PLANNING COMMISSION
Regular Meeting

Agenda

Thursday, February 10, 2022 at 7:00 PM

Teleconference Meeting
Pursuant to Assembly Bill No. 361

The public may observe the meeting and offer public comment as follows:

STEP 1
Install the free Zoom App or visit the free Zoom website at https://zoom.us/

STEP 2
Get meeting ID number, password and on the list to speak by emailing zoom@moval.org or calling (951) 413-3206, no later than 5:00 p.m. on the day of the Planning Commission Meeting.

STEP 3
Select Audio Source
Computer Speakers/Microphone or Telephone

STEP 4
Public comments may be made via Zoom during the meeting, the Chairperson will explain the process for submitting public comments.

ALTERNATIVE
If you do not wish to make public comments, you can view the meeting on Channel MVTV-3, the City's website at www.moval.org or YouTube.

Upon request, this agenda will be made available in appropriate alternative formats to persons with disabilities, in compliance with the Americans with Disabilities Act of 1990. Any person with a disability who requires a modification or accommodation in order to participate in a meeting should direct such request to the ADA Coordinator, at 951.413.3350 at least 48 hours before the meeting. The 48 hour notification will enable the City to make reasonable arrangements to ensure accessibility to this meeting.

CALL TO ORDER

ROLL CALL

PLEDGE OF ALLEGIANCE

APPROVAL OF AGENDA

PUBLIC COMMENTS PROCEDURE

During the public comment period for each item, as well as during the public comment period for items not on the agenda, the clerk will call upon each person who is on the Zoom application that has requested to speak. Each member of the public wishing to speak will have a maximum of 3 minutes to speak on any agenda item, except for the applicant for entitlement. The Commission may establish an overall time limit for comments on a particular Agenda item. Members of the public must direct their questions to the Chairperson of the Commission and not to other members of the Commission, the applicant, the Staff, or the audience. Those wishing to speak should follow the teleconference procedures. If you are absent at the time your name is called, you will forfeit the opportunity to speak on the items.

PUBLIC COMMENTS

CONSENT CALENDAR

All matters listed under Consent Calendar are considered to be routine and non-controversial, and may be enacted by one roll call vote. There will be no discussion of these items unless a member of the Planning Commission requests that an item be removed for separate action.

No items for discussion.

NON-PUBLIC HEARING ITEMS

No items for discussion.

PUBLIC HEARING ITEMS

1.

Case:	PEN21-0077 – Conditional Use Permit
Applicant:	Pilot Company
Property Owner	NALA Prop
Representative	Pilot Company, c/o Brad Alsup
Location:	Northwest corner of Redlands Boulevard and Eucalyptus Avenue
Case Planner:	Jeff Bradshaw
Council District:	3
Proposal	The January 13, 2022, public hearing for the case was continued by the Planning Commission to February 10, 2022. The Applicant is requesting approval of a Conditional Use Permit for the Pilot Travel Center to develop a 17.28-acre site with a 14,087-square foot travel center building with space for a drive-through fast-food restaurant, additional food service with a kitchen, retail store, driver amenities (e.g., restrooms, showers, laundry), and support/utility areas, fueling stations for passenger vehicles and trucks, and above ground fuel storage tanks.

OTHER COMMISSION BUSINESS

No items for discussion.

STAFF COMMENTS

PLANNING COMMISSIONER COMMENTS

ADJOURNMENT

Planning Commission Regular Meeting, Thursday, February 24, 2022 at 7:00 P.M., City of Moreno Valley, City Hall Council Chamber, 14177 Frederick Street, Moreno Valley, CA 92553.

PLANNING COMMISSION

STAFF REPORT

Meeting Date: February 10, 2022

CONTINUED PUBLIC HEARING - A CONDITIONAL USE PERMIT FOR THE DEVELOPMENT OF A TRAVEL CENTER THAT INCLUDES FAST FOOD, RETAIL, FUELING STATIONS FOR PASSENGER VEHICLES AND TRUCKS, AND TRUCK PARKING ON A 17-ACRE PARCEL LOCATED AT THE NORTHWEST CORNER OF REDLANDS BOULEVARD AND EUCALYPTUS AVENUE

Case:	PEN21-0077 – Conditional Use Permit
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Property Owner	NALA Prop
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SUMMARY

Pilot Company, LLC (“Applicant”), is requesting approval of Conditional Use Permit (PEN21-0077) for the development of the Pilot Travel Center on a 17.28-acre site that

will include a 14,087 square-foot travel center with fueling stations for passenger vehicles and trucks.

BACKGROUND

The Planning Commission continued the initially-scheduled December 9, 2021, public hearing to January 13, 2022. However, after the public testimony was completed at the continued January 13, 2022, public hearing, the Planning Commission opened up deliberations and then continued the public hearing again to February 10, 2022.

The purpose of the continuance was to direct the Applicant and City Staff to report back to the Planning Commission regarding the following items:

- World Logistics Center Specific Plan overnight parking restrictions;
- Trip Generation Summary; and
- Security Plan.

World Logistics Center Overnight Parking

Planning staff reviewed the World Logistics Center (WLC) Specific Plan and verified that overnight truck parking is prohibited. Additionally, City Staff has supplemented the Project's conditions of approval to include a requirement that signs be posted on the subject site related to restrictions on overnight parking. The Applicant offered this particular condition at the January 13, 2022, public hearing.

Trip Generation Summary

Kimley-Horn prepared the attached summary of the "project trip generation" provided in the *Transportation Impact Analysis* (September 2021) for the proposed Moreno Valley Travel Center. The summary clarifies the number of passenger vehicle trips and truck trips associated with the subject site.

Security Plan

The Applicant's team has prepared a draft security plan and reviewed by City Staff and the Riverside County Sherriff's Department. The Applicant worked collaboratively with City Staff and the Sherriff's Department to modify the security plan to address concerns raised by the City and Sherriff's Department. Additionally, City Staff has supplemented the Project's condition of approval requiring a final security plan approval. This particular condition was provided to the Planning Commission in a memorandum ahead of the January 13, 2022, public hearing.

Note: Since public disclosure of the Pilot Travel Center Security Plan would disclose sensitive information regarding the details of any onsite security measures, the City Attorney has determined that the public interest in disclosure of this information is outweighed by the necessity of preserving the confidentiality of the Security Plan for the purpose of protecting public safety and security. In other words, if details of the Security Plan are disclosed, such as but not limited to the type of technology used and the

locations of where such security measures will be installed or implemented, it could compromise the effectiveness of the Security Plan as a whole.

NOTIFICATION

Public notice was sent to all property owners of record within 600 feet of the Project Site on November 24, 2021. The public hearing notice for this project was also posted on the site and published in the Press-Enterprise Newspaper on November 26, 2021, for the December 9, 2021 Planning Commission Meeting. At the December 9, 2021 Meeting, the Planning Commission continued this Item to January 13, 2022. At the January 13, 2022 meeting, the Planning Commission Continued the Item to February 10, 2022, after the public hearing was closed. Since the public hearings were continued to certain specified dates and times, there was no need to formally re-notice the continued public hearings with respect to providing additional notice to property owners or publishing the same in the Press-Enterprise Newspaper.

STAFF RECOMMENDATION

Staff recommends that the Planning Commission take the following actions:

a. That the Planning Commission **ADOPT** Resolution No. 2022-01, and thereby:

    1. **APPROVE** the Mitigation Monitoring and Reporting Program prepared for the proposed project, which consists of Conditional Use Permit (PEN21-0077) pursuant to CEQA and the CEQA Guidelines; based on the findings set forth and/or referenced in Resolution 2022-01; and

    2. **CERTIFY** the Initial Study/Mitigated Negative Declaration prepared for Conditional Use Permit (PEN21-0077) on file with the Community Development Department, incorporated herein by this reference, which was completed in compliance with CEQA and the CEQA Guidelines, and reflects that the Planning Commission reviewed and considered the information contained in the Mitigated Negative Declaration, and exercised its independent judgment and analysis of the proposed Project's potential environmental impacts, based on the findings set forth and/or referenced in Resolution 2022-01; and

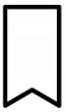
b. That the Planning Commission **ADOPT** Resolution No. 2022-02, and thereby:

    1. **APPROVE** Conditional Use Permit (PEN21-0077), based on the Recitals, Evidence contained in the Administrative Record, and Findings as set forth and/or referenced in Resolution No. 2022-02.

Prepared by:
Jeffrey Bradshaw
Associate Planner

Approved by:
Sean P Kelleher
Planning Division Manager

ATTACHMENTS

To view large attachments, please click your "bookmarks"  **on the left hand side of this document for the necessary attachment.**

1. Resolution 2022-01 - IS/MND
2. Exhibit A to Resolution 2022-01 - IS/MND
3. Appendix A - Lighting Study
4. Appendix B - Air Quality, Energy, and Greenhouse Gas
5. Appendix C - Health Risk Assessment
6. Appendix D - Biological / MSHCP
7. Appendix E - Cultural Resources
8. Appendix F - Geotechnical
9. Appendix G - Preliminary Hydrology Study
10. Appendix H - Preliminary WQMP
11. Appendix I - Noise Study
12. Appendix J1 - Traffic Impact Analysis
13. Appendix J2 - Trip Generation
14. Exhibit B to Resolution 2022-01 - NOI to Adopt MND
15. Exhibit C to Resolution 2022-01 - MMRP
16. Resolution No. 2022-02 - Conditional Use Permit
17. Exhibit A to Resolution 2022-02 - Conditions of Approval
18. Project Plans
19. Zoning Map
20. Technical Memorandum - Traffic Impact Analysis Report Review Comments and Responses
21. Comments Received in Response to Notice of Availability of the Pilot Travel Center IS/MND
22. Comments Received in Response to Public Hearing Notice
23. Comments Received after January 13, 2022 Meeting
24. January 13, 2022 Planning Commission Report
25. Trip Generation Summary for the Proposed Moreno Valley Travel Center Project

HISTORY:

01/13/22 **Planning Commission** **CONTINUED**
Next: 02/10/22

Public Hearing Opened: 7:05 PM.

RESOLUTION NUMBER 2022-01

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF MORENO VALLEY, CALIFORNIA, APPROVING MITIGATION MONITORING AND REPORTING PROGRAM AND CERTIFYING A MITIGATED NEGATIVE DECLARATION FOR THE PILOT TRAVEL CENTER PROJECT LOCATED AT THE NORTHWEST CORNER OF REDLANDS BOULEVARD AND EUCALYPTUS AVENUE (APN'S: 488-330-030, 488-330-035, 488-330-036, 488-330-037 AND 488-330-038)

WHEREAS, the City of Moreno Valley ("City") is a general law city and a municipal corporation of the State of California, and the Lead Agency for the preparation and consideration of environmental documents for local projects that are subject to requirements of the California Environmental Quality Act (CEQA[1]) and CEQA Guidelines[2]; and

WHEREAS, Pilot Company, ("Applicant") is seeking approval of Conditional Use Permit (PEN21-0077) for the development of a Pilot Travel Center with a 14,087-square foot travel center building with space for a drive-through fast-food restaurant, additional food service with a kitchen, retail store, driver amenities (e.g., restrooms, showers, laundry), and support/utility areas, fueling stations for passenger vehicles and trucks, and above ground fuel storage tanks ("Proposed Project") on a 17.28-acre site located at the northwest corner of Redlands Boulevard and Eucalyptus Avenue (APN's 488-330-030, -035, -036, -037, and -038) ("Project Site"); and

WHEREAS, Planning Division Staff completed an environmental assessment for the Proposed Project, and, based on the assessment, elected to prepare an Initial Study ("IS") and a Mitigated Negative Declaration ("MND") in accordance with Section 6 (Negative Declaration Procedures) of the City's Rules and Procedures for the Implementation of the California Environmental Quality Act and the requirements of the CEQA Guidelines Sections 15070 – 15075; and

WHEREAS, a Notice of Intent to Adopt a Mitigated Negative Declaration was duly noticed and circulated for public review for a period of 20 days commencing on November 10, 2021, through December 2, 2021; and

WHEREAS, in conformance with CEQA and the CEQA Guidelines, a Mitigation Monitoring and Reporting Program ("MMRP") that includes a program for reporting on and monitoring the Proposed Project mitigation measures was prepared for the Proposed Project and circulated with the Mitigated Negative Declaration; and

WHEREAS, on December 9, 2021, the Planning Commission continued the public hearing for the Proposed Project to January 13, 2022, at the request of the Applicant; and

[1] Public Resources Code §§ 21000-21177
[2] 14 California Code of Regulations §§15000-15387

WHEREAS, on January 13, 2022, the Planning Commission, after closing the public testimony period of the continued January 13 public hearing, continued the public hearing again to February 10, 2022, at the request of the Applicant; and

WHEREAS, the purpose of the continuance was to direct the Applicant and City Staff to report back to the Planning Commission regarding the following items: i) World Logistics Center Specific Plan overnight parking restrictions; ii) Trip Generation Summary, and iii) Security Plan; and

WHEREAS, at the continued February 10, 2022, public hearing, the Planning Commission considered the Mitigation Monitoring and Reporting Program and the Mitigated Negative Declaration prepare for the Proposed Project; and

WHEREAS, at the conclusion of the public hearing, in the exercise of its own independent judgment, the Planning Commission determined that the Mitigation Monitoring and Reporting Program and the Mitigated Negative Declaration prepared for the Proposed Project would reduce the environmental impacts of the Proposed Project to levels of insignificance and that there is no substantial evidence supporting a fair argument that the Proposed Project will have a significant effect on the environment that would otherwise require the preparation and certification of an Environmental Impact Report.

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

Section 1. Recitals and Exhibits

That the foregoing Recitals and attached exhibits are true and correct and are hereby incorporated by this reference.

Section 2. Evidence

That the Planning Commission has considered all of the evidence submitted into the Administrative Record for the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Plan for the Proposed Project, including, but not limited to, the following:

(a) Mitigated Negative Declaration inclusive of the Mitigation Monitoring and Reporting Program prepared for the Proposed Project, attached hereto as Exhibit A;
(b) Notice of Intent to Adopt a Mitigated Negative Declaration/Newspaper Notice, attached hereto as Exhibit B;
(c) Staff Report prepared for the Planning Commission's consideration and all documents, records, and references related thereto, and Staff's presentation at the public hearings;
(d) Public hearing notices;
(e) Notice of Intent to Adopt a Mitigated Negative Declaration; and

(f) Testimony, comments, and correspondence from all persons, including without limitation the Applicant and its representatives that were provided at, or prior to, the public hearings.

Section 3. Findings

Based on the content of the foregoing Recitals and the Evidence contained in the Administrative Record as set forth above, the Planning Commission makes the following findings:

(a) That the City has independently reviewed, analyzed, and considered the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program for the Proposed Project, and the entirety of the Administrative Record, including without limitation, the Initial Study and comments received;

(b) That the proposed mitigation measures will reduce all environmental impacts of the Proposed Project to levels of insignificance and there is no substantial evidence supporting a fair argument that the Proposed Project will have a significant effect on the environment;

(c) That the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program for the Proposed Project have been completed in compliance with CEQA and the CEQA Guidelines consistent the City's Rules and Procedures for the Implementation of the California Environmental Quality Act;

(d) That the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program for the Proposed Project reflect the independent judgment and analysis of the City as Lead Agency for the Proposed Project; and

(e) That the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program for the Proposed Project are adequate to serve as the required CEQA environmental documentation for the Proposed Project.

Section 4. Adoption

That based on the foregoing Recitals, Evidence contained in the Administrative Record and Findings, as set forth herein, the Planning Commission hereby certifies the Mitigated Negative Declaration attached hereto as Exhibit A and approves the Mitigation Monitoring and Reporting Program attached hereto as Exhibit C.

Section 5. Repeal of Conflicting Provisions

That all the provisions as heretofore adopted by the Planning Commission that conflicts with the provisions of this Resolution are hereby repealed.

Section 6. Severability

That the Planning Commission declares that, should any provision, section, paragraph, sentence or word of this Resolution be rendered or declared invalid by any

final court action in a court of competent jurisdiction or by reason of any preemptive legislation, the remaining provisions, sections, paragraphs, sentences or words of this Resolution as hereby adopted shall remain in full force and effect.

Section 7. **Effective Date**

That this Resolution shall take effect immediately upon the date of adoption.

Section 8. **Certification**

That the Secretary of the Planning Commission shall certify to the passage of this Resolution.

PASSED AND ADOPTED THIS 10th day of February 2022.

CITY OF MORENO VALLEY
PLANNING COMMISSION

_____
Patricia Korzec, Chairperson

ATTEST:

_____
Sean P. Kelleher, Planning Official

APPROVED AS TO FORM:

_____
Steven B. Quintanilla, Interim City Attorney

Exhibits:
Exhibit A: Mitigated Negative Declaration
Exhibit B: Notice of Intent to Adopt a Mitigated Negative Declaration/Newspaper Notice
Exhibit C: Mitigation Monitoring and Reporting Program

Exhibit A

MITIGATED NEGATIVE DECLARATION

Exhibit B

NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION/NEWSPAPER NOTICE

Exhibit C

MITIGATION MONITORING AND REPORTING PROGRAM

CITY OF MORENO VALLEY

INITIAL STUDY FOR PILOT TRAVEL CENTER

PILOT TRAVEL CENTER PROJECT
Conditional Use Permit (PEN21-0077)

Public Review Draft
November 2021

Lead Agency
CITY OF MORENO VALLEY
14177 Frederick Street
Moreno Valley, CA 92552

Prepared By
DE NOVO PLANNING GROUP
180 E. Main Street, Suite 108
Tustin, CA 92780

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APPENDICES (Separate Documents)

Appendix A – Lighting Study
Appendix B – Air Quality, Energy and Greenhouse Gas Data
Appendix C – Health Risk Assessment
Appendix D – Biological Technical Report and MSHCP Consistency Analysis
Appendix E – Cultural Resources Survey
Appendix F – Geotechnical Evaluation Report and Geotechnical Addendum
Appendix G – Preliminary Hydrology Report
Appendix H – Preliminary Water Quality Management Plan
Appendix I – Noise Impact Study
Appendix J – Trip Generation

INITIAL STUDY (IS) FOR
PILOT TRAVEL CENTER

BACKGROUND INFORMATION AND PROJECT DESCRIPTION:

1. **Project Case Number(s):** PEN21-0077

2. **Project Title:** Pilot Travel Center

3. **Public Comment Period:** November 10 – November 30, 2021

4. **Lead Agency:** City of Moreno Valley
   Jeff Bradshaw, Planning Department
   14177 Frederick Street
   Moreno Valley, CA 92552
   (951) 413-3224
   jeffreyb@moval.org

5. **Documents Posted At:** http://www.moval.org/cdd/documents/about-projects.html

6. **Prepared By:** De Novo Planning Group
   Starla Barker, AICP, Principal Planner
   180 E. Main Street, Suite 108
   Tustin, CA 92780
   (949) 396-8193
   sbarker@denovoplanning.com

7. **Project Sponsor:** Pilot Company

Applicant/Developer	**Property Owner**
Brad Alsup, Project Manager, Construction Development Pilot Company 5508 Lonas Drive, Knoxville, TN 37909 (865) 474-2935 Ryan.Robinson@pilottravelcenters.com	Alan Isaacma, Managing Member Nala Properties, LLC 269 S. Beverly Drive, #322, Beverly Hills, CA 90212 310-890-1484 isaacman@ikplaw.com

8. **Project Location:** The Project site is comprised of 17.28 acres located at the northwest corner of Eucalyptus Avenue and Redlands Boulevard, in the City of Moreno Valley, Riverside County, California, as shown in Figure A, Aerial Map. The Project site is located in Section 2 of Township 3 South, Range 3 West, Sunnymead 7.5 Quadrangle U.S. Geological Survey (USGS), San Bernardino Base Meridian

(SBBM) and is comprised of Tax Assessor Parcel Numbers APNs 488-330-035, -036, -037, and 038.

9. **General Plan Designation:** Commercial (C)

The primary purpose of areas designated Commercial is to provide property for business purposes, including, but not limited to, retail stores, restaurants, banks, hotels, professional offices, personal services and repair services. The zoning regulations identify the particular uses permitted on each parcel of land, which could include compatible noncommercial uses. Commercial development intensity should not exceed a Floor Area Ratio of 1.00 and the average floor area ratio should be significantly less.

10. **Specific Plan Name and Designation:** Not applicable.

11. **Existing Zoning:** Community Commercial District (CC)

The primary purpose of the CC district is to provide for the general shopping needs of area residents and workers with a variety of business, retail, personal and related or similar services.

