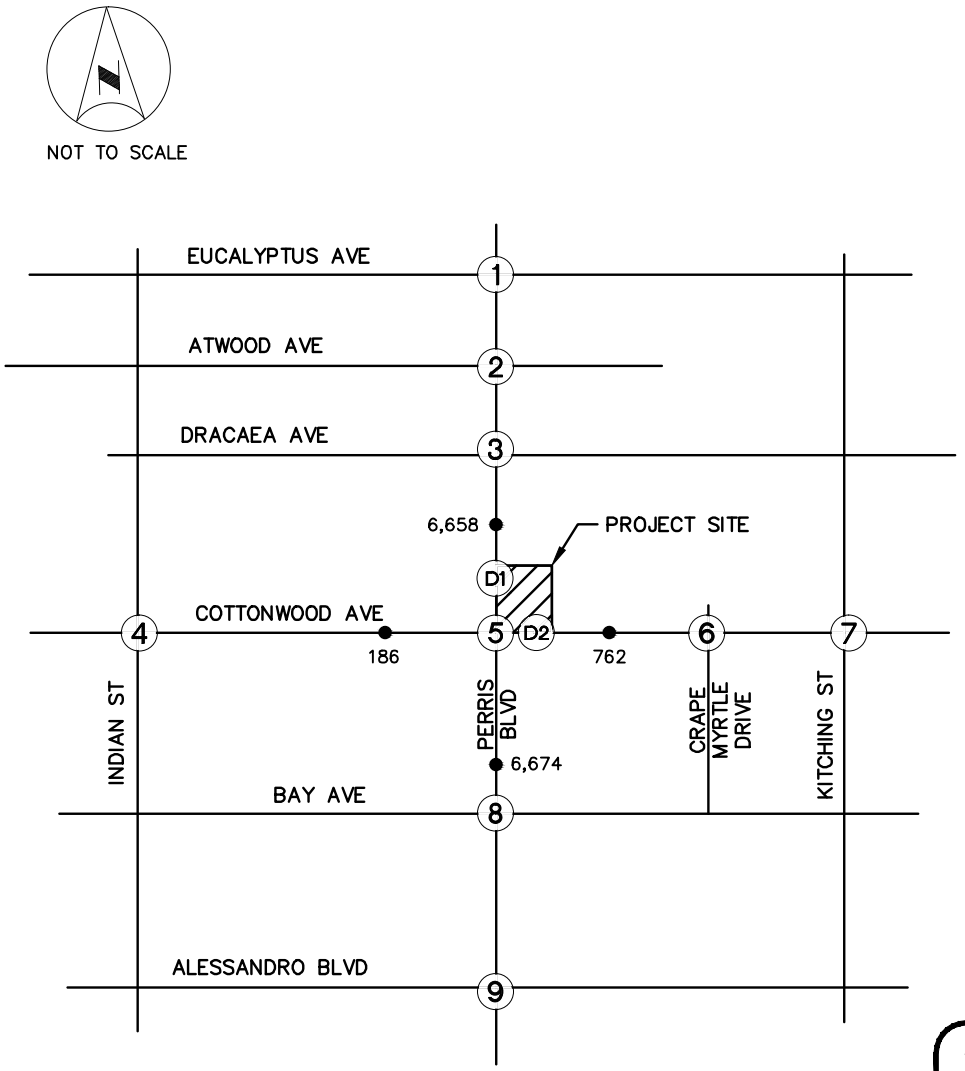
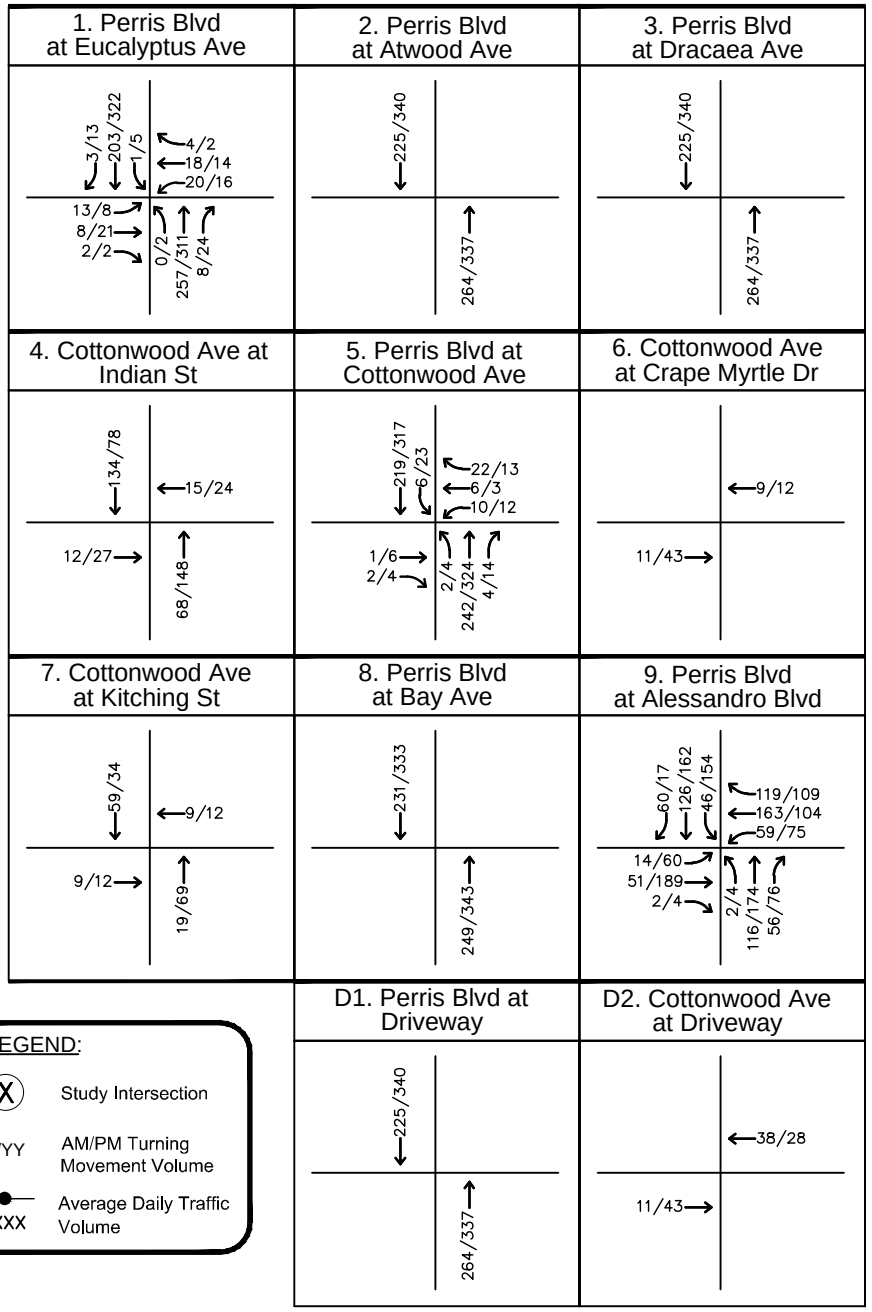


FIGURE 14
CUMULATIVE PROJECT LOCATIONS



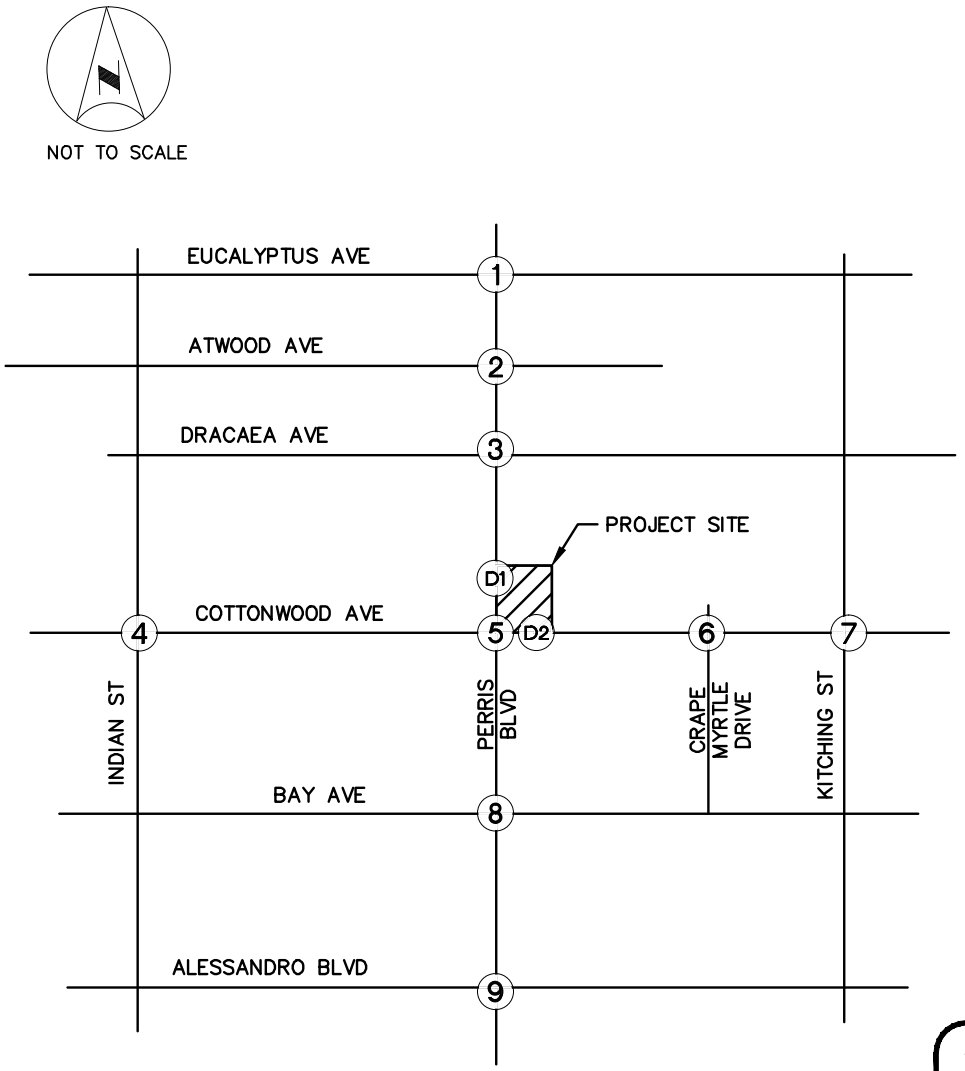


LEGEND:

- X — Study Intersection
- XX/YY — AM/PM Turning Movement Volume
- XXXX — Average Daily Traffic Volume

FIGURE 15
CUMULATIVE PROJECT
TRAFFIC VOLUMES – WEEKDAY

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND



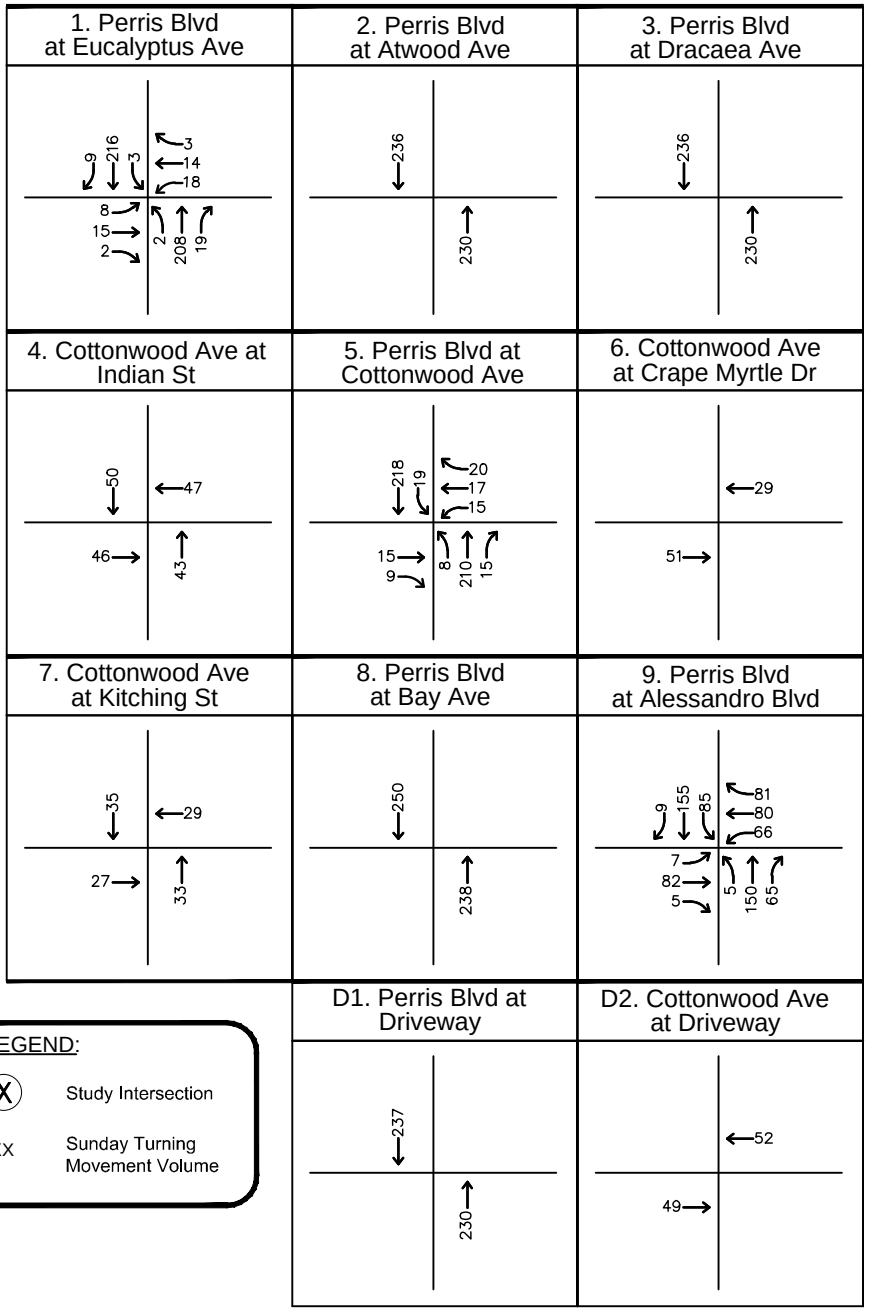
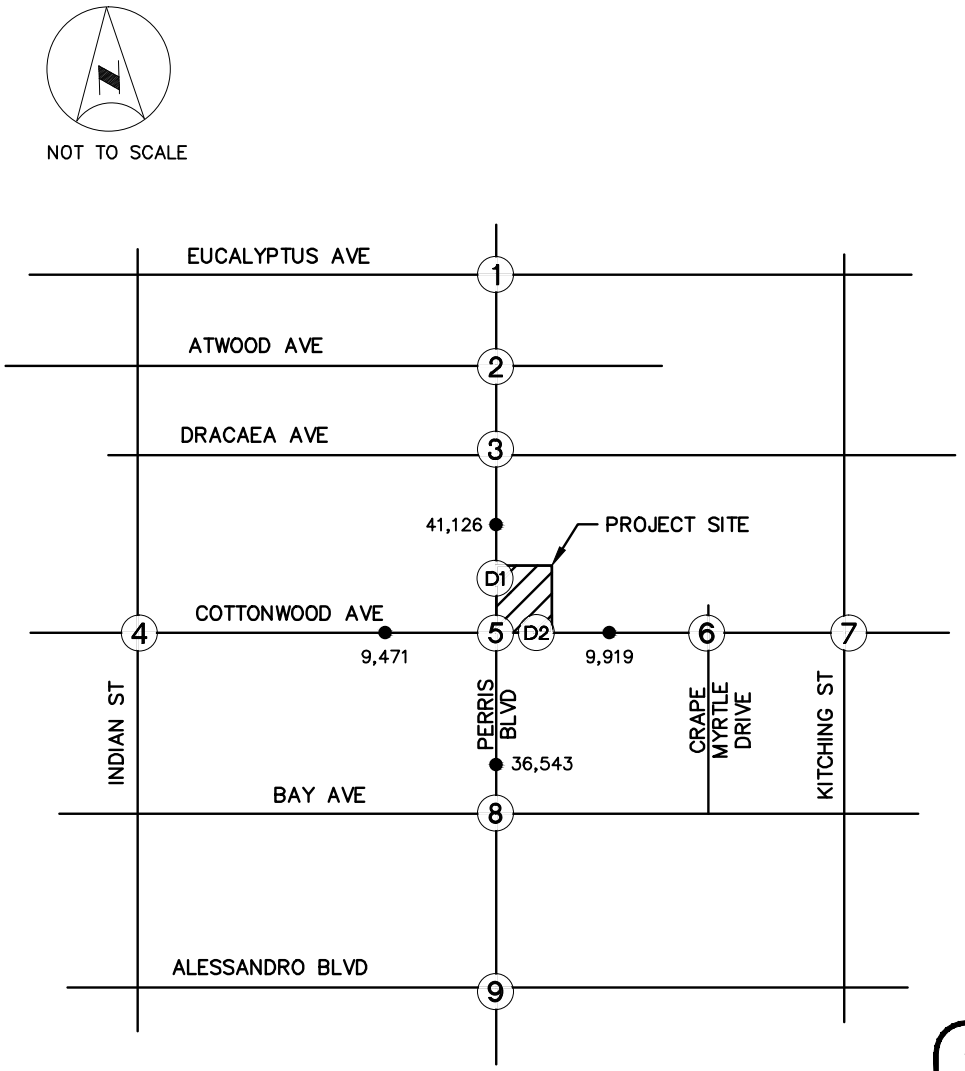


FIGURE 16
CUMULATIVE PROJECT
TRAFFIC VOLUMES – SUNDAY

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND



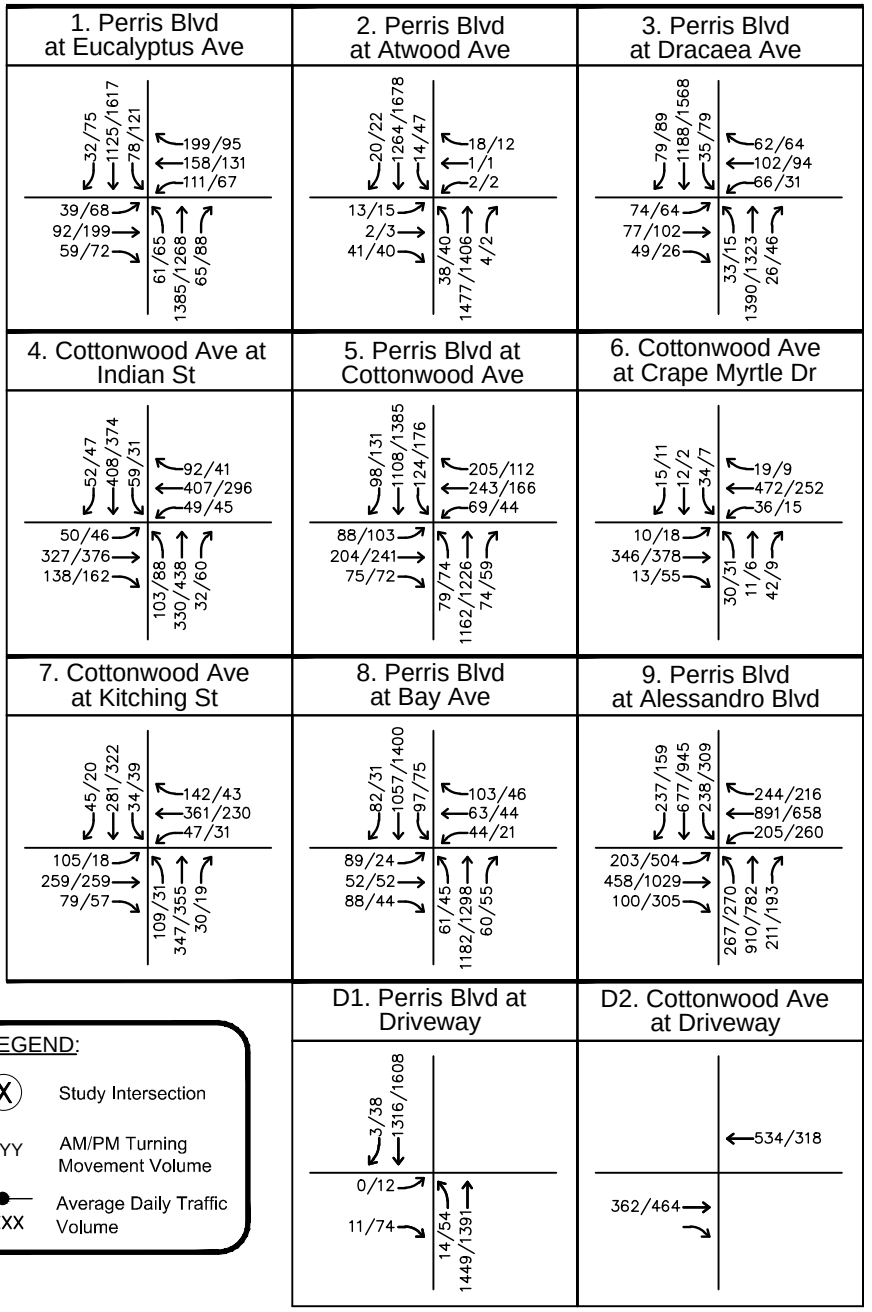
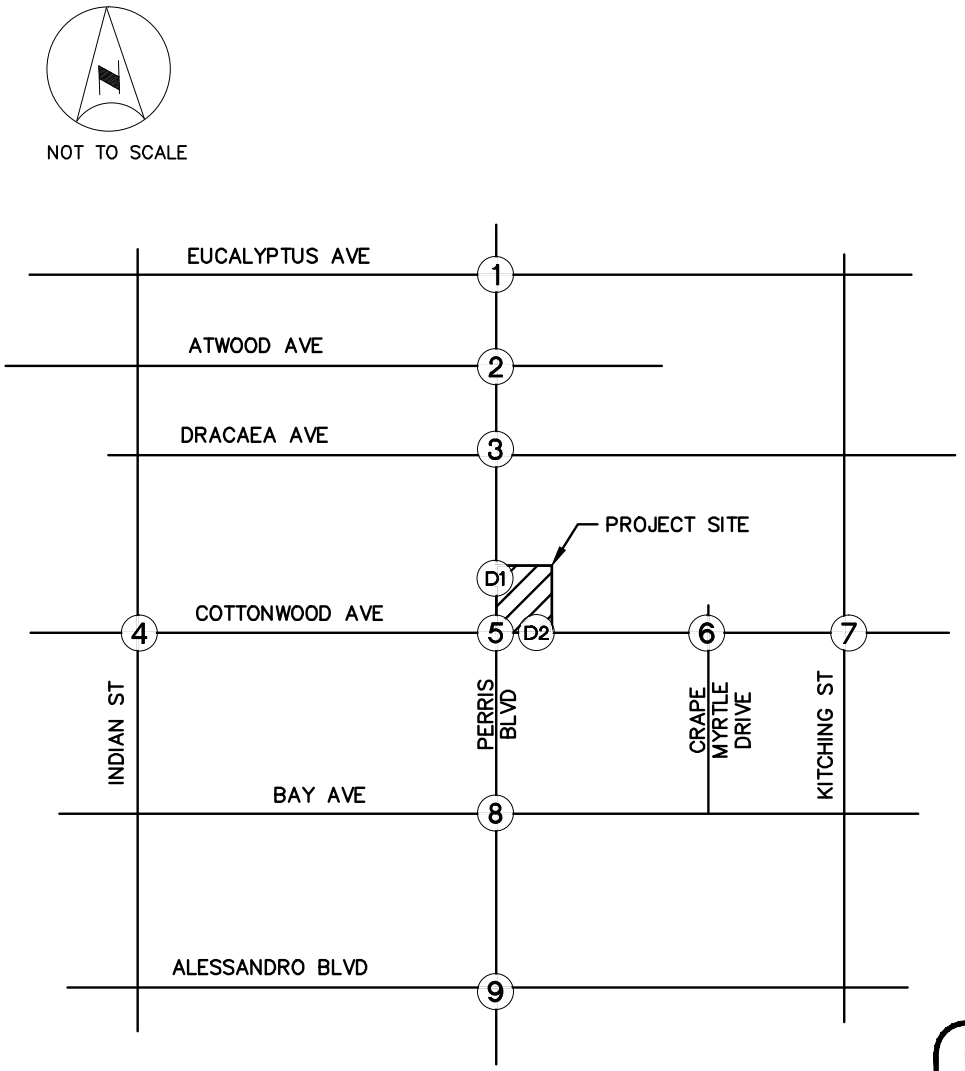
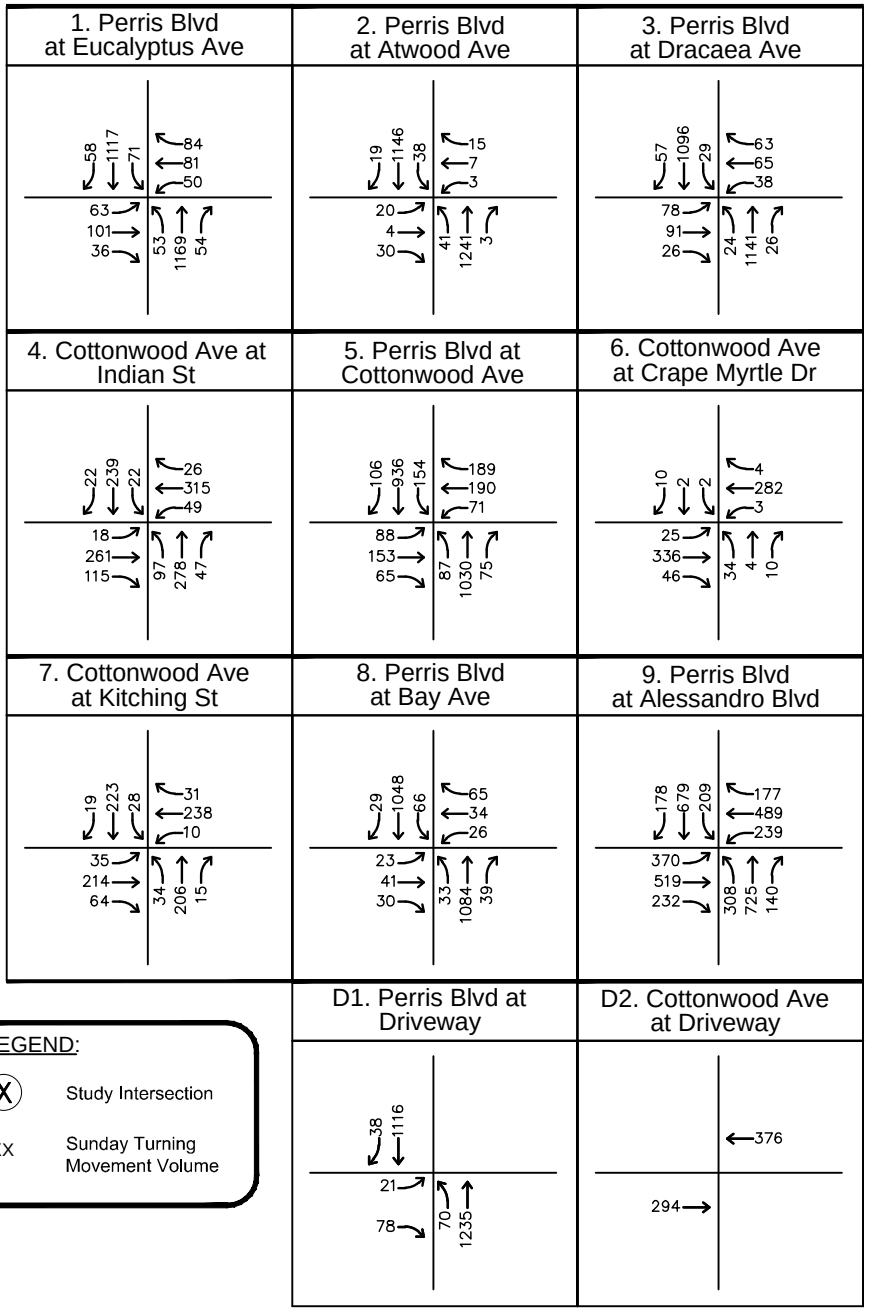


FIGURE 17
CUMULATIVE WITHOUT PROJECT
TRAFFIC VOLUMES – WEEKDAY

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND





LEGEND:

(X) Study Intersection

XX Sunday Turning Movement Volume

FIGURE 18
CUMULATIVE WITHOUT PROJECT
TRAFFIC VOLUMES – SUNDAY

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

TABLE 7
SUMMARY OF INTERSECTION OPERATION
CUMULATIVE WITHOUT PROJECT

Int. #	Intersection	Intersection Control	Peak Hour	Cumulative Conditions	
				Delay (sec/veh)	LOS
1	Perris Boulevard at Eucalyptus Avenue	Signal	AM	27.7	C
			PM	28.9	C
			SUN	18.7	B
2	Perris Boulevard at Atwood Avenue	Unsignalized	AM	46.4	E
			PM	79.7	F
			SUN	65.2	F
3	Perris Boulevard at Dracaea Avenue	Signal	AM	44.3	D
			PM	26.0	C
			SUN	27.8	C
4	Cottonwood Avenue at Indian Street	Signal	AM	27.9	C
			PM	22.4	C
			SUN	19.9	B
5	Cottonwood Avenue at Perris Boulevard	Signal	AM	35.6	D
			PM	30.9	C
			SUN	34.4	C
6	Cottonwood Avenue at Crape Myrtle Drive	Unsignalized	AM	65.3	F
			PM	18.1	C
			SUN	34.2	D
7	Cottonwood Avenue at Kitching Street	Signal	AM	30.4	C
			PM	16.6	B
			SUN	17.8	B
8	Perris Boulevard at Bay Ave	Signal	AM	27.9	C
			PM	18.2	B
			SUN	17.2	B
9	Perris Boulevard at Alessandro Boulevard	Signal	AM	50.7	D
			PM	64.8	E
			SUN	38.3	D
D1	Perris Boulevard Driveway	Unsignalized	AM	16.2	C
			PM	626.3	F
			SUN	397.9	F
D2	Cottonwood Avenue Driveway	Unsignalized	Church Driveway Removed		

Unsignalized Intersection Delay is reported for the worst approach

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

- Perris Boulevard at Atwood Avenue (AM LOS E, PM LOS F, Sunday LOS F)
- Cottonwood Avenue at Crape Myrtle Drive (AM LOS F)
- Perris Boulevard at Alessandro Boulevard (PM LOS E)
- Perris Boulevard Driveway (PM LOS F, Sunday LOS F)

With the exception of the Perris Boulevard at Alessandro Boulevard intersection, the deficient intersections are unsignalized. Due to the heavy traffic volumes anticipated in Opening Year 2020 as a result of growth and nearby projects, vehicles turning from minor streets onto Perris Boulevard are forecasted to encounter significant delays, regardless of their low volumes.

Roadway Segment Analysis – Cumulative (Opening Year 2020) Without Project

The study roadway segments were analyzed in accordance with the analysis methodology described earlier in this report. The Cumulative Without Project analysis results and Level of Service for the study roadway segments are presented in Table 8. As shown in this table, both roadway segments along Perris Boulevard are anticipated to operate deficiently in the Cumulative Without Project scenario.

Cumulative (Opening Year 2020) With Project

Project-related traffic was added to the Cumulative Without Project traffic volumes. Cumulative With Project traffic volumes are shown on Figure 19 and Figure 20.

Intersection Analysis – Cumulative (Opening Year 2020) With Project

Cumulative With Project peak hour intersection operations are summarized in Table 9. With the addition of project traffic, the following intersections would operate at an unacceptable Level of Service:

- Perris Boulevard at Atwood Avenue (AM LOS E, PM LOS F, Sunday LOS F)
- Cottonwood Avenue at Crape Myrtle Drive (AM LOS F, Sunday LOS E)
- Perris Boulevard at Alessandro Boulevard (PM LOS E)
- Perris Boulevard Driveway (AM LOS F, PM LOS F, Sunday LOS F)

These intersections are forecasted to operate deficiently before the addition of project traffic. The deficiency at the Perris Boulevard Driveway in the Without Project scenario is caused by egress vehicles from the shopping center to the west. In the With Project scenario, the westbound approach at the driveway also operates deficiently. At the remaining intersections, the project alone does not trigger the deficiencies, but rather contributes to a less-than-significant cumulative impact.

Roadway Segment Analysis – Cumulative (Opening Year 2020) With Project

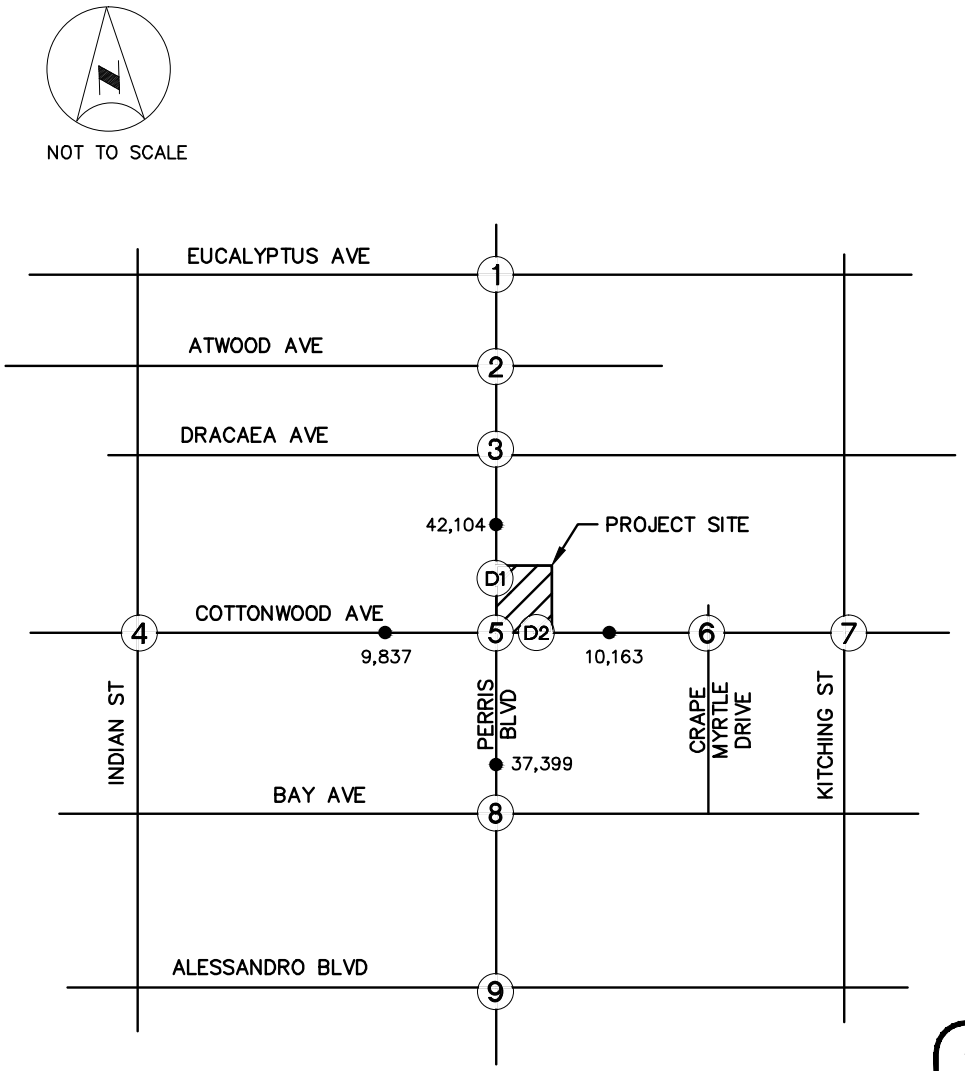
The study roadway segments were analyzed in accordance with the analysis methodology described earlier in this report. Cumulative With Project analysis results and Level of Service for the study roadway segments are presented in Table 10. As shown in this table, both roadway segments along Perris Boulevard would continue to operate deficiently with the addition of project traffic.

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

TABLE 8
SUMMARY OF ROADWAY OPERATIONS
CUMULATIVE (OPENING YEAR 2020) WITHOUT PROJECT

Roadway Segment	Roadway Classification	Roadway Capacity	ADT	V/C	LOS
Perris Boulevard: Eucalyptus Avenue to Cottonwood Avenue	4-Lane Divided Arterial	37,500	41,126	1.10	F
Perris Boulevard: Cottonwood Avenue to Alessandro Boulevard	4-Lane Divided Arterial	37,500	36,543	0.97	E
Cottonwood Avenue: Indian Street to Perris Boulevard	2-Lane Arterial	12,500	9,471	0.76	B
Cottonwood Avenue: Perris Boulevard to Kitching Street	2-Lane Arterial	12,500	9,919	0.79	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND



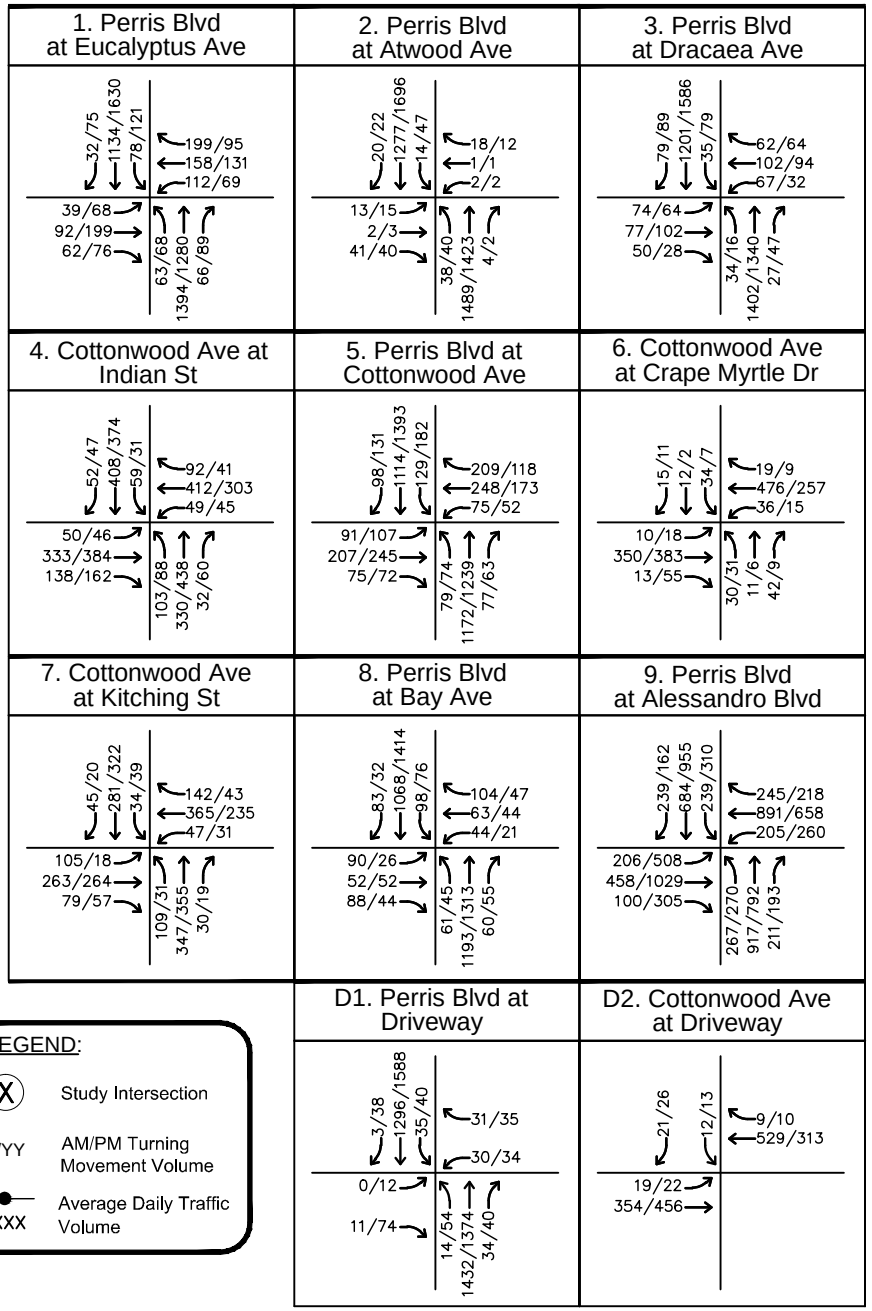
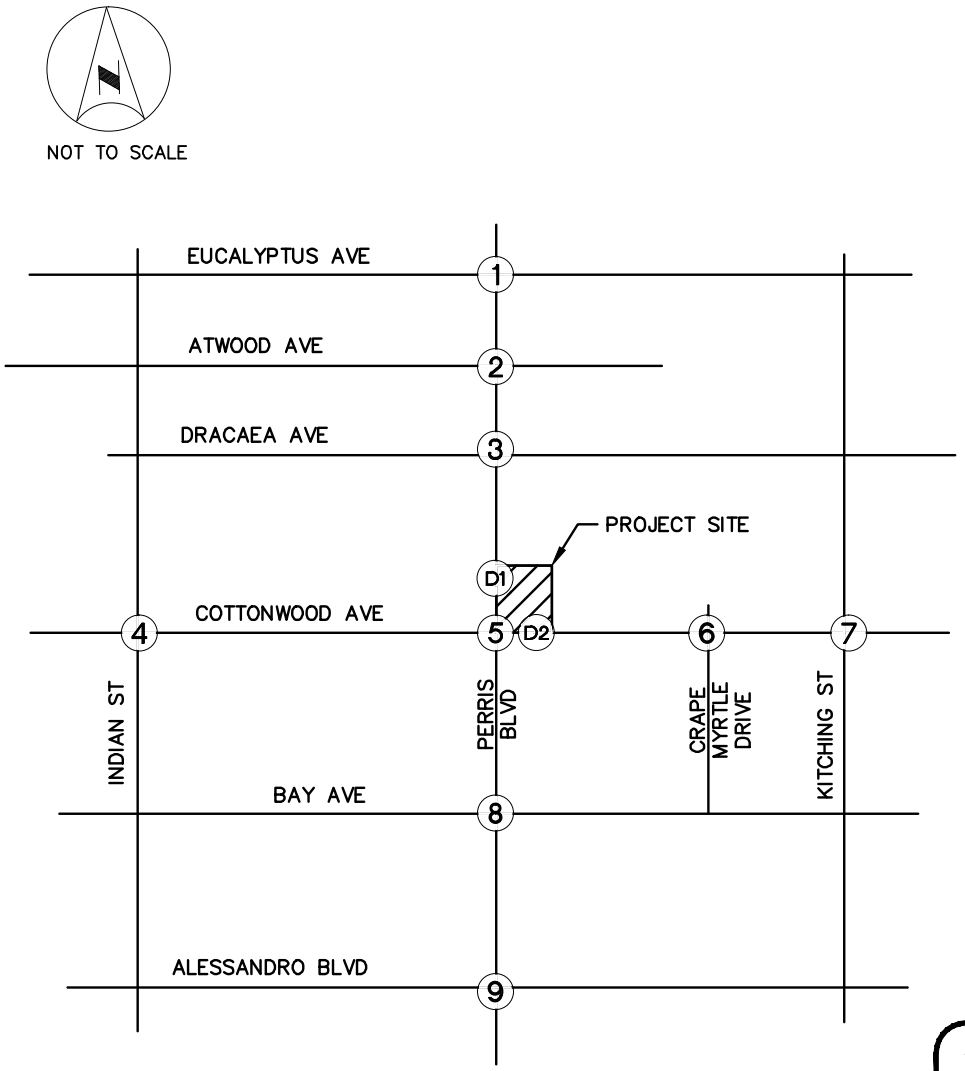
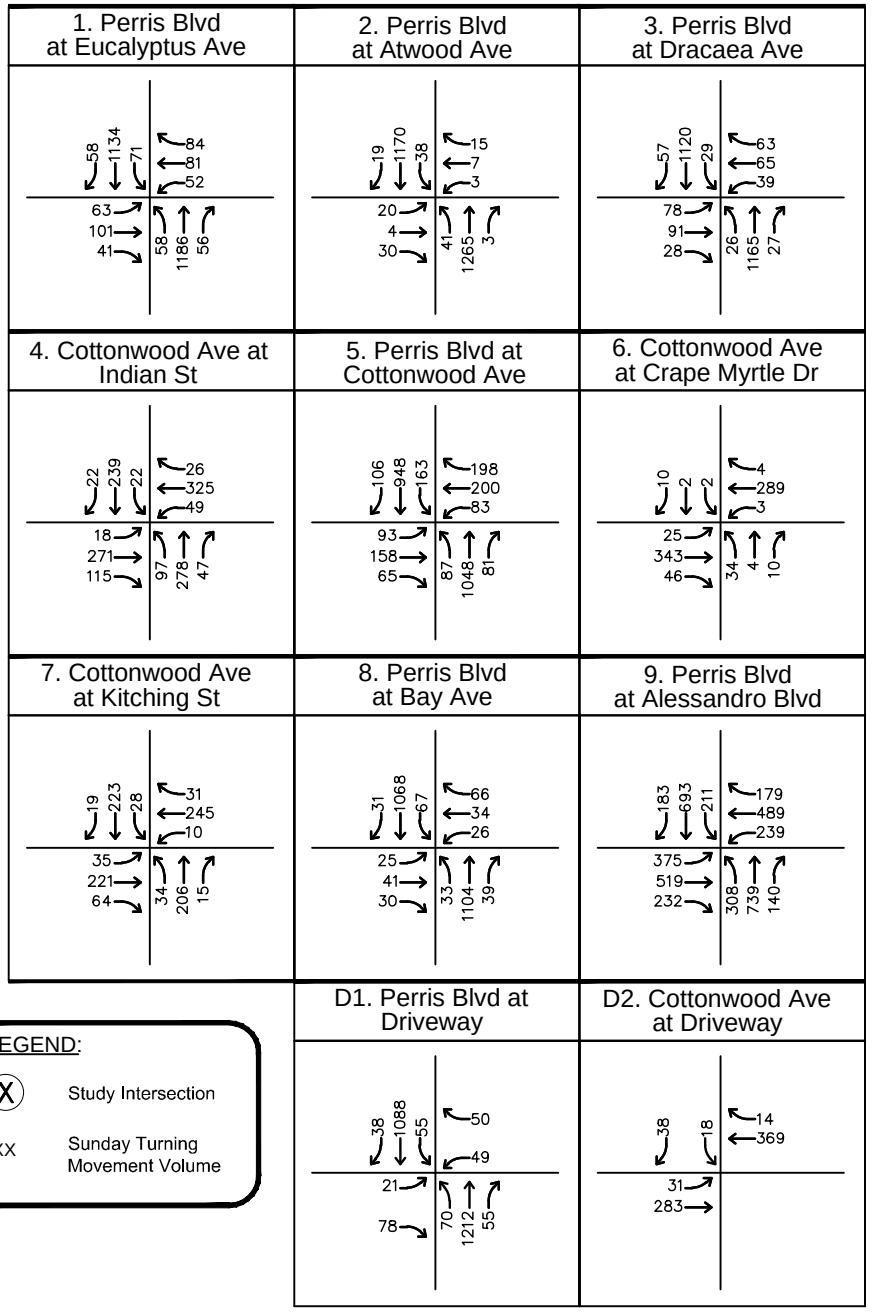


FIGURE 19
CUMULATIVE WITH PROJECT
TRAFFIC VOLUMES – WEEKDAY

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND





LEGEND:

(X) Study Intersection

XX Sunday Turning Movement Volume

FIGURE 20
CUMULATIVE WITH PROJECT
TRAFFIC VOLUMES – SUNDAY

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

TABLE 9
SUMMARY OF INTERSECTION OPERATIONS
CUMULATIVE WITH PROJECT

Int. #	Intersection	Peak Hour	Cumulative Without Project		Cumulative With Project		Project Impact
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
1	Perris Boulevard at Eucalyptus Avenue	AM	27.7	C	28.0	C	0.3
		PM	28.9	C	29.5	C	0.6
		SUN	18.7	B	19.1	B	0.4
2	Perris Boulevard at Atwood Avenue	AM	46.4	E	47.8	E	1.4
		PM	79.7	F	85.3	F	5.6
		SUN	65.2	F	71.1	F	5.9
3	Perris Boulevard at Dracaea Avenue	AM	44.3	D	45.1	D	0.8
		PM	26.0	C	26.6	C	0.6
		SUN	27.8	C	28.7	C	0.9
4	Cottonwood Avenue at Indian Street	AM	27.9	C	28.4	C	0.5
		PM	22.4	C	22.8	C	0.4
		SUN	19.9	B	20.2	C	0.3
5	Cottonwood Avenue at Perris Boulevard	AM	35.6	D	37.0	D	1.4
		PM	30.9	C	32.7	C	1.8
		SUN	34.4	C	37.7	D	3.3
6	Cottonwood Avenue at Crape Myrtle Drive	AM	65.3	F	68.0	F	2.7
		PM	18.1	C	18.4	C	0.3
		SUN	34.2	D	35.9	E	1.7
7	Cottonwood Avenue at Kitching Street	AM	30.4	C	29.0	C	-1.4
		PM	16.6	B	16.7	B	0.1
		SUN	17.8	B	18.1	B	0.3
8	Perris Boulevard at Bay Ave	AM	27.9	C	28.6	C	0.7
		PM	18.2	B	18.7	B	0.5
		SUN	17.2	B	17.5	B	0.3
9	Perris Boulevard at Alessandro Boulevard	AM	50.7	D	51.1	D	0.4
		PM	64.8	E	65.4	E	0.6
		SUN	38.3	D	38.8	D	0.5
D1	Perris Boulevard Driveway	AM	16.2	C	1275.4	F	1259.2
		PM	626.3	F	2499.9	F	1873.6
		SUN	397.9	F	2664.0	F	2266.1
D2	Cottonwood Avenue Driveway	AM	Church Driveway Removed		18.4	C	
		PM			13.7	B	
		SUN			14.3	B	

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

TABLE 10
SUMMARY OF ROADWAY OPERATIONS
CUMULATIVE (OPENING YEAR 2020) WITH PROJECT

Roadway Segment	Roadway Classification	Roadway Capacity	ADT	V/C	LOS
Perris Boulevard: Eucalyptus Avenue to Cottonwood Avenue	4-Lane Divided Arterial	37,500	42,104	1.12	F
Perris Boulevard: Cottonwood Avenue to Alessandro Boulevard	4-Lane Divided Arterial	37,500	37,399	0.99	E
Cottonwood Avenue: Indian Street to Perris Boulevard	2-Lane Arterial	12,500	9,837	0.79	A
Cottonwood Avenue: Perris Boulevard to Kitching Street	2-Lane Arterial	12,500	10,163	0.81	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

If the current roadway geometry is maintained on Perris Boulevard and Cottonwood Avenue along the project frontage, then each driveway can accommodate full ingress and egress movements. However, the potential for turn restrictions at each driveway has not yet been determined at this time. To assess the potential construction of a raised median along Perris Boulevard and/or Cottonwood Avenue, and the resulting turn restrictions caused by these medians, several project access alternatives were analyzed for the Cumulative (Opening Year 2020) With Project scenario. These alternatives are described below:

- Alternative 1 – Left-in/left-out movements restricted at both driveways. This alternative analyzes the potential for a raised median on both Perris Boulevard and Cottonwood Avenue. Only right-in/right-out movements would be allowed at both driveways.

- Alternative 2 – Left-out movements restricted at Perris Driveway and left-in/left-out movements are restricted at the Cottonwood Avenue driveway. This alternative allows southbound left turns into the driveway along Perris Boulevard, but assumes that only right-in/right-out movements are allowed along Cottonwood Avenue.

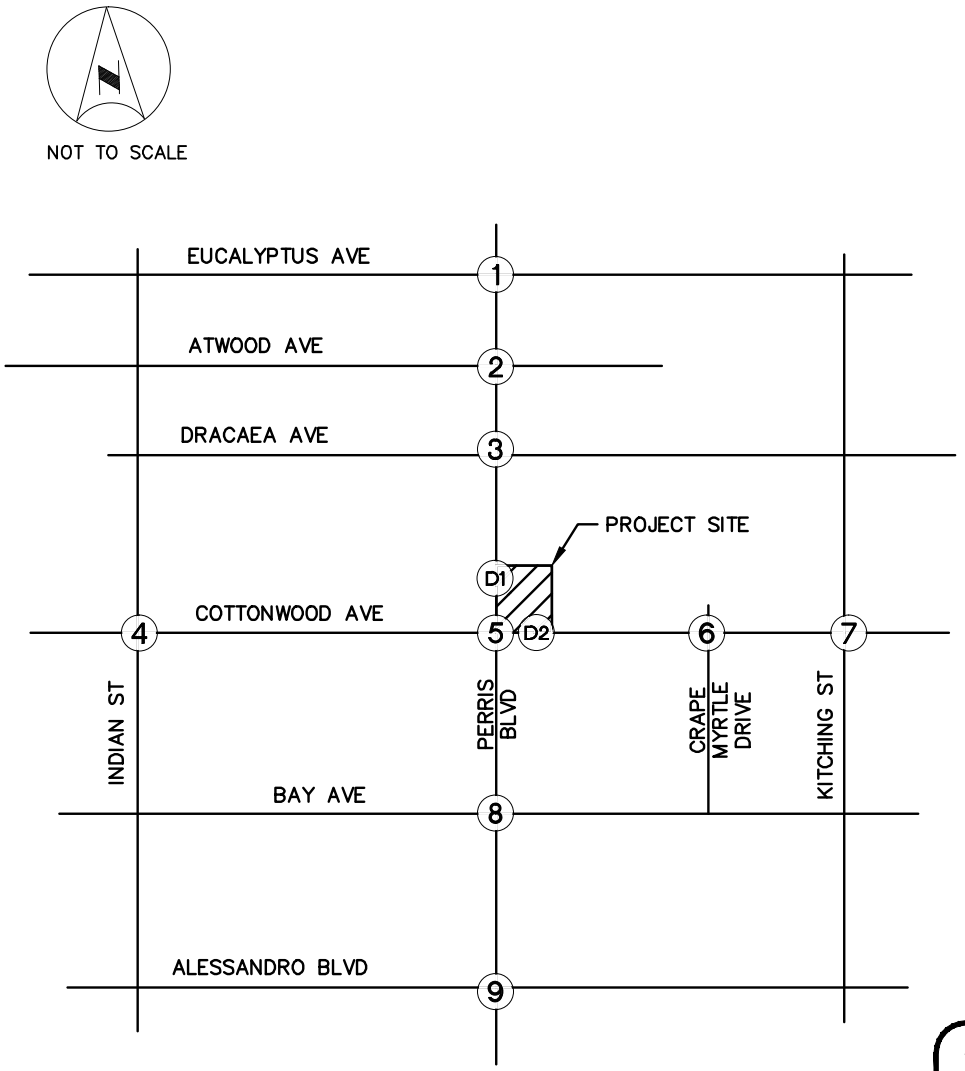
- Alternative 3 – Left-in/left-out movements are restricted at the Perris Driveway. Full movements allowed at the Cottonwood Driveway to maintain existing conditions.

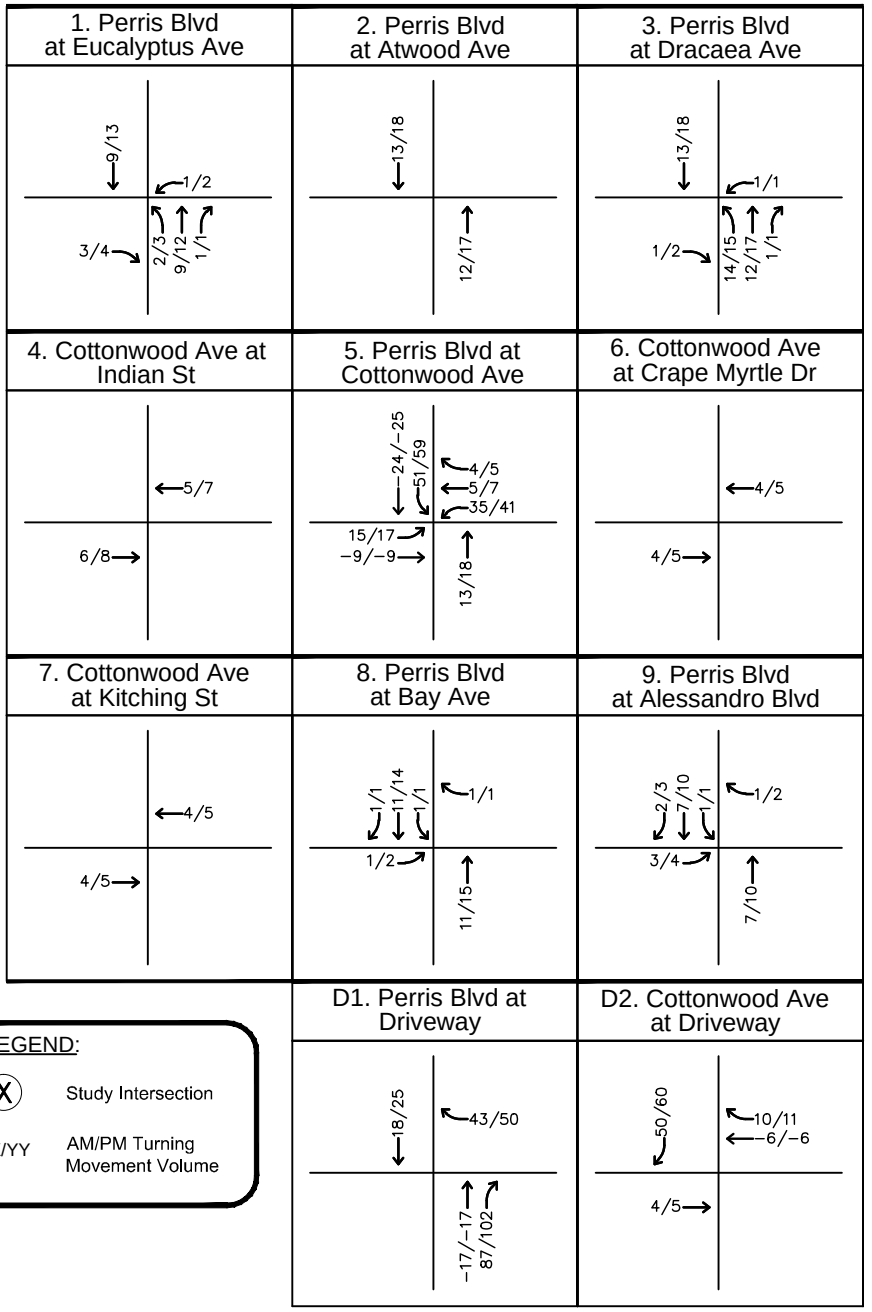
Each alternative is anticipated to cause variations in project trip assignment at immediately adjacent intersections. These variations result from additional U-turn movements required to maintain access to the site from each direction, as well as from differences in pass-by trip assignment. The resulting project trip assignments for each alternative are shown on Figures 21-26. A breakdown of pass-by trips can be found in *Appendix C*.

Intersection Analysis – Cumulative (Opening Year 2020) With Project

Cumulative With Project peak hour intersection operations for Alternative 1, Alternative 2, and Alternative 3 are summarized in Table 11. The project, regardless of access alternative, is not anticipated to contribute sufficient traffic to the transportation system to cause an additional deficiency compared to the Cumulative Without Project scenario. However, the intersections operating deficiently in the Cumulative Without Project scenario would continue to do so.

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR



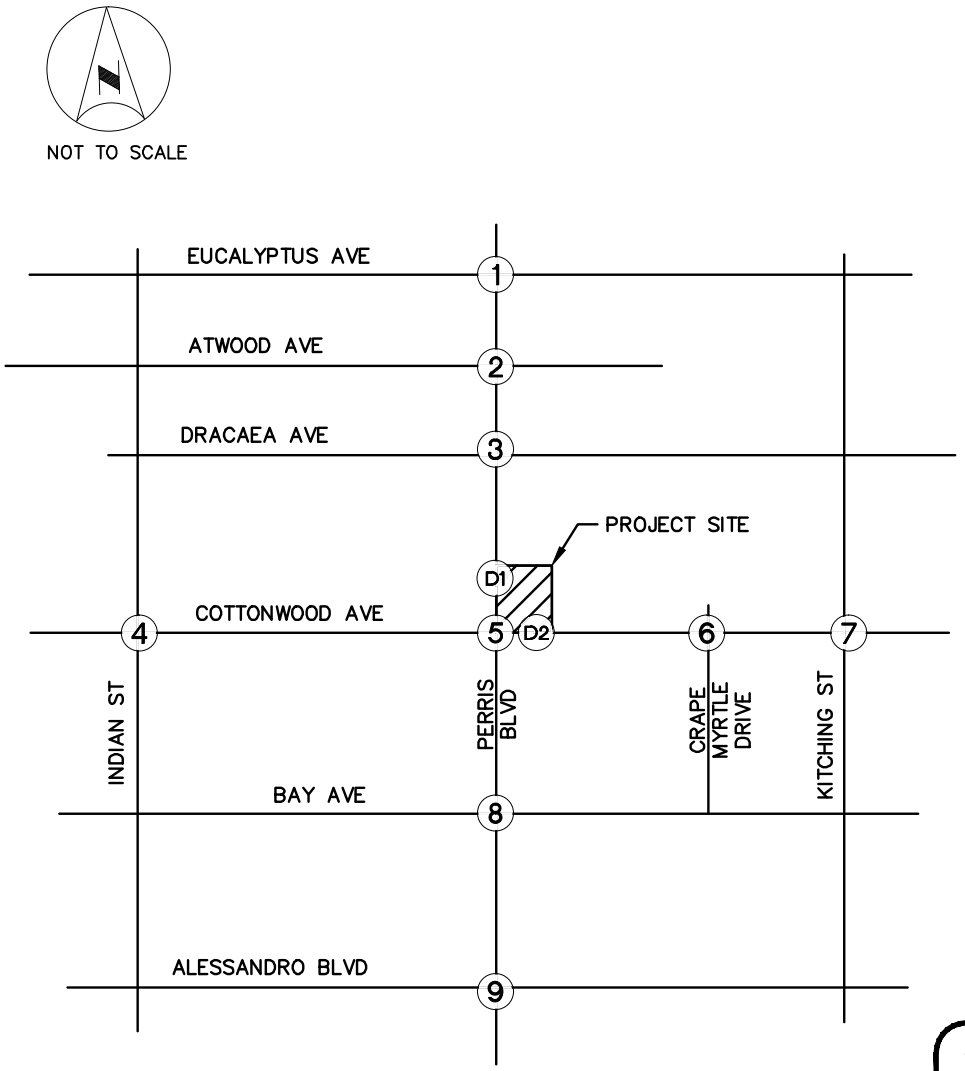


LEGEND:

X	Study Intersection
XX/YY	AM/PM Turning Movement Volume

FIGURE 21
PROJECT TRAFFIC – ALTERNATIVE 1 WEEKDAY TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND



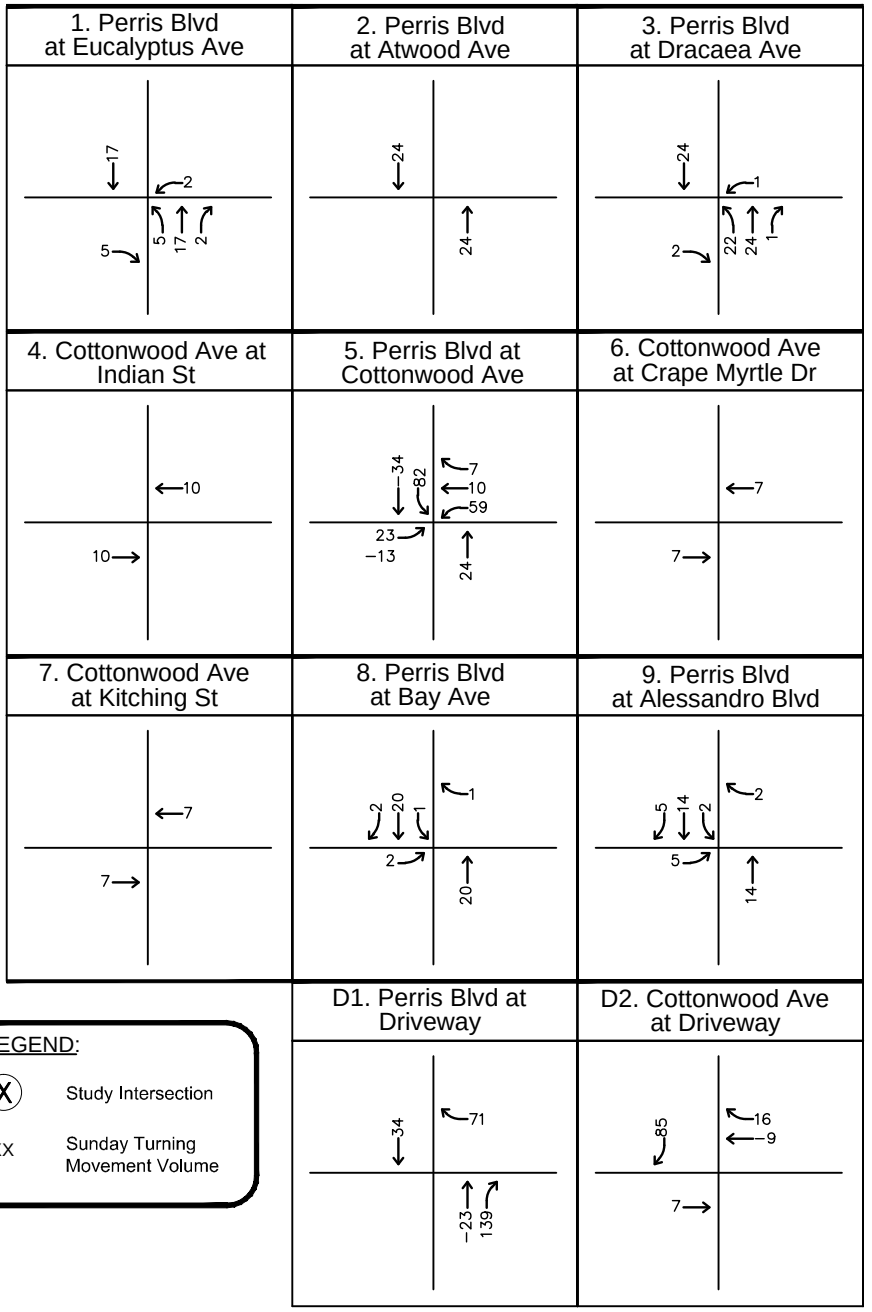
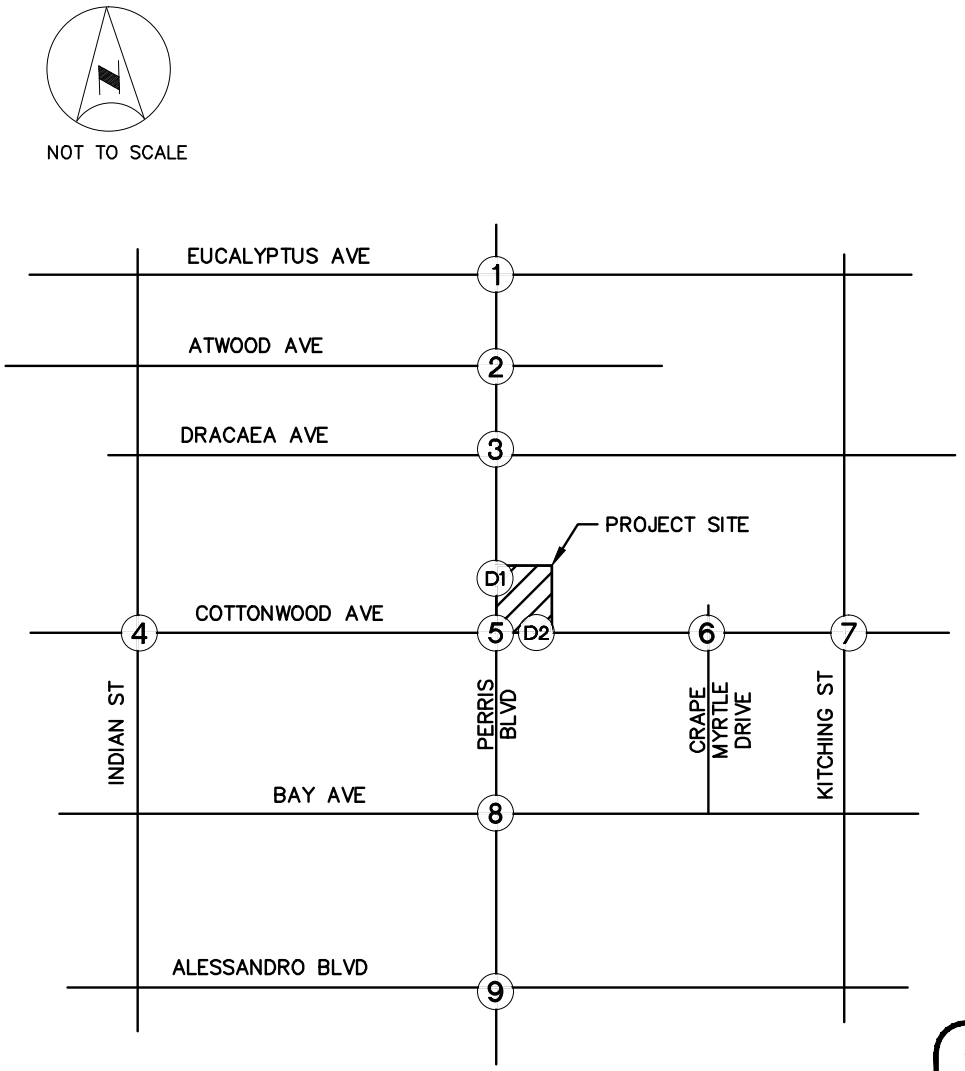
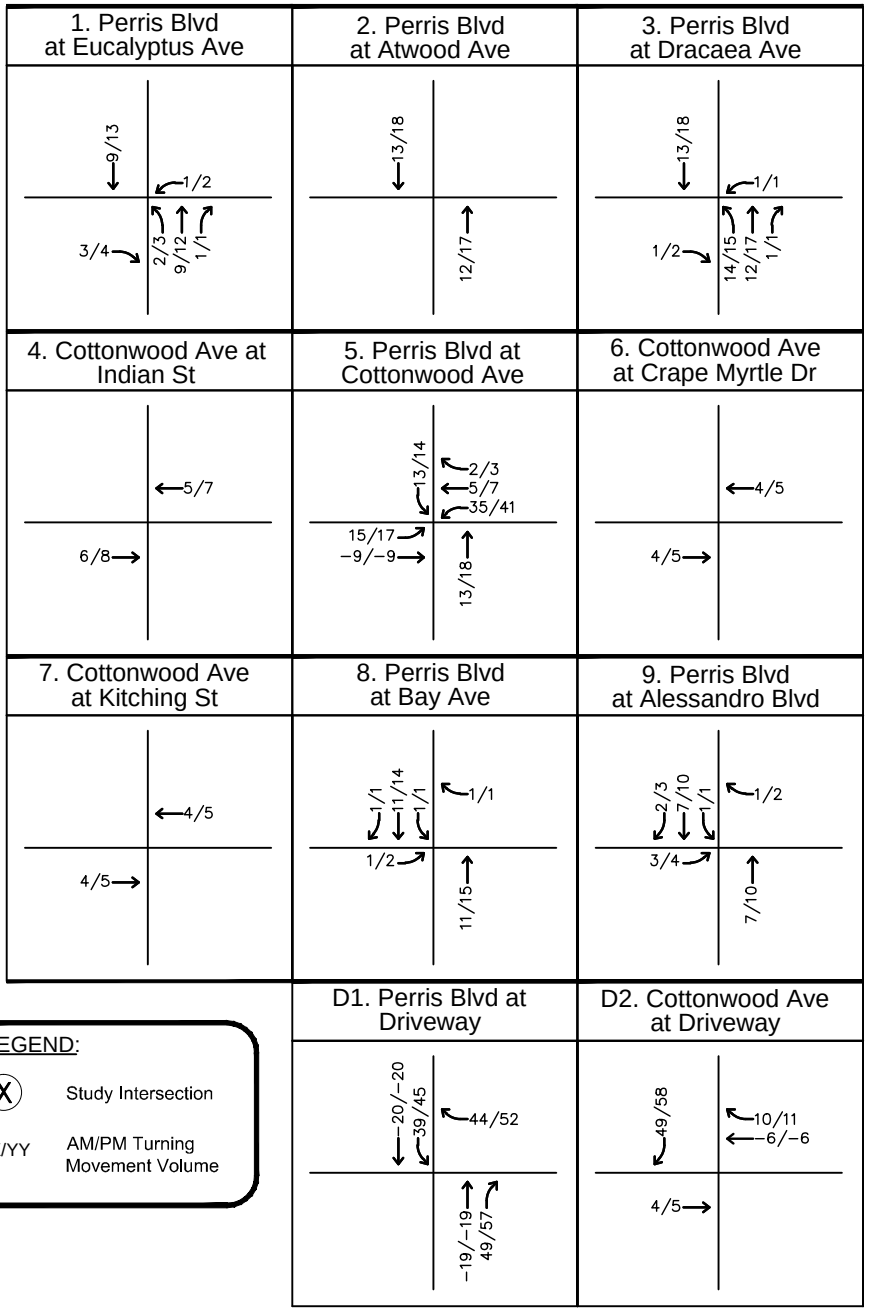


FIGURE 22
PROJECT TRAFFIC – ALTERNATIVE 1 SUNDAY TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND





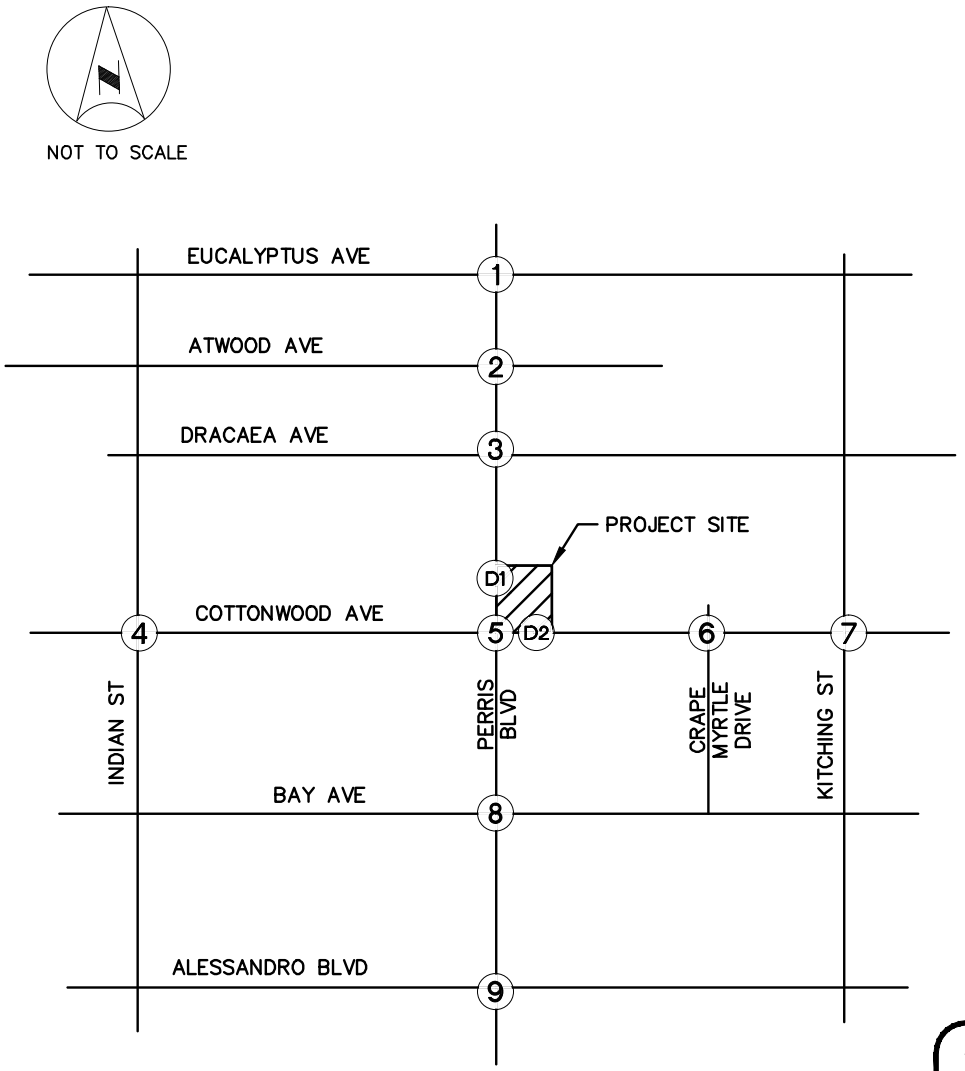
LEGEND:

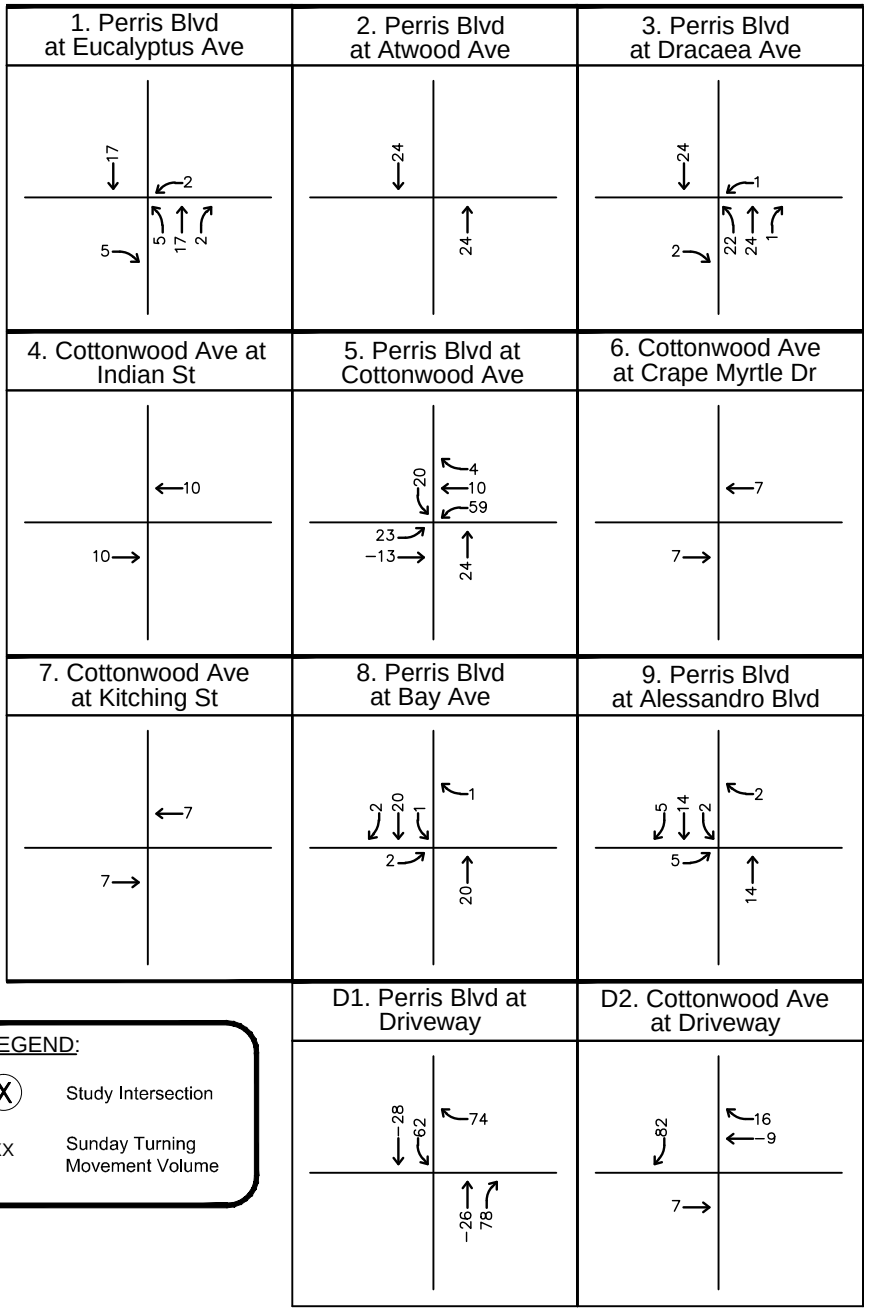
X — Study Intersection

XX/YY — AM/PM Turning Movement Volume

FIGURE 23
PROJECT TRAFFIC – ALTERNATIVE 2 WEEKDAY TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND





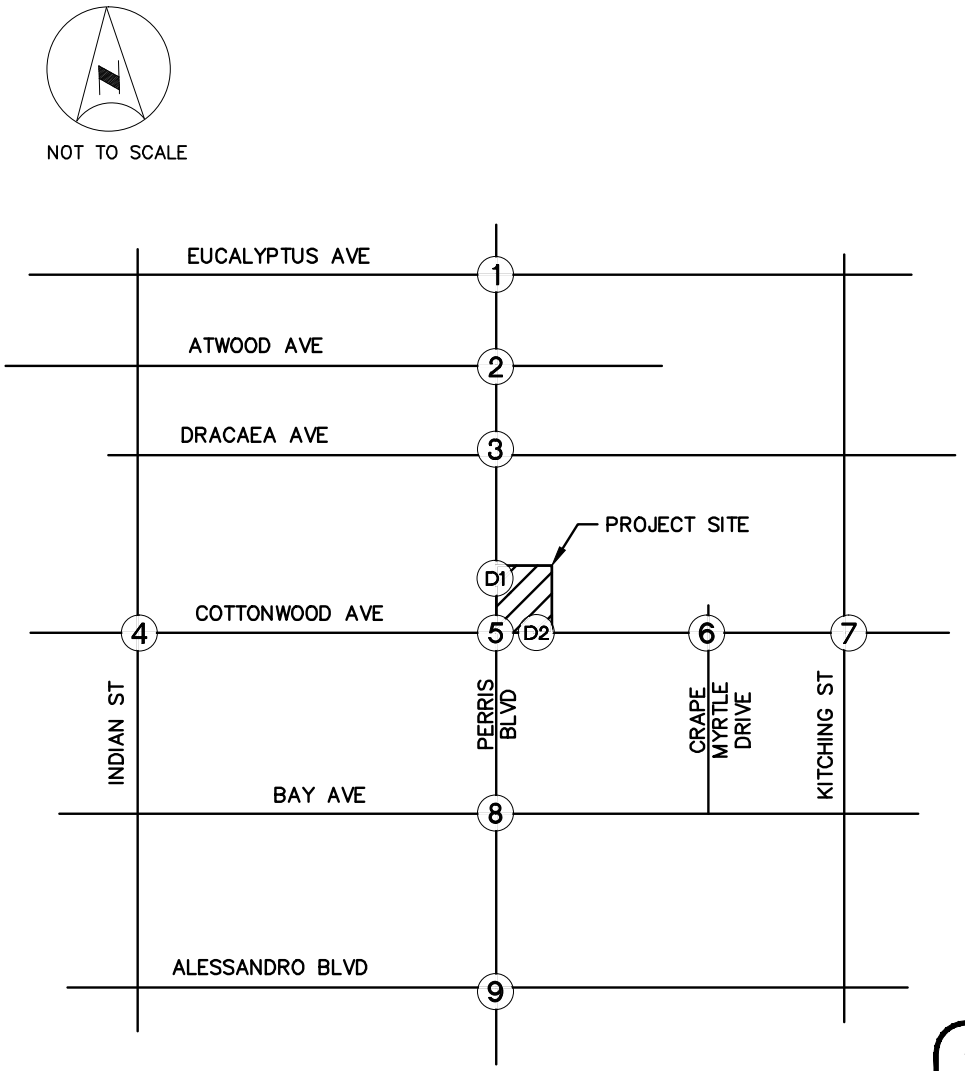
LEGEND:

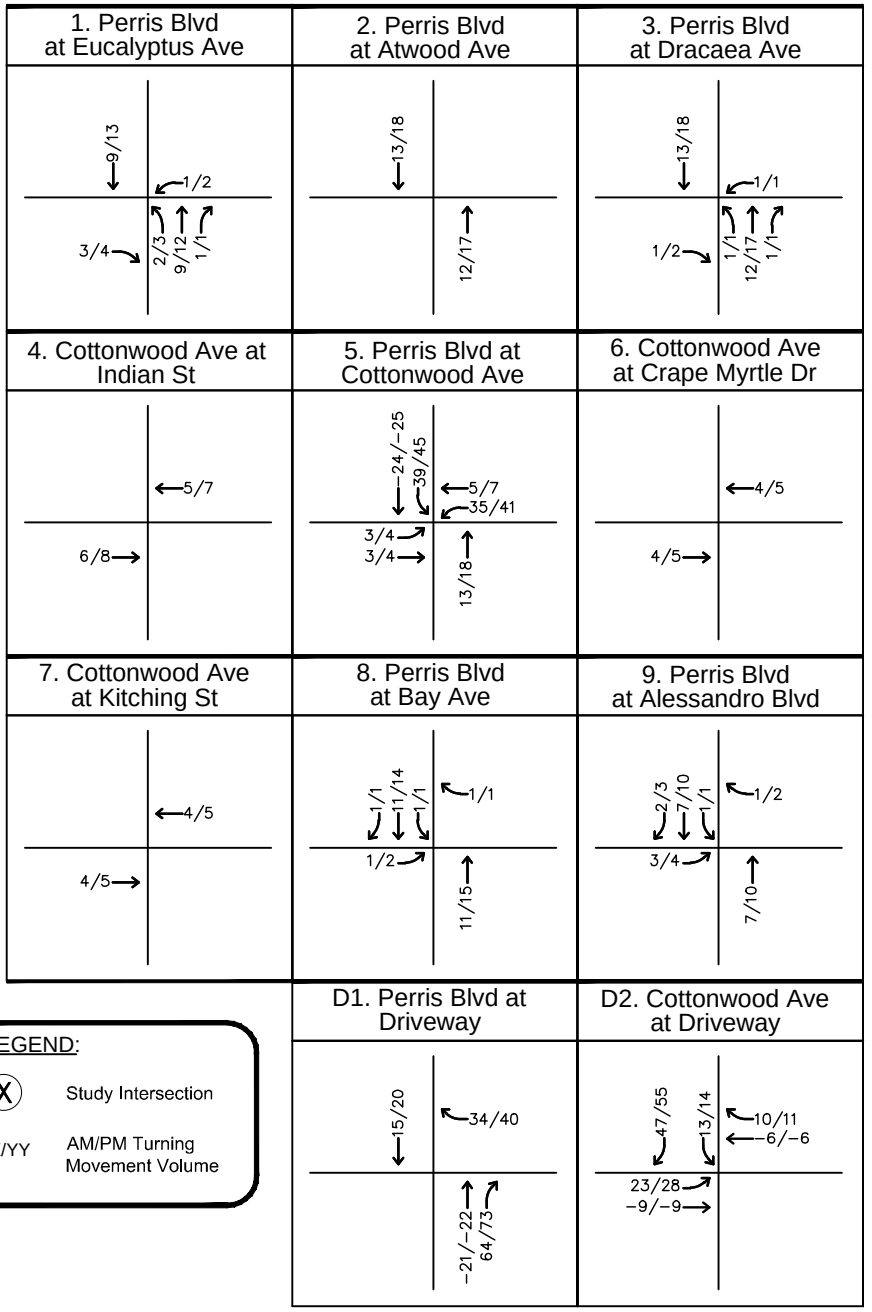
X — Study Intersection

XX — Sunday Turning Movement Volume

FIGURE 24
PROJECT TRAFFIC – ALTERNATIVE 2 SUNDAY TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

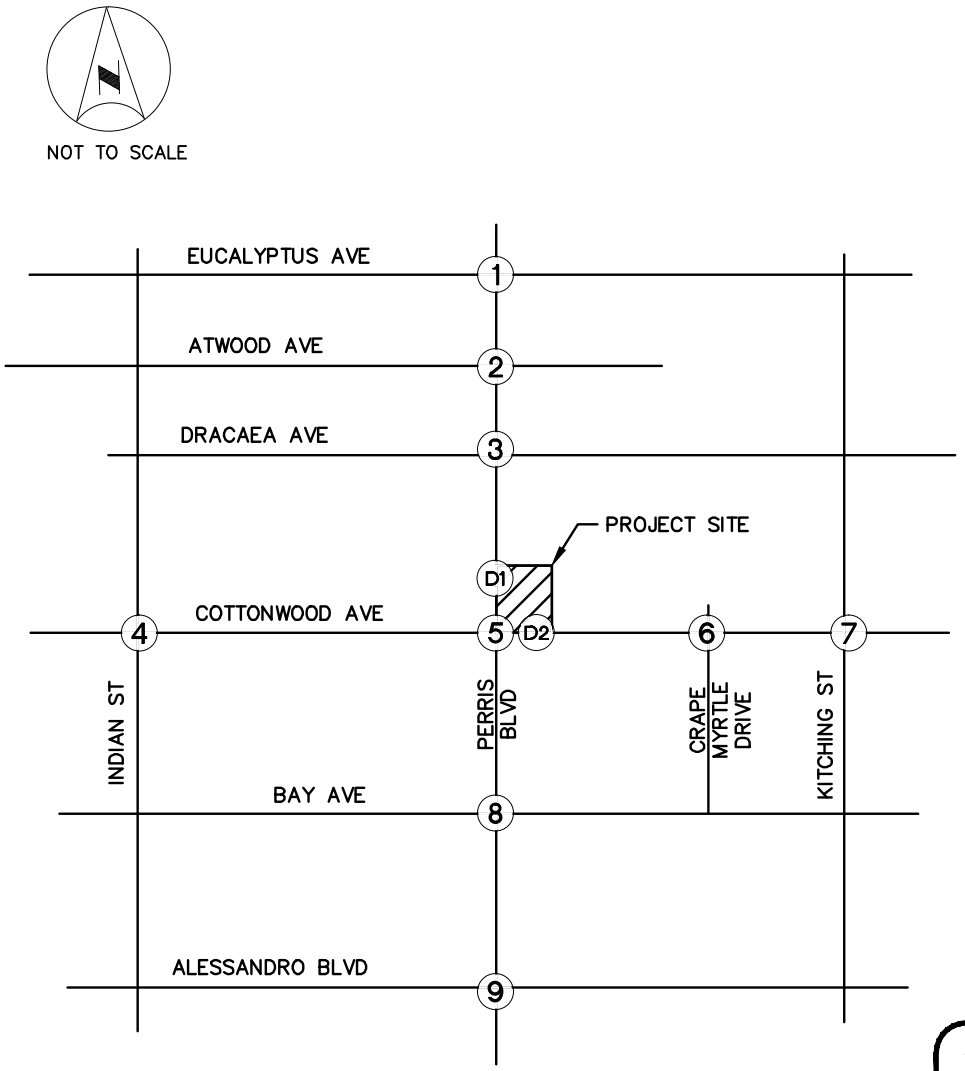




LEGEND:

X	Study Intersection
XX/YY	AM/PM Turning Movement Volume

FIGURE 25
PROJECT TRAFFIC – ALTERNATIVE 3 WEEKDAY TRIPS



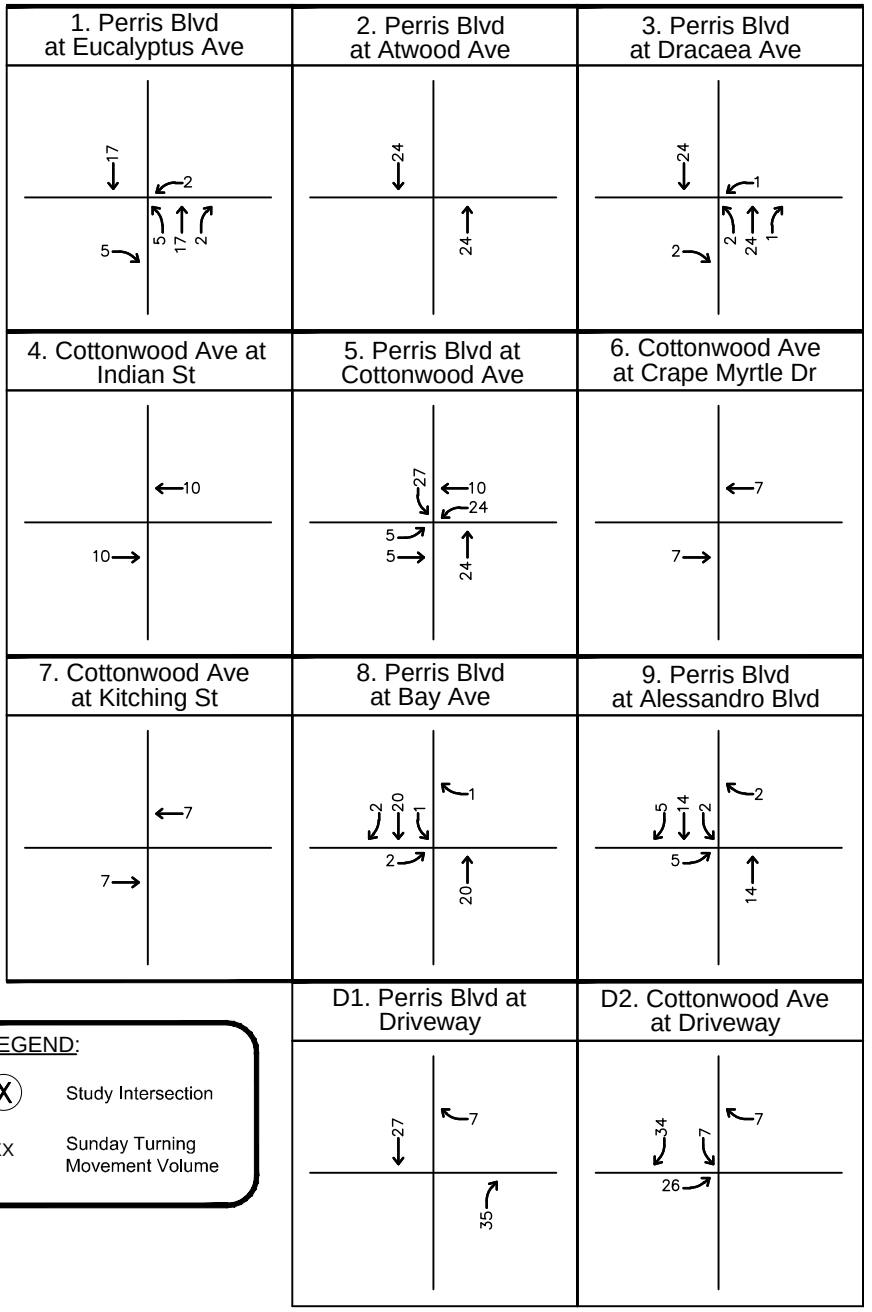


FIGURE 26
PROJECT TRAFFIC – ALTERNATIVE 3 SUNDAY TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

TABLE 11
SUMMARY OF INTERSECTION OPERATIONS
CUMULATIVE WITHOUT AND WITH PROJECT ALTERNATIVES

Int. #	Intersection	Peak Hour	Cumulative Without Project		Cumulative With Alternative 1		Project Impact	Cumulative With Alternative 2		Project Impact	Cumulative With Alternative 3		Project Impact
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	Delay (sec/veh)	LOS	Delay (sec/veh)	Delay (sec/veh)	LOS	Delay (sec/veh)
1	Perris Boulevard at Eucalyptus Avenue	AM	27.7	C	28.0	C	0.3	28.0	C	0.3	28.0	C	0.3
		PM	28.9	C	29.5	C	0.6	29.5	C	0.6	29.5	C	0.6
		SUN	18.7	B	19.1	B	0.4	19.1	B	0.4	19.1	B	0.4
2	Perris Boulevard at Atwood Avenue	AM	46.4	E	47.8	E	1.4	47.8	E	1.4	47.8	E	1.4
		PM	79.7	F	85.3	F	5.6	85.3	F	5.6	85.3	F	5.6
		SUN	65.2	F	71.1	F	5.9	71.1	F	5.9	71.1	F	5.9
3	Perris Boulevard at Dracaea Avenue	AM	44.3	D	46.1	D	1.8	46.1	D	1.8	45.1	D	0.8
		PM	26.0	C	27.9	C	1.9	27.9	C	1.9	26.6	C	0.6
		SUN	27.8	C	29.2	C	1.4	29.2	C	1.4	28.7	C	0.9
4	Cottonwood Avenue at Indian Street	AM	27.9	C	28.4	C	0.5	28.4	C	0.5	28.4	C	0.5
		PM	22.4	C	22.8	C	0.4	22.8	C	0.4	22.8	C	0.4
		SUN	19.9	B	20.2	C	0.3	20.2	C	0.3	20.2	C	0.3
5	Cottonwood Avenue at Perris Boulevard	AM	35.6	D	42.6	D	7.0	39.3	D	3.7	40.9	D	5.3
		PM	30.9	C	35.6	D	4.7	33.4	C	2.5	34.9	C	4.0
		SUN	34.4	C	45.4	D	11.0	40.2	D	5.8	40.5	D	6.1
6	Cottonwood Avenue at Crape Myrtle Drive	AM	65.3	F	68.0	F	2.7	68.0	F	2.7	68.0	F	2.7
		PM	18.1	C	18.4	C	0.3	18.4	C	0.3	18.4	C	0.3
		SUN	34.2	D	35.9	E	1.7	35.9	E	1.7	35.9	E	1.7
7	Cottonwood Avenue at Kitching Street	AM	30.4	C	29.0	C	-1.4	29.0	C	-1.4	29.0	C	-1.4
		PM	16.6	B	16.7	B	0.1	16.7	B	0.1	16.7	B	0.1
		SUN	17.8	B	18.1	B	0.3	18.1	B	0.3	18.1	B	0.3
8	Perris Boulevard at Bay Ave	AM	27.9	C	28.6	C	0.7	28.6	C	0.7	28.6	C	0.7
		PM	18.2	B	18.7	B	0.5	18.7	B	0.5	18.7	B	0.5
		SUN	17.2	B	17.5	B	0.3	17.5	B	0.3	17.5	B	0.3
9	Perris Boulevard at Alessandro Boulevard	AM	50.7	D	51.1	D	0.4	51.1	D	0.4	51.1	D	0.4
		PM	64.8	E	65.6	E	0.8	65.4	E	0.6	65.4	E	0.6
		SUN	38.3	D	38.8	D	0.5	38.8	D	0.5	38.8	D	0.5
D1	Perris Boulevard Driveway	AM	16.2	C	20.2	C	4.0	19.6	C	3.4	19.2	C	3.0
		PM	626.3	F	17.6	C	-608.7	17.1	C	-609.2	16.8	C	-609.5
		SUN	397.9	F	20.0	C	-377.9	19.1	C	-378.8	18.4	C	-379.5
D2	Cottonwood Avenue Driveway	AM	Church Driveway Removed		14.1	B		14.1	B		17.8	C	
		PM			11.1	B		11.1	B		13.2	B	
		SUN			12.1	B		12.1	B		14.5	B	

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

Queuing Analysis

The queues associated with ingress and egress movements at the Perris Boulevard driveway and at the Cottonwood Driveway were evaluated via the Simtraffic Software for the Cumulative With Project scenario. This evaluation was conducted for all driveway variations.

The Perris Boulevard driveway has been designed to align with an existing shopping center driveway on the west side of Perris Boulevard. Therefore, any potential conflicts between northbound left-turn and southbound left-turn traffic would not exist. Vehicles would be able to store in an existing two-way-left-turn lane. For other driveway alternatives, a potential raised median along Perris Boulevard and/or Cottonwood Avenue would impose limitations on queueing.

Cottonwood Avenue at the Cottonwood Avenue driveway currently has one through lane (24') striped in the eastbound direction. It is assumed that vehicles entering the project site in this direction will share the lane with through traffic, although the wide lane width provides adequate clearance for through-movement vehicles to maneuver around a turning vehicle. Furthermore, the St. Christopher Church driveway on the south side of the intersection is anticipated to be removed in future conditions as part of the church's plans for expansion.

Results of the analysis are presented in the following tables. Analysis worksheets can be found in *Appendix C*.

Summary of Queueing Analysis
Existing Geometry

	Queue Length (ft)		
	AM Peak	PM Peak	Sunday
Perris Boulevard Driveway (Southbound Left)			
Average Queue	25	20	27
95th Percentile Queue	95	54	65
Perris Boulevard Driveway (Northbound Right)			
Average Queue	1	1	8
95th Percentile Queue	7	11	78
Cottonwood Avenue Driveway (Eastbound Left)			
Average Queue	7	14	30
95th Percentile Queue	30	74	98
Cottonwood Avenue Driveway (Westbound Right)			
Average Queue	39	1	7
95th Percentile Queue	179	11	38

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Summary of Queueing Analysis Alternative **1**			
	Queue Length (ft)		
	AM Peak	PM Peak	Sunday
Perris Boulevard Driveway (Southbound Left)			
Average Queue	N/A	N/A	N/A
95th Percentile Queue	N/A	N/A	N/A
Perris Boulevard Driveway (Northbound Right)			
Average Queue	3	7	Nom.
95th Percentile Queue	26	62	Nom.
Cottonwood Avenue Driveway (Eastbound Left)			
Average Queue	N/A	N/A	N/A
95th Percentile Queue	N/A	N/A	N/A
Cottonwood Avenue Driveway (Westbound Right)			
Average Queue	93	37	57
95th Percentile Queue	347	65	237

Summary of Queueing Analysis Alternative **2**			
	Queue Length (ft)		
	AM Peak	PM Peak	Sunday
Perris Boulevard Driveway (Southbound Left)			
Average Queue	17	32	36
95th Percentile Queue	44	97	74
Perris Boulevard Driveway (Northbound Right)			
Average Queue	Nom.	Nom.	1
95th Percentile Queue	Nom.	Nom.	10
Cottonwood Avenue Driveway (Eastbound Left)			
Average Queue	N/A	N/A	N/A
95th Percentile Queue	N/A	N/A	N/A
Cottonwood Avenue Driveway (Westbound Right)			
Average Queue	73	14	32
95th Percentile Queue	274	65	149

Summary of Queueing Analysis Alternative **3**			
	Queue Length (ft)		
	AM Peak	PM Peak	Sunday
Perris Boulevard Driveway (Southbound Left)			
Average Queue	N/A	N/A	N/A
95th Percentile Queue	N/A	N/A	N/A
Perris Boulevard Driveway (Northbound Right)			
Average Queue	Nom.	Nom.	Nom.
95th Percentile Queue	Nom.	Nom.	Nom.
Cottonwood Avenue Driveway (Eastbound Left)			
Average Queue	26	23	29
95th Percentile Queue	103	80	102
Cottonwood Avenue Driveway (Westbound Right)			
Average Queue	22	4	21
95th Percentile Queue	128	34	113

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

The results indicate that the forecasted queues can be accommodated by the existing roadway geometry within the vicinity of the site.

SITE CIRCULATION RECOMMENDATIONS

Based on the proposed site plan, shown previously on Figure 2, the project features two driveways. Currently, potential access restrictions into and out of these driveways have not yet been determined. The following discussion assesses the circulation of trucks to and from the site.

Fuel trucks and supply trucks could originate from the SR-60 Freeway and travel on Perris Boulevard, which is a designated truck route, or originate from the I-215 Freeway and travel along Alessandro Boulevard, which is a designated truck route. In both instances, Perris Boulevard would be used from either the northbound or southbound direction to approach the proposed site.

To accommodate truck access into the site from the north on Perris Boulevard, there are two options with the existing roadway geometry – a truck can make a southbound left turn into the Perris Boulevard Driveway or turn onto Cottonwood Avenue before making an eastbound left turn into the Cottonwood Avenue Driveway. However, construction of a raised median along either street will restrict truck access. These turn restrictions have been studied as Alternatives 1-3. The truck access capabilities for all study scenarios are shown on Figure 27-30.

In the Alternative 1 scenario, right-in/right-out movements would be restricted on Perris Boulevard and on Cottonwood Avenue. As a result, a truck approaching from the north can only access the site via a U-Turn at the intersection. However, a U-Turn movement for a truck would not be feasible based on the turning radius. A truck from the south would be able to access the Perris Driveway in the northbound direction via a right-in movement, but would need to return to its origin by using the Cottonwood Avenue driveway to exit.

In the Alternative 2 scenario, southbound left-turn movements along Perris Boulevard would be allowed. However, eastbound left-turn movements into the site from Cottonwood Avenue would be prohibited. This access scenario would allow trucks from north on Perris Boulevard to access the site uninhibited, and return to Perris Boulevard via a westbound right-turn movement out of the driveway. Also, trucks from the south would be able to access the site via the Perris Boulevard Driveway. However, egress trucks destined for the south would need to use the Cottonwood Avenue driveway to return to Perris Boulevard.

In Alternative 3, the Perris Boulevard is restricted to right-in/right-out movements and full movements are allowed at the Cottonwood Driveway. Like Alternative 1, a truck would not be able to access the Perris Boulevard driveway from the north. A truck from the north would be able to turn onto Cottonwood Avenue and make an eastbound left-turn into the site. A vehicle from the south can access the Perris Boulevard driveway, but would need to return to Perris Boulevard using the Cottonwood Avenue driveway.

A summary table highlighting truck access capabilities at each driveway is shown on the following page.

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

	Truck Access Capability			
	Existing	Alternative **1**	Alternative **2**	Alternative **3**
Perris Driveway	Yes – Trucks from North and South	Yes – Only Trucks from South	Yes – Trucks from North and South	Yes – Only Trucks from South
Cottonwood Driveway	Yes – Trucks from North and South	No	No	Yes – Trucks from North and South

Per Level of Service analysis, the cause of deficiency at the Perris Driveway is the westbound left-turn movement. The delay at the westbound left-turn, regardless of low volume, is reported as the worst-case movement. The Cottonwood Avenue driveway, however, does not experience any excessive delays, either inbound or outbound. The delay at the Perris Driveway can be reduced by restricting left-turn movements out of the driveway during the peak hours.

From a queueing perspective, none of the alternatives experience significant queues that would cause spillback or conflicts. There is adequate room for queueing that does not inhibit other accesses from adjacent properties. Furthermore, the Church site on the south side of Cottonwood Avenue will remove its driveway as part of its envisioned expansion. As a result, conflicts between ingress/egress vehicles at the church and at the proposed project site will be inconsequential.

From an access perspective, a southbound left-turn into the site from Perris Boulevard is needed to accommodate fuel trucks from the north. Prohibiting the southbound left would require trucks to turn onto Cottonwood Avenue and use the Cottonwood Avenue driveway, given that left turns are allowed at that driveway. With a median along Perris Boulevard, a southbound truck would be forced to make a U-Turn, which is a movement that is not feasible due to physical constraints.

Based on the results of the traffic analyses and review of the truck turning templates, a recommendation can be made regarding turn restrictions at each driveway. The presence of a raised median would prevent left-turn movements exiting the site onto Perris Boulevard, which is beneficial to peak hour operations. However, a raised median with an opening would allow preserve the southbound left-turn into the site. Nevertheless, trucks would be unable to make the southbound left-turn into the site due to geometric constraints. A truck would need to turn from Perris Boulevard onto Cottonwood Avenue before entering via the Cottonwood Driveway. Therefore, an eastbound left-turn movement must be maintained along Cottonwood Avenue to maintain truck access from the north.

The driveway on Perris Boulevard is consistent with Section 9.11.080 of the Moreno Valley Municipal Code for design parameters. The distance from the driveway to the intersection of Perris Boulevard and Cottonwood Avenue exceeds 350' when measured from the centerline of Cottonwood. The driveway is located at the far northern portion of the site, and aligns with the existing driveway on the west side of Perris Boulevard. The driveway on Cottonwood Avenue has been placed as far from the intersection as possible and is within 250 feet of the intersection, per Section 9.11.080.

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

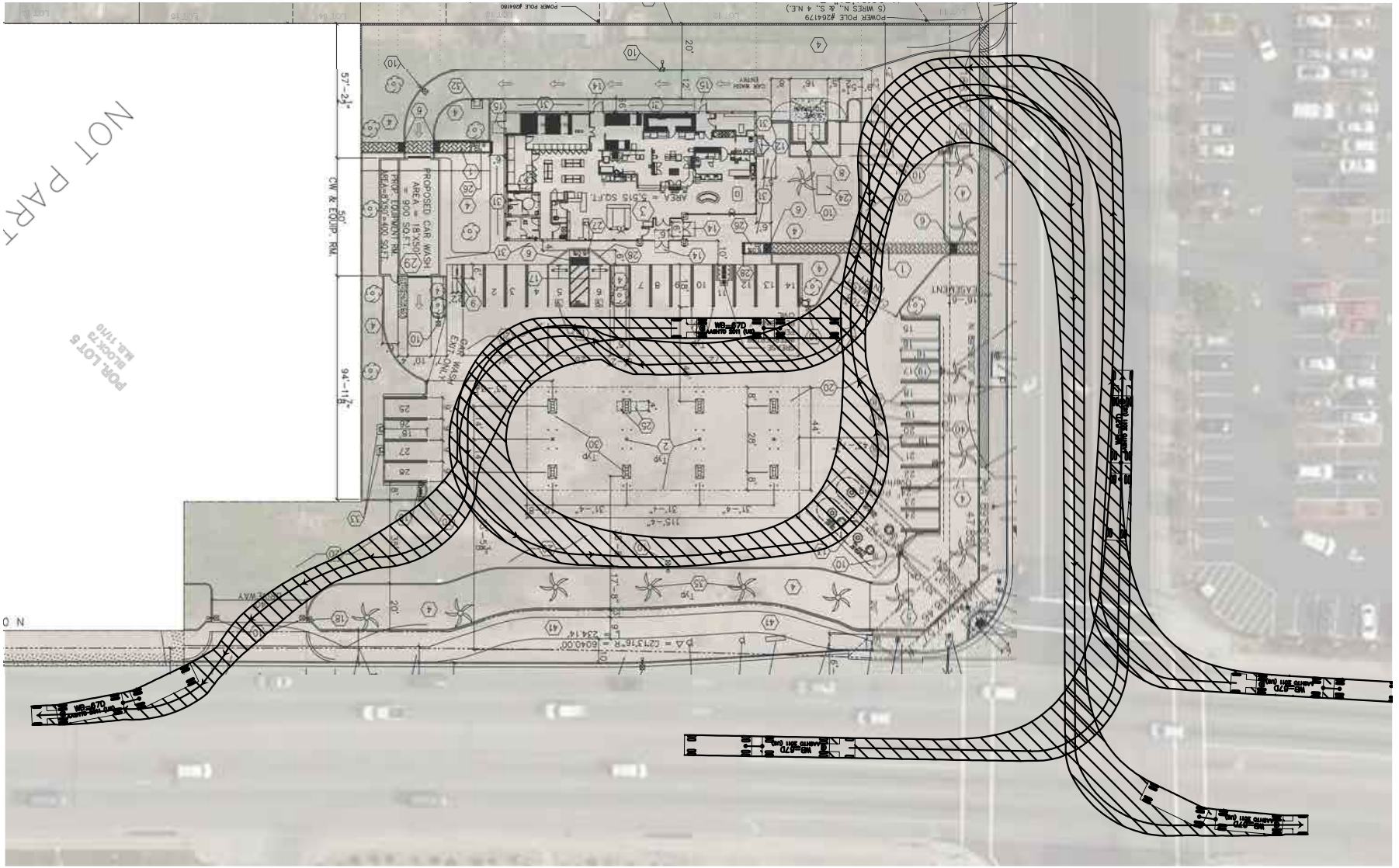
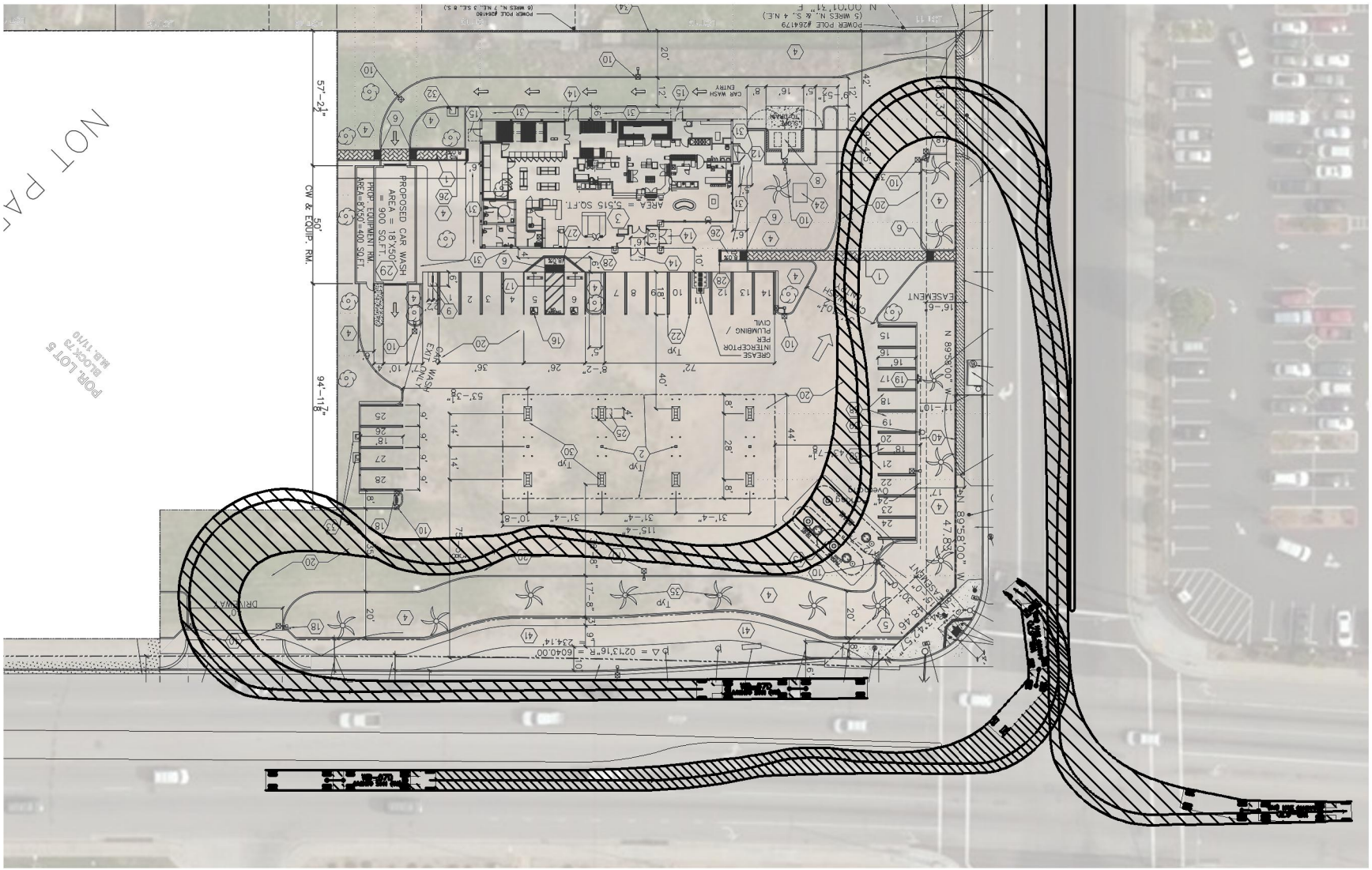


FIGURE 27
PROPOSED TRUCK TURNING TEMPLATE

NOT TO SCALE

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND



NOT TO SCALE

FIGURE 28
PROPOSED TRUCK TURNING TEMPLATE – ALTERNATIVE 1

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONA

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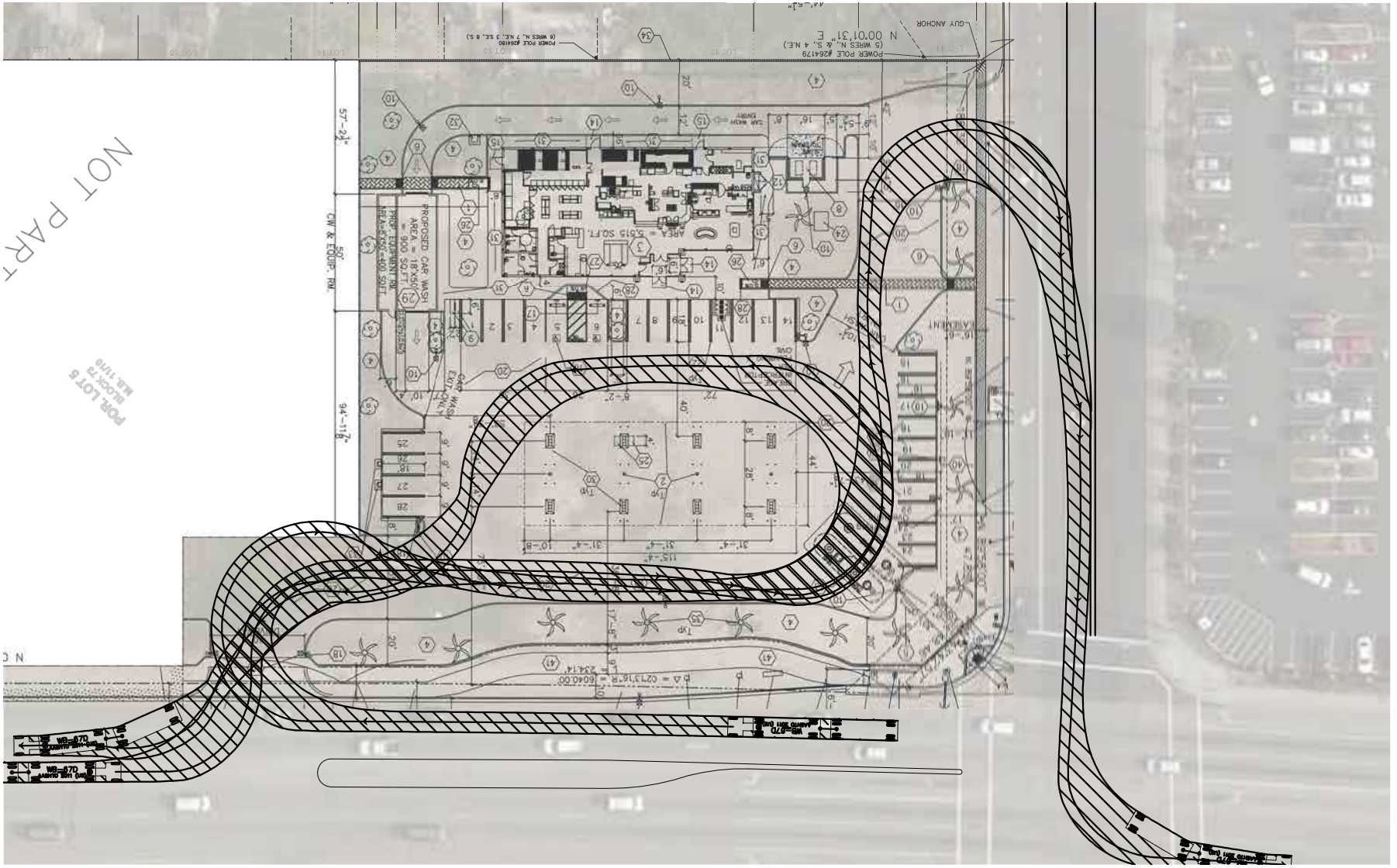

FIGURE 29
PROPOSED TRUCK TURNING TEMPLATE – ALTERNATIVE 2

NOT TO SCALE

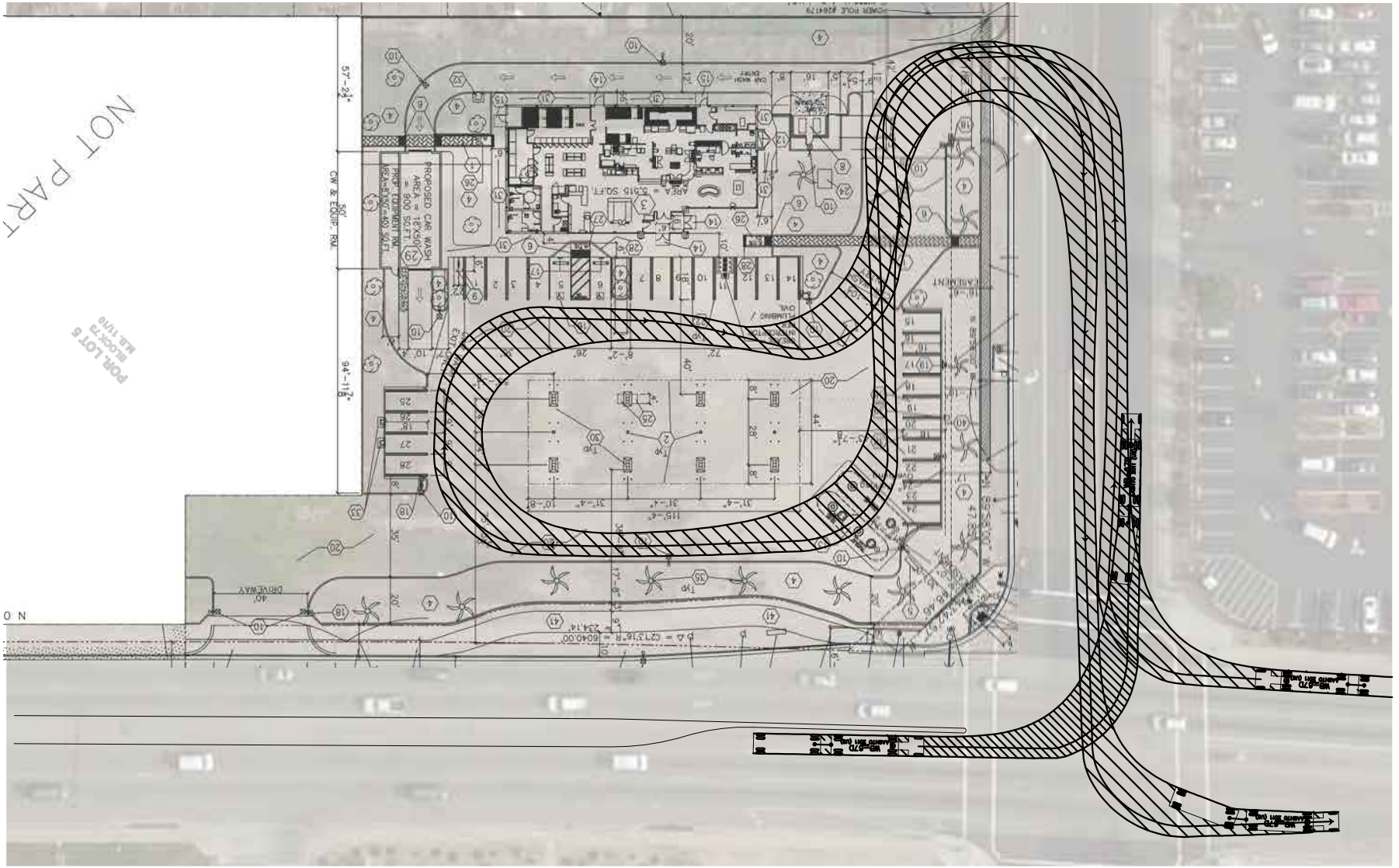

FIGURE 30
PROPOSED TRUCK TURNING TEMPLATE – ALTERNATIVE 3

NOT TO SCALE

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

TRAFFIC SIGNAL WARRANTS

Traffic signal warrants, based on the California Manual on Uniform Traffic Control Devices (MUTCD), are used to determine whether or not traffic volumes on minor streets are great enough to warrant the installation of a traffic signal at an unsignalized intersection. There are two unsignalized intersections, excluding the project driveways, within the study area:

1. Perris Boulevard at Atwood Avenue
2. Cottonwood Avenue at Crape Myrtle Drive

Traffic signal warrants for the project driveways along Perris Boulevard and Cottonwood Avenue were not conducted due to the close proximity to the existing traffic signal at Perris Boulevard and Cottonwood Avenue.

The intersection of Cottonwood Avenue and Crape Myrtle Drive operates deficiently in Existing Conditions, and would continue to do so in all subsequent analysis scenarios. The intersection of Perris Boulevard and Atwood Avenue would operate deficiently in the Cumulative Without Project scenario, and would continue to do so with the addition of project traffic. The results of the traffic signal warrants indicate that minor street volumes are too low to warrant installation of a traffic signal at either intersection. Traffic signal warrant worksheets can be found in *Appendix E*.

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

NON-MOTORIZED SITE ACCESS

Pedestrian and bicycle counts were conducted at the intersection of Perris Boulevard and Cottonwood Avenue in September, 2015. Count sheets can be found in Appendix B. The counts indicate that low volume of pedestrian and bicycle traffic travels through the intersection on a weekday and weekend basis. The maximum number of bikes observed during any peak hour was four along Perris Boulevard. Furthermore, a maximum of thirteen pedestrians were observed along any one approach during the Sunday peak hour. Because the gas station and car wash components of the proposed project occupy a large part of the site, a heavy traffic volume from pedestrians and from bicycles is not likely. The project's donut shop component may attract pedestrians from the St. Christopher's Church at the southeast corner of Perris Boulevard and Cottonwood Avenue.

Currently, a Class II bike lane is striped along Cottonwood Avenue to the east and west of the project frontage. However, a Class II bike lane is not present in the immediate frontage. The bike lane runs along a parking lane.

The Riverside Transit Agency provides transit lines that run along the project frontage:

Riverside Transit Agency Route 18 is a bus route that operates along Cottonwood Avenue within the project vicinity. Route 18 operates seven days a week and provides transportation services between Sunnymead Ranch and Moreno Valley College.

Riverside Transit Agency Route 19 is a bus route that currently operates along Perris Boulevard within the project vicinity. Route 19 operates seven days a week and provides transportation between the Moreno Valley Mall and the Perris Station Transit Center to the south of the project site.

A far-side bus stop for Route 19 is located on the east side of Perris Boulevard, along the project frontage.

PROJECT IMPROVEMENTS AND MITIGATION

Based on the Cumulative With Project scenarios, four intersections were shown to operate deficiently, as well as both roadway segments along Perris Boulevard. The deficient intersections include:

- Perris Boulevard at Atwood Avenue
- Cottonwood Avenue at Crape Myrtle Drive
- Perris Boulevard at Alessandro Boulevard
- Perris Boulevard Driveway

While these intersections are deficient, the project only contributes to their existing deficiencies. The project would contribute to any improvement not included in an existing fee program on a fair-share basis. The following mitigation measures are recommended:

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

- Perris Boulevard at Atwood Avenue - The deficiency is a result of a small number of vehicles turning left into heavy peak hour traffic along Perris Boulevard. The intersection does not warrant a traffic signal. No mitigation measure is recommended.
- Cottonwood Avenue at Crape Myrtle Drive - The deficiency is a result of a small number of vehicles exiting a residential tract. The intersection does not warrant a traffic signal. No mitigation measure is recommended.
- Perris Boulevard at Alessandro Boulevard – Construct an additional southbound left-turn lane and an additional northbound left-turn lane.
- Perris Boulevard Driveway – The delay is a result of vehicles exiting the site. Since any queueing is restricted to the project site and delays are experienced onsite rather than on a public roadway, no offsite mitigation measures are recommended. Implementation of a westbound left-turn restriction would also reduce this delay.

On Perris Boulevard, the street is currently striped as a four-lane divided roadway with 86' of curb-to-curb width. Per the City of Moreno General Plan Roadway Network, Perris Boulevard will eventually be widened to add one lane in each direction, which will increase the daily roadway capacity to 56,300 vehicles. This lane addition can be accomplished in the 86' width, as shown on the roadway cross sections on Figure 5. With the construction of additional turn lanes at the Alessandro Boulevard intersection, the delay will improve to 48 seconds in the evening peak hour, which indicates a LOS D.

Moreover, intersections that operate at acceptable Level of Service, but experience individual lane groups (i.e. westbound left or southbound through movements) that become LOS E or LOS F with the addition of project traffic, are identified below:

- Perris Boulevard and Eucalyptus Avenue WBL (PM LOS E)
- Perris Boulevard and Alessandro Boulevard NBT (PM LOS E)
- Perris and Cottonwood Avenue EBL, WBL, WBR, SBL (Sunday LOS E-F)

Despite these intersections experiencing acceptable overall Level of Service, the following mitigation measures would help improve these lane groups:

- Perris Boulevard and Eucalyptus Avenue WBL – Perris Boulevard is planned to be widened one lane in each direction based on the General Plan Roadway Network, converting it from a 4-lane arterial to a 6-lane arterial. The additional roadway capacity would improve all lane group operations at the intersection.
- Perris Boulevard and Alessandro Boulevard NBT – Construct an additional southbound left-turn lane and an additional northbound left-turn lane. This measure was identified in the previous section, and is included in an existing fee program.
- Perris and Cottonwood Avenue EBL, WBL, WBR, SBL – Perris Boulevard is planned to be widened one lane in each direction based on the General Plan Roadway Network, converting it from a 4-lane arterial to a 6-lane arterial. The additional roadway capacity would improve all lane group operations at the intersection.

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

As previously mentioned, the project would contribute to improvements not found in an existing fee program on a fair-share basis.

FUNDING MECHANISMS

The Transportation Uniform Mitigation Fee (TUMF) Program, which has been developed by the Western Riverside Council of Governments (WRCOG), provides a means of funding improvement projects throughout the County of Riverside. The TUMF levies a fee on new developments in the region to contribute to the construction of transportation projects throughout the region. Fees are calculated on a per unit basis for residential uses, and on a per square foot basis for commercial and industrial uses. The fees and improvements are based on the TUMF Nexus Study, adopted by the WRCOG in 2009.

Additionally, the City of Moreno Valley's Development Impact Fee Program (DIF) provides a mechanism for funding the development of the City's General Plan circulation system. The DIF program, like the TUMF program, collects fees from developers for residential, commercial, and industrial development. A determination of the exact project contribution to the fee program should be made between the developer and the City of Moreno Valley.

FINDINGS AND CONCLUSIONS

This traffic impact study has been prepared to evaluate the project-related traffic impacts associated with the proposed development of a Yum Yum Donut Shop and Gas Station on a vacant parcel located at the northeast corner of Perris Boulevard and Cottonwood Avenue in the City of Moreno Valley, California. The project is estimated to generate 2,445 daily trips, 190 morning peak hour trips, 222 evening peak hour trips, and 312 Sunday peak trips. After applying pass-by reductions, the development is projected to generate a net of 2,445 daily trips, 72 morning peak hour trips, 98 evening peak hour trips, and 138 Sunday trips.

Existing traffic volumes for study intersections and roadways were collected in September 2015. Existing volumes, along with existing lane geometrics and traffic control at each intersection and roadway, were used in conducting peak hour Level of Service (LOS) analyses. Under Existing Conditions, all of the study intersections and roadways are currently operating at LOS D or better, with the exception of the unsignalized intersection of Cottonwood Avenue at Crape Myrtle Drive.

Project traffic was added to the Existing traffic volumes in the Existing With Project scenario. In the Existing With Project scenario, all study intersections would operate at acceptable Level of Service with the exception of the following:

- Cottonwood Avenue at Crape Myrtle Drive (AM LOS E)
- Perris Boulevard Driveway (AM LOS F, PM LOS F, Sunday LOS F)

The intersection of Cottonwood Avenue at Crape Myrtle Drive is unsignalized and is shown to already operate deficiently in Existing Conditions. The deficiency is caused by the low volumes turning from the minor street approach.

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

The Perris Boulevard Driveway is unsignalized. The LOS F delay would be experienced by vehicles making a westbound left-turn out of the driveway onto Perris Boulevard.
All study roadway segments would continue to operate at LOS D or better in the Existing With Project scenario.

Traffic from cumulative projects and an ambient growth of 2% per year over 5 years was added to Existing volumes to determine traffic conditions for the Cumulative Without Project scenario. The following intersections operate deficiently in the Cumulative Without Project scenario:

- Perris Boulevard at Atwood Avenue (AM LOS E, PM LOS F, Sunday LOS F)
- Cottonwood Avenue at Crape Myrtle Drive (AM LOS F)
- Perris Boulevard at Alessandro Boulevard (PM LOS E)
- Perris Boulevard Driveway (PM LOS F, Sunday LOS F)

With the exception of the Perris Boulevard at Alessandro Boulevard intersection, the deficient intersections are unsignalized. Due to the heavy traffic volumes anticipated in Opening Year 2020 as a result of growth and nearby projects, vehicles turning from minor streets onto Perris Boulevard are forecasted to encounter significant delays, regardless of their low volumes.

Moreover, both study roadway segments along Perris Boulevard are anticipated to operate deficiently in the Cumulative Without Project scenario.

With the addition of project traffic to the Cumulative Without Project scenario, the following intersections would operate at an unacceptable Level of Service:

- Perris Boulevard at Atwood Avenue (AM LOS E, PM LOS F, Sunday LOS F)
- Cottonwood Avenue at Crape Myrtle Drive (AM LOS F, Sunday LOS E)
- Perris Boulevard at Alessandro Boulevard (PM LOS E)
- Perris Boulevard Driveway (AM LOS F, PM LOS F, Sunday LOS F)

These intersections are forecasted to operate deficiently before the addition of project traffic. The deficiency at the Perris Boulevard Driveway in the Without Project scenario is caused by egress vehicles from the shopping center to the west. In the With Project scenario, the westbound approach at the driveway also operates deficiently. At the remaining intersections, the project alone does not trigger the deficiencies, but rather contributes to a less-than-significant cumulative impact.

Furthermore, the two study roadway segments along Perris Boulevard will continue to operate deficiently with the addition of project traffic.

While these intersections and roadways are deficient, the project only contributes to their existing deficiencies. The project would contribute to any improvement not included in an existing fee program on a fair-share basis. The following mitigation measures are recommended:

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

- Perris Boulevard at Atwood Avenue - The deficiency is a result of a small number of vehicles turning left into heavy peak hour traffic along Perris Boulevard. The intersection does not warrant a traffic signal. No mitigation measure is recommended.
- Cottonwood Avenue at Crape Myrtle Drive - The deficiency is a result of a small number of vehicles exiting a residential tract. The intersection does not warrant a traffic signal. No mitigation measure is recommended.
- Perris Boulevard at Alessandro Boulevard – Construct an additional southbound left-turn lane and an additional northbound left-turn lane.
- Perris Boulevard Driveway – The delay is a result of vehicles exiting the site. Since any queueing is restricted to the project site and delays are experienced onsite rather than on a public roadway, no offsite mitigation measures are recommended.

On Perris Boulevard, the street is currently striped as a four-lane divided roadway with 86' of curb-to-curb width. Per the City of Moreno General Plan Roadway Network, Perris Boulevard will eventually be widened to add one lane in each direction, which will increase the daily roadway capacity to 56,300 vehicles. This lane addition can be accomplished in the 86' width, and will improve roadway operations to acceptable levels. With the construction of additional turn lanes at the Alessandro Boulevard intersection, the delay will improve to 48 seconds in the evening peak hour, which indicates a LOS D.

Moreover, intersections that operate at acceptable Level of Service, but experience individual lane groups that become LOS E or LOS F with the addition of project traffic, are identified below:

- Perris Boulevard and Eucalyptus Avenue WBL (PM LOS E)
- Perris Boulevard and Alessandro Boulevard NBT (PM LOS E)
- Perris and Cottonwood Avenue EBL, WBL, WBR, SBL (Sunday LOS E-F)

Despite these intersections experiencing acceptable overall Level of Service, the following mitigation measures would help improve these lane groups:

- Perris Boulevard and Eucalyptus Avenue WBL – Perris Boulevard is planned to be widened one lane in each direction based on the General Plan Roadway Network, converting it from a 4-lane arterial to a 6-lane arterial. The additional roadway capacity would improve all lane group operations at the intersection.
- Perris Boulevard and Alessandro Boulevard NBT – Construct an additional southbound left-turn lane and an additional northbound left-turn lane. This measure was identified in the previous section, and is included in an existing fee program.
- Perris and Cottonwood Avenue EBL, WBL, WBR, SBL – Perris Boulevard is planned to be widened one lane in each direction based on the General Plan Roadway Network, converting it from a 4-lane arterial to a 6-lane arterial. The additional roadway capacity would improve all lane group operations at the intersection.

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

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APPENDIX **A**

APPROVED SCOPING AGREEMENT

MORENO VALLEY

SCOPING AGREEMENT
FOR TRAFFIC ANALYSIS STUDY

Date: August 14, 2015

This letter acknowledges the City of Moreno Valley Transportation Engineering Division requirements for the traffic impact analysis of the following project.

Case No.	P15-018
Project Name:	Moreno Valley Yum Yum Donut Shop and Gas Station
Project Address:	Northeast Corner of Perris Blvd and Cottonwood Ave
Project Description:	Gas Station w/ 16 Pumps and Convenience Market/Donut Shop/Car Wash
Related Cases:	

	Consultant	Developer
Name:	Kimley-Horn and Associates, Inc.	A & S Engineering
Address:	765 The City Drive, Suite 200 Orange, CA 92868	28405 Sand Canyon Rd., Suite B Canyon Country, CA 91387
Telephone:	714-705-1362	661-250-9300

I. Background

The proposed project is located on the northeast corner of Perris Boulevard and Cottonwood Avenue. The project consists of a Gas Station w/ 5,515 SF building (Convenience Store and Donut Shop) & Car Wash. The project is anticipated to be completed in 2016. Per the City's guidelines, the opening year scenario for analysis will be 2020. The site plan is shown on **Figure 1**.

II. Trip Geographic Distribution and Assignment*

N: 40% **S:** 35% **E:** 10% **W:** 15%

***See Figure 2 for trip distribution diagram**

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

III. Site Trip Generation Forecast

A. ITE Trip Generation Manual (latest edition)
B. AM Peak: 7:00-9:00 AM
C. PM Peak: 4:00-6:00 PM
D. Sunday Noon: 11:00-2:00 PM
E. Intersection and link acceptable Level of Service "D" for some intersections and links and Level of Service "C" for others based upon the current City policy. (Use Highway Capacity Manual - latest edition - operations procedures; parameters per County of Riverside Traffic Impact Analysis Guidelines.)

Proposed Use Rates

Gasoline Station w/ Convenience Market & Car Wash (Fueling Position)	Daily: 152.84	AM: 11.84	PM: 13.86	Weekend: 19.46	

Internal Trip Allowance: Yes _____ No ___X___ Percentage _____

Pass-by Trip Allowance: Yes ___X___ No _____ Percentage ___See Attached **Table 1**___

IV. Specific Project Issues to be Analyzed

A. The focus of this traffic study will be on addressing the adequacy of site access and identifying specific near-term and future circulation improvements required in the study area to maintain acceptable peak hour and daily levels of service (LOS).
B. The traffic study shall address the project traffic impacts at all study intersections listed in Section VI and provide appropriate mitigation measures if applicable.
C. Sunday traffic conditions will be analyzed to address the additional weekend traffic on the street system due to the church at the southeast corner of Perris Boulevard and Cottonwood Avenue.
D. Different site access alternatives will be analyzed to assess the construction of a raised median on Perris Boulevard and/or Cottonwood Avenue. These alternatives include:
    A. Full movements at both driveways
    B. Left in/Left out restricted at both driveways
    C. Left out restricted at Perris Driveway, Left in/Left out restricted at Cottonwood Driveway
    D. Left in/Left out restricted at Perris Driveway, Full movement at Cottonwood Driveway
E. Queueing analysis will be conducted at the two site driveways. Queuing analysis for SBL movement into driveway will take into account NBL movements into adjacent shopping center.
F. Assess non-motorized (i.e. peds, bicycles, ex.) access, document available transit/bus routes

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

G. Truck turning exhibits will be prepared to show potential conflicts with raised medians.

V. Study of Horizon Years

A. Existing (2015)
B. Existing (2015) Plus Project
C. Cumulative (Opening Year 2020) Without Project (2% annual growth and cumulative project traffic) – See **Figure 3** for Cumulative Projects within a 3.5-mile radius
D. Cumulative (Opening Year 2020) With Project

VI. Facilities to be Studied (See Figure 4 for Study Area)

A. Intersections

1. Perris Boulevard at Eucalyptus Avenue
2. Perris Boulevard and Atwood Avenue
3. Perris Boulevard and Dracaea Avenue
4. Cottonwood Avenue at Indian Street
5. Cottonwood Avenue at Perris Boulevard (Will include ped/bike counts)
6. Cottonwood Avenue at Crape Myrtle Drive
7. Cottonwood Avenue at Kitching Street
8. Perris Boulevard and Bay Ave
9. Perris Boulevard at Alessandro Boulevard
10. Cottonwood Avenue Driveway
11. Perris Boulevard Driveway

B. Roadway Segments

1. Perris Boulevard between Eucalyptus Avenue and Cottonwood Avenue
2. Perris Boulevard between Cottonwood Avenue and Alessandro Boulevard
3. Cottonwood Avenue between Indian Street and Perris Boulevard
4. Cottonwood Avenue between Perris Boulevard and Kitching Street

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

VII. Deliverables

A. Draft traffic impact study (2 copies)
B. Final traffic impact study (4 copies)

All draft and final traffic impact studies shall be delivered with the appropriate review fee to the Permit Technician, Land Development Division, Moreno Valley City Hall, 14177 Frederick Street, Moreno Valley, CA 92552. Please contact the Land Development Division at 951-413-3110 prior to the delivery of the traffic study.

If you have any questions regarding this *Scoping Agreement*, please contact Michael Lloyd at (951) 413-3146.

Recommended By:

Tim Chan
Kimley-Horn and Associates, Inc.

Approved By:

8/14/15

Michael Lloyd, P.E.
Senior Traffic Engineer

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

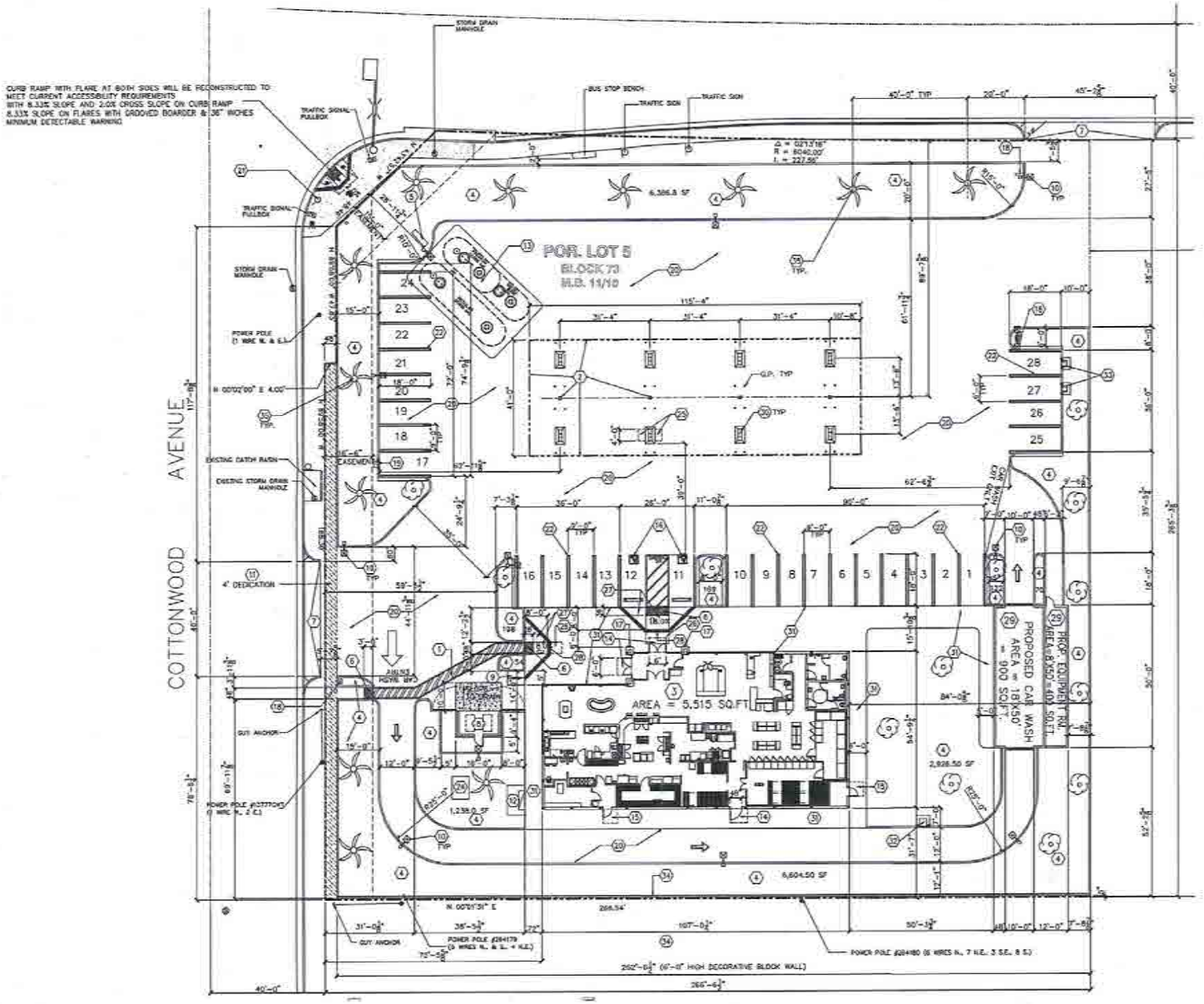

FIGURE 1
SITE PLAN

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TABLE 1
SUMMARY OF PROJECT TRIP GENERATION

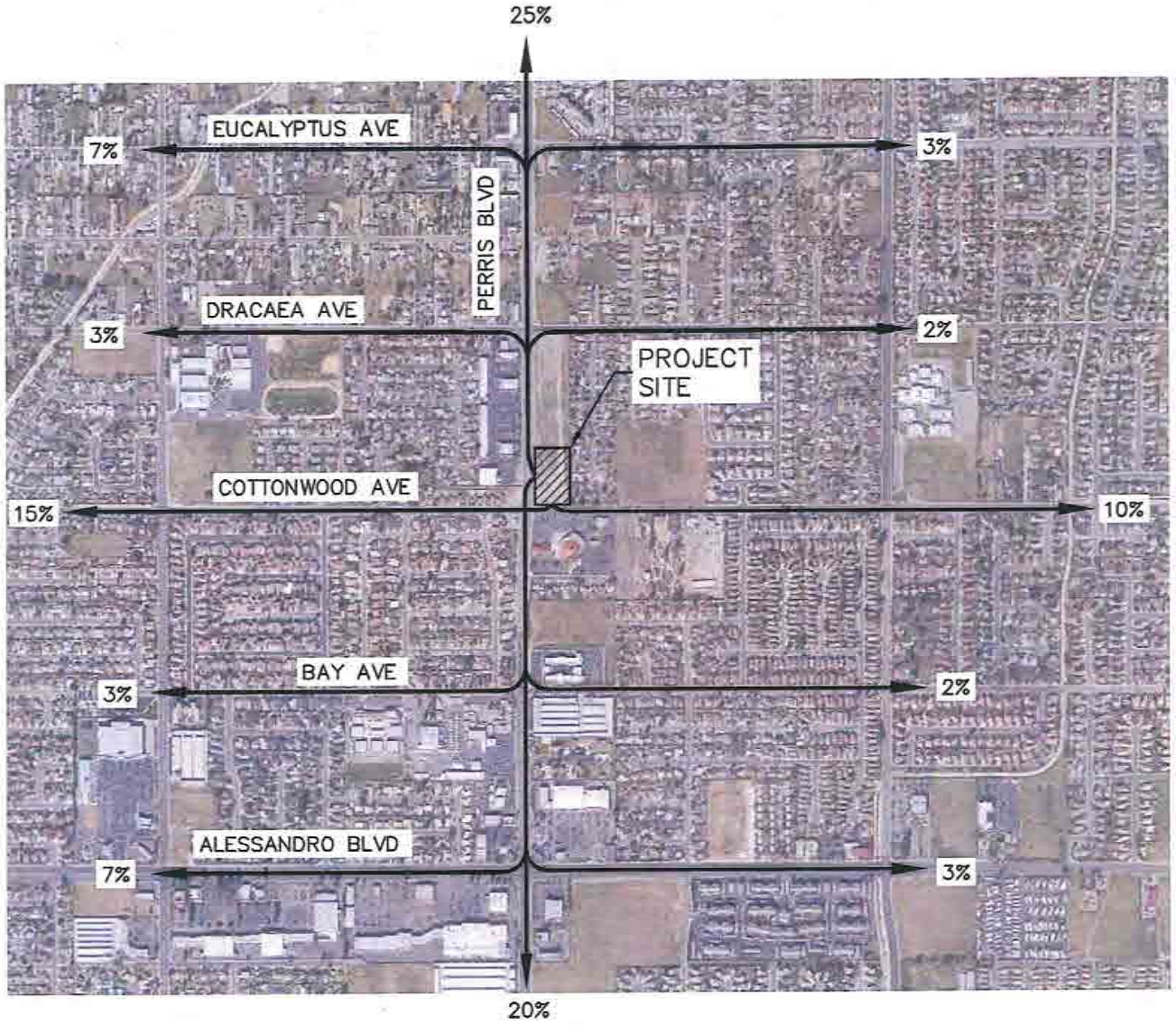
Land Use	ITE Code	Unit	Trip Generation Rates [1]									
			Daily	AM Peak Hour			PM Peak Hour			Sunday Noon [3]		
				In	Out	Total	In	Out	Total	In	Out	Total
Gasoline Station w/ Conv. Mkt. & Car Wash	946	Fueling Position	152.84	6.04	5.80	11.84	7.07	6.79	13.86	9.73	9.73	19.46

Land Use	Quantity	Unit	Trip Generation Estimates									
			Daily	AM Peak Hour			PM Peak Hour			Sunday Noon		
				In	Out	Total	In	Out	Total	In	Out	Total
Gasoline Station w/ Conv. Mkt. & Car Wash	16	Fueling Position	2,445	97	93	190	113	109	222	156	156	311
- Pass-by Trips (AM 62%, PM 56%) [2]			-	-60	-58	-118	-63	-61	-124	-87	-87	-174
Total Project Trips			**2,445**	**37**	**35**	**72**	**50**	**48**	**98**	**68**	**68**	**137**

[1] *Source: Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition*

[2] *Source: ITE Trip Generation Manual - Volume 1: User's Guide and Handbook. A pass-by rate of 56% was used for Sunday trips.*

[3] *Sunday Peak Hour trips were calculated based on ITE rates for the Saturday Peak Hour of Generator.*



NOT TO SCALE

LEGEND:

XX% TRIP PERCENTAGE

FIGURE 2
TRIP DISTRIBUTION ASSUMPTIONS

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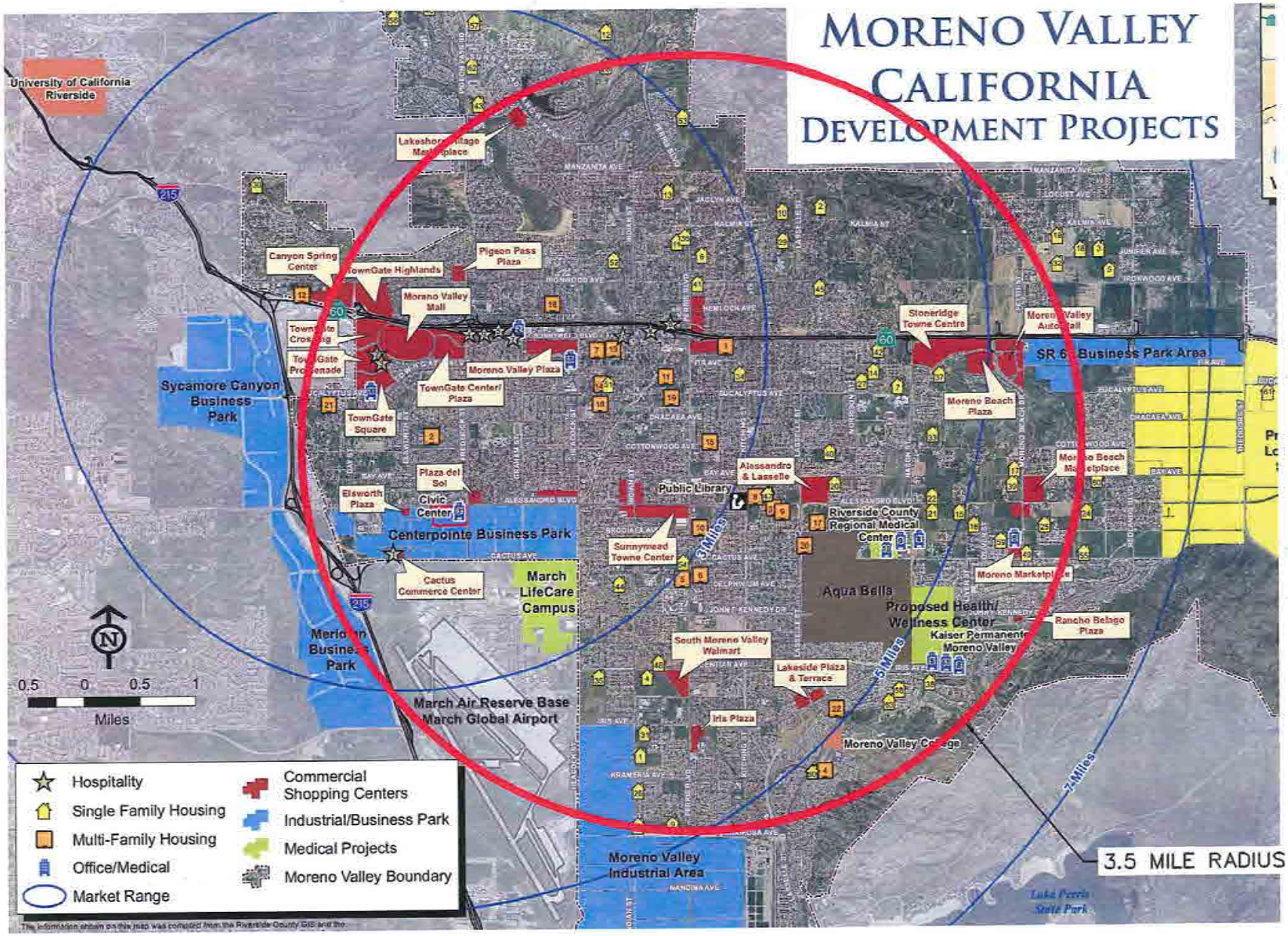

FIGURE 3
CUMULATIVE PROJECTS

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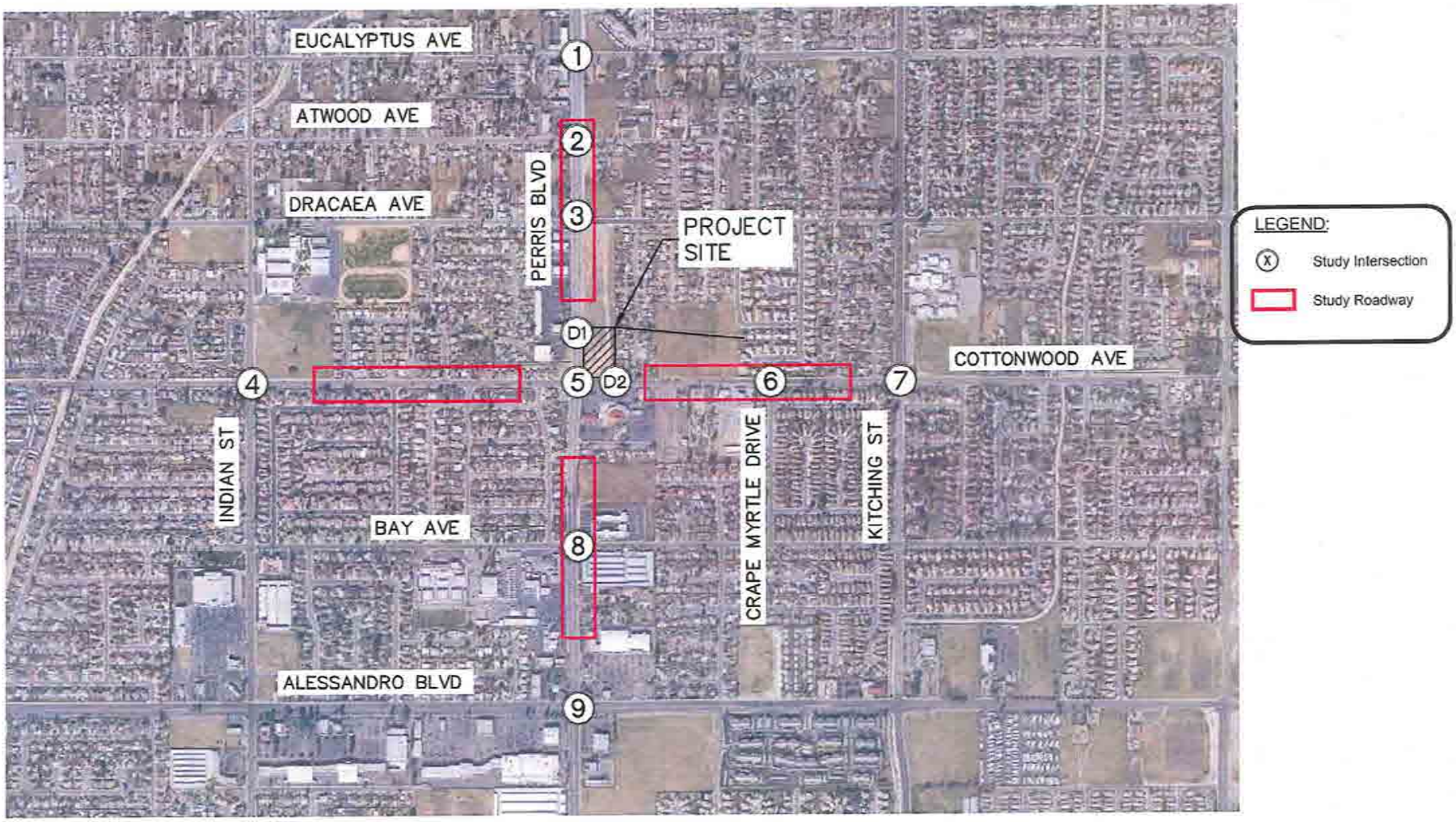

FIGURE 4
STUDY INTERSECTIONS AND ROADWAYS

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Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

APPENDIX **B**

TRAFFIC DATA COLLECTION SHEETS

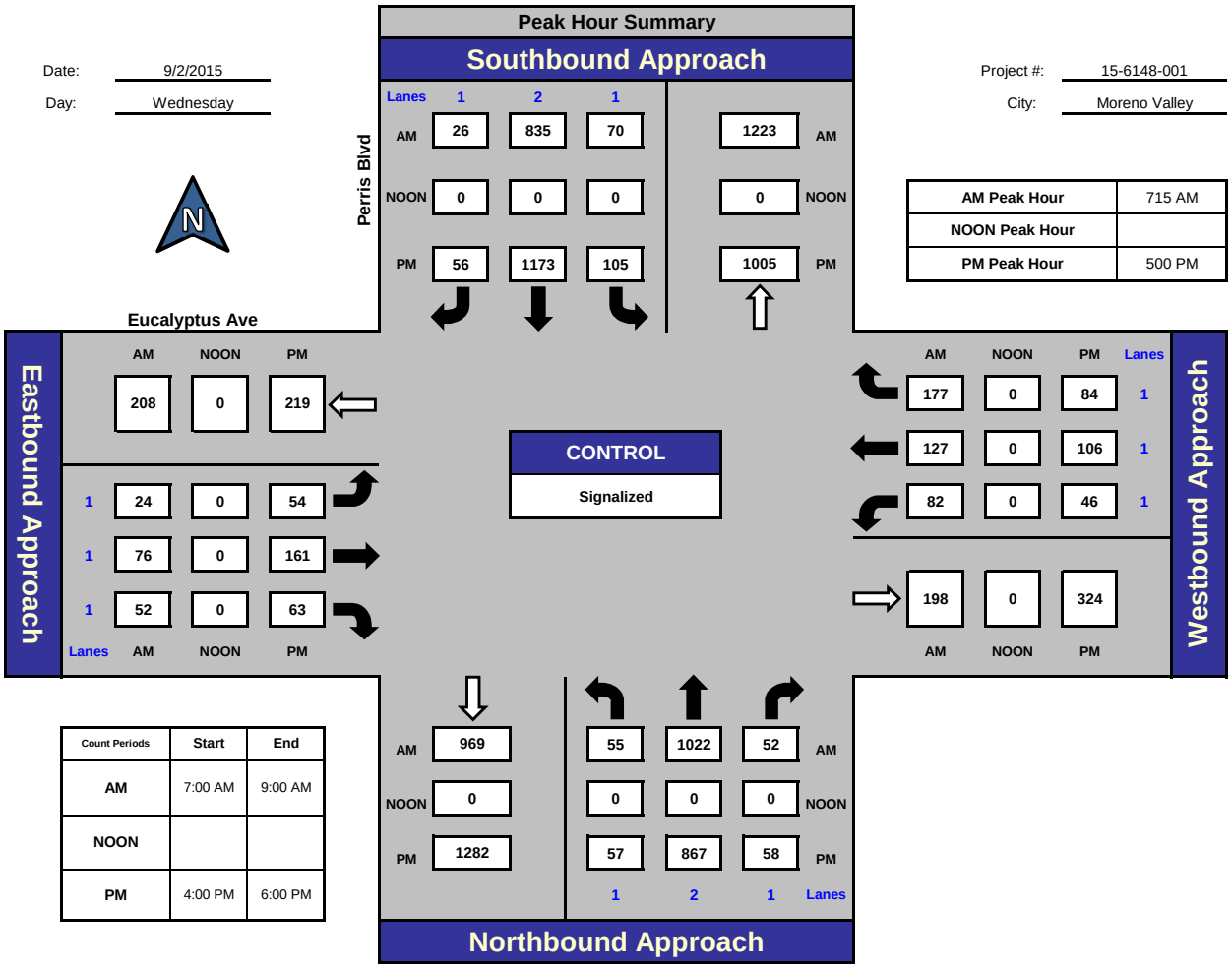
ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Perris Blvd and Eucalyptus Ave , Moreno Valley

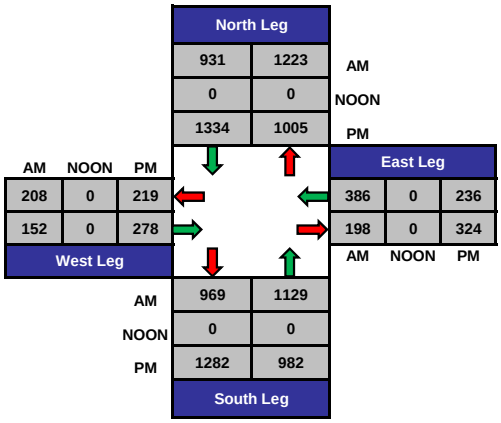
Date: 9/2/2015
Day: Wednesday
Project #: 15-6148-001
City: Moreno Valley



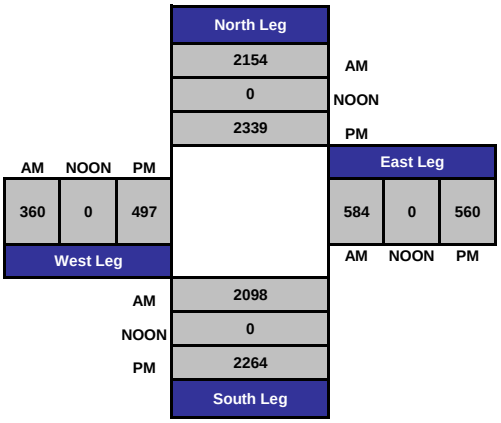
AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	500 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Perris Blvd and Eucalyptus Ave , Moreno Valley

Date: 9/13/2015
Day: Sunday
Project #: 15-6148-001
City: Moreno Valley

Peak Hour Summary	
AM Peak Hour	
NOON Peak Hour	100 PM
PM Peak Hour	

Southbound Approach (Perris Blvd)

Lanes	1	2	1		
AM	0	0	0	0	AM
NOON	44	816	62	993	NOON
PM	0	0	0	0	PM

Eastbound Approach (Eucalyptus Ave)

Lanes	AM	NOON	PM
	0	151	0
1	0	50	0
1	0	78	0
1	0	31	0

Westbound Approach

Lanes	AM	NOON	PM
1	0	73	0
1	0	61	0
1	0	29	0
	0	172	0

CONTROL: Signalized

Northbound Approach

Lanes	1	2	1		
AM	0	0	0	0	AM
NOON	876	46	870	32	NOON
PM	0	0	0	0	PM

Count Periods	Start	End
AM		
NOON	11:00 AM	2:00 PM
PM		

Total Ins & Outs

	North Leg		
AM	0	0	AM
NOON	922	993	NOON
PM	0	0	PM

West Leg AM	West Leg NOON	West Leg PM	East Leg AM	East Leg NOON	East Leg PM
0	151	0	0	163	0
0	159	0	0	172	0

	South Leg	
AM	0	0
NOON	876	948
PM	0	0

Total Volume Per Leg

	North Leg	
AM	0	AM
NOON	1915	NOON
PM	0	PM

West Leg AM	West Leg NOON	West Leg PM	East Leg AM	East Leg NOON	East Leg PM
0	310	0	0	335	0

	South Leg	
AM	0	
NOON	1824	
PM	0	

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Perris Blvd and Atwood Ave , Moreno Valley

Date: 9/2/2015
Day: Wednesday
Project #: 15-6148-002
City: Moreno Valley

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	500 PM

Peak Hour Summary

Southbound Approach (Perris Blvd)

Lanes	0	2	0	
AM	18	941	13	1127 AM
NOON	0	0	0	0 NOON
PM	20	1212	43	993 PM

Eastbound Approach (Atwood Ave)

Lanes	AM	NOON	PM
	53	0	57
0	12	0	14
1	2	0	3
0	37	0	36
Lanes	AM	NOON	PM

Westbound Approach

AM	NOON	PM	Lanes
16	0	11	0
1	0	1	1
2	0	2	0
19	0	48	
AM	NOON	PM	

CONTROL: 2-Way Stop (EB/WB)

Northbound Approach

AM	980	34	1099	4 AM
NOON	0	0	0	0 NOON
PM	1250	36	968	2 PM
		0	2	0 Lanes

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs

	North Leg		
AM	972	1127	AM
NOON	0	0	NOON
PM	1275	993	PM

West Leg			East Leg		
AM	NOON	PM			
53	0	57	19	0	14
51	0	53	19	0	48
			AM	NOON	PM

	South Leg	
AM	980	1137
NOON	0	0
PM	1250	1006

Total Volume Per Leg

	North Leg	
AM	2099	AM
NOON	0	NOON
PM	2268	PM

West Leg			East Leg		
AM	NOON	PM			
104	0	110	38	0	62
			AM	NOON	PM

	South Leg
AM	2117
NOON	0
PM	2256

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Perris Blvd and Atwood Ave , Moreno Valley

Date: 9/13/2015
Day: Sunday
Project #: 15-6148-002
City: Moreno Valley

AM Peak Hour	
NOON Peak Hour	100 PM
PM Peak Hour	

Peak Hour Summary

Southbound Approach (Perris Blvd)

Lanes	0	2	0	
AM	0	0	0	0 AM
NOON	17	824	34	948 NOON
PM	0	0	0	0 PM

Eastbound Approach (Atwood Ave)

	AM	NOON	PM
	0	60	0
0	0	18	0
1	0	4	0
0	0	27	0
Lanes	AM	NOON	PM

Westbound Approach

	AM	NOON	PM	Lanes
	0	14	0	0
	0	6	0	1
	0	3	0	0
	0	41	0	
	AM	NOON	PM	

CONTROL: 2-Way Stop (EB/WB)

Northbound Approach

AM	0	0	0	0 AM
NOON	854	37	916	3 NOON
PM	0	0	0	0 PM
		0	2	0 Lanes

Count Periods	Start	End
AM		
NOON	11:00 AM	2:00 PM
PM		

Total Ins & Outs

	North Leg		
AM	0	0	AM
NOON	875	948	NOON
PM	0	0	PM

West Leg				East Leg		
AM	NOON	PM		AM	NOON	PM
0	60	0		0	23	0
0	49	0		0	41	0

	South Leg		
AM	0	0	
NOON	854	956	
PM	0	0	

Total Volume Per Leg

	North Leg	
AM	0	
NOON	1823	
PM	0	

West Leg			East Leg		
AM	NOON	PM	AM	NOON	PM
0	109	0	0	64	0

	South Leg	
AM	0	
NOON	1810	
PM	0	

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Perris Blvd and Dracaea Ave , Moreno Valley

Date: 9/2/2015
Day: Wednesday
Project #: 15-6148-003
City: Moreno Valley

Peak Hour Summary	
AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	500 PM

Southbound Approach (Perris Blvd)

Lanes	1	2	1		
AM	72	872	32	1143	AM
NOON	0	0	0	0	NOON
PM	81	1112	72	1009	PM

Eastbound Approach (Dracaea Ave)

Lanes	AM	NOON	PM
	194	0	180
0	67	0	58
1	70	0	92
0	44	0	24

Westbound Approach

Lanes	AM	NOON	PM
0	56	0	58
1	92	0	85
0	60	0	28
	126	0	206

CONTROL: Signalized

Northbound Approach

Lanes	1	2	0	
AM	976	30	1020	24	AM
NOON	0	0	0	0	NOON
PM	1164	14	893	42	PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs

	North Leg	
AM	976	1143
NOON	0	0
PM	1265	1009

West Leg	AM	NOON	PM
	194	0	180
	181	0	174

East Leg	AM	NOON	PM
	208	0	171
	126	0	206

	South Leg	
AM	976	1074
NOON	0	0
PM	1164	949

Total Volume Per Leg

	North Leg	
AM	2119	
NOON	0	
PM	2274	

West Leg	AM	NOON	PM
	375	0	354

East Leg	AM	NOON	PM
	334	0	377

	South Leg	
AM	2050	
NOON	0	
PM	2113	

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Perris Blvd and Dracaea Ave , Moreno Valley

Date: 9/13/2015
Day: Sunday
Project #: 15-6148-003
City: Moreno Valley

AM Peak Hour	
NOON Peak Hour	100 PM
PM Peak Hour	

Peak Hour Summary

Southbound Approach (Perris Blvd)

Lanes	1	2	1		
AM	0	0	0	0	AM
NOON	52	779	26	953	NOON
PM	0	0	0	0	PM

Eastbound Approach (Dracaea Ave)

Lanes	AM	NOON	PM
	0	133	0
0	0	71	0
1	0	82	0
0	0	24	0

Westbound Approach

Lanes	AM	NOON	PM
0	0	57	0
1	0	59	0
0	0	34	0
	0	132	0

CONTROL: Signalized

Count Periods	Start	End
AM		
NOON	11:00 AM	2:00 PM
PM		

Northbound Approach

AM	0	0	0	AM
NOON	837	22	825	24 NOON
PM	0	0	0	PM
		1	2	0 Lanes

Total Ins & Outs

	AM	NOON	PM
North Leg	0	857	0
	0	953	0
East Leg	0	150	0
	0	132	0
South Leg	0	837	0
	0	871	0
West Leg	0	133	0
	0	177	0

Total Volume Per Leg

	AM	NOON	PM
North Leg	0	1810	0
East Leg	0	282	0
South Leg	0	1708	0
West Leg	0	310	0

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Indian St and Cottonwood Ave , Moreno Valley

Date: 9/2/2015

Day: Wednesday

Project #: 15-6148-004

City: Moreno Valley

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	500 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Peak Hour Summary

Southbound Approach (Indian St)

Lanes	0	2	1	
AM	47	248	53	365 AM
NOON	0	0	0	0 NOON
PM	43	268	28	342 PM

Eastbound Approach (Cottonwood Ave)

Lanes	AM	NOON	PM
	495	0	369
1	45	0	42
1	285	0	316
0	125	0	147
Lanes	AM	NOON	PM

Westbound Approach

AM	NOON	PM	Lanes
83	0	37	0
355	0	246	1
44	0	41	1
367	0	398	
AM	NOON	PM	

CONTROL: Signalized

Northbound Approach

AM	417	93	237	29 AM
NOON	0	0	0	0 NOON
PM	456	80	263	54 PM
		1	2	0 Lanes

Total Ins & Outs

North Leg		
348	365	AM
0	0	NOON
339	342	PM

West Leg			East Leg		
AM	NOON	PM			
495	0	369	482	0	324
455	0	505	367	0	398
			AM	NOON	PM

South Leg	
AM	417 359
NOON	0 0
PM	456 397

Total Volume Per Leg

North Leg	
713	AM
0	NOON
681	PM

West Leg			East Leg		
AM	NOON	PM			
950	0	874	849	0	722
			AM	NOON	PM

South Leg	
AM	776
NOON	0
PM	853

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Indian St and Cottonwood Ave , Moreno Valley

Date: 9/13/2015
Day: Sunday
Project #: 15-6148-004
City: Moreno Valley

AM Peak Hour	
NOON Peak Hour	100 PM
PM Peak Hour	

Peak Hour Summary

Southbound Approach

Lanes	0	2	1		
AM	0	0	0	0	AM
NOON	20	171	20	253	NOON
PM	0	0	0	0	PM

Indian St

Cottonwood Ave

Eastbound Approach

Lanes	AM	NOON	PM
	0	351	0
1	0	16	0
1	0	195	0
0	0	104	0

Westbound Approach

Lanes	AM	NOON	PM
0	0	24	0
1	0	243	0
1	0	44	0
	0	258	0

CONTROL

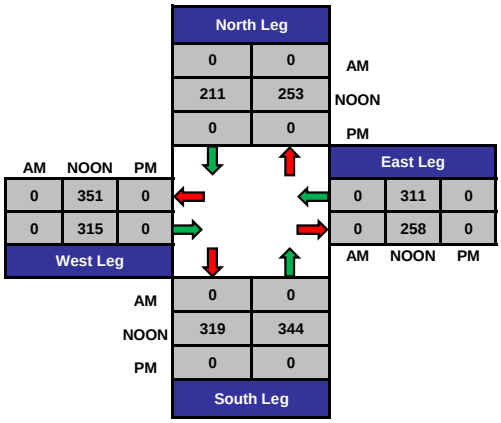
Signalized

Count Periods	Start	End
AM		
NOON	11:00 AM	2:00 PM
PM		

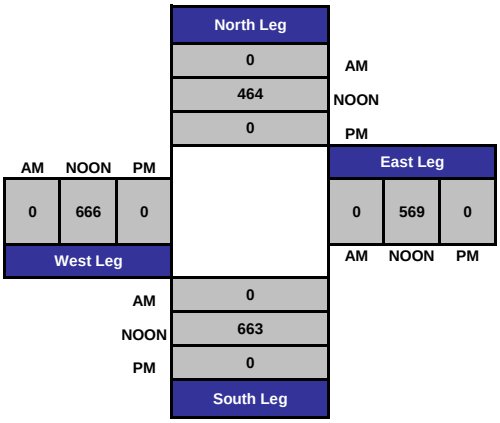
Northbound Approach

AM	0	0	0	0 AM
NOON	319	88	213	43 NOON
PM	0	0	0	0 PM
Lanes		1	2	0 Lanes

Total Ins & Outs



Total Volume Per Leg



Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Perris Blvd and Cottonwood Ave , Moreno Valley

Date: 9/2/2015
Day: Wednesday

Project #: 15-6148-005
City: Moreno Valley

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	500 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Peak Hour Summary

Southbound Approach (Perris Blvd)

Lanes	1	2	1		
AM	89	805	107	1079	AM
NOON	0	0	0	0	NOON
PM	119	967	139	1000	PM

Eastbound Approach (Cottonwood Ave)

Lanes	AM	NOON	PM
	374	0	330
1	80	0	93
1	184	0	213
1	66	0	62

Westbound Approach

Lanes	AM	NOON	PM
1	166	0	90
1	215	0	148
1	53	0	29
	354	0	393

Northbound Approach

Lanes	1	2	1	
AM	924	70	833	63	AM
NOON	0	0	0	0	NOON
PM	1058	63	817	41	PM

CONTROL: Signalized

Total Ins & Outs

	AM	NOON	PM
North Leg	1001	0	1225
	1079	0	1000
West Leg	374	0	330
	330	0	368
East Leg	434	0	267
	354	0	393
South Leg	924	0	1058
	966	0	921

Total Volume Per Leg

	AM	NOON	PM
North Leg	2080	0	2225
West Leg	704	0	698
East Leg	788	0	660
South Leg	1890	0	1979

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Perris Blvd and Cottonwood Ave , Moreno Valley

Date: 9/13/2015
Day: Sunday
Project #: 15-6148-005
City: Moreno Valley

Peak Hour Summary	
AM Peak Hour	
NOON Peak Hour	100 PM
PM Peak Hour	

Southbound Approach (Perris Blvd)

Lanes	1	2	1		
AM	0	0	0	0	AM
NOON	96	650	122	976	NOON
PM	0	0	0	0	PM

Eastbound Approach (Cottonwood Ave)

Lanes	AM	NOON	PM
	0	325	0
1	0	80	0
1	0	125	0
1	0	51	0

Westbound Approach

Lanes	AM	NOON	PM
1	0	153	0
1	0	157	0
1	0	51	0
	0	301	0

Northbound Approach

Lanes	1	2	1	
AM	0	0	0	0	AM
NOON	752	72	743	54	NOON
PM	0	0	0	0	PM

CONTROL: Signalized

Count Periods	Start	End
AM		
NOON	11:00 AM	2:00 PM
PM		

Total Ins & Outs

	North Leg	East Leg	South Leg	West Leg
AM	0	0	0	0
NOON	868	976	752	869
PM	0	0	0	0

	East Leg	West Leg
AM	0	0
NOON	361	325
PM	0	0
AM	0	0
NOON	301	256
PM	0	0

Total Volume Per Leg

	North Leg	East Leg	South Leg	West Leg
AM	0	0	0	0
NOON	1844	662	1621	581
PM	0	0	0	0

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

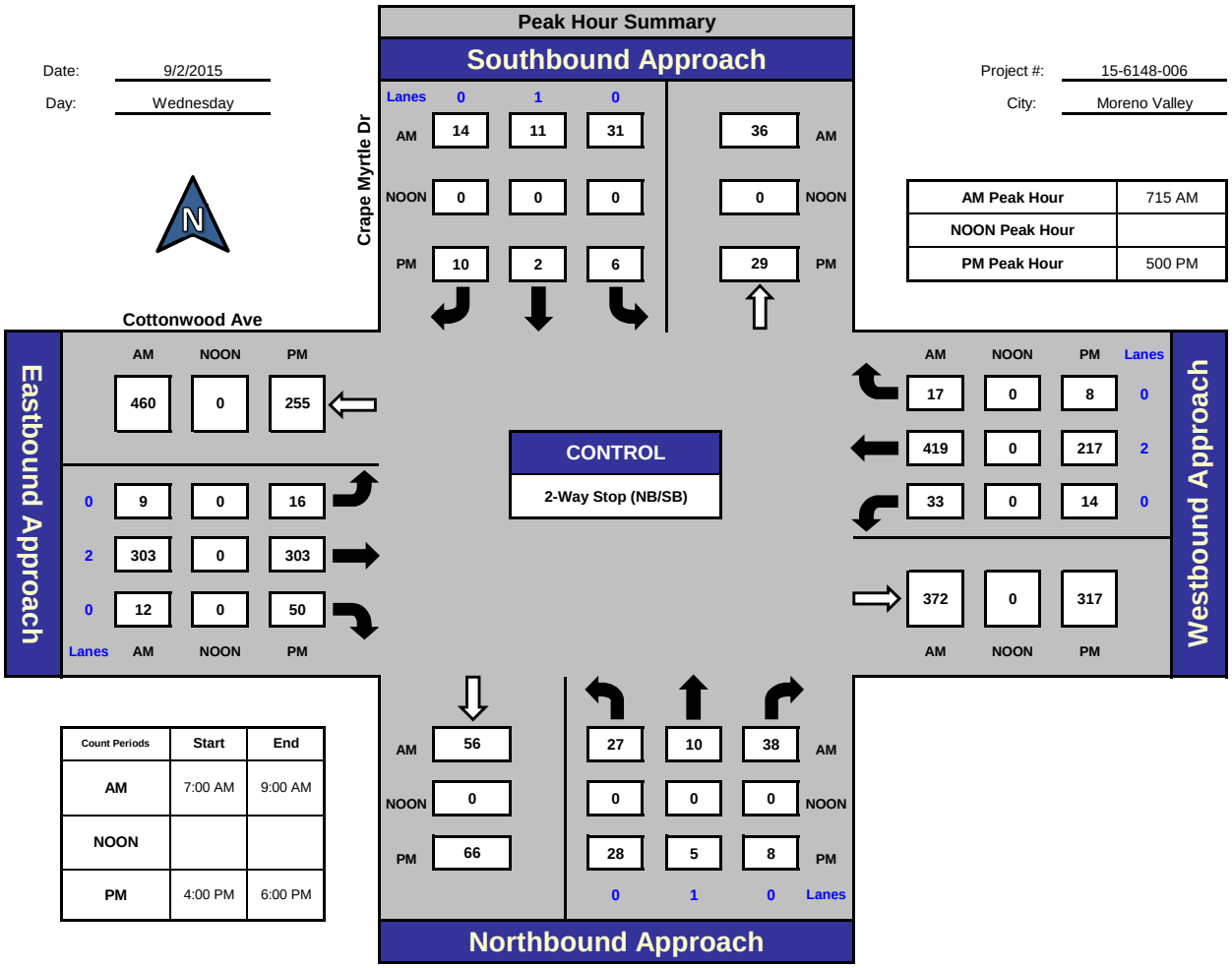
ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Crape Myrtle Dr and Cottonwood Ave , Moreno Valley

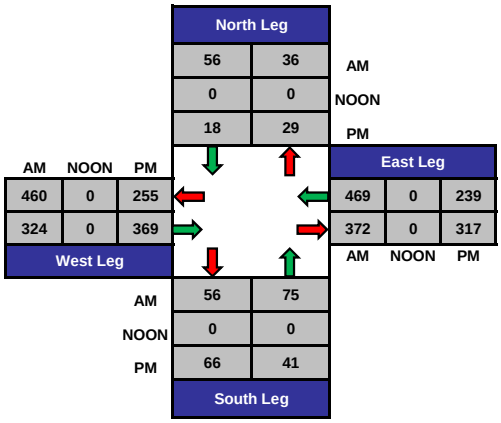
Date: 9/2/2015
Day: Wednesday
Project #: 15-6148-006
City: Moreno Valley



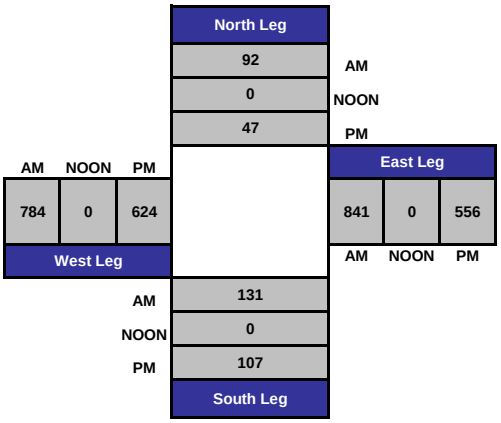
AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	500 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Crape Myrtle Dr and Cottonwood Ave , Moreno Valley

Date: 9/13/2015
Day: Sunday
Project #: 15-6148-006
City: Moreno Valley

AM Peak Hour	
NOON Peak Hour	100 PM
PM Peak Hour	

Peak Hour Summary

Southbound Approach

Lanes	0	1	0		
AM	0	0	0	0	AM
NOON	9	2	2	31	NOON
PM	0	0	0	0	PM

Crape Myrtle Dr

Cottonwood Ave

Eastbound Approach

	AM	NOON	PM
	0	269	0
0	0	23	0
2	0	258	0
0	0	42	0
Lanes	AM	NOON	PM

Westbound Approach

	AM	NOON	PM	Lanes
	0	4	0	0
	0	229	0	2
	0	3	0	0
	0	269	0	
	AM	NOON	PM	

CONTROL

2-Way Stop (NB/SB)

Count Periods	Start	End
AM		
NOON	11:00 AM	2:00 PM
PM		

Northbound Approach

AM	0	0	0	0	AM
NOON	47	31	4	9	NOON
PM	0	0	0	0	PM
		0	1	0	Lanes

Total Ins & Outs

	North Leg		
	0	0	AM
	13	31	NOON
	0	0	PM

West Leg				East Leg		
AM	NOON	PM		AM	NOON	PM
0	269	0		0	236	0
0	323	0		0	269	0

	South Leg	
AM	0	0
NOON	47	44
PM	0	0

Total Volume Per Leg

North Leg	
0	AM
44	NOON
0	PM

West Leg			East Leg		
AM	NOON	PM	AM	NOON	PM
0	592	0	0	505	0

South Leg	
AM	0
NOON	91
PM	0

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

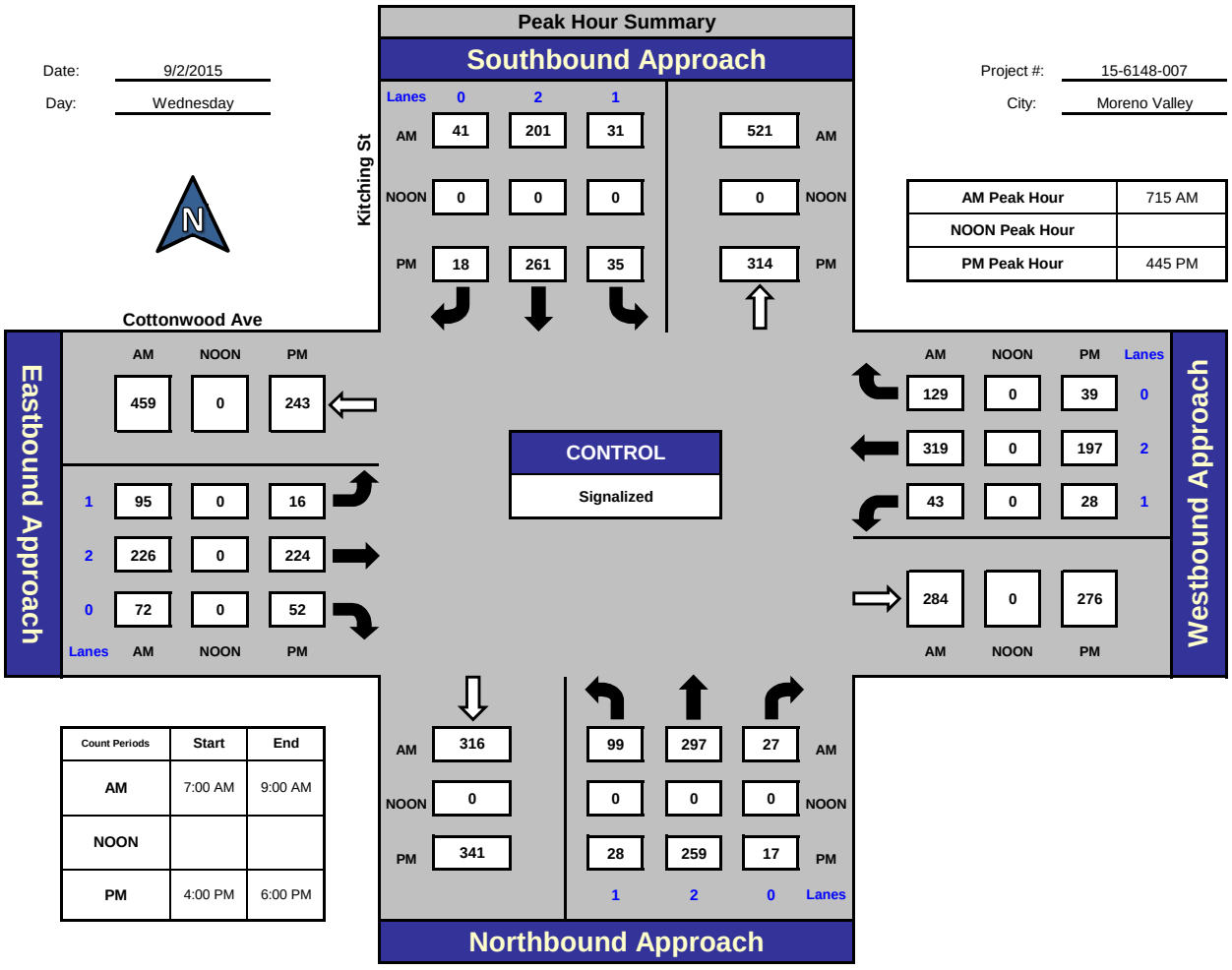
ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Kitching St and Cottonwood Ave , Moreno Valley

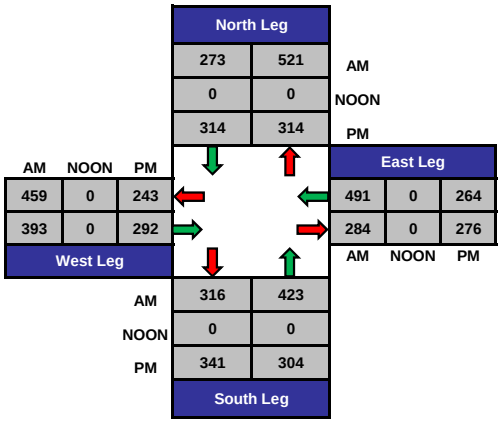
Date: 9/2/2015
Day: Wednesday
Project #: 15-6148-007
City: Moreno Valley



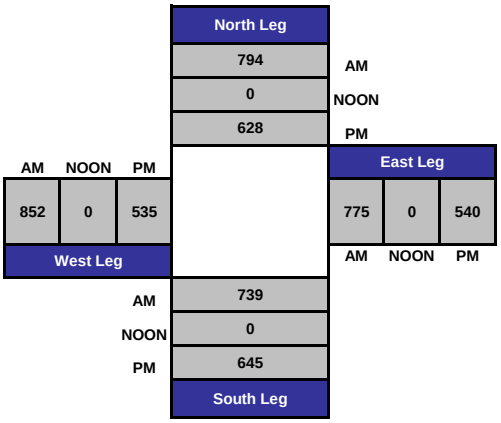
AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	445 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

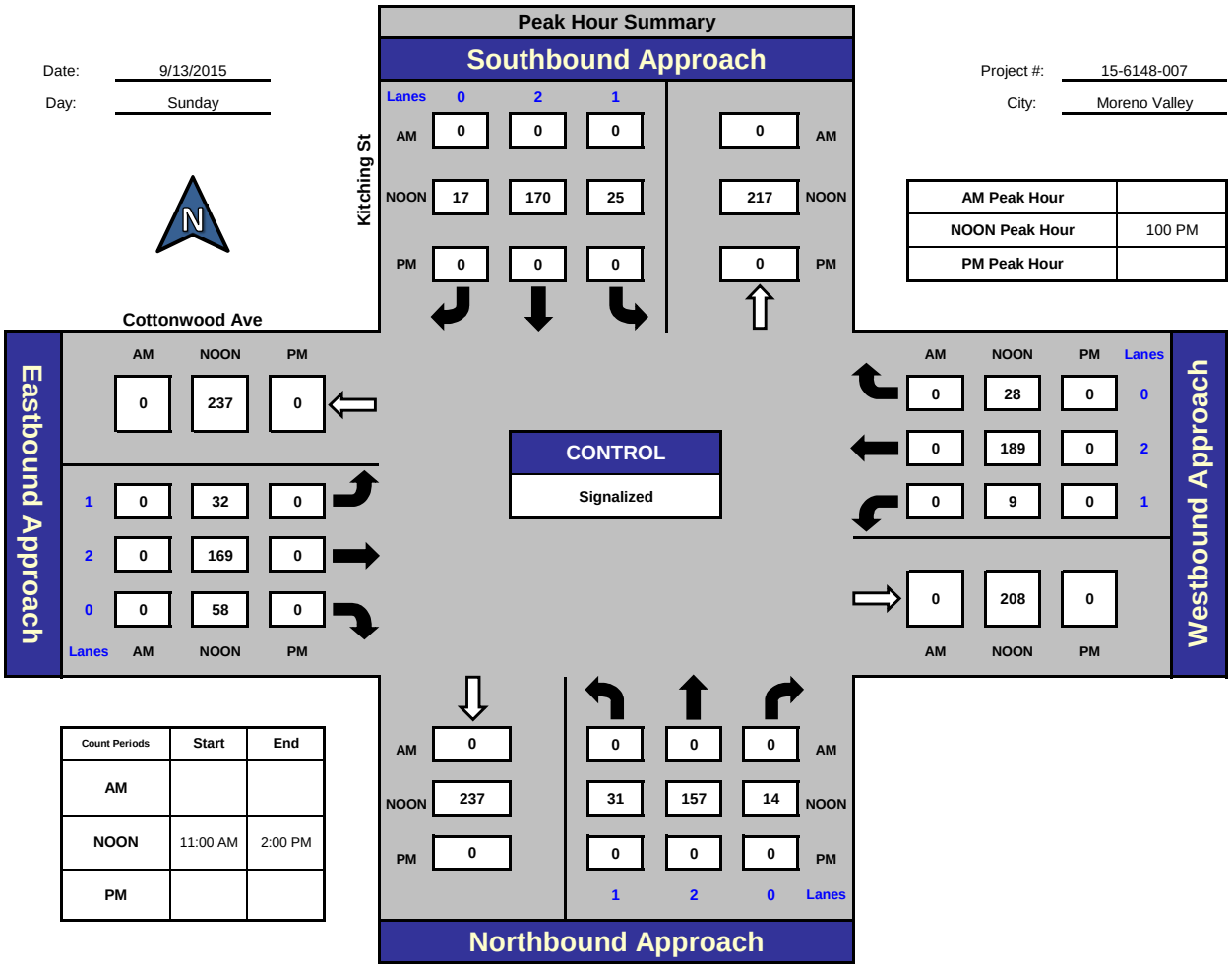
ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Kitching St and Cottonwood Ave , Moreno Valley

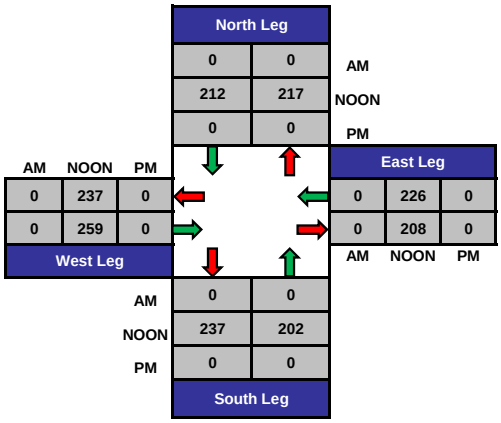
Date: 9/13/2015
Day: Sunday
Project #: 15-6148-007
City: Moreno Valley



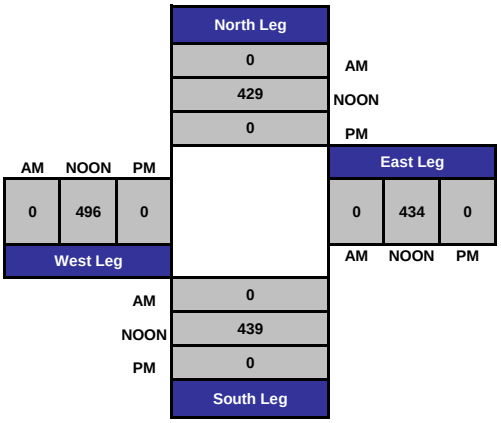
AM Peak Hour	
NOON Peak Hour	100 PM
PM Peak Hour	

Count Periods	Start	End
AM		
NOON	11:00 AM	2:00 PM
PM		

Total Ins & Outs



Total Volume Per Leg



Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

ITM Peak Hour Summary

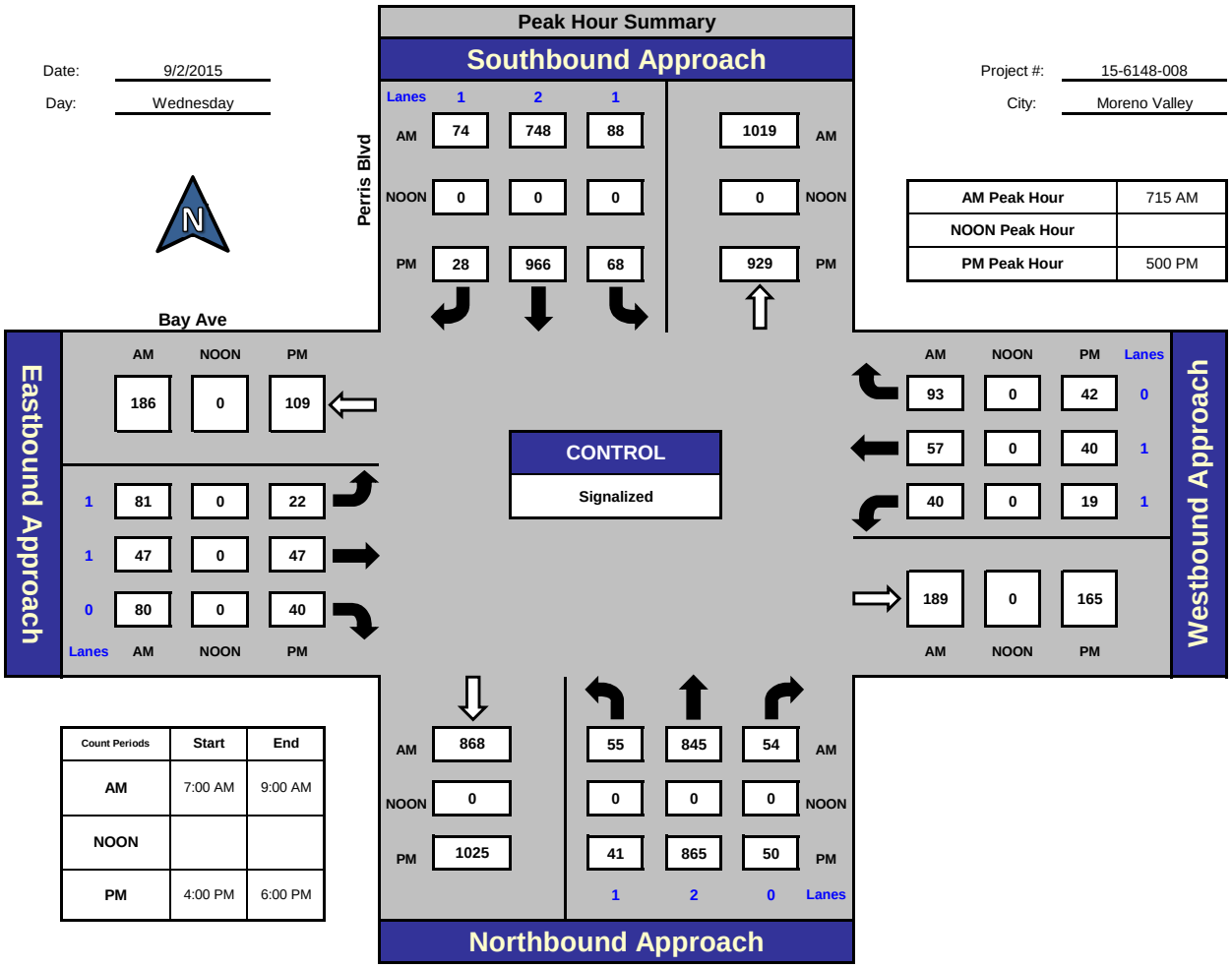
Prepared by:

National Data & Surveying Services

Perris Blvd and Bay Ave , Moreno Valley

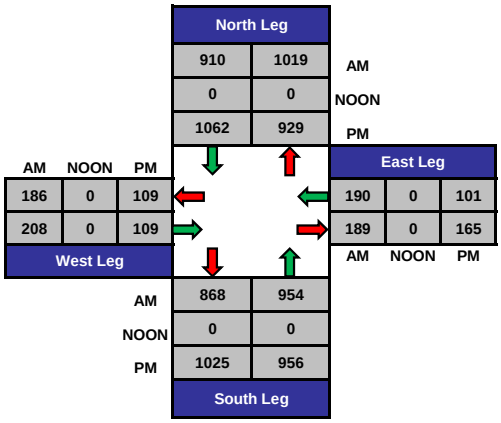
Date: 9/2/2015
Day: Wednesday
Project #: 15-6148-008
City: Moreno Valley

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	500 PM

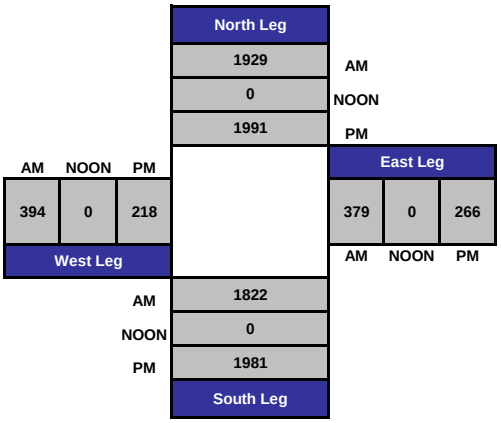


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Perris Blvd and Bay Ave , Moreno Valley

Date: 9/13/2015
Day: Sunday
Project #: 15-6148-008
City: Moreno Valley

Peak Hour Summary	
AM Peak Hour	
NOON Peak Hour	100 PM
PM Peak Hour	

Southbound Approach (Perris Blvd)

Lanes	1	2	1		
AM	0	0	0	0	AM
NOON	26	723	60	846	NOON
PM	0	0	0	0	PM

Eastbound Approach (Bay Ave)

Lanes	AM	NOON	PM
	0	87	0
1	0	21	0
1	0	37	0
0	0	27	0

Westbound Approach

Lanes	AM	NOON	PM
0	0	59	0
1	0	31	0
1	0	24	0
	0	132	0

CONTROL: Signalized

Count Periods	Start	End
AM		
NOON	11:00 AM	2:00 PM
PM		

Northbound Approach

AM	0	0	0	AM
NOON	30	766	35	NOON
PM	0	0	0	PM
Lanes	1	2	0	Lanes
AM	0			
NOON	774			
PM	0			

Total Ins & Outs

	AM	NOON	PM
North Leg	0	809	0
East Leg	0	846	0
South Leg	0	774	0
West Leg	0	831	0

	AM	NOON	PM
North Leg	0	809	0
East Leg	0	114	0
	0	132	0
West Leg	0	87	0
	0	85	0

Total Volume Per Leg

	AM	NOON	PM
North Leg	0	1655	0
East Leg	0	246	0
South Leg	0	1605	0
West Leg	0	172	0

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Perris Blvd and Alessandro Blvd , Moreno Valley

Date: 9/2/2015
Day: Wednesday
Project #: 15-6148-009
City: Moreno Valley

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	500 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs

	North Leg		
AM	833	1003	AM
NOON	0	0	NOON
PM	978	1050	PM

West Leg				East Leg		
AM	NOON	PM		AM	NOON	PM
1059	0	872		904	0	767
629	0	1436		683	0	1007

	South Leg	
AM	720	1099
NOON	0	0
PM	1150	898

Total Volume Per Leg

	North Leg	
AM	1836	AM
NOON	0	NOON
PM	2028	PM

West Leg			East Leg		
AM	NOON	PM	AM	NOON	PM
1688	0	2308	1587	0	1774

	South Leg
AM	1819
NOON	0
PM	2048

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Perris Blvd and Alessandro Blvd , Moreno Valley

Date: 9/13/2015
Day: Sunday
Project #: 15-6148-009
City: Moreno Valley

AM Peak Hour	
NOON Peak Hour	100 PM
PM Peak Hour	

Peak Hour Summary

Southbound Approach

Lanes	1	2	1		
AM	0	0	0	0	AM
NOON	153	475	112	937	NOON
PM	0	0	0	0	PM

Perris Blvd

Alessandro Blvd

Eastbound Approach

Lanes	AM	NOON	PM
	0	797	0
1	0	329	0
2	0	396	0
1	0	206	0
Lanes	AM	NOON	PM

CONTROL

Signalized

Westbound Approach

AM	NOON	PM	Lanes
0	87	0	0
0	370	0	3
0	157	0	1
0	576	0	
AM	NOON	PM	

Count Periods	Start	End
AM		
NOON	11:00 AM	2:00 PM
PM		

Northbound Approach

AM	0	0	0	0	AM
NOON	838	274	521	68	NOON
PM	0	0	0	0	PM
		1	2	1	Lanes

Total Ins & Outs

	North Leg		
AM	0	0	AM
NOON	740	937	NOON
PM	0	0	PM

West Leg			East Leg		
AM	NOON	PM	AM	NOON	PM
0	797	0	0	614	0
0	931	0	0	576	0

	South Leg		
AM	0	0	AM
NOON	838	863	NOON
PM	0	0	PM

Total Volume Per Leg

	North Leg	
AM	0	AM
NOON	1677	NOON
PM	0	PM

West Leg			East Leg		
AM	NOON	PM	AM	NOON	PM
0	1728	0	0	1190	0

	South Leg	
AM	0	AM
NOON	1701	NOON
PM	0	PM

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Dwy 1 into Church and Cottonwood Ave , Moreno Valley

Date: 9/2/2015
Day: Wednesday

Project #: 15-6148-010
City: Moreno Valley

AM Peak Hour	730 AM
NOON Peak Hour	
PM Peak Hour	500 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Peak Hour Summary

Southbound Approach (Dwy 1 into Church)

Lanes	0	0	0		
AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	0	0	0	0	PM

Eastbound Approach (Cottonwood Ave)

Lanes	AM	NOON	PM
	452	0	267
0	0	0	0
1	318	0	381
0	27	0	12

Westbound Approach

Lanes	AM	NOON	PM
0	0	0	0
1	449	0	263
1	9	0	0
	319	0	385

CONTROL: No Control

Northbound Approach

Lanes	0	1	0	
AM	36	3	0	1	AM
NOON	0	0	0	0	NOON
PM	12	4	0	4	PM

Total Ins & Outs

	AM	NOON	PM
North Leg	0	0	0
	0	0	0
	0	0	0
West Leg	452	0	267
	345	0	393
East Leg	458	0	263
	319	0	385
South Leg	36	0	12
	4	0	8

Total Volume Per Leg

	AM	NOON	PM
North Leg	0	0	0
West Leg	797	0	660
East Leg	777	0	648
South Leg	40	0	20

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Dwy 1 into Church and Cottonwood Ave , Moreno Valley

Date: 9/13/2015
Day: Sunday
Project #: 15-6148-010
City: Moreno Valley

AM Peak Hour	
NOON Peak Hour	1100 AM
PM Peak Hour	

Count Periods	Start	End
AM		
NOON	11:00 AM	2:00 PM
PM		

Peak Hour Summary

Southbound Approach (Dwy 1 into Church)

Lanes	0	0	0		
AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	0	0	0	0	PM

Eastbound Approach (Cottonwood Ave)

	AM	NOON	PM
	0	340	0
0	0	0	0
1	0	222	0
0	0	121	0
Lanes	AM	NOON	PM

Westbound Approach

	AM	NOON	PM	Lanes
	0	0	0	0
	0	293	0	1
	0	19	0	1
	0	261	0	
	AM	NOON	PM	

CONTROL: No Control

Northbound Approach

AM	0	0	0	0	AM
NOON	140	47	0	39	NOON
PM	0	0	0	0	PM
		0	1	0	Lanes

Total Ins & Outs

	AM	NOON	PM
North Leg	0	0	0
East Leg	0	0	0
West Leg	0	0	0
South Leg	0	140	0
East Leg	0	312	0
West Leg	0	343	0
South Leg	0	86	0

Total Volume Per Leg

	AM	NOON	PM
North Leg	0	0	0
East Leg	0	573	0
West Leg	0	683	0
South Leg	0	226	0

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

ITM Peak Hour Summary

Prepared by:

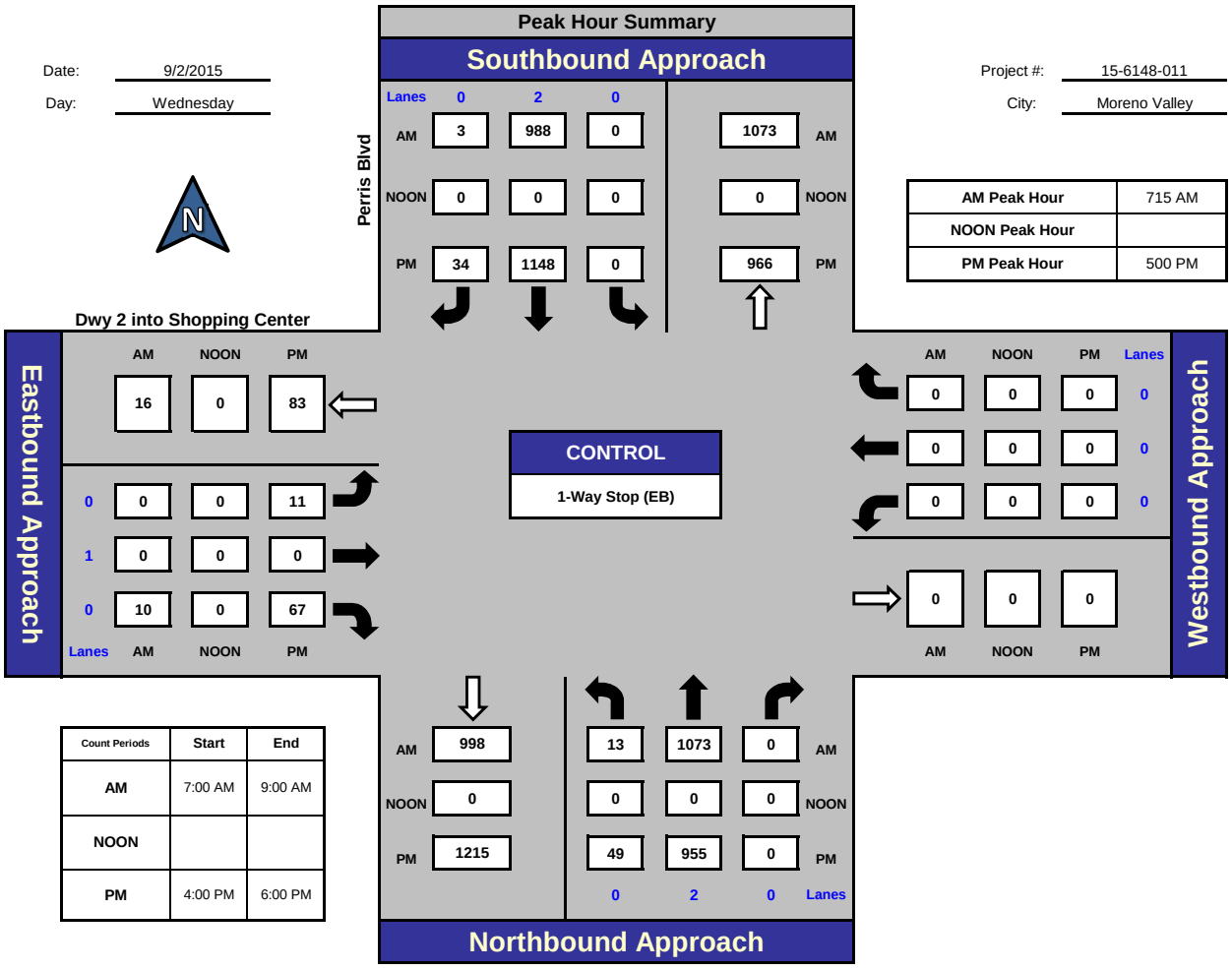
National Data & Surveying Services

Perris Blvd and Dwy 2 into Shopping Center , Moreno Valley

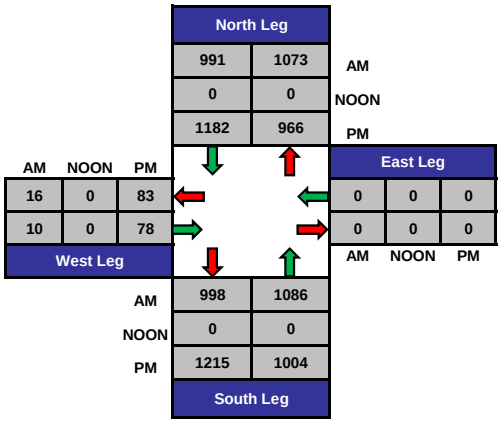
Date: 9/2/2015
Day: Wednesday
Project #: 15-6148-011
City: Moreno Valley

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	500 PM

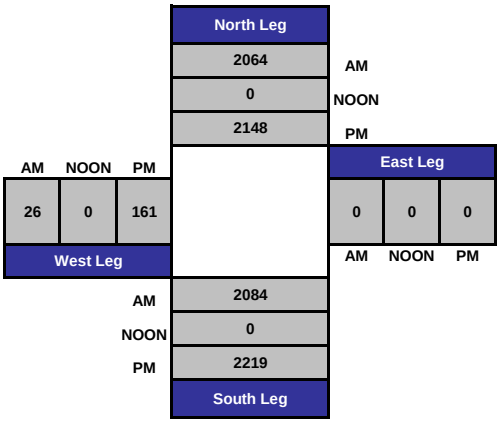
Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM



Total Ins & Outs



Total Volume Per Leg



Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Perris Blvd and Dwy 2 into Shopping Center , Moreno Valley

Date: 9/13/2015
Day: Sunday
Project #: 15-6148-011
City: Moreno Valley

AM Peak Hour	
NOON Peak Hour	100 PM
PM Peak Hour	

Peak Hour Summary

Southbound Approach

Lanes	0	2	0	
AM	0	0	0	0 AM
NOON	34	796	0	929 NOON
PM	0	0	0	0 PM

Perris Blvd

Dwy 2 into Shopping Center

Eastbound Approach

Lanes	AM	NOON	PM
	0	97	0
0	0	19	0
1	0	0	0
0	0	71	0

Westbound Approach

Lanes	AM	NOON	PM
0	0	0	0
0	0	0	0
0	0	0	0
	0	0	0

CONTROL

1-Way Stop (EB)

Count Periods	Start	End
AM		
NOON	11:00 AM	2:00 PM
PM		

Northbound Approach

Lanes	0	2	0	
AM	0	0	0	0 AM
NOON	867	63	910	0 NOON
PM	0	0	0	0 PM

Total Ins & Outs

	AM	NOON	PM
North Leg	0	830	0
	0	929	0
West Leg	0	97	0
	0	90	0
East Leg	0	0	0
	0	0	0
South Leg	0	867	0
	0	973	0

Total Volume Per Leg

	AM	NOON	PM
North Leg	0	1759	0
West Leg	0	187	0
East Leg	0	0	0
South Leg	0	1840	0

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

	Start:	End:
AM	7:00	9:00
NOON		
PM	16:00	18:00

PROJECT#: 15-6148-005
N/S Street: Perris Blvd
E/W Street: Cottonwood Ave
DATE: 9/2/2015 DAY: Wednesday
CITY: Moreno Valley

AM	1
NOON	0
PM	5

0	AM
0	NOON
4	PM

AM	NOON	PM
4	0	6

NORTH LEG

AM	NOON	PM
3	0	1

WEST LEG

EAST LEG

1	0	5
AM	NOON	PM

4	0	3
AM	NOON	PM

SOUTH LEG

AM	8
NOON	0
PM	1

0	AM
0	NOON
2	PM

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Bicycle Count Peak Hour

	Start:	End:
AM	7:00	9:00
NOON		
PM	16:00	18:00

PROJECT#: 15-6148-005
N/S Street: Perris Blvd
E/W Street: Cottonwood Ave
DATE: 9/2/2015
CITY: Moreno Valley

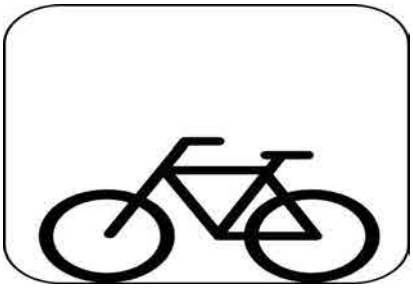
DAY: Wednesday

AM	0	1	0
NOON	0	0	0
PM	0	3	0

NORTH LEG

AM	NOON	PM
0	0	0
0	0	3
0	0	0

WEST LEG



EAST LEG

AM	NOON	PM
0	0	0
1	0	0
0	0	0

SOUTH LEG

AM	0	2	0
NOON	0	0	0
PM	0	2	0

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 15-6148-005
N/S Street: Perris Blvd
E/W Street: Cottonwood Ave
DATE: 9/2/2015 DAY: Wednesday
CITY: Moreno Valley

A M

PEDESTRIANS

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	2	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	1
7:30 AM	0	0	3	0	0	0	0	0
7:45 AM	0	0	4	0	1	2	0	1
8:00 AM	0	0	0	0	0	0	0	1
8:15 AM	0	0	2	0	0	0	1	2
8:30 AM	1	0	2	0	3	1	0	0
8:45 AM	0	1	1	0	1	2	0	0
TOTALS	1	1	14	0	5	5	1	5

BIKES

TIME	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	2	0	0	1	0	0	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	2	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS	0	2	0	0	1	0	0	0	0	0	3	0

P M

PEDESTRIANS

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
4:00 PM	0	0	1	0	0	0	0	0
4:15 PM	2	1	0	0	1	0	1	0
4:30 PM	1	3	0	0	2	0	1	0
4:45 PM	1	0	1	1	0	1	2	3
5:00 PM	1	0	0	1	0	0	1	3
5:15 PM	0	0	0	0	0	0	0	0
5:30 PM	0	2	0	0	0	0	3	0
5:45 PM	1	0	0	0	1	1	0	0
TOTALS	6	6	2	2	4	2	8	6

BIKES

TIME	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
4:00 PM	0	1	0	0	1	0	0	2	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	1	0	0	0	0
4:30 PM	0	1	0	0	1	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	1	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	1	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	2	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	1	0	0	3	0	0	0	0
TOTALS	0	2	0	0	7	0	0	6	0	0	0	0

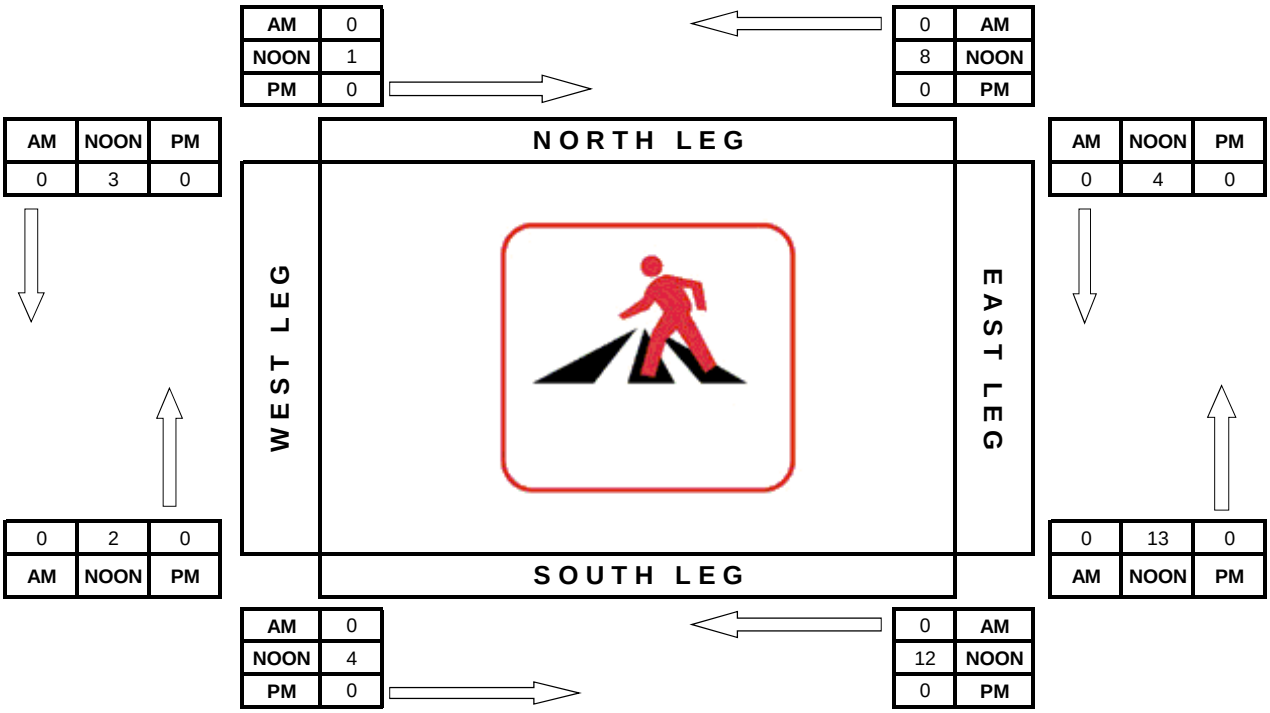
Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

	Start:	End:
AM		
NOON	11:00	14:00
PM		

PROJECT#: 15-6148-005
N/S Street: Perris Blvd
E/W Street: Cottonwood Ave
DATE: 9/13/2015 DAY: Sunday
CITY: Moreno Valley



Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Bicycle Count Peak Hour

PROJECT#: 15-6148-005
N/S Street: Perris Blvd
E/W Street: Cottonwood Ave
DATE: 9/13/2015
CITY: Moreno Valley

DAY: Sunday

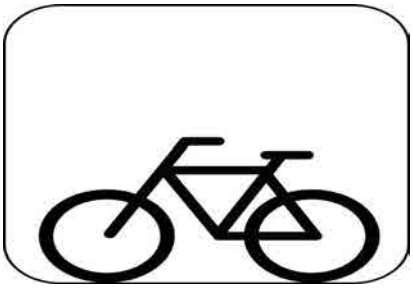
	Start:	End:
AM		
NOON	11:00	14:00
PM		

AM	0	0	0
NOON	0	4	0
PM	0	0	0

NORTH LEG

AM	NOON	PM
0	0	0
0	0	0
0	0	0

WEST LEG



AM	NOON	PM
0	0	0
0	0	0
0	1	0

EAST LEG

SOUTH LEG

AM	0	0	0
NOON	0	1	0
PM	0	0	0

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 15-6148-005
N/S Street: Perris Blvd
E/W Street: Cottonwood Ave
DATE: 9/13/2015
CITY: Moreno Valley

DAY: Sunday

N O O N

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
11:00 AM	0	0	1	5	0	0	1	1
11:15 AM	1	0	5	1	0	1	1	1
11:30 AM	0	0	5	0	0	3	0	0
11:45 AM	2	1	0	0	0	1	0	0
12:00 PM	1	0	1	0	0	0	0	0
12:15 PM	0	0	0	0	1	0	0	0
12:30 PM	0	0	0	3	1	0	0	0
12:45 PM	0	0	0	0	1	0	0	0
1:00 PM	0	2	1	0	4	1	0	0
1:15 PM	0	5	1	12	6	0	2	0
1:30 PM	1	0	2	0	0	3	0	3
1:45 PM	0	1	0	0	3	0	0	0
TOTALS	5	9	16	21	16	9	4	5

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
11:00 AM	0	1	0	1	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	1	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	1	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	1	0	0	0	0	1	0	0
1:15 PM	0	1	0	0	1	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	1	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	1	0	0	0	0	0	0	0
TOTALS	0	2	0	1	6	0	0	0	0	1	0	0

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Prepared by NDS/ATD

VOLUME

Perris Blvd Bet. Eucalyptus Ave & Cottonwood Ave

Day: Wednesday
Date: 9/2/2015

City: Moreno Valley
Project #: CA15_6149_001

DAILY TOTALS	NB	SB	EB	WB	Total
	15,554	15,665	0	0	31,219

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00	31		47						78		12:00	210		226						436	
00:15	17		44						61		12:15	261		239						500	
00:30	24		31						55		12:30	239		226						465	
00:45	21	93	23	145					44	238	12:45	226	936	221	912					447	1848
01:00	14		33						47		13:00	254		234						488	
01:15	15		30						45		13:15	233		231						464	
01:30	25		23						48		13:30	229		248						477	
01:45	21	75	24	110					45	185	13:45	268	984	209	922					477	1906
02:00	15		25						40		14:00	215		283						498	
02:15	20		23						43		14:15	271		282						553	
02:30	23		26						49		14:30	220		268						488	
02:45	33	91	25	99					58	190	14:45	257	963	288	1121					545	2084
03:00	45		19						64		15:00	267		257						524	
03:15	31		23						54		15:15	248		278						526	
03:30	50		25						75		15:30	238		239						477	
03:45	56	182	40	107					96	289	15:45	232	985	243	1017					475	2002
04:00	89		51						140		16:00	239		300						539	
04:15	92		72						164		16:15	242		267						509	
04:30	124		52						176		16:30	257		249						506	
04:45	134	439	42	217					176	656	16:45	251	989	264	1080					515	2069
05:00	142		63						205		17:00	262		317						579	
05:15	154		86						240		17:15	226		328						554	
05:30	116		112						228		17:30	229		309						538	
05:45	145	557	81	342					226	899	17:45	264	981	296	1250					560	2231
06:00	183		76						259		18:00	229		293						522	
06:15	176		129						305		18:15	197		250						447	
06:30	197		160						357		18:30	215		235						450	
06:45	221	777	147	512					368	1289	18:45	208	849	251	1029					459	1878
07:00	213		207						420		19:00	200		243						443	
07:15	278		231						509		19:15	166		226						392	
07:30	251		321						572		19:30	149		231						380	
07:45	347	1089	220	979					567	2068	19:45	131	646	184	884					315	1530
08:00	249		199						448		20:00	156		200						356	
08:15	182		147						329		20:15	142		219						361	
08:30	229		186						415		20:30	150		164						314	
08:45	211	871	139	671					350	1542	20:45	111	559	145	728					256	1287
09:00	168		193						361		21:00	147		149						296	
09:15	197		188						385		21:15	113		157						270	
09:30	194		206						400		21:30	98		134						232	
09:45	189	748	168	755					357	1503	21:45	102	460	114	554					216	1014
10:00	204		182						386		22:00	79		114						193	
10:15	229		173						402		22:15	73		109						182	
10:30	212		173						385		22:30	101		103						204	
10:45	223	868	188	716					411	1584	22:45	84	337	67	393					151	730
11:00	230		175						405		23:00	57		81						138	
11:15	196		227						423		23:15	40		72						112	
11:30	220		218						438		23:30	53		66						119	
11:45	248	894	224	844					472	1738	23:45	31	181	59	278					90	459
TOTALS		6684		5497						12181	TOTALS		8870		10168						19038
SPLIT %		54.9%		45.1%						39.0%	SPLIT %		46.6%		53.4%						61.0%

DAILY TOTALS	NB	SB	EB	WB	Total
	15,554	15,665	0	0	31,219

AM Peak Hour	07:15	07:00			07:15	PM Peak Hour	14:15	17:00			17:00
AM Pk Volume	1125	979			2096	PM Pk Volume	1015	1250			2231
Pk Hr Factor	0.811	0.762			0.916	Pk Hr Factor	0.936	0.953			0.963
7 - 9 Volume	1960	1650	0	0	3610	4 - 6 Volume	1970	2330	0	0	4300
7 - 9 Peak Hour	07:15	07:00			07:15	4 - 6 Peak Hour	16:15	17:00			17:00
7 - 9 Pk Volume	1125	979	0	0	2096	4 - 6 PK Volume	1012	1250	0	0	2231
Pk Hr Factor	0.811	0.762	0.000	0.000	0.916	Pk Hr Factor	0.966	0.953	0.000	0.000	0.963