12. **Surrounding Land Uses and Setting:**

	Land Use	General Plan	Zoning
Project Site	**Undeveloped**	**Commercial**	**Community Commercial (CC)**
North	Undeveloped and State Route (SR) 60	Highway Office/Commercial	CC
South	Eucalyptus Avenue and Vacant/Undeveloped Land	R2 Residential	Residential Agriculture 2 DU/AC (RA2)
East	SR 60 Redlands Boulevard Offramp, Redlands Boulevard and Vacant/Undeveloped Land	Business Park/Light Industrial	Light Industrial (LI)
West	Aldi Place and ALDI Distribution Center	Business Park/Light Industrial	LI

13. **Description of the Site and Project:**

Environmental Setting

The Project site is vacant and undeveloped with grasses primarily covering the site.

Project Description

The Pilot Travel Center Project (Project) proposes the construction and operation of the Pilot Travel Center on the southern (approximately 9.5-acre) portion of the 17.28-acre site for regional and local highway traveling users. Implementation of the Project would involve the development of fueling facilities, travel amenities, a drive-

thru restaurant, and parking facilities for passing motorists and commercial truck operators as described below; refer to Figure B, Proposed Site Plan.

The northern portion of the site would remain undeveloped. During construction activities, soil materials from the southern portion of the site would be deposited within the northern portion of the site and minor grading would occur to maintain existing drainage conditions.

Travel Center Building

The proposed approximately 14,087-square foot travel center building would be centrally located within the southern portion of the Project site and include a drive-thru restaurant, additional food offerings with kitchen, convenience store, driver amenities (e.g., restrooms, showers, laundry), and support/utility areas.

Fueling Facilities

The Project proposes nine diesel fueling lanes/positions and eight gas islands with 16 fueling positions. The diesel fueling lanes would be located to the north of the travel center building and include a 25-foot-tall canopy structure. An aboveground storage tank farm with guardrail, a bio-blending shed, and truck scale would be located north of the diesel fueling lanes/positions. The gas islands would be located south of the travel center building, and include a 42-foot 3-inch tall canopy structure. An aboveground storage tank farm with guardrail and belowground gasoline storage tanks would be located to the east of the proposed travel center building.

A refuse enclosure and storage area would be located to the west of the travel center building.

Parking Facilities

The Project would provide 137 parking spaces (80 automobile, 3 ADA compliant, 54 truck) with passenger automobile parking (including ADA spaces) generally located south and west of the travel center facility and around the perimeter of the gas islands. Truck parking would be generally located north and west of the diesel fueling lanes/positions. Bicycle racks would be provided near the southeast corner of the travel center building.

Signage and Lighting

Future signage and lighting will be incorporated into the Project in compliance with the standards and review process outlined in the City Municipal Code.

Landscaping and Walls

Landscaping would be provided along the Project site perimeter and throughout the site, consistent with development in the surrounding area. Proposed landscaping would include a mix of trees, shrubs, ground cover, boulders, and river rock; refer to Figure C, Preliminary Landscape Plan.

A 6-foot tall privacy fence would be located north of the proposed truck parking area, separating the northern, undeveloped portion of the Project site from the southern, developed portion of the Project site. The fence would extend south along the west perimeter of the southern portion of the site and extend east into the site, north of the southernmost driveway; refer to Figures B and C. An 8-foot tall privacy fence and 3-foot tall berm would extend south from the fence located north of the proposed truck parking area within the eastern portion of the site. The privacy fencing would extend west into the site, south of the aboveground storage tank farm. Landscaping would be located to provide screening for the proposed fencing; refer to Figure C. A 4-foot tall fence and landscape screening would be located around the perimeters of the proposed bioretention basins. Privacy fencing would also be located within the area of the drive-thru.

Access

Automobile access to the Project site would be provided from Eucalyptus Avenue and Aldi Place. The proposed driveway on Eucalyptus Avenue would be limited to right-turns in and out of the site. Truck access to the Project site would be provided from a second driveway on Aldi Place.

Infrastructure/Utilities Improvements

Stormwater. The Project proposes two bioretention basins to capture the design capture volumes for stormwater quality treatment. Onsite flows would be predominately intercepted by proposed grated inlets with filter inserts prior to entering the bioretention basins located within the southeast and southwest corners of the Project site; refer to Section VI, Hydrology and Water Quality, for further discussion regarding existing and proposed conditions.

Water. The Project would install a new 2.5-inch water line on-site to serve the proposed development, which would connect to existing facilities within the adjacent right-of-way.

Wastewater. The Project would install a new 6-inch sewer line on-site to serve the proposed development, which would connect to existing facilities within the adjacent right-of-way.

Offsite Roadway/Right-of-Way Improvements

As part of the Project, the existing median in Eucalyptus Avenue would be extended west from the roundabout to Aldi Place to restrict left hand turns onto Eucalyptus Avenue. Additionally, the multi-use trail segment along the northern side of Eucalyptus Avenue would be constructed, which would continue the existing trail segment west of Aldi Place to Redlands Boulevard, consistent with the General Plan.

Conditional Use Permit

The Project would require approval of a Conditional Use Permit (CUP) prior to Project approval to allow for the proposed use within 300 feet of a residential zone.

14. **Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?**

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21080.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

Consultation under Assembly Bill (AB) 52 commenced on September 13, 2021. The 30-day response period ended on October 12, 2021. The Soboba Band of Luiseño Indians and Pechanga Band of Luiseño Indians requested formal consultation under AB 52. The Rincon Band of Luiseño Indians contacted the City, but did not request formal consultation. The Soboba Band of Luiseño Indians and Pechanga Band of Luiseño Indians have requested agreements for tribal monitors and participation in the Cultural Resources Management Plan (CRMP). Mitigation measures have been incorporated in Section V relating to Tribal Cultural Resources (TCRs).

15. **Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement):**

a. South Coast Air Quality Management District
b. California Regional Water Quality Control Board – Santa Ana Region
c. California Department of Alcoholic Beverage Control
d. County of Riverside Health Department, Environmental Health Division as the Certified Unified Program Agency (CUPA)

16. **Other Technical Studies Referenced in this Initial Study (Provided as Appendices):**

a. Lighting Study – Appendix A
b. Air Quality, Energy and Greenhouse Gas Data – Appendix B
c. Health Risk Assessment – Appendix C
d. Biological Technical Report and MSHCP Consistency Analysis – Appendix D
e. Cultural Resources Survey – Appendix E
f. Geotechnical Evaluation Report and Geotechnical Addendum – Appendix F
g. Preliminary Hydrology Report – Appendix G
h. Preliminary Water Quality Management Plan – Appendix H
i. Noise Impact Study – Appendix I
j. Trip Generation – Appendix J

17. **Acronyms:**

ADA -	American with Disabilities Act
ALUC -	Airport Land Use Commission
ALUCP -	Airport Land Use Compatibility Plan
AQMP -	Air Quality Management Plan
CEQA -	California Environmental Quality Act
CIWMD -	California Integrated Waste Management District
CMP -	Congestion Management Plan
DTSC -	Department of Toxic Substance Control
DWR -	Department of Water Resources
EIR -	Environmental Impact Report
EMWD -	Eastern Municipal Water District
EOP -	Emergency Operations Plan
FEMA -	Federal Emergency Management Agency
FMMP -	Farmland Mapping and Monitoring Program
GIS -	Geographic Information System
GHG -	Greenhouse Gas
GP -	General Plan
HCM	Highway Capacity Manual
HOA -	Home Owners' Association
IS -	Initial Study
LHMP -	Local Hazard Mitigation Plan
LOS -	Level of Service
LST -	Localized Significance Threshold
MARB -	March Air Reserve Base
MARB/IPA-	March Air Reserve Base/Inland Port Airport
MSHCP -	Multiple Species Habitat Conservation Plan
MVFD -	Moreno Valley Fire Department
MVPD -	Moreno Valley Police Department
MVU	Moreno Valley Utility
MVUSD -	Moreno Valley Unified School District
MWD -	Metropolitan Water District
NCCP -	Natural Communities Conservation Plan
NPDES -	National Pollutant Discharge Elimination System
OEM -	Office of Emergency Services
OPR -	Office of Planning & Research, State
PEIR -	Program Environmental Impact Report
PW -	Public Works
RCEH -	Riverside County Environmental Health
RCFCWCD -	Riverside County Flood Control & Water Conservation District
RCP -	Regional Comprehensive Plan
RCTC -	Riverside County Transportation Commission
RCWMD -	Riverside County Waste Management District
RTA -	Riverside Transit Agency
RTIP -	Regional Transportation Improvement Plan
RTP -	Regional Transportation Plan
SAWPA -	Santa Ana Watershed Project Authority
SCAG -	Southern California Association of Governments
SCAQMD -	South Coast Air Quality Management District
SCH -	State Clearinghouse
SKRHCP -	Stephens' Kangaroo Rat Habitat Conservation Plan

SWPPP -	Storm Water Pollution Prevention Plan
SWRCB -	State Water Resources Control Board
USFWS -	United States Fish and Wildlife
USGS -	United States Geologic Survey
VMT -	Vehicle Miles Traveled
VVUSD -	Valley Verde Unified School District
WQMP -	Water Quality Management Plan
WRCOG -	Western Riverside Council of Government

Legend

Project Boundary

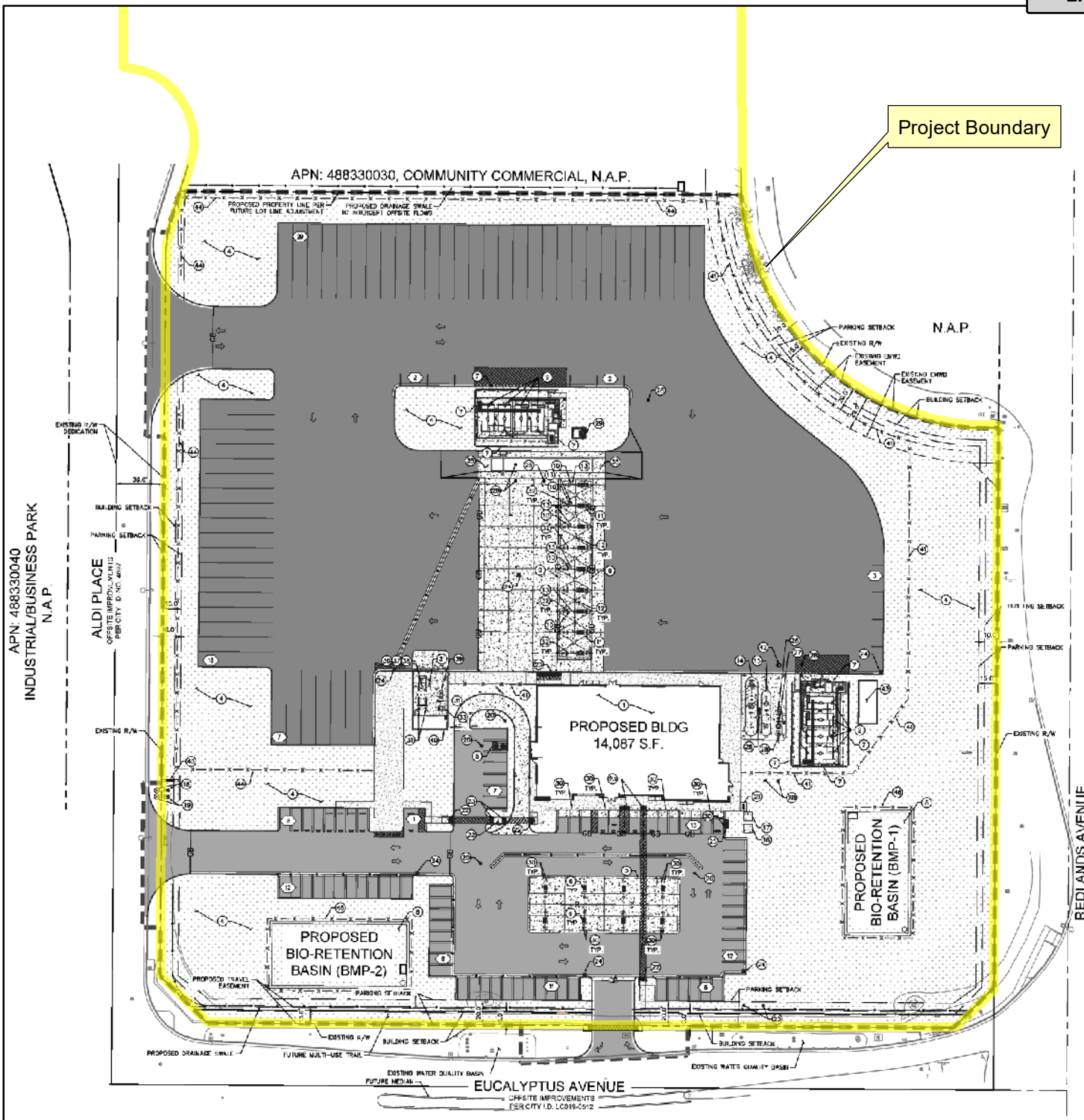
0 100 200
Feet

Sources: Riverside County GIS; ArcGIS Online World Imagery Map Service 10/10/2020.. Map date: July 16, 2021.

CITY OF MORENO VALLEY
PILOT TRAVEL CENTER
INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

Figure A. Aerial Map

De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm



LEGEND

- PROPERTY LINE CIVIL
- LIMITS OF WORK
- CENTER LINE
- SETBACKS
- EASEMENT LINE
- ACCESSIBLE ROUTE
- FENCE
- PARKING COUNT
- DETECTABLE WARNINGS
- STANDARD DUTY CONCRETE PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- HEAVY DUTY ASPHALT PAVEMENT
- STANDARD DUTY ASPHALT PAVEMENT
- LANDSCAPE/ PLANTER AREA

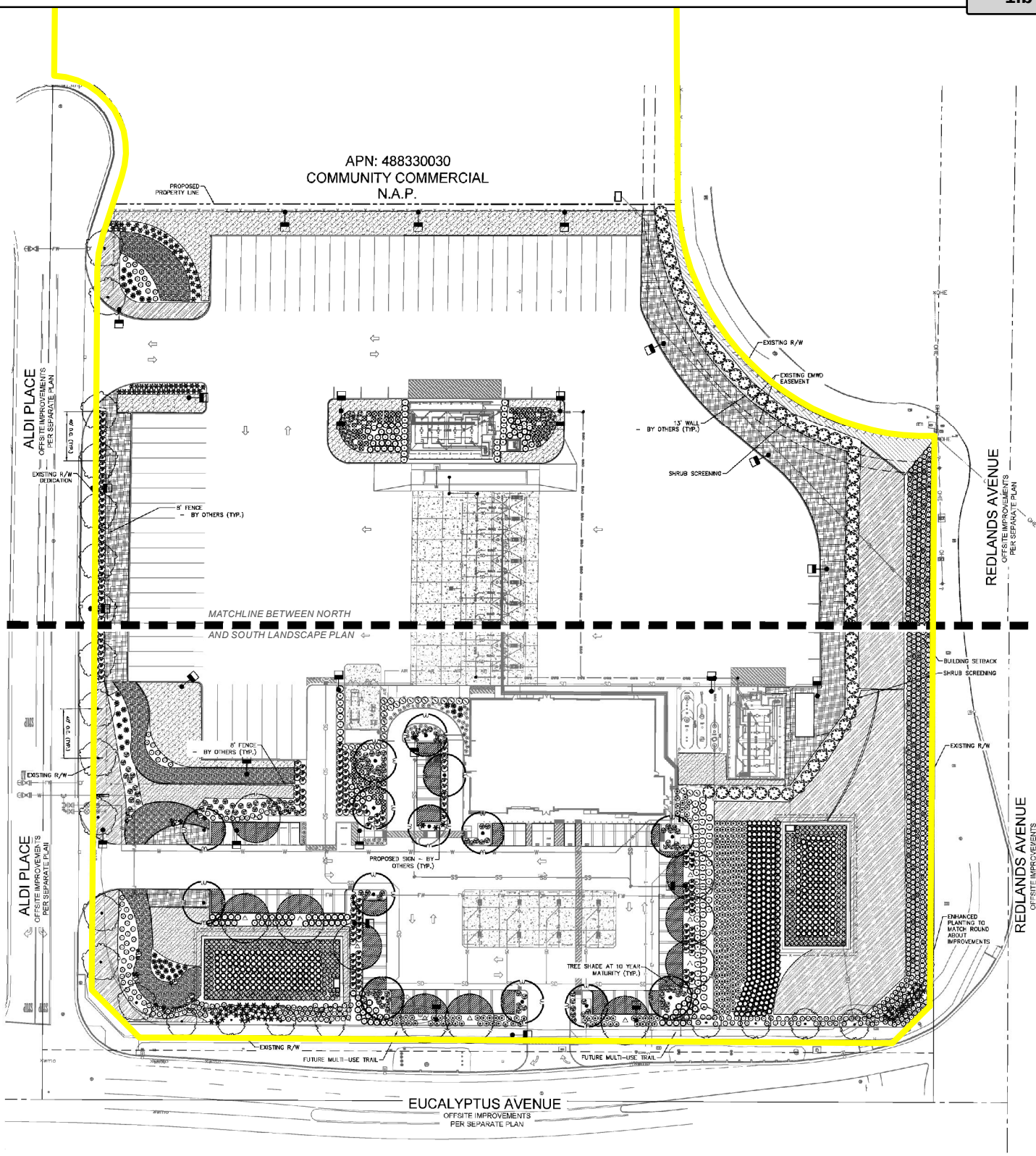
0 50 100
Feet

Sources: Kimley Horn. Map date: October 12, 2021.

CITY OF MORENO VALLEY
PILOT TRAVEL CENTER
INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

Figure B. Proposed Site Plan

De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm



Legend

Project Boundary

0 50 100
Feet

Sources: Kimley Horn. Map date: October 20, 2021.

CITY OF MORENO VALLEY
PILOT TRAVEL CENTER
INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

Figure C. Landscape Plan

De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐	Aesthetics	☐	Agriculture & Forestry Resources	☐	Air Quality
☐	Biological Resources	☐	Cultural Resources	☐	Energy
☐	Geology & Soils	☐	Greenhouse Gas Emissions	☐	Hazards & Hazardous Materials
☐	Hydrology & Water Quality	☐	Land Use & Planning	☐	Mineral Resources
☐	Noise	☐	Population & Housing	☐	Public Services
☐	Recreation	☐	Transportation	☐	Tribal Cultural Resources
☐	Utilities & Service Systems	☐	Wildfire	☐	Mandatory Findings of Significance

DETERMINATION (To be completed by the Lead Agency):

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Jeff Bradshaw
Signature

November 8, 2021
Date

Jeff Bradshaw
Printed Name

City of Moreno Valley
For

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a Lead Agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g. the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g. the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the Lead Agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect is significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) Less Than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less than Significant Impact." The Lead Agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or another CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analyses Used. Identify and state where they are available for review.

   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which

were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g. general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources. A source list should be attached, and other sources used, or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

   a) the significance criteria or threshold, if any, used to evaluate each question; and

   b) the mitigation measure identified, if any, to reduce the impact to less than significance.

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS – Except as provided in Public Resources Code §21099 – Modernization of Transportation Analysis for Transit-Oriented Infill Projects – **Would the project:**				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐

Response: The City of Moreno Valley General Plan 2040 (General Plan) Open Space and Resource Conservation Element describes scenic resources, including locally-designated scenic highways that occur within the City. The City of Moreno Valley lies on a relatively flat valley floor surrounded by rugged hills and mountains that provide a natural backdrop to the community. Panoramic views of the San Jacinto Valley can be seen from elevated segments of some local roads and from hillside residences. In general, the Open Space and Resource Conservation Element describes scenic areas as including open space, landscaped corridors and viewsheds, with the major aesthetic resource being views of the mountains and southerly views of the valley. Upon entering Moreno Valley from the west, the dominant view is of Box Springs Mountain to the immediate north and the Bernasconi Hills to the south. Both mountain ranges display numerous rock outcroppings and boulders that add visual character to these landforms. Moreno Peak is part of a prominent landform located within the City limit, south of State Route 60 (SR-60) along Moreno Beach Drive. This landform only rises a few hundred feet above the valley floor but has a unique location near the center of the valley. Moreno Beach Drive, the main route to Lake Perris from SR-60, offers views of Moreno Peak and a panoramic view of Moreno Valley. At the eastern edge of the City, SR-60 passes through the Badlands area, characterized by steep and eroded hillsides. Expanses of open land are found throughout this portion of the planning area and these tracts of land allow for uninterrupted scenic vistas from SR-60, Gilman Springs Road and other roadways, and provide views of the San Jacinto Valley and Mystic Lake. Views of the San Bernardino and San Gabriel mountains are evident at times from the valley floor. The manmade environment is also identified as equally important in terms of scenic values. Buildings, landscaping, and signs often dominate the view. Agricultural uses such as citrus groves are less common, but visually pleasing features.

There are no state-designated scenic highways within the City; refer to Response I(b). The Project site is located immediately south of SR-60. The Open Space and Resource Conservation Element identifies SR-60 as a locally-designated scenic highway. A scenic vista is generally defined as a view of undisturbed natural lands exhibiting a unique or unusual feature that comprises an important or dominant portion of the viewshed. Scenic vistas may also be represented by a particular distant view that provides visual relief from less attractive views of nearby features. Other designated federal and State lands, as well as local open space or recreational areas, may also offer scenic vistas if they represent a valued aesthetic view within the surrounding landscape.

The Open Space and Resource Conservation Element Map OSRC-3: Scenic Resources and Ridgelines, identifies the Project site as being located within a view corridor primarily associated with Moreno Peak to the southwest. Additionally, within the Project area, scenic views and vistas are primarily long-range views of the Badlands to the north and northeast (and beyond, the San Gorgonio Mountain) of the Project site. Long-range views of the Russell Mountains exist to the south of the Project site. Development of the proposed Project would not alter views of the Badlands from SR-60, as the Project site is located south of SR-60 and the Badlands are located to the northeast. Long-range views of Moreno Peak and the Russel Mountains from SR-60 would not be substantially altered. The Project proposes development within the southern portion of the site, away from SR-60, while the northern portion of the site would remain undeveloped. Long-range views of the mountains may be interrupted by the proposed development; however, due to the development being significantly setback from SR-60 and the proposed height of the building (28-foot at its highest point) and canopy structures (25-foot canopy to the north and 42-foot 3-inch canopy to the south), the proposed Project would not substantially alter long-range views of the mountains. Further, the long-range views afforded across the Project site occur only for a short duration by vehicles traveling on SR-60 due to the speed at which the vehicles travel and the existing development within the surrounding area. Development of the travel center would be consistent with development that occurs along SR-60 and within the area. The Project would not have a substantial adverse effect on a scenic vista and impacts would be less than significant.

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒

Response: There are no state scenic highways adjacent to the Project site or within the surrounding area. The proposed Project would not substantially damage scenic resources within a state scenic highway.

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐

Response: The City of Moreno Valley, including the Project site, is located in an urbanized area. Thus, the Project would be considered to have a significant impact if it would conflict with applicable zoning and other regulations governing scenic quality.

Development of the Pilot Travel Center, as proposed, would result in the development of a currently undeveloped site with a travel center facility with fueling facilities, travel amenities, a drive-thru restaurant, and parking facilities for passing motorists and commercial truck operators. The proposed development would be situated within the southern portion of the site, adjacent to Eucalyptus Avenue; the northern portion of the site would remain undeveloped. The proposed Project would be consistent with the General Plan Commercial (C) land use designation and Community Commercial (CC) zoning identified for the site. The proposed Project would be required to comply with the CC development standards, as described in Moreno Valley Municipal Code (MVMC) Section 9.04.040, *Commercial Site Development Standards*. The standards include, but are not limited to, building height, maximum lot coverage, building setbacks and landscaping requirements. The tallest building structure within the site would be 42 feet, 3 inches. The travel center would be a single structure of approximately 14,087 square feet and the fuel canopies would be open on all sides; therefore, the proposed structures would not overwhelm the site. In compliance with MVMC, the proposed Project would meet all required setbacks and include landscaping within the setbacks. The parking lot adjacent to Eucalyptus Avenue would be setback 20 feet from the roadway and would provide a ten-foot landscape setback adjacent to Eucalyptus Avenue, which would improve the visual character along the Project site's frontage. Similarly, landscaping, including a shrub screen, would be installed along the site's western perimeter with the SR-60 offramp and Redlands Boulevard. Further, the proposed landscaping would include a mix of trees, shrubs, ground cover, boulders, and river rock, and these design features would be consistent with the streetscape elements along Eucalyptus Avenue and Redlands Boulevard, as well as existing development in the area.

The Project would be consistent with the General Plan and Zoning for the site and proposed improvements associated with the travel center would be required to comply with the development standards, which would further ensure the Project would not conflict with regulations governing scenic quality. In addition to compliance with the development standards established by the MVMC, the Project would be subject to approval of a Conditional Use Permit (CUP). Pursuant to MVMC Section 9.02.060, *Conditional Use Permits*, the CUP application process allows for the review of location, design, configurations of improvements and potential impact on the surrounding area based on fixed and established standards. In order for a CUP to be approved, certain findings must be made including, but not limited to: the proposed project is consistent with the goals, objectives, policies and programs of the General Plan; the proposed project complies with all applicable zoning and other regulations; and the location, design, and operation of the proposed project will be compatible with existing and planned land

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

used in the vicinity. Further, the Project would be subject to MVMC Section 9.02.030, *Development Review Process*. Section 9.02.030 requires a major development review for projects subject to a CUP. The purposes of the major development review process are to implement General Plan policies and other adopted policy and design standards, regulations and guidelines. The major development review process is intended to achieve quality development that is functionally and aesthetically enhancing to the community and to minimize adverse effects on surrounding properties and the environment. Similar to the CUP, specific findings would be required before approving a major development review application. The development review and CUP process would provide an opportunity for public review and evaluation of site-specific requirements and characteristics, to minimize adverse effects on surrounding properties and the environment, and to ensure that all site development regulations and performance standards are provided in accordance with the MVMC. In addition, the CUP ensures ongoing compliance with conditions of operation which may be applied to the use in order to protect public health, safety and welfare, and to ensure compliance with the General Plan goals, objectives and policies. Thus, compliance with the MVMC would further ensure the Project would not conflict with applicable zoning and other regulations governing scenic quality, resulting in a less than significant impact.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Response: Development of the Project site with a travel center would introduce additional lighting when compared to existing conditions. Light sources within the Project area are primarily from vehicles traveling on SR-60, business park/light industrial uses to the east and west, and traffic signal and street lighting on adjacent streets including SR-60, Eucalyptus Avenue, and Redlands Boulevard.

The proposed Project would introduce interior lighting associated with the travel center building, lighting within the fueling areas, security and safety lighting around the building and throughout the site's parking areas, lighting associated with the proposed signage, as well as lighting from trucks and automobiles accessing the site. The new lighting sources would generally appear similar in character to the existing developed uses to the west and east of the site along SR-60.

Lighting would be incorporated into the Project in compliance with the standards and review process outlined in the MVMC. MVMC Section 9.08.100, *Lighting,* establishes lighting requirements for non-residential uses. All outdoor lighting is required to be fully shielded and directed away from surrounding residential uses. Outdoor lighting cannot exceed one-quarter foot-candle minimum maintained lighting measured from within five feet of any property line. All lighting is required to be designed and installed with full cutoff and be fully shielded to reduce glare and light trespass and have a maximum wattage of 250 watts. Within nonresidential areas, outdoor on-site lighting is required to be mounted on a post and fully shielded not to exceed 30 feet in height, except within 100 feet of a residential use, where the post cannot exceed a maximum height of 20 feet. All off-street parking lots shall be cutoff and be fully shielded to reduce glare and light trespass. MVMC Section 9.10.110, *Light and Glare*, provides performance standards including that no operation, activity, sign or lighting fixture shall create illumination which exceeds 0.5 footcandles minimum maintained on any adjacent property, whether the illumination is direct or indirect light from the source. All lighting is required to be designed to project downward and not create glare on adjacent properties.

A photometric plan has been prepared for the proposed Project; refer to Appendix A, Lighting Study. The photometric plan indicates that proposed Project lighting would be contained within the Project site. Although the Project's proposed lighting introduces lighting where it does not already occur, light spillover and glare would be avoided by requiring that light be designed to project downward and not create glare on adjacent properties per the requirements of MVMC Section 9.10.110, *Light and Glare.* Lighting for the proposed Project would be full-cutoff type and fully shielded to prevent spillover onto adjacent properties per the requirements of MVMC Section 9.08.100, *Lighting.* Further, the Project proposes lighting sources consistent with lighting sources adjacent to the site, including light fixtures on buildings and pole-mounted

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

lights. The lighting within the Project site would not illuminate adjacent properties; lighting would be partially shielded from the Residential Agriculture 2 DU/AC (RA2) zoned property to the south due to the distance from the site, required setbacks, and landscaping. Thus, the Project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area and impacts would be less than significant.

Sources:

1. City of Moreno Valley General Plan 2040, adopted June 15, 2021
   - Chapter 2 – Land Use and Community Character Element
     - Map LCC-4: Proposed General Plan Land Use
   - Chapter 10 – Open Space and Resource Conservation Element
     - Map OSRC-3: Scenic Resources and Ridgelines
2. Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021
3. Title 9 – Planning and Zoning of the Moreno Valley Municipal Code
   - Section 9.02.030 – Development Review Process
   - Section 9.02.060 – Conditional Use Permits
   - Section 9.08.100 – Lighting
   - Section 9.10.110 – Light and Glare
4. Photometric Site Plan, Pilot Travel Center, prepared by Page Interworks, PA, May 28, 2021 (Appendix A)

II. AGRICULTURE AND FOREST RESOURCES – In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest protocols adopted by the California Air Resources Board.

Would the project:

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒

Response: According to the California Department of Conservation California Important Farmland Finder, the Project site is identified as Farmland of Local Importance (L). This category is for land that has the capability for agricultural production, but does not meet the criteria of Prime, Statewide, or Unique Farmland. The Project site and surrounding area are not currently used for agriculture or in agricultural production. The Project site is located within an urbanizing area of the City and the current CC zoning anticipates the development of the site with commercial uses. The Project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) to non-agricultural use.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

Response: The Project site is currently vacant and zoned as CC. The primary purpose of the CC district is to provide for the general shopping needs of area residents and workers with a variety of business, retail, personal and related or similar services; this zone does not allow for agricultural uses. The Project

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
site is not within a Williamson Act contract. Thus, the Project would not conflict with existing zoning for agricultural use, or a Williamson Act contract.				
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
Response: The site is currently vacant and zoned as CC. The site does not contain any forest or timberland nor is there land within the surrounding area zoned for forestland or timberland. The CC zone does not allow for timberland production use. Thus, the Project would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production.				
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
Response: There are no forestlands within the Project site or the surrounding area. The Project would not result in the loss of forestland or conversion of forestland to non-forest use.				
e) Involve other changes in the existing environment which, due to their location or nature, could result in the conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒
Response: There are no agricultural resources or forestland within the Project site or surrounding area. While the California Department of Conservation California Important Farmland Finder, identifies the Project site as Farmland of Local Importance (L), there are no agricultural uses occurring on the site currently or within the immediate area. The Project site and surrounding land are either developed or identified for development of a mix of uses including commercial, office, light industrial and residential by the City of Moreno Valley Zoning Map. Therefore, the Project would not result in the conversion of farmland to nonagricultural use or conversion of forestland to non-forest use.				
Sources: 1. City of Moreno Valley General Plan 2040, adopted June 15, 2021 • Chapter 10 – Open Space and Resource Conservation Element 2. Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021 3. Title 9 – Planning and Zoning of the Moreno Valley Municipal Code 4. California Department of Conservation, *California Important Farmland Finder*, https://maps.conservation.ca.gov/DLRP/CIFF/, accessed June 3, 2021 5. California Department of Conservation, *Important Farmland Categories* https://www.conservation.ca.gov/dlrp/fmmp/Pages/Important-Farmland-Categories.aspx, accessed June 3, 2021				
III. AIR QUALITY – Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. **Would the project:**				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
Response: As part of its enforcement responsibilities, the United States Environmental Protection Agency (USEPA) requires that each state with nonattainment areas prepare and submit a State				

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs. Similarly, under State law, the California Clean Air Act (CCAA) requires an air quality attainment plan to be prepared for areas designated as nonattainment regarding the federal and State ambient air quality standards. Air quality attainment plans outline emissions limits and control measures to achieve and maintain these standards by the earliest practical date.

The Project site is located within the South Coast Air Basin (SCAB), which is under the South Coast Air Quality Management District's (SCAQMD) jurisdiction. The SCAQMD is required, pursuant to the Federal Clean Air Act (FCAA), to reduce emissions of criteria pollutants for which SCAB is in non-attainment. To reduce such emissions, the SCAQMD drafted the 2016 Air Quality Management Plan (AQMP). The 2016 AQMP establishes a program of rules and regulations directed at reducing air pollutant emissions and achieving State (California) and national air quality standards. The 2016 AQMP is a regional and multi-agency effort including the SCAQMD, the California Air Resources Board (CARB), the Southern California Association of Governments (SCAG), and the USEPA. The AQMP's pollutant control strategies are based on the latest scientific and technical information and planning assumptions, including SCAG's 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (2016-2040 RTP/SCS), updated emission inventory methodologies for various source categories, and SCAG's latest growth forecasts. While SCAG has recently adopted the 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (Connect SoCal), the SCAQMD has not released an updated AQMP that utilizes information from Connect SoCal. The SCAQMD is planning to release the updated AQMP in 2022. As such, this consistency analysis is based off the 2016 AQMP and the 2016-2040 RTP/SCS. SCAG's growth forecasts were defined in consultation with local governments and with reference to local general plans. The SCAQMD considers projects that are consistent with the 2016 AQMP, which is intended to bring the Basin into attainment for all criteria pollutants, to also have less than significant cumulative impacts. The proposed Project is subject to the SCAQMD's AQMP.

Criteria for determining consistency with the AQMP are defined by the following indicators:

- **Consistency Criterion No. 1**: A proposed project would not result in an increase in the frequency or severity of existing air quality violations, or cause or contribute to new violations, or delay the timely attainment of the AQMP's air quality standards or the interim emissions reductions.
- **Consistency Criterion No. 2**: A proposed project would not exceed the AQMP's assumptions or increments based on the years of the project build-out phase.

Consistency Criterion No. 1 refers to the California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS). As shown in Table III-1, *Construction-Related Emissions (Maximum Pounds Per Day),* and Table III-2, *Operational-Related Emissions (Maximum Pounds Per Day)*, the proposed Project construction and operational emissions would be below SCAQMD's thresholds. As the Project would not generate localized construction or regional construction or operational emissions that would exceed SCAQMD thresholds of significance, the Project would not violate any air quality standards. Thus, no impact is expected, and the Project would be consistent with the first criterion.

Consistency Criterion No. 2 refers to SCAG's growth forecasts and associated assumptions included in the AQMP. The future air quality levels projected in the AQMP are based on SCAG's growth projections, which are based, in part, on the general plans of cities located within the SCAG region. Therefore, projects that are consistent with the applicable assumptions used in the development of the AQMP would not jeopardize attainment of the air quality levels identified in the AQMP, even if they exceed the SCAQMD's recommended daily emissions thresholds.

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

With respect to determining consistency with Consistency Criterion No. 2, it is important to recognize that air quality planning within the air basin focuses on attainment of ambient air quality standards at the earliest feasible date. Projections for achieving air quality goals are based on assumptions regarding population, housing, and growth trends. Thus, the SCAQMD's second criterion for determining project consistency focuses on whether or not the proposed Project exceeds the assumptions utilized in preparing the forecasts presented in the 2016 AQMP. Determining whether or not a project exceeds the assumptions reflected in the 2016 AQMP involves the evaluation of the three criteria outlined below. The following discussion provides an analysis of each of these criteria.

1. *Would the project be consistent with the population, housing, and employment growth projections utilized in the preparation of the AQMP?*

Growth projections included in the 2016 AQMP form the basis for the projections of air pollutant emissions and are based on the pre-existing General Plan land use designations and SCAG's 2016-2040 RTP/SCS demographics forecasts. The population, housing, and employment forecasts within the 2016-2040 RTP/SCS are based on local general plans as well as input from local governments, such as the City of Moreno Valley. The SCAQMD has incorporated these same demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment) into the 2016 AQMP. It should also be noted that the City's recently adopted 2040 General Plan is anticipated to be incorporated into the future 2022 AQMP (yet to be published).

As discussed in Section XIV, the Project involves the development of a travel center, which would not induce direct population or housing growth in the City. However, the Project would induce employment growth of up to approximately 45 employees. The Project would be within the population, housing, and employment projections anticipated and planned for by the City's General Plan and would not increase growth beyond the AQMP's projections.

2. *Would the project implement all feasible air quality mitigation measures?*

The proposed Project would result in less than significant air quality impacts. Compliance with all feasible emission reduction measures identified by the SCAQMD would be required as identified in Responses b) and (c). As such, the proposed Project meets this 2016 AQMP consistency criterion.

3. *Would the project be consistent with the land use planning strategies set forth in the AQMP?*

Land use planning strategies set forth in the 2016 AQMP are primarily based on the 2016-2040 RTP/SCS. As discussed in Section VIII, the Project would be consistent with the actions and strategies of the 2016-2040 RTP/SCS.

In conclusion, the determination of 2016 AQMP consistency is primarily concerned with the long-term influence of a project on air quality in the air basin. The proposed Project would not result in a long-term impact on the region's ability to meet State and federal air quality standards. Further, the proposed Project's long-term influence on air quality in the air basin would also be consistent with the SCAQMD and SCAG's goals and policies and is considered consistent with the 2016 AQMP. Therefore, the Project would be consistent with the above criteria and impacts would be less than significant.

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐

Response:

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Construction Emissions

Project construction activities would generate short-term emissions of criteria air pollutants. The criteria pollutants of primary concern within the Project site include ozone-precursor pollutants (i.e., Reactive Organic Gases [ROG] and NOx) and PM_{10} and $PM_{2.5}$. Construction-generated emissions are short term and temporary, lasting only while construction activities occur, but would be considered a significant air quality impact if the volume of pollutants generated exceeds the SCAQMD's thresholds of significance. Construction results in the temporary generation of emissions resulting from site grading, road paving, motor vehicle exhaust associated with construction equipment and worker trips, and the movement of construction equipment, especially on unpaved surfaces. Emissions of airborne particulate matter are largely dependent on the amount of ground disturbance associated with site preparation activities, as well as weather conditions and the appropriate application of water.

For purposes of this analysis, the duration of the proposed Project's construction activities was estimated to last approximately five months. The Project's construction-related emissions were calculated using the CARB-approved CalEEMod computer program, which is designed to model emissions for land use development projects, based on typical construction requirements. Proposed Project site preparation, grading, and building construction are anticipated to begin in early 2022. The exact construction timeline is unknown, and could change due to market conditions. Appendix B, Air Quality, Energy and Greenhouse Gas Data, provides additional information regarding the construction assumptions used in this analysis.

The Project's predicted maximum daily construction-related emissions are summarized in Table III-1, *Construction-Related Emissions (Maximum Pounds Per Day)*.

As shown in Table III-1, all criteria pollutant emissions would remain below their respective thresholds. While impacts would be considered less than significant, the proposed Project would be subject to compliance with SCAQMD Rules 402, 403, and 1113, which would further reduce specific construction-related emissions. The proposed Project emissions would not worsen ambient air quality, create additional violations of federal and state standards, or delay SCAB's goal for meeting attainment standards. Impacts associated with construction emissions would be less than significant.

Table III-1
Construction-Related Emissions (Maximum Pounds Per Day)

Construction Year	Reactive Organic Gases (ROG)	Nitrogen Oxides (NOx)	Carbon Monoxide (CO)	Sulfur Oxides (SOx)	Coarse Particulates (PM_{10})	Fine Particulates ($PM_{2.5}$)
2022	5.5	54.6	46.5	0.1	8.2	5.0
SCAQMD Threshold	**75**	**100**	**550**	**150**	**55**	**150**
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod version 2016.3.2.

Notes: SCAQMD Rule 403 Fugitive Dust applied. The Rule 403 reduction/credits include the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stockpiles with tarps; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour. Reductions percentages from the SCAQMD CEQA Handbook (Tables XI-A through XI-E) were applied. No mitigation was applied to construction equipment; refer to Appendix A for model outputs.

Operational Emissions

The Project's operational emissions would be associated with motor vehicle use and area sources. Mobile sources emissions are generated from vehicle operations associated with Project operations. Typically, area sources are small sources that contribute very minor emissions individually, but when

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

combined may generate substantial amounts of pollutants. Area specific defaults in CalEEMod were used to calculate area source emissions.

CalEEMod was also used to calculate pollutants emissions from vehicular trips generated from the proposed Project. The vehicle trip rate for the Project was provided by Kimley-Horn Associates; refer to Appendix J, Trip Generation. CalEEMod default inputs for vehicle mix and trip distances were unaltered for this analysis. CalEEMod estimated emissions from Project operations are summarized in Table III-2, *Operational-Related Emissions (Maximum Pounds Per Day)*. Note that emissions rates differ from summer to winter because weather factors are dependent on the season and these factors affect pollutant mixing, dispersion, ozone formation, and other factors.