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Prepared by NDS/ATD

VOLUME

Perris Blvd Bet. Cottonwood Ave & Alessandro Blvd

Day: Wednesday
Date: 9/2/2015

City: Moreno Valley
Project #: CA15_6149_002

DAILY TOTALS	NB	SB	EB	WB	Total
	13,784	13,269	0	0	27,053

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00	28		41						69		12:00	208		206						414	
00:15	12		34						46		12:15	218		210						428	
00:30	21		22						43		12:30	217		206						423	
00:45	17	78	23	120					40	198	12:45	172	815	237	859					409	1674
01:00	13		28						41		13:00	245		215						460	
01:15	17		23						40		13:15	208		195						403	
01:30	25		17						42		13:30	202		218						420	
01:45	15	70	15	83					30	153	13:45	230	885	183	811					413	1696
02:00	12		16						28		14:00	196		215						411	
02:15	15		25						40		14:15	219		240						459	
02:30	21		19						40		14:30	185		212						397	
02:45	25	73	24	84					49	157	14:45	286	886	241	908					527	1794
03:00	32		17						49		15:00	249		236						485	
03:15	22		18						40		15:15	219		222						441	
03:30	42		23						65		15:30	208		212						420	
03:45	47	143	37	95					84	238	15:45	225	901	210	880					435	1781
04:00	64		43						107		16:00	222		226						448	
04:15	67		62						129		16:15	233		229						462	
04:30	100		46						146		16:30	202		233						435	
04:45	101	332	36	187					137	519	16:45	238	895	211	899					449	1794
05:00	114		58						172		17:00	246		262						508	
05:15	114		84						198		17:15	226		262						488	
05:30	84		102						186		17:30	214		254						468	
05:45	117	429	77	321					194	750	17:45	254	940	243	1021					497	1961
06:00	153		77						230		18:00	218		254						472	
06:15	139		109						248		18:15	189		210						399	
06:30	153		122						275		18:30	203		187						390	
06:45	171	616	144	452					315	1068	18:45	203	813	175	826					378	1639
07:00	186		172						358		19:00	181		200						381	
07:15	244		195						439		19:15	148		183						331	
07:30	247		254						501		19:30	139		189						328	
07:45	312	989	197	818					509	1807	19:45	127	595	156	728					283	1323
08:00	222		175						397		20:00	126		151						277	
08:15	163		150						313		20:15	128		167						295	
08:30	217		170						387		20:30	129		139						268	
08:45	173	775	127	622					300	1397	20:45	92	475	113	570					205	1045
09:00	170		159						329		21:00	114		127						241	
09:15	152		140						292		21:15	86		130						216	
09:30	170		174						344		21:30	85		103						188	
09:45	154	646	134	607					288	1253	21:45	86	371	87	447					173	818
10:00	195		158						353		22:00	74		100						174	
10:15	200		159						359		22:15	57		97						154	
10:30	194		151						345		22:30	92		80						172	
10:45	183	772	176	644					359	1416	22:45	80	303	54	331					134	634
11:00	222		178						400		23:00	55		59						114	
11:15	175		192						367		23:15	34		62						96	
11:30	223		187						410		23:30	46		53						99	
11:45	204	824	180	737					384	1561	23:45	23	158	45	219					68	377
TOTALS		5747		4770						10517	TOTALS		8037		8499						16536
SPLIT %		54.6%		45.4%						38.9%	SPLIT %		48.6%		51.4%						61.1%

DAILY TOTALS	NB	SB	EB	WB	Total
	13,784	13,269	0	0	27,053

AM Peak Hour	07:15	07:15			07:15	PM Peak Hour	14:45	17:00			17:00
AM Pk Volume	1025	821			1846	PM Pk Volume	962	1021			1961
Pk Hr Factor	0.821	0.808			0.907	Pk Hr Factor	0.841	0.974			0.965
7 - 9 Volume	1764	1440	0	0	3204	4 - 6 Volume	1835	1920	0	0	3755
7 - 9 Peak Hour	07:15	07:15			07:15	4 - 6 Peak Hour	17:00	17:00			17:00
7 - 9 Pk Volume	1025	821	0	0	1846	4 - 6 PK Volume	940	1021	0	0	1961
Pk Hr Factor	0.821	0.808	0.000	0.000	0.907	Pk Hr Factor	0.925	0.974	0.000	0.000	0.965

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Prepared by NDS/ATD

VOLUME

Cottonwood Ave Bet. Indian St & Perris Blvd

Day: Wednesday
Date: 9/2/2015

City: Moreno Valley
Project #: CA15_6149_003

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	4,166	4,244	8,410

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			6		7		13		12:00			57		58		115	
00:15			8		4		12		12:15			66		83		149	
00:30			4		6		10		12:30			70		80		150	
00:45			10	28	3	20	13	48	12:45			80	273	96	317	176	590
01:00			8		4		12		13:00			61		70		131	
01:15			3		2		5		13:15			69		55		124	
01:30			3		6		9		13:30			61		60		121	
01:45			3	17	4	16	7	33	13:45			83	274	61	246	144	520
02:00			2		5		7		14:00			82		73		155	
02:15			2		4		6		14:15			97		104		201	
02:30			1		1		2		14:30			81		79		160	
02:45			7	12	3	13	10	25	14:45			61	321	85	341	146	662
03:00			2		2		4		15:00			62		95		157	
03:15			3		3		6		15:15			47		70		117	
03:30			5		5		10		15:30			77		56		133	
03:45			6	16	4	14	10	30	15:45			61	247	56	277	117	524
04:00			7		10		17		16:00			77		64		141	
04:15			14		12		26		16:15			68		59		127	
04:30			12		15		27		16:30			82		49		131	
04:45			10	43	16	53	26	96	16:45			75	302	71	243	146	545
05:00			12		10		22		17:00			96		89		185	
05:15			17		8		25		17:15			92		70		162	
05:30			17		11		28		17:30			100		83		183	
05:45			19	65	17	46	36	111	17:45			87	375	84	326	171	701
06:00			27		16		43		18:00			91		61		152	
06:15			18		21		39		18:15			72		62		134	
06:30			35		32		67		18:30			84		75		159	
06:45			39	119	34	103	73	222	18:45			93	340	69	267	162	607
07:00			39		45		84		19:00			72		64		136	
07:15			63		62		125		19:15			56		60		116	
07:30			103		90		193		19:30			64		63		127	
07:45			70	275	103	300	173	575	19:45			58	250	52	239	110	489
08:00			42		75		117		20:00			49		52		101	
08:15			43		46		89		20:15			38		49		87	
08:30			43		55		98		20:30			43		43		86	
08:45			65	193	57	233	122	426	20:45			44	174	52	196	96	370
09:00			51		45		96		21:00			28		51		79	
09:15			42		49		91		21:15			36		38		74	
09:30			45		54		99		21:30			29		32		61	
09:45			44	182	40	188	84	370	21:45			21	114	22	143	43	257
10:00			49		53		102		22:00			31		30		61	
10:15			52		40		92		22:15			23		16		39	
10:30			49		56		105		22:30			18		17		35	
10:45			47	197	114	263	161	460	22:45			25	97	20	83	45	180
11:00			41		75		116		23:00			13		26		39	
11:15			60		79		139		23:15			8		17		25	
11:30			51		55		106		23:30			9		8		17	
11:45			57	209	49	258	106	467	23:45			13	43	8	59	21	102
TOTALS				1356		1507		2863	TOTALS				2810		2737		5547
SPLIT %				47.4%		52.6%		34.0%	SPLIT %				50.7%		49.3%		66.0%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	4,166	4,244	8,410

AM Peak Hour			07:15	07:15	07:15	PM Peak Hour		17:00	14:15	17:00
AM Pk Volume			278	330	608	PM Pk Volume		375	363	701
Pk Hr Factor			0.675	0.801	0.788	Pk Hr Factor		0.938	0.873	0.947
7 - 9 Volume	0	0	468	533	1001	4 - 6 Volume	0	677	569	1246
7 - 9 Peak Hour			07:15	07:15	07:15	4 - 6 Peak Hour		17:00	17:00	17:00
7 - 9 Pk Volume	0	0	278	330	608	4 - 6 Pk Volume	0	375	326	701
Pk Hr Factor	0.000	0.000	0.675	0.801	0.788	Pk Hr Factor	0.000	0.938	0.916	0.947

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Prepared by NDS/ATD

VOLUME

Cottonwood Ave Bet. Perris Blvd & Kitching St

Day: Wednesday
Date: 9/2/2015

City: Moreno Valley
Project #: CA15_6149_004

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	4,283	4,011	8,294

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			7		6		13		12:00			62		60		122	
00:15			11		4		15		12:15			56		74		130	
00:30			7		3		10		12:30			61		52		113	
00:45			4	29	3	16	7	45	12:45			86	265	59	245	145	510
01:00			8		4		12		13:00			65		44		109	
01:15			2		1		3		13:15			55		40		95	
01:30			5		4		9		13:30			77		63		140	
01:45			5	20	3	12	8	32	13:45			73	270	66	213	139	483
02:00			5		3		8		14:00			82		54		136	
02:15			2		10		12		14:15			81		89		170	
02:30			2		2		4		14:30			80		63		143	
02:45			5	14	3	18	8	32	14:45			75	318	69	275	144	593
03:00			2		5		7		15:00			70		72		142	
03:15			1		8		9		15:15			68		55		123	
03:30			4		5		9		15:30			71		46		117	
03:45			5	12	10	28	15	40	15:45			57	266	50	223	107	489
04:00			1		21		22		16:00			78		68		146	
04:15			11		20		31		16:15			68		55		123	
04:30			8		16		24		16:30			67		73		140	
04:45			6	26	26	83	32	109	16:45			86	299	63	259	149	558
05:00			10		27		37		17:00			97		64		161	
05:15			3		24		27		17:15			80		47		127	
05:30			10		28		38		17:30			95		66		161	
05:45			13	36	21	100	34	136	17:45			105	377	67	244	172	621
06:00			13		33		46		18:00			87		47		134	
06:15			18		46		64		18:15			85		59		144	
06:30			33		50		83		18:30			74		57		131	
06:45			31	95	57	186	88	281	18:45			85	331	48	211	133	542
07:00			41		79		120		19:00			81		46		127	
07:15			71		84		155		19:15			58		48		106	
07:30			113		107		220		19:30			56		47		103	
07:45			70	295	144	414	214	709	19:45			70	265	45	186	115	451
08:00			48		98		146		20:00			60		45		105	
08:15			40		47		87		20:15			63		46		109	
08:30			51		67		118		20:30			52		32		84	
08:45			45	184	74	286	119	470	20:45			58	233	28	151	86	384
09:00			43		51		94		21:00			71		30		101	
09:15			35		55		90		21:15			47		36		83	
09:30			34		60		94		21:30			39		23		62	
09:45			47	159	49	215	96	374	21:45			30	187	16	105	46	292
10:00			39		51		90		22:00			38		20		58	
10:15			50		43		93		22:15			26		16		42	
10:30			54		59		113		22:30			17		12		29	
10:45			55	198	62	215	117	413	22:45			37	118	20	68	57	186
11:00			59		56		115		23:00			14		11		25	
11:15			51		60		111		23:15			11		10		21	
11:30			53		57		110		23:30			11		4		15	
11:45			73	236	53	226	126	462	23:45			14	50	7	32	21	82
TOTALS				1304		1799		3103	TOTALS				2979		2212		5191
SPLIT %				42.0%		58.0%		37.4%	SPLIT %				57.4%		42.6%		62.6%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	4,283	4,011	8,294

AM Peak Hour			07:15	07:15	07:15	PM Peak Hour			17:00	14:15	17:00
AM Pk Volume			302	433	735	PM Pk Volume			377	293	621
Pk Hr Factor			0.668	0.752	0.835	Pk Hr Factor			0.898	0.823	0.903
7 - 9 Volume	0	0	479	700	1179	4 - 6 Volume	0	0	676	503	1179
7 - 9 Peak Hour			07:15	07:15	07:15	4 - 6 Peak Hour			17:00	16:00	17:00
7 - 9 Pk Volume	0	0	302	433	735	4 - 6 Pk Volume	0	0	377	259	621
Pk Hr Factor	0.000	0.000	0.668	0.752	0.835	Pk Hr Factor	0.000	0.000	0.898	0.887	0.903

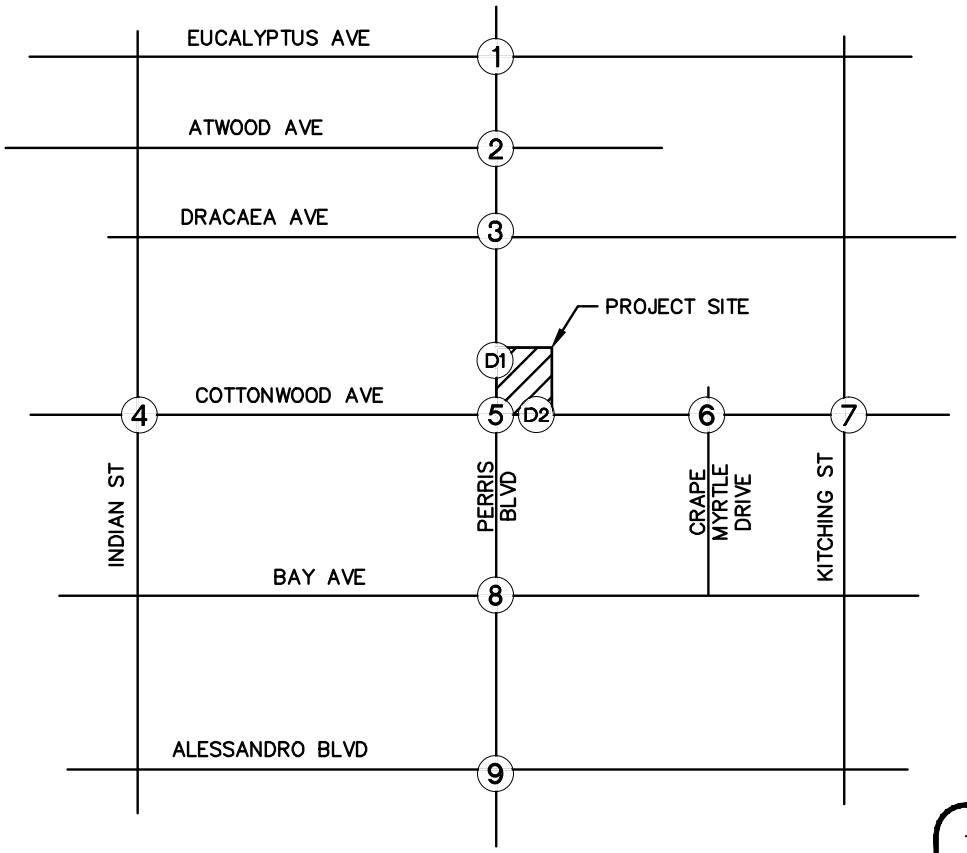
Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

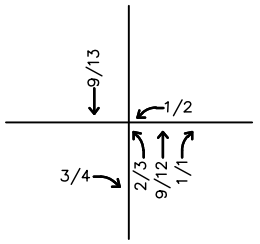
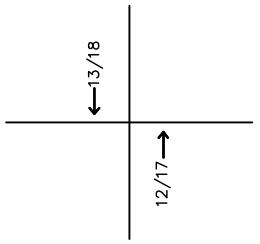
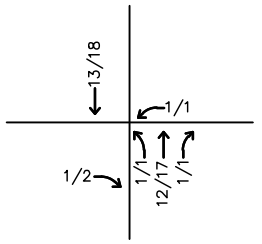
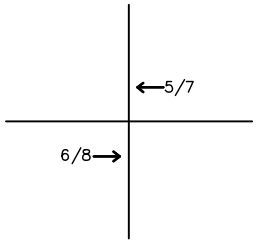
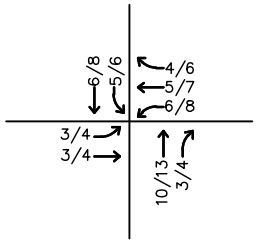
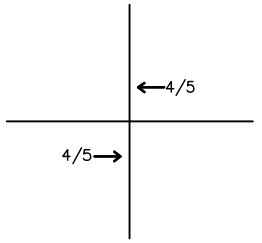
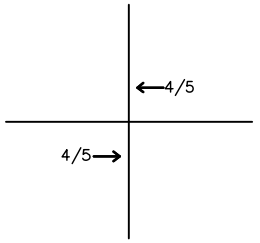
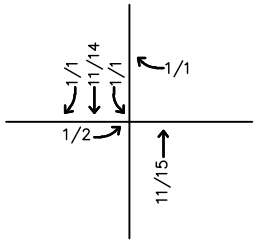
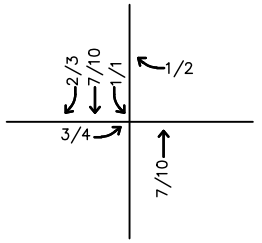
Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

APPENDIX C

TRIP ASSIGNMENT DATA

NOT TO SCALE



1. Perris Blvd at Eucalyptus Ave	2. Perris Blvd at Atwood Ave	3. Perris Blvd at Dracaea Ave
		
4. Cottonwood Ave at Indian St	5. Perris Blvd at Cottonwood Ave	6. Cottonwood Ave at Crape Myrtle Dr
		
7. Cottonwood Ave at Kitching St	8. Perris Blvd at Bay Ave	9. Perris Blvd at Alessandro Blvd
		
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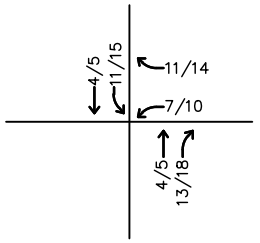
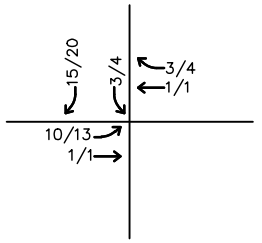
		

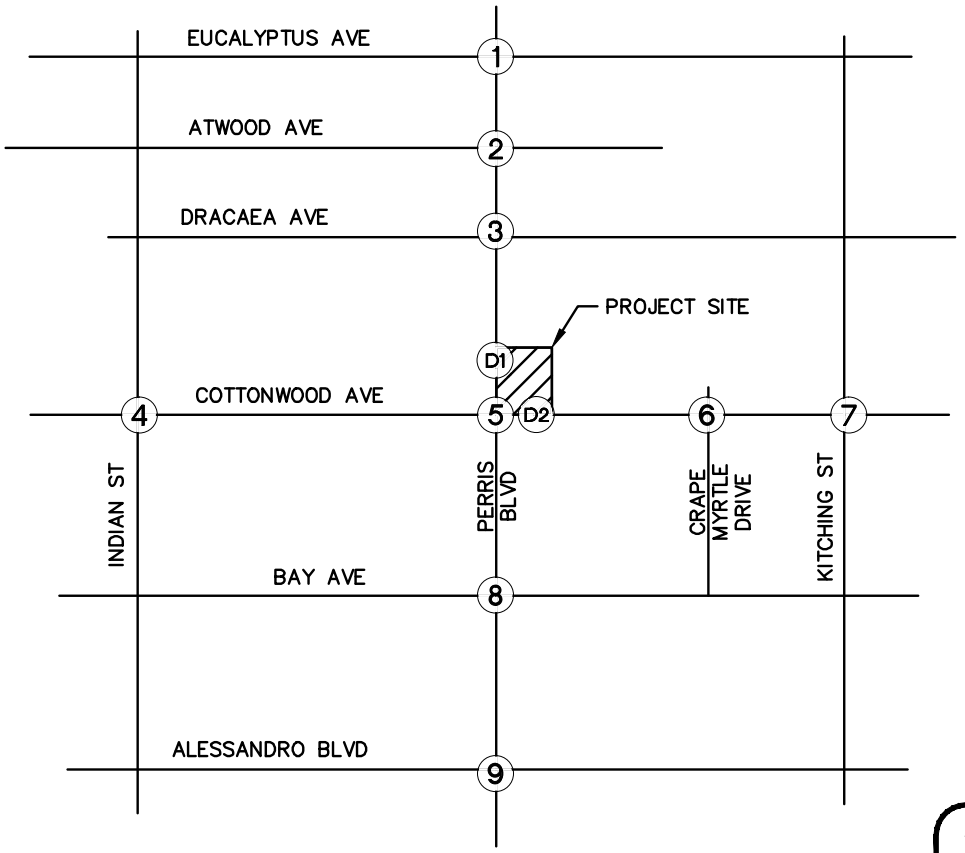
LEGEND:

X	Study Intersection
XX	Sunday Turning Movement Volume

PROJECT TRAFFIC – WEEKDAY NEW TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

NOT TO SCALE



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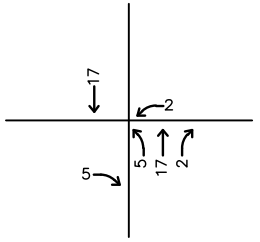
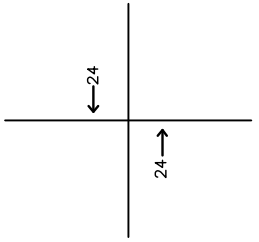
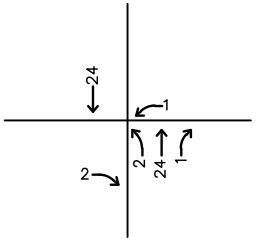
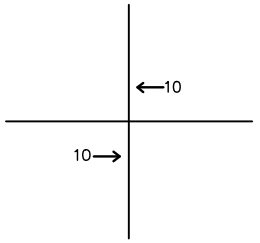
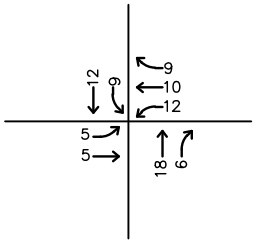
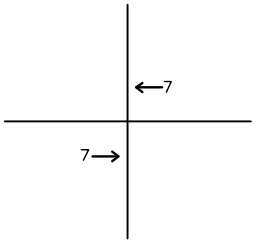
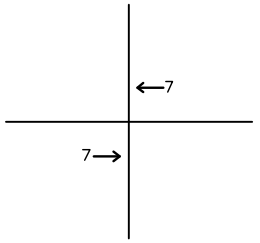
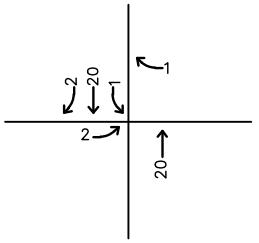
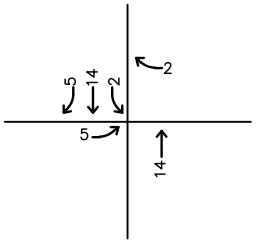
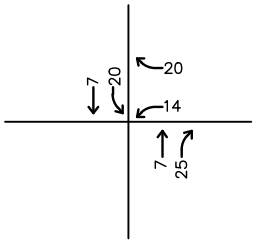
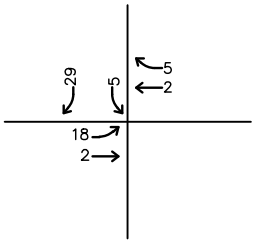
		
4. Cottonwood Ave at Indian St	5. Perris Blvd at Cottonwood Ave	6. Cottonwood Ave at Crape Myrtle Dr
		
7. Cottonwood Ave at Kitching St	8. Perris Blvd at Bay Ave	9. Perris Blvd at Alessandro Blvd
		
	D1. Perris Blvd at Driveway	D2. Cottonwood Ave at Driveway
		

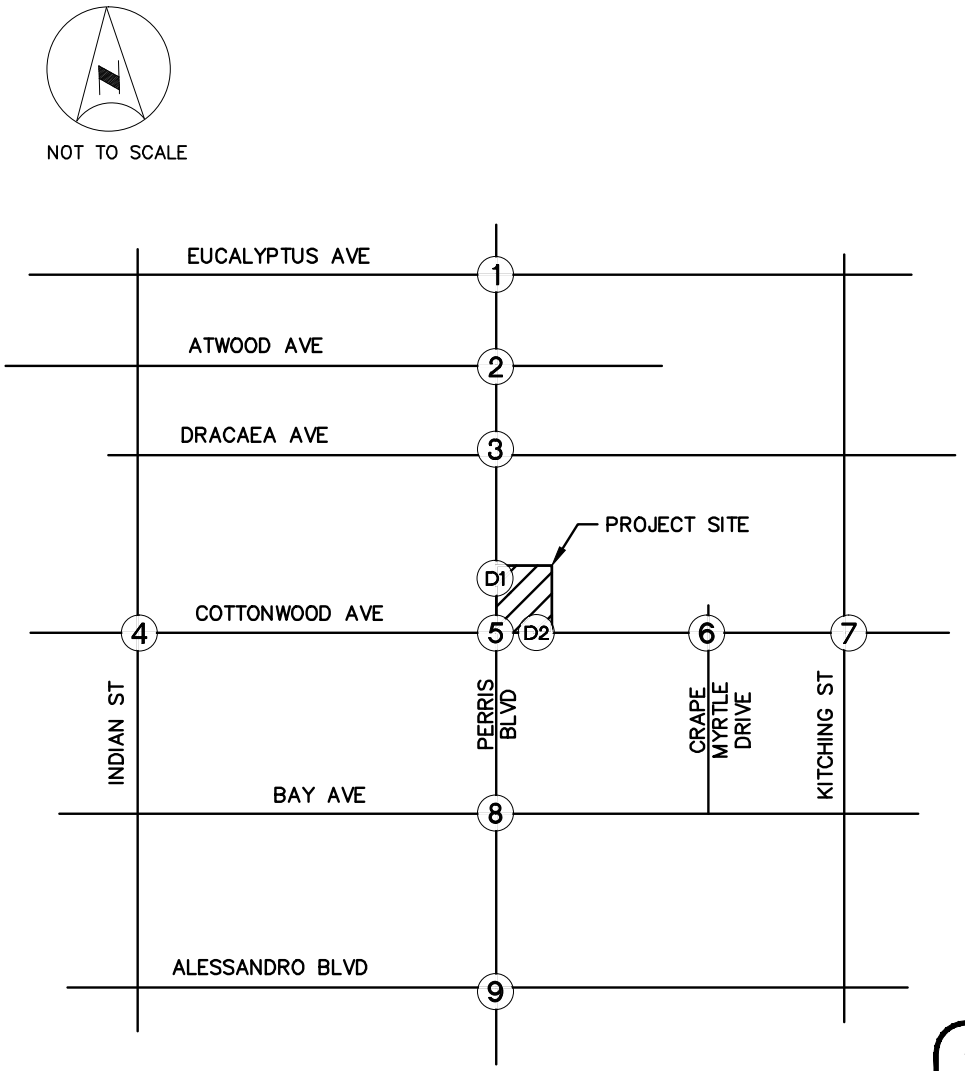
LEGEND:

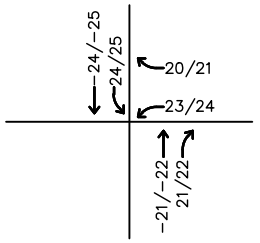
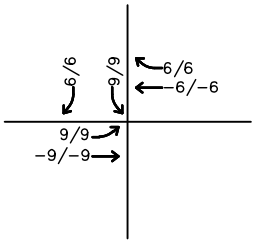
X — Study Intersection

XX — Sunday Turning Movement Volume

PROJECT TRAFFIC – SUNDAY NEW TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND



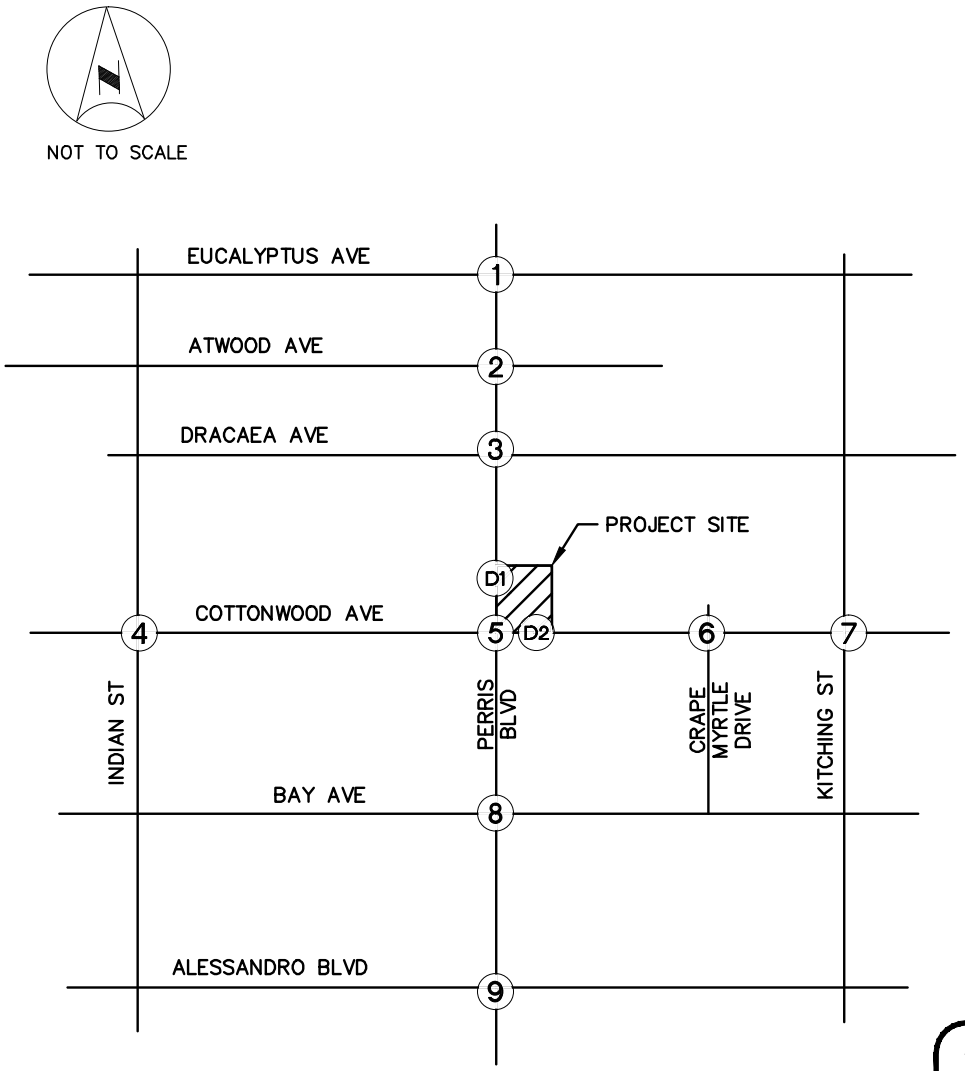
1. Perris Blvd at Eucalyptus Ave	2. Perris Blvd at Atwood Ave	3. Perris Blvd at Dracaea Ave
4. Cottonwood Ave at Indian St	5. Perris Blvd at Cottonwood Ave	6. Cottonwood Ave at Crape Myrtle Dr
7. Cottonwood Ave at Kitching St	8. Perris Blvd at Bay Ave	9. Perris Blvd at Alessandro Blvd
D1. Perris Blvd at Driveway	D2. Cottonwood Ave at Driveway	
		

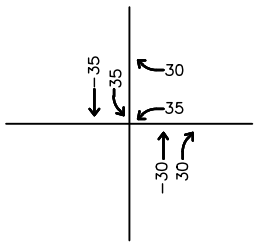
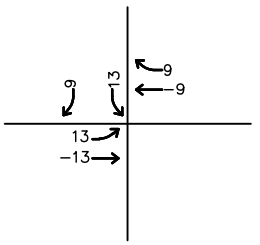
LEGEND:

X	Study Intersection
XX/YY	AM/PM Turning Movement Volume

PROJECT TRAFFIC – WEEKDAY PASS–BY TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND



1. Perris Blvd at Eucalyptus Ave	2. Perris Blvd at Atwood Ave	3. Perris Blvd at Dracaea Ave
4. Cottonwood Ave at Indian St	5. Perris Blvd at Cottonwood Ave	6. Cottonwood Ave at Crape Myrtle Dr
7. Cottonwood Ave at Kitching St	8. Perris Blvd at Bay Ave	9. Perris Blvd at Alessandro Blvd
D1. Perris Blvd at Driveway	D2. Cottonwood Ave at Driveway	
		

LEGEND:

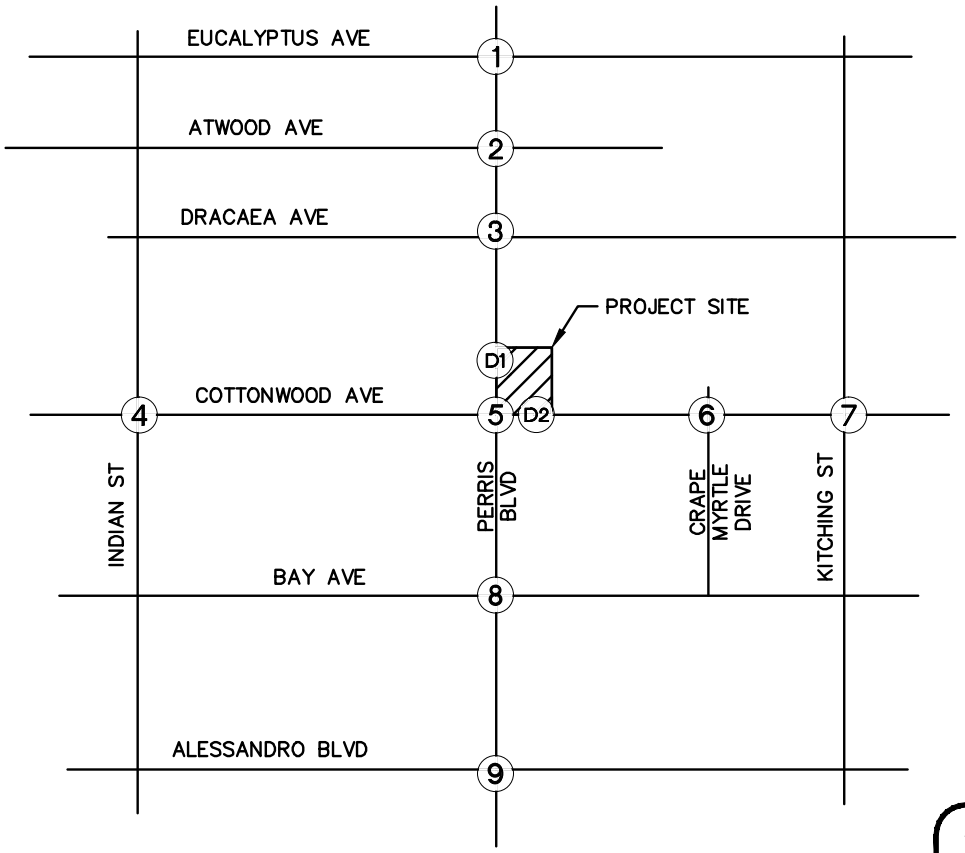
(X) Study Intersection

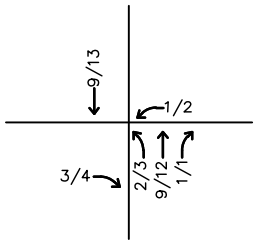
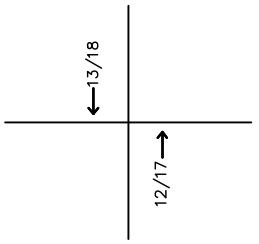
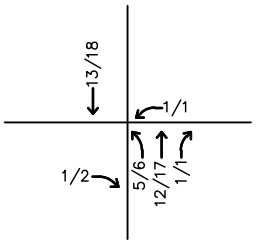
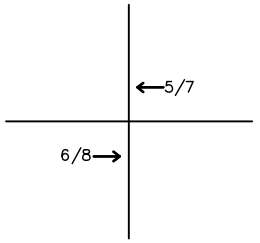
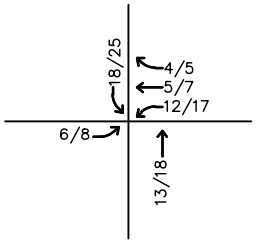
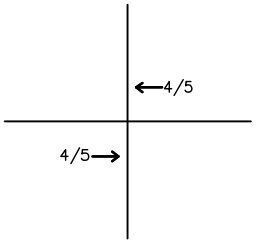
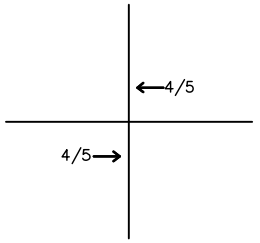
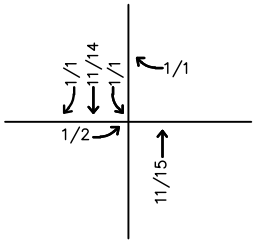
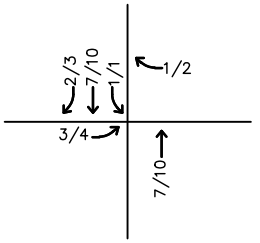
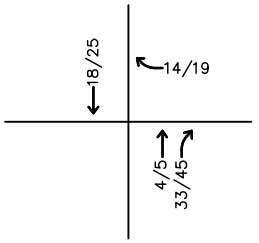
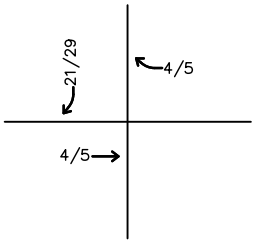
XX Sunday Turning Movement Volume

PROJECT TRAFFIC – SUNDAY PASS–BY TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

NOT TO SCALE



1. Perris Blvd at Eucalyptus Ave	2. Perris Blvd at Atwood Ave	3. Perris Blvd at Dracaea Ave
		
4. Cottonwood Ave at Indian St	5. Perris Blvd at Cottonwood Ave	6. Cottonwood Ave at Crape Myrtle Dr
		
7. Cottonwood Ave at Kitching St	8. Perris Blvd at Bay Ave	9. Perris Blvd at Alessandro Blvd
		
D1. Perris Blvd at Driveway	D2. Cottonwood Ave at Driveway	
		

LEGEND:

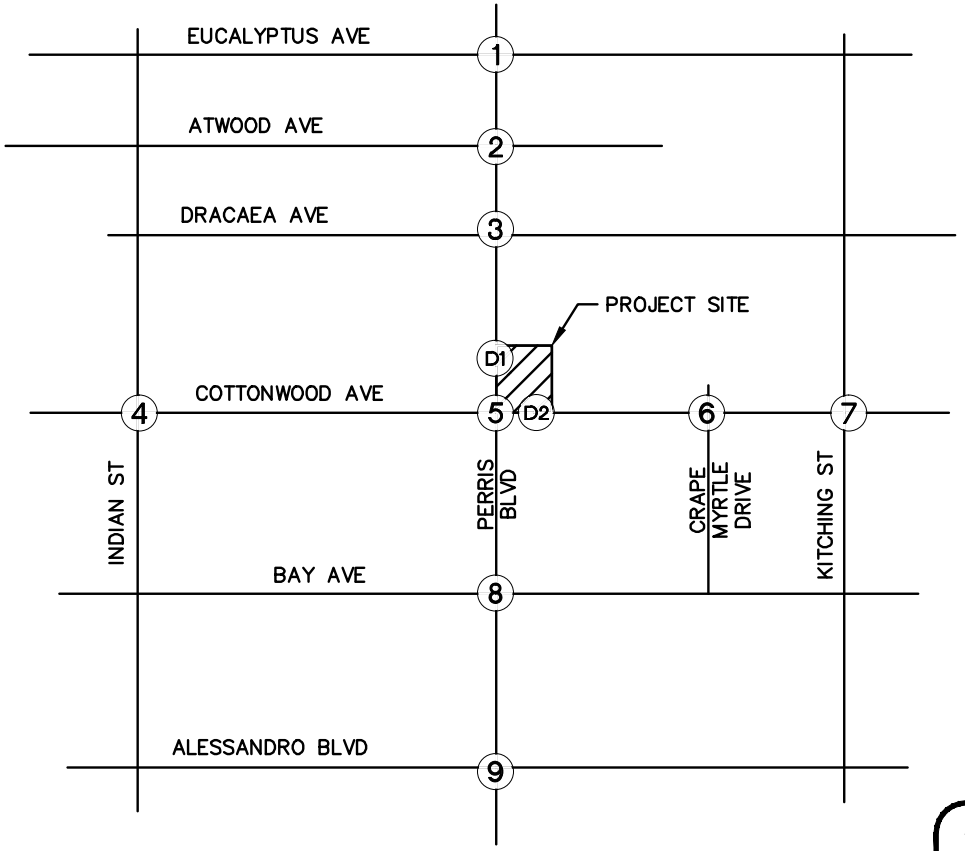
X — Study Intersection

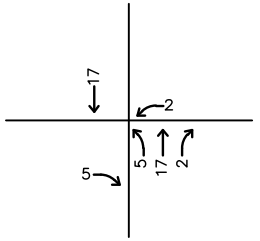
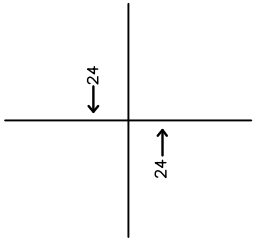
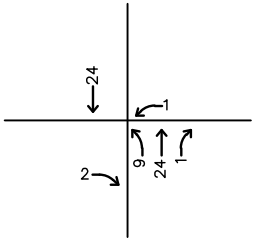
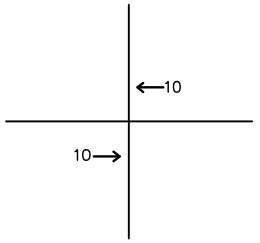
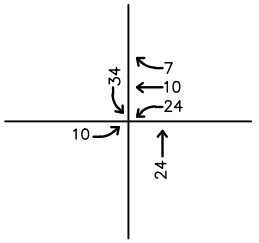
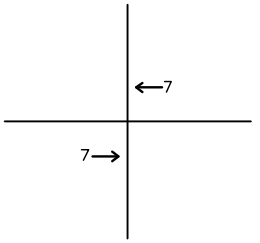
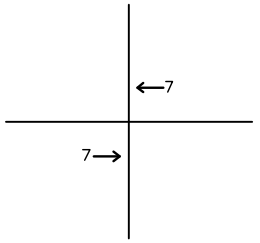
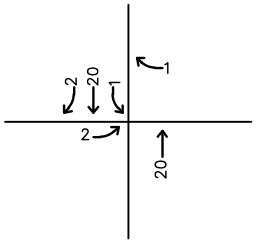
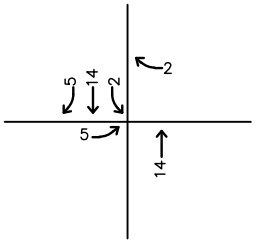
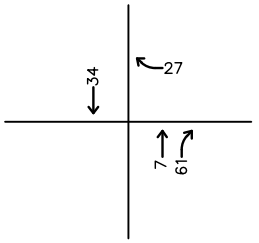
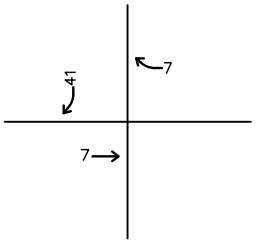
XX/YY — AM/PM Turning Movement Volume

PROJECT TRAFFIC – ALTERNATIVE 1 WEEKDAY NEW TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

NOT TO SCALE



1. Perris Blvd at Eucalyptus Ave	2. Perris Blvd at Atwood Ave	3. Perris Blvd at Dracaea Ave
		
4. Cottonwood Ave at Indian St	5. Perris Blvd at Cottonwood Ave	6. Cottonwood Ave at Crape Myrtle Dr
		
7. Cottonwood Ave at Kitching St	8. Perris Blvd at Bay Ave	9. Perris Blvd at Alessandro Blvd
		
D1. Perris Blvd at Driveway	D2. Cottonwood Ave at Driveway	
		

LEGEND:

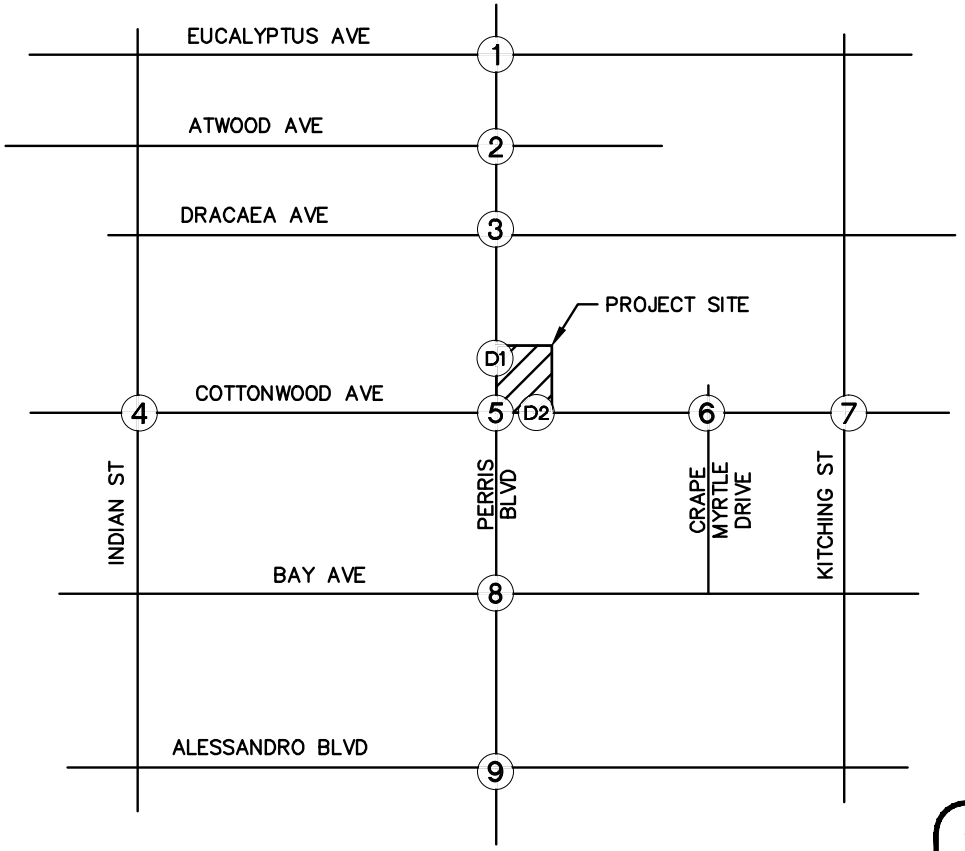
X — Study Intersection

XX — Sunday Turning Movement Volume

PROJECT TRAFFIC – ALTERNATIVE 1 SUNDAY NEW TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

NOT TO SCALE



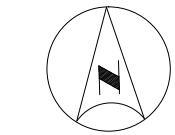
1. Perris Blvd at Eucalyptus Ave	2. Perris Blvd at Atwood Ave	3. Perris Blvd at Dracaea Ave
		9/6
4. Cottonwood Ave at Indian St	**5. Perris Blvd at Cottonwood Ave**	**6. Cottonwood Ave at Crape Myrtle Dr**
	24/25 33/34 23/24 9/9 9/9	
7. Cottonwood Ave at Kitching St	**8. Perris Blvd at Bay Ave**	**9. Perris Blvd at Alessandro Blvd**
D1. Perris Blvd at Driveway	**D2. Cottonwood Ave at Driveway**	
29/31 21/22 54/57	29/31 6/6 6/6	

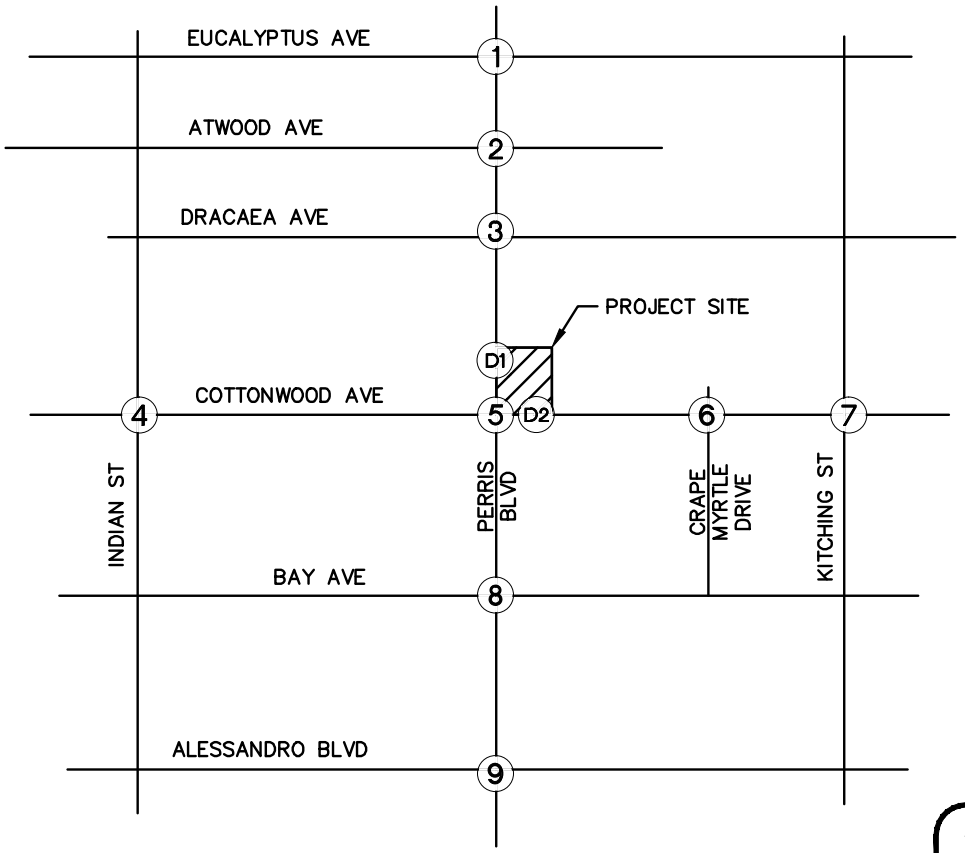
LEGEND:

X	Study Intersection
XX/YY	AM/PM Turning Movement Volume

PROJECT TRAFFIC – ALTERNATIVE 1 WEEKDAY PASS–BY TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND





1. Perris Blvd at Eucalyptus Ave	2. Perris Blvd at Atwood Ave	3. Perris Blvd at Dracaea Ave
		13
4. Cottonwood Ave at Indian St	**5. Perris Blvd at Cottonwood Ave**	**6. Cottonwood Ave at Crape Myrtle Dr**
	35, 48, 35, 13, 13	
7. Cottonwood Ave at Kitching St	**8. Perris Blvd at Bay Ave**	**9. Perris Blvd at Alessandro Blvd**
D1. Perris Blvd at Driveway	**D2. Cottonwood Ave at Driveway**	
44, 30, 78	44, 9, 9	

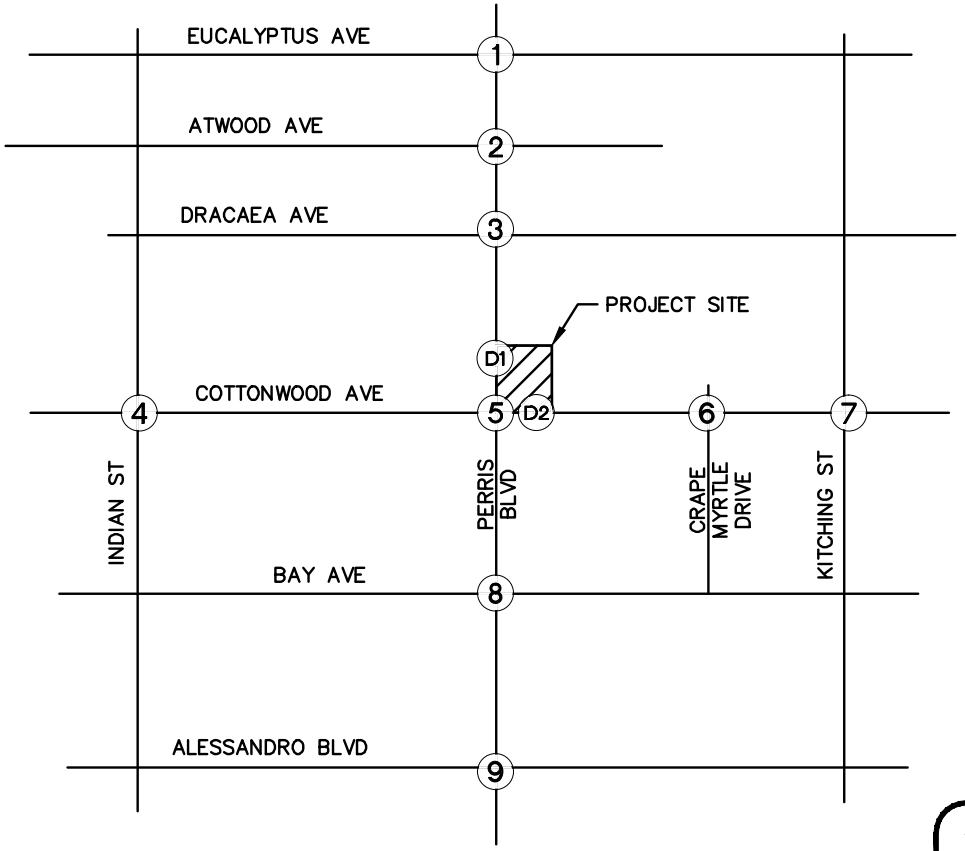
LEGEND:

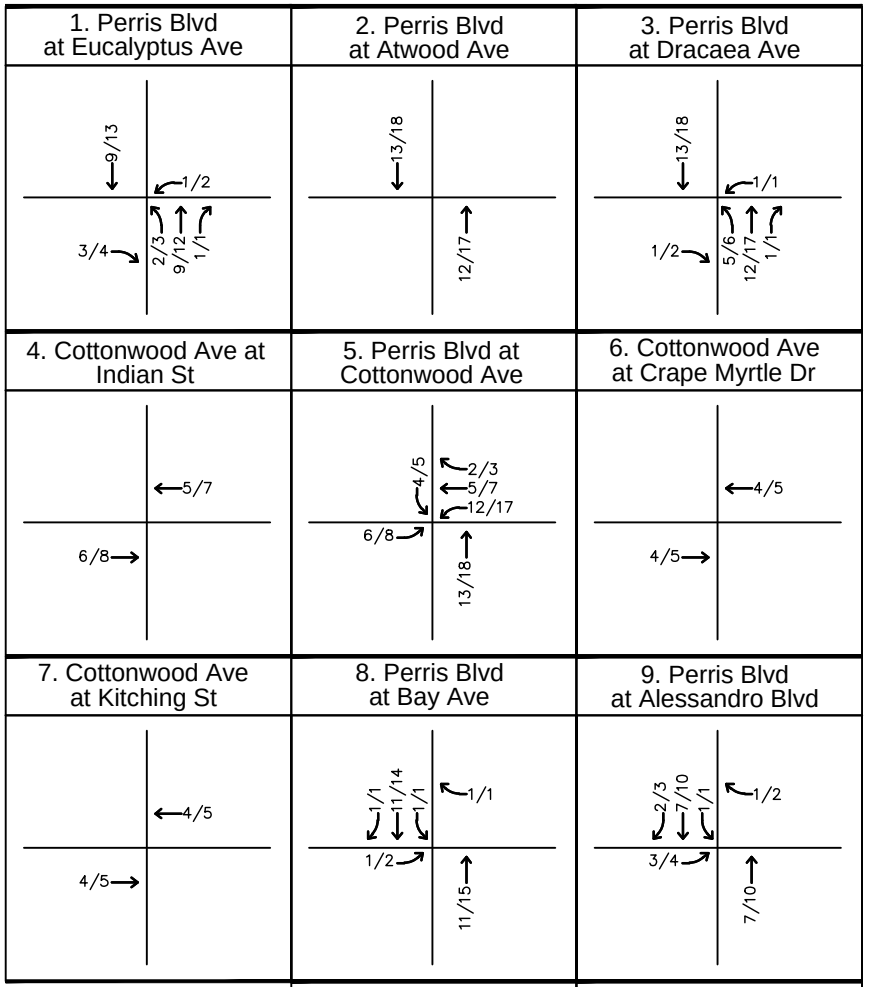
X	Study Intersection
XX	Sunday Turning Movement Volume

PROJECT TRAFFIC – ALTERNATIVE 1 SUNDAY PASS–BY TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

NOT TO SCALE





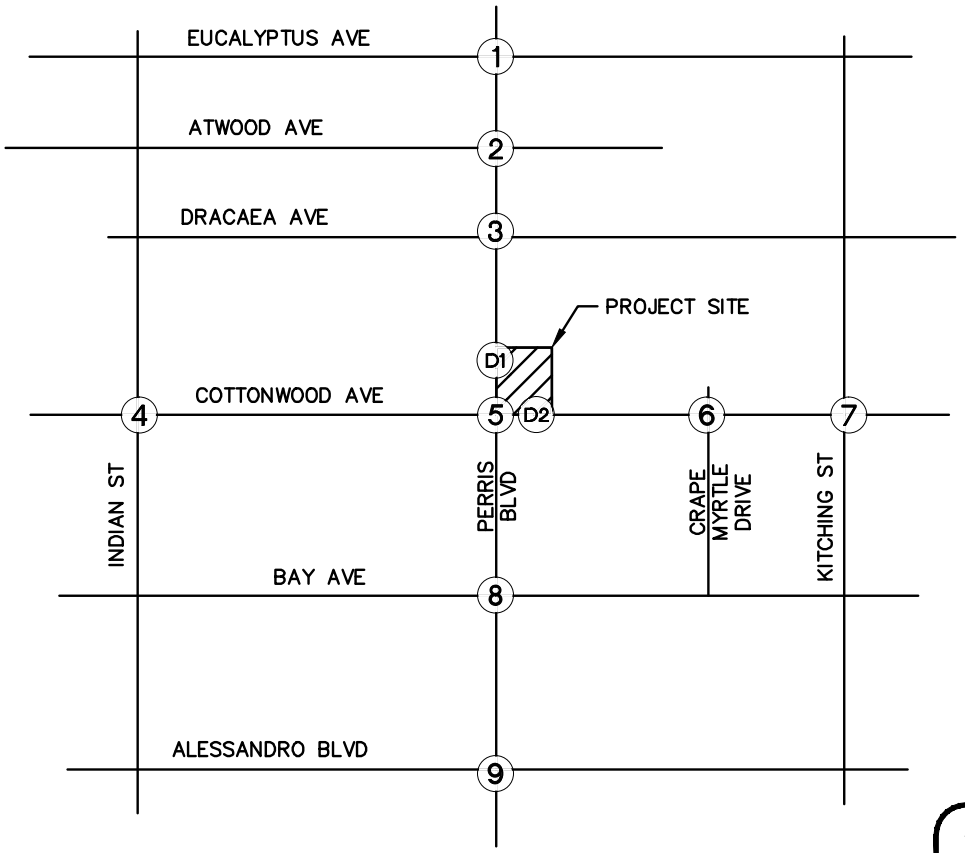
LEGEND:

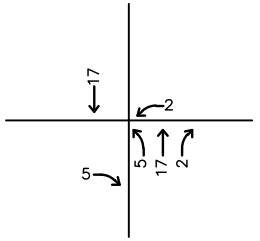
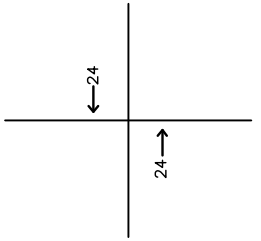
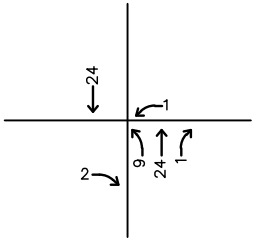
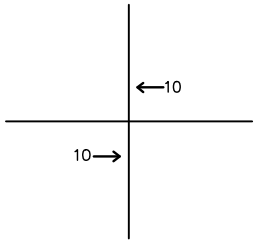
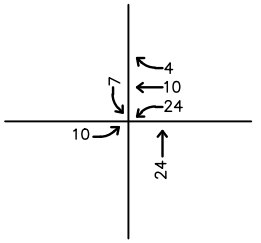
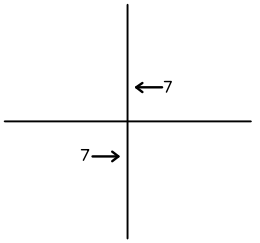
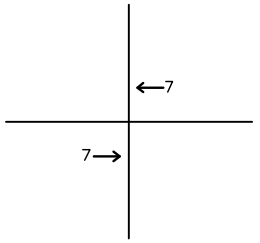
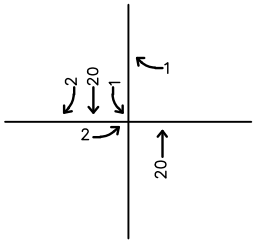
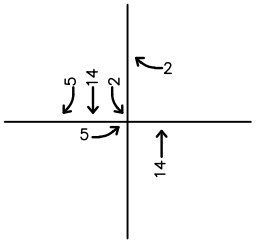
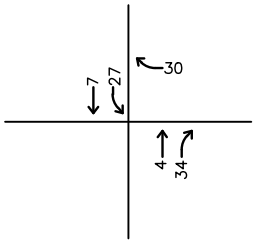
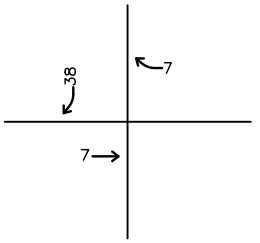
- (X) Study Intersection
- XX/YY AM/PM Turning Movement Volume
- XXXX Average Daily Traffic Volume

PROJECT TRAFFIC – ALTERNATIVE 2 WEEKDAY NEW TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

NOT TO SCALE



1. Perris Blvd at Eucalyptus Ave	2. Perris Blvd at Atwood Ave	3. Perris Blvd at Dracaea Ave
		
4. Cottonwood Ave at Indian St	5. Perris Blvd at Cottonwood Ave	6. Cottonwood Ave at Crape Myrtle Dr
		
7. Cottonwood Ave at Kitching St	8. Perris Blvd at Bay Ave	9. Perris Blvd at Alessandro Blvd
		
D1. Perris Blvd at Driveway	D2. Cottonwood Ave at Driveway	
		

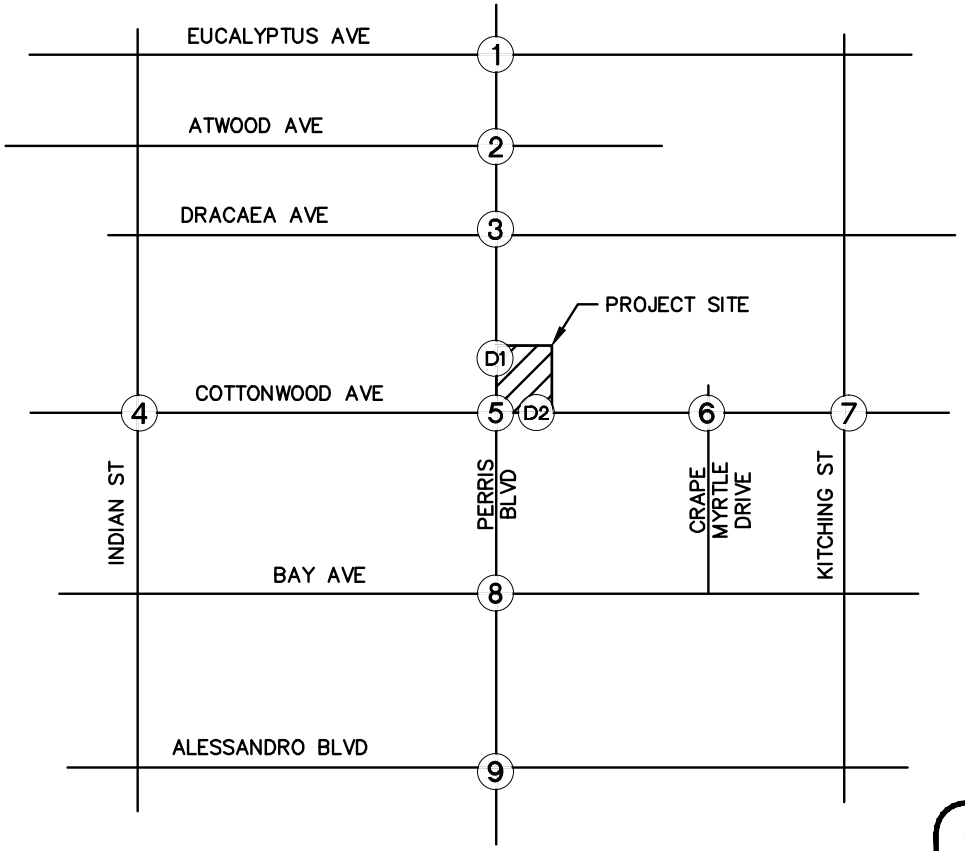
LEGEND:

- (X) Study Intersection
- XX Sunday Turning Movement Volume
- XXXX Average Daily Traffic Volume

PROJECT TRAFFIC – ALTERNATIVE 2 SUNDAY NEW TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

NOT TO SCALE



1. Perris Blvd at Eucalyptus Ave	2. Perris Blvd at Atwood Ave	3. Perris Blvd at Dracaea Ave
		9/6
4. Cottonwood Ave at Indian St	**5. Perris Blvd at Cottonwood Ave**	**6. Cottonwood Ave at Crape Myrtle Dr**
	9/9, 23/24, 9/9, −9/−9	
7. Cottonwood Ave at Kitching St	**8. Perris Blvd at Bay Ave**	**9. Perris Blvd at Alessandro Blvd**
D1. Perris Blvd at Driveway	**D2. Cottonwood Ave at Driveway**	
24/−25, 24/25, 29/31, −21/−22, 30/32	29/31, 6/6, −6/−6	

LEGEND:

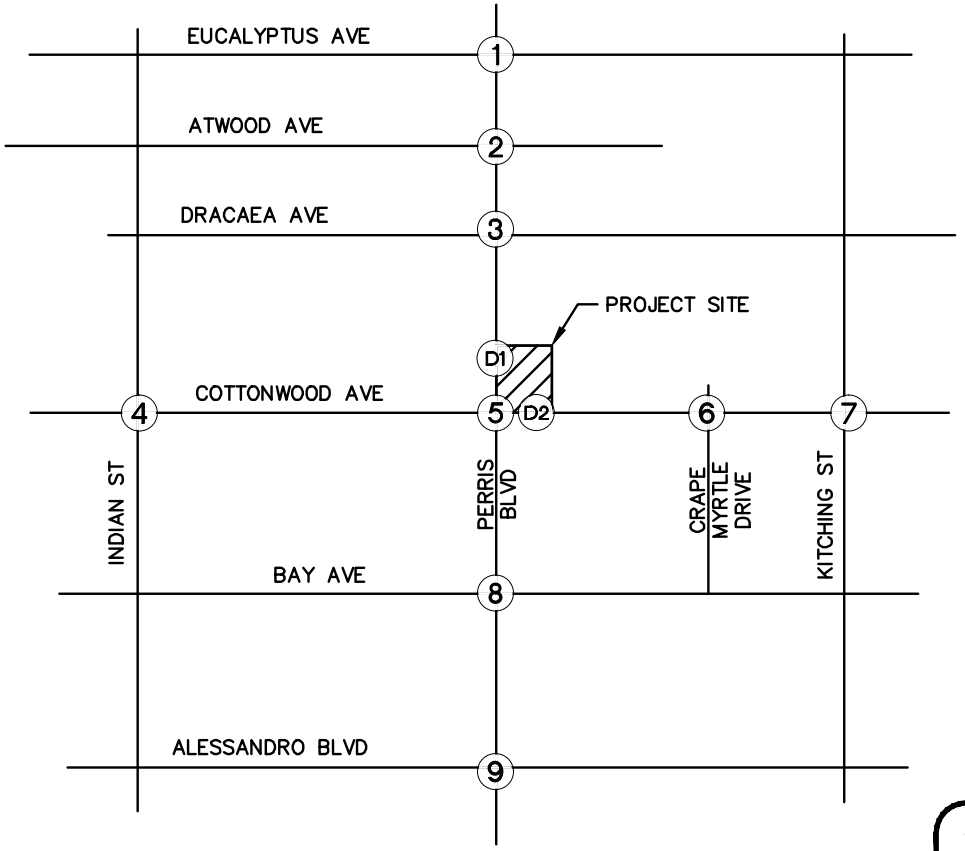
X — Study Intersection

XX/YY — AM/PM Turning Movement Volume

PROJECT TRAFFIC – ALTERNATIVE 2 WEEKDAY PASS–BY TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

NOT TO SCALE



1. Perris Blvd at Eucalyptus Ave	2. Perris Blvd at Atwood Ave	3. Perris Blvd at Dracaea Ave
		13
4. Cottonwood Ave at Indian St	**5. Perris Blvd at Cottonwood Ave**	**6. Cottonwood Ave at Crape Myrtle Dr**
	13, 35, 13, 13	
7. Cottonwood Ave at Kitching St	**8. Perris Blvd at Bay Ave**	**9. Perris Blvd at Alessandro Blvd**
D1. Perris Blvd at Driveway	**D2. Cottonwood Ave at Driveway**	
35, 35, 44, 30, 44	44, 9, 9	

LEGEND:

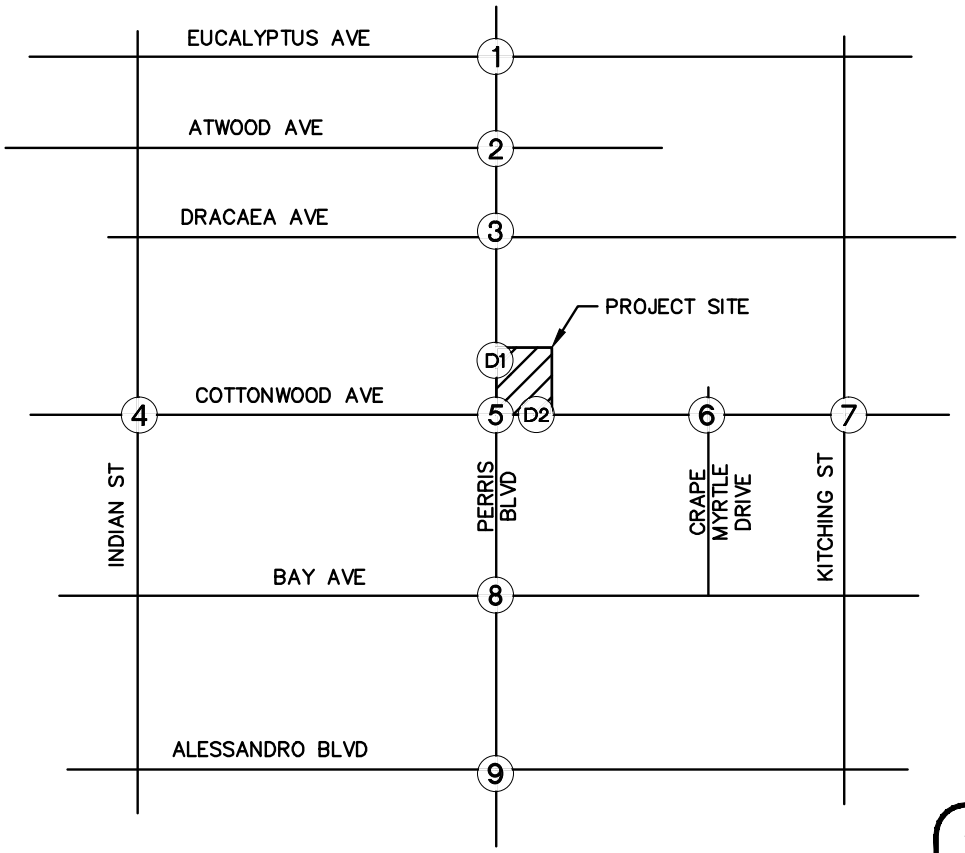
(X) Study Intersection

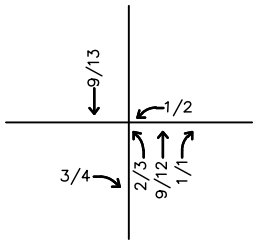
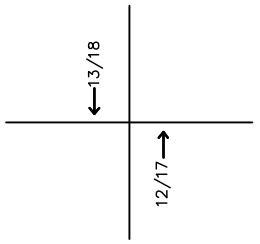
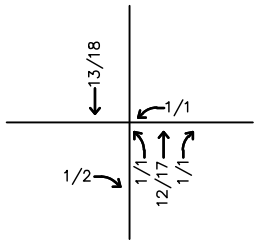
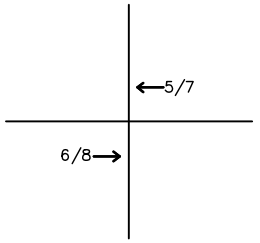
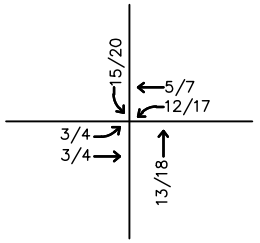
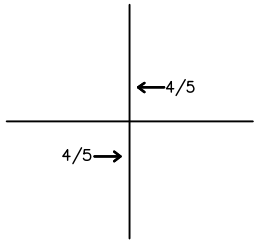
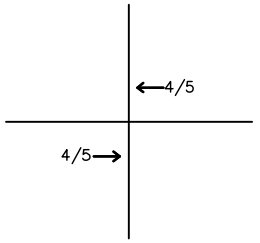
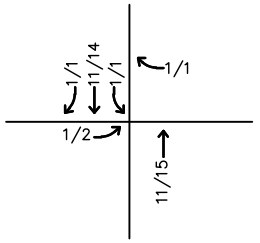
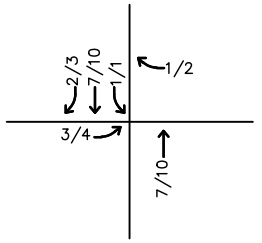
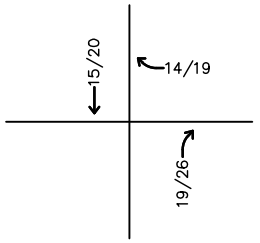
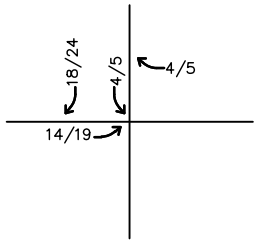
XX Sunday Turning Movement Volume

PROJECT TRAFFIC – ALTERNATIVE 2 SUNDAY PASS–BY TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

NOT TO SCALE



1. Perris Blvd at Eucalyptus Ave	2. Perris Blvd at Atwood Ave	3. Perris Blvd at Dracaea Ave
		
4. Cottonwood Ave at Indian St	**5. Perris Blvd at Cottonwood Ave**	**6. Cottonwood Ave at Crape Myrtle Dr**
		
7. Cottonwood Ave at Kitching St	**8. Perris Blvd at Bay Ave**	**9. Perris Blvd at Alessandro Blvd**
		
D1. Perris Blvd at Driveway	**D2. Cottonwood Ave at Driveway**	
		

LEGEND:

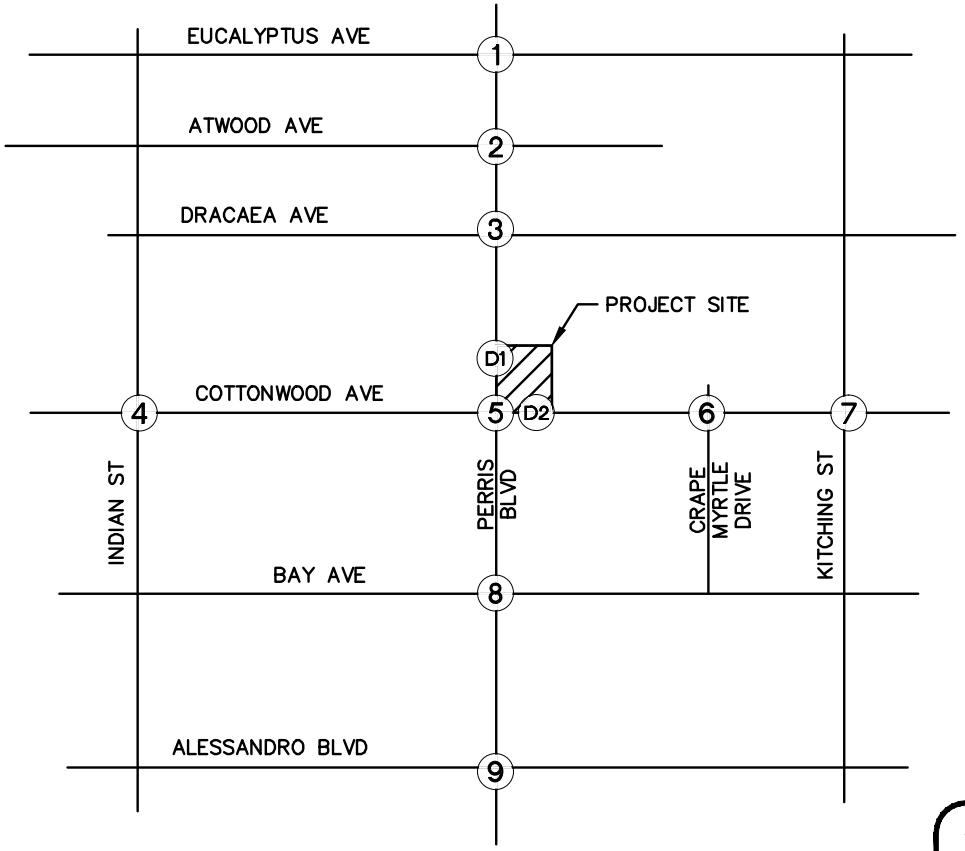
X — Study Intersection

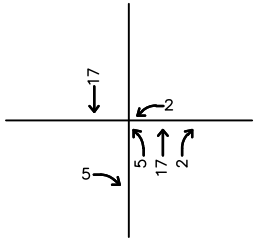
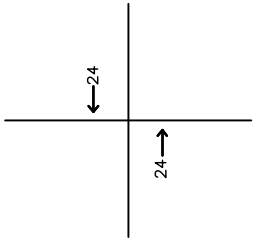
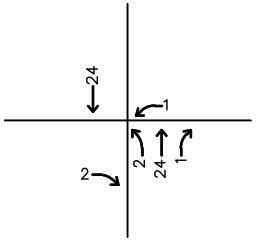
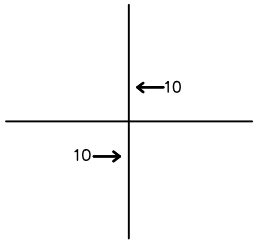
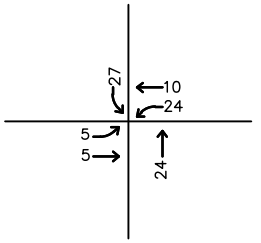
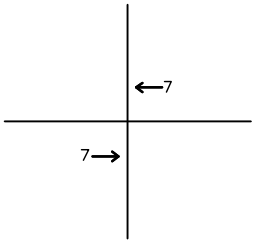
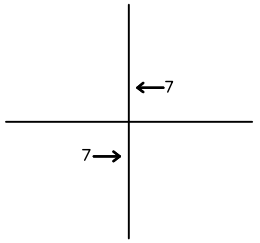
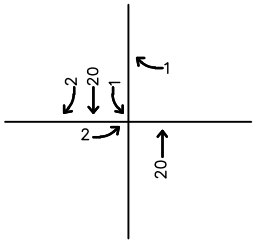
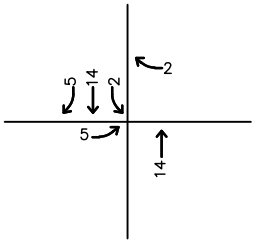
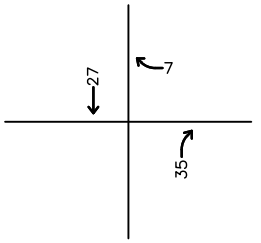
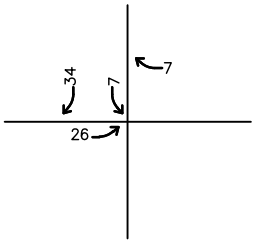
XX/YY — AM/PM Turning Movement Volume

PROJECT TRAFFIC – ALTERNATIVE 3 WEEKDAY NEW TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

NOT TO SCALE



1. Perris Blvd at Eucalyptus Ave	2. Perris Blvd at Atwood Ave	3. Perris Blvd at Dracaea Ave
		
4. Cottonwood Ave at Indian St	5. Perris Blvd at Cottonwood Ave	6. Cottonwood Ave at Crape Myrtle Dr
		
7. Cottonwood Ave at Kitching St	8. Perris Blvd at Bay Ave	9. Perris Blvd at Alessandro Blvd
		
D1. Perris Blvd at Driveway	D2. Cottonwood Ave at Driveway	
		

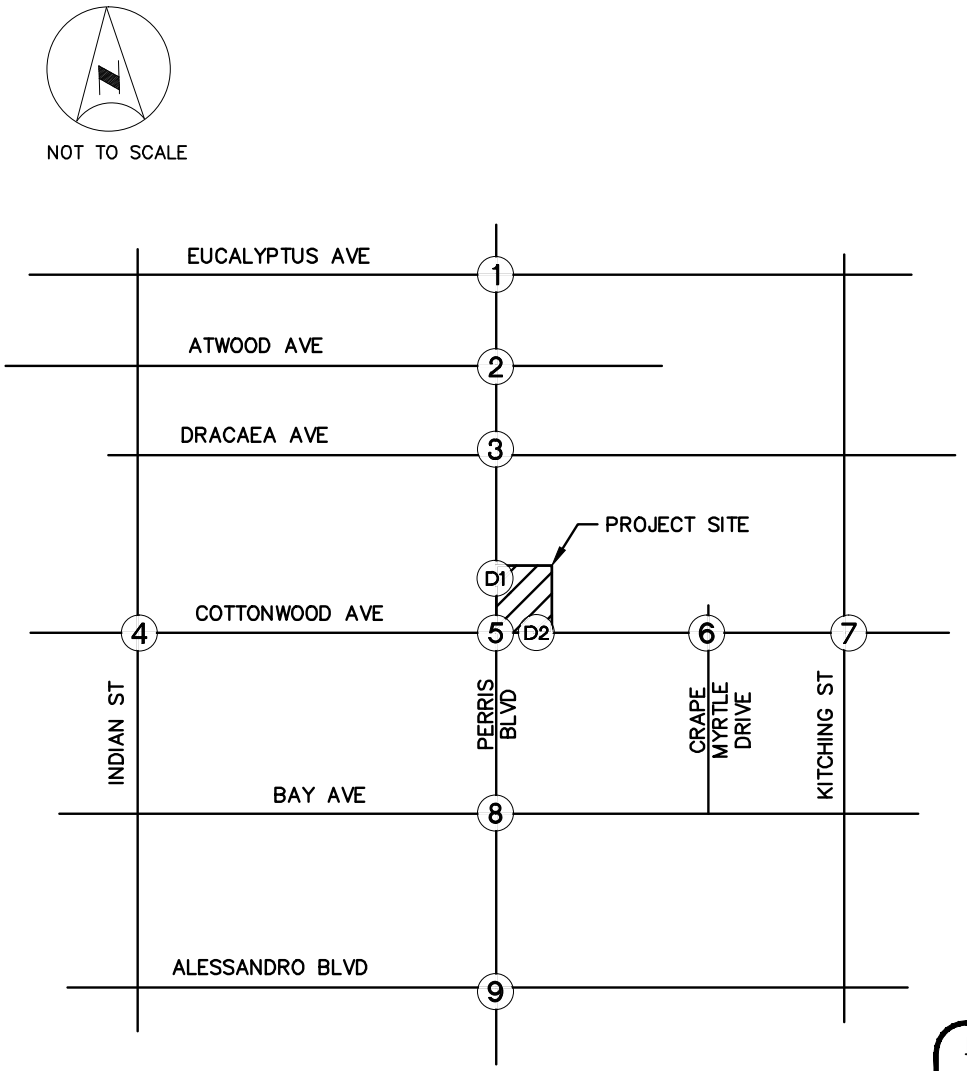
LEGEND:

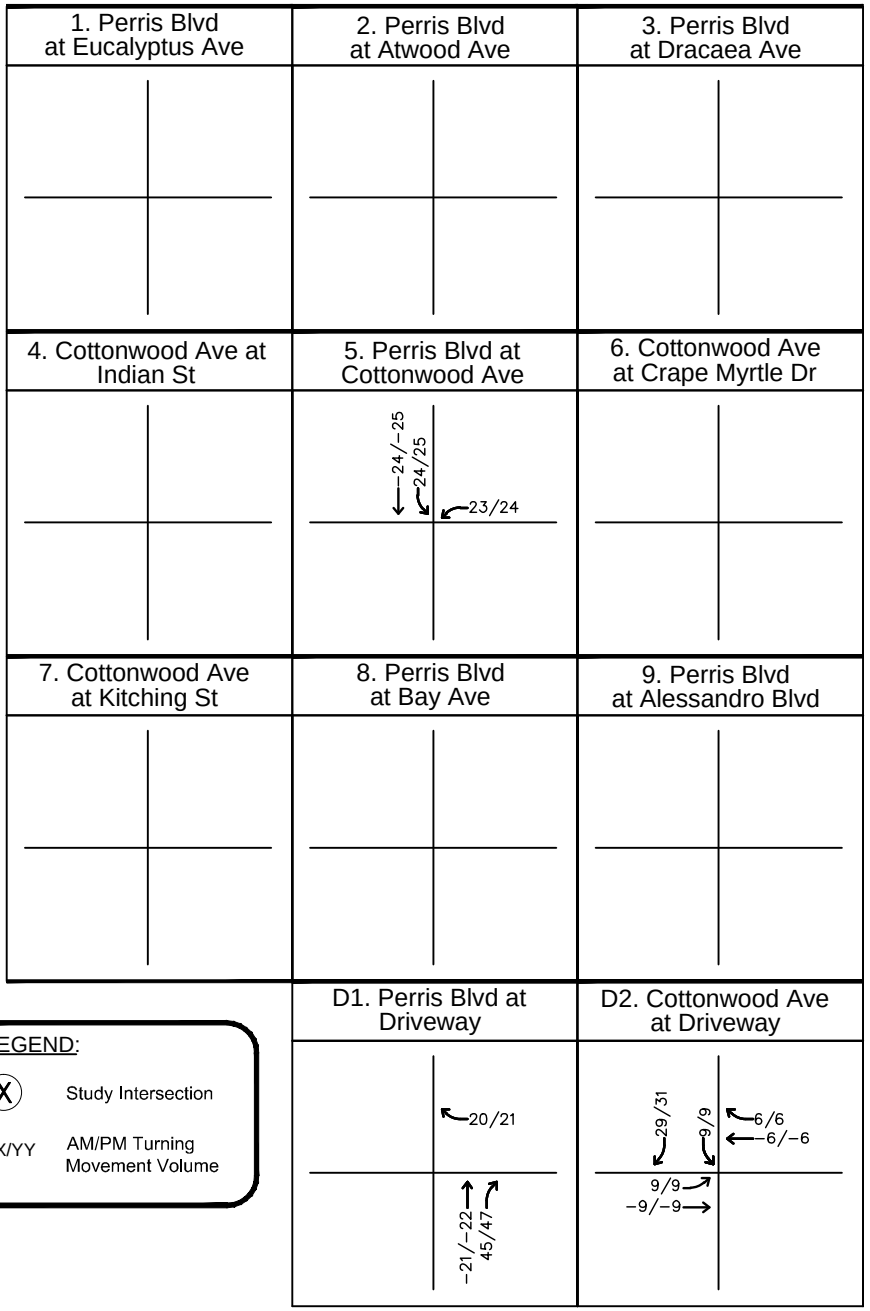
X — Study Intersection

XX — Sunday Turning Movement Volume

PROJECT TRAFFIC – ALTERNATIVE 3 SUNDAY NEW TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND





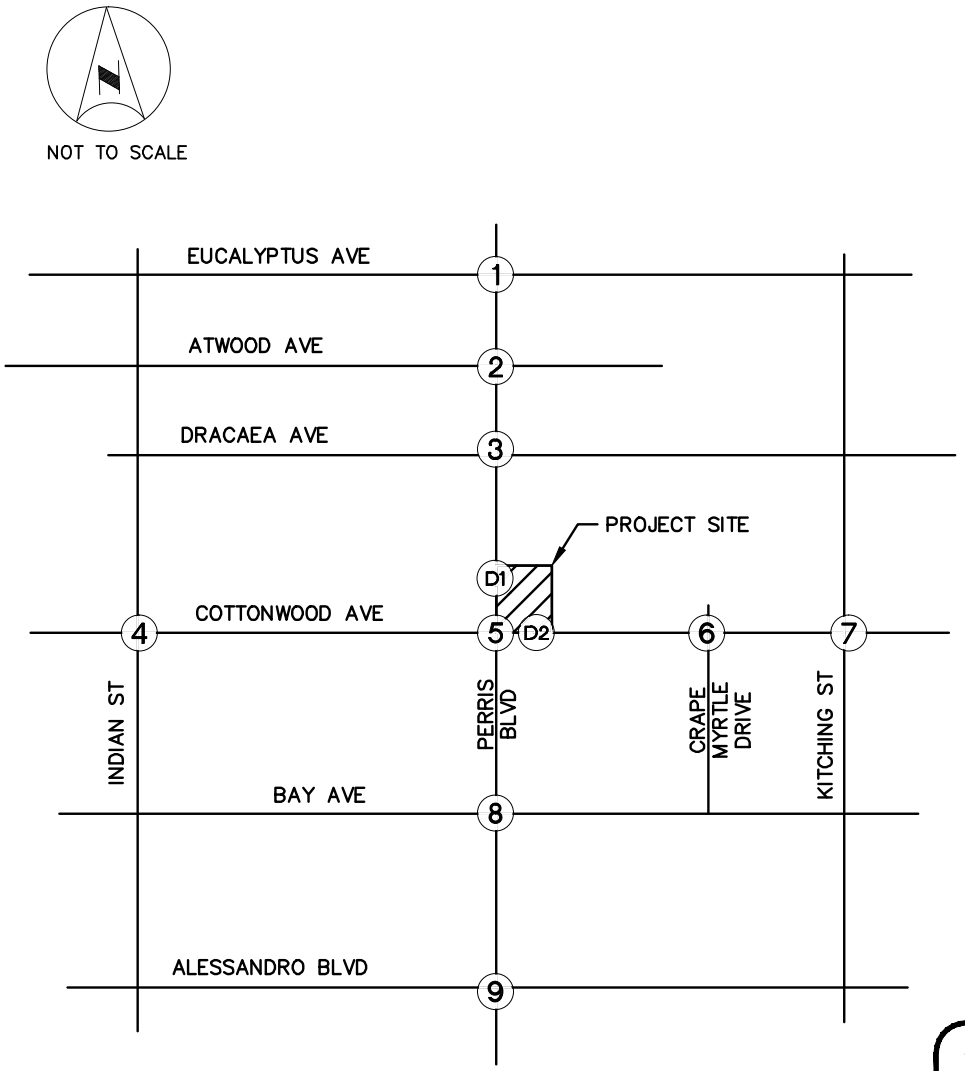
LEGEND:

X — Study Intersection

XX/YY — AM/PM Turning Movement Volume

PROJECT TRAFFIC – ALTERNATIVE 3 WEEKDAY PASS-BY TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND



1. Perris Blvd at Eucalyptus Ave	2. Perris Blvd at Atwood Ave	3. Perris Blvd at Dracaea Ave
4. Cottonwood Ave at Indian St	**5. Perris Blvd at Cottonwood Ave**	**6. Cottonwood Ave at Crape Myrtle Dr**
	35 35 35	
7. Cottonwood Ave at Kitching St	**8. Perris Blvd at Bay Ave**	**9. Perris Blvd at Alessandro Blvd**
D1. Perris Blvd at Driveway	**D2. Cottonwood Ave at Driveway**	
30 30 65	44 13 9 9 13 13	

LEGEND:

X — Study Intersection

XX — Sunday Turning Movement Volume

PROJECT TRAFFIC – ALTERNATIVE 3 SUNDAY PASS–BY TRIPS

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

APPENDIX **D**

INTERSECTION ANALYSIS WORKSHEETS

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	24	76	52	82	127	177	55	1022	52	70	835	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	35	110	75	93	144	201	63	1175	60	80	949	30
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.69	0.69	0.69	0.88	0.88	0.88	0.87	0.87	0.87	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	92	252	215	165	329	280	136	1453	650	154	1490	666
Arrive On Green	0.05	0.14	0.14	0.09	0.18	0.18	0.08	0.41	0.41	0.09	0.42	0.42
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	35	110	75	93	144	201	63	1175	60	80	949	30
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	1.1	3.2	2.5	2.9	4.0	7.0	2.0	17.1	1.4	2.5	12.4	0.7
Cycle Q Clear(g_c), s	1.1	3.2	2.5	2.9	4.0	7.0	2.0	17.1	1.4	2.5	12.4	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	92	252	215	165	329	280	136	1453	650	154	1490	666
V/C Ratio(X)	0.38	0.44	0.35	0.56	0.44	0.72	0.46	0.81	0.09	0.52	0.64	0.05
Avail Cap(c_a), veh/h	212	510	433	212	510	433	212	1453	650	212	1490	666
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	23.2	22.9	25.4	21.5	22.7	25.8	15.2	10.6	25.5	13.4	10.0
Incr Delay (d2), s/veh	2.6	1.2	1.0	3.0	0.9	3.4	2.4	5.0	0.3	2.7	2.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.7	1.2	1.6	2.2	3.3	1.1	9.3	0.6	1.3	6.4	0.3
LnGrp Delay(d),s/veh	29.4	24.4	23.9	28.3	22.4	26.1	28.3	20.2	10.8	28.2	15.5	10.1
LnGrp LOS	C	C	C	C	C	C	C	C	B	C	B	B
Approach Vol, veh/h		220			438			1298			1059	
Approach Delay, s/veh		25.0			25.4			20.1			16.3	
Approach LOS		C			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	28.0	9.5	11.9	8.5	28.6	7.0	14.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	24.0	7.0	16.0	7.0	24.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	4.5	19.1	4.9	5.2	4.0	14.4	3.1	9.0
Green Ext Time (p_c), s	0.0	4.3	0.0	1.7	0.0	7.9	0.0	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	19.9
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	67	70	44	60	92	56	30	1020	24	32	872	72
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	77	80	51	80	123	75	35	1186	28	38	1038	86
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.87	0.87	0.87	0.75	0.75	0.75	0.86	0.86	0.86	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	96	69	451	89	100	451	93	1574	37	99	1588	710
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.05	0.45	0.45	0.06	0.45	0.45
Sat Flow, veh/h	0	241	1583	0	351	1583	1774	3534	83	1774	3539	1583
Grp Volume(v), veh/h	157	0	51	203	0	75	35	594	620	38	1038	86
Grp Sat Flow(s),veh/h/ln	241	0	1583	351	0	1583	1774	1770	1848	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	1.3	0.0	0.0	2.0	1.1	15.7	15.7	1.2	12.8	1.8
Cycle Q Clear(g_c), s	16.0	0.0	1.3	16.0	0.0	2.0	1.1	15.7	15.7	1.2	12.8	1.8
Prop In Lane	0.49		1.00	0.39		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	164	0	451	190	0	451	93	788	823	99	1588	710
V/C Ratio(X)	0.96	0.00	0.11	1.07	0.00	0.17	0.38	0.75	0.75	0.38	0.65	0.12
Avail Cap(c_a), veh/h	164	0	451	190	0	451	221	788	823	221	1588	710
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	0.0	14.8	20.4	0.0	15.1	25.7	13.0	13.0	25.6	12.1	9.0
Incr Delay (d2), s/veh	57.1	0.0	0.1	85.4	0.0	0.2	2.5	6.6	6.3	2.4	2.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.0	0.6	7.4	0.0	0.9	0.6	9.0	9.4	0.6	6.7	0.8
LnGrp Delay(d),s/veh	78.6	0.0	14.9	105.8	0.0	15.2	28.2	19.6	19.3	28.0	14.2	9.4
LnGrp LOS	E		B	F		B	C	B	B	C	B	A
Approach Vol, veh/h		208			278			1249			1162	
Approach Delay, s/veh		63.0			81.3			19.7			14.3	
Approach LOS		E			F			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.1	29.0		20.0	6.9	29.2		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	25.0		16.0	7.0	25.0		16.0
Max Q Clear Time (g_c+I1), s	3.2	17.7		18.0	3.1	14.8		18.0
Green Ext Time (p_c), s	0.0	6.2		0.0	0.0	8.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	26.5
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	45	285	125	44	355	83	93	237	29	53	248	47
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	53	335	147	58	467	109	118	300	37	61	285	54
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.76	0.76	0.76	0.79	0.79	0.79	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	122	543	462	128	550	468	178	933	114	132	797	149
Arrive On Green	0.07	0.29	0.29	0.07	0.30	0.30	0.10	0.29	0.29	0.07	0.27	0.27
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3176	388	1774	2977	557
Grp Volume(v), veh/h	53	335	147	58	467	109	118	166	171	61	168	171
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1794	1774	1770	1765
Q Serve(g_s), s	1.7	9.3	4.3	1.9	14.1	3.1	3.8	4.4	4.4	2.0	4.6	4.7
Cycle Q Clear(g_c), s	1.7	9.3	4.3	1.9	14.1	3.1	3.8	4.4	4.4	2.0	4.6	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.22	1.00		0.32
Lane Grp Cap(c), veh/h	122	543	462	128	550	468	178	520	527	132	474	472
V/C Ratio(X)	0.44	0.62	0.32	0.45	0.85	0.23	0.66	0.32	0.32	0.46	0.35	0.36
Avail Cap(c_a), veh/h	208	592	503	208	592	503	208	520	527	208	474	472
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.7	18.3	16.5	26.6	19.8	15.9	25.9	16.4	16.5	26.5	17.7	17.7
Incr Delay (d2), s/veh	2.4	1.7	0.4	2.5	10.6	0.3	6.1	1.6	1.6	2.5	2.1	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	5.0	1.9	1.0	8.8	1.4	2.2	2.4	2.4	1.1	2.5	2.6
LnGrp Delay(d),s/veh	29.2	20.0	16.9	29.0	30.4	16.2	32.0	18.1	18.1	29.0	19.8	19.9
LnGrp LOS	C	B	B	C	C	B	C	B	B	C	B	B
Approach Vol, veh/h		535			634			455			400	
Approach Delay, s/veh		20.0			27.8			21.7			21.2	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	21.6	8.3	21.4	10.0	20.0	8.1	21.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	4.0	6.4	3.9	11.3	5.8	6.7	3.7	16.1
Green Ext Time (p_c), s	0.0	2.7	0.0	3.4	0.0	2.7	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	23.1
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	80	184	66	53	215	166	70	833	63	107	805	89
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	100	230	82	72	291	224	85	1016	77	127	958	106
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.80	0.80	0.80	0.74	0.74	0.74	0.82	0.82	0.82	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	169	419	356	145	394	335	158	1133	507	183	1185	530
Arrive On Green	0.10	0.22	0.22	0.08	0.21	0.21	0.09	0.32	0.32	0.10	0.33	0.33
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	100	230	82	72	291	224	85	1016	77	127	958	106
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.2	6.5	2.5	2.3	8.7	7.7	2.7	16.2	2.1	4.1	14.7	2.8
Cycle Q Clear(g_c), s	3.2	6.5	2.5	2.3	8.7	7.7	2.7	16.2	2.1	4.1	14.7	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	169	419	356	145	394	335	158	1133	507	183	1185	530
V/C Ratio(X)	0.59	0.55	0.23	0.50	0.74	0.67	0.54	0.90	0.15	0.69	0.81	0.20
Avail Cap(c_a), veh/h	209	502	427	209	502	427	209	1133	507	209	1185	530
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.7	20.3	18.8	26.1	21.9	21.5	25.9	19.2	14.4	25.7	18.0	14.1
Incr Delay (d2), s/veh	3.3	1.1	0.3	2.6	4.2	2.7	2.8	11.1	0.6	8.0	6.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	3.5	1.1	1.2	4.9	3.6	1.4	9.7	1.0	2.4	8.0	1.3
LnGrp Delay(d),s/veh	29.0	21.5	19.1	28.7	26.1	24.2	28.7	30.3	15.0	33.7	24.0	14.9
LnGrp LOS	C	C	B	C	C	C	C	C	B	C	C	B
Approach Vol, veh/h		412			587			1178			1191	
Approach Delay, s/veh		22.8			25.7			29.2			24.2	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.1	23.0	8.9	17.3	9.3	23.9	9.7	16.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	19.0	7.0	16.0	7.0	19.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	6.1	18.2	4.3	8.5	4.7	16.7	5.2	10.7
Green Ext Time (p_c), s	0.0	0.7	0.0	2.4	0.0	2.1	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	26.1
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	95	226	72	43	319	129	99	297	27	31	201	41
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	134	318	101	63	469	190	115	345	31	42	275	56
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.71	0.71	0.71	0.68	0.68	0.68	0.86	0.86	0.86	0.73	0.73	0.73
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	180	583	496	132	533	453	172	975	87	103	757	152
Arrive On Green	0.10	0.31	0.31	0.07	0.29	0.29	0.10	0.30	0.30	0.06	0.26	0.26
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3287	294	1774	2939	590
Grp Volume(v), veh/h	134	318	101	63	469	190	115	185	191	42	164	167
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1811	1774	1770	1759
Q Serve(g_s), s	4.6	8.8	2.9	2.1	14.9	6.0	3.9	5.1	5.2	1.4	4.7	4.8
Cycle Q Clear(g_c), s	4.6	8.8	2.9	2.1	14.9	6.0	3.9	5.1	5.2	1.4	4.7	4.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		0.34
Lane Grp Cap(c), veh/h	180	583	496	132	533	453	172	525	537	103	456	453
V/C Ratio(X)	0.74	0.55	0.20	0.48	0.88	0.42	0.67	0.35	0.36	0.41	0.36	0.37
Avail Cap(c_a), veh/h	200	583	496	200	570	484	200	525	537	200	456	453
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	17.7	15.7	27.6	21.1	18.0	27.1	17.2	17.2	28.2	18.9	18.9
Incr Delay (d2), s/veh	12.7	1.1	0.2	2.6	14.1	0.6	6.7	1.9	1.8	2.6	2.2	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	4.7	1.3	1.1	9.8	2.7	2.2	2.7	2.8	0.8	2.6	2.6
LnGrp Delay(d),s/veh	39.8	18.7	15.9	30.2	35.3	18.6	33.8	19.0	19.0	30.8	21.1	21.2
LnGrp LOS	D	B	B	C	D	B	C	B	B	C	C	C
Approach Vol, veh/h		553			722			491			373	
Approach Delay, s/veh		23.3			30.4			22.5			22.2	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.6	22.4	8.6	23.5	10.0	20.0	10.3	21.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	3.4	7.2	4.1	10.8	5.9	6.8	6.6	16.9
Green Ext Time (p_c), s	0.0	2.6	0.0	3.5	0.0	2.7	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	25.3
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	81	47	80	40	57	93	55	845	54	88	748	74
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	109	64	108	47	67	109	59	909	58	109	923	91
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.74	0.74	0.74	0.85	0.85	0.85	0.93	0.93	0.93	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	183	122	206	116	101	164	134	1166	74	183	1319	590
Arrive On Green	0.10	0.20	0.20	0.07	0.16	0.16	0.08	0.35	0.35	0.10	0.37	0.37
Sat Flow, veh/h	1774	624	1053	1774	639	1040	1774	3379	216	1774	3539	1583
Grp Volume(v), veh/h	109	0	172	47	0	176	59	476	491	109	923	91
Grp Sat Flow(s),veh/h/ln	1774	0	1677	1774	0	1679	1774	1770	1825	1774	1770	1583
Q Serve(g_s), s	3.2	0.0	5.1	1.4	0.0	5.4	1.8	13.3	13.3	3.2	12.2	2.1
Cycle Q Clear(g_c), s	3.2	0.0	5.1	1.4	0.0	5.4	1.8	13.3	13.3	3.2	12.2	2.1
Prop In Lane	1.00		0.63	1.00		0.62	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	183	0	329	116	0	265	134	611	630	183	1319	590
V/C Ratio(X)	0.60	0.00	0.52	0.41	0.00	0.66	0.44	0.78	0.78	0.60	0.70	0.15
Avail Cap(c_a), veh/h	226	0	487	226	0	488	226	611	630	226	1319	590
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.6	0.0	19.8	24.7	0.0	21.8	24.3	16.1	16.1	23.6	14.7	11.5
Incr Delay (d2), s/veh	3.1	0.0	1.3	2.3	0.0	2.8	2.3	9.5	9.2	3.1	3.1	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	2.5	0.8	0.0	2.7	0.9	8.1	8.3	1.7	6.5	1.0
LnGrp Delay(d),s/veh	26.7	0.0	21.1	27.0	0.0	24.6	26.6	25.7	25.4	26.7	17.8	12.0
LnGrp LOS	C		C	C		C	C	C	C	C	B	B
Approach Vol, veh/h		281			223			1026			1123	
Approach Delay, s/veh		23.3			25.1			25.6			18.2	
Approach LOS		C			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.7	23.0	7.6	14.8	8.2	24.5	9.7	12.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	19.0	7.0	16.0	7.0	19.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	5.2	15.3	3.4	7.1	3.8	14.2	5.2	7.4
Green Ext Time (p_c), s	0.0	3.1	0.0	1.3	0.0	3.9	0.0	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	22.2
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	171	369	89	132	659	113	240	719	140	174	499	160
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	209	450	109	155	775	133	255	765	149	207	594	190
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.82	0.82	0.82	0.85	0.85	0.85	0.94	0.94	0.94	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	368	847	379	353	1028	175	278	998	447	222	887	397
Arrive On Green	0.11	0.24	0.24	0.10	0.23	0.23	0.16	0.28	0.28	0.13	0.25	0.25
Sat Flow, veh/h	3442	3539	1583	3442	4376	745	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	209	450	109	155	599	309	255	765	149	207	594	190
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1731	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.7	7.1	3.6	2.7	10.5	10.6	9.0	12.6	4.8	7.4	9.6	6.5
Cycle Q Clear(g_c), s	3.7	7.1	3.6	2.7	10.5	10.6	9.0	12.6	4.8	7.4	9.6	6.5
Prop In Lane	1.00		1.00	1.00		0.43	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	368	847	379	353	797	407	278	998	447	222	887	397
V/C Ratio(X)	0.57	0.53	0.29	0.44	0.75	0.76	0.92	0.77	0.33	0.93	0.67	0.48
Avail Cap(c_a), veh/h	377	887	397	377	850	434	278	998	447	222	887	397
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	21.2	19.8	26.9	22.7	22.7	26.5	21.0	18.2	27.6	21.5	20.4
Incr Delay (d2), s/veh	1.9	0.5	0.4	0.9	3.6	7.2	33.1	5.6	2.0	41.6	4.0	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	3.5	1.6	1.3	5.3	5.9	6.9	6.9	2.3	6.1	5.2	3.3
LnGrp Delay(d),s/veh	29.0	21.7	20.2	27.8	26.2	29.9	59.6	26.6	20.2	69.2	25.5	24.5
LnGrp LOS	C	C	C	C	C	C	E	C	C	E	C	C
Approach Vol, veh/h		768			1063			1169			991	
Approach Delay, s/veh		23.5			27.5			33.0			34.5	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	22.0	10.6	19.3	14.0	20.0	10.8	19.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	8.0	18.0	7.0	16.0	10.0	16.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	9.4	14.6	4.7	9.1	11.0	11.6	5.7	12.6
Green Ext Time (p_c), s	0.0	2.6	0.1	4.4	0.0	3.3	0.1	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	30.1
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	2	37	2	1	16	34	1099	4	13	941	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	68	68	68	87	87	87	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	3	55	3	1	24	43	1390	5	15	1069	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1890	2590	545	2044	2597	697	1090	0	0	1395	0	0
Stage 1	1109	1109	-	1478	1478	-	-	-	-	-	-	-
Stage 2	781	1481	-	566	1119	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	43	25	482	33	25	383	636	-	-	486	-	-
Stage 1	223	283	-	132	188	-	-	-	-	-	-	-
Stage 2	354	187	-	476	280	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	37	23	482	26	23	383	636	-	-	486	-	-
Mov Cap-2 Maneuver	127	102	-	92	101	-	-	-	-	-	-	-
Stage 1	208	274	-	123	175	-	-	-	-	-	-	-
Stage 2	307	174	-	404	271	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.8	20.6	0.3	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	636	-	-	267	259	486	-	-
HCM Lane V/C Ratio	0.068	-	-	0.285	0.108	0.03	-	-
HCM Control Delay (s)	11.1	-	-	23.8	20.6	12.6	-	-
HCM Lane LOS	B	-	-	C	C	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.1	0.4	0.1	-	-

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	9	303	12	33	419	17	27	10	38	31	11	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	70	70	70	67	67	67	64	64	64
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	394	16	47	599	24	40	15	57	48	17	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	599	0	0	394	0	0	1129	1110	394	1146	1110	599
Stage 1	-	-	-	-	-	-	417	417	-	693	693	-
Stage 2	-	-	-	-	-	-	712	693	-	453	417	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	978	-	-	1165	-	-	181	209	655	176	209	502
Stage 1	-	-	-	-	-	-	613	591	-	434	445	-
Stage 2	-	-	-	-	-	-	423	445	-	586	591	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	978	-	-	1165	-	-	155	198	655	146	198	502
Mov Cap-2 Maneuver	-	-	-	-	-	-	155	198	-	146	198	-
Stage 1	-	-	-	-	-	-	605	584	-	429	427	-
Stage 2	-	-	-	-	-	-	373	427	-	515	584	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.6	28.2	39.5
HCM LOS			D	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	265	978	-	-	1165	-	-	189
HCM Lane V/C Ratio	0.422	0.012	-	-	0.04	-	-	0.463
HCM Control Delay (s)	28.2	8.7	-	-	8.2	-	-	39.5
HCM Lane LOS	D	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	2	0	-	-	0.1	-	-	2.2

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Driveway & Cottonwood Ave

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	318	27	9	449	0	3	0	1	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	78	78	78	50	50	50	25	25	25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	424	36	12	576	0	6	0	2	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	576	0	0	460	0	0	1041	1041	442
Stage 1	-	-	-	-	-	-	442	442	-
Stage 2	-	-	-	-	-	-	599	599	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	997	-	-	1101	-	-	255	230	615
Stage 1	-	-	-	-	-	-	648	576	-
Stage 2	-	-	-	-	-	-	549	490	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	997	-	-	1101	-	-	252	0	615
Mov Cap-2 Maneuver	-	-	-	-	-	-	252	0	-
Stage 1	-	-	-	-	-	-	648	0	-
Stage 2	-	-	-	-	-	-	543	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	17.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	296	997	-	-	1101	-	-
HCM Lane V/C Ratio	0.027	-	-	-	0.01	-	-
HCM Control Delay (s)	17.5	0	-	-	8.3	-	-
HCM Lane LOS	C	A	-	-	A	-	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	10	0	0	0	13	1073	0	0	988	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	62	62	62	25	25	25	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	16	0	0	0	15	1262	0	0	1162	4

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1826	2457	583	1166	0	0	1262	0	0
Stage 1	1164	1164	-	-	-	-	-	-	-
Stage 2	662	1293	-	-	-	-	-	-	-
Critical Hdwy	6.84	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	5.84	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	68	30	456	595	-	-	547	-	-
Stage 1	259	267	-	-	-	-	-	-	-
Stage 2	475	231	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	66	0	456	595	-	-	547	-	-
Mov Cap-2 Maneuver	66	0	-	-	-	-	-	-	-
Stage 1	259	0	-	-	-	-	-	-	-
Stage 2	463	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.2	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	595	-	-	456	547	-	-
HCM Lane V/C Ratio	0.026	-	-	0.035	-	-	-
HCM Control Delay (s)	11.2	-	-	13.2	0	-	-
HCM Lane LOS	B	-	-	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0	-	-