As shown in Table III-2, emission calculations generated from CalEEMod demonstrate that Project operations would not exceed the SCAQMD thresholds for any criteria air pollutants. Therefore, Project operational impacts would be less than significant.

Table III-2
Operational-Related Emissions (Maximum Pounds Per Day)

Source	Reactive Organic Gases (ROG)	Nitrogen Oxides (NOx)	Carbon Monoxide (CO)	Sulfur Oxides (SOx)	Coarse Particulates (PM_{10})	Fine Particulates ($PM_{2.5}$)
Summer Emissions						
Area Source	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Energy	<0.1	0.2	0.2	<0.1	<0.1	<0.1
Mobile	4.8	29.6	106.4	0.4	35.2	9.6
Total	**5.4**	**29.7**	**106.6**	**0.4**	**35.2**	**9.6**
SCAQMD Threshold	**55**	**55**	**550**	**150**	**150**	**55**
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Winter Emissions						
Area Source	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Energy	<0.1	0.2	0.2	<0.1	<0.1	<0.1
Mobile	5.2	30.8	97.9	0.4	35.2	9.6
Total	**5.2**	**31.0**	**98.9**	**0.4**	**35.2**	**9.6**
SCAQMD Threshold	**55**	**55**	**550**	**150**	**150**	**55**
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod Version 2016.3.2; refer to Appendix A for model outputs.
Note: Totals may not add up due to rounding.

Area Source Emissions
As shown in Table III-2, the Project's unmitigated area source emissions would not exceed SCAQMD thresholds for either the winter or summer seasons. Therefore, impacts would be less than significant and mitigation measures are not required.

Energy Source Emissions
Energy source emissions would be generated due to the Project's electricity and natural gas usage. The Project's primary uses of electricity and natural gas would be for space heating and cooling, water heating, ventilation, lighting, appliances, and electronics. As shown in Table III-2, the Project's energy source emissions would not exceed SCAQMD thresholds for criteria pollutants. As such, the Project

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

would not violate any air quality standards or contribute substantially to an existing or projected air quality violation. Therefore, the Project's operational air quality impacts would be less than significant.

Mobile Source Emissions

Mobile sources are emissions from motor vehicles, including tailpipe and evaporative emissions. Depending upon the pollutant being discussed, the potential air quality impact may be of either regional or local concern. For example, ROG, NOX, PM_{10}, and $PM_{2.5}$ are all pollutants of regional concern. NOx and ROG react with sunlight to form O_3, known as photochemical smog. Additionally, wind currents readily transport PM_{10} and $PM_{2.5}$. However, CO tends to be a localized pollutant, dispersing rapidly at the source.

Project-generated vehicle emissions have been estimated using CalEEMod, as recommended by SCAQMD. As shown in Table III-2, mobile source emissions would not exceed SCAQMD thresholds for criteria pollutants. Therefore, the Project's air quality impacts associated with mobile source emissions would be less than significant.

Cumulative Short-Term Emissions

SCAB is designated nonattainment for O_3, PM_{10}, and $PM_{2.5}$ for State standards and nonattainment for O_3 and $PM_{2.5}$ for Federal standards. As discussed above, the Project's construction-related emissions by themselves would not exceed the SCAQMD significance thresholds for criteria pollutants.

Since these thresholds indicate whether individual Project emissions have the potential to affect cumulative regional air quality, it can be expected that the Project-related construction emissions would not be cumulatively considerable. The SCAQMD has developed strategies to reduce criteria pollutant emissions outlined in the AQMP pursuant to the FCAA mandates. The analysis assumed fugitive dust controls would be utilized during construction, including frequent water applications. SCAQMD rules, mandates, and compliance with adopted AQMP emissions control measures would also be imposed on construction projects throughout the SCAB, which would include related cumulative projects. As concluded above, the Project's construction-related impacts would be less than significant. Compliance with SCAQMD rules and regulations would further minimize the proposed Project's construction-related emissions. Therefore, Project-related construction emissions, in combination with those from other projects in the area, would not substantially deteriorate the local air quality. The Project's construction-related emissions would not result in a cumulatively considerable contribution to significant cumulative air quality impacts.

Cumulative Long-Term Impacts

The SCAQMD has not established separate significance thresholds for cumulative operational emissions. The nature of air emissions is largely a cumulative impact. As a result, no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, individual project emissions contribute to existing cumulatively significant adverse air quality impacts. The SCAQMD developed the operational thresholds of significance based on the level above which individual project emissions would result in a cumulatively considerable contribution to SCAB's existing air quality conditions. Therefore, a project that exceeds the SCAQMD operational thresholds would also be a cumulatively considerable contribution to a significant cumulative impact.

As shown in Table III-2, the Project's operational emissions would not exceed SCAQMD thresholds. As a result, the Project's operational emissions would not result in a cumulatively considerable contribution to significant cumulative air quality impacts. Additionally, adherence to SCAQMD rules and regulations would alleviate potential impacts related to cumulative conditions on a project-by-project basis. Project operations would not contribute a cumulatively considerable net increase of any nonattainment criteria pollutant and impacts would be less than significant.

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐

Response:

Localized Construction Significance Analysis

The nearest sensitive receptors to the Project site are the residences located to the north of the Project site, north of SR-60 and residences to the south within the plant nursery adjacent to Redlands Boulevard. To identify impacts to sensitive receptors, the SCAQMD recommends addressing LSTs for construction. LSTs were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the Final Localized Significance Threshold Methodology (dated June 2003 [revised 2008]) for guidance. The LST methodology assists lead agencies in analyzing localized impacts associated with Project-specific emissions.

The maximum daily disturbed acreage would be no more than five acres. The appropriate SRA for the LSTs is the Perris Valley area (SRA 24), since SRA 3 includes the Project site. LSTs apply to CO, NO_2, PM_{10}, and $PM_{2.5}$. The SCAQMD produced look-up tables for projects that disturb areas less than or equal to 5.0 acres.

The SCAQMD's methodology states that "off-site mobile emissions from the Project should not be included in the emissions compared to LSTs." Therefore, for purposes of the construction LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered. LST thresholds are provided for distances to sensitive receptors of 25, 50, 100, 200, and 500 meters. The closest residential receptor is located approximately 190 meters from the Project site. Therefore, as recommended by the SCAQMD, LSTs for receptors located at 100 meters were utilized in this analysis for receptors closer than 200 meters. Table III-3, *Localized Significance of Construction Emissions (Maximum Pounds per Day)*, presents the results of localized emissions during proposed Project construction.

Table III-3
Localized Significance of Construction Emissions (Maximum Pounds per Day)[1]

Construction Activity	Nitrogen Oxides (NO_x)	Carbon Monoxide (CO)	Coarse Particulates (PM_{10})	Fine Particulates ($PM_{2.5}$)
Site Preparation	33.1	19.7	8.0	5.0
Grading (first phase)	38.8	29.0	4.7	2.8
Grading (second phase)	38.8	29.0	4.7	2.8
Building Construction	15.6	16.4	0.8	0.8
Paving	11.1	14.6	0.6	0.5
SCAQMD Localized Screening Thresholds (5 acres at 100 meters)	378	3,437	59	16
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**
Source: CalEEMod Version 2016.3.2; refer to Appendix A for model outputs.				
Notes: 1. Emissions reflect on-site construction emissions only, per SCAQMD guidance.				

As shown in Table III-3, the emissions of these pollutants on the peak day of Project construction would not result in significant concentrations of pollutants at nearby sensitive receptors. Further, the Project would be subject to compliance with SCAQMD Rules 402, 403, and 1113, which would further reduce specific construction-related emissions. Therefore, the proposed Project would result in a less than significant impact concerning LSTs during construction activities.

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Localized Operational Significance Analysis

The on-site operational emissions are compared to the LST thresholds in Table III-4, *Localized Significance of Operational Emissions (Maximum Pounds per Day)*. Table III-4 shows that the maximum daily emissions of these pollutants during Project operations would not result in significant concentrations of pollutants at nearby sensitive receptors. Therefore, the proposed Project would result in a less than significant impact concerning LSTs during operational activities.

Table III-4
Localized Significance of Operational Emissions (Maximum Pounds per Day)

Emission Sources	Nitrogen Oxides (NO_x)	Carbon Monoxide (CO)	Coarse Particulates (PM_{10})	Fine Particulates ($PM_{2.5}$)
On-Site Emissions (Area Sources)	0.1	<0.1	<0.1	<0.1
SCAQMD Localized Screening Threshold (5 acres at 100 meters)	378	3,437	14	4
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**

Source: CalEEMod version 2016.3.2; refer to Appendix A for model outputs.

Criteria Pollutant Health Impacts

On December 24, 2018, the California Supreme Court issued an opinion identifying the need to provide sufficient information connecting a project's air emissions to health impacts or explain why such information could not be ascertained (Sierra Club v. County of Fresno [Friant Ranch, L.P.] [2018] 6 Cal.5th 502). The SCAQMD has set its CEQA significance thresholds based on the FCAA, which defines a major stationary source (in extreme ozone nonattainment areas such as the SCAB) as emitting 10 tons per year. The thresholds correlate with the trigger levels for the federal New Source Review (NSR) Program and SCAQMD Rule 1303 for new or modified sources. The NSR Program was created by the FCAA to ensure that stationary sources of air pollution are constructed or modified in a manner that is consistent with attainment of health-based federal ambient air quality standards. The federal ambient air quality standards establish the levels of air quality necessary, with an adequate margin of safety, to protect the public health. Therefore, projects that do not exceed the SCAQMD's mass emissions thresholds would not violate any air quality standards or contribute substantially to an existing or projected air quality violation and no criteria pollutant health impacts would occur.

NOx and ROG are precursor emissions that form ozone in the atmosphere in the presence of sunlight where the pollutants undergo complex chemical reactions. It takes time and the influence of meteorological conditions for these reactions to occur, so ozone may be formed at a distance downwind from the sources. Breathing ground-level ozone can result in health effects that include: reduced lung function, inflammation of airways, throat irritation, pain, burning, or discomfort in the chest when taking a deep breath, chest tightness, wheezing, or shortness of breath. In addition to these effects, evidence from observational studies strongly indicates that higher daily ozone concentrations are associated with increased asthma attacks, increased hospital admissions, increased daily mortality, and other markers of morbidity. The consistency and coherence of the evidence for effects upon asthmatics suggests that ozone can make asthma symptoms worse and can increase sensitivity to asthma triggers.

According to the SCAQMD's 2016 AQMP, ozone, NOx, and ROG have been decreasing in the SCAB since 1975 and are projected to continue to decrease in the future. Although VMT in the SCAB continue to increase, NOx and ROG levels are decreasing because of the mandated controls on motor vehicles and the replacement of older polluting vehicles with lower-emitting vehicles. NOx emissions from electric utilities have also decreased due to the use of cleaner fuels and renewable energy. The 2016 AQMP demonstrates how the SCAQMD's control strategy to meet the 8-hour ozone standard in 2023 would lead to sufficient NOx emission reductions to attain the 1-hour ozone standard by 2022. In addition, since

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

NOx emissions also lead to the formation of $PM_{2.5}$, the NOx reductions needed to meet the ozone standards will likewise lead to improvement of $PM_{2.5}$ levels and attainment of $PM_{2.5}$ standards.

The SCAQMD's air quality modeling demonstrates that NOx reductions prove to be much more effective in reducing ozone levels and will also lead to a significant decrease in $PM_{2.5}$ concentrations. NOx-emitting stationary sources regulated by the SCAQMD include Regional Clean Air Incentives Market (RECLAIM) facilities (e.g., refineries, power plants, etc.), natural gas combustion equipment (e.g., boilers, heaters, engines, burners, flares) and other combustion sources that burn wood or propane. The 2016 AQMP identifies robust NOx reductions from new regulations on RECLAIM facilities, non-refinery flares, commercial cooking, and residential and commercial appliances. Such combustion sources are already heavily regulated with the lowest NOx emissions levels achievable but there are opportunities to require and accelerate replacement with cleaner zero-emission alternatives, such as residential and commercial furnaces, pool heaters, and backup power equipment. The AQMD plans to achieve such replacements through a combination of regulations and incentives. Technology-forcing regulations can drive development and commercialization of clean technologies, with future year requirements for new or existing equipment. Incentives can then accelerate deployment and enhance public acceptability of new technologies.

The 2016 AQMD also emphasized that beginning in 2012, continued implementation of previously adopted regulations will lead to NOx emission reductions of 68 percent by 2023 and 80 percent by 2031. With the addition of 2016 AQMP proposed regulatory measures, a 30 percent reduction of NOx from stationary sources is expected in the 15-year period between 2008 and 2023. This is in addition to significant NOx reductions from stationary sources achieved in the decades prior to 2008.

As previously discussed, Project emissions would be less than significant and would not exceed SCAQMD thresholds; refer to Table III-1 and Table III-2. Localized effects of on-site Project emissions on nearby receptors were also found to be less than significant; refer to Table III-3 and Table III-4. The LSTs represent the maximum emissions from a Project that are not expected to cause or contribute to an exceedance of the most stringent applicable NAAQS or CAAQS. The LSTs were developed by the SCAQMD based on the ambient concentrations of that pollutant for each SRA and distance to the nearest sensitive receptor. The ambient air quality standards establish the levels of air quality necessary, with an adequate margin of safety, to protect public health, including protecting the health of sensitive populations such as asthmatics, children, and the elderly. As shown above, Project-related emissions would not exceed the regional thresholds or the LSTs, and therefore would not exceed the ambient air quality standards or cause an increase in the frequency or severity of existing violations of air quality standards. Therefore, sensitive receptors would not be exposed to criteria pollutant levels more than the health-based ambient air quality standards.

Toxic Air Contaminants

A toxic air contaminant (TAC) is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air. However, their high toxicity or health risk may pose a threat to public health even at very low concentrations. In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. This contrasts with the criteria pollutants for which acceptable levels of exposure can be determined and for which the state and federal governments have set ambient air quality standards.

The proposed Project has the potential to impact nearby sensitive receptors due to the nature of the proposed travel center operations, which provide services and amenities, such as fueling facilities, to passing motorists, including commercial truck operators. Heavy-duty diesel trucks are emitters of diesel particulate matter (DPM), which is emitted from on-site truck vehicle circulation and idling and off-site mobile travel, as well as from the off-gassing of benzene vapor from various on-site refueling activities. Combined, these sources have the potential to generate substantial TACs on nearby sensitive receptors,

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

including those located nearest to the Project site. The SCAQMD has established maximum thresholds of significance for TACs, which would be significant if they exceed the following thresholds:

- Incremental residential cancer risk of equal to or greater than 10 in one million;
- Incremental workplace cancer risk of equal to or greater than 10 in one million; and,
- Chronic and Acute Hazard Index of equal to or greater than 1.0 (project increment).

Air dispersion modeling was conducted using AERMOD and HARP-2 risk modeling software to determine cancer and non-cancer TAC risks on the nearest residential and workplace receptors. Maximum incremental residential cancer risk was evaluated over a 70-year period; maximum incremental workplace cancer risk was evaluated over a 40-year period. Chronic and acute cancer risks on the nearest sensitive receptors were also modeled.

A rectangular (x-y) coordinate system was used to model receptors. An area within 1,000 meters of the proposed travel center site boundaries was used with receptor spacing of 50 meters, where applicable. Additional receptors were added along or near the nearest sensitive receptors surrounding the travel center site. Additional sensitive receptors were placed along nearby roadways and in-between receptors, to allow for analysis throughout the modelling extent and to allow for a visual representation of dispersion contours. Receptors were also placed along the proposed travel center property line.

Table III-5, *Summary of Maximum Health Risks*, displays the residential and workplace cancer risk, and acute and chronic incidence rate results at nearest receptors; refer to Appendix C, Health Risk Assessment, for the detailed analysis. On-site truck idling emissions were modeled via 16 volume sources located throughout the travel center site, where idling would occur (these were grouped together as volume sources). Additionally, on-site mobile sources and off-site mobile sources (along the relevant roadways leading to the Project site) were analyzed. Additional parameters, assumptions, and output selections provided within the modeling is described within the health risk assessment provided in Appendix C.

Table III-5: Summary of Maximum Health Risks

Risk Metric	Maximum Risk (per million persons)	Significance Threshold	Is Threshold Exceeded?
Residential Cancer Risk (70-year exposure)	5.45	10 per million	No
Workplace Cancer Risk (40-year exposure)	0.39	10 per million	No
Chronic (non-cancer)	0.01	Hazard Index ≥1.0	No
Acute (non-cancer)	0.96	Hazard Index ≥1.0	No

Sources: AERMOD (Lakes Environmental Software, 2016); and HARP-2 Air Dispersion and Risk Tool
Notes: The maximum residential cancer risk would be for the residence located approximately 190 meters to the north of the Project site. The highest residential cancer risk (70-year exposure) at this location is 5.1 per million persons, as provided within this table.

As shown in Table III-5, the proposed Project would not exceed the maximum risk values established by the SCAQMD for TACs. All receptor types would be below the applicable SCAQMD significance thresholds and impacts would be less than significant.

Carbon Monoxide Hotspots

An analysis of CO "hot spots" is needed to determine whether the change in the level of service of an intersection resulting from the proposed Project would have the potential to result in exceedances of the CAAQS or NAAQS. It has long been recognized that CO exceedances are caused by vehicular

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

emissions, primarily when vehicles are idling at intersections. Vehicle emissions standards have become increasingly stringent in the last 20 years. Currently, the CO standard in California is a maximum of 3.4 grams per mile for passenger cars (requirements for certain vehicles are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities, CO concentrations have steadily declined.

Accordingly, with the steadily decreasing CO emissions from vehicles, even very busy intersections do not result in exceedances of the CO standard. The 2016 AQMP is the most recent version that addresses CO concentrations. As part of the SCAQMD CO Hotspot Analysis, the Wilshire Boulevard/Veteran Avenue intersection, one of the most congested intersections in Southern California with approximately 100,000 average daily traffic (ADT), was modeled for CO concentrations. This modeling effort identified a CO concentration high of 4.6 ppm, which is well below the 35-ppm Federal standard. The proposed Project would not produce the volume of traffic required to generate a CO hot spot in the context of SCAQMD's CO Hotspot Analysis. As the CO hotspots were not experienced at the Wilshire Boulevard/Veteran Avenue intersection even as it accommodates 100,000 ADT, it can be reasonably inferred that CO hotspots would not be experienced at any Project area intersections from the 272 ADT attributable to the proposed Project. Therefore, impacts would be less than significant.

Construction-Related Diesel Particulate Matter

Project construction would generate DPM emissions from the use of off-road diesel equipment required. The amount to which the receptors are exposed (a function of concentration and duration of exposure) is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Health-related risks associated with diesel-exhaust emissions are primarily linked to long-term exposure and the associated risk of contracting cancer.

The use of diesel-powered construction equipment would be temporary and episodic. The duration of exposure would be short and exhaust from construction equipment would dissipate rapidly. Current models and methodologies for conducting health risk assessments are associated with longer-term exposure periods of 9, 30, and 70 years, which do not correlate well with the temporary and highly variable nature of construction activities. The closest sensitive receptors to the Project site are located to the north, north of SR-60 and to the south within the plant nursery site along Redlands Boulevard, and further from the major Project construction areas.

California Office of Environmental Health Hazard Assessment has not identified short-term health effects from DPM. Construction is temporary and would be transient throughout the site (i.e., move from location to location) and would not generate emissions in a fixed location for extended periods of time. Construction activities would be subject to and would comply with California regulations limiting the idling of heavy-duty construction equipment to no more than five minutes to further reduce nearby sensitive receptors' exposure to temporary and variable DPM emissions. For these reasons, DPM generated by Project construction activities, in and of itself, would not expose sensitive receptors to substantial amounts of air toxins and the proposed Project would result in a less than significant impact.

d) Result in other emissions (such as those leading to odors adversely affecting a substantial number of people?	☐	☐	☒	☐

Response:

Construction

Odors that could be generated by construction activities are required to follow SCAQMD Rule 402 to prevent odor nuisances on sensitive land uses. SCAQMD Rule 402, Nuisance, states:

A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

During construction, emissions from construction equipment, such as diesel exhaust, and volatile organic compounds from architectural coatings and paving activities may generate odors. However, these odors would be temporary, are not expected to affect a substantial number of people and would disperse rapidly. Therefore, impacts related to odors associated with the Project's construction-related activities would be less than significant.