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	54	161	63	46	106	84	57	867	58	105	1173	56
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	64	189	74	66	151	120	59	903	60	109	1222	58
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.70	0.70	0.70	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	290	246	138	292	248	130	1420	635	174	1507	674
Arrive On Green	0.08	0.16	0.16	0.08	0.16	0.16	0.07	0.40	0.40	0.10	0.43	0.43
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	64	189	74	66	151	120	59	903	60	109	1222	58
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	2.1	5.7	2.5	2.1	4.4	4.1	1.9	12.3	1.4	3.5	18.1	1.3
Cycle Q Clear(g_c), s	2.1	5.7	2.5	2.1	4.4	4.1	1.9	12.3	1.4	3.5	18.1	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	136	290	246	138	292	248	130	1420	635	174	1507	674
V/C Ratio(X)	0.47	0.65	0.30	0.48	0.52	0.48	0.45	0.64	0.09	0.63	0.81	0.09
Avail Cap(c_a), veh/h	208	498	423	208	498	423	208	1420	635	208	1507	674
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.5	23.7	22.4	26.4	23.1	23.0	26.6	14.4	11.1	25.9	15.1	10.2
Incr Delay (d2), s/veh	2.5	2.5	0.7	2.5	1.4	1.5	2.5	2.2	0.3	4.4	4.8	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	3.1	1.1	1.1	2.4	1.9	1.0	6.3	0.7	1.9	9.8	0.6
LnGrp Delay(d),s/veh	29.0	26.2	23.1	29.0	24.6	24.5	29.1	16.6	11.4	30.3	19.9	10.5
LnGrp LOS	C	C	C	C	C	C	C	B	B	C	B	B
Approach Vol, veh/h		327			337			1022			1389	
Approach Delay, s/veh		26.0			25.4			17.0			20.3	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	28.0	8.7	13.3	8.4	29.5	8.6	13.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	24.0	7.0	16.0	7.0	24.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	5.5	14.3	4.1	7.7	3.9	20.1	4.1	6.4
Green Ext Time (p_c), s	0.0	8.0	0.0	1.6	0.0	3.5	0.0	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	20.4
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	58	92	24	28	85	58	14	893	42	72	1112	81
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	65	103	27	31	96	65	15	930	44	74	1146	84
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.96	0.96	0.96	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	86	100	438	77	178	438	46	1486	70	149	1735	776
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.03	0.43	0.43	0.08	0.49	0.49
Sat Flow, veh/h	0	362	1583	0	644	1583	1774	3441	163	1774	3539	1583
Grp Volume(v), veh/h	168	0	27	127	0	65	15	478	496	74	1146	84
Grp Sat Flow(s),veh/h/ln	362	0	1583	644	0	1583	1774	1770	1834	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.7	0.0	0.0	1.8	0.5	12.2	12.2	2.3	14.1	1.7
Cycle Q Clear(g_c), s	16.0	0.0	0.7	16.0	0.0	1.8	0.5	12.2	12.2	2.3	14.1	1.7
Prop In Lane	0.39		1.00	0.24		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	186	0	438	256	0	438	46	764	792	149	1735	776
V/C Ratio(X)	0.90	0.00	0.06	0.50	0.00	0.15	0.33	0.63	0.63	0.50	0.66	0.11
Avail Cap(c_a), veh/h	186	0	438	256	0	438	215	764	792	215	1735	776
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.3	0.0	15.4	17.2	0.0	15.8	27.7	12.8	12.8	25.3	11.1	7.9
Incr Delay (d2), s/veh	39.6	0.0	0.1	1.5	0.0	0.2	4.0	3.8	3.7	2.5	2.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	0.0	0.3	1.7	0.0	0.8	0.3	6.7	6.9	1.2	7.3	0.8
LnGrp Delay(d),s/veh	60.0	0.0	15.5	18.7	0.0	15.9	31.7	16.6	16.5	27.9	13.1	8.2
LnGrp LOS	E		B	B		B	C	B	B	C	B	A
Approach Vol, veh/h		195			192			989			1304	
Approach Delay, s/veh		53.8			17.8			16.8			13.6	
Approach LOS		D			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.9	29.0		20.0	5.5	32.4		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	25.0		16.0	7.0	25.0		16.0
Max Q Clear Time (g_c+I1), s	4.3	14.2		18.0	2.5	16.1		18.0
Green Ext Time (p_c), s	0.0	8.6		0.0	0.0	7.2		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	18.0
HCM 2010 LOS	B

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HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	42	316	147	41	246	37	80	263	54	28	268	43
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	49	372	173	50	300	45	96	317	65	29	282	45
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.82	0.82	0.82	0.83	0.83	0.83	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	118	482	410	119	484	411	170	1022	207	80	913	144
Arrive On Green	0.07	0.26	0.26	0.07	0.26	0.26	0.10	0.35	0.35	0.05	0.30	0.30
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2934	594	1774	3064	483
Grp Volume(v), veh/h	49	372	173	50	300	45	96	190	192	29	161	166
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1758	1774	1770	1777
Q Serve(g_s), s	1.5	10.6	5.2	1.5	8.1	1.2	3.0	4.5	4.6	0.9	4.0	4.1
Cycle Q Clear(g_c), s	1.5	10.6	5.2	1.5	8.1	1.2	3.0	4.5	4.6	0.9	4.0	4.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.34	1.00		0.27
Lane Grp Cap(c), veh/h	118	482	410	119	484	411	170	617	613	80	527	529
V/C Ratio(X)	0.42	0.77	0.42	0.42	0.62	0.11	0.56	0.31	0.31	0.36	0.31	0.31
Avail Cap(c_a), veh/h	218	587	499	218	587	499	218	617	613	218	527	529
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.6	19.6	17.6	25.6	18.6	16.1	24.7	13.6	13.6	26.4	15.5	15.5
Incr Delay (d2), s/veh	2.3	5.1	0.7	2.3	1.4	0.1	2.9	1.3	1.3	2.7	1.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	6.1	2.4	0.8	4.4	0.6	1.6	2.4	2.4	0.5	2.2	2.2
LnGrp Delay(d),s/veh	27.9	24.7	18.3	27.9	20.0	16.2	27.6	14.9	14.9	29.2	17.0	17.1
LnGrp LOS	C	C	B	C	C	B	C	B	B	C	B	B
Approach Vol, veh/h		594			395			478			356	
Approach Delay, s/veh		23.1			20.6			17.4			18.0	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.6	23.9	7.8	18.8	9.5	21.0	7.8	18.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	17.0	7.0	18.0	7.0	17.0	7.0	18.0
Max Q Clear Time (g_c+I1), s	2.9	6.6	3.5	12.6	5.0	6.1	3.5	10.1
Green Ext Time (p_c), s	0.0	3.0	0.0	2.2	0.0	3.1	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	20.1
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	93	213	62	29	148	90	63	817	41	139	967	119
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	109	251	73	37	190	115	67	869	44	148	1029	127
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.78	0.78	0.78	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	180	396	336	97	308	262	143	1193	534	199	1304	583
Arrive On Green	0.10	0.21	0.21	0.05	0.17	0.17	0.08	0.34	0.34	0.11	0.37	0.37
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	109	251	73	37	190	115	67	869	44	148	1029	127
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.3	6.9	2.1	1.1	5.3	3.7	2.0	12.2	1.1	4.6	14.6	3.1
Cycle Q Clear(g_c), s	3.3	6.9	2.1	1.1	5.3	3.7	2.0	12.2	1.1	4.6	14.6	3.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	180	396	336	97	308	262	143	1193	534	199	1304	583
V/C Ratio(X)	0.60	0.63	0.22	0.38	0.62	0.44	0.47	0.73	0.08	0.75	0.79	0.22
Avail Cap(c_a), veh/h	220	529	450	220	529	450	220	1193	534	220	1304	583
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.2	20.2	18.3	25.7	21.9	21.2	24.7	16.4	12.7	24.2	15.8	12.2
Incr Delay (d2), s/veh	3.2	1.7	0.3	2.5	2.0	1.2	2.4	3.9	0.3	11.7	4.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	3.7	1.0	0.6	2.9	1.7	1.1	6.6	0.5	2.9	7.9	1.5
LnGrp Delay(d),s/veh	27.5	21.9	18.6	28.2	23.9	22.3	27.1	20.3	13.0	35.9	20.8	13.1
LnGrp LOS	C	C	B	C	C	C	C	C	B	D	C	B
Approach Vol, veh/h		433			342			980			1304	
Approach Delay, s/veh		22.7			23.8			20.5			21.7	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	23.0	7.1	16.0	8.5	24.8	9.7	13.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	19.0	7.0	16.0	7.0	19.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	6.6	14.2	3.1	8.9	4.0	16.6	5.3	7.3
Green Ext Time (p_c), s	0.0	4.1	0.0	1.7	0.0	2.1	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	21.7
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	224	52	28	197	39	28	259	17	35	261	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	20	277	64	30	214	42	32	294	19	37	275	19
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.81	0.81	0.81	0.92	0.92	0.92	0.88	0.88	0.88	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	60	401	341	85	426	362	89	1217	78	100	1232	85
Arrive On Green	0.03	0.22	0.22	0.05	0.23	0.23	0.05	0.36	0.36	0.06	0.37	0.37
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3377	217	1774	3361	231
Grp Volume(v), veh/h	20	277	64	30	214	42	32	153	160	37	144	150
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1824	1774	1770	1822
Q Serve(g_s), s	0.5	6.8	1.7	0.8	5.0	1.0	0.9	3.0	3.1	1.0	2.8	2.8
Cycle Q Clear(g_c), s	0.5	6.8	1.7	0.8	5.0	1.0	0.9	3.0	3.1	1.0	2.8	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		0.13
Lane Grp Cap(c), veh/h	60	401	341	85	426	362	89	638	658	100	649	668
V/C Ratio(X)	0.33	0.69	0.19	0.35	0.50	0.12	0.36	0.24	0.24	0.37	0.22	0.22
Avail Cap(c_a), veh/h	249	634	539	249	634	539	249	638	658	249	649	668
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.6	18.1	16.0	23.0	16.8	15.3	22.9	11.2	11.2	22.7	10.9	10.9
Incr Delay (d2), s/veh	3.2	2.1	0.3	2.5	0.9	0.1	2.4	0.9	0.9	2.3	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	3.7	0.7	0.5	2.7	0.5	0.5	1.6	1.7	0.6	1.5	1.6
LnGrp Delay(d),s/veh	26.7	20.2	16.3	25.5	17.7	15.4	25.4	12.1	12.1	25.0	11.7	11.7
LnGrp LOS	C	C	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		361			286			345			331	
Approach Delay, s/veh		19.9			18.2			13.3			13.2	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	22.0	6.4	14.7	6.5	22.3	5.7	15.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	18.0	7.0	17.0	7.0	18.0	7.0	17.0
Max Q Clear Time (g_c+I1), s	3.0	5.1	2.8	8.8	2.9	4.8	2.5	7.0
Green Ext Time (p_c), s	0.0	2.7	0.0	1.9	0.0	2.7	0.0	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	16.1
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	47	40	19	40	42	41	865	50	68	966	28
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	25	53	45	23	48	50	44	920	53	73	1039	30
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.88	0.88	0.88	0.84	0.84	0.84	0.94	0.94	0.94	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	73	131	111	68	116	120	115	1348	78	161	1494	669
Arrive On Green	0.04	0.14	0.14	0.04	0.14	0.14	0.06	0.40	0.40	0.09	0.42	0.42
Sat Flow, veh/h	1774	932	791	1774	837	872	1774	3402	196	1774	3539	1583
Grp Volume(v), veh/h	25	0	98	23	0	98	44	479	494	73	1039	30
Grp Sat Flow(s),veh/h/ln	1774	0	1723	1774	0	1709	1774	1770	1828	1774	1770	1583
Q Serve(g_s), s	0.7	0.0	2.5	0.6	0.0	2.5	1.1	10.7	10.7	1.9	11.5	0.5
Cycle Q Clear(g_c), s	0.7	0.0	2.5	0.6	0.0	2.5	1.1	10.7	10.7	1.9	11.5	0.5
Prop In Lane	1.00		0.46	1.00		0.51	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	73	0	243	68	0	236	115	701	724	161	1494	669
V/C Ratio(X)	0.34	0.00	0.40	0.34	0.00	0.42	0.38	0.68	0.68	0.45	0.70	0.04
Avail Cap(c_a), veh/h	259	0	575	259	0	570	259	701	724	259	1494	669
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.4	0.0	18.8	22.5	0.0	18.9	21.5	12.0	12.0	20.7	11.3	8.2
Incr Delay (d2), s/veh	2.7	0.0	1.1	2.9	0.0	1.2	2.1	5.3	5.2	2.0	2.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.2	0.3	0.0	1.2	0.6	6.2	6.4	1.0	6.0	0.3
LnGrp Delay(d),s/veh	25.1	0.0	19.8	25.3	0.0	20.1	23.6	17.3	17.1	22.7	14.0	8.3
LnGrp LOS	C		B	C		C	C	B	B	C	B	A
Approach Vol, veh/h		123			121			1017			1142	
Approach Delay, s/veh		20.9			21.1			17.5			14.4	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.4	23.0	5.8	10.8	7.1	24.2	6.0	10.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	19.0	7.0	16.0	7.0	19.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	3.9	12.7	2.6	4.5	3.1	13.5	2.7	4.5
Green Ext Time (p_c), s	0.0	5.1	0.0	0.7	0.0	4.5	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.4
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	402	761	273	168	502	97	241	551	106	140	709	129
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	428	810	290	195	584	113	265	605	116	154	779	142
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	461	898	402	317	909	173	305	1172	524	193	949	424
Arrive On Green	0.13	0.25	0.25	0.09	0.21	0.21	0.17	0.33	0.33	0.11	0.27	0.27
Sat Flow, veh/h	3442	3539	1583	3442	4292	817	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	428	810	290	195	459	238	265	605	116	154	779	142
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1719	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	9.2	16.5	12.5	4.1	9.2	9.4	10.9	10.3	3.9	6.3	15.4	5.4
Cycle Q Clear(g_c), s	9.2	16.5	12.5	4.1	9.2	9.4	10.9	10.3	3.9	6.3	15.4	5.4
Prop In Lane	1.00		1.00	1.00		0.48	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	461	898	402	317	718	364	305	1172	524	193	949	424
V/C Ratio(X)	0.93	0.90	0.72	0.61	0.64	0.65	0.87	0.52	0.22	0.80	0.82	0.33
Avail Cap(c_a), veh/h	461	901	403	323	727	369	309	1172	524	285	949	424
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.0	27.0	25.4	32.6	26.8	26.9	30.1	20.1	18.0	32.5	25.6	22.0
Incr Delay (d2), s/veh	25.1	12.2	6.2	3.4	1.9	4.0	22.2	1.6	1.0	9.4	7.9	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	9.5	6.1	2.1	4.5	4.9	7.2	5.3	1.8	3.6	8.5	2.6
LnGrp Delay(d),s/veh	57.1	39.1	31.7	36.0	28.7	30.9	52.3	21.8	19.0	41.9	33.6	24.1
LnGrp LOS	E	D	C	D	C	C	D	C	B	D	C	C
Approach Vol, veh/h		1528			892			986			1075	
Approach Delay, s/veh		42.7			30.9			29.6			33.5	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	28.7	10.9	22.9	16.8	24.0	14.0	19.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	12.0	21.0	7.0	19.0	13.0	20.0	10.0	16.0
Max Q Clear Time (g_c+I1), s	8.3	12.3	6.1	18.5	12.9	17.4	11.2	11.4
Green Ext Time (p_c), s	0.1	5.8	0.1	0.4	0.0	2.0	0.0	3.5

Intersection Summary	
HCM 2010 Ctrl Delay	35.3
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	14	3	36	2	1	11	36	968	2	43	1212	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	58	58	58	97	97	97	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	4	46	3	2	19	41	1098	2	44	1237	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1966	2517	629	1889	2526	550	1257	0	0	1100	0	0
Stage 1	1335	1335	-	1181	1181	-	-	-	-	-	-	-
Stage 2	631	1182	-	708	1345	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	37	28	425	43	27	479	549	-	-	630	-	-
Stage 1	162	221	-	202	262	-	-	-	-	-	-	-
Stage 2	436	262	-	392	218	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	31	24	425	33	23	479	549	-	-	630	-	-
Mov Cap-2 Maneuver	107	103	-	116	99	-	-	-	-	-	-	-
Stage 1	150	206	-	187	242	-	-	-	-	-	-	-
Stage 2	385	242	-	319	203	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	29	19.2	0.4	0.4
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	549	-	-	217	278	630	-	-
HCM Lane V/C Ratio	0.074	-	-	0.313	0.087	0.07	-	-
HCM Control Delay (s)	12.1	-	-	29	19.2	11.1	-	-
HCM Lane LOS	B	-	-	D	C	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.3	0.3	0.2	-	-

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	16	303	50	14	217	8	28	5	8	6	2	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	88	88	88	60	60	60	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	309	51	16	247	9	47	8	13	8	3	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	247	0	0	309	0	0	628	620	309	631	620	247
Stage 1	-	-	-	-	-	-	342	342	-	278	278	-
Stage 2	-	-	-	-	-	-	286	278	-	353	342	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1319	-	-	1252	-	-	395	404	731	394	404	792
Stage 1	-	-	-	-	-	-	673	638	-	728	680	-
Stage 2	-	-	-	-	-	-	721	680	-	664	638	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1319	-	-	1252	-	-	379	394	731	373	394	792
Mov Cap-2 Maneuver	-	-	-	-	-	-	379	394	-	373	394	-
Stage 1	-	-	-	-	-	-	665	630	-	719	671	-
Stage 2	-	-	-	-	-	-	697	671	-	635	630	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.5	15.2	12.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	420	1319	-	-	1252	-	-	533
HCM Lane V/C Ratio	0.163	0.012	-	-	0.013	-	-	0.045
HCM Control Delay (s)	15.2	7.8	-	-	7.9	-	-	12.1
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.6	0	-	-	0	-	-	0.1

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Driveway & Cottonwood Ave

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	381	12	0	263	0	4	0	4	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	81	81	81	33	33	33	25	25	25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	419	13	0	325	0	12	0	12	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	325	0	0	432	0	0	750	750	425
Stage 1	-	-	-	-	-	-	425	425	-
Stage 2	-	-	-	-	-	-	325	325	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1235	-	-	1128	-	-	379	340	629
Stage 1	-	-	-	-	-	-	659	586	-
Stage 2	-	-	-	-	-	-	732	649	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1235	-	-	1128	-	-	379	0	629
Mov Cap-2 Maneuver	-	-	-	-	-	-	379	0	-
Stage 1	-	-	-	-	-	-	659	0	-
Stage 2	-	-	-	-	-	-	732	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	473	1235	-	-	1128	-	-
HCM Lane V/C Ratio	0.051	-	-	-	-	-	-
HCM Control Delay (s)	13	0	-	-	0	-	-
HCM Lane LOS	B	A	-	-	A	-	-
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	11	0	67	0	0	0	49	955	0	0	1148	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	25	25	25	95	95	95	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	0	93	0	0	0	52	1005	0	0	1234	37

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1859	2361	635	1271	0	0	1005	0	0
Stage 1	1253	1253	-	-	-	-	-	-	-
Stage 2	606	1108	-	-	-	-	-	-	-
Critical Hdwy	6.84	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	5.84	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	65	35	421	542	-	-	685	-	-
Stage 1	232	242	-	-	-	-	-	-	-
Stage 2	507	284	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	59	0	421	542	-	-	685	-	-
Mov Cap-2 Maneuver	59	0	-	-	-	-	-	-	-
Stage 1	232	0	-	-	-	-	-	-	-
Stage 2	458	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	34.8	0.6	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	542	-	-	226	685	-	-
HCM Lane V/C Ratio	0.095	-	-	0.479	-	-	-
HCM Control Delay (s)	12.3	-	-	34.8	0	-	-
HCM Lane LOS	B	-	-	D	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	2.4	0	-	-

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	78	31	29	61	73	46	870	32	62	816	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	56	87	34	35	73	88	51	956	35	69	907	49
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.83	0.83	0.83	0.91	0.91	0.91	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	134	298	253	96	258	219	126	1344	601	153	1398	626
Arrive On Green	0.08	0.16	0.16	0.05	0.14	0.14	0.07	0.38	0.38	0.09	0.40	0.40
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	56	87	34	35	73	88	51	956	35	69	907	49
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	1.5	2.1	0.9	1.0	1.8	2.5	1.4	11.5	0.7	1.8	10.4	1.0
Cycle Q Clear(g_c), s	1.5	2.1	0.9	1.0	1.8	2.5	1.4	11.5	0.7	1.8	10.4	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	134	298	253	96	258	219	126	1344	601	153	1398	626
V/C Ratio(X)	0.42	0.29	0.13	0.37	0.28	0.40	0.40	0.71	0.06	0.45	0.65	0.08
Avail Cap(c_a), veh/h	248	596	507	248	596	507	248	1344	601	248	1398	626
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.1	18.5	18.0	22.8	19.3	19.7	22.2	13.2	9.8	21.7	12.3	9.4
Incr Delay (d2), s/veh	2.1	0.5	0.2	2.3	0.6	1.2	2.1	3.2	0.2	2.1	2.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.1	0.4	0.5	0.9	1.2	0.7	6.2	0.3	1.0	5.5	0.5
LnGrp Delay(d),s/veh	24.1	19.0	18.3	25.2	19.9	20.9	24.3	16.4	10.0	23.8	14.6	9.7
LnGrp LOS	C	B	B	C	B	C	C	B	B	C	B	A
Approach Vol, veh/h		177			196			1042			1025	
Approach Delay, s/veh		20.5			21.3			16.6			15.0	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	23.0	6.7	12.0	7.6	23.8	7.8	10.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	19.0	7.0	16.0	7.0	19.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	3.8	13.5	3.0	4.1	3.4	12.4	3.5	4.5
Green Ext Time (p_c), s	0.0	4.5	0.0	0.9	0.0	5.3	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	16.6
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	71	82	24	34	59	57	22	825	24	26	779	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	82	94	28	39	68	66	26	982	29	30	906	60
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.84	0.84	0.84	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	95	76	456	88	114	456	74	1579	47	83	1609	720
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.04	0.45	0.45	0.05	0.45	0.45
Sat Flow, veh/h	0	265	1583	0	395	1583	1774	3510	104	1774	3539	1583
Grp Volume(v), veh/h	176	0	28	107	0	66	26	495	516	30	906	60
Grp Sat Flow(s),veh/h/ln	265	0	1583	395	0	1583	1774	1770	1844	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.7	0.0	0.0	1.7	0.8	11.9	11.9	0.9	10.4	1.2
Cycle Q Clear(g_c), s	16.0	0.0	0.7	16.0	0.0	1.7	0.8	11.9	11.9	0.9	10.4	1.2
Prop In Lane	0.47		1.00	0.36		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	171	0	456	202	0	456	74	796	829	83	1609	720
V/C Ratio(X)	1.03	0.00	0.06	0.53	0.00	0.14	0.35	0.62	0.62	0.36	0.56	0.08
Avail Cap(c_a), veh/h	171	0	456	202	0	456	223	796	829	223	1609	720
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.2	0.0	14.4	16.4	0.0	14.7	25.9	11.7	11.7	25.7	11.1	8.6
Incr Delay (d2), s/veh	76.3	0.0	0.1	2.6	0.0	0.1	2.8	3.6	3.5	2.6	1.4	0.2
Initial Q Delay(d3),s/veh	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	0.0	0.3	1.4	0.0	0.8	0.4	6.6	6.8	0.5	5.4	0.6
LnGrp Delay(d),s/veh	97.7	0.0	14.4	19.0	0.0	14.9	28.7	15.3	15.2	28.3	12.5	8.8
LnGrp LOS	F		B	B		B	C	B	B	C	B	A
Approach Vol, veh/h		204			173			1037			996	
Approach Delay, s/veh		86.3			17.4			15.6			12.8	
Approach LOS		F			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.6	29.0		20.0	6.3	29.3		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	25.0		16.0	7.0	25.0		16.0
Max Q Clear Time (g_c+I1), s	2.9	13.9		18.0	2.8	12.4		18.0
Green Ext Time (p_c), s	0.0	8.1		0.0	0.0	9.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	195	104	44	243	24	88	213	43	20	171	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	21	250	133	52	289	29	91	220	44	22	184	22
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.78	0.78	0.78	0.84	0.84	0.84	0.97	0.97	0.97	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	62	383	325	126	449	382	173	1132	222	65	1028	121
Arrive On Green	0.04	0.21	0.21	0.07	0.24	0.24	0.10	0.38	0.38	0.04	0.32	0.32
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2950	580	1774	3189	377
Grp Volume(v), veh/h	21	250	133	52	289	29	91	130	134	22	101	105
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1760	1774	1770	1796
Q Serve(g_s), s	0.6	6.5	3.8	1.5	7.3	0.7	2.6	2.6	2.7	0.6	2.2	2.2
Cycle Q Clear(g_c), s	0.6	6.5	3.8	1.5	7.3	0.7	2.6	2.6	2.7	0.6	2.2	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.33	1.00		0.21
Lane Grp Cap(c), veh/h	62	383	325	126	449	382	173	679	675	65	571	579
V/C Ratio(X)	0.34	0.65	0.41	0.41	0.64	0.08	0.52	0.19	0.20	0.34	0.18	0.18
Avail Cap(c_a), veh/h	236	601	511	236	601	511	269	679	675	236	571	579
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.8	19.2	18.2	23.4	18.0	15.5	22.6	10.8	10.8	24.8	12.8	12.9
Incr Delay (d2), s/veh	3.1	1.9	0.8	2.2	1.5	0.1	2.4	0.6	0.7	3.0	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	3.5	1.7	0.8	4.0	0.3	1.4	1.4	1.4	0.4	1.1	1.2
LnGrp Delay(d),s/veh	28.0	21.1	19.0	25.6	19.5	15.5	25.1	11.4	11.5	27.8	13.5	13.5
LnGrp LOS	C	C	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		404			370			355			228	
Approach Delay, s/veh		20.8			20.1			15.0			14.9	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	24.2	7.7	14.8	9.2	21.0	5.9	16.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	18.0	7.0	17.0	8.0	17.0	7.0	17.0
Max Q Clear Time (g_c+I1), s	2.6	4.7	3.5	8.5	4.6	4.2	2.6	9.3
Green Ext Time (p_c), s	0.0	2.2	0.0	2.3	0.1	2.1	0.0	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	18.1
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	80	125	51	51	157	153	72	743	54	122	650	96
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	101	158	65	89	275	268	79	816	59	140	747	110
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.79	0.79	0.79	0.57	0.57	0.57	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	171	418	355	162	408	347	153	1083	484	190	1156	517
Arrive On Green	0.10	0.22	0.22	0.09	0.22	0.22	0.09	0.31	0.31	0.11	0.33	0.33
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	101	158	65	89	275	268	79	816	59	140	747	110
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.2	4.2	2.0	2.8	8.0	9.4	2.5	12.2	1.6	4.5	10.6	3.0
Cycle Q Clear(g_c), s	3.2	4.2	2.0	2.8	8.0	9.4	2.5	12.2	1.6	4.5	10.6	3.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	171	418	355	162	408	347	153	1083	484	190	1156	517
V/C Ratio(X)	0.59	0.38	0.18	0.55	0.67	0.77	0.52	0.75	0.12	0.74	0.65	0.21
Avail Cap(c_a), veh/h	211	506	431	211	506	431	211	1083	484	241	1156	517
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.5	19.4	18.5	25.6	21.0	21.6	25.7	18.4	14.7	25.5	16.9	14.3
Incr Delay (d2), s/veh	3.3	0.6	0.2	2.9	2.5	6.7	2.7	4.9	0.5	8.5	2.8	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	2.2	0.9	1.5	4.3	4.7	1.3	6.6	0.8	2.7	5.6	1.4
LnGrp Delay(d),s/veh	28.7	19.9	18.7	28.5	23.6	28.3	28.4	23.3	15.2	34.0	19.7	15.3
LnGrp LOS	C	B	B	C	C	C	C	C	B	C	B	B
Approach Vol, veh/h		324			632			954			997	
Approach Delay, s/veh		22.4			26.3			23.2			21.2	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	22.0	9.4	17.2	9.1	23.2	9.7	16.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	8.0	18.0	7.0	16.0	7.0	19.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	6.5	14.2	4.8	6.2	4.5	12.6	5.2	11.4
Green Ext Time (p_c), s	0.0	3.0	0.0	2.5	0.0	4.7	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	23.1
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	169	58	9	189	28	31	157	14	25	170	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	57	302	104	13	278	41	37	187	17	29	195	20
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.56	0.56	0.56	0.68	0.68	0.68	0.84	0.84	0.84	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	135	515	438	41	416	354	99	1123	101	82	1077	109
Arrive On Green	0.08	0.28	0.28	0.02	0.22	0.22	0.06	0.34	0.34	0.05	0.33	0.33
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3284	296	1774	3245	329
Grp Volume(v), veh/h	57	302	104	13	278	41	37	100	104	29	105	110
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1811	1774	1770	1805
Q Serve(g_s), s	1.6	7.2	2.6	0.4	7.0	1.1	1.0	2.0	2.1	0.8	2.2	2.2
Cycle Q Clear(g_c), s	1.6	7.2	2.6	0.4	7.0	1.1	1.0	2.0	2.1	0.8	2.2	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		0.18
Lane Grp Cap(c), veh/h	135	515	438	41	416	354	99	605	619	82	588	599
V/C Ratio(X)	0.42	0.59	0.24	0.32	0.67	0.12	0.37	0.17	0.17	0.35	0.18	0.18
Avail Cap(c_a), veh/h	243	655	557	243	655	557	243	605	619	243	588	599
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.6	16.0	14.3	24.6	18.1	15.8	23.3	11.8	11.8	23.7	12.1	12.2
Incr Delay (d2), s/veh	2.1	1.1	0.3	4.4	1.9	0.1	2.3	0.6	0.6	2.6	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	3.8	1.2	0.2	3.8	0.5	0.6	1.1	1.1	0.5	1.2	1.2
LnGrp Delay(d),s/veh	24.7	17.1	14.6	29.0	20.0	16.0	25.6	12.3	12.4	26.2	12.8	12.8
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		463			332			241			244	
Approach Delay, s/veh		17.5			19.8			14.4			14.4	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	21.5	5.2	18.2	6.9	21.0	7.9	15.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	17.0	7.0	18.0	7.0	17.0	7.0	18.0
Max Q Clear Time (g_c+I1), s	2.8	4.1	2.4	9.2	3.0	4.2	3.6	9.0
Green Ext Time (p_c), s	0.0	1.8	0.0	2.4	0.0	1.8	0.0	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	16.9
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	37	27	24	31	59	30	766	35	60	723	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	25	44	32	31	40	77	31	798	36	67	812	29
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.77	0.77	0.77	0.96	0.96	0.96	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	73	138	100	88	83	160	88	1361	61	153	1527	683
Arrive On Green	0.04	0.14	0.14	0.05	0.15	0.15	0.05	0.39	0.39	0.09	0.43	0.43
Sat Flow, veh/h	1774	1004	730	1774	571	1098	1774	3449	156	1774	3539	1583
Grp Volume(v), veh/h	25	0	76	31	0	117	31	409	425	67	812	29
Grp Sat Flow(s),veh/h/ln	1774	0	1734	1774	0	1669	1774	1770	1835	1774	1770	1583
Q Serve(g_s), s	0.7	0.0	1.9	0.8	0.0	3.1	0.8	8.8	8.8	1.7	8.1	0.5
Cycle Q Clear(g_c), s	0.7	0.0	1.9	0.8	0.0	3.1	0.8	8.8	8.8	1.7	8.1	0.5
Prop In Lane	1.00		0.42	1.00		0.66	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	73	0	238	88	0	243	88	698	724	153	1527	683
V/C Ratio(X)	0.34	0.00	0.32	0.35	0.00	0.48	0.35	0.59	0.59	0.44	0.53	0.04
Avail Cap(c_a), veh/h	258	0	576	258	0	555	258	698	724	258	1527	683
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.4	0.0	18.7	22.1	0.0	18.9	22.1	11.5	11.5	20.9	10.1	7.9
Incr Delay (d2), s/veh	2.7	0.0	0.8	2.4	0.0	1.5	2.4	3.6	3.5	2.0	1.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.0	0.5	0.0	1.5	0.5	4.9	5.1	0.9	4.2	0.2
LnGrp Delay(d),s/veh	25.2	0.0	19.5	24.6	0.0	20.4	24.6	15.1	14.9	22.9	11.4	8.0
LnGrp LOS	C		B	C		C	C	B	B	C	B	A
Approach Vol, veh/h		101			148			865			908	
Approach Delay, s/veh		20.9			21.3			15.3			12.2	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	23.0	6.4	10.6	6.4	24.8	6.0	11.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	19.0	7.0	16.0	7.0	19.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	3.7	10.8	2.8	3.9	2.8	10.1	2.7	5.1
Green Ext Time (p_c), s	0.0	5.7	0.0	0.8	0.0	6.0	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	14.6
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	329	396	206	157	370	87	274	521	68	112	475	153
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	366	440	229	183	430	101	301	573	75	122	516	166
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.86	0.86	0.86	0.91	0.91	0.91	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	415	732	328	350	780	178	344	1260	564	167	906	405
Arrive On Green	0.12	0.21	0.21	0.10	0.19	0.19	0.19	0.36	0.36	0.09	0.26	0.26
Sat Flow, veh/h	3442	3539	1583	3442	4142	944	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	366	440	229	183	350	181	301	573	75	122	516	166
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1696	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.9	7.5	8.9	3.3	6.2	6.5	10.9	8.3	2.1	4.4	8.4	5.8
Cycle Q Clear(g_c), s	6.9	7.5	8.9	3.3	6.2	6.5	10.9	8.3	2.1	4.4	8.4	5.8
Prop In Lane	1.00		1.00	1.00		0.56	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	415	732	328	350	638	319	344	1260	564	167	906	405
V/C Ratio(X)	0.88	0.60	0.70	0.52	0.55	0.57	0.87	0.45	0.13	0.73	0.57	0.41
Avail Cap(c_a), veh/h	415	853	382	415	817	409	347	1260	564	267	906	405
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.7	23.8	24.4	28.3	24.4	24.5	26.0	16.4	14.5	29.2	21.5	20.5
Incr Delay (d2), s/veh	19.4	0.9	4.6	1.2	0.7	1.6	20.9	1.2	0.5	6.0	2.6	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	3.8	4.3	1.6	2.9	3.2	7.4	4.2	1.0	2.4	4.4	2.9
LnGrp Delay(d),s/veh	48.2	24.7	29.0	29.5	25.1	26.1	46.9	17.6	14.9	35.2	24.1	23.6
LnGrp LOS	D	C	C	C	C	C	D	B	B	D	C	C
Approach Vol, veh/h		1035			714			949			804	
Approach Delay, s/veh		34.0			26.5			26.7			25.7	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	27.6	10.8	17.7	16.9	21.0	12.0	16.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	10.0	20.0	8.0	16.0	13.0	17.0	8.0	16.0
Max Q Clear Time (g_c+I1), s	6.4	10.3	5.3	10.9	12.9	10.4	8.9	8.5
Green Ext Time (p_c), s	0.1	5.2	0.1	2.8	0.0	3.9	0.0	3.8

Intersection Summary	
HCM 2010 Ctrl Delay	28.6
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	18	4	27	3	6	14	37	916	3	34	824	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	72	72	72	89	89	89	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	6	42	4	8	19	46	1132	4	39	947	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1697	2262	483	1780	2270	568	967	0	0	1136	0	0
Stage 1	1035	1035	-	1225	1225	-	-	-	-	-	-	-
Stage 2	662	1227	-	555	1045	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	60	40	530	52	40	466	708	-	-	611	-	-
Stage 1	248	307	-	190	249	-	-	-	-	-	-	-
Stage 2	417	249	-	484	304	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	49	35	530	42	35	466	708	-	-	611	-	-
Mov Cap-2 Maneuver	145	121	-	126	124	-	-	-	-	-	-	-
Stage 1	232	287	-	178	233	-	-	-	-	-	-	-
Stage 2	360	233	-	409	285	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	27.4	23.6	0.4	0.4
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	708	-	-	235	225	611	-	-
HCM Lane V/C Ratio	0.065	-	-	0.321	0.142	0.064	-	-
HCM Control Delay (s)	10.4	-	-	27.4	23.6	11.3	-	-
HCM Lane LOS	B	-	-	D	C	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.3	0.5	0.2	-	-

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	23	258	42	3	229	4	31	4	9	2	2	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	57	57	57	58	58	58	79	79	79	65	65	65
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	453	74	5	395	7	39	5	11	3	3	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	395	0	0	453	0	0	947	938	453	947	938	395
Stage 1	-	-	-	-	-	-	533	533	-	405	405	-
Stage 2	-	-	-	-	-	-	414	405	-	542	533	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1164	-	-	1108	-	-	241	264	607	241	264	654
Stage 1	-	-	-	-	-	-	531	525	-	622	598	-
Stage 2	-	-	-	-	-	-	616	598	-	525	525	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1164	-	-	1108	-	-	227	254	607	226	254	654
Mov Cap-2 Maneuver	-	-	-	-	-	-	227	254	-	226	254	-
Stage 1	-	-	-	-	-	-	513	507	-	601	595	-
Stage 2	-	-	-	-	-	-	597	595	-	492	507	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.1	22.3	13.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	263	1164	-	-	1108	-	-	426
HCM Lane V/C Ratio	0.212	0.035	-	-	0.005	-	-	0.047
HCM Control Delay (s)	22.3	8.2	-	-	8.3	-	-	13.9
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.8	0.1	-	-	0	-	-	0.1

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Driveway & Cottonwood Ave

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	222	121	19	293	0	47	0	39	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	81	81	81	52	52	52	25	25	25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	288	157	23	362	0	90	0	75	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	362	0	0	445	0	0	776	776	367
Stage 1	-	-	-	-	-	-	367	367	-
Stage 2	-	-	-	-	-	-	409	409	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1197	-	-	1115	-	-	366	328	678
Stage 1	-	-	-	-	-	-	701	622	-
Stage 2	-	-	-	-	-	-	671	596	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1197	-	-	1115	-	-	358	0	678
Mov Cap-2 Maneuver	-	-	-	-	-	-	358	0	-
Stage 1	-	-	-	-	-	-	701	0	-
Stage 2	-	-	-	-	-	-	657	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	17.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	455	1197	-	-	1115	-	-
HCM Lane V/C Ratio	0.363	-	-	-	0.021	-	-
HCM Control Delay (s)	17.4	0	-	-	8.3	-	-
HCM Lane LOS	C	A	-	-	A	-	-
HCM 95th %tile Q(veh)	1.6	0	-	-	0.1	-	-

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	19	0	71	0	0	0	63	910	0	0	796	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	25	25	25	82	82	82	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	0	89	0	0	0	77	1110	0	0	926	40

Major/Minor	Minor2						Major1			Major2		
Conflicting Flow All	1654	2208	483				965	0	0	1110	0	0
Stage 1	945	945	-				-	-	-	-	-	-
Stage 2	709	1263	-				-	-	-	-	-	-
Critical Hdwy	6.84	6.54	6.94				4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	5.84	5.54	-				-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	5.54	-				-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32				2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	89	44	530				709	-	-	625	-	-
Stage 1	338	339	-				-	-	-	-	-	-
Stage 2	449	239	-				-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	79	0	530				709	-	-	625	-	-
Mov Cap-2 Maneuver	79	0	-				-	-	-	-	-	-
Stage 1	338	0	-				-	-	-	-	-	-
Stage 2	400	0	-				-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	32.6	0.7	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	709	-	-	240	625	-	-
HCM Lane V/C Ratio	0.108	-	-	0.469	-	-	-
HCM Control Delay (s)	10.7	-	-	32.6	0	-	-
HCM Lane LOS	B	-	-	D	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	2.3	0	-	-

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	24	76	55	83	127	177	57	1031	53	70	844	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	35	110	80	94	144	201	66	1185	61	80	959	30
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.69	0.69	0.69	0.88	0.88	0.88	0.87	0.87	0.87	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	92	252	214	166	330	280	140	1452	650	154	1482	663
Arrive On Green	0.05	0.14	0.14	0.09	0.18	0.18	0.08	0.41	0.41	0.09	0.42	0.42
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	35	110	80	94	144	201	66	1185	61	80	959	30
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	1.1	3.2	2.7	3.0	4.0	7.0	2.1	17.4	1.4	2.5	12.6	0.7
Cycle Q Clear(g_c), s	1.1	3.2	2.7	3.0	4.0	7.0	2.1	17.4	1.4	2.5	12.6	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	92	252	214	166	330	280	140	1452	650	154	1482	663
V/C Ratio(X)	0.38	0.44	0.37	0.57	0.44	0.72	0.47	0.82	0.09	0.52	0.65	0.05
Avail Cap(c_a), veh/h	212	510	433	212	510	433	212	1452	650	212	1482	663
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	23.2	23.0	25.4	21.5	22.7	25.8	15.3	10.6	25.5	13.6	10.1
Incr Delay (d2), s/veh	2.6	1.2	1.1	3.0	0.9	3.4	2.5	5.2	0.3	2.7	2.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.7	1.2	1.6	2.2	3.3	1.1	9.4	0.7	1.3	6.6	0.3
LnGrp Delay(d),s/veh	29.4	24.4	24.1	28.4	22.4	26.1	28.2	20.5	10.9	28.2	15.7	10.2
LnGrp LOS	C	C	C	C	C	C	C	C	B	C	B	B
Approach Vol, veh/h		225			439			1312			1069	
Approach Delay, s/veh		25.1			25.4			20.4			16.5	
Approach LOS		C			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	28.0	9.5	11.9	8.6	28.5	7.0	14.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	24.0	7.0	16.0	7.0	24.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	4.5	19.4	5.0	5.2	4.1	14.6	3.1	9.0
Green Ext Time (p_c), s	0.0	4.1	0.0	1.7	0.0	7.8	0.0	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	20.1
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	67	70	45	61	92	56	31	1032	25	32	885	72
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	77	80	52	81	123	75	36	1200	29	38	1054	86
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.87	0.87	0.87	0.75	0.75	0.75	0.86	0.86	0.86	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	96	69	451	90	99	451	95	1573	38	99	1584	709
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.05	0.45	0.45	0.06	0.45	0.45
Sat Flow, veh/h	0	241	1583	0	347	1583	1774	3532	85	1774	3539	1583
Grp Volume(v), veh/h	157	0	52	204	0	75	36	601	628	38	1054	86
Grp Sat Flow(s),veh/h/ln	241	0	1583	347	0	1583	1774	1770	1848	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	1.4	0.0	0.0	2.0	1.1	16.0	16.0	1.2	13.2	1.8
Cycle Q Clear(g_c), s	16.0	0.0	1.4	16.0	0.0	2.0	1.1	16.0	16.0	1.2	13.2	1.8
Prop In Lane	0.49		1.00	0.40		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	164	0	451	189	0	451	95	788	823	99	1584	709
V/C Ratio(X)	0.96	0.00	0.12	1.08	0.00	0.17	0.38	0.76	0.76	0.38	0.67	0.12
Avail Cap(c_a), veh/h	164	0	451	189	0	451	221	788	823	221	1584	709
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	0.0	14.8	20.4	0.0	15.1	25.7	13.1	13.1	25.6	12.2	9.1
Incr Delay (d2), s/veh	57.1	0.0	0.1	88.9	0.0	0.2	2.5	6.9	6.6	2.4	2.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.0	0.6	7.5	0.0	0.9	0.6	9.2	9.5	0.6	6.8	0.8
LnGrp Delay(d),s/veh	78.6	0.0	14.9	109.3	0.0	15.2	28.1	20.0	19.7	28.0	14.4	9.4
LnGrp LOS	E		B	F		B	C	B	B	C	B	A
Approach Vol, veh/h		209			279			1265			1178	
Approach Delay, s/veh		62.8			84.0			20.1			14.5	
Approach LOS		E			F			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.1	29.0		20.0	7.0	29.1		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	25.0		16.0	7.0	25.0		16.0
Max Q Clear Time (g_c+I1), s	3.2	18.0		18.0	3.1	15.2		18.0
Green Ext Time (p_c), s	0.0	6.0		0.0	0.0	8.2		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	27.0
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	45	291	125	44	360	83	93	237	29	53	248	47
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	53	342	147	58	474	109	118	300	37	61	285	54
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.76	0.76	0.76	0.79	0.79	0.79	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	121	547	465	128	554	471	178	930	114	132	795	149
Arrive On Green	0.07	0.29	0.29	0.07	0.30	0.30	0.10	0.29	0.29	0.07	0.27	0.27
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3176	388	1774	2977	557
Grp Volume(v), veh/h	53	342	147	58	474	109	118	166	171	61	168	171
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1794	1774	1770	1765
Q Serve(g_s), s	1.7	9.5	4.3	1.9	14.4	3.1	3.8	4.4	4.5	2.0	4.6	4.7
Cycle Q Clear(g_c), s	1.7	9.5	4.3	1.9	14.4	3.1	3.8	4.4	4.5	2.0	4.6	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.22	1.00		0.32
Lane Grp Cap(c), veh/h	121	547	465	128	554	471	178	518	525	132	472	471
V/C Ratio(X)	0.44	0.63	0.32	0.45	0.86	0.23	0.66	0.32	0.33	0.46	0.36	0.36
Avail Cap(c_a), veh/h	207	590	502	207	590	502	207	518	525	207	472	471
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	18.3	16.5	26.7	19.8	15.9	26.0	16.5	16.6	26.6	17.8	17.8
Incr Delay (d2), s/veh	2.5	1.9	0.4	2.5	11.3	0.2	6.2	1.6	1.6	2.5	2.1	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	5.1	1.9	1.0	9.1	1.4	2.2	2.4	2.4	1.1	2.5	2.6
LnGrp Delay(d),s/veh	29.3	20.2	16.9	29.1	31.2	16.1	32.2	18.2	18.2	29.1	19.9	20.0
LnGrp LOS	C	C	B	C	C	B	C	B	B	C	B	C
Approach Vol, veh/h		542			641			455			400	
Approach Delay, s/veh		20.2			28.4			21.8			21.3	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	21.6	8.3	21.6	10.0	20.0	8.1	21.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	4.0	6.5	3.9	11.5	5.8	6.7	3.7	16.4
Green Ext Time (p_c), s	0.0	2.7	0.0	3.4	0.0	2.7	0.0	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	23.4
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	83	187	66	59	220	170	70	843	66	112	811	89
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	104	234	82	80	297	230	85	1028	80	133	965	106
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.80	0.80	0.80	0.74	0.74	0.74	0.82	0.82	0.82	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	171	417	354	153	398	338	157	1125	503	185	1181	528
Arrive On Green	0.10	0.22	0.22	0.09	0.21	0.21	0.09	0.32	0.32	0.10	0.33	0.33
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	104	234	82	80	297	230	85	1028	80	133	965	106
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.4	6.7	2.5	2.6	8.9	8.0	2.7	16.7	2.2	4.3	14.9	2.9
Cycle Q Clear(g_c), s	3.4	6.7	2.5	2.6	8.9	8.0	2.7	16.7	2.2	4.3	14.9	2.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	171	417	354	153	398	338	157	1125	503	185	1181	528
V/C Ratio(X)	0.61	0.56	0.23	0.52	0.75	0.68	0.54	0.91	0.16	0.72	0.82	0.20
Avail Cap(c_a), veh/h	208	499	424	208	499	424	208	1125	503	208	1181	528
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.9	20.6	19.0	26.1	22.0	21.6	26.1	19.6	14.6	25.9	18.2	14.2
Incr Delay (d2), s/veh	3.5	1.2	0.3	2.8	4.7	3.1	2.9	12.7	0.7	10.0	6.3	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	3.5	1.1	1.4	5.1	3.7	1.5	10.1	1.0	2.6	8.3	1.4
LnGrp Delay(d),s/veh	29.4	21.8	19.3	28.9	26.6	24.7	28.9	32.3	15.3	36.0	24.6	15.1
LnGrp LOS	C	C	B	C	C	C	C	C	B	D	C	B
Approach Vol, veh/h		420			607			1193			1204	
Approach Delay, s/veh		23.2			26.2			30.9			25.0	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	23.0	9.1	17.4	9.3	23.9	9.8	16.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	19.0	7.0	16.0	7.0	19.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	6.3	18.7	4.6	8.7	4.7	16.9	5.4	10.9
Green Ext Time (p_c), s	0.0	0.3	0.0	2.4	0.0	1.9	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	27.1
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	95	230	72	43	323	129	99	297	27	31	201	41
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	134	324	101	63	475	190	115	345	31	42	275	56
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.71	0.71	0.71	0.68	0.68	0.68	0.86	0.86	0.86	0.73	0.73	0.73
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	180	585	497	132	535	455	172	973	87	103	756	152
Arrive On Green	0.10	0.31	0.31	0.07	0.29	0.29	0.10	0.30	0.30	0.06	0.26	0.26
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3287	294	1774	2939	590
Grp Volume(v), veh/h	134	324	101	63	475	190	115	185	191	42	164	167
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1811	1774	1770	1759
Q Serve(g_s), s	4.6	9.0	2.9	2.1	15.2	6.0	3.9	5.1	5.2	1.4	4.7	4.9
Cycle Q Clear(g_c), s	4.6	9.0	2.9	2.1	15.2	6.0	3.9	5.1	5.2	1.4	4.7	4.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		0.34
Lane Grp Cap(c), veh/h	180	585	497	132	535	455	172	524	536	103	455	452
V/C Ratio(X)	0.74	0.55	0.20	0.48	0.89	0.42	0.67	0.35	0.36	0.41	0.36	0.37
Avail Cap(c_a), veh/h	200	585	497	200	569	483	200	524	536	200	455	452
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.2	17.7	15.6	27.6	21.2	18.0	27.1	17.2	17.2	28.3	18.9	19.0
Incr Delay (d2), s/veh	12.8	1.1	0.2	2.6	15.2	0.6	6.7	1.9	1.8	2.6	2.2	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	4.8	1.3	1.1	10.0	2.7	2.2	2.7	2.8	0.8	2.6	2.7
LnGrp Delay(d),s/veh	39.9	18.9	15.8	30.3	36.4	18.6	33.9	19.1	19.1	30.8	21.1	21.3
LnGrp LOS	D	B	B	C	D	B	C	B	B	C	C	C
Approach Vol, veh/h		559			728			491			373	
Approach Delay, s/veh		23.4			31.2			22.5			22.3	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.6	22.4	8.6	23.5	10.0	20.0	10.3	21.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	3.4	7.2	4.1	11.0	5.9	6.9	6.6	17.2
Green Ext Time (p_c), s	0.0	2.6	0.0	3.4	0.0	2.7	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	25.6
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	82	47	80	40	57	94	55	856	54	89	759	75
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	111	64	108	47	67	111	59	920	58	110	937	93
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.74	0.74	0.74	0.85	0.85	0.85	0.93	0.93	0.93	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	184	123	208	116	100	166	134	1164	73	183	1317	589
Arrive On Green	0.10	0.20	0.20	0.07	0.16	0.16	0.08	0.34	0.34	0.10	0.37	0.37
Sat Flow, veh/h	1774	624	1053	1774	632	1046	1774	3382	213	1774	3539	1583
Grp Volume(v), veh/h	111	0	172	47	0	178	59	481	497	110	937	93
Grp Sat Flow(s),veh/h/ln	1774	0	1677	1774	0	1678	1774	1770	1825	1774	1770	1583
Q Serve(g_s), s	3.3	0.0	5.1	1.4	0.0	5.5	1.8	13.5	13.5	3.3	12.5	2.2
Cycle Q Clear(g_c), s	3.3	0.0	5.1	1.4	0.0	5.5	1.8	13.5	13.5	3.3	12.5	2.2
Prop In Lane	1.00		0.63	1.00		0.62	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	184	0	331	116	0	267	134	609	628	183	1317	589
V/C Ratio(X)	0.60	0.00	0.52	0.41	0.00	0.67	0.44	0.79	0.79	0.60	0.71	0.16
Avail Cap(c_a), veh/h	225	0	486	225	0	486	225	609	628	225	1317	589
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.7	0.0	19.8	24.8	0.0	21.8	24.4	16.3	16.3	23.7	14.8	11.6
Incr Delay (d2), s/veh	3.2	0.0	1.3	2.3	0.0	2.9	2.3	10.1	9.8	3.1	3.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	2.5	0.8	0.0	2.7	0.9	8.3	8.5	1.7	6.6	1.0
LnGrp Delay(d),s/veh	26.8	0.0	21.1	27.1	0.0	24.7	26.7	26.4	26.1	26.8	18.1	12.1
LnGrp LOS	C		C	C		C	C	C	C	C	B	B
Approach Vol, veh/h		283			225			1037			1140	
Approach Delay, s/veh		23.3			25.2			26.3			18.5	
Approach LOS		C			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.7	23.0	7.6	14.9	8.2	24.5	9.7	12.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	19.0	7.0	16.0	7.0	19.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	5.3	15.5	3.4	7.1	3.8	14.5	5.3	7.5
Green Ext Time (p_c), s	0.0	2.9	0.0	1.3	0.0	3.7	0.0	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	22.5
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	174	369	89	132	659	114	240	726	140	175	506	162
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	212	450	109	155	775	134	255	772	149	208	602	193
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.82	0.82	0.82	0.85	0.85	0.85	0.94	0.94	0.94	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	369	848	379	353	1027	176	278	998	446	222	887	397
Arrive On Green	0.11	0.24	0.24	0.10	0.24	0.24	0.16	0.28	0.28	0.13	0.25	0.25
Sat Flow, veh/h	3442	3539	1583	3442	4371	750	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	212	450	109	155	600	309	255	772	149	208	602	193
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1730	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.7	7.1	3.6	2.7	10.5	10.6	9.0	12.8	4.8	7.4	9.8	6.6
Cycle Q Clear(g_c), s	3.7	7.1	3.6	2.7	10.5	10.6	9.0	12.8	4.8	7.4	9.8	6.6
Prop In Lane	1.00		1.00	1.00		0.43	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	369	848	379	353	797	407	278	998	446	222	887	397
V/C Ratio(X)	0.58	0.53	0.29	0.44	0.75	0.76	0.92	0.77	0.33	0.94	0.68	0.49
Avail Cap(c_a), veh/h	377	887	397	377	850	434	278	998	446	222	887	397
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	21.2	19.8	26.9	22.7	22.7	26.5	21.1	18.2	27.7	21.6	20.4
Incr Delay (d2), s/veh	2.0	0.5	0.4	0.9	3.6	7.2	33.2	5.8	2.0	42.8	4.2	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	3.5	1.6	1.3	5.3	5.9	7.0	7.0	2.3	6.2	5.3	3.4
LnGrp Delay(d),s/veh	29.2	21.7	20.2	27.8	26.3	30.0	59.7	26.9	20.2	70.4	25.8	24.6
LnGrp LOS	C	C	C	C	C	C	E	C	C	E	C	C
Approach Vol, veh/h		771			1064			1176			1003	
Approach Delay, s/veh		23.5			27.6			33.1			34.8	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	22.0	10.6	19.3	14.0	20.0	10.8	19.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	8.0	18.0	7.0	16.0	10.0	16.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	9.4	14.8	4.7	9.1	11.0	11.8	5.7	12.6
Green Ext Time (p_c), s	0.0	2.5	0.1	4.4	0.0	3.2	0.1	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	30.2
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	2	37	2	1	16	34	1111	4	13	954	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	68	68	68	87	87	87	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	3	55	3	1	24	43	1405	5	15	1084	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1913	2620	552	2066	2627	705	1105	0	0	1410	0	0
Stage 1	1124	1124	-	1493	1493	-	-	-	-	-	-	-
Stage 2	789	1496	-	573	1134	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	41	24	477	31	23	379	628	-	-	480	-	-
Stage 1	219	279	-	129	185	-	-	-	-	-	-	-
Stage 2	350	184	-	472	276	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	35	22	477	25	21	379	628	-	-	480	-	-
Mov Cap-2 Maneuver	124	99	-	90	98	-	-	-	-	-	-	-
Stage 1	204	270	-	120	172	-	-	-	-	-	-	-
Stage 2	303	171	-	400	267	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24.3	20.8	0.3	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	628	-	-	262	255	480	-	-
HCM Lane V/C Ratio	0.068	-	-	0.291	0.11	0.031	-	-
HCM Control Delay (s)	11.2	-	-	24.3	20.8	12.7	-	-
HCM Lane LOS	B	-	-	C	C	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.2	0.4	0.1	-	-

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	9	307	12	33	423	17	27	10	38	31	11	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	70	70	70	67	67	67	64	64	64
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	399	16	47	604	24	40	15	57	48	17	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	604	0	0	399	0	0	1140	1121	399	1157	1121	604
Stage 1	-	-	-	-	-	-	422	422	-	699	699	-
Stage 2	-	-	-	-	-	-	718	699	-	458	422	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	974	-	-	1160	-	-	178	206	651	173	206	498
Stage 1	-	-	-	-	-	-	609	588	-	430	442	-
Stage 2	-	-	-	-	-	-	420	442	-	583	588	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	974	-	-	1160	-	-	152	195	651	143	195	498
Mov Cap-2 Maneuver	-	-	-	-	-	-	152	195	-	143	195	-
Stage 1	-	-	-	-	-	-	601	581	-	425	424	-
Stage 2	-	-	-	-	-	-	370	424	-	512	581	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.6	28.8	40.5
HCM LOS			D	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	261	974	-	-	1160	-	-	186
HCM Lane V/C Ratio	0.429	0.012	-	-	0.041	-	-	0.47
HCM Control Delay (s)	28.8	8.7	-	-	8.2	-	-	40.5
HCM Lane LOS	D	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	2	0	-	-	0.1	-	-	2.3

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Driveway & Cottonwood Ave

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	19	310	27	9	444	9	3	0	1	12	0	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	78	78	78	50	50	50	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	25	413	36	12	569	12	6	0	2	13	0	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	581	0	0	449	0	0	1091	1086	431	1081	1098	575
Stage 1	-	-	-	-	-	-	482	482	-	598	598	-
Stage 2	-	-	-	-	-	-	609	604	-	483	500	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	993	-	-	1111	-	-	192	216	624	195	213	518
Stage 1	-	-	-	-	-	-	565	553	-	489	491	-
Stage 2	-	-	-	-	-	-	482	488	-	565	543	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	993	-	-	1111	-	-	177	206	624	188	204	518
Mov Cap-2 Maneuver	-	-	-	-	-	-	177	206	-	188	204	-
Stage 1	-	-	-	-	-	-	546	534	-	472	486	-
Stage 2	-	-	-	-	-	-	456	483	-	544	525	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.2	22.3	17.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	216	993	-	-	1111	-	-	316
HCM Lane V/C Ratio	0.037	0.026	-	-	0.01	-	-	0.114
HCM Control Delay (s)	22.3	8.7	0	-	8.3	-	-	17.8
HCM Lane LOS	C	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.4

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	10	30	0	31	13	1056	34	35	968	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	62	62	62	92	92	92	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	16	33	0	34	15	1242	40	41	1139	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1875	2536	571	1945	2518	641	1142	0	0	1282	0	0
Stage 1	1223	1223	-	1293	1293	-	-	-	-	-	-	-
Stage 2	652	1313	-	652	1225	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	44	27	464	39	28	417	608	-	-	537	-	-
Stage 1	190	250	-	172	231	-	-	-	-	-	-	-
Stage 2	423	226	-	423	249	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	37	24	464	35	25	417	608	-	-	537	-	-
Mov Cap-2 Maneuver	37	24	-	35	25	-	-	-	-	-	-	-
Stage 1	185	231	-	168	225	-	-	-	-	-	-	-
Stage 2	379	220	-	377	230	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13	224.4	0.1	0.4
HCM LOS	B	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	608	-	-	464	65	537	-	-
HCM Lane V/C Ratio	0.025	-	-	0.035	1.02	0.077	-	-
HCM Control Delay (s)	11.1	-	-	13	224.4	12.3	-	-
HCM Lane LOS	B	-	-	B	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	5.1	0.2	-	-

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	54	161	67	48	106	84	60	879	59	105	1186	56
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	64	189	79	69	151	120	62	916	61	109	1235	58
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.70	0.70	0.70	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	290	246	141	296	251	133	1416	634	173	1496	669
Arrive On Green	0.08	0.16	0.16	0.08	0.16	0.16	0.08	0.40	0.40	0.10	0.42	0.42
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	64	189	79	69	151	120	62	916	61	109	1235	58
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	2.1	5.7	2.7	2.2	4.5	4.1	2.0	12.6	1.4	3.5	18.6	1.3
Cycle Q Clear(g_c), s	2.1	5.7	2.7	2.2	4.5	4.1	2.0	12.6	1.4	3.5	18.6	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	136	290	246	141	296	251	133	1416	634	173	1496	669
V/C Ratio(X)	0.47	0.65	0.32	0.49	0.51	0.48	0.46	0.65	0.10	0.63	0.83	0.09
Avail Cap(c_a), veh/h	207	497	422	207	497	422	207	1416	634	207	1496	669
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.5	23.8	22.5	26.4	23.1	23.0	26.6	14.6	11.2	26.0	15.4	10.4
Incr Delay (d2), s/veh	2.5	2.5	0.7	2.6	1.4	1.4	2.5	2.3	0.3	4.4	5.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	3.1	1.2	1.2	2.4	1.9	1.1	6.6	0.7	1.9	10.0	0.6
LnGrp Delay(d),s/veh	29.1	26.3	23.2	29.0	24.5	24.4	29.1	16.9	11.5	30.4	20.7	10.6
LnGrp LOS	C	C	C	C	C	C	C	B	B	C	C	B
Approach Vol, veh/h		332			340			1039			1402	
Approach Delay, s/veh		26.1			25.3			17.3			21.0	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	28.0	8.8	13.3	8.5	29.4	8.6	13.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	24.0	7.0	16.0	7.0	24.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	5.5	14.6	4.2	7.7	4.0	20.6	4.1	6.5
Green Ext Time (p_c), s	0.0	7.9	0.0	1.6	0.0	3.1	0.0	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	20.8
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	58	92	26	29	85	58	15	910	43	72	1130	81
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	65	103	29	33	96	65	16	948	45	74	1165	84
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.96	0.96	0.96	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	86	100	438	78	170	438	49	1486	71	149	1730	774
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.03	0.43	0.43	0.08	0.49	0.49
Sat Flow, veh/h	0	362	1583	0	614	1583	1774	3440	163	1774	3539	1583
Grp Volume(v), veh/h	168	0	29	129	0	65	16	488	505	74	1165	84
Grp Sat Flow(s),veh/h/ln	362	0	1583	614	0	1583	1774	1770	1834	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.8	0.0	0.0	1.8	0.5	12.5	12.5	2.3	14.5	1.7
Cycle Q Clear(g_c), s	16.0	0.0	0.8	16.0	0.0	1.8	0.5	12.5	12.5	2.3	14.5	1.7
Prop In Lane	0.39		1.00	0.26		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	186	0	438	248	0	438	49	764	792	149	1730	774
V/C Ratio(X)	0.90	0.00	0.07	0.52	0.00	0.15	0.33	0.64	0.64	0.50	0.67	0.11
Avail Cap(c_a), veh/h	186	0	438	248	0	438	215	764	792	215	1730	774
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.3	0.0	15.4	17.3	0.0	15.8	27.6	12.9	12.9	25.3	11.3	8.0
Incr Delay (d2), s/veh	39.6	0.0	0.1	1.9	0.0	0.2	3.9	4.0	3.9	2.5	2.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	0.0	0.3	1.7	0.0	0.8	0.3	7.0	7.2	1.2	7.5	0.8
LnGrp Delay(d),s/veh	60.0	0.0	15.5	19.2	0.0	15.9	31.5	16.9	16.8	27.9	13.4	8.3
LnGrp LOS	E		B	B		B	C	B	B	C	B	A
Approach Vol, veh/h		197			194			1009			1323	
Approach Delay, s/veh		53.4			18.1			17.1			13.9	
Approach LOS		D			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.9	29.0		20.0	5.6	32.3		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	25.0		16.0	7.0	25.0		16.0
Max Q Clear Time (g_c+I1), s	4.3	14.5		18.0	2.5	16.5		18.0
Green Ext Time (p_c), s	0.0	8.4		0.0	0.0	7.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	18.2
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	42	324	147	41	253	37	80	263	54	28	268	43
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	49	381	173	50	309	45	96	317	65	29	282	45
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.82	0.82	0.82	0.83	0.83	0.83	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	117	488	415	119	490	417	170	1017	206	80	908	143
Arrive On Green	0.07	0.26	0.26	0.07	0.26	0.26	0.10	0.35	0.35	0.05	0.30	0.30
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2934	594	1774	3064	483
Grp Volume(v), veh/h	49	381	173	50	309	45	96	190	192	29	161	166
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1758	1774	1770	1777
Q Serve(g_s), s	1.5	10.9	5.2	1.6	8.4	1.2	3.0	4.5	4.6	0.9	4.1	4.1
Cycle Q Clear(g_c), s	1.5	10.9	5.2	1.6	8.4	1.2	3.0	4.5	4.6	0.9	4.1	4.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.34	1.00		0.27
Lane Grp Cap(c), veh/h	117	488	415	119	490	417	170	614	610	80	524	527
V/C Ratio(X)	0.42	0.78	0.42	0.42	0.63	0.11	0.57	0.31	0.32	0.36	0.31	0.31
Avail Cap(c_a), veh/h	216	584	497	216	584	497	216	614	610	216	524	527
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.7	19.6	17.5	25.7	18.7	16.0	24.8	13.7	13.7	26.6	15.6	15.7
Incr Delay (d2), s/veh	2.4	5.6	0.7	2.4	1.6	0.1	2.9	1.3	1.4	2.7	1.5	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	6.4	2.4	0.8	4.5	0.6	1.6	2.4	2.4	0.5	2.2	2.3
LnGrp Delay(d),s/veh	28.1	25.2	18.2	28.0	20.3	16.1	27.8	15.0	15.1	29.3	17.2	17.2
LnGrp LOS	C	C	B	C	C	B	C	B	B	C	B	B
Approach Vol, veh/h		603			404			478			356	
Approach Delay, s/veh		23.5			20.8			17.6			18.2	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.6	23.9	7.8	19.0	9.5	21.0	7.8	19.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	17.0	7.0	18.0	7.0	17.0	7.0	18.0
Max Q Clear Time (g_c+I1), s	2.9	6.6	3.6	12.9	5.0	6.1	3.5	10.4
Green Ext Time (p_c), s	0.0	3.0	0.0	2.2	0.0	3.1	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	20.3
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	97	217	62	37	155	96	63	830	45	145	975	119
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	114	255	73	47	199	123	67	883	48	154	1037	127
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.78	0.78	0.78	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	182	387	329	114	316	269	143	1182	529	199	1295	579
Arrive On Green	0.10	0.21	0.21	0.06	0.17	0.17	0.08	0.33	0.33	0.11	0.37	0.37
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	114	255	73	47	199	123	67	883	48	154	1037	127
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.5	7.1	2.2	1.4	5.6	4.0	2.1	12.6	1.2	4.8	14.9	3.1
Cycle Q Clear(g_c), s	3.5	7.1	2.2	1.4	5.6	4.0	2.1	12.6	1.2	4.8	14.9	3.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	182	387	329	114	316	269	143	1182	529	199	1295	579
V/C Ratio(X)	0.63	0.66	0.22	0.41	0.63	0.46	0.47	0.75	0.09	0.77	0.80	0.22
Avail Cap(c_a), veh/h	218	524	445	218	524	445	218	1182	529	218	1295	579
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.5	20.7	18.7	25.6	22.0	21.3	25.0	16.8	13.0	24.5	16.2	12.4
Incr Delay (d2), s/veh	4.0	1.9	0.3	2.3	2.1	1.2	2.4	4.3	0.3	14.5	5.3	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	3.9	1.0	0.8	3.1	1.8	1.1	6.8	0.6	3.2	8.2	1.5
LnGrp Delay(d),s/veh	28.5	22.6	19.0	27.9	24.0	22.5	27.4	21.1	13.3	39.1	21.4	13.3
LnGrp LOS	C	C	B	C	C	C	C	C	B	D	C	B
Approach Vol, veh/h		442			369			998			1318	
Approach Delay, s/veh		23.5			24.0			21.2			22.7	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	23.0	7.7	15.8	8.6	24.8	9.8	13.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	19.0	7.0	16.0	7.0	19.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	6.8	14.6	3.4	9.1	4.1	16.9	5.5	7.6
Green Ext Time (p_c), s	0.0	3.8	0.0	1.8	0.0	1.8	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	22.5
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	229	52	28	202	39	28	259	17	35	261	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	20	283	64	30	220	42	32	294	19	37	275	19
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.81	0.81	0.81	0.92	0.92	0.92	0.88	0.88	0.88	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	60	406	345	85	432	367	89	1212	78	100	1227	84
Arrive On Green	0.03	0.22	0.22	0.05	0.23	0.23	0.05	0.36	0.36	0.06	0.36	0.36
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3377	217	1774	3361	231
Grp Volume(v), veh/h	20	283	64	30	220	42	32	153	160	37	144	150
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1824	1774	1770	1822
Q Serve(g_s), s	0.6	7.0	1.7	0.8	5.2	1.0	0.9	3.1	3.1	1.0	2.8	2.9
Cycle Q Clear(g_c), s	0.6	7.0	1.7	0.8	5.2	1.0	0.9	3.1	3.1	1.0	2.8	2.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		0.13
Lane Grp Cap(c), veh/h	60	406	345	85	432	367	89	635	655	100	646	665
V/C Ratio(X)	0.33	0.70	0.19	0.35	0.51	0.11	0.36	0.24	0.24	0.37	0.22	0.23
Avail Cap(c_a), veh/h	248	631	537	248	631	537	248	635	655	248	646	665
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.7	18.1	16.0	23.1	16.8	15.2	23.0	11.3	11.3	22.8	11.0	11.0
Incr Delay (d2), s/veh	3.2	2.2	0.3	2.5	0.9	0.1	2.4	0.9	0.9	2.3	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	3.9	0.7	0.5	2.7	0.5	0.5	1.6	1.7	0.6	1.5	1.6
LnGrp Delay(d),s/veh	26.8	20.2	16.2	25.6	17.7	15.3	25.5	12.2	12.2	25.1	11.8	11.8
LnGrp LOS	C	C	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		367			292			345			331	
Approach Delay, s/veh		19.9			18.2			13.4			13.3	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	22.0	6.4	14.9	6.5	22.3	5.7	15.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	18.0	7.0	17.0	7.0	18.0	7.0	17.0
Max Q Clear Time (g_c+I1), s	3.0	5.1	2.8	9.0	2.9	4.9	2.6	7.2
Green Ext Time (p_c), s	0.0	2.7	0.0	1.9	0.0	2.7	0.0	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	16.2
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	24	47	40	19	40	43	41	880	50	69	980	29
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	27	53	45	23	48	51	44	936	53	74	1054	31
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.88	0.88	0.88	0.84	0.84	0.84	0.94	0.94	0.94	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	78	134	113	68	114	121	115	1344	76	162	1491	667
Arrive On Green	0.04	0.14	0.14	0.04	0.14	0.14	0.06	0.39	0.39	0.09	0.42	0.42
Sat Flow, veh/h	1774	932	791	1774	828	880	1774	3405	193	1774	3539	1583
Grp Volume(v), veh/h	27	0	98	23	0	99	44	486	503	74	1054	31
Grp Sat Flow(s),veh/h/ln	1774	0	1723	1774	0	1708	1774	1770	1829	1774	1770	1583
Q Serve(g_s), s	0.7	0.0	2.5	0.6	0.0	2.6	1.1	11.0	11.0	1.9	11.8	0.6
Cycle Q Clear(g_c), s	0.7	0.0	2.5	0.6	0.0	2.6	1.1	11.0	11.0	1.9	11.8	0.6
Prop In Lane	1.00		0.46	1.00		0.52	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	78	0	247	68	0	235	115	698	722	162	1491	667
V/C Ratio(X)	0.35	0.00	0.40	0.34	0.00	0.42	0.38	0.70	0.70	0.46	0.71	0.05
Avail Cap(c_a), veh/h	258	0	573	258	0	567	258	698	722	258	1491	667
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	0.0	18.7	22.5	0.0	19.0	21.6	12.2	12.2	20.7	11.5	8.2
Incr Delay (d2), s/veh	2.6	0.0	1.0	2.9	0.0	1.2	2.1	5.7	5.5	2.0	2.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.2	0.3	0.0	1.3	0.6	6.4	6.5	1.0	6.3	0.3
LnGrp Delay(d),s/veh	24.9	0.0	19.8	25.4	0.0	20.2	23.7	17.8	17.7	22.7	14.3	8.4
LnGrp LOS	C		B	C		C	C	B	B	C	B	A
Approach Vol, veh/h		125			122			1033			1159	
Approach Delay, s/veh		20.9			21.2			18.0			14.7	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.4	23.0	5.9	10.9	7.1	24.3	6.1	10.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	19.0	7.0	16.0	7.0	19.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	3.9	13.0	2.6	4.5	3.1	13.8	2.7	4.6
Green Ext Time (p_c), s	0.0	4.9	0.0	0.7	0.0	4.3	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	406	761	273	168	502	99	241	561	106	141	719	132
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	432	810	290	195	584	115	265	616	116	155	790	145
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	461	898	402	317	906	175	305	1170	523	194	949	424
Arrive On Green	0.13	0.25	0.25	0.09	0.21	0.21	0.17	0.33	0.33	0.11	0.27	0.27
Sat Flow, veh/h	3442	3539	1583	3442	4278	828	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	432	810	290	195	461	238	265	616	116	155	790	145
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1717	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	9.3	16.5	12.5	4.1	9.2	9.5	10.9	10.5	3.9	6.4	15.7	5.5
Cycle Q Clear(g_c), s	9.3	16.5	12.5	4.1	9.2	9.5	10.9	10.5	3.9	6.4	15.7	5.5
Prop In Lane	1.00		1.00	1.00		0.48	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	461	898	402	317	718	364	305	1170	523	194	949	424
V/C Ratio(X)	0.94	0.90	0.72	0.61	0.64	0.66	0.87	0.53	0.22	0.80	0.83	0.34
Avail Cap(c_a), veh/h	461	901	403	323	727	368	309	1170	523	285	949	424
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.0	27.0	25.4	32.6	26.8	26.9	30.1	20.2	18.0	32.4	25.7	22.0
Incr Delay (d2), s/veh	26.8	12.2	6.2	3.4	1.9	4.1	22.2	1.7	1.0	9.6	8.5	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	9.5	6.1	2.1	4.5	4.9	7.2	5.4	1.8	3.6	8.8	2.7
LnGrp Delay(d),s/veh	58.8	39.1	31.7	36.0	28.7	31.0	52.3	21.9	19.0	42.0	34.2	24.2
LnGrp LOS	E	D	C	D	C	C	D	C	B	D	C	C
Approach Vol, veh/h		1532			894			997			1090	
Approach Delay, s/veh		43.3			30.9			29.7			34.0	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	28.7	10.9	22.9	16.8	24.0	14.0	19.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	12.0	21.0	7.0	19.0	13.0	20.0	10.0	16.0
Max Q Clear Time (g_c+I1), s	8.4	12.5	6.1	18.5	12.9	17.7	11.3	11.5
Green Ext Time (p_c), s	0.1	5.7	0.1	0.4	0.0	1.8	0.0	3.4

Intersection Summary	
HCM 2010 Ctrl Delay	35.6
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	14	3	36	2	1	11	36	985	2	43	1230	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	58	58	58	97	97	97	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	4	46	3	2	19	41	1117	2	44	1255	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1994	2554	638	1917	2563	560	1276	0	0	1119	0	0
Stage 1	1353	1353	-	1200	1200	-	-	-	-	-	-	-
Stage 2	641	1201	-	717	1363	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	36	26	419	41	26	472	540	-	-	620	-	-
Stage 1	158	216	-	196	256	-	-	-	-	-	-	-
Stage 2	430	256	-	387	214	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	30	22	419	32	22	472	540	-	-	620	-	-
Mov Cap-2 Maneuver	104	100	-	113	96	-	-	-	-	-	-	-
Stage 1	146	201	-	181	237	-	-	-	-	-	-	-
Stage 2	379	237	-	314	199	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	29.8	19.5	0.4	0.4
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	540	-	-	212	272	620	-	-
HCM Lane V/C Ratio	0.076	-	-	0.321	0.089	0.071	-	-
HCM Control Delay (s)	12.2	-	-	29.8	19.5	11.2	-	-
HCM Lane LOS	B	-	-	D	C	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.3	0.3	0.2	-	-

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	16	308	50	14	222	8	28	5	8	6	2	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	88	88	88	60	60	60	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	314	51	16	252	9	47	8	13	8	3	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	252	0	0	314	0	0	639	631	314	642	631	252
Stage 1	-	-	-	-	-	-	347	347	-	284	284	-
Stage 2	-	-	-	-	-	-	292	284	-	358	347	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1313	-	-	1246	-	-	389	398	726	387	398	787
Stage 1	-	-	-	-	-	-	669	635	-	723	676	-
Stage 2	-	-	-	-	-	-	716	676	-	660	635	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1313	-	-	1246	-	-	373	388	726	367	388	787
Mov Cap-2 Maneuver	-	-	-	-	-	-	373	388	-	367	388	-
Stage 1	-	-	-	-	-	-	661	627	-	714	667	-
Stage 2	-	-	-	-	-	-	692	667	-	631	627	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.5	15.4	12.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	414	1313	-	-	1246	-	-	526
HCM Lane V/C Ratio	0.165	0.012	-	-	0.013	-	-	0.046
HCM Control Delay (s)	15.4	7.8	-	-	7.9	-	-	12.2
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.6	0	-	-	0	-	-	0.1

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Driveway & Cottonwood Ave

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	22	373	12	0	258	10	4	0	4	13	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	81	81	81	33	33	33	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	410	13	0	319	12	12	0	12	14	0	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	331	0	0	423	0	0	804	796	416	796	796	325
Stage 1	-	-	-	-	-	-	465	465	-	325	325	-
Stage 2	-	-	-	-	-	-	339	331	-	471	471	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1228	-	-	1136	-	-	301	320	637	305	320	716
Stage 1	-	-	-	-	-	-	578	563	-	687	649	-
Stage 2	-	-	-	-	-	-	676	645	-	573	560	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1228	-	-	1136	-	-	283	312	637	293	312	716
Mov Cap-2 Maneuver	-	-	-	-	-	-	283	312	-	293	312	-
Stage 1	-	-	-	-	-	-	563	548	-	669	649	-
Stage 2	-	-	-	-	-	-	649	645	-	547	545	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	14.8	13.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	392	1228	-	-	1136	-	-	483
HCM Lane V/C Ratio	0.062	0.02	-	-	-	-	-	0.088
HCM Control Delay (s)	14.8	8	0	-	0	-	-	13.2
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.3

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	10.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	11	0	67	34	0	35	49	938	40	40	1128	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	92	92	92	95	95	95	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	0	93	37	0	38	52	987	42	43	1213	37

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1914	2450	625	1804	2447	515	1249	0	0	1029	0	0
Stage 1	1317	1317	-	1112	1112	-	-	-	-	-	-	-
Stage 2	597	1133	-	692	1335	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	41	31	428	50	31	505	553	-	-	671	-	-
Stage 1	166	225	-	223	282	-	-	-	-	-	-	-
Stage 2	456	276	-	400	221	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	33	26	428	~ 35	26	505	553	-	-	671	-	-
Mov Cap-2 Maneuver	33	26	-	~ 35	26	-	-	-	-	-	-	-
Stage 1	150	211	-	202	255	-	-	-	-	-	-	-
Stage 2	382	250	-	293	207	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	65.9	260	0.6	0.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	553	-	-	159	66	671	-	-
HCM Lane V/C Ratio	0.093	-	-	0.681	1.136	0.064	-	-
HCM Control Delay (s)	12.2	-	-	65.9	260	10.7	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-	4	5.9	0.2	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	78	36	31	61	73	51	887	34	62	833	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	56	87	40	37	73	88	56	975	37	69	926	49
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.83	0.83	0.83	0.91	0.91	0.91	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	134	294	250	100	258	219	134	1344	601	153	1382	618
Arrive On Green	0.08	0.16	0.16	0.06	0.14	0.14	0.08	0.38	0.38	0.09	0.39	0.39
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	56	87	40	37	73	88	56	975	37	69	926	49
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	1.5	2.1	1.1	1.0	1.8	2.5	1.5	11.8	0.7	1.8	10.8	1.0
Cycle Q Clear(g_c), s	1.5	2.1	1.1	1.0	1.8	2.5	1.5	11.8	0.7	1.8	10.8	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	134	294	250	100	258	219	134	1344	601	153	1382	618
V/C Ratio(X)	0.42	0.30	0.16	0.37	0.28	0.40	0.42	0.73	0.06	0.45	0.67	0.08
Avail Cap(c_a), veh/h	248	596	506	248	596	506	248	1344	601	248	1382	618
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.1	18.6	18.2	22.8	19.3	19.7	22.1	13.3	9.9	21.7	12.6	9.6
Incr Delay (d2), s/veh	2.1	0.6	0.3	2.3	0.6	1.2	2.1	3.4	0.2	2.1	2.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.1	0.5	0.6	0.9	1.2	0.8	6.3	0.4	1.0	5.6	0.5
LnGrp Delay(d),s/veh	24.1	19.2	18.5	25.0	19.9	20.8	24.1	16.7	10.0	23.8	15.2	9.8
LnGrp LOS	C	B	B	C	B	C	C	B	B	C	B	A
Approach Vol, veh/h		183			198			1068			1044	
Approach Delay, s/veh		20.5			21.3			16.9			15.5	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	23.0	6.8	11.9	7.8	23.5	7.8	10.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	19.0	7.0	16.0	7.0	19.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	3.8	13.8	3.0	4.1	3.5	12.8	3.5	4.5
Green Ext Time (p_c), s	0.0	4.3	0.0	0.9	0.0	5.1	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	16.9
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	71	82	26	35	59	57	24	849	25	26	803	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	82	94	30	40	68	66	29	1011	30	30	934	60
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.84	0.84	0.84	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	95	76	456	89	111	456	81	1578	47	83	1596	714
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.05	0.45	0.45	0.05	0.45	0.45
Sat Flow, veh/h	0	265	1583	0	386	1583	1774	3510	104	1774	3539	1583
Grp Volume(v), veh/h	176	0	30	108	0	66	29	510	531	30	934	60
Grp Sat Flow(s),veh/h/ln	265	0	1583	386	0	1583	1774	1770	1844	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.8	0.0	0.0	1.7	0.9	12.4	12.4	0.9	10.9	1.2
Cycle Q Clear(g_c), s	16.0	0.0	0.8	16.0	0.0	1.7	0.9	12.4	12.4	0.9	10.9	1.2
Prop In Lane	0.47		1.00	0.37		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	171	0	456	200	0	456	81	796	829	83	1596	714
V/C Ratio(X)	1.03	0.00	0.07	0.54	0.00	0.14	0.36	0.64	0.64	0.36	0.59	0.08
Avail Cap(c_a), veh/h	171	0	456	200	0	456	223	796	829	223	1596	714
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.2	0.0	14.4	16.4	0.0	14.7	25.7	11.8	11.8	25.7	11.4	8.7
Incr Delay (d2), s/veh	76.3	0.0	0.1	2.9	0.0	0.1	2.7	3.9	3.8	2.6	1.6	0.2
Initial Q Delay(d3),s/veh	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	0.0	0.3	1.4	0.0	0.8	0.5	6.8	7.1	0.5	5.7	0.6
LnGrp Delay(d),s/veh	97.7	0.0	14.4	19.3	0.0	14.9	28.4	15.8	15.6	28.3	13.0	8.9
LnGrp LOS	F		B	B		B	C	B	B	C	B	A
Approach Vol, veh/h		206			174			1070			1024	
Approach Delay, s/veh		85.6			17.6			16.0			13.2	
Approach LOS		F			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.6	29.0		20.0	6.5	29.1		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	25.0		16.0	7.0	25.0		16.0
Max Q Clear Time (g_c+I1), s	2.9	14.4		18.0	2.9	12.9		18.0
Green Ext Time (p_c), s	0.0	8.0		0.0	0.0	8.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.8
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	205	104	44	253	24	88	213	43	20	171	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	21	263	133	52	301	29	91	220	44	22	184	22
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.78	0.78	0.78	0.84	0.84	0.84	0.97	0.97	0.97	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	62	394	335	125	460	391	173	1122	221	65	1019	120
Arrive On Green	0.04	0.21	0.21	0.07	0.25	0.25	0.10	0.38	0.38	0.04	0.32	0.32
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2950	580	1774	3189	377
Grp Volume(v), veh/h	21	263	133	52	301	29	91	130	134	22	101	105
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1760	1774	1770	1796
Q Serve(g_s), s	0.6	6.9	3.8	1.5	7.7	0.7	2.6	2.6	2.7	0.6	2.2	2.2
Cycle Q Clear(g_c), s	0.6	6.9	3.8	1.5	7.7	0.7	2.6	2.6	2.7	0.6	2.2	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.33	1.00		0.21
Lane Grp Cap(c), veh/h	62	394	335	125	460	391	173	673	670	65	566	574
V/C Ratio(X)	0.34	0.67	0.40	0.42	0.65	0.07	0.53	0.19	0.20	0.34	0.18	0.18
Avail Cap(c_a), veh/h	233	595	506	233	595	506	267	673	670	233	566	574
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.1	19.2	18.0	23.7	18.0	15.4	22.8	11.0	11.0	25.0	13.1	13.1
Incr Delay (d2), s/veh	3.1	1.9	0.8	2.2	1.6	0.1	2.5	0.6	0.7	3.1	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	3.7	1.7	0.8	4.1	0.3	1.4	1.4	1.4	0.4	1.2	1.2
LnGrp Delay(d),s/veh	28.2	21.2	18.8	25.9	19.6	15.4	25.3	11.7	11.7	28.1	13.7	13.8
LnGrp LOS	C	C	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		417			382			355			228	
Approach Delay, s/veh		20.8			20.2			15.2			15.1	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	24.2	7.8	15.3	9.2	21.0	5.9	17.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	18.0	7.0	17.0	8.0	17.0	7.0	17.0
Max Q Clear Time (g_c+I1), s	2.6	4.7	3.5	8.9	4.6	4.2	2.6	9.7
Green Ext Time (p_c), s	0.0	2.2	0.0	2.4	0.1	2.1	0.0	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	18.2
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	85	130	51	63	167	162	72	761	60	131	662	96
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	108	165	65	111	293	284	79	836	66	151	761	110
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.79	0.79	0.79	0.57	0.57	0.57	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	173	420	357	175	422	358	152	1065	477	191	1143	511
Arrive On Green	0.10	0.23	0.23	0.10	0.23	0.23	0.09	0.30	0.30	0.11	0.32	0.32
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	108	165	65	111	293	284	79	836	66	151	761	110
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.5	4.5	2.0	3.6	8.6	10.1	2.5	12.9	1.8	5.0	11.1	3.0
Cycle Q Clear(g_c), s	3.5	4.5	2.0	3.6	8.6	10.1	2.5	12.9	1.8	5.0	11.1	3.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	173	420	357	175	422	358	152	1065	477	191	1143	511
V/C Ratio(X)	0.62	0.39	0.18	0.63	0.70	0.79	0.52	0.78	0.14	0.79	0.67	0.22
Avail Cap(c_a), veh/h	208	498	424	208	498	424	208	1065	477	237	1143	511
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.9	19.7	18.7	25.9	21.2	21.8	26.2	19.1	15.2	26.0	17.5	14.7
Incr Delay (d2), s/veh	4.2	0.6	0.2	4.7	3.4	8.5	2.7	5.8	0.6	13.4	3.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	2.4	0.9	2.0	4.8	5.2	1.4	7.1	0.9	3.1	5.9	1.4
LnGrp Delay(d),s/veh	30.1	20.3	19.0	30.6	24.6	30.3	28.9	24.9	15.9	39.5	20.5	15.7
LnGrp LOS	C	C	B	C	C	C	C	C	B	D	C	B
Approach Vol, veh/h		338			688			981			1022	
Approach Delay, s/veh		23.2			27.9			24.6			22.8	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	22.0	9.9	17.5	9.1	23.3	9.8	17.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	8.0	18.0	7.0	16.0	7.0	19.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	7.0	14.9	5.6	6.5	4.5	13.1	5.5	12.1
Green Ext Time (p_c), s	0.0	2.5	0.0	2.6	0.0	4.5	0.0	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	24.6
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	176	58	9	196	28	31	157	14	25	170	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	57	314	104	13	288	41	37	187	17	29	195	20
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.56	0.56	0.56	0.68	0.68	0.68	0.84	0.84	0.84	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	134	524	445	41	426	362	99	1114	100	82	1070	109
Arrive On Green	0.08	0.28	0.28	0.02	0.23	0.23	0.06	0.34	0.34	0.05	0.33	0.33
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3284	296	1774	3245	329
Grp Volume(v), veh/h	57	314	104	13	288	41	37	100	104	29	105	110
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1811	1774	1770	1805
Q Serve(g_s), s	1.6	7.5	2.6	0.4	7.3	1.1	1.0	2.0	2.1	0.8	2.2	2.2
Cycle Q Clear(g_c), s	1.6	7.5	2.6	0.4	7.3	1.1	1.0	2.0	2.1	0.8	2.2	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		0.18
Lane Grp Cap(c), veh/h	134	524	445	41	426	362	99	600	614	82	583	595
V/C Ratio(X)	0.42	0.60	0.23	0.32	0.68	0.11	0.37	0.17	0.17	0.35	0.18	0.18
Avail Cap(c_a), veh/h	241	650	553	241	650	553	241	600	614	241	583	595
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.8	16.0	14.3	24.8	18.2	15.8	23.5	11.9	11.9	23.9	12.3	12.3
Incr Delay (d2), s/veh	2.1	1.1	0.3	4.4	1.9	0.1	2.3	0.6	0.6	2.6	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	4.0	1.2	0.2	3.9	0.5	0.6	1.1	1.1	0.5	1.2	1.2
LnGrp Delay(d),s/veh	24.9	17.1	14.5	29.2	20.0	15.9	25.8	12.5	12.5	26.4	13.0	13.0
LnGrp LOS	C	B	B	C	C	B	C	B	B	C	B	B
Approach Vol, veh/h		475			342			241			244	
Approach Delay, s/veh		17.5			19.9			14.6			14.6	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	21.5	5.2	18.5	6.9	21.0	7.9	15.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	17.0	7.0	18.0	7.0	17.0	7.0	18.0
Max Q Clear Time (g_c+I1), s	2.8	4.1	2.4	9.5	3.0	4.2	3.6	9.3
Green Ext Time (p_c), s	0.0	1.8	0.0	2.5	0.0	1.8	0.0	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	17.0
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	37	27	24	31	60	30	786	35	61	743	28
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	27	44	32	31	40	78	31	819	36	69	835	31
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.77	0.77	0.77	0.96	0.96	0.96	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	78	138	100	88	81	158	88	1360	60	155	1529	684
Arrive On Green	0.04	0.14	0.14	0.05	0.14	0.14	0.05	0.39	0.39	0.09	0.43	0.43
Sat Flow, veh/h	1774	1004	730	1774	565	1103	1774	3454	152	1774	3539	1583
Grp Volume(v), veh/h	27	0	76	31	0	118	31	420	435	69	835	31
Grp Sat Flow(s),veh/h/ln	1774	0	1734	1774	0	1668	1774	1770	1836	1774	1770	1583
Q Serve(g_s), s	0.7	0.0	1.9	0.8	0.0	3.1	0.8	9.1	9.1	1.8	8.5	0.5
Cycle Q Clear(g_c), s	0.7	0.0	1.9	0.8	0.0	3.1	0.8	9.1	9.1	1.8	8.5	0.5
Prop In Lane	1.00		0.42	1.00		0.66	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	78	0	239	88	0	238	88	697	723	155	1529	684
V/C Ratio(X)	0.35	0.00	0.32	0.35	0.00	0.50	0.35	0.60	0.60	0.44	0.55	0.05
Avail Cap(c_a), veh/h	257	0	575	257	0	553	257	697	723	257	1529	684
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.4	0.0	18.8	22.2	0.0	19.1	22.2	11.6	11.6	20.9	10.2	7.9
Incr Delay (d2), s/veh	2.6	0.0	0.8	2.4	0.0	1.6	2.4	3.8	3.7	2.0	1.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.0	0.5	0.0	1.5	0.5	5.2	5.3	0.9	4.4	0.3
LnGrp Delay(d),s/veh	25.0	0.0	19.5	24.6	0.0	20.7	24.6	15.4	15.3	22.9	11.6	8.1
LnGrp LOS	C		B	C		C	C	B	B	C	B	A
Approach Vol, veh/h		103			149			886			935	
Approach Delay, s/veh		21.0			21.5			15.7			12.3	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.2	23.0	6.4	10.6	6.4	24.8	6.1	10.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	19.0	7.0	16.0	7.0	19.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	3.8	11.1	2.8	3.9	2.8	10.5	2.7	5.1
Green Ext Time (p_c), s	0.0	5.6	0.0	0.8	0.0	6.0	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	14.8
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	334	396	206	157	370	89	274	535	68	114	489	158
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	371	440	229	183	430	103	301	588	75	124	532	172
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.86	0.86	0.86	0.91	0.91	0.91	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	415	732	328	350	777	180	344	1258	563	168	906	405
Arrive On Green	0.12	0.21	0.21	0.10	0.19	0.19	0.19	0.36	0.36	0.09	0.26	0.26
Sat Flow, veh/h	3442	3539	1583	3442	4125	958	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	371	440	229	183	351	182	301	588	75	124	532	172
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1694	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	7.1	7.5	8.9	3.3	6.2	6.5	10.9	8.5	2.1	4.5	8.7	6.0
Cycle Q Clear(g_c), s	7.1	7.5	8.9	3.3	6.2	6.5	10.9	8.5	2.1	4.5	8.7	6.0
Prop In Lane	1.00		1.00	1.00		0.57	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	415	732	328	350	638	319	344	1258	563	168	906	405
V/C Ratio(X)	0.89	0.60	0.70	0.52	0.55	0.57	0.87	0.47	0.13	0.74	0.59	0.42
Avail Cap(c_a), veh/h	415	853	382	415	817	408	347	1258	563	267	906	405
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.8	23.8	24.4	28.3	24.4	24.5	26.0	16.5	14.5	29.2	21.6	20.6
Incr Delay (d2), s/veh	21.2	0.9	4.6	1.2	0.7	1.6	20.9	1.2	0.5	6.2	2.8	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	3.8	4.3	1.6	3.0	3.2	7.4	4.4	1.0	2.5	4.6	3.0
LnGrp Delay(d),s/veh	50.0	24.7	29.0	29.5	25.1	26.1	46.9	17.8	15.0	35.4	24.4	23.8
LnGrp LOS	D	C	C	C	C	C	D	B	B	D	C	C
Approach Vol, veh/h		1040			716			964			828	
Approach Delay, s/veh		34.7			26.5			26.7			25.9	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	27.6	10.8	17.7	16.9	21.0	12.0	16.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	10.0	20.0	8.0	16.0	13.0	17.0	8.0	16.0
Max Q Clear Time (g_c+I1), s	6.5	10.5	5.3	10.9	12.9	10.7	9.1	8.5
Green Ext Time (p_c), s	0.1	5.2	0.1	2.8	0.0	3.8	0.0	3.8

Intersection Summary	
HCM 2010 Ctrl Delay	28.8
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	18	4	27	3	6	14	37	940	3	34	848	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	72	72	72	89	89	89	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	6	42	4	8	19	46	1162	4	39	975	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1740	2320	497	1824	2327	583	994	0	0	1166	0	0
Stage 1	1063	1063	-	1255	1255	-	-	-	-	-	-	-
Stage 2	677	1257	-	569	1072	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	56	37	519	48	37	456	692	-	-	595	-	-
Stage 1	238	298	-	182	241	-	-	-	-	-	-	-
Stage 2	409	241	-	474	295	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	46	32	519	38	32	456	692	-	-	595	-	-
Mov Cap-2 Maneuver	139	116	-	120	118	-	-	-	-	-	-	-
Stage 1	222	278	-	170	225	-	-	-	-	-	-	-
Stage 2	352	225	-	398	276	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	28.5	24.5	0.4	0.4
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	692	-	-	227	216	595	-	-
HCM Lane V/C Ratio	0.066	-	-	0.332	0.148	0.066	-	-
HCM Control Delay (s)	10.6	-	-	28.5	24.5	11.5	-	-
HCM Lane LOS	B	-	-	D	C	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.4	0.5	0.2	-	-

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	23	265	42	3	236	4	31	4	9	2	2	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	57	57	57	58	58	58	79	79	79	65	65	65
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	465	74	5	407	7	39	5	11	3	3	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	407	0	0	465	0	0	972	963	465	971	963	407
Stage 1	-	-	-	-	-	-	546	546	-	417	417	-
Stage 2	-	-	-	-	-	-	426	417	-	554	546	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1152	-	-	1096	-	-	232	256	597	232	256	644
Stage 1	-	-	-	-	-	-	522	518	-	613	591	-
Stage 2	-	-	-	-	-	-	606	591	-	517	518	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1152	-	-	1096	-	-	218	246	597	217	246	644
Mov Cap-2 Maneuver	-	-	-	-	-	-	218	246	-	217	246	-
Stage 1	-	-	-	-	-	-	504	500	-	592	588	-
Stage 2	-	-	-	-	-	-	587	588	-	485	500	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.1	23.1	14.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	254	1152	-	-	1096	-	-	415
HCM Lane V/C Ratio	0.219	0.035	-	-	0.005	-	-	0.048
HCM Control Delay (s)	23.1	8.2	-	-	8.3	-	-	14.1
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.8	0.1	-	-	0	-	-	0.2

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Driveway & Cottonwood Ave

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	31	211	121	19	286	14	47	0	39	18	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	81	81	81	52	52	52	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	274	157	23	353	17	90	0	75	20	0	41

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	370	0	0	431	0	0	862	850	353	880	921	362
Stage 1	-	-	-	-	-	-	433	433	-	409	409	-
Stage 2	-	-	-	-	-	-	429	417	-	471	512	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1189	-	-	1129	-	-	275	298	691	268	270	683
Stage 1	-	-	-	-	-	-	601	582	-	619	596	-
Stage 2	-	-	-	-	-	-	604	591	-	573	536	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1189	-	-	1129	-	-	246	279	691	227	253	683
Mov Cap-2 Maneuver	-	-	-	-	-	-	246	279	-	227	253	-
Stage 1	-	-	-	-	-	-	574	556	-	591	584	-
Stage 2	-	-	-	-	-	-	556	579	-	488	512	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.5	24.5	15.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	347	1189	-	-	1129	-	-	415
HCM Lane V/C Ratio	0.477	0.034	-	-	0.021	-	-	0.147
HCM Control Delay (s)	24.5	8.1	0	-	8.3	-	-	15.2
HCM Lane LOS	C	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	2.5	0.1	-	-	0.1	-	-	0.5

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	26

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	19	0	71	49	0	50	63	887	55	55	768	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	92	92	92	82	82	82	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	0	89	53	0	54	77	1082	67	64	893	40

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1736	2343	466	1843	2329	574	933	0	0	1149	0	0
Stage 1	1041	1041	-	1269	1269	-	-	-	-	-	-	-
Stage 2	695	1302	-	574	1060	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	56	36	543	~ 46	37	462	729	-	-	604	-	-
Stage 1	246	305	-	178	238	-	-	-	-	-	-	-
Stage 2	399	229	-	471	299	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	42	29	543	~ 33	30	462	729	-	-	604	-	-
Mov Cap-2 Maneuver	42	29	-	~ 33	30	-	-	-	-	-	-	-
Stage 1	220	273	-	159	213	-	-	-	-	-	-	-
Stage 2	315	205	-	352	267	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	74.3	$ 498.3	0.7	0.7
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	729	-	-	154	62	604	-	-
HCM Lane V/C Ratio	0.105	-	-	0.731	1.736	0.106	-	-
HCM Control Delay (s)	10.5	-	-	74.3	$ 498.3	11.7	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0.4	-	-	4.4	9.8	0.4	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	39	92	59	111	158	199	61	1385	65	78	1125	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	57	133	86	126	180	226	70	1592	75	89	1278	36
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.69	0.69	0.69	0.88	0.88	0.88	0.87	0.87	0.87	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	276	235	145	315	268	117	1813	811	127	1833	820
Arrive On Green	0.06	0.15	0.15	0.08	0.17	0.17	0.07	0.51	0.51	0.07	0.52	0.52
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	57	133	86	126	180	226	70	1592	75	89	1278	36
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	2.7	5.6	4.2	6.0	7.6	11.9	3.3	34.3	2.1	4.2	23.4	1.0
Cycle Q Clear(g_c), s	2.7	5.6	4.2	6.0	7.6	11.9	3.3	34.3	2.1	4.2	23.4	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	107	276	235	145	315	268	117	1813	811	127	1833	820
V/C Ratio(X)	0.53	0.48	0.37	0.87	0.57	0.84	0.60	0.88	0.09	0.70	0.70	0.04
Avail Cap(c_a), veh/h	145	347	295	145	347	295	165	1813	811	145	1833	820
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.2	33.6	32.9	39.0	32.8	34.6	39.0	18.6	10.7	39.0	15.6	10.2
Incr Delay (d2), s/veh	4.0	1.3	1.0	39.9	1.9	18.3	4.8	6.4	0.2	12.0	2.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	3.0	1.9	4.5	4.1	6.5	1.8	18.2	1.0	2.5	11.9	0.4
LnGrp Delay(d),s/veh	43.2	34.9	33.9	78.9	34.7	52.8	43.8	25.0	11.0	51.0	17.9	10.3
LnGrp LOS	D	C	C	E	C	D	D	C	B	D	B	B
Approach Vol, veh/h		276			532			1737			1403	
Approach Delay, s/veh		36.3			52.9			25.1			19.8	
Approach LOS		D			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	48.0	11.0	16.7	9.7	48.5	9.2	18.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	44.0	7.0	16.0	8.0	43.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	6.2	36.3	8.0	7.6	5.3	25.4	4.7	13.9
Green Ext Time (p_c), s	0.0	7.3	0.0	1.8	0.0	15.8	0.0	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	27.7
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	74	77	49	66	102	62	33	1390	26	35	1188	79
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	85	89	56	88	136	83	38	1616	30	42	1414	94
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.87	0.87	0.87	0.75	0.75	0.75	0.86	0.86	0.86	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	80	58	379	75	72	379	94	1863	35	101	1868	836
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.05	0.52	0.52	0.06	0.53	0.53
Sat Flow, veh/h	0	243	1583	0	299	1583	1774	3555	66	1774	3539	1583
Grp Volume(v), veh/h	174	0	56	224	0	83	38	803	843	42	1414	94
Grp Sat Flow(s),veh/h/ln	243	0	1583	299	0	1583	1774	1770	1851	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	1.9	0.0	0.0	2.8	1.4	26.4	26.6	1.5	21.0	2.0
Cycle Q Clear(g_c), s	16.0	0.0	1.9	16.0	0.0	2.8	1.4	26.4	26.6	1.5	21.0	2.0
Prop In Lane	0.49		1.00	0.39		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	138	0	379	147	0	379	94	927	970	101	1868	836
V/C Ratio(X)	1.26	0.00	0.15	1.53	0.00	0.22	0.40	0.87	0.87	0.42	0.76	0.11
Avail Cap(c_a), veh/h	138	0	379	147	0	379	186	927	970	186	1868	836
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	0.0	20.0	26.2	0.0	20.4	30.6	13.9	13.9	30.4	12.4	7.9
Incr Delay (d2), s/veh	161.5	0.0	0.2	268.5	0.0	0.3	2.8	10.7	10.4	2.7	2.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	0.0	0.8	13.6	0.0	1.2	0.7	15.5	16.2	0.8	10.8	0.9
LnGrp Delay(d),s/veh	188.6	0.0	20.2	294.7	0.0	20.7	33.4	24.5	24.3	33.2	15.3	8.2
LnGrp LOS	F		C	F		C	C	C	C	C	B	A
Approach Vol, veh/h		230			307			1684			1550	
Approach Delay, s/veh		147.6			220.6			24.6			15.4	
Approach LOS		F			F			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.8	39.0		20.0	7.5	39.2		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	35.0		16.0	7.0	35.0		16.0
Max Q Clear Time (g_c+I1), s	3.5	28.6		18.0	3.4	23.0		18.0
Green Ext Time (p_c), s	0.0	6.2		0.0	0.0	11.2		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	44.3
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	327	138	49	407	92	103	330	32	59	408	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	59	385	162	64	536	121	130	418	41	68	469	60
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.76	0.76	0.76	0.79	0.79	0.79	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	128	567	482	134	574	488	180	920	90	139	819	104
Arrive On Green	0.07	0.30	0.30	0.08	0.31	0.31	0.10	0.28	0.28	0.08	0.26	0.26
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3258	318	1774	3159	402
Grp Volume(v), veh/h	59	385	162	64	536	121	130	226	233	68	262	267
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1807	1774	1770	1792
Q Serve(g_s), s	2.0	11.2	4.9	2.1	17.3	3.5	4.4	6.5	6.6	2.3	7.9	8.0
Cycle Q Clear(g_c), s	2.0	11.2	4.9	2.1	17.3	3.5	4.4	6.5	6.6	2.3	7.9	8.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.18	1.00		0.22
Lane Grp Cap(c), veh/h	128	567	482	134	574	488	180	500	510	139	459	465
V/C Ratio(X)	0.46	0.68	0.34	0.48	0.93	0.25	0.72	0.45	0.46	0.49	0.57	0.58
Avail Cap(c_a), veh/h	201	574	488	201	574	488	201	500	510	201	459	465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.5	18.8	16.6	27.3	20.7	16.0	26.9	18.2	18.2	27.3	19.9	19.9
Incr Delay (d2), s/veh	2.6	3.2	0.4	2.6	22.7	0.3	10.8	2.9	2.9	2.7	5.1	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	6.2	2.2	1.1	12.4	1.6	2.7	3.5	3.6	1.2	4.5	4.6
LnGrp Delay(d),s/veh	30.0	22.0	17.0	30.0	43.4	16.3	37.6	21.2	21.2	29.9	24.9	25.0
LnGrp LOS	C	C	B	C	D	B	D	C	C	C	C	C
Approach Vol, veh/h		606			721			589			597	
Approach Delay, s/veh		21.4			37.7			24.8			25.5	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	21.4	8.7	22.8	10.2	20.0	8.5	23.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	4.3	8.6	4.1	13.2	6.4	10.0	4.0	19.3
Green Ext Time (p_c), s	0.0	3.4	0.0	3.1	0.0	2.9	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	27.9
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	88	204	75	69	243	205	79	1162	74	124	1108	98
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	110	255	94	93	328	277	96	1417	90	148	1319	117
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.80	0.80	0.80	0.74	0.74	0.74	0.82	0.82	0.82	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	380	323	125	366	311	126	1581	707	178	1685	754
Arrive On Green	0.08	0.20	0.20	0.07	0.20	0.20	0.07	0.45	0.45	0.10	0.48	0.48
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	110	255	94	93	328	277	96	1417	90	148	1319	117
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.5	11.3	4.5	4.6	15.4	15.3	4.8	33.1	3.0	7.3	27.9	3.7
Cycle Q Clear(g_c), s	5.5	11.3	4.5	4.6	15.4	15.3	4.8	33.1	3.0	7.3	27.9	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	380	323	125	366	311	126	1581	707	178	1685	754
V/C Ratio(X)	0.80	0.67	0.29	0.74	0.90	0.89	0.76	0.90	0.13	0.83	0.78	0.16
Avail Cap(c_a), veh/h	139	380	323	139	374	318	139	1581	707	178	1685	754
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.6	32.9	30.2	40.8	35.1	35.1	40.9	22.9	14.5	39.5	19.6	13.3
Incr Delay (d2), s/veh	26.6	4.6	0.5	17.6	23.0	25.0	20.0	8.4	0.4	26.8	3.7	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	6.3	2.0	2.9	10.3	8.8	3.0	18.0	1.4	4.9	14.4	1.7
LnGrp Delay(d),s/veh	67.2	37.5	30.7	58.4	58.1	60.0	60.9	31.2	14.9	66.3	23.3	13.7
LnGrp LOS	E	D	C	E	E	E	E	C	B	E	C	B
Approach Vol, veh/h		459			698			1603			1584	
Approach Delay, s/veh		43.2			58.9			32.1			26.6	
Approach LOS		D			E			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	44.0	10.3	22.3	10.4	46.6	11.0	21.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	40.0	7.0	18.0	7.0	42.0	7.0	18.0
Max Q Clear Time (g_c+I1), s	9.3	35.1	6.6	13.3	6.8	29.9	7.5	17.4
Green Ext Time (p_c), s	0.0	4.7	0.0	2.0	0.0	11.0	0.0	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	35.6
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	105	259	79	47	361	142	109	347	30	34	281	45
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	148	365	111	69	531	209	127	403	35	47	385	62
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.71	0.71	0.71	0.68	0.68	0.68	0.86	0.86	0.86	0.73	0.73	0.73
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	186	604	514	137	553	470	174	944	82	110	765	122
Arrive On Green	0.10	0.32	0.32	0.08	0.30	0.30	0.10	0.29	0.29	0.06	0.25	0.25
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3297	285	1774	3058	489
Grp Volume(v), veh/h	148	365	111	69	531	209	127	215	223	47	222	225
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1812	1774	1770	1777
Q Serve(g_s), s	5.2	10.5	3.3	2.4	17.9	6.8	4.4	6.3	6.4	1.6	6.9	7.0
Cycle Q Clear(g_c), s	5.2	10.5	3.3	2.4	17.9	6.8	4.4	6.3	6.4	1.6	6.9	7.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		0.27
Lane Grp Cap(c), veh/h	186	604	514	137	553	470	174	506	519	110	443	444
V/C Ratio(X)	0.80	0.60	0.22	0.50	0.96	0.44	0.73	0.43	0.43	0.43	0.50	0.51
Avail Cap(c_a), veh/h	194	604	514	194	553	470	194	506	519	194	443	444
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.0	18.2	15.7	28.3	22.1	18.2	28.0	18.6	18.6	28.9	20.6	20.6
Incr Delay (d2), s/veh	19.7	1.7	0.2	2.8	28.3	0.7	11.7	2.6	2.6	2.6	4.0	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	5.7	1.5	1.3	13.5	3.0	2.8	3.4	3.5	0.9	3.8	3.9
LnGrp Delay(d),s/veh	47.7	19.9	15.9	31.2	50.4	18.9	39.7	21.2	21.2	31.5	24.6	24.7
LnGrp LOS	D	B	B	C	D	B	D	C	C	C	C	C
Approach Vol, veh/h		624			809			565			494	
Approach Delay, s/veh		25.7			40.6			25.3			25.3	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	22.3	8.9	24.7	10.3	20.0	10.7	23.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	3.6	8.4	4.4	12.5	6.4	9.0	7.2	19.9
Green Ext Time (p_c), s	0.0	3.0	0.0	3.3	0.0	2.8	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	30.4
HCM 2010 LOS	C

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HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	89	52	88	44	63	103	61	1182	60	97	1057	82
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	120	70	119	52	74	121	66	1271	65	120	1305	101
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.74	0.74	0.74	0.85	0.85	0.85	0.93	0.93	0.93	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	163	115	195	114	100	164	130	1454	74	163	1569	702
Arrive On Green	0.09	0.19	0.19	0.06	0.16	0.16	0.07	0.42	0.42	0.09	0.44	0.44
Sat Flow, veh/h	1774	621	1056	1774	637	1042	1774	3426	175	1774	3539	1583
Grp Volume(v), veh/h	120	0	189	52	0	195	66	656	680	120	1305	101
Grp Sat Flow(s),veh/h/ln	1774	0	1676	1774	0	1679	1774	1770	1832	1774	1770	1583
Q Serve(g_s), s	4.5	0.0	7.1	1.9	0.0	7.6	2.4	23.1	23.2	4.5	22.2	2.6
Cycle Q Clear(g_c), s	4.5	0.0	7.1	1.9	0.0	7.6	2.4	23.1	23.2	4.5	22.2	2.6
Prop In Lane	1.00		0.63	1.00		0.62	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	163	0	310	114	0	264	130	751	778	163	1569	702
V/C Ratio(X)	0.74	0.00	0.61	0.46	0.00	0.74	0.51	0.87	0.87	0.74	0.83	0.14
Avail Cap(c_a), veh/h	182	0	393	182	0	393	182	751	778	182	1569	702
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.2	0.0	25.6	30.8	0.0	27.4	30.5	18.0	18.0	30.2	16.8	11.3
Incr Delay (d2), s/veh	12.9	0.0	1.9	2.8	0.0	4.0	3.1	13.3	13.1	12.9	5.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	3.4	1.0	0.0	3.8	1.3	14.1	14.6	2.8	11.8	1.2
LnGrp Delay(d),s/veh	43.1	0.0	27.5	33.6	0.0	31.4	33.5	31.3	31.1	43.1	22.1	11.7
LnGrp LOS	D		C	C		C	C	C	C	D	C	B
Approach Vol, veh/h		309			247			1402			1526	
Approach Delay, s/veh		33.6			31.9			31.3			23.1	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	33.0	8.4	16.6	9.0	34.3	10.3	14.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	29.0	7.0	16.0	7.0	29.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	6.5	25.2	3.9	9.1	4.4	24.2	6.5	9.6
Green Ext Time (p_c), s	0.0	3.5	0.0	1.3	0.0	4.5	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	27.9
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	203	458	100	205	891	244	267	910	211	238	677	237
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	248	559	122	241	1048	287	284	968	224	283	806	282
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.82	0.82	0.82	0.85	0.85	0.85	0.94	0.94	0.94	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	321	887	397	331	1007	275	308	991	443	284	944	422
Arrive On Green	0.09	0.25	0.25	0.10	0.25	0.25	0.17	0.28	0.28	0.16	0.27	0.27
Sat Flow, veh/h	3442	3539	1583	3442	3974	1087	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	248	559	122	241	894	441	284	968	224	283	806	282
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1671	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.3	10.5	4.7	5.1	19.0	19.0	11.8	20.3	8.9	12.0	16.2	11.9
Cycle Q Clear(g_c), s	5.3	10.5	4.7	5.1	19.0	19.0	11.8	20.3	8.9	12.0	16.2	11.9
Prop In Lane	1.00		1.00	1.00		0.65	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	321	887	397	331	859	423	308	991	443	284	944	422
V/C Ratio(X)	0.77	0.63	0.31	0.73	1.04	1.04	0.92	0.98	0.51	1.00	0.85	0.67
Avail Cap(c_a), veh/h	321	887	397	413	859	423	308	991	443	284	944	422
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.2	25.0	22.8	32.9	28.0	28.0	30.5	26.8	22.6	31.5	26.1	24.5
Incr Delay (d2), s/veh	11.0	1.4	0.4	4.9	41.9	55.0	32.2	23.5	4.1	52.5	9.7	8.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	5.3	2.1	2.6	13.8	15.2	8.5	13.1	4.4	10.0	9.1	6.1
LnGrp Delay(d),s/veh	44.2	26.5	23.3	37.8	69.9	83.0	62.7	50.3	26.7	84.0	35.8	32.7
LnGrp LOS	D	C	C	D	F	F	E	D	C	F	D	C
Approach Vol, veh/h		929			1576			1476			1371	
Approach Delay, s/veh		30.8			68.7			49.1			45.1	
Approach LOS		C			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	25.0	11.2	22.8	17.0	24.0	11.0	23.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	12.0	21.0	9.0	17.0	13.0	20.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	14.0	22.3	7.1	12.5	13.8	18.2	7.3	21.0
Green Ext Time (p_c), s	0.0	0.0	0.1	3.7	0.0	1.6	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	50.7
HCM 2010 LOS	D