Operational

The SCAQMD CEQA Air Quality Handbook identifies certain land uses as sources of odors. These land uses include agriculture (farming and livestock), wastewater treatment plants, food processing plants, chemical plants, composting facilities, refineries, landfills, dairies, and fiberglass molding. The Project proposes development of residential uses, which would not involve the types of uses that would emit objectionable odors affecting substantial numbers of people. The Project would not include any of the land uses that have been identified by the SCAQMD as odor sources. Therefore, the proposed Project would not create objectionable odors and impacts would be less than significant.

Sources:

1. City of Moreno Valley General Plan 2040, adopted June 15, 2021
   - Chapter 4 – Circulation Element
   - Chapter 6 – Safety Element
2. Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021
3. Title 9 – Planning and Zoning of the Moreno Valley Municipal Code
   - Section 9.10.050 – Air Quality of the Moreno Valley Municipal Code
   - Section 9.10.150 – Odors of the Moreno Valley Municipal Code
   - Section 9.10.170 – Vibration of the Moreno Valley Municipal Code
4. Moreno Valley Municipal Code Section 12.50.040 – Limitations on Engine Idling
5. Air Quality, Energy and Greenhouse Gas Data (Appendix B)
6. Analysis of Public Health Risks for the Pilot Travel Center, Moreno Valley, California, prepared by De Novo Planning Group, August 6, 2021 (Appendix C)
7. CalEEMod, version 2016.3.2

IV. BIOLOGICAL RESOURCES – Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐

Response:

Special Status Plants

The Project site is comprised of an undeveloped lot containing ruderal vegetation that is heavily disturbed. A records search was completed in April 2021 that included the Project site boundaries as depicted on USGS 7.5-minute Sunnymead topographic quadrangle, plus the surrounding eight topographic quadrangles, including San Bernardino South, Redlands, Yucaipa, El Casco, Lakeview, Perris, Steele Peak, and Riverside East. The records search was generated from the California Natural Diversity Database (CNDDB) and the California Native Plant Society's (CNPS) Electronic Inventory. The database searches identified 57 special status plant species that occur on or near the Project site. A list

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

was generated from the results of the literature review and the Project site was evaluated for suitable habitat that could support any of the special status plant species on the list. The special status plant species with potential to occur on and/or near the Project site are shown in Appendix D, Biological Technical Report and MSHCP Consistency Analysis.

A biological reconnaissance survey was conducted on April 13, 2021. Minimal amounts of trash were found throughout the site. At the time of the survey, the entire Project site appeared to have been previously disced. To the north of the Project site was SR-60 and undeveloped land, to the east was industrial and commercial development, to the west was commercial development and a parking lot, and to the south was undeveloped and residential. There was fencing along the eastern boundary of the Project site and along the eastern boundary (north of Eucalyptus Avenue and west of Redlands Boulevard) there was asphalt and gravel. Minimal amounts of native vegetation were identified within and adjacent to the Project site.

No native or non-native vegetation communities were identified on the Project site. The entire Project site is classified as disturbed. The dominant plant species observed on the Project site were non-native or invasive weedy species. Of the eight plant species observed on the Project site, many were non-native species. There were three isolated, small stands of trees within the Project site: one Peruvian pepper tree (*Schinus molle*), a small stand of eucalyptus (*Eucalyptus* spp.), and two palo verde trees (*Parkinsonia acleata*). Additionally, there were ornamental trees and shrubs along the western boundary of the Project site, in the 500-foot buffer. Soils throughout the entire site appeared to have been previously mechanically disturbed.

Plant species observed on the Project site were generally characteristic of disturbed urban areas. Plant species observed on the Project site included mustard (*Brassica* spp.), stinknet (*Oncosiphon pilulifer*), grass species (*Bromus* spp.), lupine (*Lupinus* spp.), fiddleneck (*Amsinckia tessellata*), and various ornamental tree species such as palm (*Washingtonia* spp.), Peruvian pepper (*Schinus molle*), and pine (*Pinus* spp.). Of the eight plant species observed on the Project site, only fiddleneck and lupine are native; the remaining six species are non-native. Due to the high level of disturbance at the Project site and the current lack of suitable habitat for special status plant species, all of the special status plant species identified in the literature review were presumed absent.

The Project site does not provide suitable habitat for any of the special status plant species documented within the quadrangle region search of the Project site. The Project site is devoid of sensitive habitat and does not contain any special status plants that are documented in the region. Therefore, the proposed Project would have a less than significant impacts on special status plants.

Special Status Wildlife

A records search revealed that there are 58 special status wildlife species (federal/state listed) documented within the 7.5-minute Sunnymead topographic quadrangle and surrounding areas. The records search came from the CNDDB. The special status wildlife species are shown in Appendix D. For some species, there were historic or recent sightings; however, the due to the lack of suitable habitat within the Project site, these species are presumed absent. Of the special status wildlife species, one was found to have a low potential to occur: burrowing owl. During the survey and burrowing owl habitat assessment, no suitable burrows or burrow-like structures were observed on or adjacent to the Project site. Burrows belonging to Botta's pocket gopher were present in areas; however, these were too small to be suitable for burrowing owl use. Furthermore, the soils within Project site appeared to have been previously mechanically disturbed (e.g., disced), which further reduced the site's suitability for burrowing owl. Because of these factors, the site did not provide suitable burrowing owl habitat at the time of the survey. However, due to the mobile nature of the species, it is possible that burrowing owl could use the site prior to the start of Project activities, especially if burrows or burrow-like structures are incidentally created or formed prior to the start of construction. If burrowing owl are found to be using or nesting on the Project site prior to the start of construction due to a change in potential burrow presence, direct

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

impacts in the form of ground disturbance, vegetation removal, habitat loss, and mortality and indirect impacts from construction noise and vibrations may occur. In order to avoid potentially significant impacts to burrowing owl, it is recommended that Mitigation Measure BIO-1 be implemented, which would require a pre-construction survey for burrowing owls be completed prior to construction activities in accordance with the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) burrowing owl survey guidelines and implementation of mitigation measures in the event burrowing owls are observed.

The remaining 57 special-status wildlife species are presumed absent from occurring on or adjacent to the site due to the lack of suitable habitat, including the evidence mechanical disturbances to the soils on the site, proximity to SR-60 and the surrounding industrial and residential development, and the presence of anthropogenic disturbances associated with the commercial and industrial development surrounding the site. No significant impacts to the remaining 57 special-status wildlife species are anticipated to result from the development of this Project.

The trees on and immediately adjacent to the Project site could provide nesting habitat for nesting birds and raptors protected by the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code. Furthermore, the Project site could provide nesting habitat for ground-nesting bird species. If construction of the proposed Project occurs during the bird breeding season (typically February 1 through August 31), ground disturbing construction activities could directly affect birds protected by the MBTA and their nests through the removal of habitat on the Project site, and indirectly through increased noise, vibrations, and increased human activity. Impacts to nesting birds would be less than significant with the implementation of Mitigation Measure BIO-2.

Given the absence of observations, or appropriate habitat for, special status animals, and with implementation of Mitigation Measures BIO-1 and BIO-2, the proposed Project would have a less than significant impact on special status animals.

Mitigation Measures:

BIO-1: The Project proponent shall implement the following measure to avoid or minimize impacts on burrowing owl populations:

A pre-construction survey for burrowing owls shall be completed within the Project site no more than 30 days prior to construction activities in accordance with the Western Riverside MSHCP burrowing owl survey guidelines (County of Riverside, 2006). If burrowing owls are observed during the preconstruction survey and impacts to the owls or occupied burrows are unavoidable, a specific mitigation methodology for the owls shall be determined in coordination with CDFW in order to reduce impacts to a level that is less than significant. Mitigation measures for any burrowing owls present could include avoidance of the owl burrows during the nesting season and/or passive relocation of burrowing owls.

BIO-2: The Project proponent shall implement the following measure to avoid or minimize impacts on nesting birds:

Wherever feasible, any ground disturbance activities shall be conducted during the non-breeding season for birds (approximately September 1 through January 31) in order to avoid violations of the MBTA and California Fish and Game Code §§ 3503, 3503.5 and 3513. If activities with the potential to disrupt nesting birds are scheduled to occur during the bird breeding season (February 1 through August 31), a preconstruction nesting bird survey shall be conducted by a qualified biologist who is experienced in the identification of avian species and conducting nesting bird surveys no more than three (3) days prior to the start of construction activities. The nest surveys shall include the Project site and adjacent areas where Project activities have the potential to cause nest failure. If no nesting birds are observed during the survey, site preparation and construction activities may begin. If nesting birds (including nesting raptors) are found to be present, avoidance or minimization measures shall be undertaken to avoid

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
potential Project-related impacts. Measures may include establishment of an avoidance buffer until nesting has been completed and periodic nest monitoring by the Project biologist. The width of the avoidance buffer will be determined by the Project biologist. Typically, this is 300 feet from the nest site in all directions (500 feet is typically recommended by CDFW for raptors), until the juveniles have fledged and there has been no evidence of a second attempt at nesting. The monitoring biologist will monitor the nest(s) during construction and document any findings.				
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
Response: The Project site is comprised of an undeveloped lot containing ruderal vegetation that is heavily disturbed. The Project site does not contain any riparian habitat or other sensitive natural communities that would need to be preserved. No impacts to sensitive natural communities are anticipated to result from the development of this Project. Therefore, impacts would be less than significant.				
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
Response: The Project site is comprised of an undeveloped lot containing ruderal vegetation that is heavily disturbed and does not contain any riparian habitat or other sensitive natural communities that would need to be preserved. The Project site does not include any state or federally protected wetlands or waters of the United States, nor were any blue line streams documented. The Project would not have a substantial adverse effect on a state or federally protected wetland; no impact would occur.				
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with an established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
Response: No migratory wildlife corridors or native wildlife nursery sites were identified within the Project site**.** Many species of birds and their active nests are protected under the MBTA. As previously discussed in Section IV(a), the Project site provides some limited nesting habitat on the trees or ground nesting opportunities on the Project site. In order to reduce potential impacts to wildlife species potentially nesting within the Project site, the Project would be required to comply with Mitigation Measures BIO-1 and BIO-2, which would ensure protection of any birds and active nests and reduce potential impacts to a less than significant level.				
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
Response: MVMC Chapter 9.17, *Landscape and Water Efficiency Requirements,* outlines the protection of heritage trees, which includes: any tree that defines the historical and cultural character of the city including older Palm and Olive trees, and/or any tree designated as such by official action; trees with a fifteen (15) inch diameter measured twenty-four (24) inches above ground level; and, trees that have reached a height of fifteen (15) feet or greater.				

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
The Project site is within an urban environment that is generally subjected to repeated and ongoing disturbance from human activities. No native or non-native vegetation communities were identified on the Project site. The Project site is classified as disturbed. The Project would not involve the removal of trees that meet the definition of heritage trees under MVMC. The Project would not conflict with any local policies or ordinances protecting biological resources; no impact would occur.				
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or another approved local, regional, or state habitat conservation plan?	☐	☐	☒	☐

Response: The Project site is located within the planning area for the Western Riverside MSHCP, but outside of any Conservation Areas, Criteria Cells, or Subunit designations. The Project area is located north of the Core Reserve Area for the Stephens' Kangaroo Rat Habitat Conservation Plan (HCP) and is not located within a core area. Further, as previously described in Section IV(a), no Stephens' Kangaroo Rat population is expected within the Project area due to the high level of disturbance and lack of suitable habitat. Therefore, the proposed Project would not conflict with an adopted habitat conservation plan, natural community conservation plan, or other approved plan and impacts would be less than significant.

Sources:

1. City of Moreno Valley General Plan 2040, adopted June 15, 2021
   - Chapter 10 – Open Space and Resource Conservation Element
2. Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021
3. Title 9 – Planning and Zoning of the Moreno Valley Municipal Code
   - Section 9.17.030 G – Heritage Trees
4. Moreno Valley Municipal Code
   - Chapter 8.60 – Threatened and Endangered Species
5. Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), Western Riverside MSHCP, accessed July 3, 2021
6. Stephens' Kangaroo Rat Habitat Conservation Plan (SKRHCP), Governing Documents | RCHCA, CA, accessed July 3, 2021
7. Biological Technical Report and MSHCP Consistency Analysis, prepared by ECORP Consulting, Inc., July 29, 2021 (Appendix D)

V. CULTURAL RESOURCES – Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☒	☐

Response: CEQA Guidelines Section 15064.5 defines "historic resources" as resources listed in the California Register of Historical Resources (CRHR), or determined to be eligible by the California Historical Resources Commission for listing in the CRHR. The National Register of Historic Places (NRHP) recognizes properties that are significant at the national, State and local levels. In accordance with CEQA Guidelines Section 15064.5, a site or structure may be considered a historical resource if it is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of Public Resources Code Section 5020.1(j), or if it meets the criteria for listing in either the NRHP or the CRHR (14 Code of Federal Regulations [CFR] § 4850). CEQA allows local historic resource guidelines to serve as the CRHR criteria if enacted by local legislation to act as the equivalent of the State criteria.

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Historical resources are defined as buildings, structures, objects, sites, and districts of significance in history, archaeology, architecture, and culture. Historical resources are preserved because they provide a link to a region's past as well as a frame of reference for a community.

As part of the Cultural Resources Survey for the Moreno Valley Pilot Travel Center Project, Moreno Valley, San Bernardino County, California (Cultural Resources Survey), prepared by Anza Resource Consultants, dated July 2021, and referenced as Appendix E, Cultural Resources Survey, a California Historical Resources Information System (CHRIS) search was conducted and included a review of the NRHP, the CRHR, the California Points of Historical Interest list, the California Historical Landmarks list, the Archaeological Determinations of Eligibility list, and the California State Historic Resources Inventory list. The records search also included a review of all available historic USGS 7.5-, 15-, and 30-minute quadrangle maps.

The Eastern Information Center (EIC) records search identified 22 cultural resources studies that were conducted within a one-mile radius of the Project site. Four of the 22 studies included portions of the Project site:

> RI-02172: This study included the entire Project site but focused on historic, rather than Native American or prehistoric, resources. The study did not identify cultural resources within the Project site.
>
> RI-05473: This study included a pedestrian survey of the entire Project site to current professional standards; no cultural resources were identified within the Project site.
>
> RI-06950: This study addressed the widening of the off- and on-ramps and the intersection adjacent to the east of the Project site. The study likely had some overlap but did not include a survey of most of the Project site; no cultural resources were identified within the Project site.
>
> RI-08241: This study included an intensive pedestrian survey to modern professional standards that covered the entirety of the Project site; no cultural resources were identified within the Project site. The study assessed that the Project site possessed a moderate paleontological sensitivity and recommended paleontological monitoring of ground disturbing construction activities.

A total of 35 resources were identified within one mile of the Project site. None of these resources are located within the Project site; however, the historic period Kerr Ranch is across Redlands Boulevard to the east and a historic agricultural field is across Eucalyptus Avenue to the south. The Kerr and its components were found ineligible for NRHP, CRHR, or local register listing. Of the 35 resources, 20 are historic, including 18 resources associated with the Kerr Ranch. Thirteen resources are prehistoric or Native American, one is a multicomponent site with both a historic refuse scatter and an isolated prehistoric lithic artifact, and one is a natural rock shelter with no evidence of cultural affiliation.

No cultural resources of historic origin were observed within the Project boundaries during the field survey conducted of the Project site. As no historic or potentially historic built environment resources are located within the Project site or surrounding area, the Project would not cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5 and no impact would occur.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐

Response: As noted above, the cultural resources records search conducted as part of the Cultural Resources Survey, identified 35 previously recorded prehistoric resources within one mile radius of the Project area. However, no cultural resources of historic origin were found within the Project site. The

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

closest cultural resource was determined to be located 0.3 miles northeast of the Project site, where a prehistoric isolated flake was found in 2010. The Project area was examined for artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools or fire-affected rock), soil discoloration that might indicate the presence of a cultural midden, soil depressions and features indicative of the former presence of structures or buildings (e.g., postholes, foundations), or historic-era debris (e.g., metal, glass, ceramics). Existing ground disturbances (e.g., cutbanks, ditches, animal burrows, etc.) were visually inspected.

As part of preparation of the Cultural Resources Study, a Sacred Lands File (SLF) search was requested from the Native American Heritage Commission (NAHC) on April 6, 2021. On May 20, 2021, the NAHC responded that the search of the SLF was completed with negative results (i.e., no sacred lands or resources important to Native Americans are recorded within the vicinity of the Project site). Letters were mailed to 24 Native American contacts describing the Project and requesting if they had knowledge regarding cultural resources of Native American origin within or near the Project site. The Quechan Indian Tribe responded via email on April 27, 2021, stating they have no comments regarding the proposed Project and defer to local tribes. The Rincon Band of Luiseño Indians responded in a letter delivered via email on May 11, 2021, stating that the Project site is within the traditional Luiseño use area and of interest to the Rincon Band, but they have no knowledge of resources in the Project vicinity. The Rincon Band asked that an archaeological records search be conducted, and a copy of the report provided to the Rincon Band. The Agua Caliente Band of Cahuilla Indians (ACBCI) responded in a letter attached to an email on May 20, 2021, stating that the proposed Project is within the tribe's traditional use area and requested that a cultural resources study be conducted by a qualified archaeologist, that copies of the records search results and any reports produced be provided. In compliance with Assembly Bill 52 (AB 52), the City provided formal notification to those California Native American Tribal representatives requesting notification in accordance with AB 52. The Soboba Band of Luiseño Indians and Pechanga Band of Luiseño Indians requested formal consultation under AB 52; refer to Section XVIII Tribal Cultural Resources.

Based on the assessment conducted as part of the Cultural Resources Survey, the archaeological sensitivity of the Project site is considered low. However, while highly unlikely, there is the potential for accidental discovery of archaeological resources during ground-disturbing activities, which could result in potential impacts. Mitigation Measures CUL-1 through CUL-5 have been incorporated to reduce potentially significant impacts to previously undiscovered archaeological and/or tribal cultural resources that may be accidentally encountered during Project implementation. Mitigation Measure CUL-1 requires the applicant retain a professional Archaeologist to conduct monitoring of all mass grading and trenching activities. Development of a Cultural Resources Management Plan (CRMP) would be required in consultation with the Project Archaeologist, the Soboba Band of Luiseño Indians, Pechanga Band of Luiseño Indians, the contractor, and the City. Mitigation Measure CUL-2 requires the developer secure agreements with the Soboba Band of Luiseño Indians and Pechanga Band of Luiseño Indians for tribal monitoring. Mitigation Measure CUL-3 requires either preservation-in-place or onsite reburial in the event that Native American cultural resources are discovered during grading. Mitigation Measure CUL-4 requires inclusion of a note on the Grading Plan requiring work be stopped within a 100-foot buffer around inadvertent discoveries until the Project Archaeologist and the Tribal Representatives can evaluate the find. Mitigation Measure CUL-5 requires work be stopped in the area of inadvertent discoveries and evaluation of the find, and as appropriate recommended alternative measure be implemented to avoid, minimize or mitigate negative effects on the historic or prehistoric resource. Implementation of Mitigation Measures CUL-1 through CUL-5 would reduce potential impacts to potential archaeological resources to a less than significant level.

Mitigation Measures:

CUL-1: Prior to the issuance of a grading permit, the Developer shall retain a professional Archaeologist to conduct monitoring of all mass grading and trenching activities. The Project Archaeologist shall have

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

the authority to temporarily redirect earthmoving activities in the event that suspected archaeological resources are unearthed during Project construction. The Project Archaeologist, in consultation with the Soboba Band of Luiseño Indians and Pechanga Band of Luiseño Indians (the Consulting Tribes), the contractor, and the City, shall develop a Cultural Resources Management Plan (CRMP) in consultation pursuant to the definition in AB 52 to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the Project site. A consulting tribe is defined as a tribe that initiated the AB 52 tribal consultation process for the Project, has not opted out of the AB 52 consultation process, and has completed AB 52 consultation with the City as provided for in Cal Pub Res Code Section 21080.3.2(b)(1) of AB52. Details in the Plan shall include:

a. Project grading and development scheduling;

b. The Project Archeologist and the Soboba Band of Luiseño Indians and Pechanga Band of Luiseño Indians shall attend the pre-grading meeting with the City, the construction manager and any contractors and will conduct a mandatory Cultural Resources Worker Sensitivity Training to those in attendance. The Training will include a brief review of the cultural sensitivity of the Project and the surrounding area; what resources could potentially be identified during earthmoving activities; the requirements of the monitoring program; the protocols that apply in the event inadvertent discoveries of cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated; and any other appropriate protocols. All new construction personnel that will conduct earthwork or grading activities that begin work on the Project following the initial Training must take the Cultural Sensitivity Training prior to beginning work and the Project Archaeologist and the Soboba Band of Luiseño Indians and Pechanga Band of Luiseño Indians shall make themselves available to provide the training on an as-needed basis;

c. The protocols and stipulations that the contractor, City, Consulting Tribe(s) and Project Archaeologist will follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits that shall be subject to a cultural resources evaluation.

CUL-2: Prior to the issuance of a grading permit, the Developer shall secure agreements with the Soboba Band of Luiseño Indians and Pechanga Band of Luiseño Indians for tribal monitoring. The Developer is also required to provide a minimum of 30 days advance notice to the tribes of all mass grading and trenching activities. The Native American Tribal Representatives shall have the authority to temporarily halt and redirect earth moving activities in the affected area in the event that suspected archaeological resources are unearthed. If the Native American Tribal Representatives suspect that an archaeological resource may have been unearthed, the Project Archaeologist or the Tribal Representatives shall immediately redirect grading operations in a 100-foot radius around the find to allow identification and evaluation of the suspected resource. In consultation with the Native American Tribal Representatives, the Project Archaeologist shall evaluate the suspected resource and make a determination of significance pursuant to California Public Resources Code Section 21083.2.

CUL-3: In the event that Native American cultural resources are discovered during the course of grading (inadvertent discoveries), the following procedures shall be carried out for final disposition of the discoveries:

a. One or more of the following treatments, in order of preference, shall be employed with the tribes. Evidence of such shall be provided to the City of Moreno Valley Planning Department:

   i. Preservation-In-Place of the cultural resources, if feasible. Preservation in place means avoiding the resources, leaving them in the place they were found with no development affecting the integrity of the resources.

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

ii. Onsite reburial of the discovered items as detailed in the treatment plan required pursuant to Mitigation Measure CUL-1. This shall include measures and provisions to protect the future reburial area from any future impacts in perpetuity. Reburial shall not occur until all legally required cataloging and basic recordation have been completed. No recordation of sacred items is permitted without the written consent of all Consulting Native American Tribal Governments as defined in CUL-1.

CUL-4: The City shall verify that the following note is included on the Grading Plan:

"If any suspected archaeological resources are discovered during ground-disturbing activities and the Project Archaeologist or Native American Tribal Representatives are not present, the construction supervisor is obligated to halt work in a 100-foot radius around the find and call the Project Archaeologist and the Tribal Representatives to the site to assess the significance of the find."

CUL-5: If potential historic or cultural resources are uncovered during excavation or construction activities at the project site, work in the affected area must cease immediately and a qualified person meeting the Secretary of the Interior's standards (36 CFR 61), Tribal Representatives, and all site monitors per the Mitigation Measures, shall be consulted by the City to evaluate the find, and as appropriate recommend alternative measures to avoid, minimize or mitigate negative effects on the historic, or prehistoric resource. Determinations and recommendations by the consultant shall be immediately submitted to the Planning Division for consideration, and implemented as deemed appropriate by the Community Development Director, in consultation with the State Historic Preservation Officer (SHPO) and any and all Consulting Native American Tribes as defined in CUL-1 before any further work commences in the affected area.

c) Disturb any human remains, including those interred outside of formally dedicated cemeteries?	☐	☒	☐	☐

Response: There are no dedicated cemeteries within the Project site or surrounding area. Most Native American human remains are found in association with prehistoric archaeological sites. The potential for archaeological resources is considered low. However, there is the potential for previously unknown human remains to be discovered/disturbed during the Project's ground disturbing activities, resulting in a potentially significant impact.

Mitigation Measure CUL-6 has been implemented to reduce potentially significant impacts in the event previously unknown human remains are unexpectedly discovered during Project construction activities. If human remains are found, the remains would require proper treatment in accordance with applicable laws, including State of California Health and Safety Code Sections 7050.5-7055 "Disturbance of Human Remains" and Public Resources Code Section 5097.98 and Section 5097.99. In the unlikely event that human remains are uncovered the contractor shall be required to halt work in the immediate area of the find and to notify the County Coroner, in accordance with Health and Safety Code 7050.5, who must then determine whether the remains are of forensic interest. If the Coroner, with the aid of a supervising archaeologist, determines that the remains are or appear to be of a Native American, they shall contact the Native American Heritage Commission for further investigations and proper recovery of such remains. Pursuant to California Public Resources Code Section 5097.98, whenever the NAHC receives notification of a discovery of Native American human remains from a County Coroner, the NAHC is required to immediately notify those persons it believes to be most likely descended from the deceased Native American. The descendants may, with the permission of the owner of the land, or his or her authorized representative, inspect the site of the discovery of the Native American human remains and may recommend to the owner or the person responsible for the excavation work means for treatment or disposition, with appropriate dignity, of the human remains and any associated grave goods. The

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

descendants will complete their inspection and make recommendations or preferences for treatment within 48 hours of being granted access to the site.

With implementation of Mitigation Measure CUL-6 and mandatory compliance to California Health and Safety Code Section 7050.5 and Public Resources Code Section 5097.98, any potential impacts to human remains, including human remains of Native American ancestry, would be less than significant.

Mitigation Measures:

CUL-6: If human remains are discovered, no further disturbance shall occur in the affected area until the County Coroner has made necessary findings as to origin. If the County Coroner determines that the remains are potentially Native American, the California Native American Heritage Commission shall be notified within 5 days of the published finding to be given a reasonable opportunity to identify the "most likely descendant". The "most likely descendant" shall then make recommendations, and engage in consultations concerning the treatment of the remains (California Public Resources Code 5097.98). (GP Objective 23.3, CEQA).

Sources:

1. City of Moreno Valley General Plan 2040, adopted June 15, 2021
   - Chapter 10 – Open Space and Resource Conservation Element
2. Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021
3. Title 7 – Cultural Preservation of the Moreno Valley Municipal Code
4. Cultural Resources Survey for the Moreno Valley Pilot Travel Center Project, Moreno Valley, San Bernardino County, California, prepared by Anza Resource Consultants, Sunnymead, California, July 2021 (Appendix E)

VI. ENERGY – Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐

Response: The means to achieve the goal of conserving energy include decreasing overall energy consumption, decreasing reliance on natural gas and oil, and increasing reliance on renewable energy sources. In particular, the proposed Project would be considered "wasteful, inefficient, and unnecessary" if it were to violate State and federal energy standards and/or result in significant adverse impacts related to project energy requirements, energy inefficiencies, energy intensiveness of materials, cause significant impacts on local and regional energy supplies or generate requirements for additional capacity, fail to comply with existing energy standards, otherwise result in significant adverse impacts on energy resources, or conflict or create an inconsistency with applicable plan, policy, or regulation.

The following discussion provides calculated levels of energy use expected for the proposed Project, based on commonly used modelling software (i.e., CalEEMod v.2016.3.2 and the California Air Resources Board's EMFAC2017). It should be noted that many of the assumptions provided by CalEEMod are conservative relative to the Project; thus, this discussion provides a conservative estimate of proposed Project emissions.

<u>Electricity and Natural Gas</u>
Electricity and natural gas used by the Project would be used primarily to power and heat on-site buildings. However, the Project's electricity and natural gas usage would be minimal in the context of the County as a whole.

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

On-Road Vehicles (Operation)

The Project would generate vehicle trips during its operational phase. In order to calculate operational on-road vehicle energy usage and emissions, default trip lengths generated by CalEEMod (version 2016.3.2) were used, which are based on the Project location and urbanization level parameters selected within CalEEMod; refer to Appendix B. The Project would generate an estimated total of approximately 44,888 average daily vehicle miles traveled (Average Daily VMT).[1] Based on fleet mix data provided by CalEEMod and Year 2022 gasoline and diesel miles per gallon (MPG) factors for individual vehicle classes as provided by EMFAC2017, a weighted MPG factor for operational on-road vehicles of approximately 25.5 MPG for gasoline vehicles were derived. Based on 25.5 MPG and 44,888 Average Daily VMT, the Project would generate vehicle trips that would use approximately 855 gallons of gasoline per day or 312,157 gallons of gasoline per year, and 3,599 gallons of diesel per day or 1,313,631 gallons of diesel per year.

On-Road Vehicles (Construction)

The Project would also generate on-road vehicle trips during Project construction (from construction workers and vendors). Estimates of anticipated vehicle fuel consumption were derived based on the assumed construction schedule, vehicle trip lengths, and number of workers per construction phase as provided by CalEEMod, and Year 2022 gasoline MPG factors provided by EMFAC2021. It was assumed that all vehicles would use gasoline as a fuel source (as opposed to diesel fuel or alternative sources).

Table VI-1, *On-Road Mobile Fuel Generated by Project Construction Activities – By Phase*, describes gasoline and diesel fuel used by on-road mobile sources during each phase of the construction schedule. As shown, the vast majority of on-road mobile vehicle fuel used during the construction of the Project would occur during the building construction phase.

Table VI-1
On-Road Mobile Fuel Generated by Project Construction Activities – By Phase

Construction Phase	# of Days	Total Daily Worker Trips(1)	Total Daily Vendor Trips(1)	Total Hauler Trips(1)	Gallons of Gasoline Fuel(2)	Gallons of Diesel Fuel(2)
Site Preparation	5	18	0	0	50	0
Grading (Phase 1)	20	20	0	0	224	0
Grading (Phase 2)	15	20	0	0	168	0
Building Construction	76	2	1	0	85	85
Paving	31	15	0	0	260	0
			Total	**0**	**787**	**85**

Sources: CalEEMod Version 2016.3.2; EMFAC2021.

Notes:
1. Provided by CalEEMod.
2. Refer to Appendix A for further detail.

[1] Estimated VMT is generated from CalEEMod based upon the number of Project trips and an average trip length. CalEEMod average trip lengths are used since the Project satisfies the City's SB 743 Implementation Guidance criteria for VMT screening and a detailed VMT analysis is not required; refer to Section 4.17, *Transportation*.

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Off-Road Vehicles (Construction)

Off-road construction vehicles would use diesel fuel during the construction phase of the Project. Off-road construction vehicles expected to be used during the construction phase of the Project include, but are not limited to, cranes, forklifts, generator sets, tractors, excavators, and dozers. Based on the total amount of CO_2 emissions expected to be generated by the proposed Project (as provided by the CalEEMod output), and a CO_2 to diesel fuel conversion 6,246 gallons of diesel fuel for off-road construction vehicles during the site preparation and grading phases of the Project; refer to Appendix B for detailed calculations.

Conclusion

The proposed Project would use energy resources for the operation of the travel center building (e.g., electricity), for on-road vehicle trips (e.g. gasoline and diesel fuel) generated by the Project (both during Project construction and operation), and from off-road construction activities associated with the Project (e.g. diesel fuel). Each of these activities would require the use of energy resources. The Project would be responsible for conserving energy, to the extent feasible, and would be required to comply with Statewide and local measures regarding energy conservation, such as Title 24 building efficiency standards.

The proposed Project would be in compliance with all applicable federal, State, and local regulations regulating energy usage. For example, electricity providers are responsible for the mix of energy resources used to provide electricity for its customers, and are in the process of implementing the Statewide Renewable Portfolio Standard (RPS) to increase the proportion of renewable energy (e.g. solar and wind) within its energy portfolio. Electricity providers will be required to achieve a renewable mix of at least 50 percent by 2030. Additionally, energy-saving regulations, including the latest State Title 24 building energy efficiency standards ("part 6"), would be applicable to the proposed Project. Other statewide measures, including those intended to improve the energy efficiency of the statewide passenger and heavy-duty truck vehicle fleet (e.g. the Pavley Bill and the Low Carbon Fuel Standard) are improving vehicle fuel economies, thereby conserving gasoline and diesel fuel. These energy savings would continue to accrue over time.

As a result, the Project would not result in any significant adverse impacts related to Project energy requirements, energy use inefficiencies, and/or the energy intensiveness of materials by amount and fuel type for each stage of the Project including construction, operations, maintenance, and/or removal. Both Moreno Valley Utility (MVU), the electricity provider to the site, and Southern California Gas, the natural gas provider to the site, maintain sufficient capacity to serve the proposed Project. The Project would be required to comply with all existing energy efficiency standards, and would not result in significant adverse impacts on energy resources. Therefore, the proposed Project would not result in a wasteful, inefficient, or unnecessary of energy resources during Project construction or operation. Impacts would be less than significant.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

Response: The City of Moreno Valley recently adopted its Climate Action Plan (CAP). The CAP's reduction targets (i.e., below baseline emission levels) parallel the State's commitment to reducing GHG emissions under AB 32 and SB 32. Through 2040, the CAP is a qualifying plan under CEQA Guidelines Section 15183.5. In the coming years, as the CAP is reviewed and revised, measures would be implemented to achieve the 2040 target. The CAP includes monitoring and a target for tracking progress with re-inventorying at later dates. The Project would be consistent with the City's CAP. Therefore, this impact is less than significant.

Sources:

1. City of Moreno Valley General Plan 2040, adopted June 15, 2021

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

- Chapter 10 – Open Space and Resource Conservation Element

2. Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021
3. Title 9 – Planning and Zoning of the Moreno Valley Municipal Code
4. CalEEMod, version 2016.3.2
5. California Air Resources Board, EMFAC2017
6. Air Quality, Energy and Greenhouse Gas Data (Appendix B)

VII. GEOLOGY AND SOILS – Would the project:

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to https://www.conservation.ca.gov/cgs/Documents/SP_042.pdf	☐	☐	☒	☐

Response: The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. The Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act requires the State Geologist to establish regulatory zones, known as "Alquist-Priolo Earthquake Fault Zones," around the surface traces of active faults and to issue appropriate maps. If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back from the fault (typically 50 feet). According to the Geotechnical Evaluation Report (Geotechnical Investigation), prepared by Geotechnical Solutions, Inc., dated February 26, 2021 and the Geotechnical Addendum Report (Geotechnical Addendum) prepared by Geotechnical Solutions, Inc., dated March 1, 2021, included here as Appendix F, Geotechnical Evaluation Report and Geotechnical Addendum, the nearest fault to the Project site is the San Jacinto Fault, located approximately 1.03 miles from the Project site. However, no faults have been mapped trending towards or through the Project area. The Project site is not located within an Alquist-Priolo Special Studies Fault zone as designated by the California Geologic Survey. According to the Geotechnical Investigation, the potential for direct surface rupture is considered very low and impacts would be less than significant in this regard.

ii) Strong seismic ground shaking?	☐	☐	☒	☐

Response: The Geotechnical Investigation indicates that the most significant geologic hazard to the Project site is the potential for moderate to severe ground shaking resulting from earthquakes generated on the faults close to the site. The San Jacinto Fault, located 1.03 miles from the Project site, is the closest known active fault capable of producing a 7.63 magnitude earthquake.

Based upon results of the field explorations, laboratory testing and engineering analysis, the Geotechnical Investigation concluded that the Project site is suitable for the proposed development, from a geotechnical-engineering standpoint, provided recommendations of the Geotechnical Investigation and Geotechnical Addendum be implemented in the design and construction of the proposed Project. The Geotechnical Investigation and Geotechnical Addendum includes specific recommendations based on seismic design parameters for foundation design, retaining walls, exterior concrete flatwork, concrete mix design, corrosion, pavement design, and general earthwork and grading, among other factors. Further, design of the proposed structures in accordance with the California Building Code (CBC) is anticipated to adequately mitigate concerns relative to seismic ground shaking.

Pursuant to MVMC Section 8.20, *California Building Code*, as amended by Ordinance No. 962, the City has adopted the 2019 CBC, with amendments, which prescribes regulations for the erection,

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

construction, enlargement, alteration, repair, improving, removal, conversion, demolition, occupancy, equipment, use, height, area and maintenance of all buildings and structures. The CBC includes standards related to soils and foundations, structural design, building materials, and structural testing and inspections to minimize hazards during a seismic event. The Project would be required to comply with the applicable regulations in the CBC, which would reduce potential impacts associated with strong seismic ground shaking, as well as the recommendations contained within the Geotechnical Investigation and Geotechnical Addendum prepared for the Project, which would be confirmed upon completion of grading and earthwork operations. The City of Moreno Valley Building & Safety Division would review Project construction plans for compliance with the Geotechnical Investigation, Geotechnical Addendum, CBC, and the Municipal Code. Thus, compliance with the City's established regulatory framework and standard engineering practices and design criteria, which would be verified through the City's construction plan review process, would ensure potential impacts associated with strong seismic ground shaking at the Project site would be reduced to a less than significant impact.

iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐

Response: Liquefaction is a phenomenon where earthquake-induced ground vibrations increase the pore pressure in saturated, granular soils until it is equal to the confining, overburden pressure. Engineering research of soil liquefaction potential indicates that generally three basic factors must exist concurrently in order for liquefaction to occur. These factors include:

1) A source of ground shaking, such as an earthquake, capable of generating soil mass distortions.
2) A relatively loose silty and/or sandy soil.
3) A relative shallow groundwater table (within approximately 50 feet below ground surface) or completely saturated soil conditions that will allow positive pore pressure generation.

The General Plan EIR Figure 4.7-2, Liquefaction, identifies the Project site as being located within an area having moderate liquefaction susceptibility. As part of the Geotechnical Investigation, groundwater was not encountered within a drilled hole depth of 51.5 feet and the historic groundwater depth was determined to be way deeper than 50 feet below the existing ground surface. Thus, groundwater is not anticipated to affect the site adversely. The Project would be required to comply with all applicable regulations in the most recent CBC, as amended by the MVMC, as well as the recommendations provided in the Geotechnical Investigation and Geotechnical Addendum. The City of Moreno Valley Building & Safety Division would review Project construction plans for compliance with the Geotechnical Investigation, Geotechnical Addendum, CBC, and the Municipal Code. Thus, compliance with the City's established regulatory framework and standard engineering practices and design criteria, which would be verified through the City's construction plan review process, would ensure potential impacts associated with liquefaction at the Project site would be reduced to a less than significant impact.

iv) Landslides?	☐	☐	☒	☐

Response: Landslides are mass movements of the ground that include rock falls, relatively shallow slumping and sliding of soil, and deeper rotational or transitional movement of soil or rock. General Plan EIR Figure 4.7-3, Landslides, identifies the Project site as being located outside of an area classified as being susceptible to landslides. Further, as the Project site is not located near steep slopes, the Geotechnical Investigation determined landsliding associated with the Project site would be unlikely. Impacts associated with landslides would be less than significant.

b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐

Response: No appreciable artificial fill was encountered at the boring locations during exploratory drilling conducted as part of the Geotechnical Investigation; the Project site is underlain by Quaternary alluvium. Grading and earthwork activities associated with Project construction could expose soils to potential short-term erosion by wind and water. The Project would be required to comply with MVMC Section

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

8.21.160, *Erosion Control*, which requires all grading operations requiring a grading permit to also have an approved erosion control plan. The erosion control plan would be submitted to the City Engineer for approval and include protection measures to protect adjoining public or private property from damage by erosion, flooding, or mud and/or debris deposits which may originate from the site or result from the grading operations. Additionally, the Project would be required to prepare a Storm Water Pollution Prevention Plan (SWPPP) for approval by the City prior to grading consistent with MVMC Section 8.21.170, *National Pollutant Discharge Elimination System (NPDES)*. The SWPPP would identify Best Management Practices (BMPs) that would be implemented to prevent erosion, minimize siltation from impacting downstream water bodies, and protecting water quality. Following compliance with the established regulatory framework identified in the MVMC regarding stormwater and runoff pollution control, potential impacts associated with soil erosion and the loss of topsoil would be less than significant.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐

Response: Refer to Responses VIII(a)(iii) and VIII(a)(iv) regarding the potential for liquefaction and landslides, respectively.

According to the Geotechnical Investigation, the Project site is in an area of stable soil conditions with low shrink-swell potential. Thus, the Project site has not been identified as having the potential for lateral spreading, subsidence, or collapse.

Corrosion of buried metal is an electrochemical process in which the amount of metal loss due to corrosion is directly proportional to the flow of electrical current from the metal into the soil. Lower electrical resistivities result from higher moisture and chemical contents and indicate corrosive soil. Other soil characteristics that can influence corrosivity toward metals are pH, chemical content, soil types and site drainage. Based on Geotechnical Investigation, Project site soils are classified as corrosive to ferrous metals and negligible sulfate exposure to concrete. The type of alluvial deposits encountered at the Project site and in the area in general are known to cause corrosion problems.