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HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	2	41	2	1	18	38	1477	4	14	1264	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	68	68	68	87	87	87	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	3	61	3	1	26	48	1867	5	16	1436	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2511	3449	730	2717	3457	936	1459	0	0	1873	0	0
Stage 1	1480	1480	-	1966	1966	-	-	-	-	-	-	-
Stage 2	1031	1969	-	751	1491	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 14	7	365	10	7	266	459	-	-	317	-	-
Stage 1	132	188	-	65	107	-	-	-	-	-	-	-
Stage 2	249	107	-	369	185	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 11	6	365	7	6	266	459	-	-	317	-	-
Mov Cap-2 Maneuver	70	53	-	45	53	-	-	-	-	-	-	-
Stage 1	118	179	-	58	96	-	-	-	-	-	-	-
Stage 2	198	96	-	287	176	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	46.4	32.8	0.3	0.2
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	459	-	-	167	160	317	-	-
HCM Lane V/C Ratio	0.105	-	-	0.5	0.193	0.05	-	-
HCM Control Delay (s)	13.8	-	-	46.4	32.8	17	-	-
HCM Lane LOS	B	-	-	E	D	C	-	-
HCM 95th %tile Q(veh)	0.3	-	-	2.4	0.7	0.2	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	346	13	36	472	19	30	11	42	34	12	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	70	70	70	67	67	67	64	64	64
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	449	17	51	674	27	45	16	63	53	19	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	674	0	0	449	0	0	1273	1252	449	1292	1252	674
Stage 1	-	-	-	-	-	-	475	475	-	777	777	-
Stage 2	-	-	-	-	-	-	798	777	-	515	475	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	917	-	-	1111	-	-	144	172	610	140	172	455
Stage 1	-	-	-	-	-	-	570	557	-	390	407	-
Stage 2	-	-	-	-	-	-	380	407	-	543	557	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	917	-	-	1111	-	-	119	162	610	111	162	455
Mov Cap-2 Maneuver	-	-	-	-	-	-	119	162	-	111	162	-
Stage 1	-	-	-	-	-	-	562	549	-	384	388	-
Stage 2	-	-	-	-	-	-	327	388	-	466	549	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.6	43	65.3
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	213	917	-	-	1111	-	-	148
HCM Lane V/C Ratio	0.582	0.014	-	-	0.046	-	-	0.644
HCM Control Delay (s)	43	9	-	-	8.4	-	-	65.3
HCM Lane LOS	E	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	3.2	0	-	-	0.1	-	-	3.5

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HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	11	0	0	0	14	1449	0	0	1316	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	62	62	62	92	92	92	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	18	0	0	0	16	1705	0	0	1548	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2435	3288	776	2512	3290	852	1552	0	0	1705	0	0
Stage 1	1550	1550	-	1738	1738	-	-	-	-	-	-	-
Stage 2	885	1738	-	774	1552	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	16	9	340	14	9	303	423	-	-	369	-	-
Stage 1	119	173	-	90	140	-	-	-	-	-	-	-
Stage 2	306	140	-	357	173	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	16	9	340	13	9	303	423	-	-	369	-	-
Mov Cap-2 Maneuver	16	9	-	13	9	-	-	-	-	-	-	-
Stage 1	114	173	-	87	135	-	-	-	-	-	-	-
Stage 2	294	135	-	338	173	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.2	0	0.1	0
HCM LOS	C	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	423	-	-	340	-	369	-	-
HCM Lane V/C Ratio	0.039	-	-	0.052	-	-	-	-
HCM Control Delay (s)	13.9	-	-	16.2	0	0	-	-
HCM Lane LOS	B	-	-	C	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	0	-	-

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	68	199	72	67	131	95	65	1268	88	121	1617	75
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	80	234	85	96	187	136	68	1321	92	126	1684	78
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.70	0.70	0.70	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	293	249	131	301	256	116	1743	780	157	1825	816
Arrive On Green	0.07	0.16	0.16	0.07	0.16	0.16	0.07	0.49	0.49	0.09	0.52	0.52
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	80	234	85	96	187	136	68	1321	92	126	1684	78
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.7	10.3	4.1	4.5	8.0	6.7	3.2	25.8	2.7	5.9	37.5	2.1
Cycle Q Clear(g_c), s	3.7	10.3	4.1	4.5	8.0	6.7	3.2	25.8	2.7	5.9	37.5	2.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	124	293	249	131	301	256	116	1743	780	157	1825	816
V/C Ratio(X)	0.65	0.80	0.34	0.74	0.62	0.53	0.58	0.76	0.12	0.80	0.92	0.10
Avail Cap(c_a), veh/h	146	349	297	146	349	297	146	1743	780	187	1825	816
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.7	34.6	32.0	38.7	33.3	32.8	38.7	17.5	11.7	38.1	19.1	10.5
Incr Delay (d2), s/veh	7.5	10.4	0.8	15.8	2.6	1.7	4.6	3.1	0.3	18.6	9.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	6.2	1.8	2.8	4.3	3.1	1.7	13.2	1.2	3.7	20.6	1.0
LnGrp Delay(d),s/veh	46.1	45.1	32.8	54.5	36.0	34.5	43.3	20.7	12.0	56.7	28.4	10.8
LnGrp LOS	D	D	C	D	D	C	D	C	B	E	C	B
Approach Vol, veh/h		399			419			1481			1888	
Approach Delay, s/veh		42.7			39.7			21.2			29.5	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.6	46.0	10.3	17.4	9.6	48.0	9.9	17.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	42.0	7.0	16.0	7.0	44.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	7.9	27.8	6.5	12.3	5.2	39.5	5.7	10.0
Green Ext Time (p_c), s	0.0	13.2	0.0	1.1	0.0	4.3	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	28.9
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	64	102	26	31	94	64	15	1323	46	79	1568	89
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	72	115	29	35	106	72	16	1378	48	81	1616	92
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.96	0.96	0.96	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	79	92	400	71	160	400	48	1653	58	149	1878	840
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.03	0.47	0.47	0.08	0.53	0.53
Sat Flow, veh/h	0	364	1583	0	633	1583	1774	3490	121	1774	3539	1583
Grp Volume(v), veh/h	187	0	29	141	0	72	16	698	728	81	1616	92
Grp Sat Flow(s),veh/h/ln	364	0	1583	633	0	1583	1774	1770	1841	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.9	0.0	0.0	2.3	0.6	21.7	21.8	2.8	25.0	1.8
Cycle Q Clear(g_c), s	16.0	0.0	0.9	16.0	0.0	2.3	0.6	21.7	21.8	2.8	25.0	1.8
Prop In Lane	0.39		1.00	0.25		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	171	0	400	231	0	400	48	838	872	149	1878	840
V/C Ratio(X)	1.09	0.00	0.07	0.61	0.00	0.18	0.33	0.83	0.83	0.54	0.86	0.11
Avail Cap(c_a), veh/h	171	0	400	231	0	400	196	838	872	196	1878	840
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.9	0.0	18.0	20.0	0.0	18.5	30.2	14.5	14.5	27.8	12.8	7.4
Incr Delay (d2), s/veh	96.5	0.0	0.1	4.6	0.0	0.2	4.0	9.5	9.3	3.1	5.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	0.0	0.4	2.3	0.0	1.0	0.3	12.7	13.2	1.5	13.3	0.9
LnGrp Delay(d),s/veh	120.4	0.0	18.1	24.6	0.0	18.7	34.2	23.9	23.8	30.9	18.3	7.7
LnGrp LOS	F		B	C		B	C	C	C	C	B	A
Approach Vol, veh/h		216			213			1442			1789	
Approach Delay, s/veh		106.6			22.6			24.0			18.3	
Approach LOS		F			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.3	34.0		20.0	5.7	37.6		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	30.0		16.0	7.0	30.0		16.0
Max Q Clear Time (g_c+I1), s	4.8	23.8		18.0	2.6	27.0		18.0
Green Ext Time (p_c), s	0.0	5.9		0.0	0.0	2.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	26.0
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

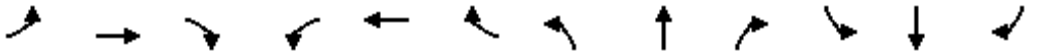
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	376	162	45	296	41	88	438	60	31	374	47
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	54	442	191	55	361	50	106	528	72	33	394	49
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.82	0.82	0.82	0.83	0.83	0.83	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	539	458	125	540	459	173	1000	136	88	860	106
Arrive On Green	0.07	0.29	0.29	0.07	0.29	0.29	0.10	0.32	0.32	0.05	0.27	0.27
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3132	426	1774	3171	392
Grp Volume(v), veh/h	54	442	191	55	361	50	106	298	302	33	219	224
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1788	1774	1770	1794
Q Serve(g_s), s	1.7	13.0	5.8	1.8	10.1	1.4	3.4	8.1	8.2	1.1	6.1	6.1
Cycle Q Clear(g_c), s	1.7	13.0	5.8	1.8	10.1	1.4	3.4	8.1	8.2	1.1	6.1	6.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		0.22
Lane Grp Cap(c), veh/h	124	539	458	125	540	459	173	565	571	88	480	487
V/C Ratio(X)	0.44	0.82	0.42	0.44	0.67	0.11	0.61	0.53	0.53	0.38	0.46	0.46
Avail Cap(c_a), veh/h	211	600	510	211	600	510	211	565	571	211	480	487
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.3	19.5	16.9	26.3	18.4	15.4	25.5	16.4	16.4	27.1	17.9	17.9
Incr Delay (d2), s/veh	2.4	8.1	0.6	2.4	2.5	0.1	3.5	3.5	3.5	2.6	3.1	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	7.8	2.6	0.9	5.5	0.6	1.8	4.5	4.6	0.6	3.3	3.5
LnGrp Delay(d),s/veh	28.7	27.7	17.5	28.7	20.9	15.5	29.1	19.9	19.9	29.8	21.0	21.0
LnGrp LOS	C	C	B	C	C	B	C	B	B	C	C	C
Approach Vol, veh/h		687			466			706			476	
Approach Delay, s/veh		24.9			21.3			21.3			21.6	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	22.8	8.2	21.1	9.8	20.0	8.1	21.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	3.1	10.2	3.8	15.0	5.4	8.1	3.7	12.1
Green Ext Time (p_c), s	0.0	3.0	0.0	2.0	0.0	3.7	0.0	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	22.4
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	103	241	72	44	166	112	74	1226	59	176	1385	131
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	121	284	85	56	213	144	79	1304	63	187	1473	139
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.78	0.78	0.78	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	153	347	295	113	306	260	133	1490	667	210	1645	736
Arrive On Green	0.09	0.19	0.19	0.06	0.16	0.16	0.07	0.42	0.42	0.12	0.46	0.46
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	121	284	85	56	213	144	79	1304	63	187	1473	139
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.1	11.1	3.5	2.3	8.2	6.4	3.3	25.7	1.8	7.9	29.0	3.9
Cycle Q Clear(g_c), s	5.1	11.1	3.5	2.3	8.2	6.4	3.3	25.7	1.8	7.9	29.0	3.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	153	347	295	113	306	260	133	1490	667	210	1645	736
V/C Ratio(X)	0.79	0.82	0.29	0.49	0.70	0.55	0.60	0.88	0.09	0.89	0.90	0.19
Avail Cap(c_a), veh/h	163	392	333	163	392	333	163	1490	667	210	1645	736
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.1	29.7	26.6	34.4	30.0	29.2	34.1	20.2	13.3	33.0	18.7	11.9
Incr Delay (d2), s/veh	21.8	11.6	0.5	3.3	3.7	1.8	4.2	7.5	0.3	34.0	8.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	6.8	1.6	1.2	4.5	2.9	1.8	14.0	0.8	5.8	15.9	1.8
LnGrp Delay(d),s/veh	55.9	41.3	27.1	37.7	33.7	31.1	38.3	27.6	13.5	67.1	26.7	12.5
LnGrp LOS	E	D	C	D	C	C	D	C	B	E	C	B
Approach Vol, veh/h		490			413			1446			1799	
Approach Delay, s/veh		42.5			33.3			27.6			29.8	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	36.0	8.9	18.2	9.7	39.3	10.5	16.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	32.0	7.0	16.0	7.0	34.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	9.9	27.7	4.3	13.1	5.3	31.0	7.1	10.2
Green Ext Time (p_c), s	0.0	4.1	0.0	1.0	0.0	2.9	0.0	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	30.9
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	259	57	31	230	43	31	355	19	39	322	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	22	320	70	34	250	47	35	403	22	41	339	21
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.81	0.81	0.81	0.92	0.92	0.92	0.88	0.88	0.88	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	65	456	387	94	485	412	96	1095	60	108	1110	68
Arrive On Green	0.04	0.24	0.24	0.05	0.26	0.26	0.05	0.32	0.32	0.06	0.33	0.33
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3414	186	1774	3387	209
Grp Volume(v), veh/h	22	320	70	34	250	47	35	208	217	41	176	184
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1830	1774	1770	1826
Q Serve(g_s), s	0.6	7.8	1.7	0.9	5.7	1.1	0.9	4.5	4.5	1.1	3.7	3.7
Cycle Q Clear(g_c), s	0.6	7.8	1.7	0.9	5.7	1.1	0.9	4.5	4.5	1.1	3.7	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		0.11
Lane Grp Cap(c), veh/h	65	456	387	94	485	412	96	568	587	108	580	599
V/C Ratio(X)	0.34	0.70	0.18	0.36	0.52	0.11	0.37	0.37	0.37	0.38	0.30	0.31
Avail Cap(c_a), veh/h	249	710	603	249	710	603	249	568	587	249	580	599
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.4	17.2	14.9	22.8	15.7	14.1	22.8	13.0	13.0	22.5	12.5	12.5
Incr Delay (d2), s/veh	3.0	2.0	0.2	2.4	0.8	0.1	2.3	1.8	1.8	2.2	1.4	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	4.3	0.8	0.5	3.0	0.5	0.5	2.5	2.6	0.6	2.0	2.1
LnGrp Delay(d),s/veh	26.4	19.2	15.1	25.2	16.6	14.2	25.1	14.9	14.8	24.7	13.9	13.8
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		412			331			460			401	
Approach Delay, s/veh		18.9			17.1			15.6			15.0	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.0	20.0	6.6	16.2	6.7	20.3	5.8	17.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	3.1	6.5	2.9	9.8	2.9	5.7	2.6	7.7
Green Ext Time (p_c), s	0.0	3.0	0.0	2.4	0.0	3.2	0.0	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.6
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	24	52	44	21	44	46	45	1298	55	75	1400	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	27	59	50	25	52	55	48	1381	59	81	1505	33
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.88	0.88	0.88	0.84	0.84	0.84	0.94	0.94	0.94	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	74	101	86	69	88	93	111	1810	77	147	1924	861
Arrive On Green	0.04	0.11	0.11	0.04	0.11	0.11	0.06	0.52	0.52	0.08	0.54	0.54
Sat Flow, veh/h	1774	933	790	1774	830	878	1774	3459	148	1774	3539	1583
Grp Volume(v), veh/h	27	0	109	25	0	107	48	705	735	81	1505	33
Grp Sat Flow(s),veh/h/ln	1774	0	1723	1774	0	1708	1774	1770	1837	1774	1770	1583
Q Serve(g_s), s	1.0	0.0	3.9	0.9	0.0	3.9	1.7	20.5	20.7	2.9	21.9	0.6
Cycle Q Clear(g_c), s	1.0	0.0	3.9	0.9	0.0	3.9	1.7	20.5	20.7	2.9	21.9	0.6
Prop In Lane	1.00		0.46	1.00		0.51	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	74	0	187	69	0	182	111	926	961	147	1924	861
V/C Ratio(X)	0.37	0.00	0.58	0.36	0.00	0.59	0.43	0.76	0.76	0.55	0.78	0.04
Avail Cap(c_a), veh/h	191	0	424	191	0	420	191	926	961	191	1924	861
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	27.6	30.4	0.0	27.7	29.4	12.3	12.3	28.6	11.8	6.9
Incr Delay (d2), s/veh	3.0	0.0	2.8	3.1	0.0	3.0	2.7	5.9	5.8	3.2	3.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	2.0	0.5	0.0	2.0	0.9	11.3	11.7	1.5	11.3	0.3
LnGrp Delay(d),s/veh	33.3	0.0	30.4	33.6	0.0	30.7	32.0	18.2	18.1	31.9	15.0	7.0
LnGrp LOS	C		C	C		C	C	B	B	C	B	A
Approach Vol, veh/h		136			132			1488			1619	
Approach Delay, s/veh		31.0			31.2			18.6			15.7	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	38.0	6.5	11.1	8.1	39.3	6.7	10.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	34.0	7.0	16.0	7.0	34.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	4.9	22.7	2.9	5.9	3.7	23.9	3.0	5.9
Green Ext Time (p_c), s	0.0	10.4	0.0	0.8	0.0	9.3	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	18.2
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	504	1029	305	260	658	216	270	782	193	309	945	159
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	536	1095	324	302	765	251	297	859	212	340	1038	175
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	590	1062	475	313	834	271	290	933	417	355	1062	475
Arrive On Green	0.17	0.30	0.30	0.09	0.22	0.22	0.16	0.26	0.26	0.20	0.30	0.30
Sat Flow, veh/h	3442	3539	1583	3442	3800	1235	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	536	1095	324	302	682	334	297	859	212	340	1038	175
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1645	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	16.8	33.0	19.8	9.6	21.6	21.9	18.0	26.0	12.5	20.9	32.0	9.6
Cycle Q Clear(g_c), s	16.8	33.0	19.8	9.6	21.6	21.9	18.0	26.0	12.5	20.9	32.0	9.6
Prop In Lane	1.00		1.00	1.00		0.75	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	590	1062	475	313	744	361	290	933	417	355	1062	475
V/C Ratio(X)	0.91	1.03	0.68	0.97	0.92	0.93	1.02	0.92	0.51	0.96	0.98	0.37
Avail Cap(c_a), veh/h	594	1062	475	313	744	361	290	933	417	355	1062	475
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.7	38.5	33.9	49.8	41.9	42.1	46.0	39.4	34.4	43.5	38.1	30.3
Incr Delay (d2), s/veh	17.8	36.0	4.0	41.4	16.1	29.4	58.9	15.6	4.4	36.8	22.7	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	21.4	9.2	6.4	11.8	12.9	13.5	14.7	6.0	13.8	18.9	4.5
LnGrp Delay(d),s/veh	62.6	74.5	37.9	91.2	58.0	71.4	104.9	55.0	38.8	80.3	60.9	32.5
LnGrp LOS	E	F	D	F	E	E	F	D	D	F	E	C
Approach Vol, veh/h		1955			1318			1368			1553	
Approach Delay, s/veh		65.1			69.0			63.3			61.9	
Approach LOS		E			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	33.0	14.0	37.0	22.0	37.0	22.9	28.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	22.0	29.0	10.0	33.0	18.0	33.0	19.0	24.0
Max Q Clear Time (g_c+I1), s	22.9	28.0	11.6	35.0	20.0	34.0	18.8	23.9
Green Ext Time (p_c), s	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	64.8
HCM 2010 LOS	E

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	63	101	36	50	81	84	53	1169	54	71	1117	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	70	112	40	60	98	101	58	1285	59	79	1241	64
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.83	0.83	0.83	0.91	0.91	0.91	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	222	188	129	210	178	126	1652	739	149	1697	759
Arrive On Green	0.08	0.12	0.12	0.07	0.11	0.11	0.07	0.47	0.47	0.08	0.48	0.48
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	70	112	40	60	98	101	58	1285	59	79	1241	64
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	2.3	3.5	1.4	2.0	3.1	3.8	1.9	18.9	1.3	2.7	17.5	1.4
Cycle Q Clear(g_c), s	2.3	3.5	1.4	2.0	3.1	3.8	1.9	18.9	1.3	2.7	17.5	1.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	140	222	188	129	210	178	126	1652	739	149	1697	759
V/C Ratio(X)	0.50	0.51	0.21	0.47	0.47	0.57	0.46	0.78	0.08	0.53	0.73	0.08
Avail Cap(c_a), veh/h	200	480	408	200	480	408	200	1652	739	200	1697	759
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.4	25.6	24.7	27.6	25.8	26.1	27.7	13.9	9.2	27.3	13.0	8.8
Incr Delay (d2), s/veh	2.7	1.8	0.6	2.6	1.6	2.8	2.6	3.7	0.2	2.9	2.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.9	0.6	1.1	1.7	1.8	1.0	9.9	0.6	1.4	9.1	0.6
LnGrp Delay(d),s/veh	30.2	27.4	25.3	30.2	27.4	28.9	30.3	17.5	9.4	30.2	15.8	9.0
LnGrp LOS	C	C	C	C	C	C	C	B	A	C	B	A
Approach Vol, veh/h		222			259			1402			1384	
Approach Delay, s/veh		27.9			28.7			17.7			16.3	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	33.0	8.5	11.4	8.4	33.8	8.9	11.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	29.0	7.0	16.0	7.0	29.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	4.7	20.9	4.0	5.5	3.9	19.5	4.3	5.8
Green Ext Time (p_c), s	0.0	7.3	0.0	1.1	0.0	8.5	0.0	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	18.7
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	78	91	26	38	65	63	24	1141	26	29	1096	57
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	90	105	30	44	75	72	29	1358	31	34	1274	66
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.84	0.84	0.84	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	94	77	453	88	111	453	81	1583	36	91	1605	718
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.05	0.45	0.45	0.05	0.45	0.45
Sat Flow, veh/h	0	270	1583	0	387	1583	1774	3537	81	1774	3539	1583
Grp Volume(v), veh/h	195	0	30	119	0	72	29	679	710	34	1274	66
Grp Sat Flow(s),veh/h/ln	270	0	1583	387	0	1583	1774	1770	1849	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.8	0.0	0.0	1.9	0.9	19.2	19.3	1.0	17.2	1.3
Cycle Q Clear(g_c), s	16.0	0.0	0.8	16.0	0.0	1.9	0.9	19.2	19.3	1.0	17.2	1.3
Prop In Lane	0.46		1.00	0.37		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	171	0	453	199	0	453	81	792	827	91	1605	718
V/C Ratio(X)	1.14	0.00	0.07	0.60	0.00	0.16	0.36	0.86	0.86	0.37	0.79	0.09
Avail Cap(c_a), veh/h	171	0	453	199	0	453	222	792	827	222	1605	718
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.2	0.0	14.5	16.6	0.0	14.9	25.9	13.8	13.8	25.6	13.0	8.7
Incr Delay (d2), s/veh	110.5	0.0	0.1	4.8	0.0	0.2	2.7	11.6	11.2	2.5	4.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	0.0	0.3	1.7	0.0	0.8	0.5	11.8	12.2	0.6	9.2	0.6
LnGrp Delay(d),s/veh	131.8	0.0	14.6	21.5	0.0	15.1	28.6	25.4	25.1	28.1	17.2	9.0
LnGrp LOS	F		B	C		B	C	C	C	C	B	A
Approach Vol, veh/h		225			191			1418			1374	
Approach Delay, s/veh		116.1			19.1			25.3			17.1	
Approach LOS		F			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.9	29.0		20.0	6.5	29.3		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	25.0		16.0	7.0	25.0		16.0
Max Q Clear Time (g_c+I1), s	3.0	21.3		18.0	2.9	19.2		18.0
Green Ext Time (p_c), s	0.0	3.5		0.0	0.0	5.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	27.8
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	261	115	49	315	26	97	278	47	22	239	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	23	335	147	58	375	31	100	287	48	24	257	24
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.78	0.78	0.78	0.84	0.84	0.84	0.97	0.97	0.97	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	67	459	390	131	527	448	174	1091	180	69	982	91
Arrive On Green	0.04	0.25	0.25	0.07	0.28	0.28	0.10	0.36	0.36	0.04	0.30	0.30
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3041	503	1774	3275	303
Grp Volume(v), veh/h	23	335	147	58	375	31	100	166	169	24	138	143
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1774	1774	1770	1809
Q Serve(g_s), s	0.7	9.4	4.4	1.8	10.3	0.8	3.1	3.8	3.8	0.7	3.4	3.4
Cycle Q Clear(g_c), s	0.7	9.4	4.4	1.8	10.3	0.8	3.1	3.8	3.8	0.7	3.4	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		0.17
Lane Grp Cap(c), veh/h	67	459	390	131	527	448	174	635	637	69	530	542
V/C Ratio(X)	0.35	0.73	0.38	0.44	0.71	0.07	0.58	0.26	0.27	0.35	0.26	0.26
Avail Cap(c_a), veh/h	219	591	503	219	591	503	219	635	637	219	530	542
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.6	19.6	17.8	25.1	18.3	14.9	24.5	12.9	12.9	26.6	15.1	15.1
Incr Delay (d2), s/veh	3.1	3.3	0.6	2.3	3.5	0.1	3.0	1.0	1.0	3.0	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	5.2	2.0	1.0	5.7	0.4	1.6	2.0	2.1	0.4	1.8	1.9
LnGrp Delay(d),s/veh	29.7	23.0	18.4	27.5	21.8	14.9	27.4	13.9	13.9	29.5	16.3	16.3
LnGrp LOS	C	C	B	C	C	B	C	B	B	C	B	B
Approach Vol, veh/h		505			464			435			305	
Approach Delay, s/veh		21.9			22.0			17.0			17.3	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.2	24.3	8.2	18.0	9.6	21.0	6.1	20.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	17.0	7.0	18.0	7.0	17.0	7.0	18.0
Max Q Clear Time (g_c+I1), s	2.7	5.8	3.8	11.4	5.1	5.4	2.7	12.3
Green Ext Time (p_c), s	0.0	2.7	0.0	2.6	0.0	2.7	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	19.9
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	88	153	65	71	190	189	87	1030	75	154	936	106
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	111	194	82	125	333	332	96	1132	82	177	1076	122
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.79	0.79	0.79	0.57	0.57	0.57	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	394	335	157	401	341	144	1286	575	215	1427	639
Arrive On Green	0.08	0.21	0.21	0.09	0.22	0.22	0.08	0.36	0.36	0.12	0.40	0.40
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	111	194	82	125	333	332	96	1132	82	177	1076	122
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	4.5	6.8	3.2	5.1	12.7	15.5	3.9	22.2	2.6	7.2	19.4	3.7
Cycle Q Clear(g_c), s	4.5	6.8	3.2	5.1	12.7	15.5	3.9	22.2	2.6	7.2	19.4	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	150	394	335	157	401	341	144	1286	575	215	1427	639
V/C Ratio(X)	0.74	0.49	0.25	0.79	0.83	0.97	0.67	0.88	0.14	0.82	0.75	0.19
Avail Cap(c_a), veh/h	167	401	341	167	401	341	167	1286	575	215	1427	639
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.2	25.8	24.4	33.2	27.8	28.9	33.1	22.1	15.9	31.9	19.0	14.3
Incr Delay (d2), s/veh	14.3	1.0	0.4	21.6	13.6	41.5	7.9	8.8	0.5	22.2	3.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	3.6	1.4	3.4	8.0	10.7	2.2	12.4	1.2	4.9	10.2	1.7
LnGrp Delay(d),s/veh	47.5	26.7	24.7	54.8	41.5	70.4	41.0	31.0	16.4	54.0	22.7	15.0
LnGrp LOS	D	C	C	D	D	E	D	C	B	D	C	B
Approach Vol, veh/h		387			790			1310			1375	
Approach Delay, s/veh		32.3			55.8			30.8			26.1	
Approach LOS		C			E			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	31.0	10.6	19.7	10.0	34.0	10.3	20.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	27.0	7.0	16.0	7.0	29.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	9.2	24.2	7.1	8.8	5.9	21.4	6.5	17.5
Green Ext Time (p_c), s	0.0	2.5	0.0	2.6	0.0	6.6	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	34.4
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	214	64	10	238	31	34	206	15	28	223	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	62	382	114	15	350	46	40	245	18	32	256	22
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.56	0.56	0.56	0.68	0.68	0.68	0.84	0.84	0.84	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	587	499	46	488	415	104	1035	76	88	991	85
Arrive On Green	0.08	0.31	0.31	0.03	0.26	0.26	0.06	0.31	0.31	0.05	0.30	0.30
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3345	244	1774	3301	282
Grp Volume(v), veh/h	62	382	114	15	350	46	40	129	134	32	136	142
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1820	1774	1770	1813
Q Serve(g_s), s	1.8	9.4	2.8	0.4	9.1	1.2	1.2	2.9	2.9	0.9	3.1	3.2
Cycle Q Clear(g_c), s	1.8	9.4	2.8	0.4	9.1	1.2	1.2	2.9	2.9	0.9	3.1	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		0.16
Lane Grp Cap(c), veh/h	140	587	499	46	488	415	104	547	563	88	531	544
V/C Ratio(X)	0.44	0.65	0.23	0.32	0.72	0.11	0.38	0.24	0.24	0.36	0.26	0.26
Avail Cap(c_a), veh/h	233	664	564	233	664	564	233	547	563	233	531	544
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.4	15.7	13.5	25.5	17.9	14.9	24.2	13.7	13.7	24.5	14.1	14.2
Incr Delay (d2), s/veh	2.2	1.9	0.2	4.0	2.4	0.1	2.3	1.0	1.0	2.5	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	5.1	1.3	0.3	5.0	0.5	0.6	1.5	1.6	0.5	1.7	1.7
LnGrp Delay(d),s/veh	25.6	17.6	13.7	29.4	20.2	15.1	26.5	14.7	14.7	27.0	15.3	15.3
LnGrp LOS	C	B	B	C	C	B	C	B	B	C	B	B
Approach Vol, veh/h		558			411			303			310	
Approach Delay, s/veh		17.7			20.0			16.3			16.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.6	20.5	5.4	20.8	7.1	20.0	8.2	18.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	2.9	4.9	2.4	11.4	3.2	5.2	3.8	11.1
Green Ext Time (p_c), s	0.0	2.2	0.0	2.8	0.0	2.2	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	17.8
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	41	30	26	34	65	33	1084	39	66	1048	29
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	27	48	35	34	44	84	34	1129	41	74	1178	33
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.77	0.77	0.77	0.96	0.96	0.96	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	76	126	92	92	77	147	92	1539	56	154	1687	755
Arrive On Green	0.04	0.13	0.13	0.05	0.13	0.13	0.05	0.44	0.44	0.09	0.48	0.48
Sat Flow, veh/h	1774	1003	731	1774	574	1096	1774	3484	126	1774	3539	1583
Grp Volume(v), veh/h	27	0	83	34	0	128	34	573	597	74	1178	33
Grp Sat Flow(s),veh/h/ln	1774	0	1734	1774	0	1669	1774	1770	1840	1774	1770	1583
Q Serve(g_s), s	0.8	0.0	2.4	1.0	0.0	3.9	1.0	14.5	14.5	2.2	14.2	0.6
Cycle Q Clear(g_c), s	0.8	0.0	2.4	1.0	0.0	3.9	1.0	14.5	14.5	2.2	14.2	0.6
Prop In Lane	1.00		0.42	1.00		0.66	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	76	0	217	92	0	224	92	782	813	154	1687	755
V/C Ratio(X)	0.35	0.00	0.38	0.37	0.00	0.57	0.37	0.73	0.73	0.48	0.70	0.04
Avail Cap(c_a), veh/h	229	0	511	229	0	492	229	782	813	229	1687	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.3	0.0	21.8	24.9	0.0	22.1	24.9	12.5	12.5	23.6	11.1	7.6
Incr Delay (d2), s/veh	2.7	0.0	1.1	2.5	0.0	2.3	2.5	6.0	5.8	2.3	2.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.2	0.6	0.0	1.9	0.6	8.3	8.6	1.1	7.4	0.3
LnGrp Delay(d),s/veh	28.0	0.0	22.9	27.4	0.0	24.4	27.4	18.6	18.3	26.0	13.6	7.7
LnGrp LOS	C		C	C		C	C	B	B	C	B	A
Approach Vol, veh/h		110			162			1204			1285	
Approach Delay, s/veh		24.2			25.0			18.7			14.1	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	28.0	6.8	10.8	6.8	29.9	6.3	11.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	24.0	7.0	16.0	7.0	24.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	4.2	16.5	3.0	4.4	3.0	16.2	2.8	5.9
Green Ext Time (p_c), s	0.0	6.5	0.0	0.8	0.0	6.8	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	17.2
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	370	519	232	239	489	177	308	725	140	209	679	178
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	411	577	258	278	569	206	338	797	154	227	738	193
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.86	0.86	0.86	0.91	0.91	0.91	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	435	765	342	360	722	255	375	1157	517	266	940	420
Arrive On Green	0.13	0.22	0.22	0.10	0.19	0.19	0.21	0.33	0.33	0.15	0.27	0.27
Sat Flow, veh/h	3442	3539	1583	3442	3712	1310	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	411	577	258	278	518	257	338	797	154	227	738	193
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1632	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	9.4	12.1	12.1	6.2	11.5	11.9	14.7	15.5	5.7	9.9	15.3	8.1
Cycle Q Clear(g_c), s	9.4	12.1	12.1	6.2	11.5	11.9	14.7	15.5	5.7	9.9	15.3	8.1
Prop In Lane	1.00		1.00	1.00		0.80	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	435	765	342	360	660	317	375	1157	517	266	940	420
V/C Ratio(X)	0.94	0.75	0.75	0.77	0.79	0.81	0.90	0.69	0.30	0.85	0.79	0.46
Avail Cap(c_a), veh/h	435	765	342	392	686	330	381	1157	517	292	940	420
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	29.0	29.0	34.5	30.3	30.4	30.4	23.1	19.9	32.8	27.0	24.3
Incr Delay (d2), s/veh	29.5	4.3	9.1	8.5	5.8	13.5	23.6	3.4	1.5	19.8	6.6	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	6.3	6.1	3.4	5.9	6.5	9.6	8.1	2.7	6.3	8.3	3.9
LnGrp Delay(d),s/veh	63.8	33.3	38.1	43.0	36.1	43.9	54.0	26.5	21.3	52.6	33.5	27.9
LnGrp LOS	E	C	D	D	D	D	D	C	C	D	C	C
Approach Vol, veh/h		1246			1053			1289			1158	
Approach Delay, s/veh		44.4			39.8			33.1			36.3	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.9	29.9	12.3	21.1	20.7	25.0	14.0	19.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	13.0	25.0	9.0	17.0	17.0	21.0	10.0	16.0
Max Q Clear Time (g_c+I1), s	11.9	17.5	8.2	14.1	16.7	17.3	11.4	13.9
Green Ext Time (p_c), s	0.1	5.6	0.1	2.2	0.0	3.0	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	38.3
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	15	3	40	2	1	12	40	1406	2	47	1678	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	58	58	58	97	97	97	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	4	51	3	2	21	45	1594	2	48	1712	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2708	3506	867	2640	3517	798	1735	0	0	1597	0	0
Stage 1	1819	1819	-	1686	1686	-	-	-	-	-	-	-
Stage 2	889	1687	-	954	1831	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 10	6	296	11	6	329	359	-	-	406	-	-
Stage 1	80	127	-	98	149	-	-	-	-	-	-	-
Stage 2	304	148	-	278	126	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 7	5	296	7	5	329	359	-	-	406	-	-
Mov Cap-2 Maneuver	50	45	-	53	42	-	-	-	-	-	-	-
Stage 1	70	112	-	86	130	-	-	-	-	-	-	-
Stage 2	246	129	-	196	111	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	79.7	33.3	0.5	0.4
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	359	-	-	116	153	406	-	-
HCM Lane V/C Ratio	0.126	-	-	0.641	0.169	0.118	-	-
HCM Control Delay (s)	16.5	-	-	79.7	33.3	15.1	-	-
HCM Lane LOS	C	-	-	F	D	C	-	-
HCM 95th %tile Q(veh)	0.4	-	-	3.3	0.6	0.4	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	18	378	55	15	252	9	31	6	9	7	2	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	88	88	88	60	60	60	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	386	56	17	286	10	52	10	15	9	3	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	286	0	0	386	0	0	751	742	386	755	742	286
Stage 1	-	-	-	-	-	-	422	422	-	320	320	-
Stage 2	-	-	-	-	-	-	329	320	-	435	422	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1276	-	-	1172	-	-	327	344	662	325	344	753
Stage 1	-	-	-	-	-	-	609	588	-	692	652	-
Stage 2	-	-	-	-	-	-	684	652	-	600	588	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1276	-	-	1172	-	-	312	334	662	304	334	753
Mov Cap-2 Maneuver	-	-	-	-	-	-	312	334	-	304	334	-
Stage 1	-	-	-	-	-	-	600	580	-	682	643	-
Stage 2	-	-	-	-	-	-	658	643	-	568	580	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.4	18.1	13.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	351	1276	-	-	1172	-	-	458
HCM Lane V/C Ratio	0.218	0.014	-	-	0.015	-	-	0.058
HCM Control Delay (s)	18.1	7.9	-	-	8.1	-	-	13.3
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.2

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Cottonwood Ave & Driveway

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	464	318	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	81	81	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	510	393	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	393	0	-	0	903	393
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	510	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1166	-	-	-	308	656
Stage 1	-	-	-	-	682	-
Stage 2	-	-	-	-	603	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1166	-	-	-	308	656
Mov Cap-2 Maneuver	-	-	-	-	308	-
Stage 1	-	-	-	-	682	-
Stage 2	-	-	-	-	603	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1166	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	22.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	0	74	0	0	0	54	1391	0	0	1608	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	92	92	92	95	95	95	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	0	103	0	0	0	57	1464	0	0	1729	41

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2595	3327	885	2443	3348	732	1770	0	0	1464	0	0
Stage 1	1749	1749	-	1578	1578	-	-	-	-	-	-	-
Stage 2	846	1578	-	865	1770	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 12	8	288	16	8	364	348	-	-	457	-	-
Stage 1	89	138	-	114	168	-	-	-	-	-	-	-
Stage 2	323	168	-	315	135	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 10	7	288	9	7	364	348	-	-	457	-	-
Mov Cap-2 Maneuver	~ 10	7	-	9	7	-	-	-	-	-	-	-
Stage 1	74	138	-	95	140	-	-	-	-	-	-	-
Stage 2	270	140	-	203	135	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 626.3	0	0.6	0
HCM LOS	F	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	348	-	-	59	-	457	-	-
HCM Lane V/C Ratio	0.163	-	-	2.024	-	-	-	-
HCM Control Delay (s)	17.4	-	-	$ 626.3	0	0	-	-
HCM Lane LOS	C	-	-	F	A	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	11.5	-	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	63	101	36	50	81	84	53	1169	54	71	1117	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	70	112	40	60	98	101	58	1285	59	79	1241	64
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.83	0.83	0.83	0.91	0.91	0.91	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	222	188	129	210	178	126	1652	739	149	1697	759
Arrive On Green	0.08	0.12	0.12	0.07	0.11	0.11	0.07	0.47	0.47	0.08	0.48	0.48
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	70	112	40	60	98	101	58	1285	59	79	1241	64
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	2.3	3.5	1.4	2.0	3.1	3.8	1.9	18.9	1.3	2.7	17.5	1.4
Cycle Q Clear(g_c), s	2.3	3.5	1.4	2.0	3.1	3.8	1.9	18.9	1.3	2.7	17.5	1.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	140	222	188	129	210	178	126	1652	739	149	1697	759
V/C Ratio(X)	0.50	0.51	0.21	0.47	0.47	0.57	0.46	0.78	0.08	0.53	0.73	0.08
Avail Cap(c_a), veh/h	200	480	408	200	480	408	200	1652	739	200	1697	759
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.4	25.6	24.7	27.6	25.8	26.1	27.7	13.9	9.2	27.3	13.0	8.8
Incr Delay (d2), s/veh	2.7	1.8	0.6	2.6	1.6	2.8	2.6	3.7	0.2	2.9	2.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.9	0.6	1.1	1.7	1.8	1.0	9.9	0.6	1.4	9.1	0.6
LnGrp Delay(d),s/veh	30.2	27.4	25.3	30.2	27.4	28.9	30.3	17.5	9.4	30.2	15.8	9.0
LnGrp LOS	C	C	C	C	C	C	C	B	A	C	B	A
Approach Vol, veh/h		222			259			1402			1384	
Approach Delay, s/veh		27.9			28.7			17.7			16.3	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	33.0	8.5	11.4	8.4	33.8	8.9	11.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	29.0	7.0	16.0	7.0	29.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	4.7	20.9	4.0	5.5	3.9	19.5	4.3	5.8
Green Ext Time (p_c), s	0.0	7.3	0.0	1.1	0.0	8.5	0.0	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	18.7
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	78	91	26	38	65	63	24	1141	26	29	1096	57
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	90	105	30	44	75	72	29	1358	31	34	1274	66
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.84	0.84	0.84	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	94	77	453	88	111	453	81	1583	36	91	1605	718
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.05	0.45	0.45	0.05	0.45	0.45
Sat Flow, veh/h	0	270	1583	0	387	1583	1774	3537	81	1774	3539	1583
Grp Volume(v), veh/h	195	0	30	119	0	72	29	679	710	34	1274	66
Grp Sat Flow(s),veh/h/ln	270	0	1583	387	0	1583	1774	1770	1849	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.8	0.0	0.0	1.9	0.9	19.2	19.3	1.0	17.2	1.3
Cycle Q Clear(g_c), s	16.0	0.0	0.8	16.0	0.0	1.9	0.9	19.2	19.3	1.0	17.2	1.3
Prop In Lane	0.46		1.00	0.37		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	171	0	453	199	0	453	81	792	827	91	1605	718
V/C Ratio(X)	1.14	0.00	0.07	0.60	0.00	0.16	0.36	0.86	0.86	0.37	0.79	0.09
Avail Cap(c_a), veh/h	171	0	453	199	0	453	222	792	827	222	1605	718
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.2	0.0	14.5	16.6	0.0	14.9	25.9	13.8	13.8	25.6	13.0	8.7
Incr Delay (d2), s/veh	110.5	0.0	0.1	4.8	0.0	0.2	2.7	11.6	11.2	2.5	4.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	0.0	0.3	1.7	0.0	0.8	0.5	11.8	12.2	0.6	9.2	0.6
LnGrp Delay(d),s/veh	131.8	0.0	14.6	21.5	0.0	15.1	28.6	25.4	25.1	28.1	17.2	9.0
LnGrp LOS	F		B	C		B	C	C	C	C	B	A
Approach Vol, veh/h		225			191			1418			1374	
Approach Delay, s/veh		116.1			19.1			25.3			17.1	
Approach LOS		F			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.9	29.0		20.0	6.5	29.3		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	25.0		16.0	7.0	25.0		16.0
Max Q Clear Time (g_c+I1), s	3.0	21.3		18.0	2.9	19.2		18.0
Green Ext Time (p_c), s	0.0	3.5		0.0	0.0	5.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	27.8
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	261	115	49	315	26	97	278	47	22	239	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	23	335	147	58	375	31	100	287	48	24	257	24
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.78	0.78	0.78	0.84	0.84	0.84	0.97	0.97	0.97	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	67	459	390	131	527	448	174	1091	180	69	982	91
Arrive On Green	0.04	0.25	0.25	0.07	0.28	0.28	0.10	0.36	0.36	0.04	0.30	0.30
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3041	503	1774	3275	303
Grp Volume(v), veh/h	23	335	147	58	375	31	100	166	169	24	138	143
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1774	1774	1770	1809
Q Serve(g_s), s	0.7	9.4	4.4	1.8	10.3	0.8	3.1	3.8	3.8	0.7	3.4	3.4
Cycle Q Clear(g_c), s	0.7	9.4	4.4	1.8	10.3	0.8	3.1	3.8	3.8	0.7	3.4	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		0.17
Lane Grp Cap(c), veh/h	67	459	390	131	527	448	174	635	637	69	530	542
V/C Ratio(X)	0.35	0.73	0.38	0.44	0.71	0.07	0.58	0.26	0.27	0.35	0.26	0.26
Avail Cap(c_a), veh/h	219	591	503	219	591	503	219	635	637	219	530	542
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.6	19.6	17.8	25.1	18.3	14.9	24.5	12.9	12.9	26.6	15.1	15.1
Incr Delay (d2), s/veh	3.1	3.3	0.6	2.3	3.5	0.1	3.0	1.0	1.0	3.0	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	5.2	2.0	1.0	5.7	0.4	1.6	2.0	2.1	0.4	1.8	1.9
LnGrp Delay(d),s/veh	29.7	23.0	18.4	27.5	21.8	14.9	27.4	13.9	13.9	29.5	16.3	16.3
LnGrp LOS	C	C	B	C	C	B	C	B	B	C	B	B
Approach Vol, veh/h		505			464			435			305	
Approach Delay, s/veh		21.9			22.0			17.0			17.3	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.2	24.3	8.2	18.0	9.6	21.0	6.1	20.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	17.0	7.0	18.0	7.0	17.0	7.0	18.0
Max Q Clear Time (g_c+I1), s	2.7	5.8	3.8	11.4	5.1	5.4	2.7	12.3
Green Ext Time (p_c), s	0.0	2.7	0.0	2.6	0.0	2.7	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	19.9
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	88	153	65	71	190	189	87	1030	75	154	936	106
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	111	194	82	125	333	332	96	1132	82	177	1076	122
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.79	0.79	0.79	0.57	0.57	0.57	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	394	335	157	401	341	144	1286	575	215	1427	639
Arrive On Green	0.08	0.21	0.21	0.09	0.22	0.22	0.08	0.36	0.36	0.12	0.40	0.40
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	111	194	82	125	333	332	96	1132	82	177	1076	122
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	4.5	6.8	3.2	5.1	12.7	15.5	3.9	22.2	2.6	7.2	19.4	3.7
Cycle Q Clear(g_c), s	4.5	6.8	3.2	5.1	12.7	15.5	3.9	22.2	2.6	7.2	19.4	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	150	394	335	157	401	341	144	1286	575	215	1427	639
V/C Ratio(X)	0.74	0.49	0.25	0.79	0.83	0.97	0.67	0.88	0.14	0.82	0.75	0.19
Avail Cap(c_a), veh/h	167	401	341	167	401	341	167	1286	575	215	1427	639
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.2	25.8	24.4	33.2	27.8	28.9	33.1	22.1	15.9	31.9	19.0	14.3
Incr Delay (d2), s/veh	14.3	1.0	0.4	21.6	13.6	41.5	7.9	8.8	0.5	22.2	3.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	3.6	1.4	3.4	8.0	10.7	2.2	12.4	1.2	4.9	10.2	1.7
LnGrp Delay(d),s/veh	47.5	26.7	24.7	54.8	41.5	70.4	41.0	31.0	16.4	54.0	22.7	15.0
LnGrp LOS	D	C	C	D	D	E	D	C	B	D	C	B
Approach Vol, veh/h		387			790			1310			1375	
Approach Delay, s/veh		32.3			55.8			30.8			26.1	
Approach LOS		C			E			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	31.0	10.6	19.7	10.0	34.0	10.3	20.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	27.0	7.0	16.0	7.0	29.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	9.2	24.2	7.1	8.8	5.9	21.4	6.5	17.5
Green Ext Time (p_c), s	0.0	2.5	0.0	2.6	0.0	6.6	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	34.4
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	214	64	10	238	31	34	206	15	28	223	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	62	382	114	15	350	46	40	245	18	32	256	22
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.56	0.56	0.56	0.68	0.68	0.68	0.84	0.84	0.84	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	587	499	46	488	415	104	1035	76	88	991	85
Arrive On Green	0.08	0.31	0.31	0.03	0.26	0.26	0.06	0.31	0.31	0.05	0.30	0.30
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3345	244	1774	3301	282
Grp Volume(v), veh/h	62	382	114	15	350	46	40	129	134	32	136	142
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1820	1774	1770	1813
Q Serve(g_s), s	1.8	9.4	2.8	0.4	9.1	1.2	1.2	2.9	2.9	0.9	3.1	3.2
Cycle Q Clear(g_c), s	1.8	9.4	2.8	0.4	9.1	1.2	1.2	2.9	2.9	0.9	3.1	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		0.16
Lane Grp Cap(c), veh/h	140	587	499	46	488	415	104	547	563	88	531	544
V/C Ratio(X)	0.44	0.65	0.23	0.32	0.72	0.11	0.38	0.24	0.24	0.36	0.26	0.26
Avail Cap(c_a), veh/h	233	664	564	233	664	564	233	547	563	233	531	544
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.4	15.7	13.5	25.5	17.9	14.9	24.2	13.7	13.7	24.5	14.1	14.2
Incr Delay (d2), s/veh	2.2	1.9	0.2	4.0	2.4	0.1	2.3	1.0	1.0	2.5	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	5.1	1.3	0.3	5.0	0.5	0.6	1.5	1.6	0.5	1.7	1.7
LnGrp Delay(d),s/veh	25.6	17.6	13.7	29.4	20.2	15.1	26.5	14.7	14.7	27.0	15.3	15.3
LnGrp LOS	C	B	B	C	C	B	C	B	B	C	B	B
Approach Vol, veh/h		558			411			303			310	
Approach Delay, s/veh		17.7			20.0			16.3			16.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.6	20.5	5.4	20.8	7.1	20.0	8.2	18.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	2.9	4.9	2.4	11.4	3.2	5.2	3.8	11.1
Green Ext Time (p_c), s	0.0	2.2	0.0	2.8	0.0	2.2	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	17.8
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	41	30	26	34	65	33	1084	39	66	1048	29
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	27	48	35	34	44	84	34	1129	41	74	1178	33
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.77	0.77	0.77	0.96	0.96	0.96	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	76	126	92	92	77	147	92	1539	56	154	1687	755
Arrive On Green	0.04	0.13	0.13	0.05	0.13	0.13	0.05	0.44	0.44	0.09	0.48	0.48
Sat Flow, veh/h	1774	1003	731	1774	574	1096	1774	3484	126	1774	3539	1583
Grp Volume(v), veh/h	27	0	83	34	0	128	34	573	597	74	1178	33
Grp Sat Flow(s),veh/h/ln	1774	0	1734	1774	0	1669	1774	1770	1840	1774	1770	1583
Q Serve(g_s), s	0.8	0.0	2.4	1.0	0.0	3.9	1.0	14.5	14.5	2.2	14.2	0.6
Cycle Q Clear(g_c), s	0.8	0.0	2.4	1.0	0.0	3.9	1.0	14.5	14.5	2.2	14.2	0.6
Prop In Lane	1.00		0.42	1.00		0.66	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	76	0	217	92	0	224	92	782	813	154	1687	755
V/C Ratio(X)	0.35	0.00	0.38	0.37	0.00	0.57	0.37	0.73	0.73	0.48	0.70	0.04
Avail Cap(c_a), veh/h	229	0	511	229	0	492	229	782	813	229	1687	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.3	0.0	21.8	24.9	0.0	22.1	24.9	12.5	12.5	23.6	11.1	7.6
Incr Delay (d2), s/veh	2.7	0.0	1.1	2.5	0.0	2.3	2.5	6.0	5.8	2.3	2.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.2	0.6	0.0	1.9	0.6	8.3	8.6	1.1	7.4	0.3
LnGrp Delay(d),s/veh	28.0	0.0	22.9	27.4	0.0	24.4	27.4	18.6	18.3	26.0	13.6	7.7
LnGrp LOS	C		C	C		C	C	B	B	C	B	A
Approach Vol, veh/h		110			162			1204			1285	
Approach Delay, s/veh		24.2			25.0			18.7			14.1	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	28.0	6.8	10.8	6.8	29.9	6.3	11.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	24.0	7.0	16.0	7.0	24.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	4.2	16.5	3.0	4.4	3.0	16.2	2.8	5.9
Green Ext Time (p_c), s	0.0	6.5	0.0	0.8	0.0	6.8	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	17.2
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	370	519	232	239	489	177	308	725	140	209	679	178
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	411	577	258	278	569	206	338	797	154	227	738	193
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.86	0.86	0.86	0.91	0.91	0.91	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	435	765	342	360	722	255	375	1157	517	266	940	420
Arrive On Green	0.13	0.22	0.22	0.10	0.19	0.19	0.21	0.33	0.33	0.15	0.27	0.27
Sat Flow, veh/h	3442	3539	1583	3442	3712	1310	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	411	577	258	278	518	257	338	797	154	227	738	193
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1632	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	9.4	12.1	12.1	6.2	11.5	11.9	14.7	15.5	5.7	9.9	15.3	8.1
Cycle Q Clear(g_c), s	9.4	12.1	12.1	6.2	11.5	11.9	14.7	15.5	5.7	9.9	15.3	8.1
Prop In Lane	1.00		1.00	1.00		0.80	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	435	765	342	360	660	317	375	1157	517	266	940	420
V/C Ratio(X)	0.94	0.75	0.75	0.77	0.79	0.81	0.90	0.69	0.30	0.85	0.79	0.46
Avail Cap(c_a), veh/h	435	765	342	392	686	330	381	1157	517	292	940	420
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	29.0	29.0	34.5	30.3	30.4	30.4	23.1	19.9	32.8	27.0	24.3
Incr Delay (d2), s/veh	29.5	4.3	9.1	8.5	5.8	13.5	23.6	3.4	1.5	19.8	6.6	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	6.3	6.1	3.4	5.9	6.5	9.6	8.1	2.7	6.3	8.3	3.9
LnGrp Delay(d),s/veh	63.8	33.3	38.1	43.0	36.1	43.9	54.0	26.5	21.3	52.6	33.5	27.9
LnGrp LOS	E	C	D	D	D	D	D	C	C	D	C	C
Approach Vol, veh/h		1246			1053			1289			1158	
Approach Delay, s/veh		44.4			39.8			33.1			36.3	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.9	29.9	12.3	21.1	20.7	25.0	14.0	19.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	13.0	25.0	9.0	17.0	17.0	21.0	10.0	16.0
Max Q Clear Time (g_c+I1), s	11.9	17.5	8.2	14.1	16.7	17.3	11.4	13.9
Green Ext Time (p_c), s	0.1	5.6	0.1	2.2	0.0	3.0	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	38.3
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	20	4	30	3	7	15	41	1241	3	38	1146	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	72	72	72	89	89	89	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	6	46	4	10	21	51	1534	4	44	1317	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2289	3055	670	2386	3063	769	1339	0	0	1538	0	0
Stage 1	1416	1416	-	1637	1637	-	-	-	-	-	-	-
Stage 2	873	1639	-	749	1426	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 21	12	399	18	12	344	511	-	-	428	-	-
Stage 1	144	202	-	105	157	-	-	-	-	-	-	-
Stage 2	311	157	-	370	199	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 15	10	399	13	10	344	511	-	-	428	-	-
Mov Cap-2 Maneuver	79	62	-	66	66	-	-	-	-	-	-	-
Stage 1	130	181	-	95	141	-	-	-	-	-	-	-
Stage 2	245	141	-	284	179	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	65.2	43.3	0.4	0.5
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	511	-	-	137	128	428	-	-
HCM Lane V/C Ratio	0.099	-	-	0.606	0.271	0.102	-	-
HCM Control Delay (s)	12.8	-	-	65.2	43.3	14.4	-	-
HCM Lane LOS	B	-	-	F	E	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-	3.1	1	0.3	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	25	336	46	3	282	4	34	4	10	2	2	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	57	57	57	58	58	58	79	79	79	65	65	65
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	589	81	5	486	7	43	5	13	3	3	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	486	0	0	589	0	0	1183	1174	589	1183	1174	486
Stage 1	-	-	-	-	-	-	677	677	-	497	497	-
Stage 2	-	-	-	-	-	-	506	497	-	686	677	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1077	-	-	986	-	-	166	192	508	166	192	581
Stage 1	-	-	-	-	-	-	443	452	-	555	545	-
Stage 2	-	-	-	-	-	-	549	545	-	438	452	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1077	-	-	986	-	-	154	183	508	153	183	581
Mov Cap-2 Maneuver	-	-	-	-	-	-	154	183	-	153	183	-
Stage 1	-	-	-	-	-	-	425	434	-	532	542	-
Stage 2	-	-	-	-	-	-	529	542	-	405	434	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.1	34.2	16.3
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	183	1077	-	-	986	-	-	340
HCM Lane V/C Ratio	0.332	0.041	-	-	0.005	-	-	0.063
HCM Control Delay (s)	34.2	8.5	-	-	8.7	-	-	16.3
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.4	0.1	-	-	0	-	-	0.2

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Cottonwood Ave & Driveway

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	294	376	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	81	81	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	382	464	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	464	0	-	0	846	464
Stage 1	-	-	-	-	464	-
Stage 2	-	-	-	-	382	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1097	-	-	-	333	598
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	690	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1097	-	-	-	333	598
Mov Cap-2 Maneuver	-	-	-	-	333	-
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	690	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1097	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	16.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	21	0	78	0	0	0	70	1235	0	0	1116	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	92	92	92	82	82	82	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	0	98	0	0	0	85	1506	0	0	1298	44

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2244	2997	671	2326	3019	753	1342	0	0	1506	0	0
Stage 1	1320	1320	-	1677	1677	-	-	-	-	-	-	-
Stage 2	924	1677	-	649	1342	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 23	13	399	20	13	352	509	-	-	441	-	-
Stage 1	166	225	-	99	150	-	-	-	-	-	-	-
Stage 2	290	150	-	425	219	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 20	11	399	13	11	352	509	-	-	441	-	-
Mov Cap-2 Maneuver	~ 20	11	-	13	11	-	-	-	-	-	-	-
Stage 1	138	225	-	82	125	-	-	-	-	-	-	-
Stage 2	242	125	-	321	219	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 397.9	0	0.7	0
HCM LOS	F	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	509	-	-	79	-	441	-	-
HCM Lane V/C Ratio	0.168	-	-	1.566	-	-	-	-
HCM Control Delay (s)	13.5	-	-	$ 397.9	0	0	-	-
HCM Lane LOS	B	-	-	F	A	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	10.2	-	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	39	92	62	112	158	199	63	1394	66	78	1134	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	57	133	90	127	180	226	72	1602	76	89	1289	36
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.69	0.69	0.69	0.88	0.88	0.88	0.87	0.87	0.87	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	276	235	145	315	268	119	1813	811	127	1830	819
Arrive On Green	0.06	0.15	0.15	0.08	0.17	0.17	0.07	0.51	0.51	0.07	0.52	0.52
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	57	133	90	127	180	226	72	1602	76	89	1289	36
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	2.7	5.6	4.4	6.1	7.6	11.9	3.4	34.6	2.1	4.2	23.8	1.0
Cycle Q Clear(g_c), s	2.7	5.6	4.4	6.1	7.6	11.9	3.4	34.6	2.1	4.2	23.8	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	107	276	235	145	315	268	119	1813	811	127	1830	819
V/C Ratio(X)	0.53	0.48	0.38	0.88	0.57	0.84	0.61	0.88	0.09	0.70	0.70	0.04
Avail Cap(c_a), veh/h	145	347	295	145	347	295	145	1813	811	145	1830	819
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.2	33.6	33.0	39.0	32.8	34.6	39.0	18.7	10.7	39.0	15.8	10.2
Incr Delay (d2), s/veh	4.0	1.3	1.0	41.4	1.8	18.2	4.9	6.7	0.2	12.0	2.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	3.0	2.0	4.6	4.1	6.5	1.8	18.4	1.0	2.5	12.0	0.4
LnGrp Delay(d),s/veh	43.2	34.9	34.1	80.5	34.7	52.8	43.9	25.4	11.0	51.0	18.1	10.3
LnGrp LOS	D	C	C	F	C	D	D	C	B	D	B	B
Approach Vol, veh/h		280			533			1750			1414	
Approach Delay, s/veh		36.3			53.3			25.5			19.9	
Approach LOS		D			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	48.0	11.0	16.7	9.7	48.4	9.2	18.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	44.0	7.0	16.0	7.0	44.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	6.2	36.6	8.1	7.6	5.4	25.8	4.7	13.9
Green Ext Time (p_c), s	0.0	7.0	0.0	1.8	0.0	16.3	0.0	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	28.0
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	74	77	50	67	102	62	34	1402	27	35	1201	79
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	85	89	57	89	136	83	40	1630	31	42	1430	94
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.87	0.87	0.87	0.75	0.75	0.75	0.86	0.86	0.86	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	80	58	379	75	70	379	97	1862	35	101	1861	833
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.05	0.52	0.52	0.06	0.53	0.53
Sat Flow, veh/h	0	243	1583	0	294	1583	1774	3553	67	1774	3539	1583
Grp Volume(v), veh/h	174	0	57	225	0	83	40	811	850	42	1430	94
Grp Sat Flow(s),veh/h/ln	243	0	1583	294	0	1583	1774	1770	1851	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	1.9	0.0	0.0	2.8	1.5	26.9	27.0	1.5	21.5	2.0
Cycle Q Clear(g_c), s	16.0	0.0	1.9	16.0	0.0	2.8	1.5	26.9	27.0	1.5	21.5	2.0
Prop In Lane	0.49		1.00	0.40		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	138	0	379	146	0	379	97	927	970	101	1861	833
V/C Ratio(X)	1.26	0.00	0.15	1.55	0.00	0.22	0.41	0.87	0.88	0.42	0.77	0.11
Avail Cap(c_a), veh/h	138	0	379	146	0	379	186	927	970	186	1861	833
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	0.0	20.0	26.3	0.0	20.4	30.5	14.0	14.0	30.4	12.6	8.0
Incr Delay (d2), s/veh	161.5	0.0	0.2	276.7	0.0	0.3	2.8	11.2	11.0	2.7	3.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	0.0	0.8	13.8	0.0	1.2	0.8	15.7	16.4	0.8	11.1	0.9
LnGrp Delay(d),s/veh	188.6	0.0	20.2	302.9	0.0	20.7	33.3	25.2	25.0	33.2	15.7	8.3
LnGrp LOS	F		C	F		C	C	C	C	C	B	A
Approach Vol, veh/h		231			308			1701			1566	
Approach Delay, s/veh		147.0			226.9			25.3			15.7	
Approach LOS		F			F			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.8	39.0		20.0	7.7	39.1		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	35.0		16.0	7.0	35.0		16.0
Max Q Clear Time (g_c+I1), s	3.5	29.0		18.0	3.5	23.5		18.0
Green Ext Time (p_c), s	0.0	5.7		0.0	0.0	10.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	45.1
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	333	138	49	412	92	103	330	32	59	408	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	59	392	162	64	542	121	130	418	41	68	469	60
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.76	0.76	0.76	0.79	0.79	0.79	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	128	567	482	134	574	488	180	920	90	139	819	104
Arrive On Green	0.07	0.30	0.30	0.08	0.31	0.31	0.10	0.28	0.28	0.08	0.26	0.26
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3258	318	1774	3159	402
Grp Volume(v), veh/h	59	392	162	64	542	121	130	226	233	68	262	267
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1807	1774	1770	1792
Q Serve(g_s), s	2.0	11.4	4.9	2.1	17.5	3.5	4.4	6.5	6.6	2.3	7.9	8.0
Cycle Q Clear(g_c), s	2.0	11.4	4.9	2.1	17.5	3.5	4.4	6.5	6.6	2.3	7.9	8.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.18	1.00		0.22
Lane Grp Cap(c), veh/h	128	567	482	134	574	488	180	500	510	139	459	465
V/C Ratio(X)	0.46	0.69	0.34	0.48	0.94	0.25	0.72	0.45	0.46	0.49	0.57	0.58
Avail Cap(c_a), veh/h	201	574	488	201	574	488	201	500	510	201	459	465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.5	18.9	16.6	27.3	20.8	16.0	26.9	18.2	18.2	27.3	19.9	19.9
Incr Delay (d2), s/veh	2.6	3.5	0.4	2.6	24.6	0.3	10.8	2.9	2.9	2.7	5.1	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	6.4	2.2	1.1	12.8	1.6	2.7	3.5	3.6	1.2	4.5	4.6
LnGrp Delay(d),s/veh	30.0	22.4	17.0	30.0	45.5	16.3	37.6	21.2	21.2	29.9	24.9	25.0
LnGrp LOS	C	C	B	C	D	B	D	C	C	C	C	C
Approach Vol, veh/h		613			727			589			597	
Approach Delay, s/veh		21.7			39.3			24.8			25.5	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	21.4	8.7	22.8	10.2	20.0	8.5	23.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	4.3	8.6	4.1	13.4	6.4	10.0	4.0	19.5
Green Ext Time (p_c), s	0.0	3.4	0.0	3.0	0.0	2.9	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	28.4
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	91	207	75	75	248	209	79	1172	77	129	1114	98
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	114	259	94	101	335	282	96	1429	94	154	1326	117
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.80	0.80	0.80	0.74	0.74	0.74	0.82	0.82	0.82	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	381	324	128	370	315	126	1575	705	178	1679	751
Arrive On Green	0.08	0.20	0.20	0.07	0.20	0.20	0.07	0.45	0.45	0.10	0.47	0.47
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	114	259	94	101	335	282	96	1429	94	154	1326	117
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.7	11.5	4.5	5.0	15.8	15.6	4.8	33.8	3.1	7.7	28.3	3.8
Cycle Q Clear(g_c), s	5.7	11.5	4.5	5.0	15.8	15.6	4.8	33.8	3.1	7.7	28.3	3.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	381	324	128	370	315	126	1575	705	178	1679	751
V/C Ratio(X)	0.82	0.68	0.29	0.79	0.90	0.90	0.76	0.91	0.13	0.87	0.79	0.16
Avail Cap(c_a), veh/h	138	381	324	138	373	317	138	1575	705	178	1679	751
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.8	33.0	30.2	41.0	35.2	35.1	41.0	23.2	14.7	39.8	19.8	13.4
Incr Delay (d2), s/veh	31.7	4.8	0.5	24.5	24.6	26.1	20.3	9.1	0.4	33.5	3.9	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	6.4	2.0	3.3	10.6	9.1	3.1	18.5	1.5	5.4	14.7	1.7
LnGrp Delay(d),s/veh	72.6	37.8	30.7	65.5	59.8	61.2	61.3	32.4	15.1	73.3	23.7	13.8
LnGrp LOS	E	D	C	E	E	E	E	C	B	E	C	B
Approach Vol, veh/h		467			718			1619			1597	
Approach Delay, s/veh		44.9			61.2			33.1			27.8	
Approach LOS		D			E			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	44.0	10.5	22.4	10.4	46.6	11.0	21.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	40.0	7.0	18.0	7.0	42.0	7.0	18.0
Max Q Clear Time (g_c+I1), s	9.7	35.8	7.0	13.5	6.8	30.3	7.7	17.8
Green Ext Time (p_c), s	0.0	4.0	0.0	1.9	0.0	10.7	0.0	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	37.0
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	105	263	79	47	365	142	109	347	30	34	281	45
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	148	370	111	69	537	209	127	403	35	47	385	62
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.71	0.71	0.71	0.68	0.68	0.68	0.86	0.86	0.86	0.73	0.73	0.73
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	182	647	550	133	595	505	166	931	81	107	763	122
Arrive On Green	0.10	0.35	0.35	0.07	0.32	0.32	0.09	0.28	0.28	0.06	0.25	0.25
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3297	285	1774	3058	489
Grp Volume(v), veh/h	148	370	111	69	537	209	127	215	223	47	222	225
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1812	1774	1770	1777
Q Serve(g_s), s	5.6	11.0	3.4	2.5	18.8	7.1	4.8	6.8	6.8	1.7	7.3	7.4
Cycle Q Clear(g_c), s	5.6	11.0	3.4	2.5	18.8	7.1	4.8	6.8	6.8	1.7	7.3	7.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		0.27
Lane Grp Cap(c), veh/h	182	647	550	133	595	505	166	500	512	107	442	443
V/C Ratio(X)	0.81	0.57	0.20	0.52	0.90	0.41	0.77	0.43	0.43	0.44	0.50	0.51
Avail Cap(c_a), veh/h	182	647	550	182	629	535	182	500	512	182	442	443
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.9	18.1	15.6	30.3	22.2	18.2	30.1	20.0	20.0	30.9	21.9	22.0
Incr Delay (d2), s/veh	23.5	1.2	0.2	3.1	15.9	0.5	16.1	2.7	2.7	2.8	4.0	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	5.9	1.5	1.4	12.2	3.1	3.1	3.7	3.8	0.9	4.1	4.1
LnGrp Delay(d),s/veh	53.4	19.3	15.8	33.4	38.1	18.7	46.3	22.7	22.7	33.7	26.0	26.1
LnGrp LOS	D	B	B	C	D	B	D	C	C	C	C	C
Approach Vol, veh/h		629			815			565			494	
Approach Delay, s/veh		26.7			32.7			28.0			26.7	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	23.2	9.1	27.6	10.4	21.0	11.0	25.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	17.0	7.0	23.0	7.0	17.0	7.0	23.0
Max Q Clear Time (g_c+I1), s	3.7	8.8	4.5	13.0	6.8	9.4	7.6	20.8
Green Ext Time (p_c), s	0.0	3.1	0.0	4.5	0.0	3.0	0.0	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	29.0
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	90	52	88	44	63	104	61	1193	60	98	1068	83
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	122	70	119	52	74	122	66	1283	65	121	1319	102
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.74	0.74	0.74	0.85	0.85	0.85	0.93	0.93	0.93	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	164	115	196	114	100	165	130	1453	74	163	1567	701
Arrive On Green	0.09	0.19	0.19	0.06	0.16	0.16	0.07	0.42	0.42	0.09	0.44	0.44
Sat Flow, veh/h	1774	621	1056	1774	634	1045	1774	3428	173	1774	3539	1583
Grp Volume(v), veh/h	122	0	189	52	0	196	66	661	687	121	1319	102
Grp Sat Flow(s),veh/h/ln	1774	0	1676	1774	0	1678	1774	1770	1832	1774	1770	1583
Q Serve(g_s), s	4.6	0.0	7.1	1.9	0.0	7.6	2.5	23.5	23.6	4.5	22.6	2.6
Cycle Q Clear(g_c), s	4.6	0.0	7.1	1.9	0.0	7.6	2.5	23.5	23.6	4.5	22.6	2.6
Prop In Lane	1.00		0.63	1.00		0.62	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	164	0	312	114	0	265	130	750	777	163	1567	701
V/C Ratio(X)	0.75	0.00	0.61	0.46	0.00	0.74	0.51	0.88	0.88	0.74	0.84	0.15
Avail Cap(c_a), veh/h	182	0	392	182	0	393	182	750	777	182	1567	701
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	25.5	30.9	0.0	27.5	30.5	18.1	18.2	30.3	16.9	11.4
Incr Delay (d2), s/veh	14.0	0.0	1.9	2.8	0.0	4.0	3.1	14.1	13.9	13.5	5.7	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	3.4	1.0	0.0	3.8	1.3	14.3	14.8	2.8	12.2	1.2
LnGrp Delay(d),s/veh	44.2	0.0	27.4	33.7	0.0	31.5	33.6	32.3	32.1	43.7	22.6	11.8
LnGrp LOS	D		C	C		C	C	C	C	D	C	B
Approach Vol, veh/h		311			248			1414			1542	
Approach Delay, s/veh		34.0			32.0			32.2			23.5	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	33.0	8.4	16.7	9.0	34.3	10.3	14.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	29.0	7.0	16.0	7.0	29.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	6.5	25.6	3.9	9.1	4.5	24.6	6.6	9.6
Green Ext Time (p_c), s	0.0	3.2	0.0	1.3	0.0	4.1	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	28.6
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	206	458	100	205	891	245	267	917	211	239	684	239
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	251	559	122	241	1048	288	284	976	224	285	814	285
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.82	0.82	0.82	0.85	0.85	0.85	0.94	0.94	0.94	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	301	861	385	325	993	273	322	1018	455	310	995	445
Arrive On Green	0.09	0.24	0.24	0.09	0.25	0.25	0.18	0.29	0.29	0.17	0.28	0.28
Sat Flow, veh/h	3442	3539	1583	3442	3970	1090	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	251	559	122	241	895	441	284	976	224	285	814	285
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1670	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.7	11.4	5.1	5.5	20.0	20.0	12.5	21.7	9.4	12.6	17.2	12.6
Cycle Q Clear(g_c), s	5.7	11.4	5.1	5.5	20.0	20.0	12.5	21.7	9.4	12.6	17.2	12.6
Prop In Lane	1.00		1.00	1.00		0.65	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	301	861	385	325	848	418	322	1018	455	310	995	445
V/C Ratio(X)	0.83	0.65	0.32	0.74	1.06	1.06	0.88	0.96	0.49	0.92	0.82	0.64
Avail Cap(c_a), veh/h	301	861	385	387	848	418	333	1018	455	310	995	445
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.9	27.2	24.8	35.3	30.0	30.0	31.9	28.0	23.7	32.4	26.8	25.2
Incr Delay (d2), s/veh	17.9	1.7	0.5	6.2	46.7	59.7	22.7	19.9	3.8	30.8	7.5	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	5.7	2.2	2.9	14.8	16.1	8.1	13.4	4.6	8.8	9.4	6.4
LnGrp Delay(d),s/veh	53.8	28.9	25.3	41.5	76.7	89.7	54.6	48.0	27.4	63.3	34.3	32.1
LnGrp LOS	D	C	C	D	F	F	D	D	C	E	C	C
Approach Vol, veh/h		932			1577			1484			1384	
Approach Delay, s/veh		35.1			75.0			46.1			39.8	
Approach LOS		D			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	27.0	11.5	23.5	18.5	26.5	11.0	24.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	14.0	23.0	9.0	18.0	15.0	22.0	7.0	20.0
Max Q Clear Time (g_c+I1), s	14.6	23.7	7.5	13.4	14.5	19.2	7.7	22.0
Green Ext Time (p_c), s	0.0	0.0	0.1	3.8	0.0	2.5	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	51.1
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	2	41	2	1	18	38	1489	4	14	1277	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	68	68	68	87	87	87	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	3	61	3	1	26	48	1883	5	16	1451	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2532	3478	737	2740	3487	944	1474	0	0	1888	0	0
Stage 1	1494	1494	-	1981	1981	-	-	-	-	-	-	-
Stage 2	1038	1984	-	759	1506	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 14	6	361	9	6	263	453	-	-	313	-	-
Stage 1	129	185	-	63	106	-	-	-	-	-	-	-
Stage 2	247	105	-	365	182	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 11	5	361	6	5	263	453	-	-	313	-	-
Mov Cap-2 Maneuver	69	51	-	43	52	-	-	-	-	-	-	-
Stage 1	115	176	-	56	95	-	-	-	-	-	-	-
Stage 2	196	94	-	283	173	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	47.8	33.5	0.3	0.2
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	453	-	-	164	157	313	-	-
HCM Lane V/C Ratio	0.106	-	-	0.51	0.197	0.051	-	-
HCM Control Delay (s)	13.9	-	-	47.8	33.5	17.1	-	-
HCM Lane LOS	B	-	-	E	D	C	-	-
HCM 95th %tile Q(veh)	0.4	-	-	2.5	0.7	0.2	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	350	13	36	476	19	30	11	42	34	12	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	70	70	70	67	67	67	64	64	64
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	455	17	51	680	27	45	16	63	53	19	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	680	0	0	455	0	0	1285	1264	455	1303	1264	680
Stage 1	-	-	-	-	-	-	481	481	-	783	783	-
Stage 2	-	-	-	-	-	-	804	783	-	520	481	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	912	-	-	1106	-	-	142	169	605	138	169	451
Stage 1	-	-	-	-	-	-	566	554	-	387	404	-
Stage 2	-	-	-	-	-	-	377	404	-	539	554	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	912	-	-	1106	-	-	117	159	605	109	159	451
Mov Cap-2 Maneuver	-	-	-	-	-	-	117	159	-	109	159	-
Stage 1	-	-	-	-	-	-	558	546	-	381	385	-
Stage 2	-	-	-	-	-	-	324	385	-	462	546	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.6	44.2	68
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	210	912	-	-	1106	-	-	145
HCM Lane V/C Ratio	0.59	0.014	-	-	0.046	-	-	0.657
HCM Control Delay (s)	44.2	9	-	-	8.4	-	-	68
HCM Lane LOS	E	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	3.3	0	-	-	0.1	-	-	3.6

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Cottonwood Ave

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	19	354	529	9	12	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	78	78	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	472	678	12	13	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	690	0	-	0	1207	684
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	523	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	905	-	-	-	203	449
Stage 1	-	-	-	-	501	-
Stage 2	-	-	-	-	595	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	905	-	-	-	195	449
Mov Cap-2 Maneuver	-	-	-	-	195	-
Stage 1	-	-	-	-	501	-
Stage 2	-	-	-	-	573	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	18.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	905	-	-	-	305
HCM Lane V/C Ratio	0.028	-	-	-	0.118
HCM Control Delay (s)	9.1	0	-	-	18.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	25.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	11	30	0	31	14	1432	34	35	1296	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	62	62	62	92	92	92	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	18	33	0	34	16	1685	40	41	1525	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2484	3367	764	2583	3349	862	1528	0	0	1725	0	0
Stage 1	1609	1609	-	1738	1738	-	-	-	-	-	-	-
Stage 2	875	1758	-	845	1611	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	15	8	346	~ 13	8	298	432	-	-	362	-	-
Stage 1	109	162	-	90	140	-	-	-	-	-	-	-
Stage 2	310	137	-	324	162	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	12	7	346	~ 11	7	298	432	-	-	362	-	-
Mov Cap-2 Maneuver	12	7	-	~ 11	7	-	-	-	-	-	-	-
Stage 1	105	144	-	87	135	-	-	-	-	-	-	-
Stage 2	265	132	-	273	144	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16	$ 1275.4	0.1	0.4
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	432	-	-	346	22	362	-	-
HCM Lane V/C Ratio	0.038	-	-	0.051	3.014	0.114	-	-
HCM Control Delay (s)	13.7	-	-	15	$ 1275.4	16.2	-	-
HCM Lane LOS	B	-	-	C	F	C	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	8.5	0.4	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	68	199	76	69	131	95	68	1280	89	121	1630	75
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	80	234	89	99	187	136	71	1333	93	126	1698	78
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.70	0.70	0.70	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	293	249	131	302	256	118	1743	780	157	1821	815
Arrive On Green	0.07	0.16	0.16	0.07	0.16	0.16	0.07	0.49	0.49	0.09	0.51	0.51
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	80	234	89	99	187	136	71	1333	93	126	1698	78
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.8	10.3	4.3	4.7	8.0	6.7	3.3	26.2	2.7	6.0	38.3	2.2
Cycle Q Clear(g_c), s	3.8	10.3	4.3	4.7	8.0	6.7	3.3	26.2	2.7	6.0	38.3	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	124	293	249	131	302	256	118	1743	780	157	1821	815
V/C Ratio(X)	0.65	0.80	0.36	0.75	0.62	0.53	0.60	0.76	0.12	0.80	0.93	0.10
Avail Cap(c_a), veh/h	145	349	296	145	349	296	145	1743	780	187	1821	815
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.8	34.7	32.2	38.8	33.4	32.8	38.8	17.7	11.7	38.2	19.4	10.6
Incr Delay (d2), s/veh	7.6	10.5	0.9	18.0	2.6	1.7	4.8	3.3	0.3	18.6	10.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	6.2	1.9	2.9	4.3	3.1	1.8	13.6	1.2	3.7	21.2	1.0
LnGrp Delay(d),s/veh	46.3	45.2	33.0	56.8	36.0	34.5	43.6	20.9	12.0	56.9	29.6	10.8
LnGrp LOS	D	D	C	E	D	C	D	C	B	E	C	B
Approach Vol, veh/h		403			422			1497			1902	
Approach Delay, s/veh		42.7			40.4			21.4			30.6	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.6	46.1	10.3	17.5	9.7	48.0	10.0	17.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	42.0	7.0	16.0	7.0	44.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	8.0	28.2	6.7	12.3	5.3	40.3	5.8	10.0
Green Ext Time (p_c), s	0.0	12.9	0.0	1.1	0.0	3.6	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	29.5
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	64	102	28	32	94	64	16	1340	47	79	1586	89
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	72	115	31	36	106	72	17	1396	49	81	1635	92
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.96	0.96	0.96	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	79	92	400	71	157	400	51	1653	58	149	1873	838
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.03	0.47	0.47	0.08	0.53	0.53
Sat Flow, veh/h	0	364	1583	0	619	1583	1774	3488	122	1774	3539	1583
Grp Volume(v), veh/h	187	0	31	142	0	72	17	707	738	81	1635	92
Grp Sat Flow(s),veh/h/ln	364	0	1583	619	0	1583	1774	1770	1841	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.9	0.0	0.0	2.3	0.6	22.2	22.3	2.8	25.6	1.8
Cycle Q Clear(g_c), s	16.0	0.0	0.9	16.0	0.0	2.3	0.6	22.2	22.3	2.8	25.6	1.8
Prop In Lane	0.39		1.00	0.25		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	171	0	400	228	0	400	51	838	872	149	1873	838
V/C Ratio(X)	1.09	0.00	0.08	0.62	0.00	0.18	0.34	0.84	0.85	0.54	0.87	0.11
Avail Cap(c_a), veh/h	171	0	400	228	0	400	196	838	872	196	1873	838
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.9	0.0	18.0	20.0	0.0	18.5	30.2	14.6	14.6	27.8	13.0	7.4
Incr Delay (d2), s/veh	96.5	0.0	0.1	5.2	0.0	0.2	3.8	10.1	9.9	3.1	6.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	0.0	0.4	2.3	0.0	1.0	0.3	13.0	13.7	1.5	13.8	0.9
LnGrp Delay(d),s/veh	120.4	0.0	18.1	25.2	0.0	18.7	34.0	24.7	24.5	30.9	19.0	7.7
LnGrp LOS	F		B	C		B	C	C	C	C	B	A
Approach Vol, veh/h		218			214			1462			1808	
Approach Delay, s/veh		105.8			23.0			24.7			19.0	
Approach LOS		F			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.3	34.0		20.0	5.8	37.5		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	30.0		16.0	7.0	30.0		16.0
Max Q Clear Time (g_c+I1), s	4.8	24.3		18.0	2.6	27.6		18.0
Green Ext Time (p_c), s	0.0	5.5		0.0	0.0	2.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	26.6
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	384	162	45	303	41	88	438	60	31	374	47
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	54	452	191	55	370	50	106	528	72	33	394	49
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.82	0.82	0.82	0.83	0.83	0.83	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	123	544	463	125	546	464	173	996	135	88	856	106
Arrive On Green	0.07	0.29	0.29	0.07	0.29	0.29	0.10	0.32	0.32	0.05	0.27	0.27
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3132	426	1774	3171	392
Grp Volume(v), veh/h	54	452	191	55	370	50	106	298	302	33	219	224
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1788	1774	1770	1794
Q Serve(g_s), s	1.7	13.4	5.8	1.8	10.4	1.4	3.4	8.2	8.2	1.1	6.1	6.2
Cycle Q Clear(g_c), s	1.7	13.4	5.8	1.8	10.4	1.4	3.4	8.2	8.2	1.1	6.1	6.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		0.22
Lane Grp Cap(c), veh/h	123	544	463	125	546	464	173	563	568	88	478	484
V/C Ratio(X)	0.44	0.83	0.41	0.44	0.68	0.11	0.61	0.53	0.53	0.38	0.46	0.46
Avail Cap(c_a), veh/h	210	597	508	210	597	508	210	563	568	210	478	484
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.5	19.6	16.9	26.4	18.5	15.3	25.7	16.6	16.6	27.3	18.0	18.1
Incr Delay (d2), s/veh	2.4	9.0	0.6	2.4	2.7	0.1	3.6	3.5	3.5	2.6	3.1	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	8.3	2.6	0.9	5.8	0.6	1.8	4.5	4.6	0.6	3.4	3.5
LnGrp Delay(d),s/veh	28.9	28.6	17.5	28.9	21.2	15.4	29.3	20.1	20.1	29.9	21.2	21.2
LnGrp LOS	C	C	B	C	C	B	C	C	C	C	C	C
Approach Vol, veh/h		697			475			706			476	
Approach Delay, s/veh		25.5			21.5			21.5			21.8	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	22.8	8.2	21.3	9.8	20.0	8.1	21.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	3.1	10.2	3.8	15.4	5.4	8.2	3.7	12.4
Green Ext Time (p_c), s	0.0	2.9	0.0	1.9	0.0	3.7	0.0	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	22.8
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	107	245	72	52	173	118	74	1239	63	182	1393	131
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	126	288	85	67	222	151	79	1318	67	194	1482	139
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.78	0.78	0.78	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	349	297	123	312	265	132	1477	661	208	1629	729
Arrive On Green	0.09	0.19	0.19	0.07	0.17	0.17	0.07	0.42	0.42	0.12	0.46	0.46
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	126	288	85	67	222	151	79	1318	67	194	1482	139
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.3	11.4	3.5	2.8	8.6	6.7	3.3	26.5	2.0	8.3	29.8	4.0
Cycle Q Clear(g_c), s	5.3	11.4	3.5	2.8	8.6	6.7	3.3	26.5	2.0	8.3	29.8	4.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	158	349	297	123	312	265	132	1477	661	208	1629	729
V/C Ratio(X)	0.80	0.83	0.29	0.54	0.71	0.57	0.60	0.89	0.10	0.93	0.91	0.19
Avail Cap(c_a), veh/h	162	389	330	162	389	330	162	1477	661	208	1629	729
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.2	30.0	26.8	34.5	30.2	29.4	34.4	20.7	13.6	33.5	19.2	12.2
Incr Delay (d2), s/veh	23.2	12.5	0.5	3.7	4.5	1.9	4.3	8.6	0.3	43.6	9.1	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	7.1	1.6	1.5	4.8	3.1	1.8	14.6	0.9	6.6	16.5	1.8
LnGrp Delay(d),s/veh	57.4	42.4	27.3	38.2	34.7	31.3	38.7	29.3	13.9	77.1	28.3	12.8
LnGrp LOS	E	D	C	D	C	C	D	C	B	E	C	B
Approach Vol, veh/h		499			440			1464			1815	
Approach Delay, s/veh		43.6			34.1			29.1			32.3	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	36.0	9.3	18.4	9.7	39.3	10.8	16.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	32.0	7.0	16.0	7.0	34.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	10.3	28.5	4.8	13.4	5.3	31.8	7.3	10.6
Green Ext Time (p_c), s	0.0	3.4	0.0	1.0	0.0	2.1	0.0	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	32.7
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	264	57	31	235	43	31	355	19	39	322	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	22	326	70	34	255	47	35	403	22	41	339	21
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.81	0.81	0.81	0.92	0.92	0.92	0.88	0.88	0.88	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	65	461	392	93	491	417	96	1091	59	108	1105	68
Arrive On Green	0.04	0.25	0.25	0.05	0.26	0.26	0.05	0.32	0.32	0.06	0.33	0.33
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3414	186	1774	3387	209
Grp Volume(v), veh/h	22	326	70	34	255	47	35	208	217	41	176	184
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1830	1774	1770	1826
Q Serve(g_s), s	0.6	8.0	1.7	0.9	5.9	1.1	1.0	4.5	4.6	1.1	3.7	3.8
Cycle Q Clear(g_c), s	0.6	8.0	1.7	0.9	5.9	1.1	1.0	4.5	4.6	1.1	3.7	3.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		0.11
Lane Grp Cap(c), veh/h	65	461	392	93	491	417	96	565	585	108	578	596
V/C Ratio(X)	0.34	0.71	0.18	0.36	0.52	0.11	0.37	0.37	0.37	0.38	0.31	0.31
Avail Cap(c_a), veh/h	248	707	601	248	707	601	248	565	585	248	578	596
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.5	17.2	14.8	22.9	15.7	14.0	22.9	13.1	13.2	22.6	12.6	12.6
Incr Delay (d2), s/veh	3.0	2.0	0.2	2.4	0.9	0.1	2.3	1.8	1.8	2.2	1.4	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	4.3	0.8	0.5	3.1	0.5	0.5	2.5	2.6	0.6	2.0	2.1
LnGrp Delay(d),s/veh	26.5	19.2	15.0	25.3	16.6	14.1	25.2	15.0	15.0	24.8	14.0	14.0
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		418			336			460			401	
Approach Delay, s/veh		18.9			17.1			15.7			15.1	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.0	20.0	6.6	16.4	6.7	20.3	5.8	17.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	3.1	6.6	2.9	10.0	3.0	5.8	2.6	7.9
Green Ext Time (p_c), s	0.0	3.0	0.0	2.4	0.0	3.2	0.0	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	52	44	21	44	47	45	1313	55	76	1414	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	30	59	50	25	52	56	48	1397	59	82	1520	34
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.88	0.88	0.88	0.84	0.84	0.84	0.94	0.94	0.94	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	80	104	88	69	87	94	111	1803	76	147	1917	858
Arrive On Green	0.04	0.11	0.11	0.04	0.11	0.11	0.06	0.52	0.52	0.08	0.54	0.54
Sat Flow, veh/h	1774	933	790	1774	822	885	1774	3461	146	1774	3539	1583
Grp Volume(v), veh/h	30	0	109	25	0	108	48	713	743	82	1520	34
Grp Sat Flow(s),veh/h/ln	1774	0	1723	1774	0	1707	1774	1770	1837	1774	1770	1583
Q Serve(g_s), s	1.1	0.0	3.9	0.9	0.0	3.9	1.7	21.1	21.2	2.9	22.5	0.7
Cycle Q Clear(g_c), s	1.1	0.0	3.9	0.9	0.0	3.9	1.7	21.1	21.2	2.9	22.5	0.7
Prop In Lane	1.00		0.46	1.00		0.52	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	80	0	193	69	0	181	111	922	957	147	1917	858
V/C Ratio(X)	0.38	0.00	0.57	0.36	0.00	0.60	0.43	0.77	0.78	0.56	0.79	0.04
Avail Cap(c_a), veh/h	190	0	422	190	0	418	190	922	957	190	1917	858
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	27.5	30.6	0.0	27.8	29.5	12.5	12.6	28.8	12.0	7.0
Incr Delay (d2), s/veh	2.9	0.0	2.6	3.1	0.0	3.1	2.7	6.3	6.1	3.3	3.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	2.0	0.5	0.0	2.0	0.9	11.7	12.2	1.5	11.7	0.3
LnGrp Delay(d),s/veh	33.2	0.0	30.1	33.7	0.0	31.0	32.2	18.8	18.7	32.0	15.5	7.1
LnGrp LOS	C		C	C		C	C	B	B	C	B	A
Approach Vol, veh/h		139			133			1504			1636	
Approach Delay, s/veh		30.7			31.5			19.2			16.1	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	38.0	6.6	11.3	8.1	39.3	6.9	10.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	34.0	7.0	16.0	7.0	34.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	4.9	23.2	2.9	5.9	3.7	24.5	3.1	5.9
Green Ext Time (p_c), s	0.0	10.0	0.0	0.8	0.0	8.8	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	18.7
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	508	1029	305	260	658	218	270	792	193	310	955	162
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	540	1095	324	302	765	253	297	870	212	341	1049	178
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	563	1062	475	313	862	282	290	933	417	355	1062	475
Arrive On Green	0.16	0.30	0.30	0.09	0.23	0.23	0.16	0.26	0.26	0.20	0.30	0.30
Sat Flow, veh/h	3442	3539	1583	3442	3792	1242	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	540	1095	324	302	683	335	297	870	212	341	1049	178
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1644	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	17.1	33.0	19.8	9.6	21.5	21.7	18.0	26.4	12.5	20.9	32.4	9.8
Cycle Q Clear(g_c), s	17.1	33.0	19.8	9.6	21.5	21.7	18.0	26.4	12.5	20.9	32.4	9.8
Prop In Lane	1.00		1.00	1.00		0.76	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	563	1062	475	313	770	374	290	933	417	355	1062	475
V/C Ratio(X)	0.96	1.03	0.68	0.97	0.89	0.90	1.02	0.93	0.51	0.96	0.99	0.37
Avail Cap(c_a), veh/h	563	1062	475	313	770	374	290	933	417	355	1062	475
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.6	38.5	33.9	49.8	41.1	41.2	46.0	39.5	34.4	43.6	38.3	30.4
Incr Delay (d2), s/veh	27.8	36.0	4.0	41.4	12.1	23.3	58.9	17.1	4.4	37.5	24.9	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	21.4	9.2	6.4	11.4	12.3	13.5	15.1	6.0	13.9	19.5	4.5
LnGrp Delay(d),s/veh	73.5	74.5	37.9	91.2	53.3	64.5	104.9	56.6	38.8	81.0	63.2	32.6
LnGrp LOS	E	F	D	F	D	E	F	E	D	F	E	C
Approach Vol, veh/h		1959			1320			1379			1568	
Approach Delay, s/veh		68.1			64.8			64.3			63.6	
Approach LOS		E			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	33.0	14.0	37.0	22.0	37.0	22.0	29.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	22.0	29.0	10.0	33.0	18.0	33.0	18.0	25.0
Max Q Clear Time (g_c+I1), s	22.9	28.4	11.6	35.0	20.0	34.4	19.1	23.7
Green Ext Time (p_c), s	0.0	0.6	0.0	0.0	0.0	0.0	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	65.4
HCM 2010 LOS	E

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	15	3	40	2	1	12	40	1423	2	47	1696	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	58	58	58	97	97	97	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	4	51	3	2	21	45	1614	2	48	1731	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2736	3545	877	2669	3555	808	1753	0	0	1616	0	0
Stage 1	1838	1838	-	1706	1706	-	-	-	-	-	-	-
Stage 2	898	1707	-	963	1849	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 10	6	292	11	6	324	353	-	-	399	-	-
Stage 1	78	125	-	95	145	-	-	-	-	-	-	-
Stage 2	301	145	-	274	123	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 7	5	292	7	5	324	353	-	-	399	-	-
Mov Cap-2 Maneuver	48	44	-	51	40	-	-	-	-	-	-	-
Stage 1	68	110	-	83	127	-	-	-	-	-	-	-
Stage 2	243	127	-	192	108	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	85.3	34.4	0.5	0.4
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	353	-	-	112	148	399	-	-
HCM Lane V/C Ratio	0.129	-	-	0.664	0.175	0.12	-	-
HCM Control Delay (s)	16.7	-	-	85.3	34.4	15.3	-	-
HCM Lane LOS	C	-	-	F	D	C	-	-
HCM 95th %tile Q(veh)	0.4	-	-	3.4	0.6	0.4	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	18	383	55	15	257	9	31	6	9	7	2	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	88	88	88	60	60	60	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	391	56	17	292	10	52	10	15	9	3	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	292	0	0	391	0	0	763	754	391	766	754	292
Stage 1	-	-	-	-	-	-	428	428	-	326	326	-
Stage 2	-	-	-	-	-	-	335	326	-	440	428	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1270	-	-	1168	-	-	321	338	658	320	338	747
Stage 1	-	-	-	-	-	-	605	585	-	687	648	-
Stage 2	-	-	-	-	-	-	679	648	-	596	585	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1270	-	-	1168	-	-	306	328	658	299	328	747
Mov Cap-2 Maneuver	-	-	-	-	-	-	306	328	-	299	328	-
Stage 1	-	-	-	-	-	-	596	577	-	677	639	-
Stage 2	-	-	-	-	-	-	653	639	-	564	577	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.4	18.4	13.5
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	345	1270	-	-	1168	-	-	452
HCM Lane V/C Ratio	0.222	0.014	-	-	0.015	-	-	0.059
HCM Control Delay (s)	18.4	7.9	-	-	8.1	-	-	13.5
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.2

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Cottonwood Ave & Driveway

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	22	456	313	10	13	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	81	81	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	501	386	12	14	28

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	399	0	-	0	942	393
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	549	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1160	-	-	-	292	656
Stage 1	-	-	-	-	682	-
Stage 2	-	-	-	-	579	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1160	-	-	-	284	656
Mov Cap-2 Maneuver	-	-	-	-	284	-
Stage 1	-	-	-	-	682	-
Stage 2	-	-	-	-	562	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	13.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1160	-	-	-	457
HCM Lane V/C Ratio	0.021	-	-	-	0.093
HCM Control Delay (s)	8.2	0	-	-	13.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	81.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	0	74	34	0	35	54	1374	40	40	1588	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	92	92	92	95	95	95	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	0	103	37	0	38	57	1446	42	43	1708	41

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2651	3416	874	2521	3415	744	1748	0	0	1488	0	0
Stage 1	1814	1814	-	1581	1581	-	-	-	-	-	-	-
Stage 2	837	1602	-	940	1834	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 11	7	293	~ 14	7	357	355	-	-	448	-	-
Stage 1	81	128	-	114	167	-	-	-	-	-	-	-
Stage 2	327	163	-	283	125	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 8	5	293	~ 7	5	357	355	-	-	448	-	-
Mov Cap-2 Maneuver	~ 8	5	-	~ 7	5	-	-	-	-	-	-	-
Stage 1	68	116	-	96	140	-	-	-	-	-	-	-
Stage 2	245	137	-	166	113	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 832.3	$ 2499.9	0.6	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	355	-	-	49	14	448	-	-
HCM Lane V/C Ratio	0.16	-	-	2.438	5.357	0.096	-	-
HCM Control Delay (s)	17.1	-	-	$ 832.3	$ 2499.9	13.9	-	-
HCM Lane LOS	C	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0.6	-	-	12.4	10.3	0.3	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	20	4	30	3	7	15	41	1265	3	38	1170	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	72	72	72	89	89	89	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	6	46	4	10	21	51	1563	4	44	1345	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2331	3112	683	2430	3121	784	1367	0	0	1567	0	0
Stage 1	1443	1443	-	1667	1667	-	-	-	-	-	-	-
Stage 2	888	1669	-	763	1454	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 20	11	392	17	11	336	498	-	-	417	-	-
Stage 1	139	196	-	100	152	-	-	-	-	-	-	-
Stage 2	305	151	-	363	193	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 14	9	392	12	~ 9	336	498	-	-	417	-	-
Mov Cap-2 Maneuver	75	59	-	63	63	-	-	-	-	-	-	-
Stage 1	125	175	-	90	136	-	-	-	-	-	-	-
Stage 2	238	136	-	276	173	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	71.1	45.4	0.4	0.5
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	498	-	-	131	123	417	-	-
HCM Lane V/C Ratio	0.102	-	-	0.634	0.282	0.105	-	-
HCM Control Delay (s)	13	-	-	71.1	45.4	14.6	-	-
HCM Lane LOS	B	-	-	F	E	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-	3.3	1.1	0.3	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	25	343	46	3	289	4	34	4	10	2	2	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	57	57	57	58	58	58	79	79	79	65	65	65
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	602	81	5	498	7	43	5	13	3	3	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	498	0	0	602	0	0	1207	1198	602	1207	1198	498
Stage 1	-	-	-	-	-	-	689	689	-	509	509	-
Stage 2	-	-	-	-	-	-	518	509	-	698	689	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1066	-	-	975	-	-	160	186	500	160	186	572
Stage 1	-	-	-	-	-	-	436	446	-	547	538	-
Stage 2	-	-	-	-	-	-	541	538	-	431	446	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1066	-	-	975	-	-	148	177	500	147	177	572
Mov Cap-2 Maneuver	-	-	-	-	-	-	148	177	-	147	177	-
Stage 1	-	-	-	-	-	-	418	428	-	524	535	-
Stage 2	-	-	-	-	-	-	521	535	-	398	428	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.1	35.9	16.7
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	176	1066	-	-	975	-	-	330
HCM Lane V/C Ratio	0.345	0.041	-	-	0.005	-	-	0.065
HCM Control Delay (s)	35.9	8.5	-	-	8.7	-	-	16.7
HCM Lane LOS	E	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.4	0.1	-	-	0	-	-	0.2

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Cottonwood Ave & Driveway

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	31	283	369	14	18	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	81	81	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	368	456	17	20	41

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	473	0	-	0	912	464
Stage 1	-	-	-	-	464	-
Stage 2	-	-	-	-	448	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1089	-	-	-	304	598
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	644	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1089	-	-	-	290	598
Mov Cap-2 Maneuver	-	-	-	-	290	-
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	614	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	14.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1089	-	-	-	446
HCM Lane V/C Ratio	0.037	-	-	-	0.136
HCM Control Delay (s)	8.4	0	-	-	14.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	117.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	21	0	78	49	0	50	70	1212	55	55	1088	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	92	92	92	82	82	82	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	0	98	53	0	54	85	1478	67	64	1265	44