The Geotechnical Investigation and Geotechnical Addendum includes specific recommendations based on seismic design parameters and geologic conditions for foundation design, retaining and screening walls, exterior flatwork, concrete mix design, corrosion, pavement design, and general earthwork and grading, among other factors. The Project would be required to comply with all applicable regulations in the most recent CBC, as adopted and amended by the MVMC. The City of Moreno Valley Building & Safety Division would review Project construction plans for compliance with the Geotechnical Investigation, Geotechnical Addendum, CBC, and the Municipal Code. Thus, compliance with the City's established regulatory framework and standard engineering practices and design criteria, which would be verified through the City's construction plan review process, would ensure potential impacts associated with a geologic unit or soil that is unstable or would become unstable at the Project site would be reduced to a less than significant level.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐

Response: Expansive soils are those that undergo volume changes as moisture content fluctuates, swelling substantially when wet or shrinking when dry. Soil expansion can damage structures by cracking foundations, causing settlement and distorting structural elements. According to the Geotechnical Investigation, underlying soils exhibit a very low expansive potential. Thus, the Project would not create

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a substantial risk to life or property associated with expansive soil and impacts would be less than significant.				
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
Response: The Project does not propose the use of septic tanks or alternative wastewater disposal systems. Public wastewater service for the Project would be provided by the Eastern Municipal Water District (EMWD). Therefore, no impact would occur in this regard.				
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

Response: A significant paleontological resource is considered to be of scientific interest if it is a rare or previously unknown species, it is of high quality and well-preserved, it preserves a previously unknown anatomical or other characteristic, provides new information about the history of life on earth, or has an identified educational or recreational value.

A pedestrian survey, conducted on April 28, 2021 and July 22, 2021, was negative for paleontological resources. However, a paleontological resources records search was conducted for the Project site on April 16, 2021 as part of the Cultural Resources Survey; refer to Appendix E. The geologic units underlying the Project area are mapped entirely as young alluvial fan deposits dating from the Late Pleistocene to Holocene. Pleistocene alluvial units are considered to be of high paleontological sensitivity. The Western Science Center does not have localities recorded with the Project site; however, three fossil localities are recorded within a third of a mile associated with the Aldi Distribution Center Project adjacent to the west. The Aldi Distribution Center Project produced three specimens from three localities that were identified as a *Megalonyx jeffersonii* phalanges, a *Hemiauchenia* right astragalus, and a *Equus* axis. The Aldi Distribution Center Project is mapped in the same geologic units as the Project site and the presence of Pleistocene megafauna indicates the area dates to the earlier estimated dates for the deposition. Thus, the Project site is considered sensitive for buried paleontological resources. Impacts to paleontological resources resulting from ground disturbing construction activity could include the destruction of fossils and would be considered a significant impact without mitigation. The Western Science Center recommends a paleontological resource mitigation plan be implemented to monitor, salvage, and curate any fossils that could be exposed by Project excavation. With implementation of Mitigation Measures GEO-1 through GEO-6, which includes retaining a paleontologist and preparing and implementing a paleontological mitigation and monitoring program that includes a program for salvage, preparation and curation of recovered fossils, potential impacts to undiscovered paleontological resources would be reduced to a less than significant level.

Mitigation Measures:

GEO-1: Retain a Qualified Paleontologist. Prior to initial ground disturbance, the applicant shall retain a project paleontologist, defined as a paleontologist who meets the Society for Vertebrate Paleontology (SVP) standards for Qualified Professional Paleontologist, to direct all mitigation measures related to paleontological resources. A qualified paleontologist (Principal Paleontologist) is defined by the SVP standards as an individual with an M.S. or Ph.D. in paleontology or geology who is experienced with paleontological procedures and techniques, who is knowledgeable in the geology of California, and who has worked as a paleontological mitigation project supervisor for a least one year.

GEO-2: Paleontological Mitigation and Monitoring Program. Prior to construction activity the Principal Paleontologist shall prepare a Paleontological Mitigation and Monitoring Program to be implemented during ground disturbance activity for the proposed Project. This program shall outline

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

paleontological monitoring extent and duration, salvage and preparation of fossils, the final mitigation and monitoring report, and paleontological staff qualifications.

GEO-3: Paleontological Monitoring. Ground disturbing construction activities (including grading, trenching, foundation work and other excavations) shall be monitored on a full-time basis by a qualified paleontological monitor during initial ground disturbance. The Paleontological Mitigation and Monitoring Program shall be supervised by the Principal Paleontologist. Monitoring shall be conducted by a qualified paleontological monitor, who is defined as an individual who has experience with collection and salvage of paleontological resources. The duration and timing of the monitoring will be determined by the Principal Paleontologist. If the Principal Paleontologist determines that full-time monitoring is no longer warranted, they may recommend that monitoring be reduced to periodic spot-checking or cease entirely. Monitoring would be reinstated if any new or unforeseen deeper ground disturbances are required, and reduction or suspension would need to be reconsidered by the Principal Paleontologist.

GEO-4: Salvage of Fossils. If fossils are discovered, the Project Paleontologist or paleontological monitor shall recover them. Typically, fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases, larger fossils (such as complete skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In this case the Paleontologist shall have the authority to temporarily direct, divert or halt construction activity to ensure that the fossil(s) can be removed in a safe and timely manner.

GEO-5: Preparation and Curation of Recovered Fossils. Once salvaged, significant fossils shall be identified to the lowest possible taxonomic level, prepared to a curation-ready condition, and curated in a scientific institution with a permanent paleontological collection (such as the Western Science Center or John D. Cooper Center), along with all pertinent field notes, photos, data, and maps. Fossils of undetermined significance at the time of collection may also warrant curation at the discretion of the Principal Paleontologist.

GEO-6: Final Paleontological Mitigation Report. Upon completion of ground disturbing activity (and curation of fossils if necessary) the Principal Paleontologist shall prepare a final mitigation and monitoring report outlining the results of the mitigation and monitoring program. The report shall include discussion of the location, duration and methods of the monitoring, stratigraphic sections, any recovered fossils, and the scientific significance of those fossils, and where fossils were curated.

Sources:

1. City of Moreno Valley General Plan 2040, adopted June 15, 2021
   - Chapter 6 – Safety Element
     - Map S-1: Fault Zones
     - Map S-2: Liquefaction Hazards
     - Map S-3: Landslide Hazards
   - Chapter 10 – Open Space and Resource Conservation Element
2. Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021
   - Section 4.7 – Geology/Soils
3. Title 9 – Planning and Zoning of the Moreno Valley Municipal Code
4. Title 8 – Building and Construction of the Moreno Valley Municipal Code
5. Local Hazard Mitigation Plan, City of Moreno Valley Fire Department, adopted October 4, 2011, amended 2017, http://www.moval.org/city_hall/departments/fire/pdfs/haz-mit-plan.pdf
6. Emergency Operations Plan, City of Moreno Valley, March 2009, http://www.moval.org/city_hall/departments/fire/pdfs/mv-eop-0309.pdf

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

7. Geotechnical Evaluation Report, Moreno Valley Truck Stop Model at South of Freeway 60 & West of Redlands Boulevard, Moreno Valley California, 92553, prepared by Geotechnical Solutions, Inc., February, 26 2021 (Appendix F)
8. Geotechnical Addendum Report, Moreno Valley Pilot #1316 Truck Stop Model at South of Freeway 60 & West of Redlands Boulevard, Moreno Valley California, 92553, prepared by Geotechnical Solutions, Inc., March 1, 2021 (Appendix F)
9. Cultural Resources Survey for the Moreno Valley Pilot Travel Center Project, Moreno Valley, San Bernardino County, California, prepared by Anza Resource Consultants, Sunnymead, California, July 2021 (Appendix E)

VIII. GREENHOUSE GAS EMISSIONS – Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐

Response: Refer to Response VII(b).

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emission of greenhouse gases?	☐	☐	☒	☐

Response: The proposed Project would generate GHGs during the construction and operational phases of the Project. The Project's primary source of construction-related GHGs would result from emissions of CO_2 associated with Project construction and worker vehicle trips; refer to Table VIII-1, *Construction GHG Emissions (Metric Tons/Year)*. Additionally, the Project would require limited grading, and would also include site preparation, building construction, and architectural coating phases.

Table VIII-1
Construction GHG Emissions (Metric Tons/Year)

Year	Bio-CO_2	NBio-CO_2	Total CO_2	CH_4	N_2O	CO_2e
2022	0	232.9	232.9	<0.1	0	234.5
Maximum	**0**	**232.9**	**232.9**	**0.1**	**0**	**234.5**

Source: CalEEMod version 2016.3.2

As shown in Table VIII-1, Project construction-related activities would generate a maximum of approximately 234 $MTCO_2e$ of GHG emissions over the course of construction. Construction GHG emissions are typically summed and amortized over the Project's lifetime (assumed to be 30 years), then added to the operational emissions.[2] The amortized Project emissions would be approximately 8 $MTCO_2e$ per year. Once construction is complete, the generation of construction-related GHG emissions would cease.

The operational phase of the Project would generate GHGs primarily from the Project's operational vehicle trips and building energy (electricity and natural gas) usage; refer to Table VIII-2, *Operational GHG Emissions 2022 (Metric Tons/Year)*. Other sources of GHG emissions would be minimal.

[2] The Project lifetime is based on SCAQMD's standard 30-year assumption (South Coast Air Quality Management District, Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #13, August 26, 2009).

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Table VIII-2
Operational GHG Emissions 2022 (Unmitigated Metric Tons/Year)

Category	Bio-CO_2	Nbio-CO_2	Total CO_2	CH_4	N_2O	CO_2e
Area	0	<0.1	<0.1	0	0	<0.1
Energy	0	85.8	85.8	<0.1	<0.1	86.2
Mobile	0	6,690.7	6,690.7	0.5	0	6,698.7
Waste	6.6	0	6.6	0.4	0	16.4
Water	0.3	5.0	5.4	<0.1	<0.1	6.4
Total	**6.9**	**6,781.6**	**6,940.2**	**0.9**	**<0.1**	**6,807.7**

Source: CalEEMod version 2016.3.2

As shown in Table VIII-2, Project operational GHG emissions would total approximately 6,807 $MTCO_2e$ annually, and combined with construction-related GHG emissions, would total approximately 7,042 $MTCO_2e$ annually.

Consistency with Applicable GHG Plans, Policies, or Regulations
Moreno Valley Climate Action Plan Consistency

The City of Moreno Valley recently adopted its Climate Action Plan. The CAP's reduction targets (i.e., below baseline emission levels) parallel the State's commitment to reducing GHG emissions under AB 32 and SB 32. Through 2040, the CAP is a qualifying plan under CEQA Guidelines Section 15183.5. In the coming years, as the CAP is reviewed and revised, measures would be implemented to achieve the 2040 target. The CAP includes monitoring and a target for tracking progress with re-inventorying at later dates. The Project would be required to be consistent with the City's CAP.

2017 Scoping Plan Consistency

The goal to reduce GHG emissions to 1990 levels by 2020 (Executive Order S-3-05) was codified by the California Legislature as AB 32. In 2008, CARB approved a Scoping Plan as required by AB 32. The Scoping Plan has a range of GHG reduction actions which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an AB 32 implementation fee to fund the program. The 2017 Scoping Plan identifies additional GHG reduction measures necessary to achieve the 2030 target. These measures build upon those identified in the first update to the Scoping Plan (2013 Scoping Plan). Although a number of these measures are currently established as policies and measures, some measures have not yet been formally proposed or adopted. It is expected that these measures or similar actions to reduce GHG emissions will be adopted subsequently as required to achieve Statewide GHG emissions targets. The Project is required to be consistent with the 2017 Scoping Plan.

2016-2040 RTP/SCS Consistency

At the regional level, the 2016-2040 RTP/SCS is adopted for the purpose of reducing GHGs resulting from vehicular emissions by passenger vehicles and light duty trucks. In order to assess the Project's consistency with the 2016-2040 RTP/SCS, the Project's land use assumptions are reviewed for consistency with those utilized by SCAG in its SCS. Generally, projects are considered consistent with the provisions and general policies of applicable City and regional land use plans and regulations, such as the 2016-2040 RTP/SCS, if they are compatible with the general intent of the plans and would not preclude the attainment of their primary goals. The Project is required to be consistent with the RTP/SCS.

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Conclusion

The Project would comply with the City of Moreno Climate Action Plan, the 2017 Scoping Plan, and the RTP/SCS. Therefore, the proposed Project would not generate GHG emissions that would have a significant impact on the environment or conflict with any applicable plans, policies, or regulations adopted for the purpose of reducing the emissions of greenhouse gases; impacts would be less than significant.

Sources:

1. City of Moreno Valley General Plan 2040, adopted June 15, 2021
2. Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021
3. Title 9 – Planning and Zoning of the Moreno Valley Municipal Code
4. California's 2017 Climate Change Scoping Plan, prepared by the California Air Resources Board, November 2017, https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf, accessed August, 6 2021
5. CalEEMod, version 2016.3.2

IX. HAZARDS AND HAZARDOUS MATERIALS – Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐

Response: Construction activities would include grading associated with on- and off-site improvements, installation of utilities/infrastructure, roadway improvements, building construction and pavement. Refer to Response IX(b) regarding existing on-site conditions. Generally, the exposure of persons to hazardous materials could occur in the following manners: improper handling or use of hazardous materials or hazardous wastes during construction or operation of future development, particularly by untrained personnel; an accident during transport; environmentally unsound disposal methods; or fire, explosion or other emergencies. The severity of potential effects varies with the activity conducted, the concentration and type of hazardous material or wastes present, and the proximity of sensitive receptors.

Project construction could expose construction workers and the public to temporary hazards related to the transport, use, and maintenance of construction equipment and/or materials (i.e., oil, diesel fuel, and transmission fluids). These activities would be short-term in nature, and the materials used would not be in such quantities or stored in such a manner as to pose a significant safety hazard. The construction contractor would be required to use standard construction controls and safety procedures that would avoid and minimize the potential for hazards associated with the transport and use of hazardous materials. Standard construction practices would be observed such that any materials released are appropriately contained and remediated as required by local, State, and Federal law. Compliance with the applicable laws and regulations governing the use, storage, and transportation of hazardous materials would ensure that all potentially hazardous materials are used and handled in an appropriate manner. Therefore, impacts concerning the routine transport, use, or disposal of hazardous materials during Project construction would be less than significant.

The operational phase of the Project would occur after construction is complete and business operations commence, including the presence of employees and customers within the travel center site. The proposed Project would involve typical activities associated with gas and diesel fueling stations, convenience stores, and restaurants, which would include diesel and gasoline fuels to be stored and dispensed on-site and the use of commercially available cleaning products and the occasional use of pesticides and herbicides for landscape maintenance. There is a risk of release of these materials into the environment if they are not stored and handled in accordance with BMPs. Hazardous materials would be required to be stored, used, and disposed of in compliance with local, state, and federal regulations.

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Any business that would handle hazardous material and/or hazardous waste of quantities at any one time during a year equal to, or greater than a total volume of 55 gallons, a total weight of 500 pounds, or 200 cubic feet of a compressed gas is a hazardous materials handler and must report Owner/Operator, Business Activities, Inventory, Site Map, and Emergency Response and Contingency Plan and Employee Training Plan information in the California Environmental Reporting System (CERS). Therefore, the Project would be required to report information in the CERS. Further, the Project would be required to comply with existing regulatory requirements, including but not limited to the Code of Federal Regulations, Title 49, Transportation, specific to the transport of hazardous materials, California Code of Regulations Titles 8, 22, and Title 26, and their enabling legislation set forth in California Health and Safety Code (HSC) Division 20, Chapter 6.95, Hazardous Materials Release Response Plans and Inventory, and the requirements of the CUPA, which would ensure safety standards related to the use and storage of hazardous materials are implemented.

The Project would involve the transport of hazardous materials to the site associated with the proposed travel center's fueling operations. The transport of fuel and tank filling operations would be conducted in compliance with applicable federal and state regulatory requirements that regulate the transportation of hazardous materials. Additionally, trucks utilizing the proposed travel center may also transport hazardous materials. However, the General Plan identifies SR-60 as a State Route open to vehicles carrying hazardous materials/waste. Thus, the transport of hazardous materials/waste within the area occurs under existing conditions. The transport of hazardous materials on area roadways are regulated by the California Highway Patrol and Caltrans. Transporters of hazardous wastes are required to be certified by the Department of Transportation (DOT) and manifests are required to track the hazardous waste during transport.

Consistency with local, state, and federal regulations related to the transport, storage, use, and disposal of hazardous materials would ensure that the potential risk associated with the routine transport, use, emission or disposal of hazardous materials would be minimized to the extent practical and impacts would be less than significant.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐

Response: One of the means through which human exposure to hazardous substance could occur is through accidental release. Incidents that result in an accidental release of hazardous substance into the environment can cause contamination of soil, surface water, and groundwater, in addition to any toxic fumes that might be generated. Human exposure of contaminated soil, soil vapor, or water can have potential health effects on a variety of factors, including the nature of the contaminant and the degree of exposure. Refer to Response IX(a) regarding proposed on-site conditions.

A records review of regulatory databases was conducted. The Project site is not on a list of hazardous materials sites; refer to Response IX(d). The Project site is currently vacant and undeveloped and does not contain conditions with the potential to involve the release of hazardous materials into the environment. Thus, development of the proposed travel center, as proposed, would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Response: There are no schools located within one-quarter mile of the Project site. The nearest school to the Project site is the Valley View High School, located approximately 1.9 miles southwest of the Project site (Google Earth Pro, 2021). Accordingly, the proposed Project has no potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. No impact would occur.				
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
Response: Government Code Section 65962.5 requires the Department of Toxic Substances Control (DTSC) and State Water Resources Control Board (SWRCB) to compile and update a regulatory sites list (pursuant to the criteria of the Section). The California Department of Health Services is also required to compile and update, as appropriate, a list of all public drinking water wells that contain detectable levels of organic contaminants and that are subject to water analysis pursuant to Health and Safety Code Section 116395. Government Code Section 65962.5 requires the local enforcement agency, as designated pursuant to Section 18051 of Title 14 of the California Code of Regulations, to compile, as appropriate, a list of all solid waste disposal facilities from which there is a known migration of hazardous waste. A records review of regulatory databases was conducted. The Project site was not identified as being listed on any regulatory databases. Based on review of the CalEPA Cortese listing, the Project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Therefore, the Project site has not been included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and as a result would not create a significant hazard to the public or the environment.				
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
Response: The Project site is not located within an airport land use plan area or within two miles of a public or public use airport. The Project site is located approximately 5.9 miles northeast of March Air Reserve Base (MARB)/Inland Port Airport. The Project site is not located within the MARB airport influence area (AIA) and it not included on the MARB Land Use Compatibility Plan as a property that may be exposed to safety or noise hazards from operations at the MARB. Accordingly, implementation of the proposed Project would not result in an airport-related noise or safety hazard for people working on the Project site. No impact would occur.				
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
Response: The City of Moreno Valley Emergency Operations Plan (EOP) addresses the City's prevention, preparedness, response, recovery, and mitigation phases of response to emergency situations associated with natural, man-made and technological disasters. The City's EOP establishes the emergency organization, assigns tasks, and specifies policies and general procedures. The EOP is designed to include the City of Moreno Valley as part of the Riverside County Operational Area, SEMS, and NIMS, which provides a framework for coordinating multiagency responses in the case of emergencies.				

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

The General Plan Safety Element and City of Moreno Valley Local Hazard Mitigation Plan (LHMP) identify major streets as designated evacuation routes. Within the Project area, SR-60 and Redlands Boulevard are designated as evacuation routes. In the event of an emergency, the City would coordinate with the Office of Emergency Management and Volunteer Services, the Sheriff's Department, and Emergency Operations Center located within the Moreno Valley Fire Department (MVFD) in establishing evacuation procedures. SR-60 and Redlands Boulevard would provide primary access to the travel center site and would continue to serve as the primary evacuation and emergency access route within the area. Eucalyptus Avenue would also provide access to and out of the Project area. The Project does not propose or necessitate any changes to the EOP. The Project proposes minor improvements to Eucalyptus Avenue, including extending the median west from the roundabout at Redlands Boulevard to Aldi Place to restrict left hand turns onto Eucalyptus Avenue. During construction activities associated with the proposed on- and off-site improvements, traffic lanes located immediately adjacent to the Project site may be temporarily closed or controlled by construction personnel. However, this would be temporary and emergency access to the Project site and surrounding area would be required to be maintained at all times. Additionally, all construction staging would occur within the boundaries of the Project site and would not interfere with circulation along SR-60, Redlands Boulevard, or any other nearby roadways. The proposed improvements to Eucalyptus Avenue would not impede or interfere with an emergency response plan or emergency evacuation plan.