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2325	3131	655	2442	3119	773	1309	0	0	1545	0	0
Stage 1	1415	1415	-	1682	1682	-	-	-	-	-	-	-
Stage 2	910	1716	-	760	1437	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 20	11	409	~ 16	11	342	524	-	-	426	-	-
Stage 1	144	202	-	98	149	-	-	-	-	-	-	-
Stage 2	296	143	-	364	197	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 13	8	409	~ 9	8	342	524	-	-	426	-	-
Mov Cap-2 Maneuver	~ 13	8	-	~ 9	8	-	-	-	-	-	-	-
Stage 1	121	172	-	82	125	-	-	-	-	-	-	-
Stage 2	209	120	-	236	167	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 733	$ 2664	0.7	0.7
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	524	-	-	55	18	426	-	-
HCM Lane V/C Ratio	0.163	-	-	2.25	5.978	0.15	-	-
HCM Control Delay (s)	13.2	-	-	$ 733	$ 2664	14.9	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0.6	-	-	12.4	14.1	0.5	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	63	101	41	52	81	84	58	1186	56	71	1134	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	70	112	46	63	98	101	64	1303	62	79	1260	64
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.83	0.83	0.83	0.91	0.91	0.91	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	218	185	133	210	178	134	1652	739	149	1683	753
Arrive On Green	0.08	0.12	0.12	0.07	0.11	0.11	0.08	0.47	0.47	0.08	0.48	0.48
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	70	112	46	63	98	101	64	1303	62	79	1260	64
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	2.3	3.5	1.6	2.1	3.1	3.8	2.1	19.3	1.3	2.7	18.0	1.4
Cycle Q Clear(g_c), s	2.3	3.5	1.6	2.1	3.1	3.8	2.1	19.3	1.3	2.7	18.0	1.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	140	218	185	133	210	178	134	1652	739	149	1683	753
V/C Ratio(X)	0.50	0.51	0.25	0.48	0.47	0.57	0.48	0.79	0.08	0.53	0.75	0.09
Avail Cap(c_a), veh/h	200	480	408	200	480	408	200	1652	739	200	1683	753
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.4	25.8	24.9	27.6	25.8	26.1	27.5	14.0	9.2	27.3	13.3	8.9
Incr Delay (d2), s/veh	2.7	1.9	0.7	2.6	1.6	2.8	2.6	3.9	0.2	2.9	3.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.9	0.7	1.1	1.7	1.8	1.1	10.1	0.6	1.4	9.5	0.6
LnGrp Delay(d),s/veh	30.2	27.6	25.6	30.2	27.4	28.9	30.2	17.9	9.4	30.2	16.4	9.1
LnGrp LOS	C	C	C	C	C	C	C	B	A	C	B	A
Approach Vol, veh/h		228			262			1429			1403	
Approach Delay, s/veh		28.0			28.7			18.1			16.8	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	33.0	8.6	11.3	8.7	33.5	8.9	11.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	29.0	7.0	16.0	7.0	29.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	4.7	21.3	4.1	5.5	4.1	20.0	4.3	5.8
Green Ext Time (p_c), s	0.0	7.0	0.0	1.1	0.0	8.1	0.0	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	19.1
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	78	91	28	39	65	63	26	1165	27	29	1120	57
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	90	105	32	45	75	72	31	1387	32	34	1302	66
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.84	0.84	0.84	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	94	77	453	89	109	453	85	1582	36	91	1596	714
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.05	0.45	0.45	0.05	0.45	0.45
Sat Flow, veh/h	0	270	1583	0	379	1583	1774	3536	82	1774	3539	1583
Grp Volume(v), veh/h	195	0	32	120	0	72	31	693	726	34	1302	66
Grp Sat Flow(s),veh/h/ln	270	0	1583	379	0	1583	1774	1770	1848	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.8	0.0	0.0	1.9	0.9	19.9	19.9	1.0	17.9	1.3
Cycle Q Clear(g_c), s	16.0	0.0	0.8	16.0	0.0	1.9	0.9	19.9	19.9	1.0	17.9	1.3
Prop In Lane	0.46		1.00	0.37		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	171	0	453	197	0	453	85	792	827	91	1596	714
V/C Ratio(X)	1.14	0.00	0.07	0.61	0.00	0.16	0.37	0.88	0.88	0.37	0.82	0.09
Avail Cap(c_a), veh/h	171	0	453	197	0	453	222	792	827	222	1596	714
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.2	0.0	14.5	16.7	0.0	14.9	25.8	14.0	14.0	25.6	13.3	8.8
Incr Delay (d2), s/veh	110.5	0.0	0.1	5.3	0.0	0.2	2.6	13.0	12.7	2.5	4.7	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	0.0	0.4	1.7	0.0	0.8	0.5	12.5	13.0	0.6	9.5	0.6
LnGrp Delay(d),s/veh	131.8	0.0	14.6	22.0	0.0	15.1	28.4	27.0	26.7	28.1	18.0	9.0
LnGrp LOS	F		B	C		B	C	C	C	C	B	A
Approach Vol, veh/h		227			192			1450			1402	
Approach Delay, s/veh		115.3			19.4			26.9			17.9	
Approach LOS		F			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.9	29.0		20.0	6.7	29.2		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	25.0		16.0	7.0	25.0		16.0
Max Q Clear Time (g_c+I1), s	3.0	21.9		18.0	2.9	19.9		18.0
Green Ext Time (p_c), s	0.0	2.9		0.0	0.0	4.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	28.7
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	271	115	49	325	26	97	278	47	22	239	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	23	347	147	58	387	31	100	287	48	24	257	24
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.78	0.78	0.78	0.84	0.84	0.84	0.97	0.97	0.97	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	468	398	131	535	455	173	1084	179	69	975	90
Arrive On Green	0.04	0.25	0.25	0.07	0.29	0.29	0.10	0.36	0.36	0.04	0.30	0.30
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3041	503	1774	3275	303
Grp Volume(v), veh/h	23	347	147	58	387	31	100	166	169	24	138	143
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1774	1774	1770	1809
Q Serve(g_s), s	0.7	9.8	4.4	1.8	10.7	0.8	3.1	3.8	3.9	0.8	3.4	3.4
Cycle Q Clear(g_c), s	0.7	9.8	4.4	1.8	10.7	0.8	3.1	3.8	3.9	0.8	3.4	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		0.17
Lane Grp Cap(c), veh/h	66	468	398	131	535	455	173	630	632	69	527	538
V/C Ratio(X)	0.35	0.74	0.37	0.44	0.72	0.07	0.58	0.26	0.27	0.35	0.26	0.27
Avail Cap(c_a), veh/h	217	587	499	217	587	499	217	630	632	217	527	538
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	19.7	17.7	25.3	18.3	14.8	24.7	13.1	13.1	26.7	15.3	15.3
Incr Delay (d2), s/veh	3.1	3.8	0.6	2.3	4.0	0.1	3.0	1.0	1.0	3.0	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	5.5	2.0	1.0	6.1	0.4	1.6	2.0	2.1	0.4	1.8	1.9
LnGrp Delay(d),s/veh	29.9	23.5	18.2	27.7	22.3	14.9	27.7	14.1	14.1	29.7	16.5	16.5
LnGrp LOS	C	C	B	C	C	B	C	B	B	C	B	B
Approach Vol, veh/h		517			476			435			305	
Approach Delay, s/veh		22.3			22.5			17.2			17.5	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.2	24.4	8.2	18.3	9.6	21.0	6.1	20.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	17.0	7.0	18.0	7.0	17.0	7.0	18.0
Max Q Clear Time (g_c+I1), s	2.8	5.9	3.8	11.8	5.1	5.4	2.7	12.7
Green Ext Time (p_c), s	0.0	2.7	0.0	2.5	0.0	2.7	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	20.2
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	93	158	65	83	200	198	87	1048	81	163	948	106
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	118	200	82	146	351	347	96	1152	89	187	1090	122
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.79	0.79	0.79	0.57	0.57	0.57	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	149	366	311	178	397	338	137	1333	596	223	1503	672
Arrive On Green	0.08	0.20	0.20	0.10	0.21	0.21	0.08	0.38	0.38	0.13	0.42	0.42
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	118	200	82	146	351	347	96	1152	89	187	1090	122
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.2	7.7	3.5	6.4	14.6	17.0	4.2	24.0	3.0	8.2	20.4	3.8
Cycle Q Clear(g_c), s	5.2	7.7	3.5	6.4	14.6	17.0	4.2	24.0	3.0	8.2	20.4	3.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	149	366	311	178	397	338	137	1333	596	223	1503	672
V/C Ratio(X)	0.79	0.55	0.26	0.82	0.88	1.03	0.70	0.86	0.15	0.84	0.73	0.18
Avail Cap(c_a), veh/h	156	374	318	178	397	338	156	1333	596	223	1503	672
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.8	28.8	27.1	35.1	30.4	31.3	35.9	23.0	16.4	34.1	19.1	14.3
Incr Delay (d2), s/veh	23.2	1.6	0.4	25.1	20.2	56.1	11.2	7.7	0.5	23.8	3.1	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	4.1	1.6	4.4	9.7	12.6	2.5	13.1	1.4	5.5	10.5	1.8
LnGrp Delay(d),s/veh	59.0	30.4	27.6	60.3	50.6	87.4	47.1	30.6	16.9	57.9	22.1	14.9
LnGrp LOS	E	C	C	E	D	F	D	C	B	E	C	B
Approach Vol, veh/h		400			844			1337			1399	
Approach Delay, s/veh		38.2			67.4			30.9			26.3	
Approach LOS		D			E			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	34.0	12.0	19.7	10.2	37.8	10.7	21.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	10.0	30.0	8.0	16.0	7.0	33.0	7.0	17.0
Max Q Clear Time (g_c+I1), s	10.2	26.0	8.4	9.7	6.2	22.4	7.2	19.0
Green Ext Time (p_c), s	0.0	3.7	0.0	2.5	0.0	9.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	37.7
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	221	64	10	245	31	34	206	15	28	223	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	62	395	114	15	360	46	40	245	18	32	256	22
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.56	0.56	0.56	0.68	0.68	0.68	0.84	0.84	0.84	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	594	505	46	497	422	104	1028	75	88	984	84
Arrive On Green	0.08	0.32	0.32	0.03	0.27	0.27	0.06	0.31	0.31	0.05	0.30	0.30
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3345	244	1774	3301	282
Grp Volume(v), veh/h	62	395	114	15	360	46	40	129	134	32	136	142
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1820	1774	1770	1813
Q Serve(g_s), s	1.8	9.8	2.8	0.4	9.4	1.2	1.2	2.9	3.0	0.9	3.1	3.2
Cycle Q Clear(g_c), s	1.8	9.8	2.8	0.4	9.4	1.2	1.2	2.9	3.0	0.9	3.1	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		0.16
Lane Grp Cap(c), veh/h	140	594	505	46	497	422	104	544	559	88	527	540
V/C Ratio(X)	0.44	0.66	0.23	0.32	0.72	0.11	0.38	0.24	0.24	0.36	0.26	0.26
Avail Cap(c_a), veh/h	231	659	560	231	659	560	231	544	559	231	527	540
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.6	15.8	13.4	25.7	17.9	14.9	24.3	13.9	13.9	24.7	14.3	14.3
Incr Delay (d2), s/veh	2.2	2.2	0.2	4.0	2.7	0.1	2.3	1.0	1.0	2.5	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	5.4	1.3	0.3	5.2	0.5	0.6	1.6	1.6	0.5	1.7	1.8
LnGrp Delay(d),s/veh	25.8	18.0	13.6	29.6	20.6	15.0	26.7	14.9	14.9	27.2	15.5	15.5
LnGrp LOS	C	B	B	C	C	B	C	B	B	C	B	B
Approach Vol, veh/h		571			421			303			310	
Approach Delay, s/veh		18.0			20.3			16.5			16.7	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	20.5	5.4	21.1	7.1	20.0	8.2	18.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	2.9	5.0	2.4	11.8	3.2	5.2	3.8	11.4
Green Ext Time (p_c), s	0.0	2.2	0.0	2.8	0.0	2.2	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	18.1
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	41	30	26	34	66	33	1104	39	67	1068	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	29	48	35	34	44	86	34	1150	41	75	1200	35
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.77	0.77	0.77	0.96	0.96	0.96	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	81	126	92	92	74	145	92	1539	55	155	1688	755
Arrive On Green	0.05	0.13	0.13	0.05	0.13	0.13	0.05	0.44	0.44	0.09	0.48	0.48
Sat Flow, veh/h	1774	1003	731	1774	565	1103	1774	3486	124	1774	3539	1583
Grp Volume(v), veh/h	29	0	83	34	0	130	34	584	607	75	1200	35
Grp Sat Flow(s),veh/h/ln	1774	0	1734	1774	0	1668	1774	1770	1841	1774	1770	1583
Q Serve(g_s), s	0.9	0.0	2.4	1.0	0.0	4.0	1.0	14.9	15.0	2.2	14.6	0.6
Cycle Q Clear(g_c), s	0.9	0.0	2.4	1.0	0.0	4.0	1.0	14.9	15.0	2.2	14.6	0.6
Prop In Lane	1.00		0.42	1.00		0.66	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	81	0	217	92	0	219	92	781	812	155	1688	755
V/C Ratio(X)	0.36	0.00	0.38	0.37	0.00	0.59	0.37	0.75	0.75	0.48	0.71	0.05
Avail Cap(c_a), veh/h	228	0	510	228	0	491	228	781	812	228	1688	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.2	0.0	21.8	24.9	0.0	22.2	24.9	12.7	12.7	23.6	11.3	7.6
Incr Delay (d2), s/veh	2.7	0.0	1.1	2.5	0.0	2.5	2.5	6.4	6.2	2.3	2.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	1.2	0.6	0.0	2.0	0.6	8.5	8.8	1.2	7.6	0.3
LnGrp Delay(d),s/veh	27.8	0.0	22.9	27.4	0.0	24.8	27.4	19.1	18.9	26.0	13.8	7.7
LnGrp LOS	C		C	C		C	C	B	B	C	B	A
Approach Vol, veh/h		112			164			1225			1310	
Approach Delay, s/veh		24.2			25.3			19.2			14.4	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	28.0	6.8	10.8	6.8	29.9	6.5	11.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	24.0	7.0	16.0	7.0	24.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	4.2	17.0	3.0	4.4	3.0	16.6	2.9	6.0
Green Ext Time (p_c), s	0.0	6.2	0.0	0.8	0.0	6.5	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	17.5
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	375	519	232	239	489	179	308	739	140	211	693	183
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	417	577	258	278	569	208	338	812	154	229	753	199
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.86	0.86	0.86	0.91	0.91	0.91	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	435	765	342	360	720	257	375	1153	516	268	939	420
Arrive On Green	0.13	0.22	0.22	0.10	0.19	0.19	0.21	0.33	0.33	0.15	0.27	0.27
Sat Flow, veh/h	3442	3539	1583	3442	3701	1319	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	417	577	258	278	520	257	338	812	154	229	753	199
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1630	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	9.5	12.1	12.1	6.2	11.5	11.9	14.7	15.9	5.7	10.0	15.7	8.4
Cycle Q Clear(g_c), s	9.5	12.1	12.1	6.2	11.5	11.9	14.7	15.9	5.7	10.0	15.7	8.4
Prop In Lane	1.00		1.00	1.00		0.81	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	435	765	342	360	660	317	375	1153	516	268	939	420
V/C Ratio(X)	0.96	0.75	0.75	0.77	0.79	0.81	0.90	0.70	0.30	0.85	0.80	0.47
Avail Cap(c_a), veh/h	435	765	342	392	686	330	381	1153	516	292	939	420
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	29.0	29.0	34.5	30.3	30.5	30.4	23.3	19.9	32.7	27.1	24.4
Incr Delay (d2), s/veh	32.6	4.3	9.1	8.5	5.9	13.7	23.6	3.6	1.5	20.1	7.2	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	6.3	6.1	3.4	6.0	6.6	9.6	8.4	2.7	6.4	8.6	4.1
LnGrp Delay(d),s/veh	66.9	33.3	38.1	43.0	36.2	44.1	54.0	27.0	21.4	52.8	34.3	28.2
LnGrp LOS	E	C	D	D	D	D	D	C	C	D	C	C
Approach Vol, veh/h		1252			1055			1304			1181	
Approach Delay, s/veh		45.5			39.9			33.3			36.8	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.9	29.8	12.3	21.1	20.7	25.0	14.0	19.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	13.0	25.0	9.0	17.0	17.0	21.0	10.0	16.0
Max Q Clear Time (g_c+I1), s	12.0	17.9	8.2	14.1	16.7	17.7	11.5	13.9
Green Ext Time (p_c), s	0.1	5.4	0.1	2.2	0.0	2.7	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	38.8
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	39	92	62	112	158	199	63	1394	66	78	1134	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	57	133	90	127	180	226	72	1602	76	89	1289	36
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.69	0.69	0.69	0.88	0.88	0.88	0.87	0.87	0.87	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	276	235	145	315	268	119	1813	811	127	1830	819
Arrive On Green	0.06	0.15	0.15	0.08	0.17	0.17	0.07	0.51	0.51	0.07	0.52	0.52
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	57	133	90	127	180	226	72	1602	76	89	1289	36
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	2.7	5.6	4.4	6.1	7.6	11.9	3.4	34.6	2.1	4.2	23.8	1.0
Cycle Q Clear(g_c), s	2.7	5.6	4.4	6.1	7.6	11.9	3.4	34.6	2.1	4.2	23.8	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	107	276	235	145	315	268	119	1813	811	127	1830	819
V/C Ratio(X)	0.53	0.48	0.38	0.88	0.57	0.84	0.61	0.88	0.09	0.70	0.70	0.04
Avail Cap(c_a), veh/h	145	347	295	145	347	295	145	1813	811	145	1830	819
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.2	33.6	33.0	39.0	32.8	34.6	39.0	18.7	10.7	39.0	15.8	10.2
Incr Delay (d2), s/veh	4.0	1.3	1.0	41.4	1.8	18.2	4.9	6.7	0.2	12.0	2.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	3.0	2.0	4.6	4.1	6.5	1.8	18.4	1.0	2.5	12.0	0.4
LnGrp Delay(d),s/veh	43.2	34.9	34.1	80.5	34.7	52.8	43.9	25.4	11.0	51.0	18.1	10.3
LnGrp LOS	D	C	C	F	C	D	D	C	B	D	B	B
Approach Vol, veh/h		280			533			1750			1414	
Approach Delay, s/veh		36.3			53.3			25.5			19.9	
Approach LOS		D			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	48.0	11.0	16.7	9.7	48.4	9.2	18.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	44.0	7.0	16.0	7.0	44.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	6.2	36.6	8.1	7.6	5.4	25.8	4.7	13.9
Green Ext Time (p_c), s	0.0	7.0	0.0	1.8	0.0	16.3	0.0	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	28.0
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	74	77	50	67	102	62	47	1402	27	35	1201	79
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	85	89	57	89	136	83	55	1630	31	42	1430	94
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.87	0.87	0.87	0.75	0.75	0.75	0.86	0.86	0.86	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	79	58	375	74	68	375	118	1878	36	100	1835	821
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.07	0.53	0.53	0.06	0.52	0.52
Sat Flow, veh/h	0	243	1583	0	289	1583	1774	3553	67	1774	3539	1583
Grp Volume(v), veh/h	174	0	57	225	0	83	55	811	850	42	1430	94
Grp Sat Flow(s),veh/h/ln	243	0	1583	289	0	1583	1774	1770	1851	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	1.9	0.0	0.0	2.8	2.0	26.9	27.0	1.5	22.0	2.1
Cycle Q Clear(g_c), s	16.0	0.0	1.9	16.0	0.0	2.8	2.0	26.9	27.0	1.5	22.0	2.1
Prop In Lane	0.49		1.00	0.40		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	137	0	375	143	0	375	118	936	979	100	1835	821
V/C Ratio(X)	1.27	0.00	0.15	1.58	0.00	0.22	0.46	0.87	0.87	0.42	0.78	0.11
Avail Cap(c_a), veh/h	137	0	375	143	0	375	184	936	979	184	1835	821
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.5	0.0	20.4	26.7	0.0	20.7	30.3	13.8	13.9	30.8	13.1	8.3
Incr Delay (d2), s/veh	167.0	0.0	0.2	289.8	0.0	0.3	2.8	10.6	10.4	2.8	3.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	0.0	0.9	14.1	0.0	1.3	1.1	15.8	16.5	0.8	11.6	1.0
LnGrp Delay(d),s/veh	194.5	0.0	20.6	316.5	0.0	21.0	33.2	24.4	24.3	33.5	16.5	8.6
LnGrp LOS	F		C	F		C	C	C	C	C	B	A
Approach Vol, veh/h		231			308			1716			1566	
Approach Delay, s/veh		151.6			236.9			24.6			16.5	
Approach LOS		F			F			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.8	39.7		20.0	8.5	39.0		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	35.0		16.0	7.0	35.0		16.0
Max Q Clear Time (g_c+I1), s	3.5	29.0		18.0	4.0	24.0		18.0
Green Ext Time (p_c), s	0.0	5.7		0.0	0.0	10.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	46.1
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	333	138	49	412	92	103	330	32	59	408	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	59	392	162	64	542	121	130	418	41	68	469	60
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.76	0.76	0.76	0.79	0.79	0.79	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	128	567	482	134	574	488	180	920	90	139	819	104
Arrive On Green	0.07	0.30	0.30	0.08	0.31	0.31	0.10	0.28	0.28	0.08	0.26	0.26
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3258	318	1774	3159	402
Grp Volume(v), veh/h	59	392	162	64	542	121	130	226	233	68	262	267
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1807	1774	1770	1792
Q Serve(g_s), s	2.0	11.4	4.9	2.1	17.5	3.5	4.4	6.5	6.6	2.3	7.9	8.0
Cycle Q Clear(g_c), s	2.0	11.4	4.9	2.1	17.5	3.5	4.4	6.5	6.6	2.3	7.9	8.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.18	1.00		0.22
Lane Grp Cap(c), veh/h	128	567	482	134	574	488	180	500	510	139	459	465
V/C Ratio(X)	0.46	0.69	0.34	0.48	0.94	0.25	0.72	0.45	0.46	0.49	0.57	0.58
Avail Cap(c_a), veh/h	201	574	488	201	574	488	201	500	510	201	459	465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.5	18.9	16.6	27.3	20.8	16.0	26.9	18.2	18.2	27.3	19.9	19.9
Incr Delay (d2), s/veh	2.6	3.5	0.4	2.6	24.6	0.3	10.8	2.9	2.9	2.7	5.1	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	6.4	2.2	1.1	12.8	1.6	2.7	3.5	3.6	1.2	4.5	4.6
LnGrp Delay(d),s/veh	30.0	22.4	17.0	30.0	45.5	16.3	37.6	21.2	21.2	29.9	24.9	25.0
LnGrp LOS	C	C	B	C	D	B	D	C	C	C	C	C
Approach Vol, veh/h		613			727			589			597	
Approach Delay, s/veh		21.7			39.3			24.8			25.5	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	21.4	8.7	22.8	10.2	20.0	8.5	23.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	4.3	8.6	4.1	13.4	6.4	10.0	4.0	19.5
Green Ext Time (p_c), s	0.0	3.4	0.0	3.0	0.0	2.9	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	28.4
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	103	195	75	104	248	209	79	1175	74	175	1084	98
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	129	244	94	141	335	282	96	1433	90	208	1290	117
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.80	0.80	0.80	0.74	0.74	0.74	0.82	0.82	0.82	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	331	281	158	352	299	125	1534	686	217	1716	768
Arrive On Green	0.08	0.18	0.18	0.09	0.19	0.19	0.07	0.43	0.43	0.12	0.48	0.48
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	129	244	94	141	335	282	96	1433	90	208	1290	117
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.5	11.2	4.7	7.1	16.0	15.8	4.8	34.7	3.1	10.5	26.6	3.7
Cycle Q Clear(g_c), s	6.5	11.2	4.7	7.1	16.0	15.8	4.8	34.7	3.1	10.5	26.6	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	331	281	158	352	299	125	1534	686	217	1716	768
V/C Ratio(X)	0.93	0.74	0.33	0.89	0.95	0.94	0.77	0.93	0.13	0.96	0.75	0.15
Avail Cap(c_a), veh/h	138	331	281	158	352	299	138	1534	686	217	1716	768
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.3	35.0	32.3	40.6	36.1	36.0	41.1	24.3	15.3	39.3	18.8	12.9
Incr Delay (d2), s/veh	57.1	8.3	0.7	42.5	35.5	37.1	20.5	11.9	0.4	49.5	3.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	6.5	2.1	5.3	11.7	10.0	3.1	19.5	1.4	8.1	13.6	1.7
LnGrp Delay(d),s/veh	98.3	43.4	33.0	83.1	71.6	73.1	61.6	36.2	15.7	88.8	21.9	13.3
LnGrp LOS	F	D	C	F	E	E	E	D	B	F	C	B
Approach Vol, veh/h		467			758			1619			1615	
Approach Delay, s/veh		56.5			74.3			36.6			29.9	
Approach LOS		E			E			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	43.0	12.0	20.0	10.4	47.6	11.0	21.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	11.0	39.0	8.0	16.0	7.0	43.0	7.0	17.0
Max Q Clear Time (g_c+I1), s	12.5	36.7	9.1	13.2	6.8	28.6	8.5	18.0
Green Ext Time (p_c), s	0.0	2.2	0.0	1.3	0.0	12.9	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	42.6
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	105	263	79	47	365	142	109	347	30	34	281	45
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	148	370	111	69	537	209	127	403	35	47	385	62
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.71	0.71	0.71	0.68	0.68	0.68	0.86	0.86	0.86	0.73	0.73	0.73
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	182	647	550	133	595	505	166	931	81	107	763	122
Arrive On Green	0.10	0.35	0.35	0.07	0.32	0.32	0.09	0.28	0.28	0.06	0.25	0.25
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3297	285	1774	3058	489
Grp Volume(v), veh/h	148	370	111	69	537	209	127	215	223	47	222	225
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1812	1774	1770	1777
Q Serve(g_s), s	5.6	11.0	3.4	2.5	18.8	7.1	4.8	6.8	6.8	1.7	7.3	7.4
Cycle Q Clear(g_c), s	5.6	11.0	3.4	2.5	18.8	7.1	4.8	6.8	6.8	1.7	7.3	7.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		0.27
Lane Grp Cap(c), veh/h	182	647	550	133	595	505	166	500	512	107	442	443
V/C Ratio(X)	0.81	0.57	0.20	0.52	0.90	0.41	0.77	0.43	0.43	0.44	0.50	0.51
Avail Cap(c_a), veh/h	182	647	550	182	629	535	182	500	512	182	442	443
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.9	18.1	15.6	30.3	22.2	18.2	30.1	20.0	20.0	30.9	21.9	22.0
Incr Delay (d2), s/veh	23.5	1.2	0.2	3.1	15.9	0.5	16.1	2.7	2.7	2.8	4.0	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	5.9	1.5	1.4	12.2	3.1	3.1	3.7	3.8	0.9	4.1	4.1
LnGrp Delay(d),s/veh	53.4	19.3	15.8	33.4	38.1	18.7	46.3	22.7	22.7	33.7	26.0	26.1
LnGrp LOS	D	B	B	C	D	B	D	C	C	C	C	C
Approach Vol, veh/h		629			815			565			494	
Approach Delay, s/veh		26.7			32.7			28.0			26.7	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	23.2	9.1	27.6	10.4	21.0	11.0	25.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	17.0	7.0	23.0	7.0	17.0	7.0	23.0
Max Q Clear Time (g_c+I1), s	3.7	8.8	4.5	13.0	6.8	9.4	7.6	20.8
Green Ext Time (p_c), s	0.0	3.1	0.0	4.5	0.0	3.0	0.0	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	29.0
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	90	52	88	44	63	104	61	1193	60	98	1068	83
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	122	70	119	52	74	122	66	1283	65	121	1319	102
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.74	0.74	0.74	0.85	0.85	0.85	0.93	0.93	0.93	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	164	115	196	114	100	165	130	1453	74	163	1567	701
Arrive On Green	0.09	0.19	0.19	0.06	0.16	0.16	0.07	0.42	0.42	0.09	0.44	0.44
Sat Flow, veh/h	1774	621	1056	1774	634	1045	1774	3428	173	1774	3539	1583
Grp Volume(v), veh/h	122	0	189	52	0	196	66	661	687	121	1319	102
Grp Sat Flow(s),veh/h/ln	1774	0	1676	1774	0	1678	1774	1770	1832	1774	1770	1583
Q Serve(g_s), s	4.6	0.0	7.1	1.9	0.0	7.6	2.5	23.5	23.6	4.5	22.6	2.6
Cycle Q Clear(g_c), s	4.6	0.0	7.1	1.9	0.0	7.6	2.5	23.5	23.6	4.5	22.6	2.6
Prop In Lane	1.00		0.63	1.00		0.62	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	164	0	312	114	0	265	130	750	777	163	1567	701
V/C Ratio(X)	0.75	0.00	0.61	0.46	0.00	0.74	0.51	0.88	0.88	0.74	0.84	0.15
Avail Cap(c_a), veh/h	182	0	392	182	0	393	182	750	777	182	1567	701
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	25.5	30.9	0.0	27.5	30.5	18.1	18.2	30.3	16.9	11.4
Incr Delay (d2), s/veh	14.0	0.0	1.9	2.8	0.0	4.0	3.1	14.1	13.9	13.5	5.7	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	3.4	1.0	0.0	3.8	1.3	14.3	14.8	2.8	12.2	1.2
LnGrp Delay(d),s/veh	44.2	0.0	27.4	33.7	0.0	31.5	33.6	32.3	32.1	43.7	22.6	11.8
LnGrp LOS	D		C	C		C	C	C	C	D	C	B
Approach Vol, veh/h		311			248			1414			1542	
Approach Delay, s/veh		34.0			32.0			32.2			23.5	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	33.0	8.4	16.7	9.0	34.3	10.3	14.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	29.0	7.0	16.0	7.0	29.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	6.5	25.6	3.9	9.1	4.5	24.6	6.6	9.6
Green Ext Time (p_c), s	0.0	3.2	0.0	1.3	0.0	4.1	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	28.6
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	206	458	100	205	891	245	267	917	211	239	684	239
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	251	559	122	241	1048	288	284	976	224	285	814	285
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.82	0.82	0.82	0.85	0.85	0.85	0.94	0.94	0.94	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	301	861	385	325	993	273	322	1018	455	310	995	445
Arrive On Green	0.09	0.24	0.24	0.09	0.25	0.25	0.18	0.29	0.29	0.17	0.28	0.28
Sat Flow, veh/h	3442	3539	1583	3442	3970	1090	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	251	559	122	241	895	441	284	976	224	285	814	285
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1670	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.7	11.4	5.1	5.5	20.0	20.0	12.5	21.7	9.4	12.6	17.2	12.6
Cycle Q Clear(g_c), s	5.7	11.4	5.1	5.5	20.0	20.0	12.5	21.7	9.4	12.6	17.2	12.6
Prop In Lane	1.00		1.00	1.00		0.65	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	301	861	385	325	848	418	322	1018	455	310	995	445
V/C Ratio(X)	0.83	0.65	0.32	0.74	1.06	1.06	0.88	0.96	0.49	0.92	0.82	0.64
Avail Cap(c_a), veh/h	301	861	385	387	848	418	333	1018	455	310	995	445
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.9	27.2	24.8	35.3	30.0	30.0	31.9	28.0	23.7	32.4	26.8	25.2
Incr Delay (d2), s/veh	17.9	1.7	0.5	6.2	46.7	59.7	22.7	19.9	3.8	30.8	7.5	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	5.7	2.2	2.9	14.8	16.1	8.1	13.4	4.6	8.8	9.4	6.4
LnGrp Delay(d),s/veh	53.8	28.9	25.3	41.5	76.7	89.7	54.6	48.0	27.4	63.3	34.3	32.1
LnGrp LOS	D	C	C	D	F	F	D	D	C	E	C	C
Approach Vol, veh/h		932			1577			1484			1384	
Approach Delay, s/veh		35.1			75.0			46.1			39.8	
Approach LOS		D			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	27.0	11.5	23.5	18.5	26.5	11.0	24.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	14.0	23.0	9.0	18.0	15.0	22.0	7.0	20.0
Max Q Clear Time (g_c+I1), s	14.6	23.7	7.5	13.4	14.5	19.2	7.7	22.0
Green Ext Time (p_c), s	0.0	0.0	0.1	3.8	0.0	2.5	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	51.1
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	2	41	2	1	18	38	1489	4	14	1277	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	68	68	68	87	87	87	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	3	61	3	1	26	48	1883	5	16	1451	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2532	3478	737	2740	3487	944	1474	0	0	1888	0	0
Stage 1	1494	1494	-	1981	1981	-	-	-	-	-	-	-
Stage 2	1038	1984	-	759	1506	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 14	6	361	9	6	263	453	-	-	313	-	-
Stage 1	129	185	-	63	106	-	-	-	-	-	-	-
Stage 2	247	105	-	365	182	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 11	5	361	6	5	263	453	-	-	313	-	-
Mov Cap-2 Maneuver	69	51	-	43	52	-	-	-	-	-	-	-
Stage 1	115	176	-	56	95	-	-	-	-	-	-	-
Stage 2	196	94	-	283	173	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	47.8	33.5	0.3	0.2
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	453	-	-	164	157	313	-	-
HCM Lane V/C Ratio	0.106	-	-	0.51	0.197	0.051	-	-
HCM Control Delay (s)	13.9	-	-	47.8	33.5	17.1	-	-
HCM Lane LOS	B	-	-	E	D	C	-	-
HCM 95th %tile Q(veh)	0.4	-	-	2.5	0.7	0.2	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	350	13	36	476	19	30	11	42	34	12	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	70	70	70	67	67	67	64	64	64
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	455	17	51	680	27	45	16	63	53	19	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	680	0	0	455	0	0	1285	1264	455	1303	1264	680
Stage 1	-	-	-	-	-	-	481	481	-	783	783	-
Stage 2	-	-	-	-	-	-	804	783	-	520	481	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	912	-	-	1106	-	-	142	169	605	138	169	451
Stage 1	-	-	-	-	-	-	566	554	-	387	404	-
Stage 2	-	-	-	-	-	-	377	404	-	539	554	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	912	-	-	1106	-	-	117	159	605	109	159	451
Mov Cap-2 Maneuver	-	-	-	-	-	-	117	159	-	109	159	-
Stage 1	-	-	-	-	-	-	558	546	-	381	385	-
Stage 2	-	-	-	-	-	-	324	385	-	462	546	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.6	44.2	68
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	210	912	-	-	1106	-	-	145
HCM Lane V/C Ratio	0.59	0.014	-	-	0.046	-	-	0.657
HCM Control Delay (s)	44.2	9	-	-	8.4	-	-	68
HCM Lane LOS	E	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	3.3	0	-	-	0.1	-	-	3.6

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Cottonwood Ave

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	366	528	10	0	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	78	78	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	488	677	13	0	54

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	690	0	-	0	1171	683
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	488	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	905	-	-	-	213	449
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	617	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	905	-	-	-	213	449
Mov Cap-2 Maneuver	-	-	-	-	213	-
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	617	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	905	-	-	-	449
HCM Lane V/C Ratio	-	-	-	-	0.121
HCM Control Delay (s)	0	-	-	-	14.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	11	0	0	43	14	1432	87	0	1334	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	62	62	62	92	92	92	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	18	0	0	47	16	1685	102	0	1569	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2446	3391	786	2554	3342	894	1573	0	0	1787	0	0
Stage 1	1571	1571	-	1769	1769	-	-	-	-	-	-	-
Stage 2	875	1820	-	785	1573	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	16	7	335	13	8	284	415	-	-	343	-	-
Stage 1	115	169	-	86	135	-	-	-	-	-	-	-
Stage 2	310	127	-	352	169	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	13	7	335	12	8	284	415	-	-	343	-	-
Mov Cap-2 Maneuver	13	7	-	12	8	-	-	-	-	-	-	-
Stage 1	111	169	-	83	130	-	-	-	-	-	-	-
Stage 2	249	122	-	333	169	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.3	20.2	0.1	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	415	-	-	335	284	343	-	-
HCM Lane V/C Ratio	0.04	-	-	0.053	0.165	-	-	-
HCM Control Delay (s)	14	-	-	16.3	20.2	0	-	-
HCM Lane LOS	B	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.6	0	-	-

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	68	199	76	69	131	95	68	1280	89	121	1630	75
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	80	234	89	99	187	136	71	1333	93	126	1698	78
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.70	0.70	0.70	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	293	249	131	302	256	118	1743	780	157	1821	815
Arrive On Green	0.07	0.16	0.16	0.07	0.16	0.16	0.07	0.49	0.49	0.09	0.51	0.51
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	80	234	89	99	187	136	71	1333	93	126	1698	78
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.8	10.3	4.3	4.7	8.0	6.7	3.3	26.2	2.7	6.0	38.3	2.2
Cycle Q Clear(g_c), s	3.8	10.3	4.3	4.7	8.0	6.7	3.3	26.2	2.7	6.0	38.3	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	124	293	249	131	302	256	118	1743	780	157	1821	815
V/C Ratio(X)	0.65	0.80	0.36	0.75	0.62	0.53	0.60	0.76	0.12	0.80	0.93	0.10
Avail Cap(c_a), veh/h	145	349	296	145	349	296	145	1743	780	187	1821	815
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.8	34.7	32.2	38.8	33.4	32.8	38.8	17.7	11.7	38.2	19.4	10.6
Incr Delay (d2), s/veh	7.6	10.5	0.9	18.0	2.6	1.7	4.8	3.3	0.3	18.6	10.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	6.2	1.9	2.9	4.3	3.1	1.8	13.6	1.2	3.7	21.2	1.0
LnGrp Delay(d),s/veh	46.3	45.2	33.0	56.8	36.0	34.5	43.6	20.9	12.0	56.9	29.6	10.8
LnGrp LOS	D	D	C	E	D	C	D	C	B	E	C	B
Approach Vol, veh/h		403			422			1497			1902	
Approach Delay, s/veh		42.7			40.4			21.4			30.6	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.6	46.1	10.3	17.5	9.7	48.0	10.0	17.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	42.0	7.0	16.0	7.0	44.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	8.0	28.2	6.7	12.3	5.3	40.3	5.8	10.0
Green Ext Time (p_c), s	0.0	12.9	0.0	1.1	0.0	3.6	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	29.5
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	64	102	28	32	94	64	30	1340	47	79	1586	89
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	72	115	31	36	106	72	31	1396	49	81	1635	92
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.96	0.96	0.96	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	79	92	400	71	157	400	82	1653	58	149	1810	810
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.05	0.47	0.47	0.08	0.51	0.51
Sat Flow, veh/h	0	364	1583	0	619	1583	1774	3488	122	1774	3539	1583
Grp Volume(v), veh/h	187	0	31	142	0	72	31	707	738	81	1635	92
Grp Sat Flow(s),veh/h/ln	364	0	1583	619	0	1583	1774	1770	1841	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.9	0.0	0.0	2.3	1.1	22.2	22.3	2.8	26.6	1.9
Cycle Q Clear(g_c), s	16.0	0.0	0.9	16.0	0.0	2.3	1.1	22.2	22.3	2.8	26.6	1.9
Prop In Lane	0.39		1.00	0.25		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	171	0	400	228	0	400	82	838	872	149	1810	810
V/C Ratio(X)	1.09	0.00	0.08	0.62	0.00	0.18	0.38	0.84	0.85	0.54	0.90	0.11
Avail Cap(c_a), veh/h	171	0	400	228	0	400	196	838	872	196	1810	810
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.9	0.0	18.0	20.0	0.0	18.5	29.3	14.6	14.6	27.8	14.1	8.0
Incr Delay (d2), s/veh	96.5	0.0	0.1	5.2	0.0	0.2	2.8	10.1	9.9	3.1	7.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	0.0	0.4	2.3	0.0	1.0	0.6	13.0	13.7	1.5	14.7	0.9
LnGrp Delay(d),s/veh	120.4	0.0	18.1	25.2	0.0	18.7	32.1	24.7	24.5	30.9	21.9	8.3
LnGrp LOS	F		B	C		B	C	C	C	C	C	A
Approach Vol, veh/h		218			214			1476			1808	
Approach Delay, s/veh		105.8			23.0			24.8			21.6	
Approach LOS		F			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.3	34.0		20.0	6.9	36.4		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	30.0		16.0	7.0	30.0		16.0
Max Q Clear Time (g_c+I1), s	4.8	24.3		18.0	3.1	28.6		18.0
Green Ext Time (p_c), s	0.0	5.5		0.0	0.0	1.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	27.9
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	384	162	45	303	41	88	438	60	31	374	47
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	54	452	191	55	370	50	106	528	72	33	394	49
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.82	0.82	0.82	0.83	0.83	0.83	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	123	544	463	125	546	464	173	996	135	88	856	106
Arrive On Green	0.07	0.29	0.29	0.07	0.29	0.29	0.10	0.32	0.32	0.05	0.27	0.27
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3132	426	1774	3171	392
Grp Volume(v), veh/h	54	452	191	55	370	50	106	298	302	33	219	224
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1788	1774	1770	1794
Q Serve(g_s), s	1.7	13.4	5.8	1.8	10.4	1.4	3.4	8.2	8.2	1.1	6.1	6.2
Cycle Q Clear(g_c), s	1.7	13.4	5.8	1.8	10.4	1.4	3.4	8.2	8.2	1.1	6.1	6.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		0.22
Lane Grp Cap(c), veh/h	123	544	463	125	546	464	173	563	568	88	478	484
V/C Ratio(X)	0.44	0.83	0.41	0.44	0.68	0.11	0.61	0.53	0.53	0.38	0.46	0.46
Avail Cap(c_a), veh/h	210	597	508	210	597	508	210	563	568	210	478	484
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.5	19.6	16.9	26.4	18.5	15.3	25.7	16.6	16.6	27.3	18.0	18.1
Incr Delay (d2), s/veh	2.4	9.0	0.6	2.4	2.7	0.1	3.6	3.5	3.5	2.6	3.1	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	8.3	2.6	0.9	5.8	0.6	1.8	4.5	4.6	0.6	3.4	3.5
LnGrp Delay(d),s/veh	28.9	28.6	17.5	28.9	21.2	15.4	29.3	20.1	20.1	29.9	21.2	21.2
LnGrp LOS	C	C	B	C	C	B	C	C	C	C	C	C
Approach Vol, veh/h		697			475			706			476	
Approach Delay, s/veh		25.5			21.5			21.5			21.8	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	22.8	8.2	21.3	9.8	20.0	8.1	21.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	3.1	10.2	3.8	15.4	5.4	8.2	3.7	12.4
Green Ext Time (p_c), s	0.0	2.9	0.0	1.9	0.0	3.7	0.0	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	22.8
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	120	232	72	85	173	117	74	1244	59	235	1360	131
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	141	273	85	109	222	150	79	1323	63	250	1447	139
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.78	0.78	0.78	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	161	325	277	137	301	256	120	1484	664	261	1765	790
Arrive On Green	0.09	0.17	0.17	0.08	0.16	0.16	0.07	0.42	0.42	0.15	0.50	0.50
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	141	273	85	109	222	150	79	1323	63	250	1447	139
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.9	12.5	4.1	5.3	10.0	7.7	3.8	30.6	2.1	12.3	30.6	4.3
Cycle Q Clear(g_c), s	6.9	12.5	4.1	5.3	10.0	7.7	3.8	30.6	2.1	12.3	30.6	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	161	325	277	137	301	256	120	1484	664	261	1765	790
V/C Ratio(X)	0.88	0.84	0.31	0.79	0.74	0.59	0.66	0.89	0.09	0.96	0.82	0.18
Avail Cap(c_a), veh/h	161	359	305	141	338	287	141	1484	664	261	1765	790
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.6	35.2	31.8	40.0	35.2	34.3	40.1	23.8	15.5	37.3	18.8	12.2
Incr Delay (d2), s/veh	38.1	14.9	0.6	25.7	7.4	2.5	8.4	8.5	0.3	43.7	4.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	7.8	1.9	3.6	5.7	3.6	2.2	16.6	1.0	9.2	16.0	2.0
LnGrp Delay(d),s/veh	77.7	50.1	32.4	65.7	42.6	36.8	48.6	32.2	15.8	81.0	23.2	12.6
LnGrp LOS	E	D	C	E	D	D	D	C	B	F	C	B
Approach Vol, veh/h		499			481			1465			1836	
Approach Delay, s/veh		54.9			46.0			32.4			30.2	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	41.0	10.8	19.4	10.0	48.0	12.0	18.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	13.0	37.0	7.0	17.0	7.0	43.0	8.0	16.0
Max Q Clear Time (g_c+I1), s	14.3	32.6	7.3	14.5	5.8	32.6	8.9	12.0
Green Ext Time (p_c), s	0.0	4.2	0.0	0.9	0.0	9.6	0.0	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	35.6
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	264	57	31	235	43	31	355	19	39	322	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	22	326	70	34	255	47	35	403	22	41	339	21
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.81	0.81	0.81	0.92	0.92	0.92	0.88	0.88	0.88	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	65	461	392	93	491	417	96	1091	59	108	1105	68
Arrive On Green	0.04	0.25	0.25	0.05	0.26	0.26	0.05	0.32	0.32	0.06	0.33	0.33
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3414	186	1774	3387	209
Grp Volume(v), veh/h	22	326	70	34	255	47	35	208	217	41	176	184
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1830	1774	1770	1826
Q Serve(g_s), s	0.6	8.0	1.7	0.9	5.9	1.1	1.0	4.5	4.6	1.1	3.7	3.8
Cycle Q Clear(g_c), s	0.6	8.0	1.7	0.9	5.9	1.1	1.0	4.5	4.6	1.1	3.7	3.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		0.11
Lane Grp Cap(c), veh/h	65	461	392	93	491	417	96	565	585	108	578	596
V/C Ratio(X)	0.34	0.71	0.18	0.36	0.52	0.11	0.37	0.37	0.37	0.38	0.31	0.31
Avail Cap(c_a), veh/h	248	707	601	248	707	601	248	565	585	248	578	596
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.5	17.2	14.8	22.9	15.7	14.0	22.9	13.1	13.2	22.6	12.6	12.6
Incr Delay (d2), s/veh	3.0	2.0	0.2	2.4	0.9	0.1	2.3	1.8	1.8	2.2	1.4	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	4.3	0.8	0.5	3.1	0.5	0.5	2.5	2.6	0.6	2.0	2.1
LnGrp Delay(d),s/veh	26.5	19.2	15.0	25.3	16.6	14.1	25.2	15.0	15.0	24.8	14.0	14.0
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		418			336			460			401	
Approach Delay, s/veh		18.9			17.1			15.7			15.1	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.0	20.0	6.6	16.4	6.7	20.3	5.8	17.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	3.1	6.6	2.9	10.0	3.0	5.8	2.6	7.9
Green Ext Time (p_c), s	0.0	3.0	0.0	2.4	0.0	3.2	0.0	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	52	44	21	44	47	45	1313	55	76	1414	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	30	59	50	25	52	56	48	1397	59	82	1520	34
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.88	0.88	0.88	0.84	0.84	0.84	0.94	0.94	0.94	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	80	104	88	69	87	94	111	1803	76	147	1917	858
Arrive On Green	0.04	0.11	0.11	0.04	0.11	0.11	0.06	0.52	0.52	0.08	0.54	0.54
Sat Flow, veh/h	1774	933	790	1774	822	885	1774	3461	146	1774	3539	1583
Grp Volume(v), veh/h	30	0	109	25	0	108	48	713	743	82	1520	34
Grp Sat Flow(s),veh/h/ln	1774	0	1723	1774	0	1707	1774	1770	1837	1774	1770	1583
Q Serve(g_s), s	1.1	0.0	3.9	0.9	0.0	3.9	1.7	21.1	21.2	2.9	22.5	0.7
Cycle Q Clear(g_c), s	1.1	0.0	3.9	0.9	0.0	3.9	1.7	21.1	21.2	2.9	22.5	0.7
Prop In Lane	1.00		0.46	1.00		0.52	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	80	0	193	69	0	181	111	922	957	147	1917	858
V/C Ratio(X)	0.38	0.00	0.57	0.36	0.00	0.60	0.43	0.77	0.78	0.56	0.79	0.04
Avail Cap(c_a), veh/h	190	0	422	190	0	418	190	922	957	190	1917	858
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	27.5	30.6	0.0	27.8	29.5	12.5	12.6	28.8	12.0	7.0
Incr Delay (d2), s/veh	2.9	0.0	2.6	3.1	0.0	3.1	2.7	6.3	6.1	3.3	3.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	2.0	0.5	0.0	2.0	0.9	11.7	12.2	1.5	11.7	0.3
LnGrp Delay(d),s/veh	33.2	0.0	30.1	33.7	0.0	31.0	32.2	18.8	18.7	32.0	15.5	7.1
LnGrp LOS	C		C	C		C	C	B	B	C	B	A
Approach Vol, veh/h		139			133			1504			1636	
Approach Delay, s/veh		30.7			31.5			19.2			16.1	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	38.0	6.6	11.3	8.1	39.3	6.9	10.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	34.0	7.0	16.0	7.0	34.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	4.9	23.2	2.9	5.9	3.7	24.5	3.1	5.9
Green Ext Time (p_c), s	0.0	10.0	0.0	0.8	0.0	8.8	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	18.7
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	508	1029	305	260	658	218	270	792	193	310	955	162
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	540	1095	324	302	765	253	297	870	212	341	1049	178
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	593	1062	475	313	829	271	290	933	417	355	1062	475
Arrive On Green	0.17	0.30	0.30	0.09	0.22	0.22	0.16	0.26	0.26	0.20	0.30	0.30
Sat Flow, veh/h	3442	3539	1583	3442	3792	1242	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	540	1095	324	302	683	335	297	870	212	341	1049	178
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1644	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	16.9	33.0	19.8	9.6	21.7	22.0	18.0	26.4	12.5	20.9	32.4	9.8
Cycle Q Clear(g_c), s	16.9	33.0	19.8	9.6	21.7	22.0	18.0	26.4	12.5	20.9	32.4	9.8
Prop In Lane	1.00		1.00	1.00		0.76	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	593	1062	475	313	741	359	290	933	417	355	1062	475
V/C Ratio(X)	0.91	1.03	0.68	0.97	0.92	0.93	1.02	0.93	0.51	0.96	0.99	0.37
Avail Cap(c_a), veh/h	594	1062	475	313	741	359	290	933	417	355	1062	475
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.7	38.5	33.9	49.8	42.1	42.2	46.0	39.5	34.4	43.6	38.3	30.4
Incr Delay (d2), s/veh	18.2	36.0	4.0	41.4	17.0	30.7	58.9	17.1	4.4	37.5	24.9	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	21.4	9.2	6.4	11.9	13.0	13.5	15.1	6.0	13.9	19.5	4.5
LnGrp Delay(d),s/veh	62.9	74.5	37.9	91.2	59.0	72.8	104.9	56.6	38.8	81.0	63.2	32.6
LnGrp LOS	E	F	D	F	E	E	F	E	D	F	E	C
Approach Vol, veh/h		1959			1320			1379			1568	
Approach Delay, s/veh		65.2			69.9			64.3			63.6	
Approach LOS		E			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	33.0	14.0	37.0	22.0	37.0	23.0	28.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	22.0	29.0	10.0	33.0	18.0	33.0	19.0	24.0
Max Q Clear Time (g_c+I1), s	22.9	28.4	11.6	35.0	20.0	34.4	18.9	24.0
Green Ext Time (p_c), s	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	65.6
HCM 2010 LOS	E

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	15	3	40	2	1	12	40	1423	2	47	1696	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	58	58	58	97	97	97	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	4	51	3	2	21	45	1614	2	48	1731	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2736	3545	877	2669	3555	808	1753	0	0	1616	0	0
Stage 1	1838	1838	-	1706	1706	-	-	-	-	-	-	-
Stage 2	898	1707	-	963	1849	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 10	6	292	11	6	324	353	-	-	399	-	-
Stage 1	78	125	-	95	145	-	-	-	-	-	-	-
Stage 2	301	145	-	274	123	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 7	5	292	7	5	324	353	-	-	399	-	-
Mov Cap-2 Maneuver	48	44	-	51	40	-	-	-	-	-	-	-
Stage 1	68	110	-	83	127	-	-	-	-	-	-	-
Stage 2	243	127	-	192	108	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	85.3	34.4	0.5	0.4
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	353	-	-	112	148	399	-	-
HCM Lane V/C Ratio	0.129	-	-	0.664	0.175	0.12	-	-
HCM Control Delay (s)	16.7	-	-	85.3	34.4	15.3	-	-
HCM Lane LOS	C	-	-	F	D	C	-	-
HCM 95th %tile Q(veh)	0.4	-	-	3.4	0.6	0.4	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	18	383	55	15	257	9	31	6	9	7	2	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	88	88	88	60	60	60	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	391	56	17	292	10	52	10	15	9	3	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	292	0	0	391	0	0	763	754	391	766	754	292
Stage 1	-	-	-	-	-	-	428	428	-	326	326	-
Stage 2	-	-	-	-	-	-	335	326	-	440	428	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1270	-	-	1168	-	-	321	338	658	320	338	747
Stage 1	-	-	-	-	-	-	605	585	-	687	648	-
Stage 2	-	-	-	-	-	-	679	648	-	596	585	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1270	-	-	1168	-	-	306	328	658	299	328	747
Mov Cap-2 Maneuver	-	-	-	-	-	-	306	328	-	299	328	-
Stage 1	-	-	-	-	-	-	596	577	-	677	639	-
Stage 2	-	-	-	-	-	-	653	639	-	564	577	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.4	18.4	13.5
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	345	1270	-	-	1168	-	-	452
HCM Lane V/C Ratio	0.222	0.014	-	-	0.015	-	-	0.059
HCM Control Delay (s)	18.4	7.9	-	-	8.1	-	-	13.5
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.2

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Cottonwood Ave & Driveway

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	469	312	11	0	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	81	81	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	515	385	14	0	65

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	399	0	-	0	907	392
Stage 1	-	-	-	-	392	-
Stage 2	-	-	-	-	515	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1160	-	-	-	306	657
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	600	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1160	-	-	-	306	657
Mov Cap-2 Maneuver	-	-	-	-	306	-
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	600	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1160	-	-	-	657
HCM Lane V/C Ratio	-	-	-	-	0.099
HCM Control Delay (s)	0	-	-	-	11.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	24.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	0	74	0	0	50	54	1374	102	0	1633	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	92	92	92	95	95	95	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	0	103	0	0	54	57	1446	107	0	1756	41

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2613	3443	898	2492	3411	777	1797	0	0	1554	0	0
Stage 1	1776	1776	-	1614	1614	-	-	-	-	-	-	-
Stage 2	837	1667	-	878	1797	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 12	7	282	15	7	340	340	-	-	422	-	-
Stage 1	86	134	-	108	161	-	-	-	-	-	-	-
Stage 2	327	152	-	309	131	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 9	6	282	8	6	340	340	-	-	422	-	-
Mov Cap-2 Maneuver	~ 9	6	-	8	6	-	-	-	-	-	-	-
Stage 1	72	134	-	90	134	-	-	-	-	-	-	-
Stage 2	229	127	-	196	131	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 719.5	17.6	0.6	0
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	340	-	-	54	340	422	-	-
HCM Lane V/C Ratio	0.167	-	-	2.212	0.16	-	-	-
HCM Control Delay (s)	17.7	-	-	$ 719.5	17.6	0	-	-
HCM Lane LOS	C	-	-	F	C	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	11.9	0.6	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	63	101	41	52	81	84	58	1186	56	71	1134	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	70	112	46	63	98	101	64	1303	62	79	1260	64
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.83	0.83	0.83	0.91	0.91	0.91	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	218	185	133	210	178	134	1652	739	149	1683	753
Arrive On Green	0.08	0.12	0.12	0.07	0.11	0.11	0.08	0.47	0.47	0.08	0.48	0.48
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	70	112	46	63	98	101	64	1303	62	79	1260	64
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	2.3	3.5	1.6	2.1	3.1	3.8	2.1	19.3	1.3	2.7	18.0	1.4
Cycle Q Clear(g_c), s	2.3	3.5	1.6	2.1	3.1	3.8	2.1	19.3	1.3	2.7	18.0	1.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	140	218	185	133	210	178	134	1652	739	149	1683	753
V/C Ratio(X)	0.50	0.51	0.25	0.48	0.47	0.57	0.48	0.79	0.08	0.53	0.75	0.09
Avail Cap(c_a), veh/h	200	480	408	200	480	408	200	1652	739	200	1683	753
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.4	25.8	24.9	27.6	25.8	26.1	27.5	14.0	9.2	27.3	13.3	8.9
Incr Delay (d2), s/veh	2.7	1.9	0.7	2.6	1.6	2.8	2.6	3.9	0.2	2.9	3.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.9	0.7	1.1	1.7	1.8	1.1	10.1	0.6	1.4	9.5	0.6
LnGrp Delay(d),s/veh	30.2	27.6	25.6	30.2	27.4	28.9	30.2	17.9	9.4	30.2	16.4	9.1
LnGrp LOS	C	C	C	C	C	C	C	B	A	C	B	A
Approach Vol, veh/h		228			262			1429			1403	
Approach Delay, s/veh		28.0			28.7			18.1			16.8	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	33.0	8.6	11.3	8.7	33.5	8.9	11.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	29.0	7.0	16.0	7.0	29.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	4.7	21.3	4.1	5.5	4.1	20.0	4.3	5.8
Green Ext Time (p_c), s	0.0	7.0	0.0	1.1	0.0	8.1	0.0	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	19.1
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	78	91	28	39	65	63	46	1165	27	29	1120	57
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	90	105	32	45	75	72	55	1387	32	34	1302	66
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.84	0.84	0.84	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	92	76	444	87	106	444	127	1621	37	91	1550	694
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.07	0.46	0.46	0.05	0.44	0.44
Sat Flow, veh/h	0	270	1583	0	379	1583	1774	3536	82	1774	3539	1583
Grp Volume(v), veh/h	195	0	32	120	0	72	55	693	726	34	1302	66
Grp Sat Flow(s),veh/h/ln	270	0	1583	379	0	1583	1774	1770	1848	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.8	0.0	0.0	2.0	1.7	19.9	20.0	1.1	18.7	1.4
Cycle Q Clear(g_c), s	16.0	0.0	0.8	16.0	0.0	2.0	1.7	19.9	20.0	1.1	18.7	1.4
Prop In Lane	0.46		1.00	0.37		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	168	0	444	193	0	444	127	811	847	91	1550	694
V/C Ratio(X)	1.16	0.00	0.07	0.62	0.00	0.16	0.43	0.86	0.86	0.38	0.84	0.10
Avail Cap(c_a), veh/h	168	0	444	193	0	444	218	811	847	218	1550	694
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.8	0.0	15.1	17.2	0.0	15.5	25.4	13.8	13.8	26.2	14.3	9.4
Incr Delay (d2), s/veh	119.8	0.0	0.1	6.0	0.0	0.2	2.3	11.2	10.9	2.6	5.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	0.0	0.4	1.8	0.0	0.9	0.9	12.2	12.6	0.6	10.3	0.7
LnGrp Delay(d),s/veh	141.6	0.0	15.2	23.2	0.0	15.7	27.7	25.0	24.6	28.7	19.9	9.7
LnGrp LOS	F		B	C		B	C	C	C	C	B	A
Approach Vol, veh/h		227			192			1474			1402	
Approach Delay, s/veh		123.8			20.4			24.9			19.6	
Approach LOS		F			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.9	30.2		20.0	8.1	29.0		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	25.0		16.0	7.0	25.0		16.0
Max Q Clear Time (g_c+I1), s	3.1	22.0		18.0	3.7	20.7		18.0
Green Ext Time (p_c), s	0.0	2.9		0.0	0.0	4.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	29.2
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	271	115	49	325	26	97	278	47	22	239	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	23	347	147	58	387	31	100	287	48	24	257	24
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.78	0.78	0.78	0.84	0.84	0.84	0.97	0.97	0.97	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	468	398	131	535	455	173	1084	179	69	975	90
Arrive On Green	0.04	0.25	0.25	0.07	0.29	0.29	0.10	0.36	0.36	0.04	0.30	0.30
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3041	503	1774	3275	303
Grp Volume(v), veh/h	23	347	147	58	387	31	100	166	169	24	138	143
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1774	1774	1770	1809
Q Serve(g_s), s	0.7	9.8	4.4	1.8	10.7	0.8	3.1	3.8	3.9	0.8	3.4	3.4
Cycle Q Clear(g_c), s	0.7	9.8	4.4	1.8	10.7	0.8	3.1	3.8	3.9	0.8	3.4	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		0.17
Lane Grp Cap(c), veh/h	66	468	398	131	535	455	173	630	632	69	527	538
V/C Ratio(X)	0.35	0.74	0.37	0.44	0.72	0.07	0.58	0.26	0.27	0.35	0.26	0.27
Avail Cap(c_a), veh/h	217	587	499	217	587	499	217	630	632	217	527	538
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	19.7	17.7	25.3	18.3	14.8	24.7	13.1	13.1	26.7	15.3	15.3
Incr Delay (d2), s/veh	3.1	3.8	0.6	2.3	4.0	0.1	3.0	1.0	1.0	3.0	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	5.5	2.0	1.0	6.1	0.4	1.6	2.0	2.1	0.4	1.8	1.9
LnGrp Delay(d),s/veh	29.9	23.5	18.2	27.7	22.3	14.9	27.7	14.1	14.1	29.7	16.5	16.5
LnGrp LOS	C	C	B	C	C	B	C	B	B	C	B	B
Approach Vol, veh/h		517			476			435			305	
Approach Delay, s/veh		22.3			22.5			17.2			17.5	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.2	24.4	8.2	18.3	9.6	21.0	6.1	20.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	17.0	7.0	18.0	7.0	17.0	7.0	18.0
Max Q Clear Time (g_c+I1), s	2.8	5.9	3.8	11.8	5.1	5.4	2.7	12.7
Green Ext Time (p_c), s	0.0	2.7	0.0	2.5	0.0	2.7	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	20.2
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	111	140	65	130	200	196	87	1054	75	236	901	106
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	141	177	82	228	351	344	96	1158	82	271	1036	122
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.79	0.79	0.79	0.57	0.57	0.57	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	331	281	237	414	352	125	1258	563	276	1559	697
Arrive On Green	0.09	0.18	0.18	0.13	0.22	0.22	0.07	0.36	0.36	0.16	0.44	0.44
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	141	177	82	228	351	344	96	1158	82	271	1036	122
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	7.1	7.8	4.0	11.5	16.3	19.4	4.8	28.2	3.2	13.7	20.8	4.2
Cycle Q Clear(g_c), s	7.1	7.8	4.0	11.5	16.3	19.4	4.8	28.2	3.2	13.7	20.8	4.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	158	331	281	237	414	352	125	1258	563	276	1559	697
V/C Ratio(X)	0.89	0.53	0.29	0.96	0.85	0.98	0.77	0.92	0.15	0.98	0.66	0.17
Avail Cap(c_a), veh/h	158	331	281	237	414	352	177	1258	563	276	1559	697
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.6	33.6	32.1	38.8	33.5	34.8	41.1	27.8	19.7	37.9	19.9	15.3
Incr Delay (d2), s/veh	42.5	1.7	0.6	48.3	15.1	41.9	11.8	12.3	0.5	49.0	2.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	4.1	1.8	8.8	10.1	12.6	2.8	15.8	1.5	10.5	10.6	1.9
LnGrp Delay(d),s/veh	83.1	35.3	32.7	87.1	48.7	76.6	52.9	40.1	20.3	86.9	22.2	15.8
LnGrp LOS	F	D	C	F	D	E	D	D	C	F	C	B
Approach Vol, veh/h		400			923			1336			1429	
Approach Delay, s/veh		51.6			68.6			39.8			33.9	
Approach LOS		D			E			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	36.0	16.0	20.0	10.4	43.6	12.0	24.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	14.0	32.0	12.0	16.0	9.0	37.0	8.0	20.0
Max Q Clear Time (g_c+I1), s	15.7	30.2	13.5	9.8	6.8	22.8	9.1	21.4
Green Ext Time (p_c), s	0.0	1.7	0.0	2.4	0.0	11.4	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	45.4
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	221	64	10	245	31	34	206	15	28	223	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	62	395	114	15	360	46	40	245	18	32	256	22
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.56	0.56	0.56	0.68	0.68	0.68	0.84	0.84	0.84	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	594	505	46	497	422	104	1028	75	88	984	84
Arrive On Green	0.08	0.32	0.32	0.03	0.27	0.27	0.06	0.31	0.31	0.05	0.30	0.30
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3345	244	1774	3301	282
Grp Volume(v), veh/h	62	395	114	15	360	46	40	129	134	32	136	142
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1820	1774	1770	1813
Q Serve(g_s), s	1.8	9.8	2.8	0.4	9.4	1.2	1.2	2.9	3.0	0.9	3.1	3.2
Cycle Q Clear(g_c), s	1.8	9.8	2.8	0.4	9.4	1.2	1.2	2.9	3.0	0.9	3.1	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		0.16
Lane Grp Cap(c), veh/h	140	594	505	46	497	422	104	544	559	88	527	540
V/C Ratio(X)	0.44	0.66	0.23	0.32	0.72	0.11	0.38	0.24	0.24	0.36	0.26	0.26
Avail Cap(c_a), veh/h	231	659	560	231	659	560	231	544	559	231	527	540
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.6	15.8	13.4	25.7	17.9	14.9	24.3	13.9	13.9	24.7	14.3	14.3
Incr Delay (d2), s/veh	2.2	2.2	0.2	4.0	2.7	0.1	2.3	1.0	1.0	2.5	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	5.4	1.3	0.3	5.2	0.5	0.6	1.6	1.6	0.5	1.7	1.8
LnGrp Delay(d),s/veh	25.8	18.0	13.6	29.6	20.6	15.0	26.7	14.9	14.9	27.2	15.5	15.5
LnGrp LOS	C	B	B	C	C	B	C	B	B	C	B	B
Approach Vol, veh/h		571			421			303			310	
Approach Delay, s/veh		18.0			20.3			16.5			16.7	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	20.5	5.4	21.1	7.1	20.0	8.2	18.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	2.9	5.0	2.4	11.8	3.2	5.2	3.8	11.4
Green Ext Time (p_c), s	0.0	2.2	0.0	2.8	0.0	2.2	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	18.1
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	41	30	26	34	66	33	1104	39	67	1068	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	29	48	35	34	44	86	34	1150	41	75	1200	35
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.77	0.77	0.77	0.96	0.96	0.96	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	81	126	92	92	74	145	92	1539	55	155	1688	755
Arrive On Green	0.05	0.13	0.13	0.05	0.13	0.13	0.05	0.44	0.44	0.09	0.48	0.48
Sat Flow, veh/h	1774	1003	731	1774	565	1103	1774	3486	124	1774	3539	1583
Grp Volume(v), veh/h	29	0	83	34	0	130	34	584	607	75	1200	35
Grp Sat Flow(s),veh/h/ln	1774	0	1734	1774	0	1668	1774	1770	1841	1774	1770	1583
Q Serve(g_s), s	0.9	0.0	2.4	1.0	0.0	4.0	1.0	14.9	15.0	2.2	14.6	0.6
Cycle Q Clear(g_c), s	0.9	0.0	2.4	1.0	0.0	4.0	1.0	14.9	15.0	2.2	14.6	0.6
Prop In Lane	1.00		0.42	1.00		0.66	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	81	0	217	92	0	219	92	781	812	155	1688	755
V/C Ratio(X)	0.36	0.00	0.38	0.37	0.00	0.59	0.37	0.75	0.75	0.48	0.71	0.05
Avail Cap(c_a), veh/h	228	0	510	228	0	491	228	781	812	228	1688	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.2	0.0	21.8	24.9	0.0	22.2	24.9	12.7	12.7	23.6	11.3	7.6
Incr Delay (d2), s/veh	2.7	0.0	1.1	2.5	0.0	2.5	2.5	6.4	6.2	2.3	2.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	1.2	0.6	0.0	2.0	0.6	8.5	8.8	1.2	7.6	0.3
LnGrp Delay(d),s/veh	27.8	0.0	22.9	27.4	0.0	24.8	27.4	19.1	18.9	26.0	13.8	7.7
LnGrp LOS	C		C	C		C	C	B	B	C	B	A
Approach Vol, veh/h		112			164			1225			1310	
Approach Delay, s/veh		24.2			25.3			19.2			14.4	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	28.0	6.8	10.8	6.8	29.9	6.5	11.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	24.0	7.0	16.0	7.0	24.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	4.2	17.0	3.0	4.4	3.0	16.6	2.9	6.0
Green Ext Time (p_c), s	0.0	6.2	0.0	0.8	0.0	6.5	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	17.5
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	375	519	232	239	489	179	308	739	140	211	693	183
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	417	577	258	278	569	208	338	812	154	229	753	199
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.86	0.86	0.86	0.91	0.91	0.91	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	435	765	342	360	720	257	375	1153	516	268	939	420
Arrive On Green	0.13	0.22	0.22	0.10	0.19	0.19	0.21	0.33	0.33	0.15	0.27	0.27
Sat Flow, veh/h	3442	3539	1583	3442	3701	1319	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	417	577	258	278	520	257	338	812	154	229	753	199
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1630	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	9.5	12.1	12.1	6.2	11.5	11.9	14.7	15.9	5.7	10.0	15.7	8.4
Cycle Q Clear(g_c), s	9.5	12.1	12.1	6.2	11.5	11.9	14.7	15.9	5.7	10.0	15.7	8.4
Prop In Lane	1.00		1.00	1.00		0.81	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	435	765	342	360	660	317	375	1153	516	268	939	420
V/C Ratio(X)	0.96	0.75	0.75	0.77	0.79	0.81	0.90	0.70	0.30	0.85	0.80	0.47
Avail Cap(c_a), veh/h	435	765	342	392	686	330	381	1153	516	292	939	420
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	29.0	29.0	34.5	30.3	30.5	30.4	23.3	19.9	32.7	27.1	24.4
Incr Delay (d2), s/veh	32.6	4.3	9.1	8.5	5.9	13.7	23.6	3.6	1.5	20.1	7.2	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	6.3	6.1	3.4	6.0	6.6	9.6	8.4	2.7	6.4	8.6	4.1
LnGrp Delay(d),s/veh	66.9	33.3	38.1	43.0	36.2	44.1	54.0	27.0	21.4	52.8	34.3	28.2
LnGrp LOS	E	C	D	D	D	D	D	C	C	D	C	C
Approach Vol, veh/h		1252			1055			1304			1181	
Approach Delay, s/veh		45.5			39.9			33.3			36.8	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.9	29.8	12.3	21.1	20.7	25.0	14.0	19.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	13.0	25.0	9.0	17.0	17.0	21.0	10.0	16.0
Max Q Clear Time (g_c+I1), s	12.0	17.9	8.2	14.1	16.7	17.7	11.5	13.9
Green Ext Time (p_c), s	0.1	5.4	0.1	2.2	0.0	2.7	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	38.8
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	20	4	30	3	7	15	41	1265	3	38	1170	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	72	72	72	89	89	89	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	6	46	4	10	21	51	1563	4	44	1345	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2331	3112	683	2430	3121	784	1367	0	0	1567	0	0
Stage 1	1443	1443	-	1667	1667	-	-	-	-	-	-	-
Stage 2	888	1669	-	763	1454	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 20	11	392	17	11	336	498	-	-	417	-	-
Stage 1	139	196	-	100	152	-	-	-	-	-	-	-
Stage 2	305	151	-	363	193	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 14	9	392	12	~ 9	336	498	-	-	417	-	-
Mov Cap-2 Maneuver	75	59	-	63	63	-	-	-	-	-	-	-
Stage 1	125	175	-	90	136	-	-	-	-	-	-	-
Stage 2	238	136	-	276	173	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	71.1	45.4	0.4	0.5
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	498	-	-	131	123	417	-	-
HCM Lane V/C Ratio	0.102	-	-	0.634	0.282	0.105	-	-
HCM Control Delay (s)	13	-	-	71.1	45.4	14.6	-	-
HCM Lane LOS	B	-	-	F	E	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-	3.3	1.1	0.3	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	25	343	46	3	289	4	34	4	10	2	2	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	57	57	57	58	58	58	79	79	79	65	65	65
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	602	81	5	498	7	43	5	13	3	3	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	498	0	0	602	0	0	1207	1198	602	1207	1198	498
Stage 1	-	-	-	-	-	-	689	689	-	509	509	-
Stage 2	-	-	-	-	-	-	518	509	-	698	689	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1066	-	-	975	-	-	160	186	500	160	186	572
Stage 1	-	-	-	-	-	-	436	446	-	547	538	-
Stage 2	-	-	-	-	-	-	541	538	-	431	446	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1066	-	-	975	-	-	148	177	500	147	177	572
Mov Cap-2 Maneuver	-	-	-	-	-	-	148	177	-	147	177	-
Stage 1	-	-	-	-	-	-	418	428	-	524	535	-
Stage 2	-	-	-	-	-	-	521	535	-	398	428	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.1	35.9	16.7
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	176	1066	-	-	975	-	-	330
HCM Lane V/C Ratio	0.345	0.041	-	-	0.005	-	-	0.065
HCM Control Delay (s)	35.9	8.5	-	-	8.7	-	-	16.7
HCM Lane LOS	E	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.4	0.1	-	-	0	-	-	0.2

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Cottonwood Ave & Driveway

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	301	367	16	0	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	81	81	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	391	453	20	0	92

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	473	0	-	0	854	463
Stage 1	-	-	-	-	463	-
Stage 2	-	-	-	-	391	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1089	-	-	-	329	599
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	683	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1089	-	-	-	329	599
Mov Cap-2 Maneuver	-	-	-	-	329	-
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	683	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1089	-	-	-	599
HCM Lane V/C Ratio	-	-	-	-	0.154
HCM Control Delay (s)	0	-	-	-	12.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.5

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	26

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	21	0	78	0	0	71	70	1212	139	0	1150	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	92	92	92	82	82	82	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	0	98	0	0	77	85	1478	170	0	1337	44

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2269	3177	691	2403	3115	824	1381	0	0	1648	0	0
Stage 1	1359	1359	-	1734	1734	-	-	-	-	-	-	-
Stage 2	910	1818	-	669	1381	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 22	10	387	17	11	316	492	-	-	388	-	-
Stage 1	157	215	-	91	141	-	-	-	-	-	-	-
Stage 2	296	128	-	413	210	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 14	8	387	11	9	316	492	-	-	388	-	-
Mov Cap-2 Maneuver	~ 14	8	-	11	9	-	-	-	-	-	-	-
Stage 1	130	215	-	75	117	-	-	-	-	-	-	-
Stage 2	185	106	-	309	210	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 675.2	20	0.7	0
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	492	-	-	58	316	388	-	-
HCM Lane V/C Ratio	0.174	-	-	2.134	0.244	-	-	-
HCM Control Delay (s)	13.8	-	-	$ 675.2	20	0	-	-
HCM Lane LOS	B	-	-	F	C	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	12.1	0.9	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	39	92	62	112	158	199	63	1394	66	78	1134	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	57	133	90	127	180	226	72	1602	76	89	1289	36
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.69	0.69	0.69	0.88	0.88	0.88	0.87	0.87	0.87	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	276	235	145	315	268	119	1813	811	127	1830	819
Arrive On Green	0.06	0.15	0.15	0.08	0.17	0.17	0.07	0.51	0.51	0.07	0.52	0.52
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	57	133	90	127	180	226	72	1602	76	89	1289	36
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	2.7	5.6	4.4	6.1	7.6	11.9	3.4	34.6	2.1	4.2	23.8	1.0
Cycle Q Clear(g_c), s	2.7	5.6	4.4	6.1	7.6	11.9	3.4	34.6	2.1	4.2	23.8	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	107	276	235	145	315	268	119	1813	811	127	1830	819
V/C Ratio(X)	0.53	0.48	0.38	0.88	0.57	0.84	0.61	0.88	0.09	0.70	0.70	0.04
Avail Cap(c_a), veh/h	145	347	295	145	347	295	145	1813	811	145	1830	819
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.2	33.6	33.0	39.0	32.8	34.6	39.0	18.7	10.7	39.0	15.8	10.2
Incr Delay (d2), s/veh	4.0	1.3	1.0	41.4	1.8	18.2	4.9	6.7	0.2	12.0	2.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	3.0	2.0	4.6	4.1	6.5	1.8	18.4	1.0	2.5	12.0	0.4
LnGrp Delay(d),s/veh	43.2	34.9	34.1	80.5	34.7	52.8	43.9	25.4	11.0	51.0	18.1	10.3
LnGrp LOS	D	C	C	F	C	D	D	C	B	D	B	B
Approach Vol, veh/h		280			533			1750			1414	
Approach Delay, s/veh		36.3			53.3			25.5			19.9	
Approach LOS		D			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	48.0	11.0	16.7	9.7	48.4	9.2	18.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	44.0	7.0	16.0	7.0	44.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	6.2	36.6	8.1	7.6	5.4	25.8	4.7	13.9
Green Ext Time (p_c), s	0.0	7.0	0.0	1.8	0.0	16.3	0.0	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	28.0
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	74	77	50	67	102	62	47	1402	27	35	1201	79
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	85	89	57	89	136	83	55	1630	31	42	1430	94
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.87	0.87	0.87	0.75	0.75	0.75	0.86	0.86	0.86	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	79	58	375	74	68	375	118	1878	36	100	1835	821
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.07	0.53	0.53	0.06	0.52	0.52
Sat Flow, veh/h	0	243	1583	0	289	1583	1774	3553	67	1774	3539	1583
Grp Volume(v), veh/h	174	0	57	225	0	83	55	811	850	42	1430	94
Grp Sat Flow(s),veh/h/ln	243	0	1583	289	0	1583	1774	1770	1851	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	1.9	0.0	0.0	2.8	2.0	26.9	27.0	1.5	22.0	2.1
Cycle Q Clear(g_c), s	16.0	0.0	1.9	16.0	0.0	2.8	2.0	26.9	27.0	1.5	22.0	2.1
Prop In Lane	0.49		1.00	0.40		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	137	0	375	143	0	375	118	936	979	100	1835	821
V/C Ratio(X)	1.27	0.00	0.15	1.58	0.00	0.22	0.46	0.87	0.87	0.42	0.78	0.11
Avail Cap(c_a), veh/h	137	0	375	143	0	375	184	936	979	184	1835	821
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.5	0.0	20.4	26.7	0.0	20.7	30.3	13.8	13.9	30.8	13.1	8.3
Incr Delay (d2), s/veh	167.0	0.0	0.2	289.8	0.0	0.3	2.8	10.6	10.4	2.8	3.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	0.0	0.9	14.1	0.0	1.3	1.1	15.8	16.5	0.8	11.6	1.0
LnGrp Delay(d),s/veh	194.5	0.0	20.6	316.5	0.0	21.0	33.2	24.4	24.3	33.5	16.5	8.6
LnGrp LOS	F		C	F		C	C	C	C	C	B	A
Approach Vol, veh/h		231			308			1716			1566	
Approach Delay, s/veh		151.6			236.9			24.6			16.5	
Approach LOS		F			F			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.8	39.7		20.0	8.5	39.0		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	35.0		16.0	7.0	35.0		16.0
Max Q Clear Time (g_c+I1), s	3.5	29.0		18.0	4.0	24.0		18.0
Green Ext Time (p_c), s	0.0	5.7		0.0	0.0	10.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	46.1
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	333	138	49	412	92	103	330	32	59	408	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	59	392	162	64	542	121	130	418	41	68	469	60
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.76	0.76	0.76	0.79	0.79	0.79	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	128	567	482	134	574	488	180	920	90	139	819	104
Arrive On Green	0.07	0.30	0.30	0.08	0.31	0.31	0.10	0.28	0.28	0.08	0.26	0.26
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3258	318	1774	3159	402
Grp Volume(v), veh/h	59	392	162	64	542	121	130	226	233	68	262	267
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1807	1774	1770	1792
Q Serve(g_s), s	2.0	11.4	4.9	2.1	17.5	3.5	4.4	6.5	6.6	2.3	7.9	8.0
Cycle Q Clear(g_c), s	2.0	11.4	4.9	2.1	17.5	3.5	4.4	6.5	6.6	2.3	7.9	8.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.18	1.00		0.22
Lane Grp Cap(c), veh/h	128	567	482	134	574	488	180	500	510	139	459	465
V/C Ratio(X)	0.46	0.69	0.34	0.48	0.94	0.25	0.72	0.45	0.46	0.49	0.57	0.58
Avail Cap(c_a), veh/h	201	574	488	201	574	488	201	500	510	201	459	465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.5	18.9	16.6	27.3	20.8	16.0	26.9	18.2	18.2	27.3	19.9	19.9
Incr Delay (d2), s/veh	2.6	3.5	0.4	2.6	24.6	0.3	10.8	2.9	2.9	2.7	5.1	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	6.4	2.2	1.1	12.8	1.6	2.7	3.5	3.6	1.2	4.5	4.6
LnGrp Delay(d),s/veh	30.0	22.4	17.0	30.0	45.5	16.3	37.6	21.2	21.2	29.9	24.9	25.0
LnGrp LOS	C	C	B	C	D	B	D	C	C	C	C	C
Approach Vol, veh/h		613			727			589			597	
Approach Delay, s/veh		21.7			39.3			24.8			25.5	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	21.4	8.7	22.8	10.2	20.0	8.5	23.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	4.3	8.6	4.1	13.4	6.4	10.0	4.0	19.5
Green Ext Time (p_c), s	0.0	3.4	0.0	3.0	0.0	2.9	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	28.4
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	103	195	75	104	248	207	79	1175	74	137	1108	98
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	129	244	94	141	335	280	96	1433	90	163	1319	117
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.80	0.80	0.80	0.74	0.74	0.74	0.82	0.82	0.82	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	350	298	158	371	315	126	1575	704	178	1679	751
Arrive On Green	0.08	0.19	0.19	0.09	0.20	0.20	0.07	0.44	0.44	0.10	0.47	0.47
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	129	244	94	141	335	280	96	1433	90	163	1319	117
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.5	11.0	4.6	7.1	15.8	15.5	4.8	34.0	3.0	8.2	28.1	3.8
Cycle Q Clear(g_c), s	6.5	11.0	4.6	7.1	15.8	15.5	4.8	34.0	3.0	8.2	28.1	3.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	350	298	158	371	315	126	1575	704	178	1679	751
V/C Ratio(X)	0.93	0.70	0.32	0.89	0.90	0.89	0.76	0.91	0.13	0.92	0.79	0.16
Avail Cap(c_a), veh/h	138	352	299	158	373	317	138	1575	704	178	1679	751
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.2	34.1	31.5	40.5	35.2	35.0	41.0	23.3	14.7	40.1	19.8	13.4
Incr Delay (d2), s/veh	56.7	5.9	0.6	42.2	24.4	24.8	20.4	9.4	0.4	44.7	3.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	6.2	2.1	5.3	10.6	8.9	3.1	18.6	1.4	6.2	14.4	1.7
LnGrp Delay(d),s/veh	98.0	40.0	32.1	82.8	59.6	59.8	61.4	32.7	15.1	84.7	23.6	13.9
LnGrp LOS	F	D	C	F	E	E	E	C	B	F	C	B
Approach Vol, veh/h		467			756			1619			1599	
Approach Delay, s/veh		54.4			64.0			33.4			29.1	
Approach LOS		D			E			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	44.0	12.0	20.9	10.4	46.6	11.0	21.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	40.0	8.0	17.0	7.0	42.0	7.0	18.0
Max Q Clear Time (g_c+I1), s	10.2	36.0	9.1	13.0	6.8	30.1	8.5	17.8
Green Ext Time (p_c), s	0.0	3.9	0.0	1.7	0.0	10.9	0.0	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	39.3
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	105	263	79	47	365	142	109	347	30	34	281	45
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	148	370	111	69	537	209	127	403	35	47	385	62
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.71	0.71	0.71	0.68	0.68	0.68	0.86	0.86	0.86	0.73	0.73	0.73
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	182	647	550	133	595	505	166	931	81	107	763	122
Arrive On Green	0.10	0.35	0.35	0.07	0.32	0.32	0.09	0.28	0.28	0.06	0.25	0.25
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3297	285	1774	3058	489
Grp Volume(v), veh/h	148	370	111	69	537	209	127	215	223	47	222	225
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1812	1774	1770	1777
Q Serve(g_s), s	5.6	11.0	3.4	2.5	18.8	7.1	4.8	6.8	6.8	1.7	7.3	7.4
Cycle Q Clear(g_c), s	5.6	11.0	3.4	2.5	18.8	7.1	4.8	6.8	6.8	1.7	7.3	7.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		0.27
Lane Grp Cap(c), veh/h	182	647	550	133	595	505	166	500	512	107	442	443
V/C Ratio(X)	0.81	0.57	0.20	0.52	0.90	0.41	0.77	0.43	0.43	0.44	0.50	0.51
Avail Cap(c_a), veh/h	182	647	550	182	629	535	182	500	512	182	442	443
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.9	18.1	15.6	30.3	22.2	18.2	30.1	20.0	20.0	30.9	21.9	22.0
Incr Delay (d2), s/veh	23.5	1.2	0.2	3.1	15.9	0.5	16.1	2.7	2.7	2.8	4.0	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	5.9	1.5	1.4	12.2	3.1	3.1	3.7	3.8	0.9	4.1	4.1
LnGrp Delay(d),s/veh	53.4	19.3	15.8	33.4	38.1	18.7	46.3	22.7	22.7	33.7	26.0	26.1
LnGrp LOS	D	B	B	C	D	B	D	C	C	C	C	C
Approach Vol, veh/h		629			815			565			494	
Approach Delay, s/veh		26.7			32.7			28.0			26.7	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	23.2	9.1	27.6	10.4	21.0	11.0	25.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	17.0	7.0	23.0	7.0	17.0	7.0	23.0
Max Q Clear Time (g_c+I1), s	3.7	8.8	4.5	13.0	6.8	9.4	7.6	20.8
Green Ext Time (p_c), s	0.0	3.1	0.0	4.5	0.0	3.0	0.0	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	29.0
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	90	52	88	44	63	104	61	1193	60	98	1068	83
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	122	70	119	52	74	122	66	1283	65	121	1319	102
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.74	0.74	0.74	0.85	0.85	0.85	0.93	0.93	0.93	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	164	115	196	114	100	165	130	1453	74	163	1567	701
Arrive On Green	0.09	0.19	0.19	0.06	0.16	0.16	0.07	0.42	0.42	0.09	0.44	0.44
Sat Flow, veh/h	1774	621	1056	1774	634	1045	1774	3428	173	1774	3539	1583
Grp Volume(v), veh/h	122	0	189	52	0	196	66	661	687	121	1319	102
Grp Sat Flow(s),veh/h/ln	1774	0	1676	1774	0	1678	1774	1770	1832	1774	1770	1583
Q Serve(g_s), s	4.6	0.0	7.1	1.9	0.0	7.6	2.5	23.5	23.6	4.5	22.6	2.6
Cycle Q Clear(g_c), s	4.6	0.0	7.1	1.9	0.0	7.6	2.5	23.5	23.6	4.5	22.6	2.6
Prop In Lane	1.00		0.63	1.00		0.62	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	164	0	312	114	0	265	130	750	777	163	1567	701
V/C Ratio(X)	0.75	0.00	0.61	0.46	0.00	0.74	0.51	0.88	0.88	0.74	0.84	0.15
Avail Cap(c_a), veh/h	182	0	392	182	0	393	182	750	777	182	1567	701
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	25.5	30.9	0.0	27.5	30.5	18.1	18.2	30.3	16.9	11.4
Incr Delay (d2), s/veh	14.0	0.0	1.9	2.8	0.0	4.0	3.1	14.1	13.9	13.5	5.7	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	3.4	1.0	0.0	3.8	1.3	14.3	14.8	2.8	12.2	1.2
LnGrp Delay(d),s/veh	44.2	0.0	27.4	33.7	0.0	31.5	33.6	32.3	32.1	43.7	22.6	11.8
LnGrp LOS	D		C	C		C	C	C	C	D	C	B
Approach Vol, veh/h		311			248			1414			1542	
Approach Delay, s/veh		34.0			32.0			32.2			23.5	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	33.0	8.4	16.7	9.0	34.3	10.3	14.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	29.0	7.0	16.0	7.0	29.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	6.5	25.6	3.9	9.1	4.5	24.6	6.6	9.6
Green Ext Time (p_c), s	0.0	3.2	0.0	1.3	0.0	4.1	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	28.6
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	206	458	100	205	891	245	267	917	211	239	684	239
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	251	559	122	241	1048	288	284	976	224	285	814	285
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.82	0.82	0.82	0.85	0.85	0.85	0.94	0.94	0.94	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	301	861	385	325	993	273	322	1018	455	310	995	445
Arrive On Green	0.09	0.24	0.24	0.09	0.25	0.25	0.18	0.29	0.29	0.17	0.28	0.28
Sat Flow, veh/h	3442	3539	1583	3442	3970	1090	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	251	559	122	241	895	441	284	976	224	285	814	285
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1670	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.7	11.4	5.1	5.5	20.0	20.0	12.5	21.7	9.4	12.6	17.2	12.6
Cycle Q Clear(g_c), s	5.7	11.4	5.1	5.5	20.0	20.0	12.5	21.7	9.4	12.6	17.2	12.6
Prop In Lane	1.00		1.00	1.00		0.65	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	301	861	385	325	848	418	322	1018	455	310	995	445
V/C Ratio(X)	0.83	0.65	0.32	0.74	1.06	1.06	0.88	0.96	0.49	0.92	0.82	0.64
Avail Cap(c_a), veh/h	301	861	385	387	848	418	333	1018	455	310	995	445
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.9	27.2	24.8	35.3	30.0	30.0	31.9	28.0	23.7	32.4	26.8	25.2
Incr Delay (d2), s/veh	17.9	1.7	0.5	6.2	46.7	59.7	22.7	19.9	3.8	30.8	7.5	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	5.7	2.2	2.9	14.8	16.1	8.1	13.4	4.6	8.8	9.4	6.4
LnGrp Delay(d),s/veh	53.8	28.9	25.3	41.5	76.7	89.7	54.6	48.0	27.4	63.3	34.3	32.1
LnGrp LOS	D	C	C	D	F	F	D	D	C	E	C	C
Approach Vol, veh/h		932			1577			1484			1384	
Approach Delay, s/veh		35.1			75.0			46.1			39.8	
Approach LOS		D			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	27.0	11.5	23.5	18.5	26.5	11.0	24.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	14.0	23.0	9.0	18.0	15.0	22.0	7.0	20.0
Max Q Clear Time (g_c+I1), s	14.6	23.7	7.5	13.4	14.5	19.2	7.7	22.0
Green Ext Time (p_c), s	0.0	0.0	0.1	3.8	0.0	2.5	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	51.1
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	2	41	2	1	18	38	1489	4	14	1277	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	68	68	68	87	87	87	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	3	61	3	1	26	48	1883	5	16	1451	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2532	3478	737	2740	3487	944	1474	0	0	1888	0	0
Stage 1	1494	1494	-	1981	1981	-	-	-	-	-	-	-
Stage 2	1038	1984	-	759	1506	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 14	6	361	9	6	263	453	-	-	313	-	-
Stage 1	129	185	-	63	106	-	-	-	-	-	-	-
Stage 2	247	105	-	365	182	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 11	5	361	6	5	263	453	-	-	313	-	-
Mov Cap-2 Maneuver	69	51	-	43	52	-	-	-	-	-	-	-
Stage 1	115	176	-	56	95	-	-	-	-	-	-	-
Stage 2	196	94	-	283	173	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	47.8	33.5	0.3	0.2
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	453	-	-	164	157	313	-	-
HCM Lane V/C Ratio	0.106	-	-	0.51	0.197	0.051	-	-
HCM Control Delay (s)	13.9	-	-	47.8	33.5	17.1	-	-
HCM Lane LOS	B	-	-	E	D	C	-	-
HCM 95th %tile Q(veh)	0.4	-	-	2.5	0.7	0.2	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	350	13	36	476	19	30	11	42	34	12	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	70	70	70	67	67	67	64	64	64
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	455	17	51	680	27	45	16	63	53	19	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	680	0	0	455	0	0	1285	1264	455	1303	1264	680
Stage 1	-	-	-	-	-	-	481	481	-	783	783	-
Stage 2	-	-	-	-	-	-	804	783	-	520	481	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	912	-	-	1106	-	-	142	169	605	138	169	451
Stage 1	-	-	-	-	-	-	566	554	-	387	404	-
Stage 2	-	-	-	-	-	-	377	404	-	539	554	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	912	-	-	1106	-	-	117	159	605	109	159	451
Mov Cap-2 Maneuver	-	-	-	-	-	-	117	159	-	109	159	-
Stage 1	-	-	-	-	-	-	558	546	-	381	385	-
Stage 2	-	-	-	-	-	-	324	385	-	462	546	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.6	44.2	68
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	210	912	-	-	1106	-	-	145
HCM Lane V/C Ratio	0.59	0.014	-	-	0.046	-	-	0.657
HCM Control Delay (s)	44.2	9	-	-	8.4	-	-	68
HCM Lane LOS	E	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	3.3	0	-	-	0.1	-	-	3.6

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Cottonwood Ave & Driveway

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	366	528	10	0	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	78	78	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	488	677	13	0	53

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	690	0	-	0	1171	683
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	488	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	905	-	-	-	213	449
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	617	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	905	-	-	-	213	449
Mov Cap-2 Maneuver	-	-	-	-	213	-
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	617	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	905	-	-	-	449
HCM Lane V/C Ratio	-	-	-	-	0.119
HCM Control Delay (s)	0	-	-	-	14.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	11	0	0	44	14	1430	49	39	1296	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	62	62	62	92	92	92	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	18	0	0	48	16	1682	58	46	1525	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2492	3391	764	2598	3364	870	1528	0	0	1740	0	0
Stage 1	1618	1618	-	1744	1744	-	-	-	-	-	-	-
Stage 2	874	1773	-	854	1620	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	15	7	346	12	8	295	432	-	-	358	-	-
Stage 1	108	161	-	90	139	-	-	-	-	-	-	-
Stage 2	311	134	-	320	160	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	11	6	346	10	7	295	432	-	-	358	-	-
Mov Cap-2 Maneuver	11	6	-	10	7	-	-	-	-	-	-	-
Stage 1	104	140	-	87	134	-	-	-	-	-	-	-
Stage 2	251	129	-	265	139	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16	19.6	0.1	0.5
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	432	-	-	346	295	358	-	-
HCM Lane V/C Ratio	0.038	-	-	0.051	0.162	0.128	-	-
HCM Control Delay (s)	13.7	-	-	16	19.6	16.5	-	-
HCM Lane LOS	B	-	-	C	C	C	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.6	0.4	-	-

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	68	199	76	69	131	95	68	1280	89	121	1630	75
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	80	234	89	99	187	136	71	1333	93	126	1698	78
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.70	0.70	0.70	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	293	249	131	302	256	118	1743	780	157	1821	815
Arrive On Green	0.07	0.16	0.16	0.07	0.16	0.16	0.07	0.49	0.49	0.09	0.51	0.51
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	80	234	89	99	187	136	71	1333	93	126	1698	78
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.8	10.3	4.3	4.7	8.0	6.7	3.3	26.2	2.7	6.0	38.3	2.2
Cycle Q Clear(g_c), s	3.8	10.3	4.3	4.7	8.0	6.7	3.3	26.2	2.7	6.0	38.3	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	124	293	249	131	302	256	118	1743	780	157	1821	815
V/C Ratio(X)	0.65	0.80	0.36	0.75	0.62	0.53	0.60	0.76	0.12	0.80	0.93	0.10
Avail Cap(c_a), veh/h	145	349	296	145	349	296	145	1743	780	187	1821	815
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.8	34.7	32.2	38.8	33.4	32.8	38.8	17.7	11.7	38.2	19.4	10.6
Incr Delay (d2), s/veh	7.6	10.5	0.9	18.0	2.6	1.7	4.8	3.3	0.3	18.6	10.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	6.2	1.9	2.9	4.3	3.1	1.8	13.6	1.2	3.7	21.2	1.0
LnGrp Delay(d),s/veh	46.3	45.2	33.0	56.8	36.0	34.5	43.6	20.9	12.0	56.9	29.6	10.8
LnGrp LOS	D	D	C	E	D	C	D	C	B	E	C	B
Approach Vol, veh/h		403			422			1497			1902	
Approach Delay, s/veh		42.7			40.4			21.4			30.6	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.6	46.1	10.3	17.5	9.7	48.0	10.0	17.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	42.0	7.0	16.0	7.0	44.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	8.0	28.2	6.7	12.3	5.3	40.3	5.8	10.0
Green Ext Time (p_c), s	0.0	12.9	0.0	1.1	0.0	3.6	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	29.5
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	64	102	28	32	94	64	30	1340	47	79	1586	89
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	72	115	31	36	106	72	31	1396	49	81	1635	92
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.96	0.96	0.96	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	79	92	400	71	157	400	82	1653	58	149	1810	810
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.05	0.47	0.47	0.08	0.51	0.51
Sat Flow, veh/h	0	364	1583	0	619	1583	1774	3488	122	1774	3539	1583
Grp Volume(v), veh/h	187	0	31	142	0	72	31	707	738	81	1635	92
Grp Sat Flow(s),veh/h/ln	364	0	1583	619	0	1583	1774	1770	1841	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.9	0.0	0.0	2.3	1.1	22.2	22.3	2.8	26.6	1.9
Cycle Q Clear(g_c), s	16.0	0.0	0.9	16.0	0.0	2.3	1.1	22.2	22.3	2.8	26.6	1.9
Prop In Lane	0.39		1.00	0.25		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	171	0	400	228	0	400	82	838	872	149	1810	810
V/C Ratio(X)	1.09	0.00	0.08	0.62	0.00	0.18	0.38	0.84	0.85	0.54	0.90	0.11
Avail Cap(c_a), veh/h	171	0	400	228	0	400	196	838	872	196	1810	810
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.9	0.0	18.0	20.0	0.0	18.5	29.3	14.6	14.6	27.8	14.1	8.0
Incr Delay (d2), s/veh	96.5	0.0	0.1	5.2	0.0	0.2	2.8	10.1	9.9	3.1	7.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	0.0	0.4	2.3	0.0	1.0	0.6	13.0	13.7	1.5	14.7	0.9
LnGrp Delay(d),s/veh	120.4	0.0	18.1	25.2	0.0	18.7	32.1	24.7	24.5	30.9	21.9	8.3
LnGrp LOS	F		B	C		B	C	C	C	C	C	A
Approach Vol, veh/h		218			214			1476			1808	
Approach Delay, s/veh		105.8			23.0			24.8			21.6	
Approach LOS		F			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.3	34.0		20.0	6.9	36.4		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	30.0		16.0	7.0	30.0		16.0
Max Q Clear Time (g_c+I1), s	4.8	24.3		18.0	3.1	28.6		18.0
Green Ext Time (p_c), s	0.0	5.5		0.0	0.0	1.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	27.9
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	384	162	45	303	41	88	438	60	31	374	47
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	54	452	191	55	370	50	106	528	72	33	394	49
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.82	0.82	0.82	0.83	0.83	0.83	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	123	544	463	125	546	464	173	996	135	88	856	106
Arrive On Green	0.07	0.29	0.29	0.07	0.29	0.29	0.10	0.32	0.32	0.05	0.27	0.27
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3132	426	1774	3171	392
Grp Volume(v), veh/h	54	452	191	55	370	50	106	298	302	33	219	224
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1788	1774	1770	1794
Q Serve(g_s), s	1.7	13.4	5.8	1.8	10.4	1.4	3.4	8.2	8.2	1.1	6.1	6.2
Cycle Q Clear(g_c), s	1.7	13.4	5.8	1.8	10.4	1.4	3.4	8.2	8.2	1.1	6.1	6.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		0.22
Lane Grp Cap(c), veh/h	123	544	463	125	546	464	173	563	568	88	478	484
V/C Ratio(X)	0.44	0.83	0.41	0.44	0.68	0.11	0.61	0.53	0.53	0.38	0.46	0.46
Avail Cap(c_a), veh/h	210	597	508	210	597	508	210	563	568	210	478	484
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.5	19.6	16.9	26.4	18.5	15.3	25.7	16.6	16.6	27.3	18.0	18.1
Incr Delay (d2), s/veh	2.4	9.0	0.6	2.4	2.7	0.1	3.6	3.5	3.5	2.6	3.1	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	8.3	2.6	0.9	5.8	0.6	1.8	4.5	4.6	0.6	3.4	3.5
LnGrp Delay(d),s/veh	28.9	28.6	17.5	28.9	21.2	15.4	29.3	20.1	20.1	29.9	21.2	21.2
LnGrp LOS	C	C	B	C	C	B	C	C	C	C	C	C
Approach Vol, veh/h		697			475			706			476	
Approach Delay, s/veh		25.5			21.5			21.5			21.8	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	22.8	8.2	21.3	9.8	20.0	8.1	21.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	3.1	10.2	3.8	15.4	5.4	8.2	3.7	12.4
Green Ext Time (p_c), s	0.0	2.9	0.0	1.9	0.0	3.7	0.0	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	22.8
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	120	232	72	85	173	115	74	1244	59	190	1385	131
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	141	273	85	109	222	147	79	1323	63	202	1473	139
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.78	0.78	0.78	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	161	326	277	137	300	255	121	1530	685	236	1761	788
Arrive On Green	0.09	0.17	0.17	0.08	0.16	0.16	0.07	0.43	0.43	0.13	0.50	0.50
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	141	273	85	109	222	147	79	1323	63	202	1473	139
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.9	12.5	4.1	5.3	10.0	7.5	3.8	29.8	2.1	9.8	31.5	4.2
Cycle Q Clear(g_c), s	6.9	12.5	4.1	5.3	10.0	7.5	3.8	29.8	2.1	9.8	31.5	4.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	161	326	277	137	300	255	121	1530	685	236	1761	788
V/C Ratio(X)	0.87	0.84	0.31	0.79	0.74	0.58	0.65	0.86	0.09	0.85	0.84	0.18
Avail Cap(c_a), veh/h	161	360	306	141	339	288	141	1530	685	242	1761	788
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.4	35.0	31.6	39.9	35.1	34.1	39.9	22.6	14.7	37.3	19.0	12.2
Incr Delay (d2), s/veh	37.2	14.7	0.6	25.5	7.3	2.2	8.3	6.8	0.3	24.1	4.9	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	7.7	1.9	3.6	5.7	3.5	2.1	16.0	1.0	6.4	16.3	2.0
LnGrp Delay(d),s/veh	76.7	49.8	32.2	65.4	42.4	36.3	48.2	29.4	15.0	61.4	23.9	12.6
LnGrp LOS	E	D	C	E	D	D	D	C	B	E	C	B
Approach Vol, veh/h		499			478			1465			1814	
Approach Delay, s/veh		54.4			45.8			29.8			27.2	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.7	42.0	10.8	19.4	10.0	47.7	12.0	18.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	12.0	38.0	7.0	17.0	7.0	43.0	8.0	16.0
Max Q Clear Time (g_c+I1), s	11.8	31.8	7.3	14.5	5.8	33.5	8.9	12.0
Green Ext Time (p_c), s	0.0	5.9	0.0	0.9	0.0	8.9	0.0	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	33.4
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	264	57	31	235	43	31	355	19	39	322	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	22	326	70	34	255	47	35	403	22	41	339	21
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.81	0.81	0.81	0.92	0.92	0.92	0.88	0.88	0.88	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	65	461	392	93	491	417	96	1091	59	108	1105	68
Arrive On Green	0.04	0.25	0.25	0.05	0.26	0.26	0.05	0.32	0.32	0.06	0.33	0.33
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3414	186	1774	3387	209
Grp Volume(v), veh/h	22	326	70	34	255	47	35	208	217	41	176	184
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1830	1774	1770	1826
Q Serve(g_s), s	0.6	8.0	1.7	0.9	5.9	1.1	1.0	4.5	4.6	1.1	3.7	3.8
Cycle Q Clear(g_c), s	0.6	8.0	1.7	0.9	5.9	1.1	1.0	4.5	4.6	1.1	3.7	3.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		0.11
Lane Grp Cap(c), veh/h	65	461	392	93	491	417	96	565	585	108	578	596
V/C Ratio(X)	0.34	0.71	0.18	0.36	0.52	0.11	0.37	0.37	0.37	0.38	0.31	0.31
Avail Cap(c_a), veh/h	248	707	601	248	707	601	248	565	585	248	578	596
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.5	17.2	14.8	22.9	15.7	14.0	22.9	13.1	13.2	22.6	12.6	12.6
Incr Delay (d2), s/veh	3.0	2.0	0.2	2.4	0.9	0.1	2.3	1.8	1.8	2.2	1.4	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	4.3	0.8	0.5	3.1	0.5	0.5	2.5	2.6	0.6	2.0	2.1
LnGrp Delay(d),s/veh	26.5	19.2	15.0	25.3	16.6	14.1	25.2	15.0	15.0	24.8	14.0	14.0
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		418			336			460			401	
Approach Delay, s/veh		18.9			17.1			15.7			15.1	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.0	20.0	6.6	16.4	6.7	20.3	5.8	17.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	3.1	6.6	2.9	10.0	3.0	5.8	2.6	7.9
Green Ext Time (p_c), s	0.0	3.0	0.0	2.4	0.0	3.2	0.0	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	52	44	21	44	47	45	1313	55	76	1414	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	30	59	50	25	52	56	48	1397	59	82	1520	34
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.88	0.88	0.88	0.84	0.84	0.84	0.94	0.94	0.94	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	80	104	88	69	87	94	111	1803	76	147	1917	858
Arrive On Green	0.04	0.11	0.11	0.04	0.11	0.11	0.06	0.52	0.52	0.08	0.54	0.54
Sat Flow, veh/h	1774	933	790	1774	822	885	1774	3461	146	1774	3539	1583
Grp Volume(v), veh/h	30	0	109	25	0	108	48	713	743	82	1520	34
Grp Sat Flow(s),veh/h/ln	1774	0	1723	1774	0	1707	1774	1770	1837	1774	1770	1583
Q Serve(g_s), s	1.1	0.0	3.9	0.9	0.0	3.9	1.7	21.1	21.2	2.9	22.5	0.7
Cycle Q Clear(g_c), s	1.1	0.0	3.9	0.9	0.0	3.9	1.7	21.1	21.2	2.9	22.5	0.7
Prop In Lane	1.00		0.46	1.00		0.52	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	80	0	193	69	0	181	111	922	957	147	1917	858
V/C Ratio(X)	0.38	0.00	0.57	0.36	0.00	0.60	0.43	0.77	0.78	0.56	0.79	0.04
Avail Cap(c_a), veh/h	190	0	422	190	0	418	190	922	957	190	1917	858
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	27.5	30.6	0.0	27.8	29.5	12.5	12.6	28.8	12.0	7.0
Incr Delay (d2), s/veh	2.9	0.0	2.6	3.1	0.0	3.1	2.7	6.3	6.1	3.3	3.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	2.0	0.5	0.0	2.0	0.9	11.7	12.2	1.5	11.7	0.3
LnGrp Delay(d),s/veh	33.2	0.0	30.1	33.7	0.0	31.0	32.2	18.8	18.7	32.0	15.5	7.1
LnGrp LOS	C		C	C		C	C	B	B	C	B	A
Approach Vol, veh/h		139			133			1504			1636	
Approach Delay, s/veh		30.7			31.5			19.2			16.1	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	38.0	6.6	11.3	8.1	39.3	6.9	10.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	34.0	7.0	16.0	7.0	34.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	4.9	23.2	2.9	5.9	3.7	24.5	3.1	5.9
Green Ext Time (p_c), s	0.0	10.0	0.0	0.8	0.0	8.8	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	18.7
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	508	1029	305	260	658	218	270	792	193	310	955	162
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	540	1095	324	302	765	253	297	870	212	341	1049	178
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	563	1062	475	313	862	282	290	933	417	355	1062	475
Arrive On Green	0.16	0.30	0.30	0.09	0.23	0.23	0.16	0.26	0.26	0.20	0.30	0.30
Sat Flow, veh/h	3442	3539	1583	3442	3792	1242	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	540	1095	324	302	683	335	297	870	212	341	1049	178
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1644	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	17.1	33.0	19.8	9.6	21.5	21.7	18.0	26.4	12.5	20.9	32.4	9.8
Cycle Q Clear(g_c), s	17.1	33.0	19.8	9.6	21.5	21.7	18.0	26.4	12.5	20.9	32.4	9.8
Prop In Lane	1.00		1.00	1.00		0.76	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	563	1062	475	313	770	374	290	933	417	355	1062	475
V/C Ratio(X)	0.96	1.03	0.68	0.97	0.89	0.90	1.02	0.93	0.51	0.96	0.99	0.37
Avail Cap(c_a), veh/h	563	1062	475	313	770	374	290	933	417	355	1062	475
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.6	38.5	33.9	49.8	41.1	41.2	46.0	39.5	34.4	43.6	38.3	30.4
Incr Delay (d2), s/veh	27.8	36.0	4.0	41.4	12.1	23.3	58.9	17.1	4.4	37.5	24.9	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	21.4	9.2	6.4	11.4	12.3	13.5	15.1	6.0	13.9	19.5	4.5
LnGrp Delay(d),s/veh	73.5	74.5	37.9	91.2	53.3	64.5	104.9	56.6	38.8	81.0	63.2	32.6
LnGrp LOS	E	F	D	F	D	E	F	E	D	F	E	C
Approach Vol, veh/h		1959			1320			1379			1568	
Approach Delay, s/veh		68.1			64.8			64.3			63.6	
Approach LOS		E			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	33.0	14.0	37.0	22.0	37.0	22.0	29.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	22.0	29.0	10.0	33.0	18.0	33.0	18.0	25.0
Max Q Clear Time (g_c+I1), s	22.9	28.4	11.6	35.0	20.0	34.4	19.1	23.7
Green Ext Time (p_c), s	0.0	0.6	0.0	0.0	0.0	0.0	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	65.4
HCM 2010 LOS	E

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	15	3	40	2	1	12	40	1423	2	47	1696	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	58	58	58	97	97	97	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	4	51	3	2	21	45	1614	2	48	1731	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2736	3545	877	2669	3555	808	1753	0	0	1616	0	0
Stage 1	1838	1838	-	1706	1706	-	-	-	-	-	-	-
Stage 2	898	1707	-	963	1849	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 10	6	292	11	6	324	353	-	-	399	-	-
Stage 1	78	125	-	95	145	-	-	-	-	-	-	-
Stage 2	301	145	-	274	123	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 7	5	292	7	5	324	353	-	-	399	-	-
Mov Cap-2 Maneuver	48	44	-	51	40	-	-	-	-	-	-	-
Stage 1	68	110	-	83	127	-	-	-	-	-	-	-
Stage 2	243	127	-	192	108	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	85.3	34.4	0.5	0.4
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	353	-	-	112	148	399	-	-
HCM Lane V/C Ratio	0.129	-	-	0.664	0.175	0.12	-	-
HCM Control Delay (s)	16.7	-	-	85.3	34.4	15.3	-	-
HCM Lane LOS	C	-	-	F	D	C	-	-
HCM 95th %tile Q(veh)	0.4	-	-	3.4	0.6	0.4	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	18	383	55	15	257	9	31	6	9	7	2	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	88	88	88	60	60	60	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	391	56	17	292	10	52	10	15	9	3	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	292	0	0	391	0	0	763	754	391	766	754	292
Stage 1	-	-	-	-	-	-	428	428	-	326	326	-
Stage 2	-	-	-	-	-	-	335	326	-	440	428	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1270	-	-	1168	-	-	321	338	658	320	338	747
Stage 1	-	-	-	-	-	-	605	585	-	687	648	-
Stage 2	-	-	-	-	-	-	679	648	-	596	585	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1270	-	-	1168	-	-	306	328	658	299	328	747
Mov Cap-2 Maneuver	-	-	-	-	-	-	306	328	-	299	328	-
Stage 1	-	-	-	-	-	-	596	577	-	677	639	-
Stage 2	-	-	-	-	-	-	653	639	-	564	577	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.4	18.4	13.5
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	345	1270	-	-	1168	-	-	452
HCM Lane V/C Ratio	0.222	0.014	-	-	0.015	-	-	0.059
HCM Control Delay (s)	18.4	7.9	-	-	8.1	-	-	13.5
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.2

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Cottonwood Ave & Driveway

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	469	312	11	0	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	81	81	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	515	385	14	0	63

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	399	0	-	0	907	392
Stage 1	-	-	-	-	392	-
Stage 2	-	-	-	-	515	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1160	-	-	-	306	657
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	600	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1160	-	-	-	306	657
Mov Cap-2 Maneuver	-	-	-	-	306	-
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	600	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1160	-	-	-	657
HCM Lane V/C Ratio	-	-	-	-	0.096
HCM Control Delay (s)	0	-	-	-	11.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	33.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	0	74	0	0	52	54	1372	57	45	1588	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	92	92	92	95	95	95	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	0	103	0	0	57	57	1444	60	48	1708	41

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2661	3443	874	2539	3433	752	1748	0	0	1504	0	0
Stage 1	1825	1825	-	1588	1588	-	-	-	-	-	-	-
Stage 2	836	1618	-	951	1845	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 11	7	293	14	7	353	355	-	-	441	-	-
Stage 1	80	127	-	113	166	-	-	-	-	-	-	-
Stage 2	328	161	-	279	124	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 7	5	293	7	5	353	355	-	-	441	-	-
Mov Cap-2 Maneuver	~ 7	5	-	7	5	-	-	-	-	-	-	-
Stage 1	67	113	-	95	139	-	-	-	-	-	-	-
Stage 2	231	135	-	161	111	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 971.4	17.1	0.6	0.4
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	355	-	-	44	353	441	-	-
HCM Lane V/C Ratio	0.16	-	-	2.715	0.16	0.11	-	-
HCM Control Delay (s)	17.1	-	-	$ 971.4	17.1	14.2	-	-
HCM Lane LOS	C	-	-	F	C	B	-	-
HCM 95th %tile Q(veh)	0.6	-	-	12.9	0.6	0.4	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	63	101	41	52	81	84	58	1186	56	71	1134	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	70	112	46	63	98	101	64	1303	62	79	1260	64
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.83	0.83	0.83	0.91	0.91	0.91	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	218	185	133	210	178	134	1652	739	149	1683	753
Arrive On Green	0.08	0.12	0.12	0.07	0.11	0.11	0.08	0.47	0.47	0.08	0.48	0.48
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	70	112	46	63	98	101	64	1303	62	79	1260	64
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	2.3	3.5	1.6	2.1	3.1	3.8	2.1	19.3	1.3	2.7	18.0	1.4
Cycle Q Clear(g_c), s	2.3	3.5	1.6	2.1	3.1	3.8	2.1	19.3	1.3	2.7	18.0	1.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	140	218	185	133	210	178	134	1652	739	149	1683	753
V/C Ratio(X)	0.50	0.51	0.25	0.48	0.47	0.57	0.48	0.79	0.08	0.53	0.75	0.09
Avail Cap(c_a), veh/h	200	480	408	200	480	408	200	1652	739	200	1683	753
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.4	25.8	24.9	27.6	25.8	26.1	27.5	14.0	9.2	27.3	13.3	8.9
Incr Delay (d2), s/veh	2.7	1.9	0.7	2.6	1.6	2.8	2.6	3.9	0.2	2.9	3.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.9	0.7	1.1	1.7	1.8	1.1	10.1	0.6	1.4	9.5	0.6
LnGrp Delay(d),s/veh	30.2	27.6	25.6	30.2	27.4	28.9	30.2	17.9	9.4	30.2	16.4	9.1
LnGrp LOS	C	C	C	C	C	C	C	B	A	C	B	A
Approach Vol, veh/h		228			262			1429			1403	
Approach Delay, s/veh		28.0			28.7			18.1			16.8	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	33.0	8.6	11.3	8.7	33.5	8.9	11.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	29.0	7.0	16.0	7.0	29.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	4.7	21.3	4.1	5.5	4.1	20.0	4.3	5.8
Green Ext Time (p_c), s	0.0	7.0	0.0	1.1	0.0	8.1	0.0	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	19.1
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	78	91	28	39	65	63	46	1165	27	29	1120	57
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	90	105	32	45	75	72	55	1387	32	34	1302	66
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.84	0.84	0.84	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	92	76	444	87	106	444	127	1621	37	91	1550	694
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.07	0.46	0.46	0.05	0.44	0.44
Sat Flow, veh/h	0	270	1583	0	379	1583	1774	3536	82	1774	3539	1583
Grp Volume(v), veh/h	195	0	32	120	0	72	55	693	726	34	1302	66
Grp Sat Flow(s),veh/h/ln	270	0	1583	379	0	1583	1774	1770	1848	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.8	0.0	0.0	2.0	1.7	19.9	20.0	1.1	18.7	1.4
Cycle Q Clear(g_c), s	16.0	0.0	0.8	16.0	0.0	2.0	1.7	19.9	20.0	1.1	18.7	1.4
Prop In Lane	0.46		1.00	0.37		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	168	0	444	193	0	444	127	811	847	91	1550	694
V/C Ratio(X)	1.16	0.00	0.07	0.62	0.00	0.16	0.43	0.86	0.86	0.38	0.84	0.10
Avail Cap(c_a), veh/h	168	0	444	193	0	444	218	811	847	218	1550	694
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.8	0.0	15.1	17.2	0.0	15.5	25.4	13.8	13.8	26.2	14.3	9.4
Incr Delay (d2), s/veh	119.8	0.0	0.1	6.0	0.0	0.2	2.3	11.2	10.9	2.6	5.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	0.0	0.4	1.8	0.0	0.9	0.9	12.2	12.6	0.6	10.3	0.7
LnGrp Delay(d),s/veh	141.6	0.0	15.2	23.2	0.0	15.7	27.7	25.0	24.6	28.7	19.9	9.7
LnGrp LOS	F		B	C		B	C	C	C	C	B	A
Approach Vol, veh/h		227			192			1474			1402	
Approach Delay, s/veh		123.8			20.4			24.9			19.6	
Approach LOS		F			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.9	30.2		20.0	8.1	29.0		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	25.0		16.0	7.0	25.0		16.0
Max Q Clear Time (g_c+I1), s	3.1	22.0		18.0	3.7	20.7		18.0
Green Ext Time (p_c), s	0.0	2.9		0.0	0.0	4.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	29.2
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	271	115	49	325	26	97	278	47	22	239	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	23	347	147	58	387	31	100	287	48	24	257	24
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.78	0.78	0.78	0.84	0.84	0.84	0.97	0.97	0.97	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	468	398	131	535	455	173	1084	179	69	975	90
Arrive On Green	0.04	0.25	0.25	0.07	0.29	0.29	0.10	0.36	0.36	0.04	0.30	0.30
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3041	503	1774	3275	303
Grp Volume(v), veh/h	23	347	147	58	387	31	100	166	169	24	138	143
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1774	1774	1770	1809
Q Serve(g_s), s	0.7	9.8	4.4	1.8	10.7	0.8	3.1	3.8	3.9	0.8	3.4	3.4
Cycle Q Clear(g_c), s	0.7	9.8	4.4	1.8	10.7	0.8	3.1	3.8	3.9	0.8	3.4	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		0.17
Lane Grp Cap(c), veh/h	66	468	398	131	535	455	173	630	632	69	527	538
V/C Ratio(X)	0.35	0.74	0.37	0.44	0.72	0.07	0.58	0.26	0.27	0.35	0.26	0.27
Avail Cap(c_a), veh/h	217	587	499	217	587	499	217	630	632	217	527	538
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	19.7	17.7	25.3	18.3	14.8	24.7	13.1	13.1	26.7	15.3	15.3
Incr Delay (d2), s/veh	3.1	3.8	0.6	2.3	4.0	0.1	3.0	1.0	1.0	3.0	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	5.5	2.0	1.0	6.1	0.4	1.6	2.0	2.1	0.4	1.8	1.9
LnGrp Delay(d),s/veh	29.9	23.5	18.2	27.7	22.3	14.9	27.7	14.1	14.1	29.7	16.5	16.5
LnGrp LOS	C	C	B	C	C	B	C	B	B	C	B	B
Approach Vol, veh/h		517			476			435			305	
Approach Delay, s/veh		22.3			22.5			17.2			17.5	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.2	24.4	8.2	18.3	9.6	21.0	6.1	20.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	17.0	7.0	18.0	7.0	17.0	7.0	18.0
Max Q Clear Time (g_c+I1), s	2.8	5.9	3.8	11.8	5.1	5.4	2.7	12.7
Green Ext Time (p_c), s	0.0	2.7	0.0	2.5	0.0	2.7	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	20.2
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	111	140	65	130	200	193	87	1054	75	174	936	106
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	141	177	82	228	351	339	96	1158	82	200	1076	122
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.79	0.79	0.79	0.57	0.57	0.57	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	173	327	278	258	416	354	126	1305	584	234	1520	680
Arrive On Green	0.10	0.18	0.18	0.15	0.22	0.22	0.07	0.37	0.37	0.13	0.43	0.43
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	141	177	82	228	351	339	96	1158	82	200	1076	122
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	7.0	7.7	4.0	11.3	16.1	18.9	4.8	27.5	3.1	9.9	22.3	4.3
Cycle Q Clear(g_c), s	7.0	7.7	4.0	11.3	16.1	18.9	4.8	27.5	3.1	9.9	22.3	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	173	327	278	258	416	354	126	1305	584	234	1520	680
V/C Ratio(X)	0.82	0.54	0.30	0.88	0.84	0.96	0.76	0.89	0.14	0.86	0.71	0.18
Avail Cap(c_a), veh/h	178	333	283	258	416	354	139	1305	584	238	1520	680
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.6	33.6	32.1	37.5	33.3	34.3	40.8	26.5	18.8	38.0	20.9	15.8
Incr Delay (d2), s/veh	24.2	1.7	0.6	28.4	14.6	36.8	19.9	9.2	0.5	24.7	2.8	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	4.1	1.8	7.5	10.0	11.9	3.0	15.0	1.4	6.4	11.4	2.0
LnGrp Delay(d),s/veh	63.8	35.3	32.7	65.9	47.8	71.2	60.8	35.7	19.3	62.8	23.7	16.4
LnGrp LOS	E	D	C	E	D	E	E	D	B	E	C	B
Approach Vol, veh/h		400			918			1336			1398	
Approach Delay, s/veh		44.8			60.9			36.5			28.7	
Approach LOS		D			E			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.8	37.0	17.0	19.7	10.4	42.4	12.7	24.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	12.0	33.0	13.0	16.0	7.0	38.0	9.0	20.0
Max Q Clear Time (g_c+I1), s	11.9	29.5	13.3	9.7	6.8	24.3	9.0	20.9
Green Ext Time (p_c), s	0.0	3.2	0.0	2.4	0.0	11.2	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	40.2
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	221	64	10	245	31	34	206	15	28	223	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	62	395	114	15	360	46	40	245	18	32	256	22
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.56	0.56	0.56	0.68	0.68	0.68	0.84	0.84	0.84	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	594	505	46	497	422	104	1028	75	88	984	84
Arrive On Green	0.08	0.32	0.32	0.03	0.27	0.27	0.06	0.31	0.31	0.05	0.30	0.30
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3345	244	1774	3301	282
Grp Volume(v), veh/h	62	395	114	15	360	46	40	129	134	32	136	142
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1820	1774	1770	1813
Q Serve(g_s), s	1.8	9.8	2.8	0.4	9.4	1.2	1.2	2.9	3.0	0.9	3.1	3.2
Cycle Q Clear(g_c), s	1.8	9.8	2.8	0.4	9.4	1.2	1.2	2.9	3.0	0.9	3.1	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		0.16
Lane Grp Cap(c), veh/h	140	594	505	46	497	422	104	544	559	88	527	540
V/C Ratio(X)	0.44	0.66	0.23	0.32	0.72	0.11	0.38	0.24	0.24	0.36	0.26	0.26
Avail Cap(c_a), veh/h	231	659	560	231	659	560	231	544	559	231	527	540
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.6	15.8	13.4	25.7	17.9	14.9	24.3	13.9	13.9	24.7	14.3	14.3
Incr Delay (d2), s/veh	2.2	2.2	0.2	4.0	2.7	0.1	2.3	1.0	1.0	2.5	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	5.4	1.3	0.3	5.2	0.5	0.6	1.6	1.6	0.5	1.7	1.8
LnGrp Delay(d),s/veh	25.8	18.0	13.6	29.6	20.6	15.0	26.7	14.9	14.9	27.2	15.5	15.5
LnGrp LOS	C	B	B	C	C	B	C	B	B	C	B	B
Approach Vol, veh/h		571			421			303			310	
Approach Delay, s/veh		18.0			20.3			16.5			16.7	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	20.5	5.4	21.1	7.1	20.0	8.2	18.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	2.9	5.0	2.4	11.8	3.2	5.2	3.8	11.4
Green Ext Time (p_c), s	0.0	2.2	0.0	2.8	0.0	2.2	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	18.1
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	41	30	26	34	66	33	1104	39	67	1068	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	29	48	35	34	44	86	34	1150	41	75	1200	35
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.77	0.77	0.77	0.96	0.96	0.96	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	81	126	92	92	74	145	92	1539	55	155	1688	755
Arrive On Green	0.05	0.13	0.13	0.05	0.13	0.13	0.05	0.44	0.44	0.09	0.48	0.48
Sat Flow, veh/h	1774	1003	731	1774	565	1103	1774	3486	124	1774	3539	1583
Grp Volume(v), veh/h	29	0	83	34	0	130	34	584	607	75	1200	35
Grp Sat Flow(s),veh/h/ln	1774	0	1734	1774	0	1668	1774	1770	1841	1774	1770	1583
Q Serve(g_s), s	0.9	0.0	2.4	1.0	0.0	4.0	1.0	14.9	15.0	2.2	14.6	0.6
Cycle Q Clear(g_c), s	0.9	0.0	2.4	1.0	0.0	4.0	1.0	14.9	15.0	2.2	14.6	0.6
Prop In Lane	1.00		0.42	1.00		0.66	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	81	0	217	92	0	219	92	781	812	155	1688	755
V/C Ratio(X)	0.36	0.00	0.38	0.37	0.00	0.59	0.37	0.75	0.75	0.48	0.71	0.05
Avail Cap(c_a), veh/h	228	0	510	228	0	491	228	781	812	228	1688	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.2	0.0	21.8	24.9	0.0	22.2	24.9	12.7	12.7	23.6	11.3	7.6
Incr Delay (d2), s/veh	2.7	0.0	1.1	2.5	0.0	2.5	2.5	6.4	6.2	2.3	2.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	1.2	0.6	0.0	2.0	0.6	8.5	8.8	1.2	7.6	0.3
LnGrp Delay(d),s/veh	27.8	0.0	22.9	27.4	0.0	24.8	27.4	19.1	18.9	26.0	13.8	7.7
LnGrp LOS	C		C	C		C	C	B	B	C	B	A
Approach Vol, veh/h		112			164			1225			1310	
Approach Delay, s/veh		24.2			25.3			19.2			14.4	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	28.0	6.8	10.8	6.8	29.9	6.5	11.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	24.0	7.0	16.0	7.0	24.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	4.2	17.0	3.0	4.4	3.0	16.6	2.9	6.0
Green Ext Time (p_c), s	0.0	6.2	0.0	0.8	0.0	6.5	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	17.5
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	375	519	232	239	489	179	308	739	140	211	693	183
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	417	577	258	278	569	208	338	812	154	229	753	199
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.86	0.86	0.86	0.91	0.91	0.91	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	435	765	342	360	720	257	375	1153	516	268	939	420
Arrive On Green	0.13	0.22	0.22	0.10	0.19	0.19	0.21	0.33	0.33	0.15	0.27	0.27
Sat Flow, veh/h	3442	3539	1583	3442	3701	1319	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	417	577	258	278	520	257	338	812	154	229	753	199
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1630	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	9.5	12.1	12.1	6.2	11.5	11.9	14.7	15.9	5.7	10.0	15.7	8.4
Cycle Q Clear(g_c), s	9.5	12.1	12.1	6.2	11.5	11.9	14.7	15.9	5.7	10.0	15.7	8.4
Prop In Lane	1.00		1.00	1.00		0.81	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	435	765	342	360	660	317	375	1153	516	268	939	420
V/C Ratio(X)	0.96	0.75	0.75	0.77	0.79	0.81	0.90	0.70	0.30	0.85	0.80	0.47
Avail Cap(c_a), veh/h	435	765	342	392	686	330	381	1153	516	292	939	420
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	29.0	29.0	34.5	30.3	30.5	30.4	23.3	19.9	32.7	27.1	24.4
Incr Delay (d2), s/veh	32.6	4.3	9.1	8.5	5.9	13.7	23.6	3.6	1.5	20.1	7.2	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	6.3	6.1	3.4	6.0	6.6	9.6	8.4	2.7	6.4	8.6	4.1
LnGrp Delay(d),s/veh	66.9	33.3	38.1	43.0	36.2	44.1	54.0	27.0	21.4	52.8	34.3	28.2
LnGrp LOS	E	C	D	D	D	D	D	C	C	D	C	C
Approach Vol, veh/h		1252			1055			1304			1181	
Approach Delay, s/veh		45.5			39.9			33.3			36.8	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.9	29.8	12.3	21.1	20.7	25.0	14.0	19.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	13.0	25.0	9.0	17.0	17.0	21.0	10.0	16.0
Max Q Clear Time (g_c+I1), s	12.0	17.9	8.2	14.1	16.7	17.7	11.5	13.9
Green Ext Time (p_c), s	0.1	5.4	0.1	2.2	0.0	2.7	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	38.8
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	20	4	30	3	7	15	41	1265	3	38	1170	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	72	72	72	89	89	89	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	6	46	4	10	21	51	1563	4	44	1345	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2331	3112	683	2430	3121	784	1367	0	0	1567	0	0
Stage 1	1443	1443	-	1667	1667	-	-	-	-	-	-	-
Stage 2	888	1669	-	763	1454	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 20	11	392	17	11	336	498	-	-	417	-	-
Stage 1	139	196	-	100	152	-	-	-	-	-	-	-
Stage 2	305	151	-	363	193	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 14	9	392	12	~ 9	336	498	-	-	417	-	-
Mov Cap-2 Maneuver	75	59	-	63	63	-	-	-	-	-	-	-
Stage 1	125	175	-	90	136	-	-	-	-	-	-	-
Stage 2	238	136	-	276	173	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	71.1	45.4	0.4	0.5
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	498	-	-	131	123	417	-	-
HCM Lane V/C Ratio	0.102	-	-	0.634	0.282	0.105	-	-
HCM Control Delay (s)	13	-	-	71.1	45.4	14.6	-	-
HCM Lane LOS	B	-	-	F	E	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-	3.3	1.1	0.3	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	25	343	46	3	289	4	34	4	10	2	2	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	57	57	57	58	58	58	79	79	79	65	65	65
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	602	81	5	498	7	43	5	13	3	3	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	498	0	0	602	0	0	1207	1198	602	1207	1198	498
Stage 1	-	-	-	-	-	-	689	689	-	509	509	-
Stage 2	-	-	-	-	-	-	518	509	-	698	689	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1066	-	-	975	-	-	160	186	500	160	186	572
Stage 1	-	-	-	-	-	-	436	446	-	547	538	-
Stage 2	-	-	-	-	-	-	541	538	-	431	446	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1066	-	-	975	-	-	148	177	500	147	177	572
Mov Cap-2 Maneuver	-	-	-	-	-	-	148	177	-	147	177	-
Stage 1	-	-	-	-	-	-	418	428	-	524	535	-
Stage 2	-	-	-	-	-	-	521	535	-	398	428	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.1	35.9	16.7
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	176	1066	-	-	975	-	-	330
HCM Lane V/C Ratio	0.345	0.041	-	-	0.005	-	-	0.065
HCM Control Delay (s)	35.9	8.5	-	-	8.7	-	-	16.7
HCM Lane LOS	E	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.4	0.1	-	-	0	-	-	0.2

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Cottonwood Ave & Driveway

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	301	367	16	0	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	81	81	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	391	453	20	0	89

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	473	0	-	0	854	463
Stage 1	-	-	-	-	463	-
Stage 2	-	-	-	-	391	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1089	-	-	-	329	599
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	683	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1089	-	-	-	329	599
Mov Cap-2 Maneuver	-	-	-	-	329	-
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	683	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1089	-	-	-	599
HCM Lane V/C Ratio	-	-	-	-	0.149
HCM Control Delay (s)	0	-	-	-	12.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.5

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	36.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	21	0	78	0	0	74	70	1209	78	62	1088	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	92	92	92	82	82	82	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	0	98	0	0	80	85	1474	95	72	1265	44

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2339	3171	655	2470	3146	785	1309	0	0	1570	0	0
Stage 1	1431	1431	-	1693	1693	-	-	-	-	-	-	-
Stage 2	908	1740	-	777	1453	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 19	10	409	15	11	336	524	-	-	416	-	-
Stage 1	141	198	-	97	147	-	-	-	-	-	-	-
Stage 2	296	140	-	356	194	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 11	7	409	9	8	336	524	-	-	416	-	-
Mov Cap-2 Maneuver	~ 11	7	-	9	8	-	-	-	-	-	-	-
Stage 1	118	164	-	81	123	-	-	-	-	-	-	-
Stage 2	189	117	-	224	160	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 924.1	19.1	0.7	0.8
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	524	-	-	47	336	416	-	-
HCM Lane V/C Ratio	0.163	-	-	2.633	0.239	0.173	-	-
HCM Control Delay (s)	13.2	-	-	$ 924.1	19.1	15.5	-	-
HCM Lane LOS	B	-	-	F	C	C	-	-
HCM 95th %tile Q(veh)	0.6	-	-	13.1	0.9	0.6	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	39	92	62	112	158	199	63	1394	66	78	1134	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	57	133	90	127	180	226	72	1602	76	89	1289	36
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.69	0.69	0.69	0.88	0.88	0.88	0.87	0.87	0.87	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	276	235	145	315	268	119	1813	811	127	1830	819
Arrive On Green	0.06	0.15	0.15	0.08	0.17	0.17	0.07	0.51	0.51	0.07	0.52	0.52
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	57	133	90	127	180	226	72	1602	76	89	1289	36
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	2.7	5.6	4.4	6.1	7.6	11.9	3.4	34.6	2.1	4.2	23.8	1.0
Cycle Q Clear(g_c), s	2.7	5.6	4.4	6.1	7.6	11.9	3.4	34.6	2.1	4.2	23.8	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	107	276	235	145	315	268	119	1813	811	127	1830	819
V/C Ratio(X)	0.53	0.48	0.38	0.88	0.57	0.84	0.61	0.88	0.09	0.70	0.70	0.04
Avail Cap(c_a), veh/h	145	347	295	145	347	295	145	1813	811	145	1830	819
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.2	33.6	33.0	39.0	32.8	34.6	39.0	18.7	10.7	39.0	15.8	10.2
Incr Delay (d2), s/veh	4.0	1.3	1.0	41.4	1.8	18.2	4.9	6.7	0.2	12.0	2.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	3.0	2.0	4.6	4.1	6.5	1.8	18.4	1.0	2.5	12.0	0.4
LnGrp Delay(d),s/veh	43.2	34.9	34.1	80.5	34.7	52.8	43.9	25.4	11.0	51.0	18.1	10.3
LnGrp LOS	D	C	C	F	C	D	D	C	B	D	B	B
Approach Vol, veh/h		280			533			1750			1414	
Approach Delay, s/veh		36.3			53.3			25.5			19.9	
Approach LOS		D			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	48.0	11.0	16.7	9.7	48.4	9.2	18.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	44.0	7.0	16.0	7.0	44.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	6.2	36.6	8.1	7.6	5.4	25.8	4.7	13.9
Green Ext Time (p_c), s	0.0	7.0	0.0	1.8	0.0	16.3	0.0	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	28.0
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	74	77	50	67	102	62	34	1402	27	35	1201	79
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	85	89	57	89	136	83	40	1630	31	42	1430	94
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.87	0.87	0.87	0.75	0.75	0.75	0.86	0.86	0.86	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	80	58	379	75	70	379	97	1862	35	101	1861	833
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.05	0.52	0.52	0.06	0.53	0.53
Sat Flow, veh/h	0	243	1583	0	294	1583	1774	3553	67	1774	3539	1583
Grp Volume(v), veh/h	174	0	57	225	0	83	40	811	850	42	1430	94
Grp Sat Flow(s),veh/h/ln	243	0	1583	294	0	1583	1774	1770	1851	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	1.9	0.0	0.0	2.8	1.5	26.9	27.0	1.5	21.5	2.0
Cycle Q Clear(g_c), s	16.0	0.0	1.9	16.0	0.0	2.8	1.5	26.9	27.0	1.5	21.5	2.0
Prop In Lane	0.49		1.00	0.40		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	138	0	379	146	0	379	97	927	970	101	1861	833
V/C Ratio(X)	1.26	0.00	0.15	1.55	0.00	0.22	0.41	0.87	0.88	0.42	0.77	0.11
Avail Cap(c_a), veh/h	138	0	379	146	0	379	186	927	970	186	1861	833
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	0.0	20.0	26.3	0.0	20.4	30.5	14.0	14.0	30.4	12.6	8.0
Incr Delay (d2), s/veh	161.5	0.0	0.2	276.7	0.0	0.3	2.8	11.2	11.0	2.7	3.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	0.0	0.8	13.8	0.0	1.2	0.8	15.7	16.4	0.8	11.1	0.9
LnGrp Delay(d),s/veh	188.6	0.0	20.2	302.9	0.0	20.7	33.3	25.2	25.0	33.2	15.7	8.3
LnGrp LOS	F		C	F		C	C	C	C	C	B	A
Approach Vol, veh/h		231			308			1701			1566	
Approach Delay, s/veh		147.0			226.9			25.3			15.7	
Approach LOS		F			F			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.8	39.0		20.0	7.7	39.1		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	35.0		16.0	7.0	35.0		16.0
Max Q Clear Time (g_c+I1), s	3.5	29.0		18.0	3.5	23.5		18.0
Green Ext Time (p_c), s	0.0	5.7		0.0	0.0	10.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	45.1
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	333	138	49	412	92	103	330	32	59	408	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	59	392	162	64	542	121	130	418	41	68	469	60
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.76	0.76	0.76	0.79	0.79	0.79	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	128	567	482	134	574	488	180	920	90	139	819	104
Arrive On Green	0.07	0.30	0.30	0.08	0.31	0.31	0.10	0.28	0.28	0.08	0.26	0.26
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3258	318	1774	3159	402
Grp Volume(v), veh/h	59	392	162	64	542	121	130	226	233	68	262	267
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1807	1774	1770	1792
Q Serve(g_s), s	2.0	11.4	4.9	2.1	17.5	3.5	4.4	6.5	6.6	2.3	7.9	8.0
Cycle Q Clear(g_c), s	2.0	11.4	4.9	2.1	17.5	3.5	4.4	6.5	6.6	2.3	7.9	8.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.18	1.00		0.22
Lane Grp Cap(c), veh/h	128	567	482	134	574	488	180	500	510	139	459	465
V/C Ratio(X)	0.46	0.69	0.34	0.48	0.94	0.25	0.72	0.45	0.46	0.49	0.57	0.58
Avail Cap(c_a), veh/h	201	574	488	201	574	488	201	500	510	201	459	465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.5	18.9	16.6	27.3	20.8	16.0	26.9	18.2	18.2	27.3	19.9	19.9
Incr Delay (d2), s/veh	2.6	3.5	0.4	2.6	24.6	0.3	10.8	2.9	2.9	2.7	5.1	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	6.4	2.2	1.1	12.8	1.6	2.7	3.5	3.6	1.2	4.5	4.6
LnGrp Delay(d),s/veh	30.0	22.4	17.0	30.0	45.5	16.3	37.6	21.2	21.2	29.9	24.9	25.0
LnGrp LOS	C	C	B	C	D	B	D	C	C	C	C	C
Approach Vol, veh/h		613			727			589			597	
Approach Delay, s/veh		21.7			39.3			24.8			25.5	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	21.4	8.7	22.8	10.2	20.0	8.5	23.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	4.3	8.6	4.1	13.4	6.4	10.0	4.0	19.5
Green Ext Time (p_c), s	0.0	3.4	0.0	3.0	0.0	2.9	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	28.4
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	91	207	75	104	248	205	79	1175	74	163	1084	98
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	114	259	94	141	335	277	96	1433	90	194	1290	117
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.80	0.80	0.80	0.74	0.74	0.74	0.82	0.82	0.82	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	331	281	158	352	299	125	1573	704	197	1716	768
Arrive On Green	0.08	0.18	0.18	0.09	0.19	0.19	0.07	0.44	0.44	0.11	0.48	0.48
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	114	259	94	141	335	277	96	1433	90	194	1290	117
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.7	12.0	4.7	7.1	16.0	15.5	4.8	34.0	3.0	9.8	26.6	3.7
Cycle Q Clear(g_c), s	5.7	12.0	4.7	7.1	16.0	15.5	4.8	34.0	3.0	9.8	26.6	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	331	281	158	352	299	125	1573	704	197	1716	768
V/C Ratio(X)	0.83	0.78	0.33	0.89	0.95	0.93	0.77	0.91	0.13	0.98	0.75	0.15
Avail Cap(c_a), veh/h	138	331	281	158	352	299	138	1573	704	197	1716	768
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.9	35.3	32.3	40.6	36.1	35.9	41.1	23.3	14.7	39.9	18.8	12.9
Incr Delay (d2), s/veh	32.0	11.5	0.7	42.5	35.5	33.3	20.5	9.5	0.4	59.3	3.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	7.2	2.1	5.3	11.7	9.5	3.1	18.6	1.4	8.0	13.6	1.7
LnGrp Delay(d),s/veh	72.9	46.8	33.0	83.1	71.6	69.2	61.6	32.8	15.1	99.3	21.9	13.3
LnGrp LOS	E	D	C	F	E	E	E	C	B	F	C	B
Approach Vol, veh/h		467			753			1619			1601	
Approach Delay, s/veh		50.4			72.9			33.5			30.6	
Approach LOS		D			E			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	44.0	12.0	20.0	10.4	47.6	11.0	21.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	10.0	40.0	8.0	16.0	7.0	43.0	7.0	17.0
Max Q Clear Time (g_c+I1), s	11.8	36.0	9.1	14.0	6.8	28.6	7.7	18.0
Green Ext Time (p_c), s	0.0	3.8	0.0	1.0	0.0	12.9	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	40.9
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	105	263	79	47	365	142	109	347	30	34	281	45
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	148	370	111	69	537	209	127	403	35	47	385	62
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.71	0.71	0.71	0.68	0.68	0.68	0.86	0.86	0.86	0.73	0.73	0.73
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	182	647	550	133	595	505	166	931	81	107	763	122
Arrive On Green	0.10	0.35	0.35	0.07	0.32	0.32	0.09	0.28	0.28	0.06	0.25	0.25
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3297	285	1774	3058	489
Grp Volume(v), veh/h	148	370	111	69	537	209	127	215	223	47	222	225
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1812	1774	1770	1777
Q Serve(g_s), s	5.6	11.0	3.4	2.5	18.8	7.1	4.8	6.8	6.8	1.7	7.3	7.4
Cycle Q Clear(g_c), s	5.6	11.0	3.4	2.5	18.8	7.1	4.8	6.8	6.8	1.7	7.3	7.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		0.27
Lane Grp Cap(c), veh/h	182	647	550	133	595	505	166	500	512	107	442	443
V/C Ratio(X)	0.81	0.57	0.20	0.52	0.90	0.41	0.77	0.43	0.43	0.44	0.50	0.51
Avail Cap(c_a), veh/h	182	647	550	182	629	535	182	500	512	182	442	443
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.9	18.1	15.6	30.3	22.2	18.2	30.1	20.0	20.0	30.9	21.9	22.0
Incr Delay (d2), s/veh	23.5	1.2	0.2	3.1	15.9	0.5	16.1	2.7	2.7	2.8	4.0	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	5.9	1.5	1.4	12.2	3.1	3.1	3.7	3.8	0.9	4.1	4.1
LnGrp Delay(d),s/veh	53.4	19.3	15.8	33.4	38.1	18.7	46.3	22.7	22.7	33.7	26.0	26.1
LnGrp LOS	D	B	B	C	D	B	D	C	C	C	C	C
Approach Vol, veh/h		629			815			565			494	
Approach Delay, s/veh		26.7			32.7			28.0			26.7	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	23.2	9.1	27.6	10.4	21.0	11.0	25.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	17.0	7.0	23.0	7.0	17.0	7.0	23.0
Max Q Clear Time (g_c+I1), s	3.7	8.8	4.5	13.0	6.8	9.4	7.6	20.8
Green Ext Time (p_c), s	0.0	3.1	0.0	4.5	0.0	3.0	0.0	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	29.0
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	90	52	88	44	63	104	61	1193	60	98	1068	83
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	122	70	119	52	74	122	66	1283	65	121	1319	102
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.74	0.74	0.74	0.85	0.85	0.85	0.93	0.93	0.93	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	164	115	196	114	100	165	130	1453	74	163	1567	701
Arrive On Green	0.09	0.19	0.19	0.06	0.16	0.16	0.07	0.42	0.42	0.09	0.44	0.44
Sat Flow, veh/h	1774	621	1056	1774	634	1045	1774	3428	173	1774	3539	1583
Grp Volume(v), veh/h	122	0	189	52	0	196	66	661	687	121	1319	102
Grp Sat Flow(s),veh/h/ln	1774	0	1676	1774	0	1678	1774	1770	1832	1774	1770	1583
Q Serve(g_s), s	4.6	0.0	7.1	1.9	0.0	7.6	2.5	23.5	23.6	4.5	22.6	2.6
Cycle Q Clear(g_c), s	4.6	0.0	7.1	1.9	0.0	7.6	2.5	23.5	23.6	4.5	22.6	2.6
Prop In Lane	1.00		0.63	1.00		0.62	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	164	0	312	114	0	265	130	750	777	163	1567	701
V/C Ratio(X)	0.75	0.00	0.61	0.46	0.00	0.74	0.51	0.88	0.88	0.74	0.84	0.15
Avail Cap(c_a), veh/h	182	0	392	182	0	393	182	750	777	182	1567	701
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	25.5	30.9	0.0	27.5	30.5	18.1	18.2	30.3	16.9	11.4
Incr Delay (d2), s/veh	14.0	0.0	1.9	2.8	0.0	4.0	3.1	14.1	13.9	13.5	5.7	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	3.4	1.0	0.0	3.8	1.3	14.3	14.8	2.8	12.2	1.2
LnGrp Delay(d),s/veh	44.2	0.0	27.4	33.7	0.0	31.5	33.6	32.3	32.1	43.7	22.6	11.8
LnGrp LOS	D		C	C		C	C	C	C	D	C	B
Approach Vol, veh/h		311			248			1414			1542	
Approach Delay, s/veh		34.0			32.0			32.2			23.5	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	33.0	8.4	16.7	9.0	34.3	10.3	14.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	29.0	7.0	16.0	7.0	29.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	6.5	25.6	3.9	9.1	4.5	24.6	6.6	9.6
Green Ext Time (p_c), s	0.0	3.2	0.0	1.3	0.0	4.1	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	28.6
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	206	458	100	205	891	245	267	917	211	239	684	239
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	251	559	122	241	1048	288	284	976	224	285	814	285
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.82	0.82	0.82	0.85	0.85	0.85	0.94	0.94	0.94	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	301	861	385	325	993	273	322	1018	455	310	995	445
Arrive On Green	0.09	0.24	0.24	0.09	0.25	0.25	0.18	0.29	0.29	0.17	0.28	0.28
Sat Flow, veh/h	3442	3539	1583	3442	3970	1090	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	251	559	122	241	895	441	284	976	224	285	814	285
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1670	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.7	11.4	5.1	5.5	20.0	20.0	12.5	21.7	9.4	12.6	17.2	12.6
Cycle Q Clear(g_c), s	5.7	11.4	5.1	5.5	20.0	20.0	12.5	21.7	9.4	12.6	17.2	12.6
Prop In Lane	1.00		1.00	1.00		0.65	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	301	861	385	325	848	418	322	1018	455	310	995	445
V/C Ratio(X)	0.83	0.65	0.32	0.74	1.06	1.06	0.88	0.96	0.49	0.92	0.82	0.64
Avail Cap(c_a), veh/h	301	861	385	387	848	418	333	1018	455	310	995	445
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.9	27.2	24.8	35.3	30.0	30.0	31.9	28.0	23.7	32.4	26.8	25.2
Incr Delay (d2), s/veh	17.9	1.7	0.5	6.2	46.7	59.7	22.7	19.9	3.8	30.8	7.5	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	5.7	2.2	2.9	14.8	16.1	8.1	13.4	4.6	8.8	9.4	6.4
LnGrp Delay(d),s/veh	53.8	28.9	25.3	41.5	76.7	89.7	54.6	48.0	27.4	63.3	34.3	32.1
LnGrp LOS	D	C	C	D	F	F	D	D	C	E	C	C
Approach Vol, veh/h		932			1577			1484			1384	
Approach Delay, s/veh		35.1			75.0			46.1			39.8	
Approach LOS		D			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	27.0	11.5	23.5	18.5	26.5	11.0	24.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	14.0	23.0	9.0	18.0	15.0	22.0	7.0	20.0
Max Q Clear Time (g_c+I1), s	14.6	23.7	7.5	13.4	14.5	19.2	7.7	22.0
Green Ext Time (p_c), s	0.0	0.0	0.1	3.8	0.0	2.5	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	51.1
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	2	41	2	1	18	38	1489	4	14	1277	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	68	68	68	87	87	87	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	3	61	3	1	26	48	1883	5	16	1451	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2532	3478	737	2740	3487	944	1474	0	0	1888	0	0
Stage 1	1494	1494	-	1981	1981	-	-	-	-	-	-	-
Stage 2	1038	1984	-	759	1506	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 14	6	361	9	6	263	453	-	-	313	-	-
Stage 1	129	185	-	63	106	-	-	-	-	-	-	-
Stage 2	247	105	-	365	182	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 11	5	361	6	5	263	453	-	-	313	-	-
Mov Cap-2 Maneuver	69	51	-	43	52	-	-	-	-	-	-	-
Stage 1	115	176	-	56	95	-	-	-	-	-	-	-
Stage 2	196	94	-	283	173	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	47.8	33.5	0.3	0.2
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	453	-	-	164	157	313	-	-
HCM Lane V/C Ratio	0.106	-	-	0.51	0.197	0.051	-	-
HCM Control Delay (s)	13.9	-	-	47.8	33.5	17.1	-	-
HCM Lane LOS	B	-	-	E	D	C	-	-
HCM 95th %tile Q(veh)	0.4	-	-	2.5	0.7	0.2	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	350	13	36	476	19	30	11	42	34	12	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	70	70	70	67	67	67	64	64	64
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	455	17	51	680	27	45	16	63	53	19	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	680	0	0	455	0	0	1285	1264	455	1303	1264	680
Stage 1	-	-	-	-	-	-	481	481	-	783	783	-
Stage 2	-	-	-	-	-	-	804	783	-	520	481	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	912	-	-	1106	-	-	142	169	605	138	169	451
Stage 1	-	-	-	-	-	-	566	554	-	387	404	-
Stage 2	-	-	-	-	-	-	377	404	-	539	554	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	912	-	-	1106	-	-	117	159	605	109	159	451
Mov Cap-2 Maneuver	-	-	-	-	-	-	117	159	-	109	159	-
Stage 1	-	-	-	-	-	-	558	546	-	381	385	-
Stage 2	-	-	-	-	-	-	324	385	-	462	546	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.6	44.2	68
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	210	912	-	-	1106	-	-	145
HCM Lane V/C Ratio	0.59	0.014	-	-	0.046	-	-	0.657
HCM Control Delay (s)	44.2	9	-	-	8.4	-	-	68
HCM Lane LOS	E	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	3.3	0	-	-	0.1	-	-	3.6

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Cottonwood Ave & Driveway

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	23	353	528	10	13	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	78	78	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	31	471	677	13	14	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	690	0	-	0	1215	683
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	532	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	905	-	-	-	200	449
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	589	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	905	-	-	-	191	449
Mov Cap-2 Maneuver	-	-	-	-	191	-
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	562	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	17.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	905	-	-	-	347
HCM Lane V/C Ratio	0.034	-	-	-	0.188
HCM Control Delay (s)	9.1	0	-	-	17.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	11	0	0	34	14	1428	64	0	1331	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	62	62	62	92	92	92	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	18	0	0	37	16	1680	75	0	1566	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2441	3356	785	2534	3320	878	1569	0	0	1755	0	0
Stage 1	1568	1568	-	1751	1751	-	-	-	-	-	-	-
Stage 2	873	1788	-	783	1569	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	16	8	336	14	8	291	417	-	-	353	-	-
Stage 1	116	170	-	89	138	-	-	-	-	-	-	-
Stage 2	311	132	-	353	170	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	14	8	336	13	8	291	417	-	-	353	-	-
Mov Cap-2 Maneuver	14	8	-	13	8	-	-	-	-	-	-	-
Stage 1	112	170	-	86	133	-	-	-	-	-	-	-
Stage 2	261	127	-	334	170	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.3	19.2	0.1	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	417	-	-	336	291	353	-	-
HCM Lane V/C Ratio	0.039	-	-	0.053	0.127	-	-	-
HCM Control Delay (s)	14	-	-	16.3	19.2	0	-	-
HCM Lane LOS	B	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.4	0	-	-

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	68	199	76	69	131	95	68	1280	89	121	1630	75
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	80	234	89	99	187	136	71	1333	93	126	1698	78
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.70	0.70	0.70	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	293	249	131	302	256	118	1743	780	157	1821	815
Arrive On Green	0.07	0.16	0.16	0.07	0.16	0.16	0.07	0.49	0.49	0.09	0.51	0.51
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	80	234	89	99	187	136	71	1333	93	126	1698	78
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.8	10.3	4.3	4.7	8.0	6.7	3.3	26.2	2.7	6.0	38.3	2.2
Cycle Q Clear(g_c), s	3.8	10.3	4.3	4.7	8.0	6.7	3.3	26.2	2.7	6.0	38.3	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	124	293	249	131	302	256	118	1743	780	157	1821	815
V/C Ratio(X)	0.65	0.80	0.36	0.75	0.62	0.53	0.60	0.76	0.12	0.80	0.93	0.10
Avail Cap(c_a), veh/h	145	349	296	145	349	296	145	1743	780	187	1821	815
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.8	34.7	32.2	38.8	33.4	32.8	38.8	17.7	11.7	38.2	19.4	10.6
Incr Delay (d2), s/veh	7.6	10.5	0.9	18.0	2.6	1.7	4.8	3.3	0.3	18.6	10.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	6.2	1.9	2.9	4.3	3.1	1.8	13.6	1.2	3.7	21.2	1.0
LnGrp Delay(d),s/veh	46.3	45.2	33.0	56.8	36.0	34.5	43.6	20.9	12.0	56.9	29.6	10.8
LnGrp LOS	D	D	C	E	D	C	D	C	B	E	C	B
Approach Vol, veh/h		403			422			1497			1902	
Approach Delay, s/veh		42.7			40.4			21.4			30.6	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.6	46.1	10.3	17.5	9.7	48.0	10.0	17.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	42.0	7.0	16.0	7.0	44.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	8.0	28.2	6.7	12.3	5.3	40.3	5.8	10.0
Green Ext Time (p_c), s	0.0	12.9	0.0	1.1	0.0	3.6	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	29.5
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	64	102	28	32	94	64	16	1340	47	79	1586	89
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	72	115	31	36	106	72	17	1396	49	81	1635	92
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.96	0.96	0.96	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	79	92	400	71	157	400	51	1653	58	149	1873	838
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.03	0.47	0.47	0.08	0.53	0.53
Sat Flow, veh/h	0	364	1583	0	619	1583	1774	3488	122	1774	3539	1583
Grp Volume(v), veh/h	187	0	31	142	0	72	17	707	738	81	1635	92
Grp Sat Flow(s),veh/h/ln	364	0	1583	619	0	1583	1774	1770	1841	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.9	0.0	0.0	2.3	0.6	22.2	22.3	2.8	25.6	1.8
Cycle Q Clear(g_c), s	16.0	0.0	0.9	16.0	0.0	2.3	0.6	22.2	22.3	2.8	25.6	1.8
Prop In Lane	0.39		1.00	0.25		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	171	0	400	228	0	400	51	838	872	149	1873	838
V/C Ratio(X)	1.09	0.00	0.08	0.62	0.00	0.18	0.34	0.84	0.85	0.54	0.87	0.11
Avail Cap(c_a), veh/h	171	0	400	228	0	400	196	838	872	196	1873	838
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.9	0.0	18.0	20.0	0.0	18.5	30.2	14.6	14.6	27.8	13.0	7.4
Incr Delay (d2), s/veh	96.5	0.0	0.1	5.2	0.0	0.2	3.8	10.1	9.9	3.1	6.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	0.0	0.4	2.3	0.0	1.0	0.3	13.0	13.7	1.5	13.8	0.9
LnGrp Delay(d),s/veh	120.4	0.0	18.1	25.2	0.0	18.7	34.0	24.7	24.5	30.9	19.0	7.7
LnGrp LOS	F		B	C		B	C	C	C	C	B	A
Approach Vol, veh/h		218			214			1462			1808	
Approach Delay, s/veh		105.8			23.0			24.7			19.0	
Approach LOS		F			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.3	34.0		20.0	5.8	37.5		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	30.0		16.0	7.0	30.0		16.0
Max Q Clear Time (g_c+I1), s	4.8	24.3		18.0	2.6	27.6		18.0
Green Ext Time (p_c), s	0.0	5.5		0.0	0.0	2.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	26.6
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	384	162	45	303	41	88	438	60	31	374	47
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	54	452	191	55	370	50	106	528	72	33	394	49
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.82	0.82	0.82	0.83	0.83	0.83	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	123	544	463	125	546	464	173	996	135	88	856	106
Arrive On Green	0.07	0.29	0.29	0.07	0.29	0.29	0.10	0.32	0.32	0.05	0.27	0.27
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3132	426	1774	3171	392
Grp Volume(v), veh/h	54	452	191	55	370	50	106	298	302	33	219	224
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1788	1774	1770	1794
Q Serve(g_s), s	1.7	13.4	5.8	1.8	10.4	1.4	3.4	8.2	8.2	1.1	6.1	6.2
Cycle Q Clear(g_c), s	1.7	13.4	5.8	1.8	10.4	1.4	3.4	8.2	8.2	1.1	6.1	6.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		0.22
Lane Grp Cap(c), veh/h	123	544	463	125	546	464	173	563	568	88	478	484
V/C Ratio(X)	0.44	0.83	0.41	0.44	0.68	0.11	0.61	0.53	0.53	0.38	0.46	0.46
Avail Cap(c_a), veh/h	210	597	508	210	597	508	210	563	568	210	478	484
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.5	19.6	16.9	26.4	18.5	15.3	25.7	16.6	16.6	27.3	18.0	18.1
Incr Delay (d2), s/veh	2.4	9.0	0.6	2.4	2.7	0.1	3.6	3.5	3.5	2.6	3.1	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	8.3	2.6	0.9	5.8	0.6	1.8	4.5	4.6	0.6	3.4	3.5
LnGrp Delay(d),s/veh	28.9	28.6	17.5	28.9	21.2	15.4	29.3	20.1	20.1	29.9	21.2	21.2
LnGrp LOS	C	C	B	C	C	B	C	C	C	C	C	C
Approach Vol, veh/h		697			475			706			476	
Approach Delay, s/veh		25.5			21.5			21.5			21.8	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	22.8	8.2	21.3	9.8	20.0	8.1	21.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	3.1	10.2	3.8	15.4	5.4	8.2	3.7	12.4
Green Ext Time (p_c), s	0.0	2.9	0.0	1.9	0.0	3.7	0.0	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	22.8
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	107	245	72	85	173	112	74	1244	59	221	1360	131
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	126	288	85	109	222	144	79	1323	63	235	1447	139
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.78	0.78	0.78	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	156	335	285	137	315	268	120	1474	659	260	1753	784
Arrive On Green	0.09	0.18	0.18	0.08	0.17	0.17	0.07	0.42	0.42	0.15	0.50	0.50
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	126	288	85	109	222	144	79	1323	63	235	1447	139
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.2	13.3	4.1	5.4	10.0	7.4	3.9	30.9	2.1	11.6	31.0	4.3
Cycle Q Clear(g_c), s	6.2	13.3	4.1	5.4	10.0	7.4	3.9	30.9	2.1	11.6	31.0	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	156	335	285	137	315	268	120	1474	659	260	1753	784
V/C Ratio(X)	0.81	0.86	0.30	0.79	0.71	0.54	0.66	0.90	0.10	0.91	0.83	0.18
Avail Cap(c_a), veh/h	160	356	303	140	335	285	140	1474	659	260	1753	784
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.8	35.3	31.6	40.3	34.8	33.7	40.4	24.2	15.8	37.3	19.1	12.4
Incr Delay (d2), s/veh	24.9	17.9	0.6	26.0	6.1	1.7	8.7	9.0	0.3	32.2	4.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	8.5	1.9	3.6	5.7	3.4	2.2	16.9	1.0	8.0	16.2	2.0
LnGrp Delay(d),s/veh	64.7	53.3	32.2	66.3	41.0	35.5	49.2	33.1	16.0	69.5	23.7	12.9
LnGrp LOS	E	D	C	E	D	D	D	C	B	E	C	B
Approach Vol, veh/h		499			475			1465			1821	
Approach Delay, s/veh		52.6			45.1			33.2			28.8	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	41.0	10.9	20.0	10.0	48.0	11.8	19.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	13.0	37.0	7.0	17.0	7.0	43.0	8.0	16.0
Max Q Clear Time (g_c+I1), s	13.6	32.9	7.4	15.3	5.9	33.0	8.2	12.0
Green Ext Time (p_c), s	0.0	3.9	0.0	0.7	0.0	9.2	0.0	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	34.9
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	264	57	31	235	43	31	355	19	39	322	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	22	326	70	34	255	47	35	403	22	41	339	21
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.81	0.81	0.81	0.92	0.92	0.92	0.88	0.88	0.88	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	65	461	392	93	491	417	96	1091	59	108	1105	68
Arrive On Green	0.04	0.25	0.25	0.05	0.26	0.26	0.05	0.32	0.32	0.06	0.33	0.33
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3414	186	1774	3387	209
Grp Volume(v), veh/h	22	326	70	34	255	47	35	208	217	41	176	184
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1830	1774	1770	1826
Q Serve(g_s), s	0.6	8.0	1.7	0.9	5.9	1.1	1.0	4.5	4.6	1.1	3.7	3.8
Cycle Q Clear(g_c), s	0.6	8.0	1.7	0.9	5.9	1.1	1.0	4.5	4.6	1.1	3.7	3.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		0.11
Lane Grp Cap(c), veh/h	65	461	392	93	491	417	96	565	585	108	578	596
V/C Ratio(X)	0.34	0.71	0.18	0.36	0.52	0.11	0.37	0.37	0.37	0.38	0.31	0.31
Avail Cap(c_a), veh/h	248	707	601	248	707	601	248	565	585	248	578	596
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.5	17.2	14.8	22.9	15.7	14.0	22.9	13.1	13.2	22.6	12.6	12.6
Incr Delay (d2), s/veh	3.0	2.0	0.2	2.4	0.9	0.1	2.3	1.8	1.8	2.2	1.4	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	4.3	0.8	0.5	3.1	0.5	0.5	2.5	2.6	0.6	2.0	2.1
LnGrp Delay(d),s/veh	26.5	19.2	15.0	25.3	16.6	14.1	25.2	15.0	15.0	24.8	14.0	14.0
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		418			336			460			401	
Approach Delay, s/veh		18.9			17.1			15.7			15.1	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.0	20.0	6.6	16.4	6.7	20.3	5.8	17.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	3.1	6.6	2.9	10.0	3.0	5.8	2.6	7.9
Green Ext Time (p_c), s	0.0	3.0	0.0	2.4	0.0	3.2	0.0	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	52	44	21	44	47	45	1313	55	76	1414	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	30	59	50	25	52	56	48	1397	59	82	1520	34
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.88	0.88	0.88	0.84	0.84	0.84	0.94	0.94	0.94	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	80	104	88	69	87	94	111	1803	76	147	1917	858
Arrive On Green	0.04	0.11	0.11	0.04	0.11	0.11	0.06	0.52	0.52	0.08	0.54	0.54
Sat Flow, veh/h	1774	933	790	1774	822	885	1774	3461	146	1774	3539	1583
Grp Volume(v), veh/h	30	0	109	25	0	108	48	713	743	82	1520	34
Grp Sat Flow(s),veh/h/ln	1774	0	1723	1774	0	1707	1774	1770	1837	1774	1770	1583
Q Serve(g_s), s	1.1	0.0	3.9	0.9	0.0	3.9	1.7	21.1	21.2	2.9	22.5	0.7
Cycle Q Clear(g_c), s	1.1	0.0	3.9	0.9	0.0	3.9	1.7	21.1	21.2	2.9	22.5	0.7
Prop In Lane	1.00		0.46	1.00		0.52	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	80	0	193	69	0	181	111	922	957	147	1917	858
V/C Ratio(X)	0.38	0.00	0.57	0.36	0.00	0.60	0.43	0.77	0.78	0.56	0.79	0.04
Avail Cap(c_a), veh/h	190	0	422	190	0	418	190	922	957	190	1917	858
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	27.5	30.6	0.0	27.8	29.5	12.5	12.6	28.8	12.0	7.0
Incr Delay (d2), s/veh	2.9	0.0	2.6	3.1	0.0	3.1	2.7	6.3	6.1	3.3	3.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	2.0	0.5	0.0	2.0	0.9	11.7	12.2	1.5	11.7	0.3
LnGrp Delay(d),s/veh	33.2	0.0	30.1	33.7	0.0	31.0	32.2	18.8	18.7	32.0	15.5	7.1
LnGrp LOS	C		C	C		C	C	B	B	C	B	A
Approach Vol, veh/h		139			133			1504			1636	
Approach Delay, s/veh		30.7			31.5			19.2			16.1	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	38.0	6.6	11.3	8.1	39.3	6.9	10.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	34.0	7.0	16.0	7.0	34.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	4.9	23.2	2.9	5.9	3.7	24.5	3.1	5.9
Green Ext Time (p_c), s	0.0	10.0	0.0	0.8	0.0	8.8	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	18.7
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	508	1029	305	260	658	218	270	792	193	310	955	162
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	540	1095	324	302	765	253	297	870	212	341	1049	178
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	563	1062	475	313	862	282	290	933	417	355	1062	475
Arrive On Green	0.16	0.30	0.30	0.09	0.23	0.23	0.16	0.26	0.26	0.20	0.30	0.30
Sat Flow, veh/h	3442	3539	1583	3442	3792	1242	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	540	1095	324	302	683	335	297	870	212	341	1049	178
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1644	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	17.1	33.0	19.8	9.6	21.5	21.7	18.0	26.4	12.5	20.9	32.4	9.8
Cycle Q Clear(g_c), s	17.1	33.0	19.8	9.6	21.5	21.7	18.0	26.4	12.5	20.9	32.4	9.8
Prop In Lane	1.00		1.00	1.00		0.76	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	563	1062	475	313	770	374	290	933	417	355	1062	475
V/C Ratio(X)	0.96	1.03	0.68	0.97	0.89	0.90	1.02	0.93	0.51	0.96	0.99	0.37
Avail Cap(c_a), veh/h	563	1062	475	313	770	374	290	933	417	355	1062	475
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.6	38.5	33.9	49.8	41.1	41.2	46.0	39.5	34.4	43.6	38.3	30.4
Incr Delay (d2), s/veh	27.8	36.0	4.0	41.4	12.1	23.3	58.9	17.1	4.4	37.5	24.9	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	21.4	9.2	6.4	11.4	12.3	13.5	15.1	6.0	13.9	19.5	4.5
LnGrp Delay(d),s/veh	73.5	74.5	37.9	91.2	53.3	64.5	104.9	56.6	38.8	81.0	63.2	32.6
LnGrp LOS	E	F	D	F	D	E	F	E	D	F	E	C
Approach Vol, veh/h		1959			1320			1379			1568	
Approach Delay, s/veh		68.1			64.8			64.3			63.6	
Approach LOS		E			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	33.0	14.0	37.0	22.0	37.0	22.0	29.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	22.0	29.0	10.0	33.0	18.0	33.0	18.0	25.0
Max Q Clear Time (g_c+I1), s	22.9	28.4	11.6	35.0	20.0	34.4	19.1	23.7
Green Ext Time (p_c), s	0.0	0.6	0.0	0.0	0.0	0.0	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	65.4
HCM 2010 LOS	E

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	15	3	40	2	1	12	40	1423	2	47	1696	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	58	58	58	97	97	97	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	4	51	3	2	21	45	1614	2	48	1731	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2736	3545	877	2669	3555	808	1753	0	0	1616	0	0
Stage 1	1838	1838	-	1706	1706	-	-	-	-	-	-	-
Stage 2	898	1707	-	963	1849	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 10	6	292	11	6	324	353	-	-	399	-	-
Stage 1	78	125	-	95	145	-	-	-	-	-	-	-
Stage 2	301	145	-	274	123	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 7	5	292	7	5	324	353	-	-	399	-	-
Mov Cap-2 Maneuver	48	44	-	51	40	-	-	-	-	-	-	-
Stage 1	68	110	-	83	127	-	-	-	-	-	-	-
Stage 2	243	127	-	192	108	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	85.3	34.4	0.5	0.4
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	353	-	-	112	148	399	-	-
HCM Lane V/C Ratio	0.129	-	-	0.664	0.175	0.12	-	-
HCM Control Delay (s)	16.7	-	-	85.3	34.4	15.3	-	-
HCM Lane LOS	C	-	-	F	D	C	-	-
HCM 95th %tile Q(veh)	0.4	-	-	3.4	0.6	0.4	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	18	383	55	15	257	9	31	6	9	7	2	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	88	88	88	60	60	60	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	391	56	17	292	10	52	10	15	9	3	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	292	0	0	391	0	0	763	754	391	766	754	292
Stage 1	-	-	-	-	-	-	428	428	-	326	326	-
Stage 2	-	-	-	-	-	-	335	326	-	440	428	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1270	-	-	1168	-	-	321	338	658	320	338	747
Stage 1	-	-	-	-	-	-	605	585	-	687	648	-
Stage 2	-	-	-	-	-	-	679	648	-	596	585	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1270	-	-	1168	-	-	306	328	658	299	328	747
Mov Cap-2 Maneuver	-	-	-	-	-	-	306	328	-	299	328	-
Stage 1	-	-	-	-	-	-	596	577	-	677	639	-
Stage 2	-	-	-	-	-	-	653	639	-	564	577	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.4	18.4	13.5
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	345	1270	-	-	1168	-	-	452
HCM Lane V/C Ratio	0.222	0.014	-	-	0.015	-	-	0.059
HCM Control Delay (s)	18.4	7.9	-	-	8.1	-	-	13.5
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.2

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Cottonwood Ave & Driveway

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	28	455	312	11	14	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	81	81	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	31	500	385	14	15	60

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	399	0	-	0	954	392
Stage 1	-	-	-	-	392	-
Stage 2	-	-	-	-	562	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1160	-	-	-	287	657
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	571	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1160	-	-	-	276	657
Mov Cap-2 Maneuver	-	-	-	-	276	-
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	550	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1160	-	-	-	513
HCM Lane V/C Ratio	0.027	-	-	-	0.146
HCM Control Delay (s)	8.2	0	-	-	13.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	24.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	0	74	0	0	40	54	1369	73	0	1628	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	92	92	92	95	95	95	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	0	103	0	0	43	57	1441	77	0	1751	41

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2605	3403	896	2468	3384	759	1791	0	0	1518	0	0
Stage 1	1771	1771	-	1593	1593	-	-	-	-	-	-	-
Stage 2	834	1632	-	875	1791	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 12	7	283	15	7	349	342	-	-	436	-	-
Stage 1	86	135	-	112	165	-	-	-	-	-	-	-
Stage 2	329	158	-	310	132	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 9	6	283	8	6	349	342	-	-	436	-	-
Mov Cap-2 Maneuver	~ 9	6	-	8	6	-	-	-	-	-	-	-
Stage 1	72	135	-	93	138	-	-	-	-	-	-	-
Stage 2	240	132	-	197	132	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 719.5	16.8	0.6	0
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	342	-	-	54	349	436	-	-
HCM Lane V/C Ratio	0.166	-	-	2.212	0.125	-	-	-
HCM Control Delay (s)	17.6	-	-	$ 719.5	16.8	0	-	-
HCM Lane LOS	C	-	-	F	C	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	11.9	0.4	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
1: Perris Blvd & Eucalyptus Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	63	101	41	52	81	84	58	1186	56	71	1134	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	70	112	46	63	98	101	64	1303	62	79	1260	64
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.83	0.83	0.83	0.91	0.91	0.91	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	218	185	133	210	178	134	1652	739	149	1683	753
Arrive On Green	0.08	0.12	0.12	0.07	0.11	0.11	0.08	0.47	0.47	0.08	0.48	0.48
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	70	112	46	63	98	101	64	1303	62	79	1260	64
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	2.3	3.5	1.6	2.1	3.1	3.8	2.1	19.3	1.3	2.7	18.0	1.4
Cycle Q Clear(g_c), s	2.3	3.5	1.6	2.1	3.1	3.8	2.1	19.3	1.3	2.7	18.0	1.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	140	218	185	133	210	178	134	1652	739	149	1683	753
V/C Ratio(X)	0.50	0.51	0.25	0.48	0.47	0.57	0.48	0.79	0.08	0.53	0.75	0.09
Avail Cap(c_a), veh/h	200	480	408	200	480	408	200	1652	739	200	1683	753
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.4	25.8	24.9	27.6	25.8	26.1	27.5	14.0	9.2	27.3	13.3	8.9
Incr Delay (d2), s/veh	2.7	1.9	0.7	2.6	1.6	2.8	2.6	3.9	0.2	2.9	3.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.9	0.7	1.1	1.7	1.8	1.1	10.1	0.6	1.4	9.5	0.6
LnGrp Delay(d),s/veh	30.2	27.6	25.6	30.2	27.4	28.9	30.2	17.9	9.4	30.2	16.4	9.1
LnGrp LOS	C	C	C	C	C	C	C	B	A	C	B	A
Approach Vol, veh/h		228			262			1429			1403	
Approach Delay, s/veh		28.0			28.7			18.1			16.8	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	33.0	8.6	11.3	8.7	33.5	8.9	11.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	29.0	7.0	16.0	7.0	29.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	4.7	21.3	4.1	5.5	4.1	20.0	4.3	5.8
Green Ext Time (p_c), s	0.0	7.0	0.0	1.1	0.0	8.1	0.0	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	19.1
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
3: Perris Blvd & Dracaea Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	78	91	28	39	65	63	26	1165	27	29	1120	57
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	90	105	32	45	75	72	31	1387	32	34	1302	66
Adj No. of Lanes	0	1	1	0	1	1	1	2	0	1	2	1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.84	0.84	0.84	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	94	77	453	89	109	453	85	1582	36	91	1596	714
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.05	0.45	0.45	0.05	0.45	0.45
Sat Flow, veh/h	0	270	1583	0	379	1583	1774	3536	82	1774	3539	1583
Grp Volume(v), veh/h	195	0	32	120	0	72	31	693	726	34	1302	66
Grp Sat Flow(s),veh/h/ln	270	0	1583	379	0	1583	1774	1770	1848	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.8	0.0	0.0	1.9	0.9	19.9	19.9	1.0	17.9	1.3
Cycle Q Clear(g_c), s	16.0	0.0	0.8	16.0	0.0	1.9	0.9	19.9	19.9	1.0	17.9	1.3
Prop In Lane	0.46		1.00	0.37		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	171	0	453	197	0	453	85	792	827	91	1596	714
V/C Ratio(X)	1.14	0.00	0.07	0.61	0.00	0.16	0.37	0.88	0.88	0.37	0.82	0.09
Avail Cap(c_a), veh/h	171	0	453	197	0	453	222	792	827	222	1596	714
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.2	0.0	14.5	16.7	0.0	14.9	25.8	14.0	14.0	25.6	13.3	8.8
Incr Delay (d2), s/veh	110.5	0.0	0.1	5.3	0.0	0.2	2.6	13.0	12.7	2.5	4.7	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	0.0	0.4	1.7	0.0	0.8	0.5	12.5	13.0	0.6	9.5	0.6
LnGrp Delay(d),s/veh	131.8	0.0	14.6	22.0	0.0	15.1	28.4	27.0	26.7	28.1	18.0	9.0
LnGrp LOS	F		B	C		B	C	C	C	C	B	A
Approach Vol, veh/h		227			192			1450			1402	
Approach Delay, s/veh		115.3			19.4			26.9			17.9	
Approach LOS		F			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.9	29.0		20.0	6.7	29.2		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	25.0		16.0	7.0	25.0		16.0
Max Q Clear Time (g_c+I1), s	3.0	21.9		18.0	2.9	19.9		18.0
Green Ext Time (p_c), s	0.0	2.9		0.0	0.0	4.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	28.7
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
4: Indian St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	271	115	49	325	26	97	278	47	22	239	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	23	347	147	58	387	31	100	287	48	24	257	24
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.78	0.78	0.78	0.84	0.84	0.84	0.97	0.97	0.97	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	468	398	131	535	455	173	1084	179	69	975	90
Arrive On Green	0.04	0.25	0.25	0.07	0.29	0.29	0.10	0.36	0.36	0.04	0.30	0.30
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3041	503	1774	3275	303
Grp Volume(v), veh/h	23	347	147	58	387	31	100	166	169	24	138	143
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1774	1774	1770	1809
Q Serve(g_s), s	0.7	9.8	4.4	1.8	10.7	0.8	3.1	3.8	3.9	0.8	3.4	3.4
Cycle Q Clear(g_c), s	0.7	9.8	4.4	1.8	10.7	0.8	3.1	3.8	3.9	0.8	3.4	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		0.17
Lane Grp Cap(c), veh/h	66	468	398	131	535	455	173	630	632	69	527	538
V/C Ratio(X)	0.35	0.74	0.37	0.44	0.72	0.07	0.58	0.26	0.27	0.35	0.26	0.27
Avail Cap(c_a), veh/h	217	587	499	217	587	499	217	630	632	217	527	538
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	19.7	17.7	25.3	18.3	14.8	24.7	13.1	13.1	26.7	15.3	15.3
Incr Delay (d2), s/veh	3.1	3.8	0.6	2.3	4.0	0.1	3.0	1.0	1.0	3.0	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	5.5	2.0	1.0	6.1	0.4	1.6	2.0	2.1	0.4	1.8	1.9
LnGrp Delay(d),s/veh	29.9	23.5	18.2	27.7	22.3	14.9	27.7	14.1	14.1	29.7	16.5	16.5
LnGrp LOS	C	C	B	C	C	B	C	B	B	C	B	B
Approach Vol, veh/h		517			476			435			305	
Approach Delay, s/veh		22.3			22.5			17.2			17.5	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.2	24.4	8.2	18.3	9.6	21.0	6.1	20.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	17.0	7.0	18.0	7.0	17.0	7.0	18.0
Max Q Clear Time (g_c+I1), s	2.8	5.9	3.8	11.8	5.1	5.4	2.7	12.7
Green Ext Time (p_c), s	0.0	2.7	0.0	2.5	0.0	2.7	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	20.2
HCM 2010 LOS	C

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
5: Perris Blvd & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	93	158	65	130	200	189	87	1054	75	216	901	106
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	118	200	82	228	351	332	96	1158	82	248	1036	122
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.79	0.79	0.79	0.57	0.57	0.57	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	147	314	267	259	431	366	127	1233	552	279	1537	688
Arrive On Green	0.08	0.17	0.17	0.15	0.23	0.23	0.07	0.35	0.35	0.16	0.43	0.43
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	118	200	82	228	351	332	96	1158	82	248	1036	122
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.8	8.9	4.0	11.2	15.9	18.1	4.7	28.2	3.2	12.2	20.8	4.2
Cycle Q Clear(g_c), s	5.8	8.9	4.0	11.2	15.9	18.1	4.7	28.2	3.2	12.2	20.8	4.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	147	314	267	259	431	366	127	1233	552	279	1537	688
V/C Ratio(X)	0.80	0.64	0.31	0.88	0.81	0.91	0.76	0.94	0.15	0.89	0.67	0.18
Avail Cap(c_a), veh/h	160	335	285	259	440	374	199	1233	552	279	1537	688
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.1	34.5	32.5	37.2	32.4	33.3	40.6	28.1	19.9	36.7	20.1	15.4
Incr Delay (d2), s/veh	23.1	3.6	0.6	27.4	11.1	24.7	8.9	14.7	0.6	27.4	2.4	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	4.9	1.8	7.5	9.5	10.4	2.6	16.2	1.5	8.1	10.6	1.9
LnGrp Delay(d),s/veh	63.1	38.1	33.1	64.6	43.5	58.0	49.5	42.7	20.5	64.1	22.5	16.0
LnGrp LOS	E	D	C	E	D	E	D	D	C	E	C	B
Approach Vol, veh/h		400			911			1336			1406	
Approach Delay, s/veh		44.5			54.0			41.9			29.3	
Approach LOS		D			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	35.0	17.0	19.0	10.3	42.7	11.4	24.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	14.0	31.0	13.0	16.0	10.0	35.0	8.0	21.0
Max Q Clear Time (g_c+I1), s	14.2	30.2	13.2	10.9	6.7	22.8	7.8	20.1
Green Ext Time (p_c), s	0.0	0.8	0.0	2.1	0.1	10.0	0.0	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	40.5
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
7: Kitching St & Cottonwood Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	221	64	10	245	31	34	206	15	28	223	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	62	395	114	15	360	46	40	245	18	32	256	22
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.56	0.56	0.56	0.68	0.68	0.68	0.84	0.84	0.84	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	594	505	46	497	422	104	1028	75	88	984	84
Arrive On Green	0.08	0.32	0.32	0.03	0.27	0.27	0.06	0.31	0.31	0.05	0.30	0.30
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3345	244	1774	3301	282
Grp Volume(v), veh/h	62	395	114	15	360	46	40	129	134	32	136	142
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1820	1774	1770	1813
Q Serve(g_s), s	1.8	9.8	2.8	0.4	9.4	1.2	1.2	2.9	3.0	0.9	3.1	3.2
Cycle Q Clear(g_c), s	1.8	9.8	2.8	0.4	9.4	1.2	1.2	2.9	3.0	0.9	3.1	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		0.16
Lane Grp Cap(c), veh/h	140	594	505	46	497	422	104	544	559	88	527	540
V/C Ratio(X)	0.44	0.66	0.23	0.32	0.72	0.11	0.38	0.24	0.24	0.36	0.26	0.26
Avail Cap(c_a), veh/h	231	659	560	231	659	560	231	544	559	231	527	540
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.6	15.8	13.4	25.7	17.9	14.9	24.3	13.9	13.9	24.7	14.3	14.3
Incr Delay (d2), s/veh	2.2	2.2	0.2	4.0	2.7	0.1	2.3	1.0	1.0	2.5	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	5.4	1.3	0.3	5.2	0.5	0.6	1.6	1.6	0.5	1.7	1.8
LnGrp Delay(d),s/veh	25.8	18.0	13.6	29.6	20.6	15.0	26.7	14.9	14.9	27.2	15.5	15.5
LnGrp LOS	C	B	B	C	C	B	C	B	B	C	B	B
Approach Vol, veh/h		571			421			303			310	
Approach Delay, s/veh		18.0			20.3			16.5			16.7	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	20.5	5.4	21.1	7.1	20.0	8.2	18.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	16.0	7.0	19.0	7.0	16.0	7.0	19.0
Max Q Clear Time (g_c+I1), s	2.9	5.0	2.4	11.8	3.2	5.2	3.8	11.4
Green Ext Time (p_c), s	0.0	2.2	0.0	2.8	0.0	2.2	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	18.1
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
8: Perris Blvd & Bay Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	41	30	26	34	66	33	1104	39	67	1068	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	29	48	35	34	44	86	34	1150	41	75	1200	35
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.85	0.85	0.85	0.77	0.77	0.77	0.96	0.96	0.96	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	81	126	92	92	74	145	92	1539	55	155	1688	755
Arrive On Green	0.05	0.13	0.13	0.05	0.13	0.13	0.05	0.44	0.44	0.09	0.48	0.48
Sat Flow, veh/h	1774	1003	731	1774	565	1103	1774	3486	124	1774	3539	1583
Grp Volume(v), veh/h	29	0	83	34	0	130	34	584	607	75	1200	35
Grp Sat Flow(s),veh/h/ln	1774	0	1734	1774	0	1668	1774	1770	1841	1774	1770	1583
Q Serve(g_s), s	0.9	0.0	2.4	1.0	0.0	4.0	1.0	14.9	15.0	2.2	14.6	0.6
Cycle Q Clear(g_c), s	0.9	0.0	2.4	1.0	0.0	4.0	1.0	14.9	15.0	2.2	14.6	0.6
Prop In Lane	1.00		0.42	1.00		0.66	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	81	0	217	92	0	219	92	781	812	155	1688	755
V/C Ratio(X)	0.36	0.00	0.38	0.37	0.00	0.59	0.37	0.75	0.75	0.48	0.71	0.05
Avail Cap(c_a), veh/h	228	0	510	228	0	491	228	781	812	228	1688	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.2	0.0	21.8	24.9	0.0	22.2	24.9	12.7	12.7	23.6	11.3	7.6
Incr Delay (d2), s/veh	2.7	0.0	1.1	2.5	0.0	2.5	2.5	6.4	6.2	2.3	2.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	1.2	0.6	0.0	2.0	0.6	8.5	8.8	1.2	7.6	0.3
LnGrp Delay(d),s/veh	27.8	0.0	22.9	27.4	0.0	24.8	27.4	19.1	18.9	26.0	13.8	7.7
LnGrp LOS	C		C	C		C	C	B	B	C	B	A
Approach Vol, veh/h		112			164			1225			1310	
Approach Delay, s/veh		24.2			25.3			19.2			14.4	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	28.0	6.8	10.8	6.8	29.9	6.5	11.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	24.0	7.0	16.0	7.0	24.0	7.0	16.0
Max Q Clear Time (g_c+I1), s	4.2	17.0	3.0	4.4	3.0	16.6	2.9	6.0
Green Ext Time (p_c), s	0.0	6.2	0.0	0.8	0.0	6.5	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	17.5
HCM 2010 LOS	B

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 Signalized Intersection Summary
9: Perris Blvd & Alessandro Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	375	519	232	239	489	179	308	739	140	211	693	183
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	417	577	258	278	569	208	338	812	154	229	753	199
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.86	0.86	0.86	0.91	0.91	0.91	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	435	765	342	360	720	257	375	1153	516	268	939	420
Arrive On Green	0.13	0.22	0.22	0.10	0.19	0.19	0.21	0.33	0.33	0.15	0.27	0.27
Sat Flow, veh/h	3442	3539	1583	3442	3701	1319	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	417	577	258	278	520	257	338	812	154	229	753	199
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1630	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	9.5	12.1	12.1	6.2	11.5	11.9	14.7	15.9	5.7	10.0	15.7	8.4
Cycle Q Clear(g_c), s	9.5	12.1	12.1	6.2	11.5	11.9	14.7	15.9	5.7	10.0	15.7	8.4
Prop In Lane	1.00		1.00	1.00		0.81	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	435	765	342	360	660	317	375	1153	516	268	939	420
V/C Ratio(X)	0.96	0.75	0.75	0.77	0.79	0.81	0.90	0.70	0.30	0.85	0.80	0.47
Avail Cap(c_a), veh/h	435	765	342	392	686	330	381	1153	516	292	939	420
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	29.0	29.0	34.5	30.3	30.5	30.4	23.3	19.9	32.7	27.1	24.4
Incr Delay (d2), s/veh	32.6	4.3	9.1	8.5	5.9	13.7	23.6	3.6	1.5	20.1	7.2	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	6.3	6.1	3.4	6.0	6.6	9.6	8.4	2.7	6.4	8.6	4.1
LnGrp Delay(d),s/veh	66.9	33.3	38.1	43.0	36.2	44.1	54.0	27.0	21.4	52.8	34.3	28.2
LnGrp LOS	E	C	D	D	D	D	D	C	C	D	C	C
Approach Vol, veh/h		1252			1055			1304			1181	
Approach Delay, s/veh		45.5			39.9			33.3			36.8	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.9	29.8	12.3	21.1	20.7	25.0	14.0	19.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	13.0	25.0	9.0	17.0	17.0	21.0	10.0	16.0
Max Q Clear Time (g_c+I1), s	12.0	17.9	8.2	14.1	16.7	17.7	11.5	13.9
Green Ext Time (p_c), s	0.1	5.4	0.1	2.2	0.0	2.7	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	38.8
HCM 2010 LOS	D

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
2: Perris Blvd & Atwood Ave

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	20	4	30	3	7	15	41	1265	3	38	1170	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	72	72	72	89	89	89	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	6	46	4	10	21	51	1563	4	44	1345	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2331	3112	683	2430	3121	784	1367	0	0	1567	0	0
Stage 1	1443	1443	-	1667	1667	-	-	-	-	-	-	-
Stage 2	888	1669	-	763	1454	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 20	11	392	17	11	336	498	-	-	417	-	-
Stage 1	139	196	-	100	152	-	-	-	-	-	-	-
Stage 2	305	151	-	363	193	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 14	9	392	12	~ 9	336	498	-	-	417	-	-
Mov Cap-2 Maneuver	75	59	-	63	63	-	-	-	-	-	-	-
Stage 1	125	175	-	90	136	-	-	-	-	-	-	-
Stage 2	238	136	-	276	173	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	71.1	45.4	0.4	0.5
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	498	-	-	131	123	417	-	-
HCM Lane V/C Ratio	0.102	-	-	0.634	0.282	0.105	-	-
HCM Control Delay (s)	13	-	-	71.1	45.4	14.6	-	-
HCM Lane LOS	B	-	-	F	E	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-	3.3	1.1	0.3	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
6: Crape Myrtle Dr & Cottonwood Ave

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	25	343	46	3	289	4	34	4	10	2	2	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	0	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	57	57	57	58	58	58	79	79	79	65	65	65
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	602	81	5	498	7	43	5	13	3	3	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	498	0	0	602	0	0	1207	1198	602	1207	1198	498
Stage 1	-	-	-	-	-	-	689	689	-	509	509	-
Stage 2	-	-	-	-	-	-	518	509	-	698	689	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1066	-	-	975	-	-	160	186	500	160	186	572
Stage 1	-	-	-	-	-	-	436	446	-	547	538	-
Stage 2	-	-	-	-	-	-	541	538	-	431	446	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1066	-	-	975	-	-	148	177	500	147	177	572
Mov Cap-2 Maneuver	-	-	-	-	-	-	148	177	-	147	177	-
Stage 1	-	-	-	-	-	-	418	428	-	524	535	-
Stage 2	-	-	-	-	-	-	521	535	-	398	428	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.1	35.9	16.7
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	176	1066	-	-	975	-	-	330
HCM Lane V/C Ratio	0.345	0.041	-	-	0.005	-	-	0.065
HCM Control Delay (s)	35.9	8.5	-	-	8.7	-	-	16.7
HCM Lane LOS	E	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.4	0.1	-	-	0	-	-	0.2

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
10: Cottonwood Ave & Driveway

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	39	281	367	16	20	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	81	81	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	51	365	453	20	22	85

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	473	0	-	0	929	463
Stage 1	-	-	-	-	463	-
Stage 2	-	-	-	-	466	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1089	-	-	-	297	599
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	632	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1089	-	-	-	279	599
Mov Cap-2 Maneuver	-	-	-	-	279	-
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	595	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	14.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1089	-	-	-	485
HCM Lane V/C Ratio	0.047	-	-	-	0.22
HCM Control Delay (s)	8.5	0	-	-	14.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

HCM 2010 TWSC
11: Perris Blvd & Driveway

Intersection	
Int Delay, s/veh	22.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	21	0	78	0	0	57	70	1205	100	0	1143	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	92	92	92	82	82	82	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	0	98	0	0	62	85	1470	122	0	1329	44

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2256	3113	687	2366	3074	796	1373	0	0	1591	0	0
Stage 1	1351	1351	-	1701	1701	-	-	-	-	-	-	-
Stage 2	905	1762	-	665	1373	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 22	11	389	18	12	330	496	-	-	408	-	-
Stage 1	158	217	-	95	146	-	-	-	-	-	-	-
Stage 2	298	136	-	416	212	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 16	9	389	12	10	330	496	-	-	408	-	-
Mov Cap-2 Maneuver	~ 16	9	-	12	10	-	-	-	-	-	-	-
Stage 1	131	217	-	79	121	-	-	-	-	-	-	-
Stage 2	201	113	-	312	212	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 561.8	18.4	0.7	0
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	496	-	-	65	330	408	-	-
HCM Lane V/C Ratio	0.172	-	-	1.904	0.188	-	-	-
HCM Control Delay (s)	13.8	-	-	$ 561.8	18.4	0	-	-
HCM Lane LOS	B	-	-	F	C	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	11.4	0.7	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Queuing and Blocking Report
Cumulative WP AM

2/8/2016

Intersection: 10: Cottonwood Ave

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	181	264	70
Average Queue (ft)	7	39	21
95th Queue (ft)	30	179	50
Link Distance (ft)	163	1161	109
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	5		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Perris Blvd & Driveway

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	52	151	53	56	21	224	463	205
Average Queue (ft)	14	65	13	2	1	25	42	18
95th Queue (ft)	42	142	42	19	7	95	210	102
Link Distance (ft)	116	136		291	291		450	450
Upstream Blk Time (%)		12					0	
Queuing Penalty (veh)		0					0	
Storage Bay Dist (ft)			100			200		
Storage Blk Time (%)							2	
Queuing Penalty (veh)							1	

Zone Summary

Zone wide Queuing Penalty: 6

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Queuing and Blocking Report
Cumulaitve WP PM

2/8/2016

Intersection: 10: Cottonwood Ave & Driveway

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	159	31	75
Average Queue (ft)	14	1	19
95th Queue (ft)	74	11	46
Link Distance (ft)	161	1162	58
Upstream Blk Time (%)	0		0
Queuing Penalty (veh)	0		0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Perris Blvd & Driveway

Movement	EB	WB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	TR	L	T	TR
Maximum Queue (ft)	180	151	71	22	54	465	341
Average Queue (ft)	129	132	29	1	20	148	79
95th Queue (ft)	159	173	63	11	54	344	262
Link Distance (ft)	116	136		291		450	450
Upstream Blk Time (%)	90	90				0	
Queuing Penalty (veh)	0	0				0	
Storage Bay Dist (ft)			100		200		
Storage Blk Time (%)						7	
Queuing Penalty (veh)						3	

Zone Summary

Zone wide Queuing Penalty: 3

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Queuing and Blocking Report
Cumulative WP Sunday

2/8/2016

Intersection: 10: Cottonwood Ave & Driveway

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	138	91	51
Average Queue (ft)	30	7	22
95th Queue (ft)	98	38	42
Link Distance (ft)	159	1163	26
Upstream Blk Time (%)			8
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Perris Blvd & Driveway

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	151	151	125	308	299	94	257	216
Average Queue (ft)	77	146	53	17	8	27	34	17
95th Queue (ft)	140	180	99	122	78	65	160	101
Link Distance (ft)	116	136		291	291		450	450
Upstream Blk Time (%)	33	93		0	0			
Queuing Penalty (veh)	0	0		1	1			
Storage Bay Dist (ft)			100			200		
Storage Blk Time (%)			6				1	
Queuing Penalty (veh)			45				1	

Zone Summary

Zone wide Queuing Penalty: 48

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Queuing and Blocking Report
Cumulative WP Alternative 1 AM

2/8/2016

Intersection: 10: Cottonwood Ave & Driveway

Movement	WB	SB
Directions Served	TR	LR
Maximum Queue (ft)	500	67
Average Queue (ft)	93	24
95th Queue (ft)	347	50
Link Distance (ft)	1161	109
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: Perris Blvd & Driveway

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	TR	T	TR
Maximum Queue (ft)	50	74	31	50	76	286	211
Average Queue (ft)	8	31	8	2	3	88	29
95th Queue (ft)	31	55	29	17	26	234	134
Link Distance (ft)	116	136		291	291	450	450
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			100				
Storage Blk Time (%)						2	
Queuing Penalty (veh)						0	

Zone Summary

Zone wide Queuing Penalty: 0

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Queuing and Blocking Report
Cumulaitve WP Alternative 1 PM

2/8/2016

Intersection: 10: Cottonwood Ave & Driveway

Movement	WB	SB
Directions Served	TR	LR
Maximum Queue (ft)	320	75
Average Queue (ft)	34	37
95th Queue (ft)	172	65
Link Distance (ft)	1162	58
Upstream Blk Time (%)		9
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: Perris Blvd & Driveway

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	TR	T	TR
Maximum Queue (ft)	132	105	123	161	180	484	491
Average Queue (ft)	104	37	40	6	7	260	191
95th Queue (ft)	165	74	86	54	62	497	425
Link Distance (ft)	116	136		291	291	450	450
Upstream Blk Time (%)	60					4	3
Queuing Penalty (veh)	0					0	0
Storage Bay Dist (ft)			100				
Storage Blk Time (%)			4			21	
Queuing Penalty (veh)			27			0	

Zone Summary

Zone wide Queuing Penalty: 27

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Queuing and Blocking Report
Cumulative WP Alternative 1 Sunday

2/8/2016

Intersection: 10: Cottonwood Ave & Driveway

Movement	WB	SB
Directions Served	TR	LR
Maximum Queue (ft)	372	60
Average Queue (ft)	57	33
95th Queue (ft)	237	50
Link Distance (ft)	1163	26
Upstream Blk Time (%)		27
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: Perris Blvd & Driveway

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	T	TR
Maximum Queue (ft)	140	72	72	502	465
Average Queue (ft)	84	27	35	99	70
95th Queue (ft)	154	53	66	371	308
Link Distance (ft)	116	136		450	450
Upstream Blk Time (%)	37			2	1
Queuing Penalty (veh)	0			0	0
Storage Bay Dist (ft)			100		
Storage Blk Time (%)				12	
Queuing Penalty (veh)				0	

Zone Summary

Zone wide Queuing Penalty: 0

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Queuing and Blocking Report
Cumulative WP Alternative 2 AM

2/8/2016

Intersection: 10: Cottonwood Ave & Driveway

Movement	WB	SB
Directions Served	TR	LR
Maximum Queue (ft)	465	124
Average Queue (ft)	73	38
95th Queue (ft)	274	90
Link Distance (ft)	1161	109
Upstream Blk Time (%)		9
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: Perris Blvd & Driveway

Movement	EB	WB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	L	T	TR
Maximum Queue (ft)	30	74	55	55	54	252	241
Average Queue (ft)	11	29	12	2	17	37	24
95th Queue (ft)	34	59	38	19	44	146	121
Link Distance (ft)	116	136		291		450	450
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			100		200		
Storage Blk Time (%)						1	
Queuing Penalty (veh)						0	

Zone Summary

Zone wide Queuing Penalty: 0

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Queuing and Blocking Report
Cumulaitve WP Alternative 2 PM

2/8/2016

Intersection: 10: Cottonwood Ave & Driveway

Movement	WB	SB
Directions Served	TR	LR
Maximum Queue (ft)	116	75
Average Queue (ft)	14	30
95th Queue (ft)	65	57
Link Distance (ft)	1162	58
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: Perris Blvd & Driveway

Movement	EB	WB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	L	T	TR
Maximum Queue (ft)	169	54	102	224	358	313
Average Queue (ft)	123	33	38	32	89	50
95th Queue (ft)	149	60	84	97	264	202
Link Distance (ft)	116	136			450	450
Upstream Blk Time (%)	97					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)			100	200		
Storage Blk Time (%)			3		2	
Queuing Penalty (veh)			23		1	

Zone Summary

Zone wide Queuing Penalty: 24

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Queuing and Blocking Report
Cumulative WP Alternative 2 Sunday

2/8/2016

Intersection: 10: Cottonwood Ave & Driveway

Movement	WB	SB
Directions Served	TR	LR
Maximum Queue (ft)	258	51
Average Queue (ft)	32	31
95th Queue (ft)	149	48
Link Distance (ft)	1163	26
Upstream Blk Time (%)		22
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: Perris Blvd & Driveway

Movement	EB	WB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	TR	L	T	TR
Maximum Queue (ft)	156	122	96	22	76	182	21
Average Queue (ft)	88	38	36	1	36	14	1
95th Queue (ft)	151	76	72	10	74	90	7
Link Distance (ft)	116	136		291		450	450
Upstream Blk Time (%)	32	0					
Queuing Penalty (veh)	0	0					
Storage Bay Dist (ft)			100		200		
Storage Blk Time (%)			0			0	
Queuing Penalty (veh)			0			0	

Zone Summary

Zone wide Queuing Penalty: 0

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Queuing and Blocking Report
Cumulative WP Alternative 3 AM

2/8/2016

Intersection: 10: Cottonwood Ave & Driveway

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	164	261	73
Average Queue (ft)	26	22	25
95th Queue (ft)	103	128	59
Link Distance (ft)	163	1161	109
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	4		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Perris Blvd & Driveway

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	T	TR
Maximum Queue (ft)	94	71	31	285	238
Average Queue (ft)	17	24	9	62	41
95th Queue (ft)	61	54	31	227	170
Link Distance (ft)	116	136		1114	1114
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100		
Storage Blk Time (%)				2	
Queuing Penalty (veh)				0	

Zone Summary

Zone wide Queuing Penalty: 4

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Queuing and Blocking Report
Cumulaitve WP Alternative 3 PM

2/8/2016

Intersection: 10: Cottonwood Ave & Driveway

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	162	94	52
Average Queue (ft)	23	4	29
95th Queue (ft)	80	34	55
Link Distance (ft)	161	1162	58
Upstream Blk Time (%)	0		0
Queuing Penalty (veh)	0		0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Perris Blvd & Driveway

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	T	TR
Maximum Queue (ft)	180	115	72	489	484
Average Queue (ft)	116	31	36	248	186
95th Queue (ft)	158	76	71	520	480
Link Distance (ft)	116	136		450	450
Upstream Blk Time (%)	55			7	3
Queuing Penalty (veh)	0			0	0
Storage Bay Dist (ft)			100		
Storage Blk Time (%)				21	
Queuing Penalty (veh)				0	

Zone Summary

Zone wide Queuing Penalty: 0

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Queuing and Blocking Report
Cumulative WP Alternative 3 Sunday

2/8/2016

Intersection: 10: Cottonwood Ave & Driveway

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	160	205	51
Average Queue (ft)	29	21	31
95th Queue (ft)	102	113	46
Link Distance (ft)	159	1163	26
Upstream Blk Time (%)	0		22
Queuing Penalty (veh)	0		0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Perris Blvd & Driveway

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	T	TR
Maximum Queue (ft)	180	72	72	152	142
Average Queue (ft)	79	35	37	15	10
95th Queue (ft)	148	58	62	85	63
Link Distance (ft)	116	136		1114	1114
Upstream Blk Time (%)	30				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)			100		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Zone Summary

Zone wide Queuing Penalty: 0

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

APPENDIX E

SIGNAL WARRANT WORKSHEETS

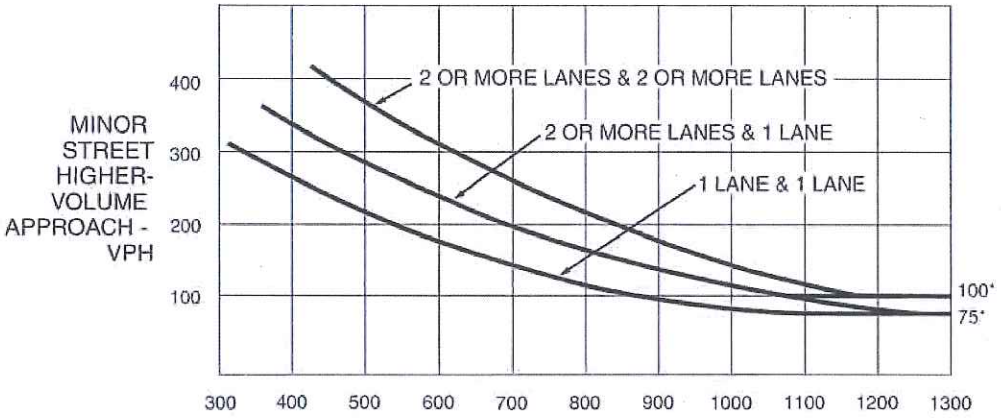
Figure 4C-3. Warrant 3, Peak Hour

Not warranted

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

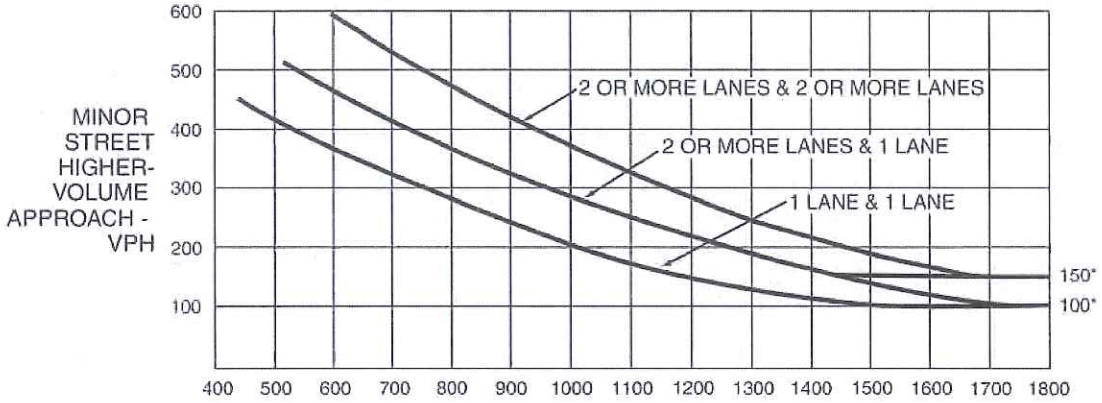
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

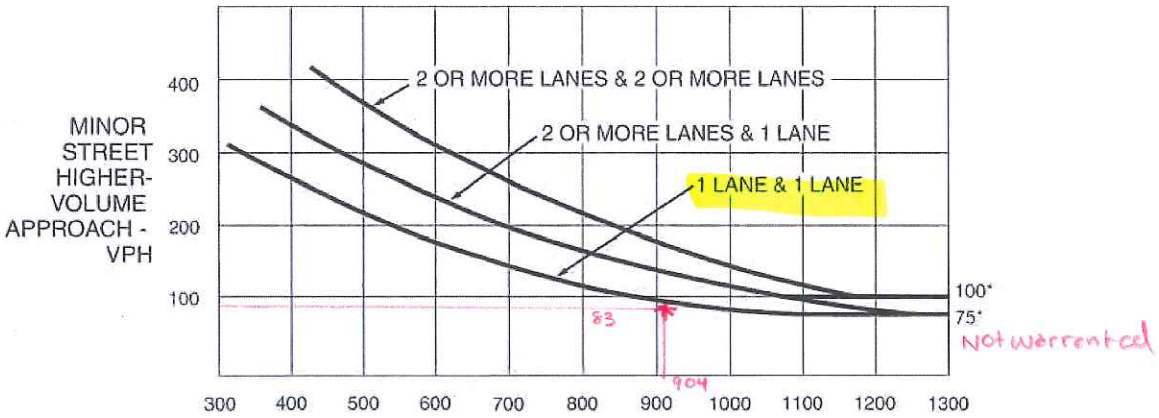
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

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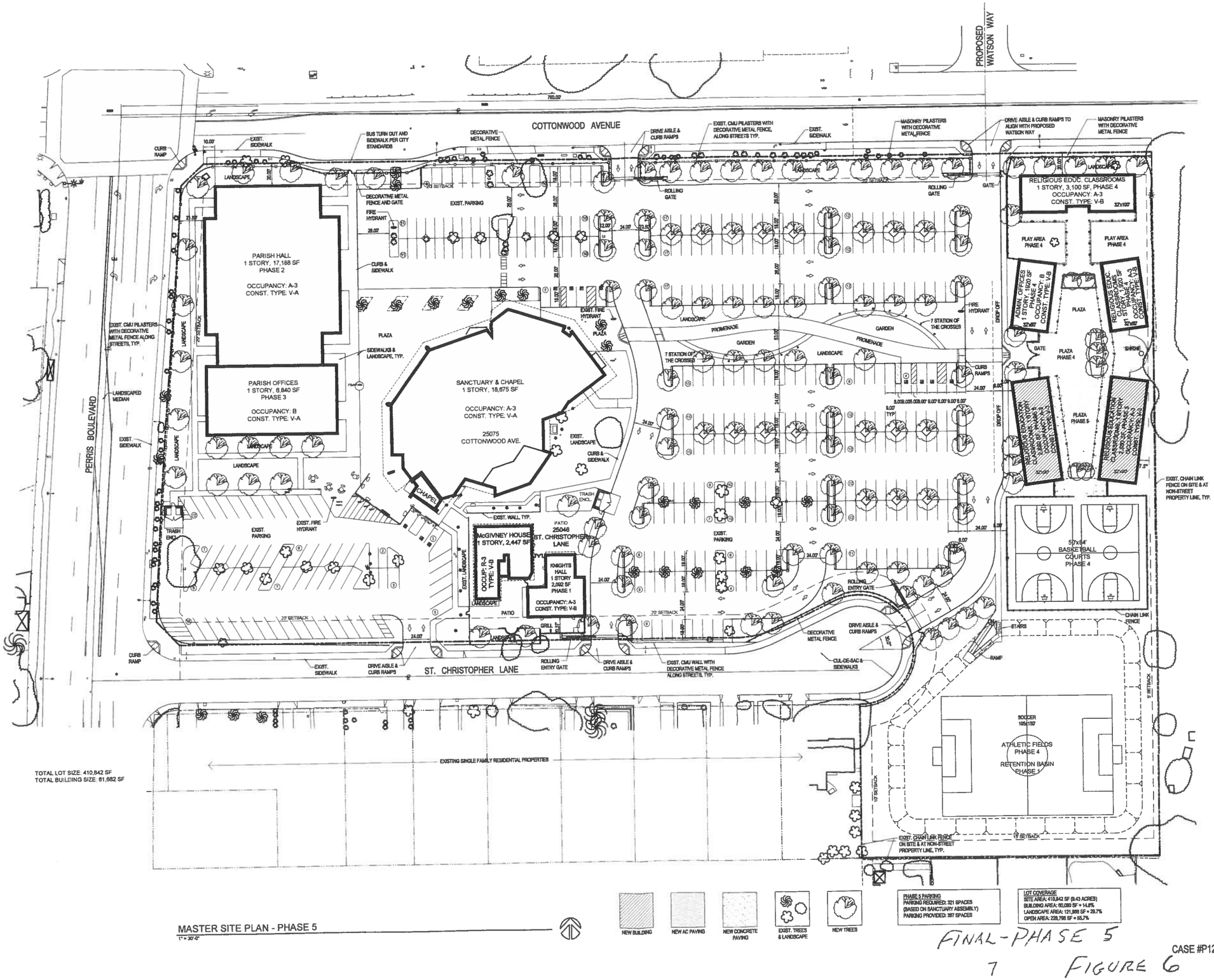
Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

APPENDIX **F**

ADDITIONAL INFORMATION



MASTER SITE PLAN - PHASE 5
1" = 30'-0"

FINAL-PHASE 5
7 FIGURE 6

CASE #P12-051

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LICENSED ARCHITECT
BENNETT LORD
RA. C13928
EXP.08/13
STATE OF CALIFORNIA

No.	Issue:	Date
	CUP SUBMITTAL #1	04/20/12
	CUP SUBMITTAL #2	-/-/12

Sheet Title:
MASTER SITE PLAN - PHASE 5
NEW CLASSROOM BUILDINGS

Project Architect:
BENNETT LORD

Project Number:
1011-101

Sheet Number
AS-1.7

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

By using the new Sanctuary size of 18.675 K from Figure 2, and by adding 3.2 K of additional assembly area because of the increased size of the new Parish Hall as discussed under Phase 2, Figure 3, the Total additional Sunday Peak Hour traffic due to the Master Plan, was determined as shown in Table 2

Table 2

St. Christopher Church Master Plan Sunday Peak Hour Traffic Generation

	Size	Rate / K		Peak Hour Vehicles	
		INBOUND	OUTBOUND	INBOUND	OUTBOUND
Improved Sanctuary	18.675 K				
New Parish Hall	9.400 K*				
Assembly Area					
Total =	28.075 K	16.87 K	17.68 K	474	496
Combined Master Plan Plus Existing Vehicles				474	496
Existing Peak Hour Vehicles				418	438
Vehicles added by Master Plan				56	58

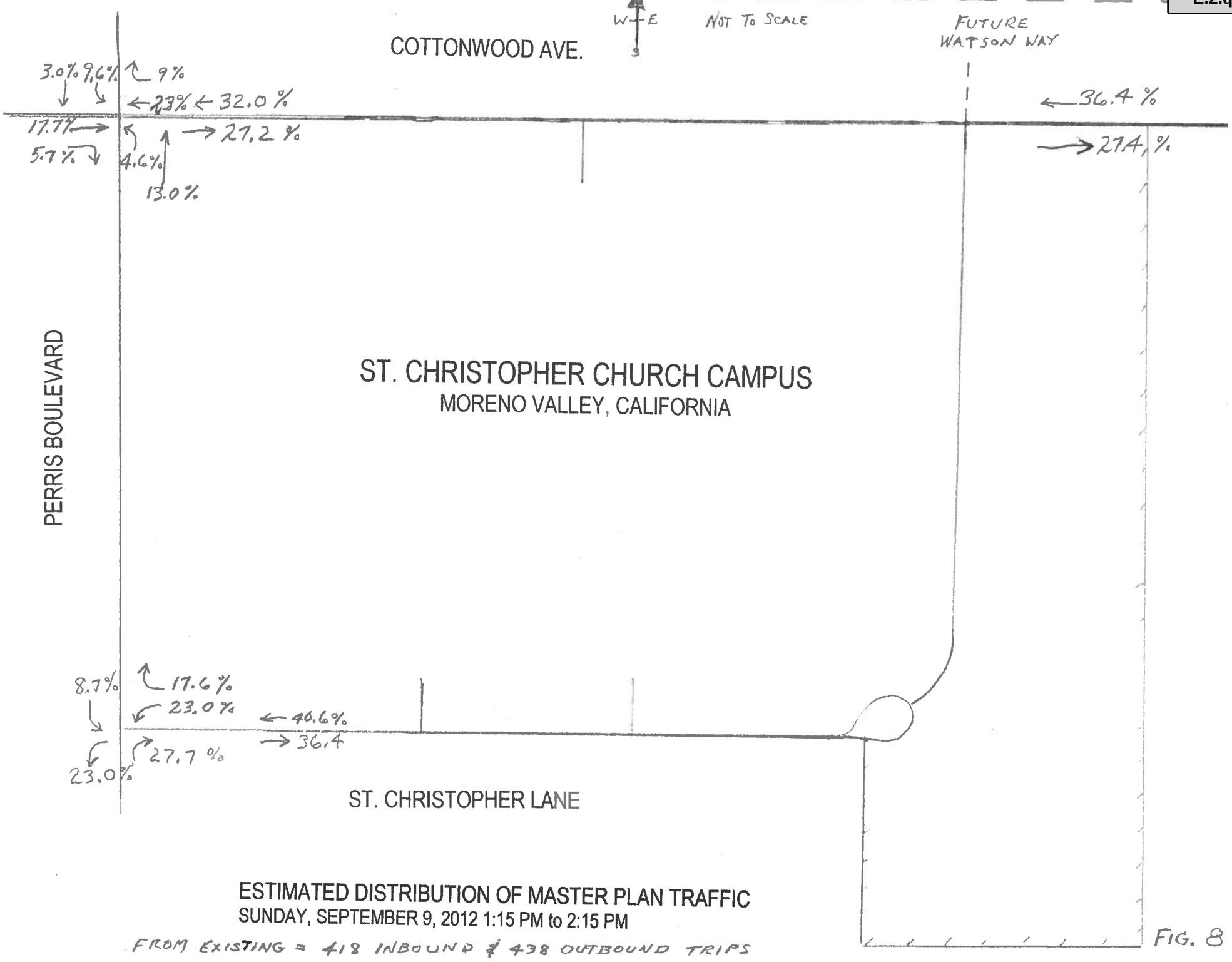
*Old Parish Hall = 6200 K

Note that the Parish Master Plan will add 56 inbound and 58 outbound new, Sunday peak hour trips to the existing ones counted and shown on Figure 7.

Project Traffic Distribution And Assignment

Before starting on this study, this consultant, in a meeting with the City of Moreno Valley, Transportation Engineer, agreed that the volumes of the existing Sunday peak hour traffic counts would be used to estimate the future Sunday peak hour Master Plan distribution of new, forecasted, peak hour trips. Therefore, the peak hour volumes of Figure 7 were used for this future trip distribution. Figure 8 shows those trip distribution percentages on the various streets and intersections while Figure 9 shows the new trips, generated by the Master Plan, assigned to the streets and future driveways of the church campus.

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

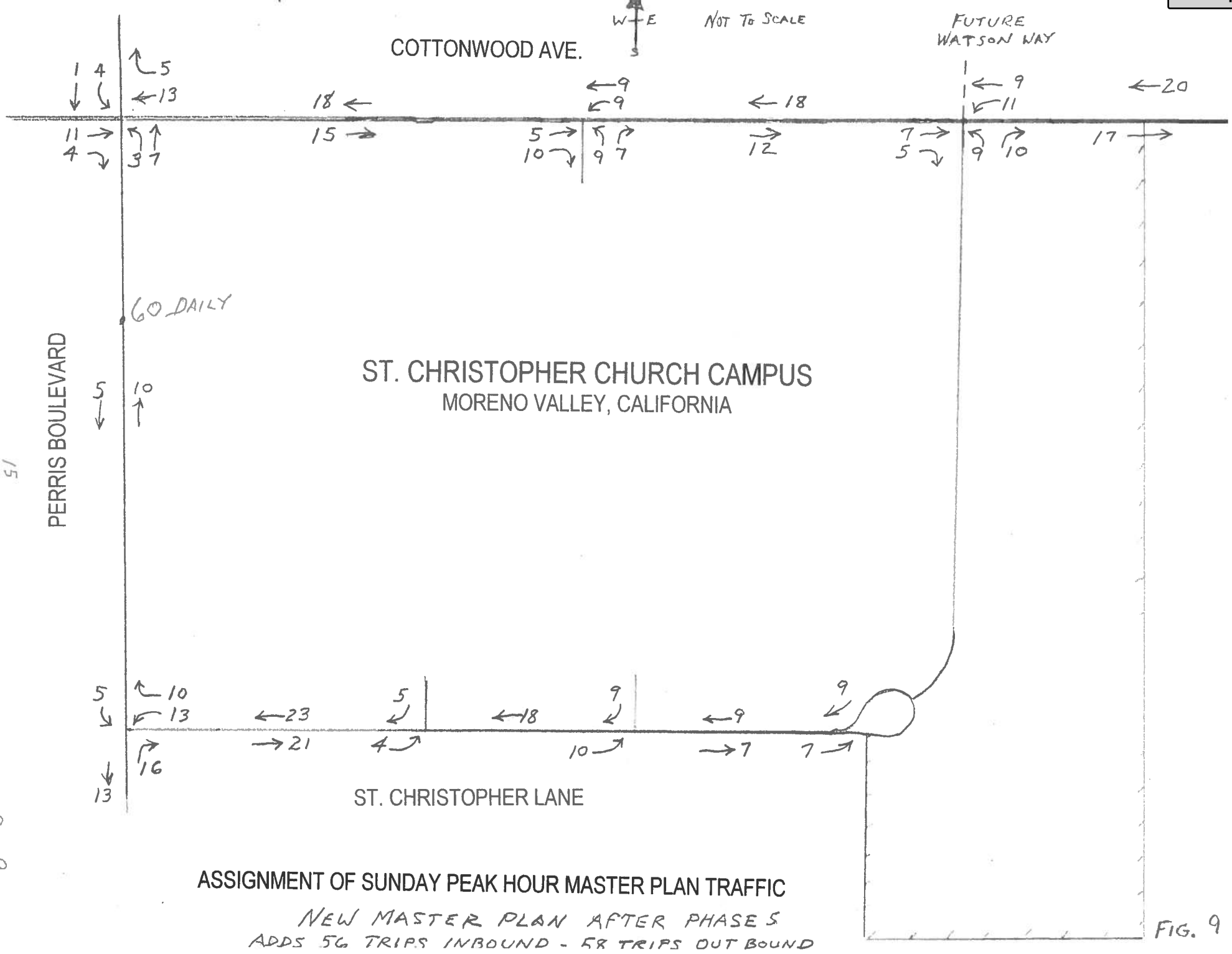


ESTIMATED DISTRIBUTION OF MASTER PLAN TRAFFIC
SUNDAY, SEPTEMBER 9, 2012 1:15 PM to 2:15 PM

FROM EXISTING = 418 INBOUND & 438 OUTBOUND TRIPS

FIG. 8

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT OF A DONUT STOR)



ASSIGNMENT OF SUNDAY PEAK HOUR MASTER PLAN TRAFFIC

NEW MASTER PLAN AFTER PHASE 5
ADDS 56 TRIPS INBOUND - 58 TRIPS OUT BOUND

FIG. 9

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT OF A DONUT STOR)

Kimley»Horn

February 27, 2017

Ahmad Ghaderi
A & S Engineering, Inc.
28405 Sand Canyon Rd., Suite "B"
Canyon Country, CA 91387

Subject: *Planning Case No. PA15-0030 Supplemental Traffic Assessment*

Dear Mr. Ghaderi:

This memorandum has been prepared to supplement the Traffic Impact Study, dated April 2016, for the Yum Yum Donut Shop and Gas Station with Car Wash Project ("the Project") at the northeast corner of Perris Boulevard and Cottonwood Avenue. The project application was previously submitted to City of Moreno Valley staff and included plans to develop this particular land use.

At the time the traffic study was prepared, the Project was a standalone component to an overall larger site. There are currently no immediate plans to develop the remainder of the property, which extends to the north and encompasses the adjacent northerly parcel. However, the applicant is requesting a zone change from the current Office Commercial (OC) zoning to Community Commercial (CC) zoning. At the request of City staff, this memorandum will assess the implications of this zone change on the current proposed land use, as well as on the remainder of the undeveloped site. This memorandum will discuss permitted uses under each zoning category, per the City of Moreno Valley Municipal Code, and will also provide a general trip generation characteristics of various land uses permitted within each zoning category for informational purposes.

DISCUSSION

Per Section 9.02.020 of the City of Moreno Valley Municipal Code, the permitted uses for each zoning district type are indicated. The Project is currently in compliance with both the existing OC and proposed CC zoning districts. Both zoning districts permit the development of automobile service stations with accessory uses, including convenience stores and car washes. Therefore, a zone change would not cause the Project to deviate from a permitted use.

There are no defined plans to develop the remaining portion of the site at this time. While the OC and CC zoning types districts permit similar uses, such as sit-down restaurants, medical clinics, hotels, and various stores, there are several additional uses that would be permitted only within a CC zone. For instance, fast-food with drive-through establishments are not allowed within an OC zone. The following section provides a trip generation comparison for various permitted uses.

TRIP GENERATION ASSESSMENT

A trip generation comparison has been prepared to provide, for informational purposes, the trip generating potential of various land use types within each district. Trip generation estimates are based on the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 9th Edition* (2012) and are shown in Table 1.

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

TABLE 1 COMPARISON OF TRIP GENERATION RATES									
			Trip Generation Rates [1]						
				AM Peak Hour			PM Peak Hour		
Land Use	ITE Code	Unit	Daily	In	Out	Total	In	Out	Total
Office Commercial (OC) District									
Gasoline Station w/ Conv. Mkt. & Car Wash	946	Fueling Position	152.84	6.038	5.802	11.84	7.069	6.791	13.86
Medical-Dental Office Building	720	KSF	36.13	1.888	0.502	2.39	1.000	2.570	3.57
High-Turnover (Sit-Down) Restaurant	932	KSF	127.15	5.946	4.865	10.81	5.910	3.940	9.85
Community Commercial (CC) District									
Fast-Food Restaurant w/ Drive-Through	934	KSF	496.12	23.164	22.256	45.42	16.978	15.672	32.65
Shopping Center	820	KSF	42.70	0.595	0.365	0.96	1.781	1.929	3.71
Apparel Store	876	KSF	66.40	0.800	0.200	1.00	1.915	1.915	3.83
[1] Source: Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition									

The trip generation rates in Table 1 show a general picture of possible land uses to be developed on the vacant site. A gas station, which is permitted under both uses, generates a large amount of traffic; locations with up to 12 or 16 fueling positions is commonplace. A fast-food with drive-through restaurant, which would be exclusive to the CC district and which would have a generally small building footprint, would generate a similar or lower amount of traffic to a gas station. For instance, in a case where a fast-food restaurant is 3,000 square-feet, a gas station with twelve pumps would generate significantly more traffic on a daily and peak hour basis.

A full assessment would not be detailed without a planned development in mind. However, looking at and comparing the higher-generating land uses permitted under both zoning district shows similarities in trip generating potential.

FINDINGS AND CONCLUSIONS

The Project falls within a permitted use in both the existing OC and proposed CC zoning designations. The previously prepared traffic study would be consistent with the General Plan, and no new impacts are anticipated outside of what was analyzed.

The zone change from an OC to a CC district would provide greater options for the development of the remaining areas. However, there are numerous commercial land uses that are common amongst permitted uses in both zoning designations. Due to the uncertainty in defining land uses for the undeveloped portions of the site, traffic conditions should be assessed on an individual basis when subsequent project applications are submitted to the City.

Attachment: Traffic Impact Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Kimley»Horn

June 8, 2018

Eric Lewis
City of Moreno Valley
14177 Frederick Street
Moreno Valley, CA 92553

Attn: Vincent Tran

Subject: *Planning Case No. PA15-0030 – Cottonwood Avenue Striping Concept*

Dear Mr. Lewis:

This letter has been prepared to supplement the Traffic Impact Study for the Yum Yum Donut Shop and Gas Station with Car Wash Project ("the Project") at the northeast corner of Perris Boulevard and Cottonwood Avenue. This letter will provide an assessment of queues on Cottonwood Avenue along the project frontage, and will provide a conceptual striping layout to facilitate site access from Cottonwood Avenue in the eastbound direction.

Queueing was based on volumes established in the Traffic Impact Study for the Cumulative (Opening Year 2020) scenario with Alternative 3 implemented. Average and Ninety-fifth percentile queuing were checked and reported for the westbound left-turn movement at the Perris Avenue and Cottonwood Avenue intersection, and for the eastbound left-turn movement turning into the proposed project site. The 95th-percentile queue is defined to be the queue length (in feet per lane) that has only a 5-percent probability of being exceeded during the analysis time period. It is a useful parameter for determining the appropriate length of turn pockets, but it is not typical of what an average driver would experience. Vehicle queuing was analyzed using the SimTraffic Software assuming each vehicle occupies a space of 25 feet. The queuing analysis worksheets are attached to this letter.

Table 1. Queueing Summary

	Queue Length (ft)		
	AM Peak	PM Peak	Sunday
Perris Boulevard/Cottonwood Avenue Intersection (Westbound Left)			
Average Queue	68	62	78
95th Percentile Queue	146	130	154
Cottonwood Avenue Driveway (Eastbound Left)			
Average Queue	11	8	15
95th Percentile Queue	38	33	44

Based on this queueing information, a conceptual striping exhibit was prepared and is shown on Figure 1. The westbound left-turn pocket at the intersection of Perris Boulevard and Cottonwood Avenue was sized to maximize the available storage length between the intersection and the project driveway. The eastbound left-turn movement into the project site was striped to accommodate approximately 40 feet of storage.

Attachment: Traffic Study - Cottonwood Memorandum (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE

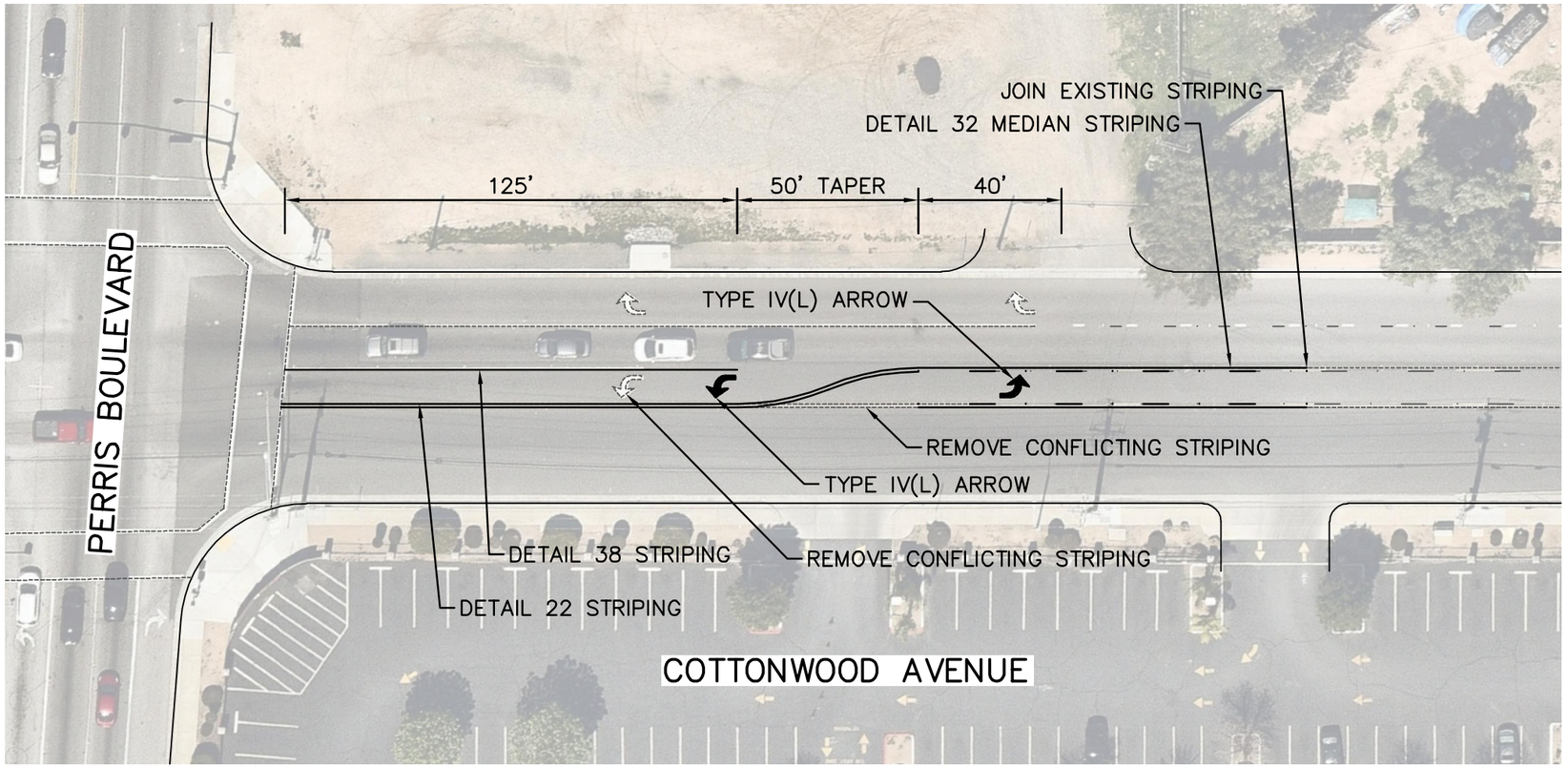


FIGURE 1
COTTONWOOD AVENUE STRIPING CONCEPT

NORTH

SCALE: 1" = 40'

Kimley»Horn

Attachment: Traffic Study - Cottonwood Memorandum (3257 : A GENERAL PL

APPENDIX

Intersection: 5: Perris Blvd & Cottonwood Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	T	R	L	T
Maximum Queue (ft)	124	338	70	172	220	176	120	579	534	125	225	425
Average Queue (ft)	68	122	23	68	119	61	75	328	276	39	130	235
95th Queue (ft)	131	262	52	146	215	132	136	549	496	118	233	391
Link Distance (ft)		1274	1274		204	204		617	617			404
Upstream Blk Time (%)					4	0		1	1			2
Queuing Penalty (veh)					14	1		0	0			0
Storage Bay Dist (ft)	100			125			95			100	200	
Storage Blk Time (%)	5	13		3	13		6	43	29	0	2	11
Queuing Penalty (veh)	13	12		12	19		33	34	22	0	14	19

Intersection: 5: Perris Blvd & Cottonwood Ave

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	378	120
Average Queue (ft)	180	48
95th Queue (ft)	320	127
Link Distance (ft)	404	
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		95
Storage Blk Time (%)	18	0
Queuing Penalty (veh)	18	0

Intersection: 10: Cottonwood Ave & Driveway

Movement	EB	EB	WB	WB	B4	SB
Directions Served	L	T	T	TR	T	LR
Maximum Queue (ft)	51	4	122	36	46	66
Average Queue (ft)	11	0	12	1	1	31
95th Queue (ft)	38	0	69	10	23	60
Link Distance (ft)		204	119	119	437	43
Upstream Blk Time (%)			1			6
Queuing Penalty (veh)			0			0
Storage Bay Dist (ft)	40					
Storage Blk Time (%)	1	0				
Queuing Penalty (veh)	4	0				

Network Summary

Network wide Queuing Penalty: 215

Attachment: Traffic Study - Cottonwood Memorandum (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE

Queuing and Blocking Report
Cumulative WP Alternative 3 PM

PM
06/08/2018

Intersection: 5: Perris Blvd & Cottonwood Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	T	R	L	T
Maximum Queue (ft)	124	526	79	165	215	123	120	622	606	125	225	437
Average Queue (ft)	85	202	27	62	92	38	71	374	329	34	176	311
95th Queue (ft)	150	464	62	130	177	88	136	630	590	113	269	481
Link Distance (ft)		1274	1274		207	207		617	617			404
Upstream Blk Time (%)					1			7	5			11
Queuing Penalty (veh)					1			0	0			0
Storage Bay Dist (ft)	100			125			95			100	200	
Storage Blk Time (%)	9	28		1	6		7	46	34	0	10	17
Queuing Penalty (veh)	24	32		3	8		42	34	20	0	71	37

Intersection: 5: Perris Blvd & Cottonwood Ave

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	423	120
Average Queue (ft)	261	56
95th Queue (ft)	444	137
Link Distance (ft)	404	
Upstream Blk Time (%)	6	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		95
Storage Blk Time (%)	26	0
Queuing Penalty (veh)	34	1

Intersection: 10: Cottonwood Ave & Driveway

Movement	EB	WB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	50	25	2	64
Average Queue (ft)	8	1	0	31
95th Queue (ft)	33	12	2	56
Link Distance (ft)		121	121	43
Upstream Blk Time (%)				3
Queuing Penalty (veh)				0
Storage Bay Dist (ft)	40			
Storage Blk Time (%)	0			
Queuing Penalty (veh)	2			

Network Summary

Network wide Queuing Penalty: 311

Attachment: Traffic Study - Cottonwood Memorandum (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE

Queuing and Blocking Report
Cumulative WP Alternative 3 Sunday

Sunday
06/07/2018

Intersection: 5: Perris Blvd & Cottonwood Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	T	R	L	T
Maximum Queue (ft)	124	213	80	174	218	164	120	597	555	125	224	390
Average Queue (ft)	64	93	22	78	99	55	73	315	262	42	143	193
95th Queue (ft)	125	175	52	154	191	124	136	557	508	123	239	338
Link Distance (ft)		1274	1274		206	206		617	617			404
Upstream Blk Time (%)					1	0		4	3			0
Queuing Penalty (veh)					4	0		0	0			0
Storage Bay Dist (ft)	100			125			95			100	200	
Storage Blk Time (%)	3	8		5	7		6	43	28	0	4	5
Queuing Penalty (veh)	6	8		16	15		30	38	21	0	20	11

Intersection: 5: Perris Blvd & Cottonwood Ave

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	314	120
Average Queue (ft)	143	47
95th Queue (ft)	261	121
Link Distance (ft)	404	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		95
Storage Blk Time (%)	12	0
Queuing Penalty (veh)	14	0

Intersection: 10: Cottonwood Ave & Driveway

Movement	EB	WB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	52	64	6	64
Average Queue (ft)	15	2	0	39
95th Queue (ft)	44	21	3	63
Link Distance (ft)		117	117	43
Upstream Blk Time (%)		0		7
Queuing Penalty (veh)		0		0
Storage Bay Dist (ft)	40			
Storage Blk Time (%)	1			
Queuing Penalty (veh)	4			

Network Summary

Network wide Queuing Penalty: 188

Attachment: Traffic Study - Cottonwood Memorandum (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE

Noise Mitigation Analysis for The Proposed Yum Yum Donuts Car Wash City of Moreno Valley, California

Project #0110.0026.001.0001
February 14, 2018

Prepared For:

A&S Engineering
28405 Sand Canyon Road, Suite B
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Prepared By:

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Landrum & Brown
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Irvine, CA 92612
949-349-0671

Attachment: Noise Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT

Attachment: Noise Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT

NOISE MITIGATION ANALYSIS FOR THE PROPOSED YUM YUM DONUTS CAR WASH CITY OF MORENO VALLEY

1.0 INTRODUCTION

A car wash is being proposed at the northeast corner of Perris Boulevard and Cottonwood Avenue in Moreno Valley, as shown in Exhibit 1. The car wash will be "self-serve" and is planned to be open 24 hours per day. The purpose of this report is to determine whether the noise levels from the proposed car wash will be consistent with the Noise Ordinance adopted by the City of Moreno Valley. The project calls for the addition of a tunnel-type car wash. The developer is planning to design and construct this car wash very similar to an existing car wash facility located in the City of San Diego. This report presents the results of the car wash noise measurements at the existing San Diego car wash, and determines whether that design is acceptable for the planned Yum Yum Donuts car wash in Moreno Valley.

The site plan is shown in Exhibit 2. The nearest residences are located directly to the east. Other residential areas are located much farther from the facility. The potential noise impacts on the nearest residential area are addressed in this report, and any required mitigation measures are identified.

2.0 BACKGROUND INFORMATION ON NOISE

Sound is technically described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dB higher than another is judged to be twice as loud; and 20 dB higher four times as loud; and so forth. Everyday sounds normally range from 30 dB (very quiet) to 100 dB (very loud).

Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear. Community noise levels are measured in terms of the "A-weighted decibel" abbreviated dBA. Exhibit 3 provides examples of various noises and their typical A-weighted noise level.

Two commonly used metrics to describe fluctuating noise levels are Leq and Lmax. These metrics are described below. The noise level limits set forth in the City's Noise Ordinance are specified in terms of these metrics.

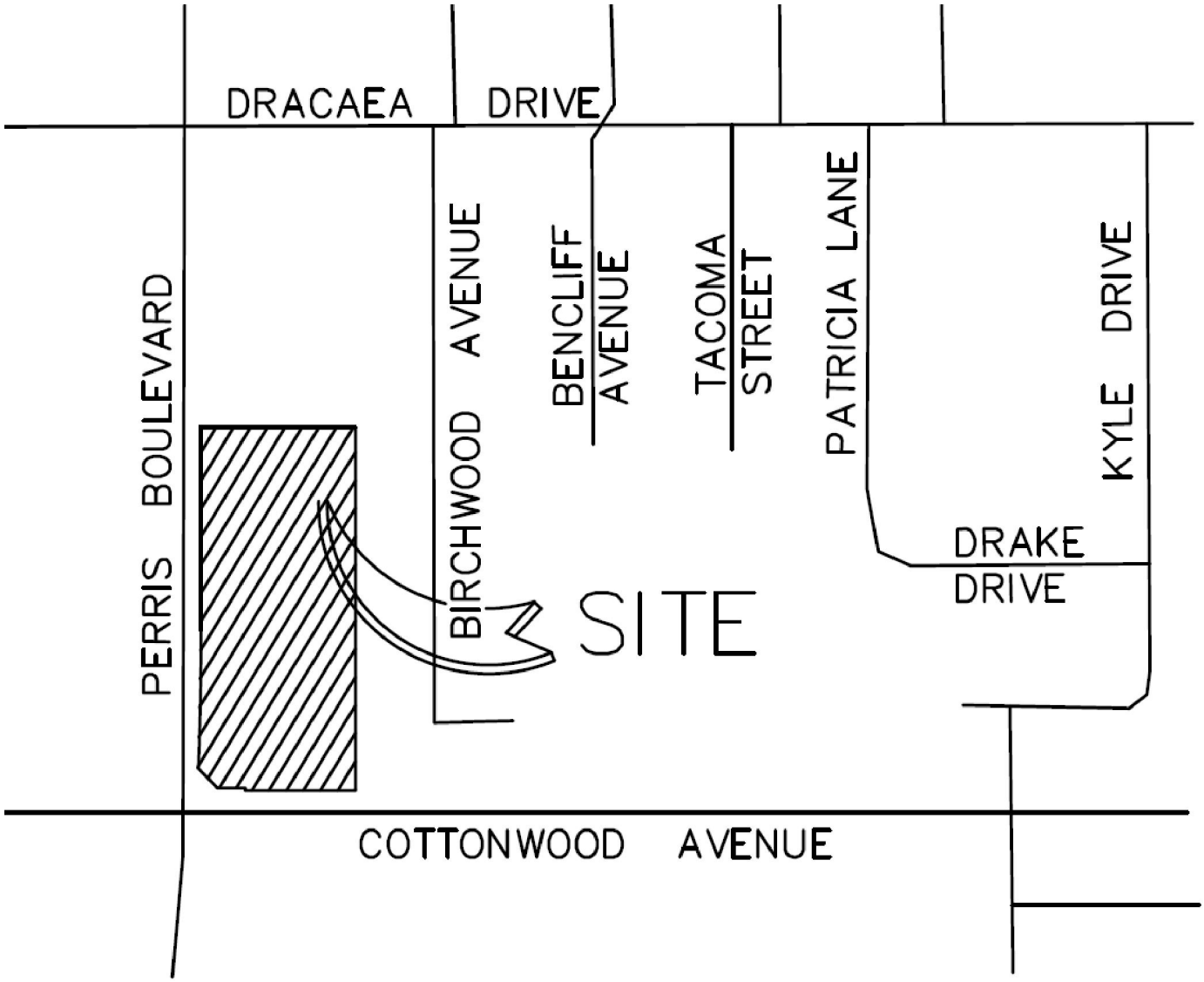


Exhibit 1

Vicinity Map

Attachment: Noise Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT

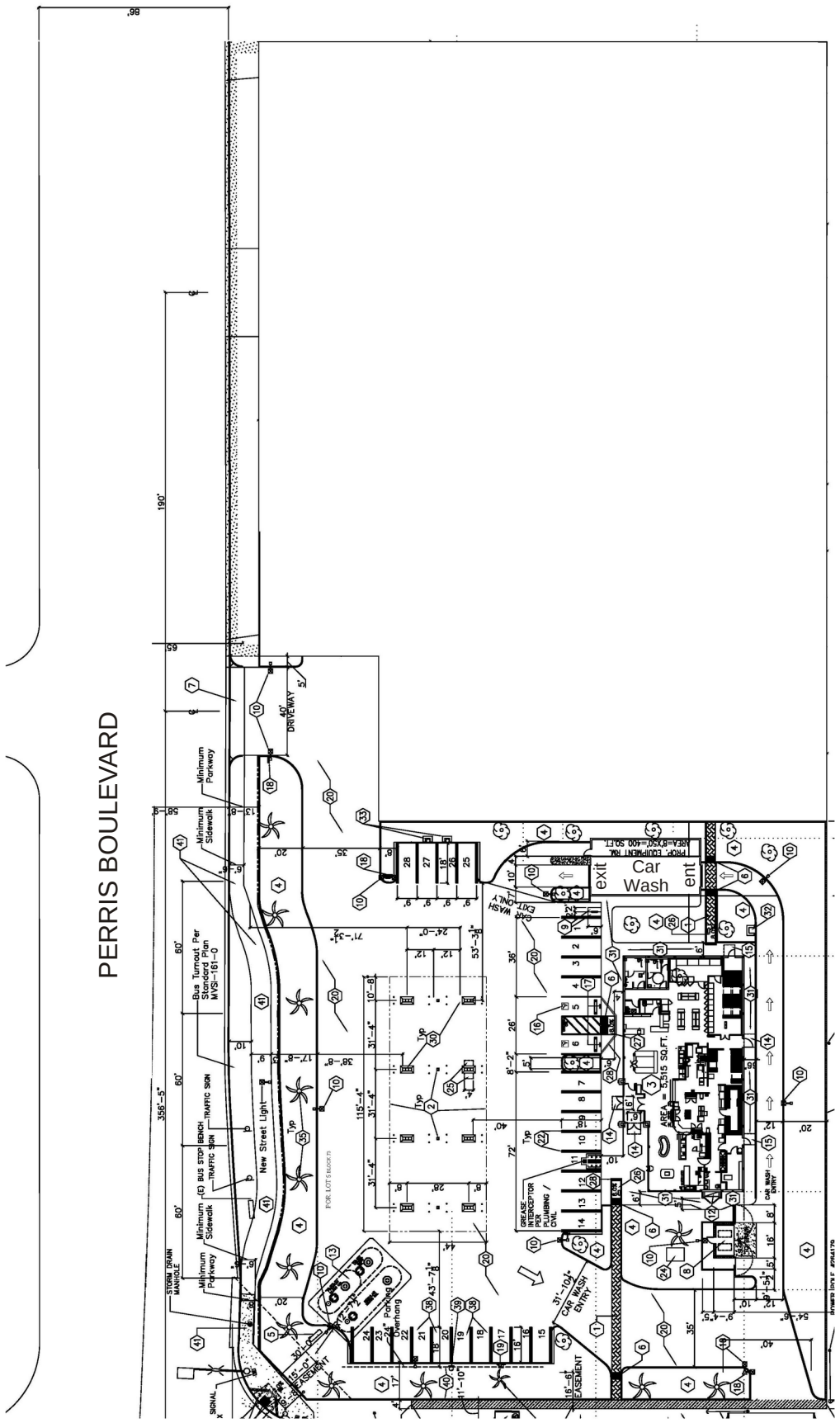
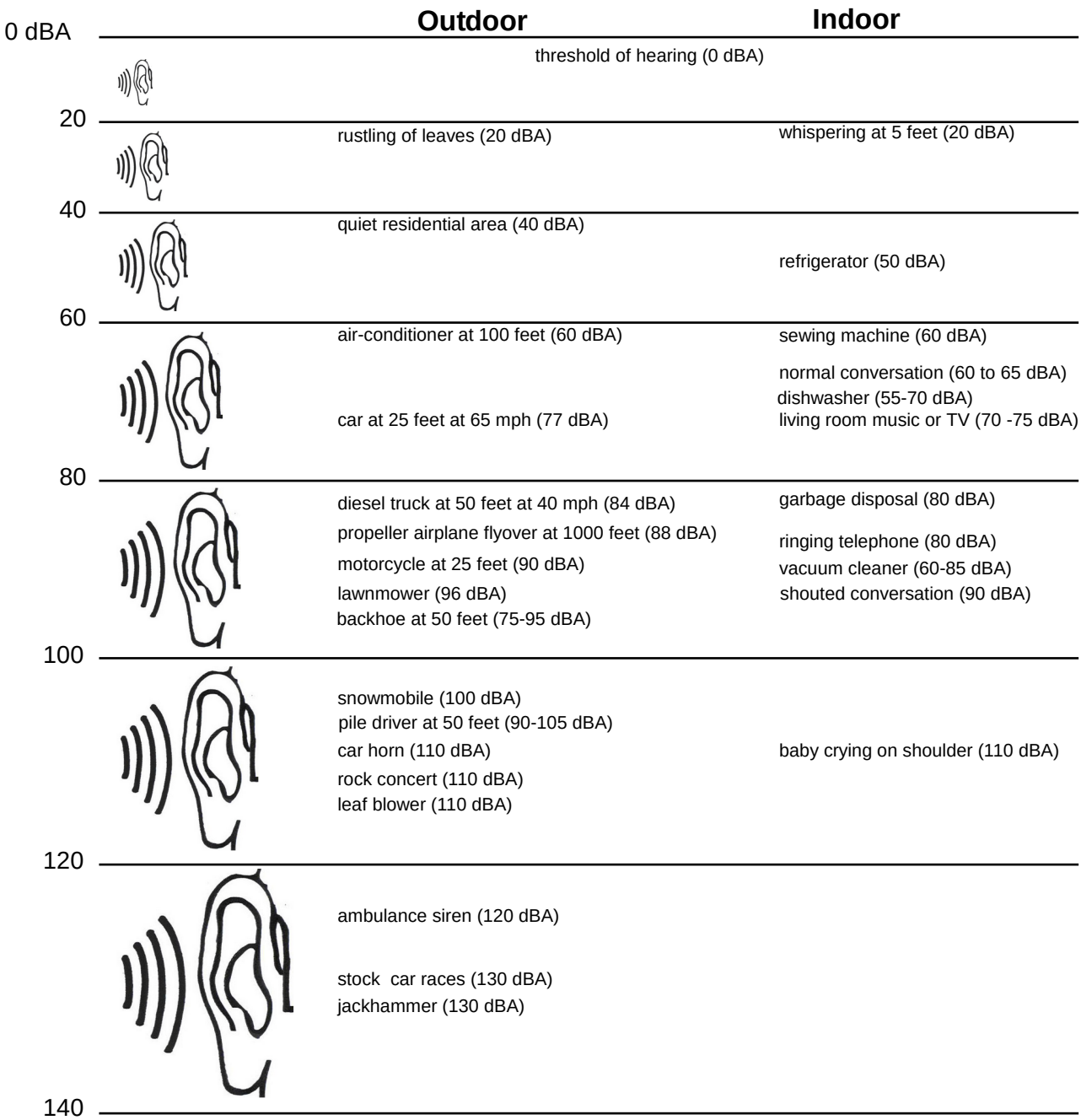


Exhibit 2
Site Plan

Attachment: Noise Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT



Sources: League for the Hard Of Hearing, www.lhh.org
Handbook of Noise Control, McGraw Hill, Edited by Cyril Harris, 1979
Measurements by Landrum & Brown

Attachment: Noise Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT

Exhibit J

Typical A-Weighted Sound Levels

Leq is the sound level corresponding to a steady-state sound level that would contain the same total energy as the time-varying signal over a given sample period. Leq is the "energy" average noise level during the time period of the sample. It is the energy average of all the events and background noise levels that occur during that time period.

Lmax is the loudest sound level measured during the time period of the sample.

Sound levels decrease as a function of distance from the source as a result of wave divergence, atmospheric absorption and ground attenuation. As the sound wave travels away from the source, the sound energy is dispersed over a greater area, thereby dispersing the sound power of the wave. Intervening topography or sound walls can also have a substantial effect on the effective perceived noise levels.

Noise has been defined as unwanted sound and it is known to have several adverse effects on people. From these known effects of noise, criteria have been established to help protect the public health and safety and prevent disruption of certain human activities. These criteria are based on such known impacts of noise on people as hearing loss, speech interference, sleep interference, physiological responses and annoyance. Each of these potential noise impacts on people are briefly discussed in the following narratives:

HEARING LOSS is not a concern in community noise situations of this type. The potential for noise induced hearing loss is more commonly associated with occupational noise exposures in heavy industry or very noisy work environments. Noise levels in neighborhoods, even in very noisy airport environs, are not sufficiently loud to cause hearing loss.

SPEECH INTERFERENCE is one of the primary concerns in environmental noise problems. Normal conversational speech is in the range of 60 to 65 dBA, and any noise in this range or louder may interfere with speech. There are specific methods of describing speech interference as a function of distance between speaker and listener and voice level.

SLEEP INTERFERENCE is a major noise concern for traffic noise. Sleep disturbance studies have identified interior noise levels that have the potential to cause sleep disturbance. Note that sleep disturbance does not necessarily mean awakening from sleep, but can refer to altering the pattern and stages of sleep.

PHYSIOLOGICAL RESPONSES are those measurable effects of noise on people that are realized as changes in pulse rate, blood pressure, etc. While such effects can be induced and observed, the extent is not known to which these physiological responses cause harm or are signs of harm.

Attachment: Noise Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT

ANNOYANCE is the most difficult of all noise responses to describe. Annoyance is a very individual characteristic and can vary widely from person to person. What one person considers tolerable can be quite unbearable to another of equal hearing capability.

3.0 MORENO VALLEY NOISE ORDINANCE STANDARDS

Noise ordinances are designed to protect adjacent noise-sensitive land uses from non-transportation related noise sources operating on private property (e.g., manufacturing facilities, music, and mechanical equipment). Many communities have developed noise ordinances to control these types of non-transportation related noise.

The City's noise level limits for car wash noise are shown in Section 9.10.140 of the City's Noise Ordinance. These standards are given in terms of maximum allowable noise levels. Higher noise levels are permitted during the daytime hours (8 a.m. to 10 p.m.) than are during nighttime hours (10 p.m. to 8 a.m.). The City of Moreno Valley Noise Ordinance levels are contained in Table 1, and they show the acceptable levels at outdoor residential land uses during each time period. The Lmax criterion applies to the highest noise level experienced at the receptor site.

Table 1
CITY OF MORENO VALLEY
EXTERIOR NOISE ORDINANCE STANDARDS

		NOISE LEVEL NOT TO BE EXCEEDED	
LAND USE	NOISE METRIC	Daytime 8 a.m. to 10 p.m.	Nighttime 10 p.m. to 8 a.m.
Residential	Lmax	60 dBA	55 dBA

As the car wash is expected to operate 24 hours a day, the projected noise levels will be compared to the nighttime criteria, since meeting the nighttime criteria ensures that the daytime criteria will also be met. The City's Noise Ordinance does not contain any indoor noise standards. Therefore, compliance with the nighttime Lmax exterior standard in the Noise Ordinance is addressed.

Attachment: Noise Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT

4.0 PROJECTED CAR WASH NOISE LEVELS

The projected noise levels from the planned Yum Yum Donuts car wash are based on the measured noise levels at the existing Arco car wash facility at 3170 Carmel Valley Road in San Diego. This car wash is equipped with automatic doors at both the entrance and exit ends, and these doors are essential in reducing the noise levels from the car wash facility when they are closed. The noise levels at this facility were measured on August 12, 2016. Measurements were performed on-axis with the tunnel at a distance of 25 feet from the entrance end with both car wash doors closed. The measurements at this location were used to determine the noise levels at the nearest noise-sensitive receptors at the Moreno Valley site. The measurement site is shown in Exhibit 4. The car wash operations of interest (wash cycle, rinse cycle, and dry cycle) were measured. Truck passes in the parking lot passes were not able to be excluded from the measurements, and were edited out of the data in order to assess the car wash noise levels alone.

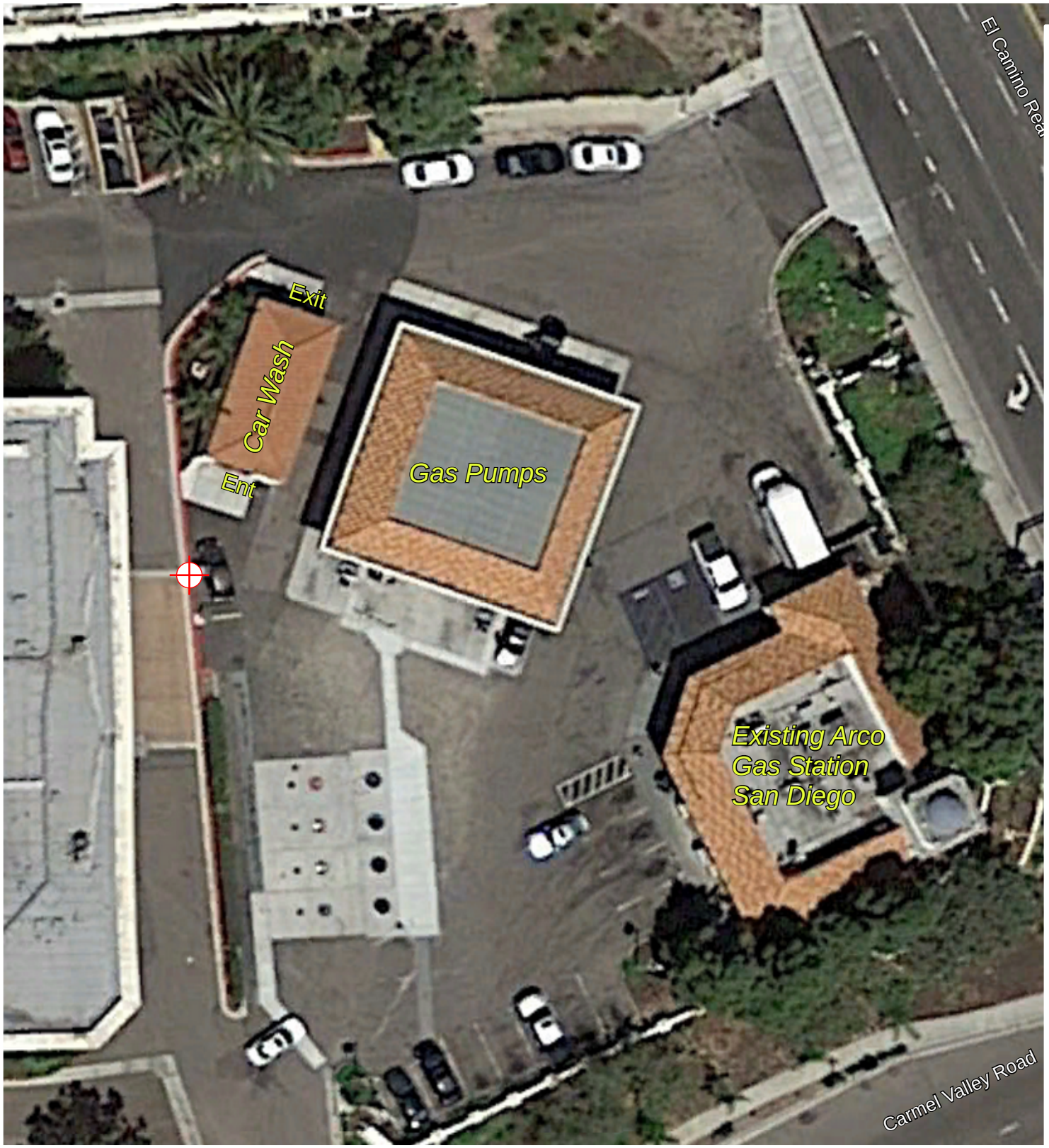
The sound level meter used for the measurements was a Brüel and Kjær Model 2236 sound level meter. This meter conforms to American National Standards Institute (ANSI) Type 1 specifications. The meter and calibrator are laboratory calibrated and certified annually with calibration traceable to the National Institute of Standards and Technology (NIST). The meter was field calibrated before and after the measurement period using a Brüel and Kjær Model 4231 acoustical calibrator. The measured Lmax was 65.7 dBA at a distance of 25 feet from the entrance end of the tunnel with the car wash doors closed.

Based upon the measured car wash source noise data and the proposed site plan, the noise level was calculated for the nearest observer at the adjacent residential area, at a distance of 57 feet from the entrance end of the tunnel. The resulting unmitigated noise level at the residential area is 58.5 dBA. This noise level would exceed the nighttime noise standard of 55 dBA. The developer plans to construct a 6-foot high masonry wall at the east property line. The wall will need to wrap around the northeast corner of the project and extend westward to the car wash tunnel. The required barrier location is shown in Exhibit 5. With this noise barrier, the resulting projected noise level is shown below in Table 2.

Table 2
PROJECTED NOISE LEVELS (dBA)

Location	**Projected Noise Level (Lmax)**	Comparison To Noise Level Limit
<u>With Yum Yum Donuts car wash designed like existing Arco facility and 6.0'-high noise barrier</u>		
Nearest Residence	**49.4**	Meets Ordinance

Attachment: Noise Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT



N

- Measurement Location

Exhibit 4

Existing Car Wash Measurement Locations

Attachment: Noise Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT

Requires 6.0'-High Noise Barrier

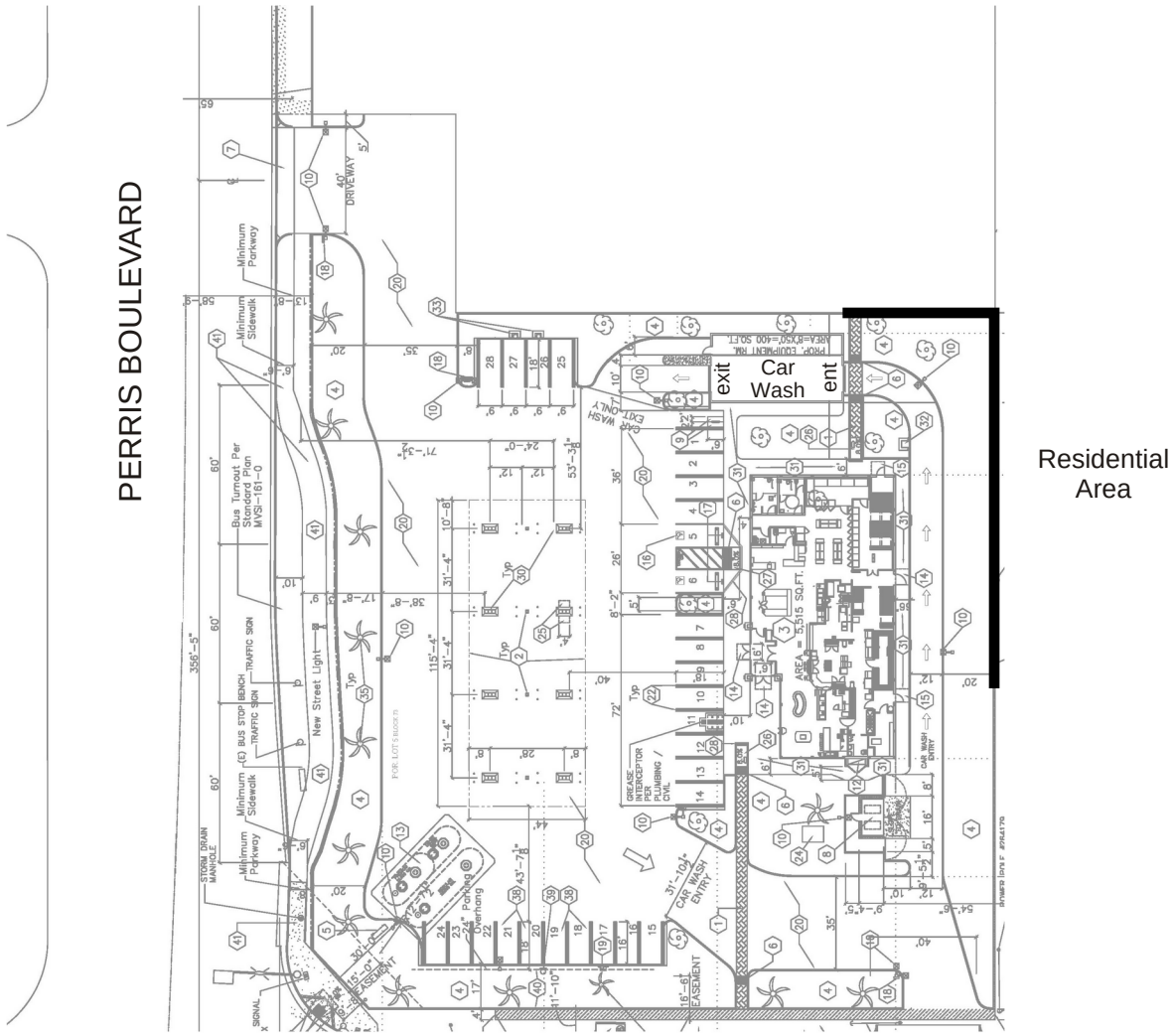


Exhibit 3

Required Noise Barrier

Attachment: Noise Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT

The projected Lmax at the nearest residential receiver from the proposed car wash is 49.4 dBA. This meets the City's nighttime exterior Noise Ordinance limit of 55 dBA. The results of the analysis indicate that with the car wash designed like the existing Arco facility, the Lmax noise levels at all the nearest residential areas are projected to meet the daytime and nighttime Noise Ordinance limits. The proposed car wash must be designed, constructed, and operated the same as the existing Arco car wash in order for the noise level limits to be met. This includes such items as equipment types and locations, door types and configuration, and operational parameters such as when the doors open and close.

6.0 DESIGN MEASURES

Calculations have shown that with the car wash designed and operated like the existing Arco facility, the project will meet the City's daytime and nighttime Noise Ordinance limits. The following design items must be adhered to in order for the noise level limits to be met.

- The car wash equipment shall be the same as that used at the Arco facility, and placed in the same locations within the tunnel as at the Arco facility.

- The building design (walls and roof) shall be the same materials as used at the Arco facility.

- The roll-up doors shall be the same type, and shall be installed the same as the Arco facility.

- Both the entrance end and exit end doors need to be in the closed position when a car is being washed and dried.

- A noise barrier shall be constructed that meets or exceeds the barrier shown in Exhibit 5.

- The noise barrier must have a surface density of at least 3.5 pounds per square foot, and shall have no openings or gaps. The wall may be constructed of stud and stucco, 3/8-inch plate glass, 5/8-inch Plexiglas, any masonry material, or a combination of these materials.

With these design measures in place, the noise levels at the nearest homes will meet the City's daytime and nighttime Noise Ordinance limits.

Attachment: Noise Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT

APPENDIX

Calculation Spreadsheets

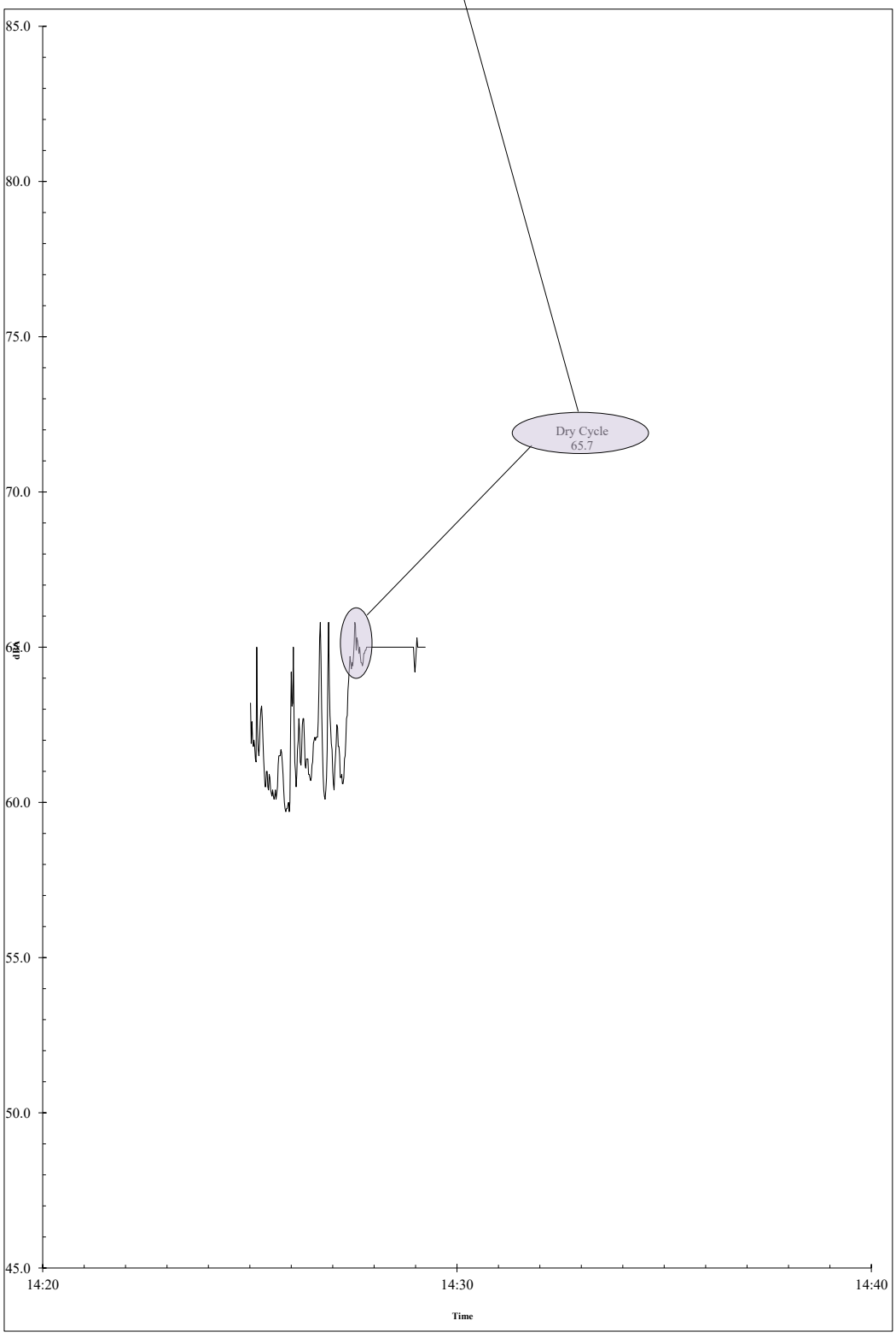
Attachment: Noise Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT

Arco Car Wash
3170 Carmel Valley Road
San Diego
25' from Entrance End, Doors Closed
8-12-16

Night STD = **55**

ref at 25' Distance, On-Axis

Metric	Level	at 57'
LEQ	63.0	
Lmax	65.7	**58.5** no wall
L1.7	65.3	
L8.3	65.0	
L25	#NUM!	
L50	62.7	
L90	60.4	
Lmin	59.7	



Attachment: Noise Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR DEVELOPMENT

Source: Arco Car Wash SD, Entrance End, Door Closed
Reference Frequency (Hz): 500

Nighttime Lmax Standard
55

Residential property to the east

Source Height	Source Elevation	Source Level	Reference Distance	Source to Barrier	Barrier Height	Barrier Elevation	Barrier to Receiver	Receiver Height	Receiver Elevation	Barrier Reduction	**Lmax (dBA)**
8	0	65.7	25	57	0.0	0	1	5	0	0.000	58.4
8	0	65.7	25	57	**6.0** planned	0	1	5	0	9.139	49.2

Attachment: Noise Study (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

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Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

October 12, 2018 ASE-01

Ms. Yasmin Tabatabayi
A & S Engineering
28405 Sand Canyon Road, Suite "B"
Canyon County, CA 91387

Subject: Supplement to the Yum Yum Donuts Moreno Valley Gas Station Project Air Quality and Greenhouse Gas Emissions Technical Report

Dear Ms. Tabatabayi:

HELIX Environmental Planning, Inc. (HELIX) has prepared this brief letter report to supplement the findings from the Yum Yum Donuts Moreno Valley Project's (project's) Air Quality and Greenhouse Gas Emissions Technical Report (HELIX 2018). The following analysis provides additional detail related to the exposure of sensitive receptors to toxic air contaminants (TACs) from operation of the proposed gas station component of the project, including a quantitative health risk assessment (HRA) to evaluate community health risks. Please see the Air Quality and Greenhouse Gas Emissions Technical Report for a complete discussion of the analysis related to other topics including emissions of criteria air pollutants and greenhouse gases associated with construction and operation of the project.

SUMMARY OF RESULTS

The incremental excess cancer risk for the closest existing residents, off-site workers, and students were estimated using the U.S. Environmental Protection Agency's (USEPA) AERMOD air dispersion model and the California Air Resources Board's (CARB) Hotspots Analysis and Reporting Program (HARP) software suite. All estimated incremental excess cancer risks would be below the South Coast Air Quality Management District's (SCAQMD) threshold of 10 in 1 million. Therefore, impacts resulting from TAC emissions from the proposed gas station would be less than significant and no mitigation is needed.

PROJECT DESCRIPTION

The project site is located at the corner of Perris Boulevard and Cottonwood Avenue in the City of Moreno Valley. The project site is composed of Assessor's Parcel Numbers (APNs) 479-140-023-2, 479-140-024-3, and 479-131-012-4. The project proposes to develop a 3.77-acre vacant lot for a 5,515 square foot Yum Yum Donuts restaurant and convenience market with a car wash and gas station. Sixteen gas pumps through eight production dispensers would be provided and a 5,075-square foot

steel canopy would be constructed above. Additionally, two underground fuel storage tanks would be installed in the southeast corner of the project.

The proposed project would require a permit to construct and operate a gasoline dispensing facility from the SCAQMD, which will review the facility design and location for compliance with SCAQMD standards for air quality and community health. All tanks and dispensers would be equipped with the latest Phase I and Phase II Enhanced Vapor Recovery (EVR) air pollution control equipment technology per SCAQMD Rule 461. The Phase I EVR equipment controls the vapors in the return path from the tanks back to the tanker truck during offloading filling operations and have a minimum required efficiency of 98 percent. The Phase II EVR equipment, which also includes "in-station diagnostics," controls and monitors the vapors in the return path from the vehicles back to the tanks and have a minimum required efficiency of 95 percent (SCAQMD 2012).

AIR QUALITY SETTING

Toxic Air Contaminants

Toxic air contaminants (TACs) are a diverse group of air pollutants that may cause or contribute to an increase in deaths or in serious illness or that may pose a present or potential hazard to human health. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage, or short-term acute effects such as eye watering, respiratory irritation (a cough), runny nose, throat pain, and headaches. TACs are considered either carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant. For carcinogenic TACs, there is no level of exposure that is considered safe and impacts are evaluated in terms of overall relative risk expressed as excess cancer cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

Activities at gasoline dispensing facilities can release TACs into the air, including the organic compounds benzene, toluene, and xylene.[1] Benzene is a potent carcinogen and is one of the highest risk air pollutants regulated by the California Air Resources Board (CARB). The only identified pathway of exposure for air quality health risks from benzene is inhalation. Toluene and xylenes are not considered carcinogens, but they (along with benzene) can contribute to chronic and acute health conditions.

Sensitive Receptors

CARB and the Office of Environmental Health Hazard Assessment (OEHHA) have identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, infants (including in utero in the third trimester of pregnancy), and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis (CARB 2005, OEHHA 2015). Some land uses are considered more sensitive to air pollution than others due to

[1] Gasoline vapor can contain as many as 16 different TACs, including 3 carcinogens. Benzene, toluene, and xylenes are the focus of the 1997 CAPCOA Gas Station risk assessment guidelines, which concluded that only cancer risk from benzene needs to be evaluated. The 2017 SCAQMD procedure confirms the conclusions of the 1997 CAPCOA document.

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

the types of population groups or activities involved and are referred to as sensitive receptors. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers.

The closest existing sensitive receptors to the project site are single-family residences, adjacent to the project property line to the east. Additional single-family residences are located across Perris Boulevard to the west and across Cottonwood Avenue, approximately 200 feet to the southwest. The closest school is the Saint Christopher Preschool approximately 175 feet to the southeast. There are no other schools within 1,000 feet of the project site. Please see Figure 1, Project Site and Sensitive Receptor Locations.

METHODOLOGY

MODEL PARAMETERS

Potential health risks to nearby sensitive receptors from the emission of TACs during operations at the proposed gasoline fueling facility were analyzed in accordance with the SCAQMD's *Risk Assessment Procedures for Rules 1401, 1401.1 and 212* (SCAQMD 2017), the California Air Pollution Control Officers Association's (CAPCOA) *Gasoline Service Station Industrywide Risk Assessment Guidelines* (CAPCOA 1997), and the OEHHA *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* (OEHHA 2015). Note that although the gas station may include a diesel fueling station, TACs associated with diesel vapor are not released in quantities sufficient enough to require analysis or reporting, for example gasoline in the U.S. contains 0.6 to 1.3 percent benzene by volume, diesel fuel contains less than 0.02 percent benzene (IARC 1989).

According to the SCAQMD (2017) procedures, benzene is the most important substance driving the risk in the gasoline service stations and only the cancer risk resulting from exposure to benzene is required to be evaluated. For gasoline service stations, non-cancer health risks and risks from other TACs in gasoline vapors do not need to be evaluated. Therefore, only the localized concentrations of benzene, and the associated increase in cancer risk, were analyzed in the health risk assessment.

Localized concentrations of benzene were modeled using Lakes AERMOD View version 9.6.1. The Lakes program utilizes the EPA's AERMOD gaussian air dispersion model. The emissions of benzene were modeled in accordance with SCAQMD (2017) gasoline dispensing station risk assessment procedure which breaks the emissions into five sources:

Loading – Loading emissions occur when a cargo tank truck unloads gasoline to the storage tanks at the gasoline station. Storage tank vapors are emitted from the vent pipe during the initial fuel transfer period. These emissions are significantly reduced when the vent pipe includes a pressure/vacuum valve. Loading is modeled as a point source.

Breathing – Gasoline vapors are emitted from the storage tank vent pipe due to temperature and pressure changes within the storage tank vapor space. Breathing is modeled as a point source.

Refueling – During the refueling process, gasoline vapors are emitted at the vehicle/nozzle interface. Refueling is modeled as a volume source.

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Spillage – Spillage emissions occur during vehicle fueling if there is overflow after a tank is filled or when other liquid fuel unintentionally discharges from the nozzle and evaporates. Spillage is modeled as a volume source.

Hose Permeation – Emissions occur when liquid gasoline or gasoline vapors diffuse through the dispensing hose outer surface to the atmosphere. Hose permeation is modeled as a volume source.

The locations of fuel sources were set at the center of the gas station pump canopy indicated on the project site plan (A & S Engineering 2018), as shown on Figure 1. The modeling parameters in the SCAQMD procedure represent default values for a typical gas station. Site specific parameters for the proposed gas station were not known at the time of the analysis except for the location of the gas pumps and the size of the canopy over the pumps. Therefore, all recommended default parameters were used except the actual square footage and location of the gas pump canopy for the project was used for the size and location of the volume sources. The SCAQMD procedure does not recommend an exhaust gas velocity for the vent pipe point sources (loading and breathing)—the gasoline storage tank vent pipe was assumed to have a rain cap, and an initial gasoline vapor vertical exit velocity of 0.01 meters per second was used. The modeling parameters for the sources of benzene emissions are shown in Table 1, *Source Modeling Parameters.* The source modeling assumes that 80 percent of the daily emissions would occur from 6 a.m. to 8 p.m. and 20 percent of the daily emissions would occur from 8 p.m. to 6 a.m.

Table 1
SOURCE MODELING PARAMETERS

Process	Release Height (m)	Point Source Parameters			Volume Source Parameters	
		Stack Diameter (m)	Gas Temperature (K)	Gas Velocity[1] (m/s)	Volume Side (m)	Volume Height (m)
Loading	3.7	0.05	289	0.01	-	-
Breathing	3.7	0.05	289	0.01	-	-
Refueling	1	-	-	-	21.7	5
Spillage	0	-	-	-	21.7	5
Hose Permeation	1	-	-	-	21.7	5

Source: SQAQMD *Risk Assessment Procedure for Rules 1401, 1401.1 and 212* (2017); CAPCOA *Gasoline Service Station Industrywide Risk Assessment Guidelines* (1997).

[1] Assumes the vent pipe is fitted with a rain cap and the initial gas exit vertical velocity is near zero

m = meters; m/s = meters per second; K = degrees Kelvin; - = not applicable

SCAQMD provides emission factors for benzene vapor per volume of liquid gasoline throughput, as shown in Table 2, *Average Hourly Benzene Emissions*. Per the project applicant, a conservative (highest anticipated) estimate of the project's gasoline throughput would be 500,000 gallons per month (6 million gallons per year). According to CARB, in 2002, 96 percent of gas stations in California had throughputs less than 2.4 million gallons per year. The remaining four percent, or approximately 450 facilities, had average gasoline throughputs of 3.6 million gallons per year (CARB 2005). Therefore, given the number of pumps (16 pumps), 6 million gallons per year is a very conservative (high) estimate of throughput. The benzene emission factors and calculated average hourly emissions for each source are shown in Table 2.

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Table 2
AVERAGE HOURLY BENZENE EMISSIONS

Process	Emission Factor[1] (pounds benzene/1,000 gallons gasoline)	Average Hourly Emissions[2](pounds/hour)
Loading	0.000683	4.6749E-04
Breathing	0.000109	7.4606E-05
Refueling	0.001460	9.9932E-04
Spillage	0.001700	1.1636E-03
Hose Permeation	0.000041	2.8063E-05

Source: Risk Assessment Procedure for Rules 1401, 1401.1 and 212 (SCAQMD 2017)

[1] pounds of benzene vapor per 1,000 gallons of liquid gasoline throughput.

[2] average hourly emissions = emissions factor (pounds/1,000 gallons) x annual gasoline throughput (gallons) / 1,000 (gallons) / 8,766 (hours per year).

Downwash from the project's buildings was modeled using the Building Profile Input Program (BPIP – a building preprocessing program for AERMOD). The project's building sizes and locations were estimated from the project site plan (A & S Engineering 2018).

The SCAQMD provides pre-processed meteorological data suitable for use with AERMOD (SCAQMD 2018). The available data set most representative of conditions in the project vicinity was from the Perris station, approximately 10 miles south of the project site. The Perris set includes 5 years of data collected between 2010 to 2016. Urban dispersion coefficients were selected in the model to reflect the developed nature of the project vicinity.

CARB provides digital elevation model (DEM) files suitable for use in AERMAP (a terrain preprocessing program for AERMOD) (CARB 2018). Elevation files with 30-meter resolution from the United States Geological Survey quadrangle map for Sunnymead was used in the model to cover the analysis area.

RISK DETERMINATION

To develop risk isopleths (linear contours showing equal level of risk), and ensure the area of maximum impact was captured, receptors were placed in a cartesian grid 600 meters by 600 meters (approximately 2,000 feet by 2,000 feet), centered on the project site with a grid spacing of 15 meters (50 feet) and a receptor height (flagpole height) of 1.2 meters (4 feet) above the ground. Additional discrete receptors were placed at the residential property line of the 11 closest identified sensitive receptors, the four closest off-site worker buildings, and the location in the Saint Christopher Preschool closest to the project site (with a receptor height of 0.7 meters (2.3 feet for students).

Health risks resulting from localized concentration of benzene were estimated using the CARB Hotspots Analysis and Reporting Program (HARP), Air Dispersion Modeling and Risk Tool (ADMRT) version 18159. The plot files of localized benzene concentrations from AERMOD were imported into the ADMRT model to determine health risks. For the residential cancer risk, an exposure duration of 30 years was selected in accordance with the OEHHA (2015) guidelines. The model conservatively assumes that residents would be standing and breathing at the location of the property line closest to the gas station every day between 17 and 21 hours per day (depending on the age group, starting with infants in utero in the third trimester of pregnancy) for 30 years. For off-site worker cancer risk, an exposure duration of 25 years was selected with an assumption of 8 hours per day, 5 days per week of exposure, in accordance with

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

the OEHHA guidelines. For health risk at the school, an exposure duration of 8 hours per day, 5 days per week, for 3 years (starting at age 3) was selected. The output of the modeling provides concentrations of the modeled constituent in micrograms per cubic meter for the maximum one-hour, 5-year average, and the relevant analysis year duration concentrations.

Cancer burden evaluates an overall population's increased cancer risk and is defined as the increases in cancer cases in the population due exposure to TACs from a project. Cancer burden is calculated differently from individual risk. Per OEHHA, cancer burden uses a 70-year exposure (instead of 30 years) to evaluate population-wide cancer risk, and the cancer burden only evaluates residential exposure (not schools or parks). Cancer burden is calculated by estimating the number of residents that could be exposed to an incremental excess cancer risk of 1 in 1 million and multiplying the number of exposed residents by the estimated incremental excess cancer risk of the maximum exposed individual resident (MEIR). The number of residents that could be exposed to an incremental excess cancer risk was estimated by counting the number of single-family residences in or touching the 1 in 1 million risk isopleth (29 residences for this project) and assuming that each residence could contain up to 10 individuals for a total population of 290.

SIGNIFICANCE CRITERIA

As described in the project's Air Quality and Greenhouse Gas Emissions Technical Report, based on Appendix G of the state CEQA Guidelines, a significant impact related to exposure to TACs is identified if the project results in the following:

- Expose sensitive receptors to substantial pollutant concentrations.

The state CEQA Guidelines states that the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determination. Neither CARB or OEHAA guidance provide significance criteria for TACs. The SCAQMD (2015) has established significance thresholds to assess the regional and localized impacts of project-related air pollutant emissions.

Table 3, *SCAQMD Community Health Risk Thresholds*, presents the most current significance threshold established by SCAQMD for maximum incremental cancer risk for TACs. A project with that results in emissions of TAC concentrations below this threshold is generally considered to have a less than significant effect on air quality and community health.

Table 3
SCAQMD COMMUNITY HEALTH RISK THRESHOLDS

Scenario	Threshold
Cancer Risk	Incremental excess risk of 10 in 1 million
Cancer Burden	Increase in cancer cases in the population of 0.5

Source: SCAQMD 2015

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RESULTS

The incremental excess cancer risk is an estimate of the chance a person exposed to a specific source of a TAC may have of developing cancer from that exposure beyond the individual's risk of developing cancer from existing background levels of TACs in the ambient air. For context, the average cancer risk from TACs in the ambient air for an individual living in an urban area of California is 830 in 1 million (CARB 2015). Cancer risk estimates do not mean, and should not be interpreted to mean, that a person will develop cancer from estimated exposures to toxic air pollutants. The maximum estimated community incremental excess cancer risks due to exposure to the project TAC emissions from long term operation of the proposed retail gasoline dispensing facility are presented in Table 4, *Community Incremental Excess Cancer Risk and Cancer Burden*. These estimates are conservative (health protective) and are based on the highest anticipated annual gasoline throughput for the proposed gas station and assume that the resident, worker, or student is outdoors for the entire exposure period. The estimated incremental excess cancer risks due to exposure to the project TAC emissions for each receptor location shown in Figure 1 are presented in Table 5, *Discrete Receptor Incremental Excess Cancer Risk*. The model inputs, outputs, and risk isopleths are available in the attached Appendix.

Table 4
COMMUNITY INCREMENTAL EXCESS CANCER RISK AND CANCER BURDEN

	Maximum Exposed Individual Resident Cancer Risk	Maximum Exposed Individual Worker Cancer Risk	Maximum Exposed Individual Student Cancer Risk	Cancer Burden[1]
Results	5.3 in 1 million	0.2 in 1 million	0.1 in 1 million	0.002
Threshold	10 in 1 million	10 in 1 million	10 in 1 million	0.5
Exceed Threshold?	No	No	No	No

Source: Lakes AERMOD View version 9.6.1 and CARB ADMRT version 18159. See attached Appendix for model inputs, outputs, and risk isopleths.

[1] Cancer burden is calculated by multiplying the maximum number of residents with the 1 in 1 million risk isopleth (290 individuals) by the MEIR risk for a 70-year exposure (6.3×10^{-6}).

Table 5
DISCRETE RECEPTOR INCREMENTAL EXCESS CANCER RISK

Receptor	Receptor Type	Estimated Cancer Risk
R1	Resident	4.9 in 1 million
R2	Resident	5.3 in 1 million
R3	Resident	5.2 in 1 million
R4	Resident	4.3 in 1 million
R5	Resident	3.3 in 1 million
R6	Resident	2.3 in 1 million
R7	Resident	1.8 in 1 million
R8	Resident	1.9 in 1 million
R9	Resident	1.5 in 1 million
R10	Resident	1.2 in 1 million
R11	Resident	1.4 in 1 million
W1	Off-Site Worker	0.1 in 1 million

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Table 5 (cont.)
DISCRETE RECEPTOR INCREMENTAL EXCESS CANCER RISK

Receptor	Receptor Type	Estimated Cancer Risk
W2	Off-Site Worker	0.2 in 1 million
W3	Off-Site Worker	0.1 in 1 million
W4	Off-Site Worker	0.1 in 1 million
S1	Student	0.1 in 1 million

Source: Lakes AERMOD View version 9.6.1 and CARB ADMRT version 18159. See attached Appendix for model inputs, outputs, and risk isopleths.

As shown in Table 4, the incremental excess community cancer risks due to exposure to the project-related benzene emissions from long term operation of the proposed retail gasoline dispensing facility would not exceed the SCAQMD thresholds. Therefore, the operation of project would not result in a significant impact related to the exposure of sensitive receptors to substantial pollutant concentrations.

Martin Rolph
Air Quality Specialist

Joanne M. Dramko, AICP
Principal Air Quality Specialist

Attachments:

Figure 1, Project Site and Sensitive Receptor Locations

Appendix, Model Inputs and Outputs

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

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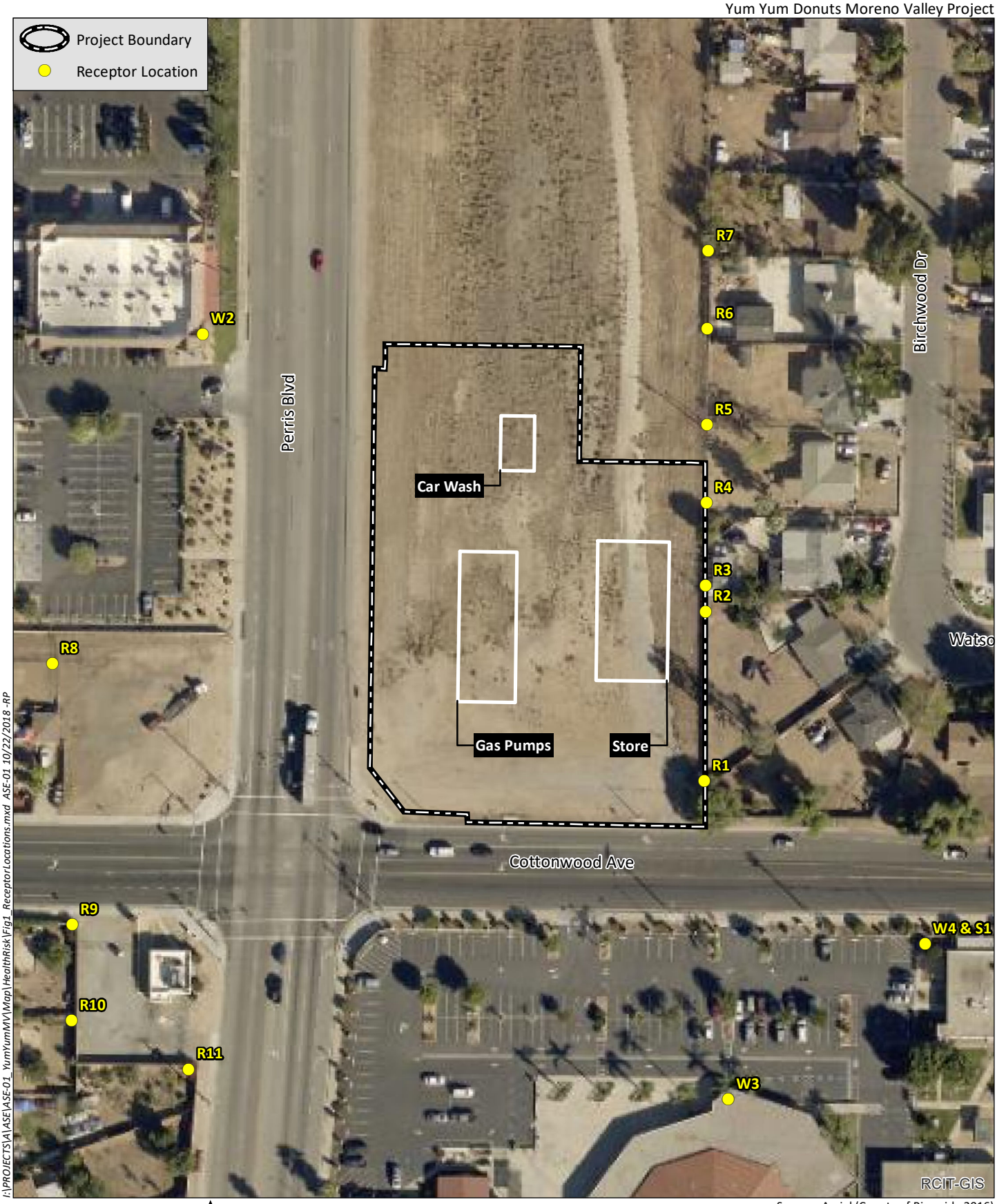
Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Yum Yum Donuts Moreno Valley Project



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0 100 Feet

Source: Aerial (County of Riverside 2016)

HELIX Environmental Planning

Project Site and Sensitive Receptor Locations

Figure 1

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Appendix

Model Inputs and Outputs

Control Pathway

AERMOD

Dispersion Options

Titles

C:\Users\martinr\Desktop\YumYumD\YumYumD.isc

Dispersion Options

- [x] Regulatory Default
- [ ] Non-Default Options

Dispersion Coefficient

Urban

Population:
Name (Optional):
Roughness Length:

Output Type

- [x] Concentration
- [ ] Total Deposition (Dry & Wet)
- [ ] Dry Deposition
- [ ] Wet Deposition

Plume Depletion

- [ ] Dry Removal
- [ ] Wet Removal

Output Warnings

- [ ] No Output Warnings
- [ ] Non-fatal Warnings for Non-sequential Met Data

Pollutant / Averaging Time / Terrain Options

Pollutant Type

OTHER - BENZENE

Averaging Time Options

Hours

1	2	3	4	6	8	12	24
■	☐	☐	☐	☐	■	☐	☐

- [ ] Month
- [x] Period
- [ ] Annual

Exponential Decay

Half-life of 4 hrs will be used

Terrain Height Options

- [ ] Flat
- [x] Elevated

SO: Meters
RE: Meters
TG: Meters

Flagpole Receptors

- [x] Yes
- [ ] No

Default Height = 1.20 m

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Control Pathway

Optional Files

- [ ] Re-Start File
- [ ] Init File
- [ ] Multi-Year Analyses
- [ ] Event Input File
- [x] Error Listing File

Detailed Error Listing File

Filename: YumYumD.err

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Meteorology Pathway

AERMOD

Met Input Data

Surface Met Data

Filename: MET and DEM Files\PERI_v9.SFC
Format Type: Default AERMET format

Profile Met Data

Filename: MET and DEM Files\PERI_v9.PFL
Format Type: Default AERMET format

Wind Speed

☐ Wind Speeds are Vector Mean (Not Scalar Means)

Wind Direction

Rotation Adjustment [deg]:

Potential Temperature Profile

Base Elevation above MSL (for Primary Met Tower): 1,450.00 [ft]

Meteorological Station Data

Stations	Station No.	Year	X Coordinate [m]	Y Coordinate [m]	Station Name
Surface		2010			
Upper Air		2010			
On-Site		2010			

Data Period

Data Period to Process

Start Date: 1/1/2010 Start Hour: 1 End Date: 12/31/2016 End Hour: 24

Wind Speed Categories

Stability Category	Wind Speed [m/s]	Stability Category	Wind Speed [m/s]
A	1.54	D	8.23
B	3.09	E	10.8
C	5.14	F	No Upper Bound

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Output Pathway

AERMOD

Tabular Printed Outputs

Short Term Averaging Period	RECTABLE Highest Values Table										MAXTABLE Maximum Values Table	DAYTABLE Daily Values Table
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th		
1	■	☐	☐	☐	☐	☐	☐	☐	☐	☐		No
8	■	☐	☐	☐	☐	☐	☐	☐	☐	☐		No

Contour Plot Files (PLOTFILE)

Path for PLOTFILES: YumYumD.AD

Averaging Period	Source Group ID	High Value	File Name
1	ALL	1st	01H1GALL.PLT
8	ALL	1st	08H1GALL.PLT
Period	ALL	N/A	PE00GALL.PLT

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Receptor Pathway

Receptor Networks

Note: Terrain Elavations and Flagpole Heights for Network Grids are in Page RE2 - 1 (If applicable)
Generated Discrete Receptors for Multi-Tier (Risk) Grid and Receptor Locations for Fenceline Grid are in Page RE3 - 1 (If applicable)

Uniform Cartesian Grid

Receptor Network ID	Grid Origin X Coordinate [m]	Grid Origin Y Coordinate [m]	No. of X-Axis Receptors	No. of Y-Axis Receptors	Spacing for X-Axis [m]	Spacing for Y-Axis [m]
UCART1	478831.50	3753577.50	40	40	15.00	15.00

Discrete Receptors

Discrete Cartesian Receptors

Record Number	X-Coordinate [m]	Y-Coordinate [m]	Group Name (Optional)	Terrain Elevations	Flagpole Heights [m] (Optional)
1	479179.00	3753836.00		484.00	1.20
2	479179.00	3753875.00		484.00	1.20
3	479179.00	3753881.00		484.00	1.20
4	479179.00	3753900.00		484.00	1.20
5	479179.00	3753918.00		484.05	1.20
6	479179.00	3753940.00		484.78	1.20
7	479179.00	3753958.00		485.00	1.20
8	479029.00	3753862.00		484.43	1.20
9	479034.00	3753802.00		484.00	1.20
10	479034.00	3753780.00		484.00	1.20
11	479061.00	3753769.00		484.00	1.20
12	479016.00	3753872.00		484.52	1.20
13	479063.00	3753938.00		485.00	1.20
14	479185.00	3753763.00		483.00	1.20
15	479230.00	3753799.00		483.00	0.70

Plant Boundary Receptors

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Receptor Pathway

AERMOD

Cartesian Plant Boundary

Primary

Record Number	X-Coordinate [m]	Y-Coordinate [m]	Group Name (Optional)	Terrain Elevations	Flagpole Heights [m] (Optional)
1	479099.00	3753830.00	FENCEPRI	484.04	
2	479176.00	3753830.00	FENCEPRI	484.00	
3	479176.00	3753908.00	FENCEPRI	484.00	
4	479144.50	3753908.00	FENCEPRI	484.61	
5	479144.50	3753934.00	FENCEPRI	484.94	
6	479099.00	3753934.00	FENCEPRI	484.73	

Receptor Groups

Record Number	Group ID	Group Description
1	FENCEPRI	Cartesian plant boundary Primary Receptors

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Results Summary

C:\Users\martinr\Desktop\YumYumD\YumYumD.isc

BENZENE - Concentration - Source Group: ALL

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	3.53024	ug/m^3	479131.50	3753847.50	484.00	1.20	484.00	12/5/2010, 16
8-HR	1ST	1.37847	ug/m^3	479116.50	3753892.50	484.00	1.20	484.00	1/5/2016, 16
PERIOD		0.44023	ug/m^3	479131.50	3753847.50	484.00	1.20	484.00	

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

Sensitive Receptor Summary

C:\Users\martinr\Desktop\YumYumD\YumYumD.isc

BENZENE - Concentration - Source Group: ALL

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	0.59464	ug/m^3	13493BirD	479179.00	3753836.00	484.00	1.20	484.00	9/4/2014, 7
1-HR	1ST	0.65463	ug/m^3	13741BirD	479179.00	3753875.00	484.00	1.20	484.00	3/22/2016, 18
1-HR	1ST	0.65574	ug/m^3	13453BirD	479179.00	3753881.00	484.00	1.20	484.00	2/2/2015, 8
1-HR	1ST	0.77877	ug/m^3	13441BirD	479179.00	3753900.00	484.00	1.20	484.00	9/5/2016, 7
1-HR	1ST	0.65893	ug/m^3	13431BirD	479179.00	3753918.00	484.05	1.20	484.05	9/5/2016, 7
1-HR	1ST	0.42492	ug/m^3	13423DirD	479179.00	3753940.00	484.78	1.20	484.78	8/20/2011, 7
1-HR	1ST	0.30482	ug/m^3	13401BirD	479179.00	3753958.00	485.00	1.20	485.00	8/20/2011, 7
1-HR	1ST	0.32375	ug/m^3	24960CotA	479029.00	3753862.00	484.43	1.20	484.43	7/29/2015, 19
1-HR	1ST	0.39709	ug/m^3	13516PerB	479034.00	3753802.00	484.00	1.20	484.00	1/3/2011, 16
1-HR	1ST	0.28495	ug/m^3	13530PerB	479034.00	3753780.00	484.00	1.20	484.00	1/3/2011, 16
1-HR	1ST	0.23311	ug/m^3	13546PerB	479061.00	3753769.00	484.00	1.20	484.00	7/6/2016, 19
1-HR	1ST	0.21470	ug/m^3	StChrS	479230.00	3753799.00	483.00	0.70	483.00	1/27/2015, 17
8-HR	1ST	0.19688	ug/m^3	13493BirD	479179.00	3753836.00	484.00	1.20	484.00	4/18/2011, 24
8-HR	1ST	0.26377	ug/m^3	13741BirD	479179.00	3753875.00	484.00	1.20	484.00	4/1/2014, 24
8-HR	1ST	0.25897	ug/m^3	13453BirD	479179.00	3753881.00	484.00	1.20	484.00	4/1/2014, 24
8-HR	1ST	0.23607	ug/m^3	13441BirD	479179.00	3753900.00	484.00	1.20	484.00	2/21/2010, 24
8-HR	1ST	0.20962	ug/m^3	13431BirD	479179.00	3753918.00	484.05	1.20	484.05	3/26/2014, 24
8-HR	1ST	0.15490	ug/m^3	13423DirD	479179.00	3753940.00	484.78	1.20	484.78	5/8/2011, 24
8-HR	1ST	0.11624	ug/m^3	13401BirD	479179.00	3753958.00	485.00	1.20	485.00	5/8/2011, 24
8-HR	1ST	0.09220	ug/m^3	24960CotA	479029.00	3753862.00	484.43	1.20	484.43	1/23/2014, 24

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

Sensitive Receptor Summary

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BENZENE - Concentration - Source Group: ALL

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
8-HR	1ST	0.08572	ug/m^3	13516PerB	479034.00	3753802.00	484.00	1.20	484.00	3/9/2011, 24
8-HR	1ST	0.07791	ug/m^3	13530PerB	479034.00	3753780.00	484.00	1.20	484.00	12/23/2014, 24
8-HR	1ST	0.09033	ug/m^3	13546PerB	479061.00	3753769.00	484.00	1.20	484.00	12/23/2014, 24
8-HR	1ST	0.07069	ug/m^3	StChrS	479230.00	3753799.00	483.00	0.70	483.00	4/18/2011, 24
PERIOD		0.06102	ug/m^3	13493BirD	479179.00	3753836.00	484.00	1.20	484.00	
PERIOD		0.06618	ug/m^3	13741BirD	479179.00	3753875.00	484.00	1.20	484.00	
PERIOD		0.06440	ug/m^3	13453BirD	479179.00	3753881.00	484.00	1.20	484.00	
PERIOD		0.05370	ug/m^3	13441BirD	479179.00	3753900.00	484.00	1.20	484.00	
PERIOD		0.04097	ug/m^3	13431BirD	479179.00	3753918.00	484.05	1.20	484.05	
PERIOD		0.02880	ug/m^3	13423DirD	479179.00	3753940.00	484.78	1.20	484.78	
PERIOD		0.02193	ug/m^3	13401BirD	479179.00	3753958.00	485.00	1.20	485.00	
PERIOD		0.02367	ug/m^3	24960CotA	479029.00	3753862.00	484.43	1.20	484.43	
PERIOD		0.01876	ug/m^3	13516PerB	479034.00	3753802.00	484.00	1.20	484.00	
PERIOD		0.01529	ug/m^3	13530PerB	479034.00	3753780.00	484.00	1.20	484.00	
PERIOD		0.01768	ug/m^3	13546PerB	479061.00	3753769.00	484.00	1.20	484.00	
PERIOD		0.01789	ug/m^3	StChrS	479230.00	3753799.00	483.00	0.70	483.00	

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

Source Pathway - Source Inputs

AERMOD

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	STCK1	479124.00 Loading	3753870.00	484.00	3.70	0.00006	289.00	0.01	0.05
POINT	STCK2	479124.00 Breathing	3753870.00	484.00	3.70	5.17E-6	289.00	0.01	0.05

Volume Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dim. [m]	Initial Vertical Dim. [m]
VOLUME	VOL1	479124.00 Refueling	3753870.00	484.00	1.00	0.00013	21.71	Surface-Based	5.05	1.16
VOLUME	VOL2	479124.00 Spillage	3753870.00	484.00	0.00	0.00015	21.71	Surface-Based	5.05	2.33
VOLUME	VOL3	479124.00 Hose Permeation	3753870.00	484.00	1.00	3.54E-6	21.71	Surface-Based	5.05	1.16

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

Source Pathway

AERMOD

Building Downwash Information

Source ID: STCK1

Heights [m] (10 to 360 deg)

10-60 deg	0.00	0.00	0.00	0.00	6.10	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	6.10	6.10
250-300 deg	6.10	6.10	6.10	6.10	6.10	6.10
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00

Widths [m] (10 to 360 deg)

10-60 deg	0.00	0.00	0.00	0.00	34.40	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	34.40	35.15
250-300 deg	34.84	33.48	31.09	33.48	34.84	35.15
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00

Lengths [m] (10 to 360 deg)

10-60 deg	0.00	0.00	0.00	0.00	32.59	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	32.59	29.80
250-300 deg	26.10	21.61	16.46	21.61	26.10	29.80
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00

Along Flow [m] (10 to 360 deg)

10-60 deg	0.00	0.00	0.00	0.00	11.56	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	-44.15	-45.82
250-300 deg	-46.09	-44.96	-42.46	-44.07	-44.35	-43.27
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00

Across Flow [m] (10 to 360 deg)

10-60 deg	0.00	0.00	0.00	0.00	-20.05	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	20.05	14.91
250-300 deg	9.32	3.44	-2.55	-8.45	-14.10	-19.32
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00

Source ID: STCK2

Heights [m] (10 to 360 deg)

10-60 deg	0.00	0.00	0.00	0.00	6.10	0.00

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Source Pathway

70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	6.10	6.10
250-300 deg	6.10	6.10	6.10	6.10	6.10	6.10
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00
Widths [m] (10 to 360 deg)						
10-60 deg	0.00	0.00	0.00	0.00	34.40	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	34.40	35.15
250-300 deg	34.84	33.48	31.09	33.48	34.84	35.15
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00
Lengths [m] (10 to 360 deg)						
10-60 deg	0.00	0.00	0.00	0.00	32.59	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	32.59	29.80
250-300 deg	26.10	21.61	16.46	21.61	26.10	29.80
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00
Along Flow [m] (10 to 360 deg)						
10-60 deg	0.00	0.00	0.00	0.00	11.56	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	-44.15	-45.82
250-300 deg	-46.09	-44.96	-42.46	-44.07	-44.35	-43.27
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00
Across Flow [m] (10 to 360 deg)						
10-60 deg	0.00	0.00	0.00	0.00	-20.05	0.00
70-120 deg	0.00	0.00	0.00	0.00	0.00	0.00
130-180 deg	0.00	0.00	0.00	0.00	0.00	0.00
190-240 deg	0.00	0.00	0.00	0.00	20.05	14.91
250-300 deg	9.32	3.44	-2.55	-8.45	-14.10	-19.32
310-360 deg	0.00	0.00	0.00	0.00	0.00	0.00

Emission Rate Units for Output

For Concentration

Unit Factor:	1E6
Emission Unit Label:	GRAMS/SEC
Concentration Unit Label:	MICROGRAMS/M**3

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Source Pathway

Variable Emissions

Hourly Emission Rate Variation

Scenario: Scenario 1

Source ID:	STCK1						
1 to 6		0.48	0.48	0.48	0.48	0.48	0.48
7 to 12		1.37	1.37	1.37	1.37	1.37	1.37
13 to 18		1.37	1.37	1.37	1.37	1.37	1.37
19 to 24		1.37	1.37	0.48	0.48	0.48	0.48
Source ID:	**STCK2**						
1 to 6		0.48	0.48	0.48	0.48	0.48	0.48
7 to 12		1.37	1.37	1.37	1.37	1.37	1.37
13 to 18		1.37	1.37	1.37	1.37	1.37	1.37
19 to 24		1.37	1.37	0.48	0.48	0.48	0.48
Source ID:	**VOL1**						
1 to 6		0.48	0.48	0.48	0.48	0.48	0.48
7 to 12		1.37	1.37	1.37	1.37	1.37	1.37
13 to 18		1.37	1.37	1.37	1.37	1.37	1.37
19 to 24		1.37	1.37	0.48	0.48	0.48	0.48
Source ID:	**VOL2**						
1 to 6		0.48	0.48	0.48	0.48	0.48	0.48
7 to 12		1.37	1.37	1.37	1.37	1.37	1.37
13 to 18		1.37	1.37	1.37	1.37	1.37	1.37
19 to 24		1.37	1.37	0.48	0.48	0.48	0.48

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Source Pathway - Source Inputs

AERMOD

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	STCK1	479124.00 Loading	3753870.00	484.00	3.70	0.00006	289.00	0.01	0.05
POINT	STCK2	479124.00 Breathing	3753870.00	484.00	3.70	5.17E-6	289.00	0.01	0.05

Volume Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dim. [m]	Initial Vertical Dim. [m]
VOLUME	VOL1	479124.00 Refueling	3753870.00	484.00	1.00	0.00013	21.71	Surface-Based	5.05	1.16
VOLUME	VOL2	479124.00 Spillage	3753870.00	484.00	0.00	0.00015	21.71	Surface-Based	5.05	2.33
VOLUME	VOL3	479124.00 Hose Permeation	3753870.00	484.00	1.00	3.54E-6	21.71	Surface-Based	5.05	1.16

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

ProjectSummaryReport

HARP Project Summary Report 10/5/2018 11:15:50 AM

PROJECT INFORMATION
HARP Version: 18159
Project Name: YUMYUMD
Project Output Directory: C:\Users\martinr\Desktop\YumYumD\YumYumADMRT
HARP Database: NA

FACILITY INFORMATION
Origin
X (m):479124
Y (m):3753870
Zone:11
No. of Sources:0
No. of Buildings:0

EMISSION INVENTORY
No. of Pollutants:0
No. of Background Pollutants:0

Emissions

ScrID	StkID	ProID	PolID	PolAbbrev
Multi	Annual Ems (lbs/yr)	MaxHr Ems (lbs/hr)	MWAF	

Background

PolID	PolAbbrev	Conc (ug/m^3)	MWAF

Ground level concentration files (\glc\)

POLLUTANT HEALTH INFORMATION
Health Database: C:\HARP2\Tables\HEALTH17320.mdb
Health Table Version: HEALTH18232
Official: True

PolID	PolAbbrev	InhCancer	OralCancer	AcuteREL	InhChronicREL	OralChronicREL	InhChronic8HRREL
71432	Benzene	0.1		27	3	3	

LIST OF RISK ASSESSMENT FILES

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

ProjectSummaryReport

Health risk analysis files (\hra\)

_____

Pop CancerCancerRisk.csv
Pop CancerCancerRiskSumByRec.csv
Pop CancerGLCList.csv
Pop CancerHRAInput.hra
Pop CancerOutput.txt
Pop CancerPathwayRec.csv
Pop CancerPolDB.csv
Preschool CancerCancerRisk.csv
Preschool CancerCancerRiskSumByRec.csv
Preschool CancerGLCList.csv
Preschool CancerHRAInput.hra
Preschool CancerOutput.txt
Preschool CancerPathwayRec.csv
Preschool CancerPolDB.csv
Residential CancerCancerRisk.csv
Residential CancerCancerRiskSumByRec.csv
Residential CancerGLCList.csv
Residential CancerHRAInput.hra
Residential CancerOutput.txt
Residential CancerPathwayRec.csv
Residential CancerPolDB.csv
Worker CancerCancerRisk.csv
Worker CancerCancerRiskSumByRec.csv
Worker CancerGLCList.csv
Worker CancerHRAInput.hra
Worker CancerOutput.txt
Worker CancerPathwayRec.csv
Worker CancerPolDB.csv

Spatial averaging files (\sa\)

_____

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Residential CancerOutput

HARP2 - HRACalc (dated 17023) 10/19/2018 10:00:56 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors set to 0
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: Cancer
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 30

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 14
16<30 Years Bin: 14
16 to 70 Years Bin: 0

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: False
Dermal: False
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Residential CancerOutput

Daily breathing rate: LongTerm24HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: OFF

****
TIER 2 SETTINGS
Tier2 not used.

****

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to:
C:\Users\martinr\Desktop\HRA\Model\YumYumADMRT\hra\Residential CancerCancerRisk.csv
Cancer risk total by receptor saved to:
C:\Users\martinr\Desktop\HRA\Model\YumYumADMRT\hra\Residential
CancerCancerRiskSumByRec.csv
HRA ran successfully

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

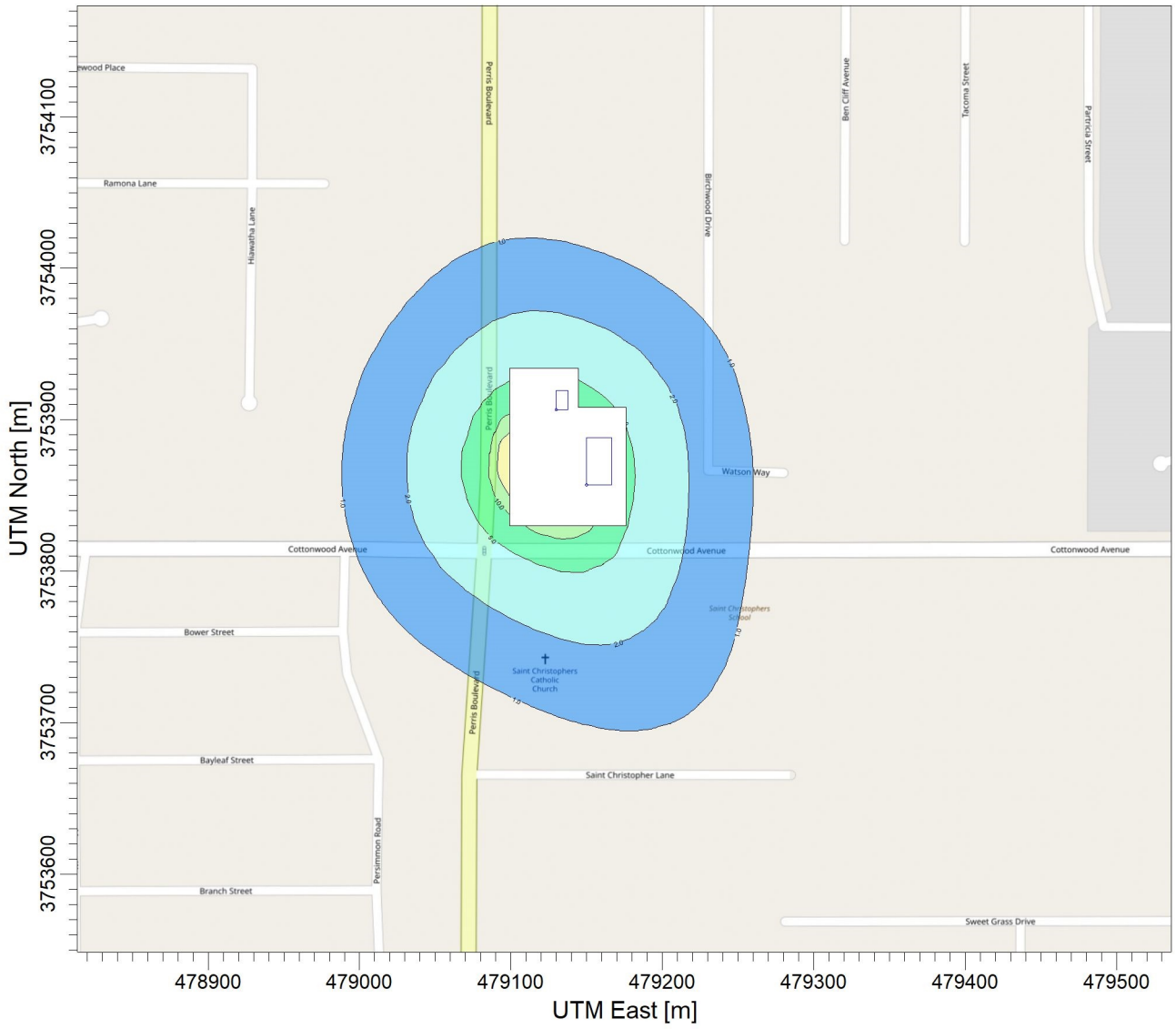
*HARP - HRACalc v17023 10/19/2018 10:00:56 AM - Cancer Risk -
Input File: C:\Users\martinr\Desktop\HRA\Model\YumYumADMRT\hra\Residential CancerHRAInput.hra

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO
1601	ALL		479179	3753836	4.91E-06	30YrCancerDerived_Inh
1602	ALL		479179	3753875	5.32E-06	30YrCancerDerived_Inh
1603	ALL		479179	3753881	5.18E-06	30YrCancerDerived_Inh
1604	ALL		479179	3753900	4.32E-06	30YrCancerDerived_Inh
1605	ALL		479179	3753918	3.29E-06	30YrCancerDerived_Inh
1606	ALL		479179	3753940	2.32E-06	30YrCancerDerived_Inh
1607	ALL		479179	3753958	1.76E-06	30YrCancerDerived_Inh
1608	ALL		479029	3753862	1.90E-06	30YrCancerDerived_Inh
1609	ALL		479034	3753802	1.51E-06	30YrCancerDerived_Inh
1610	ALL		479034	3753780	1.23E-06	30YrCancerDerived_Inh
1611	ALL		479061	3753769	1.42E-06	30YrCancerDerived_Inh

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

PROJECT TITLE:

Yum Yum Donuts Gas Station HRA
Residential Cancer Risk Isopleths



PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL

COMMENTS: Increased residential cancer risk isopleths shown in chances per 1 million.	SOURCES: **5**	COMPANY NAME: **HELIX Environmenal Planning**	
	RECEPTORS: **1621**		
	OUTPUT TYPE: **Risk**	SCALE: 1:4,546 0 0.1 km	
	MAX:	DATE: **10/19/2018**	PROJECT NO.: **ASE-01**

AERMOD View - Lakes Environmental Software

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Worker CancerOutput

HARP2 - HRACalc (dated 17023) 10/19/2018 10:01:54 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors set to 0
****
RISK SCENARIO SETTINGS

Receptor Type: Worker
Scenario: Cancer
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: 16
Total Exposure Duration: 25

Exposure Duration Bin Distribution
3rd Trimester Bin: 0
0<2 Years Bin: 0
2<9 Years Bin: 0
2<16 Years Bin: 0
16<30 Years Bin: 0
16 to 70 Years Bin: 25

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Worker CancerOutput

Daily breathing rate: Moderate8HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: OFF

****
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.05
Soil mixing depth (m): 0.01
Dermal climate: Mixed

****
TIER 2 SETTINGS
Tier2 not used.

****

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to:
C:\Users\martinr\Desktop\HRA\Model\YumYumADMRT\hra\Worker CancerCancerRisk.csv
Cancer risk total by receptor saved to:
C:\Users\martinr\Desktop\HRA\Model\YumYumADMRT\hra\Worker
CancerCancerRiskSumByRec.csv
HRA ran successfully

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

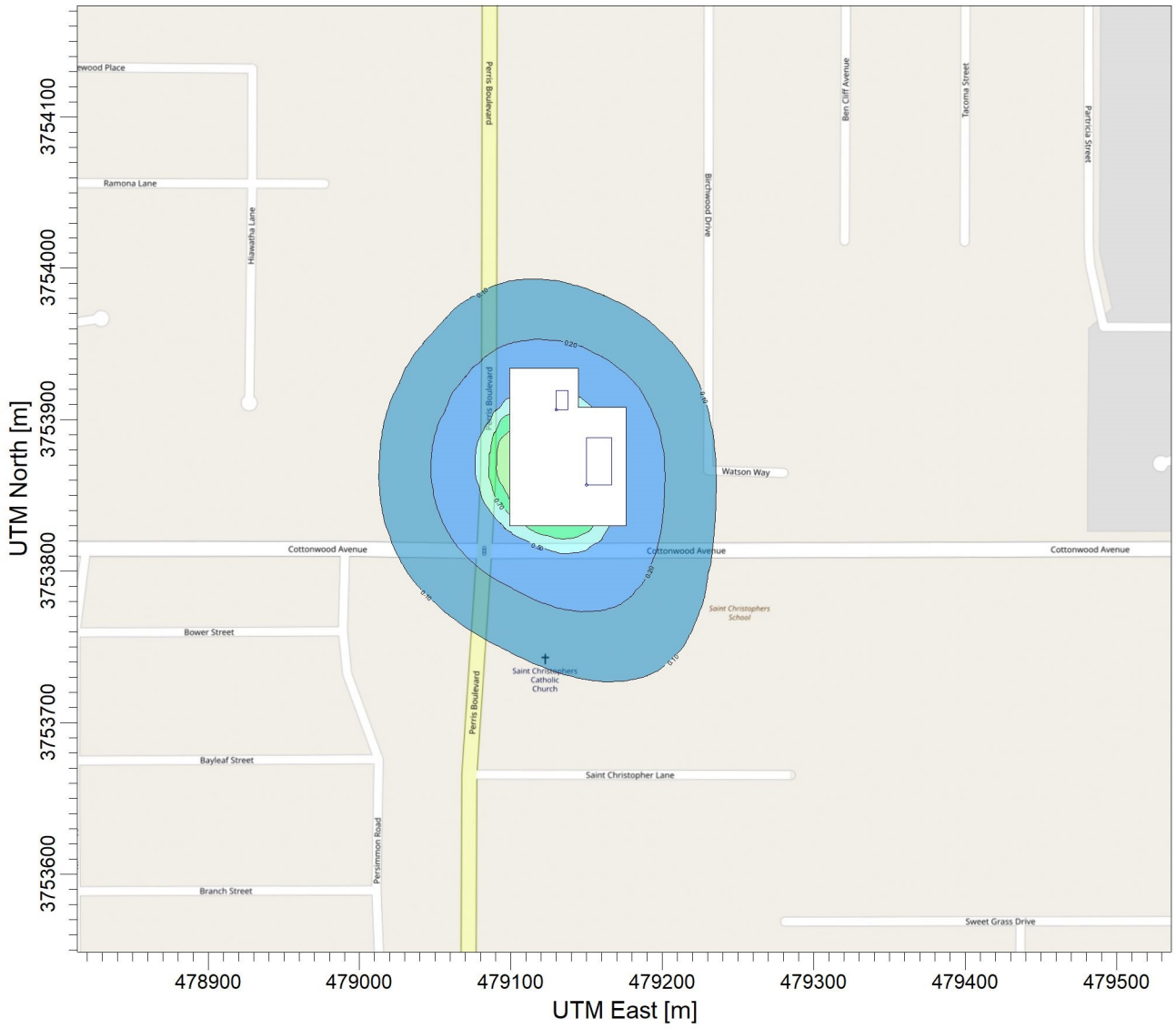
*HARP - HRACalc v17023 10/19/2018 10:01:54 AM - Cancer Risk -
Input File: C:\Users\martinr\Desktop\HRA\Model\YumYumADMRT\hra\Worker CancerHRAInput.hra

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO
1611	ALL		479061	3753769	9.95E-08	25YrCancerDerived_InhSoilDerm
1612	ALL		479016	3753872	1.05E-07	25YrCancerDerived_InhSoilDerm
1613	ALL		479063	3753938	1.54E-07	25YrCancerDerived_InhSoilDerm
1614	ALL		479185	3753763	1.46E-07	25YrCancerDerived_InhSoilDerm
1615	ALL		479230	3753799	1.01E-07	25YrCancerDerived_InhSoilDerm

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

PROJECT TITLE:

Yum Yum Donuts Gas Station HRA
Worker Cancer Risk Isopleths



PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL

ug/m^3

COMMENTS: Increased worker cancer risk isopleths shown in chances per 1 million.	SOURCES: **5**	COMPANY NAME: **HELIX Environmenal Planning**	
	RECEPTORS: **1621**		
	OUTPUT TYPE: **Risk**	SCALE: 1:4,546 0 0.1 km	
	MAX:	DATE: **10/19/2018**	PROJECT NO.: **ASE-01**

AERMOD View - Lakes Environmental Software

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Preschool CancerOutput

HARP2 - HRACalc (dated 17023) 10/19/2018 10:04:17 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors set to 0
****
RISK SCENARIO SETTINGS

Receptor Type: Worker
Scenario: Cancer
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: 3
Total Exposure Duration: 3

Exposure Duration Bin Distribution
3rd Trimester Bin: 0
0<2 Years Bin: 0
2<9 Years Bin: 3
2<16 Years Bin: 0
16<30 Years Bin: 0
16 to 70 Years Bin: 0

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Preschool CancerOutput

Daily breathing rate: Moderate8HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: OFF

****
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.05
Soil mixing depth (m): 0.01
Dermal climate: Mixed

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed
Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to:
C:\Users\martinr\Desktop\HRA\Model\YumYumADMRT\hra\Preschool CancerCancerRisk.csv
Cancer risk total by receptor saved to:
C:\Users\martinr\Desktop\HRA\Model\YumYumADMRT\hra\Preschool CancerCancerRiskSumByRec.csv
HRA ran successfully

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

*HARP - HRACalc v17023 10/19/2018 10:04:17 AM - Cancer Risk -
Input File: C:\Users\martinr\Desktop\HRA\Model\YumYumADMRT\hra\Preschool CancerHRAInput.hra

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO
1615	ALL		479230	3753799	1.01E-07	3YrCancerDerived_InhSoilDerm

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Pop CancerOutput

HARP2 - HRACalc (dated 17023) 10/19/2018 10:03:11 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors set to 0
****
RISK SCENARIO SETTINGS

Receptor Type: Population
Scenario: Cancer
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 70

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 14
16<30 Years Bin: 0
16 to 70 Years Bin: 54

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: False
Dermal: False
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

Pop CancerOutput

Daily breathing rate: LongTerm24HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: OFF

****
TIER 2 SETTINGS
Tier2 not used.

****

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to:
C:\Users\martinr\Desktop\HRA\Model\YumYumADMRT\hra\Pop CancerCancerRisk.csv
Cancer risk total by receptor saved to:
C:\Users\martinr\Desktop\HRA\Model\YumYumADMRT\hra\Pop CancerCancerRiskSumByRec.csv
HRA ran successfully

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

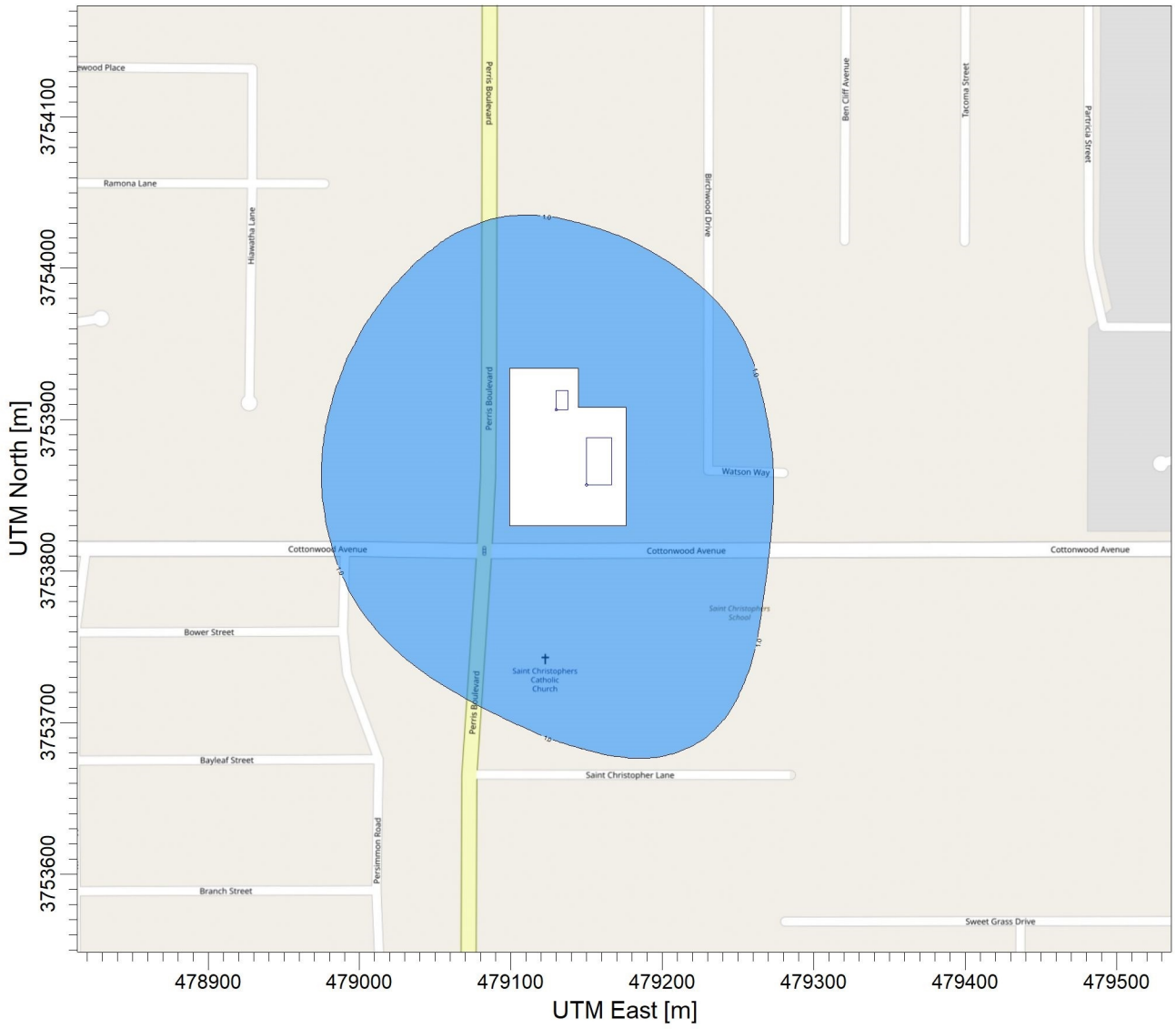
*HARP - HRACalc v17023 10/19/2018 10:03:11 AM - Cancer Risk -
Input File: C:\Users\martinr\Desktop\HRA\Model\YumYumADMRT\hra\Pop CancerHRAInput.hra

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO
1601	ALL		479179	3753836	5.82E-06	70YrCancerDerived_Inh
1602	ALL		479179	3753875	6.31E-06	70YrCancerDerived_Inh
1603	ALL		479179	3753881	6.14E-06	70YrCancerDerived_Inh
1604	ALL		479179	3753900	5.12E-06	70YrCancerDerived_Inh
1605	ALL		479179	3753918	3.91E-06	70YrCancerDerived_Inh
1606	ALL		479179	3753940	2.75E-06	70YrCancerDerived_Inh
1607	ALL		479179	3753958	2.09E-06	70YrCancerDerived_Inh
1608	ALL		479029	3753862	2.26E-06	70YrCancerDerived_Inh
1609	ALL		479034	3753802	1.79E-06	70YrCancerDerived_Inh
1610	ALL		479034	3753780	1.46E-06	70YrCancerDerived_Inh
1611	ALL		479061	3753769	1.69E-06	70YrCancerDerived_Inh

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

PROJECT TITLE:

Yum Yum Donuts Gas Station HRA
Population Cancer Risk Isopleths



PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL

COMMENTS: Increased population cancer risk isopleths shown in chances per 1 million.	SOURCES: **5**	COMPANY NAME: **HELIX Environmenal Planning**	
	RECEPTORS: **1621**		
	OUTPUT TYPE: **Risk**	SCALE: 1:4,546 0 0.1 km	
	MAX:	DATE: **10/19/2018**	PROJECT NO.: **ASE-01**

AERMOD View - Lakes Environmental Software

Attachment: Health Risk Assessment (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND CONDITIONAL USE PERMIT FOR

OFFICIAL MINUTES OF THE PLANNING COMMISSION OF THE CITY OF MORENO VALLEY

REGULAR MEETING – 7:00 PM
July 26, 2018

Attachment: Planning Commission Minutes - July 26, 2018 meeting (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

CALL TO ORDER

This Regular Meeting of the Planning Commission of the City of Moreno Valley was called to order at 7:01 p.m. by Chair Barnes in the Council Chamber located at 14177 Frederick Street.

ROLL CALL

Planning Commission:	Jeffrey Barnes	Chair	Present
	Patricia Korzec	Vice Chair	Present
	Jeffrey Sims	Commissioner	Excused Absence
	Ray L. Baker	Commissioner	Excused Absence
	Jeffrey Barnes	Commissioner	Present
	Alvin Dejohnette	Commissioner	Present
	Robert Harris	Commissioner	Present
	JoAnn Stephan	Commissioner	Present

PLEDGE OF ALLEGIANCE

The Pledge of Allegiance was led by Commissioner Robert Harris.

APPROVAL OF AGENDA

Motion made by Vice Chair Patricia Korzec and seconded by Commissioner Robert Harris.

Vote:	5-0-0-2
Ayes:	Vice Chair Korzec, Commissioners Harris, Stephan, Dejohnette, and Chair Barnes
Noes:	
Abstain:	
Action:	Approved
Excused:	Commissioners Sims and Baker

STAFF PRESENT

Paul Early	City Attorney
Albert Armijo	Interim Planning Manager
Chris Ormsby	Senior Planner
Jeff Bradshaw	Associate Planner
Vince Giron	Associate Engineer
Michael Lloyd	Assistant City Engineer
Eric Lewis	City Traffic Engineer
Chris Cox	Fire Safety Specialist

* ALL PLANNING COMMISSION MEETINGS ARE VIDEO/AUDIO RECORDED. THIS RECORD IS AVAILABLE FOR REVIEW 1 BUSINESS DAY AFTER EACH MEETING AND CAN BE ACCESSED VIA THE FOLLOWING LINK http://morenovalleyca.iqm2.com/Citizens/Calendar.aspx

Ashley Aparicio Planning Commission Secretary

CONSENT CALENDAR

No items for Discussion

APPROVAL OF MINUTES

Minutes - Planning Commission Regular Meeting of May 24, 2018 7:00 PM

Motion made by Vice Chair Patricia Korzec and seconded by Commissioner Robert Harris with the recommendation to update the attendance of Commissioner Jeffrey Sims to reflect excused absence.

Vote:	5-0-0-2
Ayes:	Vice Chair Korzec, Commissioners Harris, Stephan, Dejohnette, and Chair Barnes
Noes:	
Abstain:	
Action:	Approved
Excused:	Commissioners Sims and Baker

PUBLIC COMMENTS PROCEDURE

Rafael Brugueras

1. The City's progress and economic growth due to the City approving great projects. We have an estimated 210,000 residents. We are the 3rd in the nation for our budget and we are the 21st largest city in the State of CA and we are doing very well.
2. We need to continue to offer jobs and affordable housing as that is the reason for people to continue to choose Moreno Valley.
3. Continue filling our lots until there are no more lots to fill.

Ken Iglesias

1. Recommendation to expand RTA Route 40 through Moreno Valley from the north east of Moreno Valley, similar to route 18 or route 31.

Louise Zulueta

1. Asked to withdraw request to speak.

NON-PUBLIC HEARING ITEMS

No items for Discussion

PUBLIC HEARING ITEMS

Attachment: Planning Commission Minutes - July 26, 2018 meeting (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

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1. Street Vacation of a Portion of Hemlock Avenue, westerly of Heacock Street and easterly of Swegles Lane along the Frontage of an Approved Multi-family Project (Report of: Planning Commission)

Recommendations:

Staff recommends that the Planning Commission APPROVE Resolution No. 2018-39, and thereby FINDS that the vacation of Hemlock Avenue is in conformance with the General Plan and current zoning, and RECOMMENDS that the City Council approve the street vacation for a portion of Hemlock Avenue, LGL17-0014.

Public Hearing Opened: 7:17 p.m.

Public Comments:

Rafael Brugueras supported the item.

Public Hearing Closed: 7:18 p.m.

Motion made by Vice Chair Patricia Korzec and seconded by Commissioner Dejohnette.

Vote:	5-0-0-2
Ayes:	Vice Chair Korzec, Commissioners Harris, Stephan, Dejohnette, and Chair Barnes
Noes:	
Abstain:	
Action:	Approved
Excused:	Commissioners Sims and Baker

2. Conditional Use Permit and Zone Change for Moreno Valley Storage, a proposed 538 unit mini-storage facility with a caretaker's residence. The Zone Change from Neighborhood Commercial to Community Commercial is required for the proposed use to be approved. (Report of: Planning Commission)

A. Staff recommends that the Planning Commission APPROVE Resolution No. 2018-32, and thereby RECOMMEND that the City Council:

1. CERTIFY that the Mitigated Negative Declaration prepared for Zone Change PEN17-0134 and Conditional Use Permit PEN17-0135 on file with the Community Development Department, incorporated herein by this reference, has been completed in compliance with the California Environmental Quality Act, that the Planning Commission reviewed and considered the information contained in the Mitigated Negative Declaration and that the document reflects the City's independent judgment and analysis; attached hereto as Exhibit A; and

Attachment: Planning Commission Minutes - July 26, 2018 meeting (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

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2. APPROVE the Mitigation Monitoring Program prepared for Zone Change PEN17-0134 and Conditional Use Permit PEN17-0135, attached hereto as Exhibit B.

B. Staff recommends that the Planning Commission APPROVE Resolution No. 2018-33, and thereby RECOMMEND that the City Council:

1. APPROVE Zone Change application PEN17-0134 based on the findings contained in this resolution, and as shown on the attachment included as Exhibit A.

C. Staff recommends that the Planning Commission APPROVE Resolution No. 2018-34, and thereby RECOMMEND that the City Council:

1. APPROVE Conditional Use Permit PEN17-0135 based on the findings contained in this resolution, and subject to the conditions of approval included as Exhibit A.

Public Hearing Opened: 7:39 p.m.

Public Comments:

Rafael Brugueras supports the item.

Ken Iglesias supports the item.

Public Hearing Closed: 7:44 p.m.

Motion made by Vice Chair Patricia Korzec and seconded by Commissioner Harris to approve the project with the Conditions of Approval as amended.

Vote:	5-0-0-2
Ayes:	Vice Chair Korzec, Commissioners Harris, Stephan, Dejohnette, and Chair Barnes
Noes:	
Abstain:	
Action:	Approved
Excused:	Commissioners Sims and Baker

3. Conditional Use Permit for Yum Yum Donuts Moreno Valley, a service station with convenience store and car wash on a 1.77 acre site located at the northeast corner of Perris Boulevard and Cottonwood Avenue. The applicant is also requesting approval for beer and wine sales in the convenience store. A General Plan Amendment from Residential Office to Commercial and a Zone Change from Office Commercial (OC) to Community Commercial (CC) is requested. (Report of: Planning Commission)

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Attachment: Planning Commission Minutes - July 26, 2018 meeting (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

A. Staff recommends that the Planning Commission APPROVE Resolution No. 2018-35, and thereby RECOMMEND that the City Council:

1. CERTIFY that the Mitigated Negative Declaration prepared for General Plan Amendment PEN16-0086, Zone Change PEN16-0087 and Conditional Use Permit PEN16-0088 on file with the Community Development Department, incorporated herein by this reference, has been completed in compliance with the California Environmental Quality Act, that the Planning Commission reviewed and considered the information contained in the Mitigated Negative Declaration and that the document reflects the City's independent judgment and analysis; attached hereto as Exhibit A; and

2. APPROVE the Mitigation Monitoring Program prepared for General Plan Amendment PEN16-0086, Zone Change PEN16-0087 and Conditional Use Permit PEN16-0088, attached hereto as Exhibit B.

B. Staff recommends that the Planning Commission APPROVE Resolution No. 2018-36, and thereby RECOMMEND that the City Council:

1. APPROVE General Plan Amendment application PEN16-0086 based on the findings contained in this resolution, and as shown on the attachment included as Exhibit A.

C. Staff recommends that the Planning Commission APPROVE Resolution No. 2018-37, and thereby RECOMMEND that the City Council:

1. APPROVE Zone Change application PEN16-0087 based on the findings contained in this resolution, and as shown on the attachment included as Exhibit A. 3 Packet Pg. 667 Page 8

D. Staff recommends that the Planning Commission APPROVE Resolution No. 2018-38, and thereby RECOMMEND that the City Council:

2. APPROVE Conditional Use Permit PEN16-0088 based on the findings contained in this resolution, and subject to the conditions of approval included as Exhibit A.

Public Hearing Opened: 8:10 p.m.

Public Comments:

Rafael Brugueras supports the item.

Ken Iglesias supports the item.

Theresa Anchuleta supports the convenience store but opposes the gas station.

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Attachment: Planning Commission Minutes - July 26, 2018 meeting (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

Public Hearing Closed: 8:19 p.m.

Motion made by Vice Chair Patricia Korzec and seconded by Commissioner Harris to approve the project with the Conditions of Approval as amended.

Vote:	5-0-0-2
Ayes:	Vice Chair Korzec, Commissioners Harris, Stephan, Dejohnette, and Chair Barnes
Noes:	
Abstain:	
Action:	Approved
Excused:	Commissioners Sims and Baker

OTHER COMMISSION BUSINESS

No items for Discussion

STAFF COMMENTS

No items for Discussion

PLANNING COMMISSIONER COMMENTS

No items for Discussion

ADJOURNMENT

There being no further business to come before the Planning Commission, Chairman Barnes adjourned the meeting at 8:29 PM.

Submitted by:

Ashley Aparicio
Planning Commission Secretary

Approved by:

Jeffrey Barnes
Chair

Attachment: Planning Commission Minutes - July 26, 2018 meeting (3257 : A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND

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Report to City Council

TO: Mayor and City Council

FROM: Marshall Eyerman, Chief Financial Officer

AGENDA DATE: December 11, 2018

TITLE: CONSIDERATION OF CHANGING THE NUMBER OF COMMERCIAL CANNABIS BUSINESS PERMITS ALLOWED IN THE CITY

RECOMMENDED ACTION

Recommendations: That the City Council:

1. Consider a change in the maximum number of Commercial Cannabis Business Permits that would be issued in the City.

SUMMARY

At the October 16, 2018 meeting, as part of the revisions to the City's Cannabis Regulations, the City Council considered a change in the number of allowed Commercial Cannabis Business Permits. Council voted to retain status quo and delay further consideration of an increase. At the November 13, 2018 Council meeting, Council directed staff to bring back the item for discussion.

DISCUSSION

The following table sets forth three alternative options to change the number of permits, for City Council consideration. These were presented at the October 16th meeting. Council can adopt other alternatives, as desired by the majority.

	Dispensaries	Testing Facilities	Cultivation Facilities	Microbusinesses	Distribution Centers	Manufacturing Facilities	Total
Option A	23	2	8	3	2	5	43
Option B	30	2	8	3	2	5	50
Option C	Permits will be issued to all businesses that meet State and Local compliance requirements.						

If the City Council amends the number of permits, all previously qualified applications for a Commercial Cannabis Business Permit shall be subject to the application procedures, policies and criteria in effect at the time of such application (Initial Application Procedures). Any new applications shall be processed in accordance with current or then existing policies, procedures and criteria.

ALTERNATIVES

1. Consider and, if desired by the majority, adopt a resolution changing the number of Commercial Cannabis Business Permits.

2. Take no action and retain the current Commercial Cannabis Business Permit limits.

FISCAL IMPACT

Increase in the number of permits in the City will create additional revenue based on the passage of Measure M.

NOTIFICATION

Agenda was posted in accordance with the Brown Act.

PREPARATION OF STAFF REPORT

Prepared By:
Brian Mohan
Financial Resources Division Manager

Department Head Approval:
Marshall Eyerman
Chief Financial Officer

CITY COUNCIL GOALS

Public Safety. Provide a safe and secure environment for people and property in the community, control the number and severity of fire and hazardous material incidents, and provide protection for citizens who live, work and visit the City of Moreno Valley.

Community Image, Neighborhood Pride and Cleanliness. Promote a sense of community pride and foster an excellent image about our City by developing and executing programs which will result in quality development, enhanced neighborhood preservation efforts, including home rehabilitation and neighborhood restoration.

CITY COUNCIL STRATEGIC PRIORITIES

1. **Economic Development**
2. **Public Safety**
3. **Library**
4. **Infrastructure**
5. **Beautification, Community Engagement, and Quality of Life**

6. Youth Programs

ATTACHMENTS

1. Cannabis Resolution A - Increase Dispensaries to 23 and Micro to 3
2. Cannabis Resolution B - Increase Dispensaries to 30 and Micro to 3
3. Cannabis Resolution C - No Cap or Limit

APPROVALS

Budget Officer Approval	✓ Approved	11/16/18 1:57 PM
City Attorney Approval	✓ Approved	11/27/18 1:33 PM
City Manager Approval	✓ Approved	12/05/18 2:48 PM

Attachment "_"

Attachment: Cannabis Resolution A - Increase Dispensaries to 23 and Micro to 3 [Revision 2] (3310 : CONSIDERATION OF CHANGES TO THE

RESOLUTION NO. YYYY-____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, ESTABLISHING THE MAXIMUM NUMBER OF COMMERCIAL CANNABIS BUSINESS PERMITS ALLOWED PURSUANT TO CHAPTER 5.05 OF THE MORENO VALLEY MUNICIPAL CODE

WHEREAS, the City of Moreno Valley is a General Law city organized pursuant to Article XI of the California Constitution; and

WHEREAS, pursuant to the authority granted the City by Article XI, Section 7 of the California Constitution, the City has the police power to adopt regulations designed to promote the public convenience or the general prosperity, as well as regulations designed to promote the public health and safety; and

WHEREAS, consistent with that authority, the City Council lawfully adopted Chapter 5.05 of the Moreno Valley Municipal Code and Sections 9.09.290 et seq. of the Moreno Valley Municipal Code establishing a regulatory process for the issuance of Commercial Cannabis Business Permits and the Issuance of Conditional Use Permits for cannabis related business activity in the City; and

WHEREAS, Chapter 5.05 and Sections 9.09.290 et seq. of the Moreno Valley Municipal Code establish that application procedures and permit limits may be established by resolution of the City Council.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

1. No more than forty-three (43) Commercial Cannabis Business Permits can be approved and active at any given time, which 43 permits shall be further specified to authorize, a maximum of twenty-three (23) dispensaries, a maximum of two (2) testing facilities, a maximum of eight (8) cultivation facilities, a maximum of three (3) microbusinesses, a maximum of two (2) distribution centers, and a maximum of five (5) manufacturing facilities.

2. This Resolution shall take effect immediately upon adoption and in the event of any conflict between this Resolution and any previously adopted Resolution or Policy of the City Council, this Resolution shall take precedence.

3. All pending or previously submitted applications for a Commercial Cannabis

Business Permit shall be subject to the application procedures, policies and criteria in effect at the time of such application. New applications shall be subject to any and all adopted policies, procedures and criteria in effect at the time the City opens up a new application period.

APPROVED AND ADOPTED this _____ day of _____, YYYY.

_____
Yxstian Gutierrez, Mayor Valley

ATTEST:

_____
Pat Jacquez-Narez, City Clerk

APPROVED AS TO FORM:

_____
Martin Koczanowicz, City Attorney

Attachment: Cannabis Resolution A - Increase Dispensaries to 23 and Micro to 3 [Revision 2] (3310 : CONSIDERATION OF CHANGES TO THE

Attachment: Cannabis Resolution A - Increase Dispensaries to 23 and Micro to 3 [Revision 2] (3310 : CONSIDERATION OF CHANGES TO THE

RESOLUTION JURAT

STATE OF CALIFORNIA)

COUNTY OF RIVERSIDE) ss.

CITY OF MORENO VALLEY)

I, Jane Halstead, City Clerk of the City of Moreno Valley, California, do hereby certify that Resolution No. YYYY-___ was duly and regularly adopted by the City Council of the City of Moreno Valley at a regular meeting thereof held on the _____ day of_____, YYYY by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

(Council Members, Mayor Pro Tem and Mayor)

_____
CITY CLERK

(SEAL)

Attachment "_"

RESOLUTION NO. YYYY-____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, ESTABLISHING THE MAXIMUM NUMBER OF COMMERCIAL CANNABIS BUSINESS PERMITS ALLOWED PURSUANT TO CHAPTER 5.05 OF THE MORENO VALLEY MUNICIPAL CODE

WHEREAS, the City of Moreno Valley is a General Law city organized pursuant to Article XI of the California Constitution; and

WHEREAS, pursuant to the authority granted the City by Article XI, Section 7 of the California Constitution, the City has the police power to adopt regulations designed to promote the public convenience or the general prosperity, as well as regulations designed to promote the public health and safety; and

WHEREAS, consistent with that authority, the City Council lawfully adopted Chapter 5.05 of the Moreno Valley Municipal Code and Sections 9.09.290 et seq. of the Moreno Valley Municipal Code establishing a regulatory process for the issuance of Commercial Cannabis Business Permits and the Issuance of Conditional Use Permits for cannabis related business activity in the City; and

WHEREAS, Chapter 5.05 and Sections 9.09.290 et seq. of the Moreno Valley Municipal Code establish that application procedures and permit limits may be established by resolution of the City Council.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

1. No more than fifty (50) Commercial Cannabis Business Permits can be approved and active at any given time, which 50 permits shall be further specified to authorize, a maximum of thirty (30) dispensaries, a maximum of two (2) testing facilities, a maximum of eight (8) cultivation facilities, a maximum of three (3) microbusinesses, a maximum of two (2) distribution centers, and a maximum of five (5) manufacturing facilities.

2. This Resolution shall take effect immediately upon adoption and in the event of any conflict between this Resolution and any previously adopted Resolution or Policy of the City Council, this Resolution shall take precedence.

Attachment: Cannabis Resolution B - Increase Dispensaries to 30 and Micro to 3 [Revision 1] (3310 : CONSIDERATION OF CHANGES TO THE

3. All pending or previously submitted applications for a Commercial Cannabis Business Permit shall be subject to the application procedures, policies and criteria in effect at the time of such application. New applications shall be subject to any and all adopted policies, procedures and criteria in effect at the time the City opens up a new application period.

APPROVED AND ADOPTED this _____ day of _____, YYYY.

_____
Yxstian Gutierrez, Mayor Valley

ATTEST:

_____
Pat Jacquez-Narez, City Clerk

APPROVED AS TO FORM:

_____
Martin Koczanowicz, City Attorney

Attachment: Cannabis Resolution B - Increase Dispensaries to 30 and Micro to 3 [Revision 1] (3310 : CONSIDERATION OF CHANGES TO THE

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RESOLUTION JURAT

STATE OF CALIFORNIA)

COUNTY OF RIVERSIDE) ss.

CITY OF MORENO VALLEY)

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AYES:

NOES:

ABSENT:

ABSTAIN:

(Council Members, Mayor Pro Tem and Mayor)

_____
CITY CLERK

(SEAL)

Attachment "_"

Attachment: Cannabis Resolution C - No Cap or Limit [Revision 1] (3310 : CONSIDERATION OF CHANGES TO THE NUMBER OF COMMERCIAL

RESOLUTION NO. YYYY-____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, ESTABLISHING THE MAXIMUM NUMBER OF COMMERCIAL CANNABIS BUSINESS PERMITS ALLOWED PURSUANT TO CHAPTER 5.05 OF THE MORENO VALLEY MUNICIPAL CODE

WHEREAS, the City of Moreno Valley is a General Law city organized pursuant to Article XI of the California Constitution; and

WHEREAS, pursuant to the authority granted the City by Article XI, Section 7 of the California Constitution, the City has the police power to adopt regulations designed to promote the public convenience or the general prosperity, as well as regulations designed to promote the public health and safety; and

WHEREAS, consistent with that authority, the City Council lawfully adopted Chapter 5.05 of the Moreno Valley Municipal Code and Section 9.09.290 of the Moreno Valley Municipal Code establishing a regulatory process for the issuance of Commercial Cannabis Business Permits and the issuance of Conditional Use Permits for cannabis related business activity in the City; and

WHEREAS, Chapter 5.05 and Section 9.09.290 of the Moreno Valley Municipal Code establish that application procedures and permit limits may be established by resolution of the City Council.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

1. There shall be no cap or limit on the number of Commercial Cannabis Business Permits as long as each applicant meets all requirements set forth in Chapter 5.05 and Section 9.09.290 of the Moreno Valley Municipal Code.

2. This Resolution shall take effect immediately upon adoption and in the event of any conflict between this Resolution and any previously adopted Resolution or Policy of the City Council, this Resolution shall take precedence.

3. All pending or previously submitted applications for a Commercial Cannabis Business Permit shall be subject to the application procedures, policies and criteria in effect at the time of such application. New applications shall be subject to any and all adopted policies, procedures and criteria in effect at the time the City opens up a new application period. City may open new application periods from time to time in its sole discretion.

APPROVED AND ADOPTED this _____ day of _____, YYYY.

_____
Yxstian Gutierrez, Mayor Valley

ATTEST:

_____
Pat Jacquez-Narez, City Clerk

APPROVED AS TO FORM:

_____
Martin Koczanowicz, City Attorney

Attachment: Cannabis Resolution C - No Cap or Limit [Revision 1] (3310 : CONSIDERATION OF CHANGES TO THE NUMBER OF COMMERCIAL

RESOLUTION JURAT

STATE OF CALIFORNIA)

COUNTY OF RIVERSIDE) ss.

CITY OF MORENO VALLEY)

I, Jane Halstead, City Clerk of the City of Moreno Valley, California, do hereby certify that Resolution No. YYYY-___ was duly and regularly adopted by the City Council of the City of Moreno Valley at a regular meeting thereof held on the _____ day of_____, YYYY by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

(Council Members, Mayor Pro Tem and Mayor)

_____
CITY CLERK

(SEAL)

Attachment: Cannabis Resolution C - No Cap or Limit [Revision 1] (3310 : CONSIDERATION OF CHANGES TO THE NUMBER OF COMMERCIAL