The Project would be required to comply with all applicable Building and Fire Code requirements, including access requirements, minimum roadway widths, fire apparatus access roads, fire lanes, signage, and access walkways, and would submit construction plans to the MVFD's Fire Prevention Bureau for review and approval prior to issuance of any building permit. Approval by the Fire Department would ensure that construction and operation of the proposed travel center would not impair implementation of or physically interfere with the City's EOP or emergency evacuation plan and impacts would be less than significant.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

Response: According to the General Plan Safety Element and California Department of Forestry and Fire Protection (CALFIRE) Fire Hazard Severity Zone Maps, the Project site is not located within a Very High Fire Hazard Severity Zone (VHFHSZ), nor are any of the properties within the surrounding area located within a fire hazard zone. The General Plan Safety Element identifies the area approximately 0.5 miles to the southwest of the Project site as being located within a VHFHSZ. Thus, the Project site and surrounding area are not identified as having a significant risk associated with wildland fires. As stated, the Project would be required to comply with all zoning, building, and fire codes and would be reviewed by MVFD to ensure compliance. The proposed Project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires and impacts would be less than significant.

Sources:

1. City of Moreno Valley General Plan 2040, adopted June 15, 2021
   - Chapter 6 – Safety Element
     - Map S-5: Fire Hazard Severity Zones
2. Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021
3. March Air Reserve Base (MARB)/March Inland Port (MIP) Airport Land Use Compatibility Plan (ALUCP), adopted on November 13, 2014, http://www.rcaluc.org/Portals/13/17%20-%20Vol.%201%20March%20Air%20Reserve%20Base%20Final.pdf?ver=2016-08-15-145812-700
4. Local Hazard Mitigation Plan, City of Moreno Valley Fire Department, adopted October 4, 2011, amended 2017, http://www.moval.org/city_hall/departments/fire/pdfs/haz-mit-plan.pdf

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

5. Emergency Operations Plan, City of Moreno Valley, March 2009, http://www.moval.org/city_hall/departments/fire/pdfs/mv-eop-0309.pdf
6. Cortese List Data Resources, Department of Toxic Substances Control, https://calepa.ca.gov/sitecleanup/corteselist/, accessed July 28, 2021
7. Very High Fire Hazard Severity Zones in LRA – Moreno Valley, California Department of Forestry and Fire Protection, https://osfm.fire.ca.gov/media/5917/moreno_valley.pdf, accessed July 28, 2021

X. HYDROLOGY AND WATER QUALITY – Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐

Response:

Short-Term Construction

Short-term construction activities associated with the proposed Project could impact water quality. Sources of potential construction-related storm water pollution include handling, storage, and disposal of construction materials containing pollutants; maintenance and operation of construction equipment; and site preparation activities, such as excavation, grading and trenching. These sources, if not controlled, can generate soil erosion and on- and off-site transport via storm run-off or mechanical equipment. Poorly maintained vehicles and heavy equipment leaking fuel, oil, antifreeze, or other vehicle-related fluids on the Project site are also common sources of storm water pollution and soil contamination.

Discharge of pollutants into waters of the United States are regulated by the SWRCB. Potential construction-related water quality impacts would be addressed through compliance with MVMC Chapter 8.21, *Grading Regulations*, and Chapter 8.10, *Stormwater/Urban Runoff Management and Discharge Controls*, which establishes the regulations for control of excavation, grading, and earthwork construction for the control of grading site runoff, including erosion, sediments and construction related pollutants, and the National Pollutant Discharge Elimination System (NPDES) program's Construction General Permit. Construction activity subject to this General Permit includes any construction or demolition activity, including, but not limited to, clearing, grading, grubbing, or excavation, or any other activity that results in a land disturbance of equal to or greater than 1.0 acre. As the proposed Project construction activities would disturb more than 1.0 acre, it would be subject to the General Permit. To obtain coverage under the General Permit, dischargers are required to file with the SWRCB the Permit Registration Documents (PRDs), which include a Notice of Intent (NOI) and other compliance-related documents.

The Project Applicant would be required to prepare and submit a NOI and a SWPPP to the SWRCB demonstrating compliance with the General Permit. The General Permit requires that non-storm water discharges from construction sites be eliminated or reduced to the maximum extent practicable, that a SWPPP be developed governing construction activities for the proposed Project, and that routine inspections be performed of all storm water pollution prevention measures and control practices being used at the site, including inspections before and after storm events. The SWPPP is required to specify BMPs that the Project would be required to implement during construction activities to ensure that all potential pollutants of concern are prevented, minimized, and/or otherwise appropriately treated prior to being discharged from the Project site. Examples of BMPs that may be used during construction include, but are not limited to, sandbag barriers, geotextiles, storm drain inlet protection, sediment traps, rip rap soil stabilizers, and hydroseeding. Upon completion of the Project, the Applicant would be required to submit a Notice of Termination to the SWRCB to indicate that construction is completed. Mandatory compliance with the MVMC and SWPPP would ensure that the proposed Project would not violate any water quality standards or waste discharge requirements during construction activities. Therefore, water quality impacts associated with construction activities would be less than significant.

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Long-Term Operations

Proposed Project operations could result in long-term impacts to surface water quality from urban stormwater runoff. The proposed Project would result in new impervious areas associated with site improvements, including new asphalt, fueling facilities, and the proposed travel center building. Typical activities at the proposed travel center site would include the use of various automotive petroleum products (i.e., oil, grease, fuel) and common cooking materials. Diesel fuel exhaust from diesel trucks and associated truck refrigeration units (TRUs) would also cause air pollution that could affect water quality. Human activities have an effect on water quality when chemicals, heavy metals, hydrocarbons (auto emissions and car crank case oil), and other materials are transported with stormwater into drainage systems.

A Preliminary Water Quality Management Plan (Preliminary WQMP) has been prepared by Kimley-Horn Associates, dated April 26, 2021 and last revised October 6, 2021; refer to Appendix H, Preliminary Water Quality Management Plan. The Preliminary WQMP includes BMPs to protect water quality associated with Project operations. The proposed on-site bioretention system would provide water quality functions for on-site stormwater runoff. As described in Response X(c), on-site flows would predominately be intercepted by proposed grated inlets with filter inserts which would screen trash prior to entering the bioretention basins. Drainage conveyed into the bioretention basins would be intercepted by forebays before being discharged into the basins. The bioretention basins were sized to capture the design capture volumes (DCV) required for water quality purposes. Once the DCVs are met, flows would be discharged via control structures located within the basins into the existing storm drain laterals. The proposed on-site stormwater drainage facilities and water quality measures would ensure the proposed Project would not impact water quality. As part of the permit review and approval process, the City of Moreno Valley Land Development Division would review the proposed drainage improvements and water quality measures, including the Preliminary WQMP to ensure the proposed measures would comply with the City storm drain and water quality requirements. The proposed Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality; impacts would be less than significant.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐

Response: Refer to Response XIX(b) for a discussion concerning the Project's water supplies/demand, including groundwater. According to General Plan EIR Figure 4.10-4, Groundwater, the Project site is located within the San Jacinto Groundwater Basin (Basin). Under the Sustainable Groundwater Management Act (SGMA), each high and medium priority basin is required to have a groundwater sustainability agency responsible for groundwater management and development of a groundwater sustainability plan. The EMWD is the responsible for the West San Jacinto Groundwater Basin and for the development and implementation of a groundwater sustainability plan. According to the General Plan EIR, although future development would increase the amount of impervious surfaces within the Planning Area, which would reduce the amount of rainwater that would infiltrate the soil and incrementally reduce groundwater recharge rates overtime, domestic water supplies are not primarily reliant on groundwater and the framework for the SGMA requires that groundwater basins be managed to ensure long-term water supply reliability.

Although a portion of the Project site would be developed with impervious surfaces, a majority of the approximately 17.28-acre site would remain pervious, associated with the undeveloped northern portion of the site and the landscaping proposed throughout the southern portion of the site. Thus, groundwater infiltration would continue to occur. Although flows within the bioretention basins would be discharged via control structures into the existing storm drain laterals, some incidental infiltration would also occur. Project implementation would not substantially decrease groundwater supplies or interfere substantially

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
with groundwater recharge such that the Project may impede sustainable groundwater management of the basin; impacts would be less than significant.				
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) Result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?	☐	☐	☒	☐
iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
iv) Impede or redirect flood flows?	☐	☐	☒	☐

Response: Refer to Response X(a) regarding potential impacts involving erosion and water quality.

The Project would not alter the course of a stream or river, as there are no streams or rivers located within or around the Project site. The Project site is vacant and land cover consists mostly of light weeds and brush. Under existing conditions, the site drains in the southeast direction into two inlets connected to the public storm drain system in Eucalyptus Avenue.

The Preliminary Hydrology Report prepared by Kimley-Horn Associates, dated October 6, 2021; refer to Appendix G, Preliminary Hydrology Report, concluded that approximately 26 cubic feet per second (cfs) is allowed to be discharged into the 45-inch CMP inlet located closest to the intersection of Eucalyptus Avenue and Redlands Road and 12 cfs is allowed to be discharged into the 36-inch CMP inlet located closest to the intersection of Eucalyptus Avenue and Aldi Place. Additionally, the two existing CMP inlets were sized accounting for the future commercial development of the tributary areas.

Under the proposed condition, the southern portion of the Project site would intercept flows from the northern (undeveloped) portion of the site. The north flows would be intercepted and routed south through a proposed storm drain system along the eastern boundary of the Project site. The approximately 9.55-acre portion of the Project site would be developed with the proposed travel center. This portion of the Project site has been subdivided into 11 drainage subareas for hydrologic analyses. Drainage from Drainage Area (DA)-1 and DA-2 predominantly drain in a southeast direction and would be conveyed by a proposed storm drain system into a proposed bioretention basin (BMP-1) within the southeast portion of the Project site. The bioretention area (DA-8) would also contribute to the flows into BMP-1. The flows from BMP-1 would then be conveyed south and confluence with the northern flows (DA-12) to collectively discharge into the existing 45-inch CMP southeast of the Project site. Drainage from DA-3, DA-4, DA-5, and DA-6 would predominantly drain in a southeast direction and be conveyed by the proposed storm drain system into the proposed bioretention basin (BMP-2) located within the southwest portion of the Project site. The bioretention area (DA-7) would also contribute to the flows into BMP-2. The flows from BMP-2 would then be conveyed south and discharge into the existing 36-inch CMP southwest of the Project site. Drainage areas DA-9, DA-10 and DA-11 would include the proposed driveways which would discharge minimal flows directly onto the adjacent streets. The proposed flows for the 100-year storm event would be 26.98 cfs and 11.80 cfs compared to the allowable flows of 26.0 cfs and 12.0 cfs, respectively.

As stated, there are two existing inlets/storm drain laterals south of the Project site that were planned to convey flows from the developed Project site into the existing 60-inch RCP along Eucalyptus Avenue. Therefore, the proposed Project would discharge flows similar to the planned or allowable flows for the two existing laterals. The proposed 100-year flows tributary to the existing 45-inch CMP would surpass

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

the allowable flows by 3.8 percent, while the proposed 100-year flows tributary to the 36-inch CMP would be below the allowable flows by 1.7 percent. Therefore, the proposed development would be considered consistent with the allowable flows for the existing drainage devices and additional stormwater mitigation would not be necessary for the 100-year storm event. The Project would not substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite or create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or impede or redirect flood flows; impacts would be less than significant in this regard.

The proposed site grading intends to maintain the existing flow pattern by predominantly draining in a southeast direction. On-site flows would predominately be intercepted by proposed grated inlets with filter inserts which would screen trash prior to entering the bioretention basins. Drainage conveyed into the bioretention basins would be intercepted by forebays before being discharged into the basins. The bioretention basins were sized to capture the DCV required for water quality purposes. Once the DCVs are met, flows would be discharged via control structures located within the basins into the existing storm drain laterals. The proposed on-site stormwater drainage facilities and water quality measures would ensure the proposed Project would not provide substantial additional sources of polluted runoff. Impacts would be less than significant in this regard.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒

Response: According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), the Project site is located within Zone X, defined as areas determined to be outside the 0.2 percent annual chance floodplain. Thus, the Project is not located within a flood hazard area. Tsunamis are sea waves that are generated in response to large-magnitude earthquakes, which can result in coastal flooding. Seiches are the oscillation of large bodies of standing water, such as lakes, that can occur in response to ground shaking. The Project site is located approximately 45 miles from the Pacific Ocean. Further, there are no large bodies of standing water near the Project site; Lake Perris is located approximately 4.3 miles to the south; Mystic Lake is located approximately 4.3 miles to the southeast; and Poorman's Reservoir is located approximately 5 miles to the northwest. As a result, tsunamis and seiches do not pose hazards due to the Project site's inland location and lack of nearby bodies of standing water. The Project site is not located within a flood hazard, tsunami or seiche zones potentially resulting in a release of pollutants due to Project Inundation. No impact would occur in this regard.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Response: Refer to Responses X(a) and X(b), above. In addition to complying with the SWPPP during Project construction activities, the Project proposes on-site drainage improvements that include water quality measures to ensure the proposed travel center operations would not impact water quality. As discussed above, on-site flows would predominately be intercepted by proposed grated inlets with filter inserts which would screen trash prior to entering the bioretention basins. Drainage conveyed into the bioretention basins would be intercepted by forebays before being discharged into the basins, which were sized to capture the DCV required for water quality purposes. Thus, the bioretention basins would provide stormwater quality treatment and stormwater mitigation. The Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan; impacts would be less than significant.

Sources:

1. City of Moreno Valley General Plan 2040, adopted June 15, 2021
   - Chapter 6 – Safety Element
     - Map S-4: Flood Hazard Areas
   - Chapter 10 – Open Space and Resource Conservation Element

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

2. Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021
   - Figure 4.10-4: Groundwater
3. Title 9 – Planning and Zoning of the Moreno Valley Municipal Code
4. Moreno Valley Municipal Code
   - Chapter 8.10 – Stormwater/Urban Runoff Management and Discharge Controls
   - Chapter 8.21 – Grading Regulations
5. Eastern Municipal Water District, *2015 Urban Water Management Plan,* 2016
6. Federal Emergency Management Agency, *Flood Insurance Rate Map panel 06065C0770G*
7. Preliminary Hydrology Report, Pilot Moreno Valley, prepared by Kimley-Horn and Associates, October 6, 2021 (Appendix G)
8. Preliminary Project Specific Water Quality Management Plan, Pilot Moreno Valley, prepared by Kimley-Horn and Associates, April 26, 2021 and last revised October 6, 2021 (Appendix H)

XI. LAND USE AND PLANNING – Would the project:

a) Physically divide an established community?	☐	☐	☐	☒

Response: The approximately 17.28-acre Project site is comprised of a vacant lot. The Project site is comprised of two parcels, both of which are designated C by the City of Moreno Valley General Plan and zoned CC by the City of Moreno Valley Zoning Map. The southern parcel of the Project site is proposed to be developed with a Pilot Travel Center, which would include fueling facilities, travel amenities, a drive-thru restaurant, and parking facilities for passing motorists and commercial truck operators. The northern parcel would remain undeveloped. The Project site would retain the existing C land use designation and CC zoning with approval of a CUP.

Although development occurs within the surrounding area, the Project site is physically separated from uses to the north by SR-60 and to the south by Eucalyptus Avenue. The Project site is designated for commercial uses and development of the southern portion of the Project site with the proposed travel center would be consistent with the land uses located west of the Project site. Offsite improvements to Eucalyptus Avenue would include extending the median west from the roundabout at Redlands Boulevard to Aldi Place to restrict left hand turns onto Eucalyptus Avenue. During construction activities associated with the proposed on- and off-site improvements, traffic lanes located immediately adjacent to the Project site may be temporarily closed or controlled by construction personnel. However, this would be temporary and all construction staging would occur within the boundaries of the Project site and would not interfere with circulation along SR-60, Redlands Boulevard, or any other nearby roadways. Additionally, the Project proposes a multi-use trail segment running east to west along the northern side of Eucalyptus Avenue, to connect existing trail segments west of Aldi Place and east of Redlands Boulevard, as well as a multi-use trail segment running north to south along the west side of Redlands Boulevard. Development of the roadway/driveways and the proposed multi-use trails would not physically divide an established community, as it would provide shared access to the adjacent parcels. No impact would occur in this regard.

b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

Response: The Project site is designated with the C land use designation by the City of Moreno Valley General Plan. The C designation is designed to accommodate retail and service uses. The Project proposes the construction and operation of a Pilot Travel Center on an approximately 9.5-acre portion of the Project site for regional and local highway traveling users. Implementation of the Project would involve the development of fueling facilities, travel amenities, restaurants, and parking facilities for passing motorists and commercial truck operators. The proposed Project would be consistent with the

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

City's General Plan land use designation and no amendments to the General Plan would be required. Thus, the proposed Project would not conflict with the City's General Plan and impacts would be less than significant.

The Project site is zoned CC by the City of Moreno Valley Zoning Map. The CC zone is intended to provide for the general shopping needs of area residents and workers with a variety of business, retail, personal and related or similar services. The Project proposes a service station and associated drive-thru restaurant. According to MVMC, Chapter 9.02, *Permits and Approvals*, as the Project site is located within three hundred (300) feet or less from a residential zone, a CUP is required. MVMC Section 9.02.060, *Conditional Use Permits*, establishes the purpose of a CUP, which is to allow the establishment of those uses which have some special impact or uniqueness such that their effect on the surrounding environment cannot be determined in advance of the use being proposed for a particular location. Additionally, per Section 9.02.060, the CUP application process allows for the review of location, design, configurations of improvements and potential impact on the surrounding area based on fixed and established standards. In order for a CUP to be approved, certain findings must be made including, but not limited to: the proposed project is consistent with the goals, objectives, policies and programs of the General Plan; the proposed project complies with all applicable zoning and other regulations; and the location, design, and operation of the proposed project will be compatible with existing and planned land used in the vicinity. The CUP process is intended to ensure that all site development regulations and performance standards are provided in accordance with the MVMC. Approval of the CUP is required to be based on minimum criteria and requires findings be made by the approval authority. The CUP process would provide an opportunity for public review and evaluation of site-specific requirements and characteristics, to minimize adverse effects on surrounding properties and the environment, and to ensure that all site development regulations and performance standards are provided in accordance with the MVMC. In addition, the CUP ensures ongoing compliance with conditions of operation which may be applied to the use in order to protect public health, safety and welfare, and to ensure compliance with the General Plan goals, objectives and policies

The Project would be consistent with the CC zoning, subject to approval of a CUP. MVMC Section 9.04.040, *Commercial Site Development Standards*, establishes the development standards for the CC zone, including but not limited to, lot area and width, building setbacks, height, and coverage, parking, and landscaping. The Project would comply with the development standards required for the CC zone.

As discussed, the Project would be consistent with the General Plan land use designation and with approval of the CUP, it would be consistent with the zoning for the Project site. Further, the Project would be consistent with the development standards for the CC zone, and as demonstrated throughout this Initial Study would not result in significant unavoidable environmental impacts. Thus, the proposed Project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect and impacts would be less than significant.

Sources:

1. City of Moreno Valley General Plan 2040, adopted June 15, 2021
   - Chapter 2 – Land Use and Community Character Element
2. Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021
3. Title 9 – Planning and Zoning of the Moreno Valley Municipal Code

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. MINERAL RESOURCES – Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
Response: The State Mining and Geology Board (SMGB) establishes Mineral Resources Zones (MRZs) to designate lands that contain mineral deposits. According to the General Plan EIR, no regionally or statewide significant mineral resources are located within the planning area. The Project site is located within an area designated as an MRZ-3 zone, which under the Surface Mining and Recreation Act (SMARA), is land where the significance of mineral resources cannot be determined. The Project site does not contain any mining or recovery operations for mineral resources, nor have these operations historically occurred on the Project site. Development of the proposed Project would not result in the loss of availability of a known mineral resource that would be of value to the region or the state.				
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒
Response: According to the General Plan EIR, no regionally or statewide significant mineral resources are located within the planning area. The Project site does not contain any mining or recovery operations for mineral resources, nor have these operations historically occurred on the Project site. Both the City and the County have adopted SMARA regulations governing the extraction of mineral resources and eventual reclamation of mining operations. Continued implementation of these regulations will allow for the mining of locally-important mineral resources. Development of the Project, as proposed, would not result in the loss of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impact would occur in this regard.				
Sources: 1. City of Moreno Valley General Plan 2040, adopted June 15, 2021 • Chapter 10 – Open Space and Resource Conservation Element 2. Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021 • Section 4.12 – Mineral Resources 3. Title 9 – Planning and Zoning of the Moreno Valley Municipal Code 4. The Surface Mining and Reclamation Act of 1975 (SMARA, Public Resources Code, Sections 2710-2796), https://www.conservation.ca.gov/dmr/lawsandregulations, accessed June 23, 2021				
XIII. NOISE – Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
Fundamentals of Noise Sound, Noise, Acoustics Sound is a disturbance created by a moving or vibrating source and is capable of being detected by the hearing organs. Sound may be thought of as mechanical energy of a moving object transmitted by pressure waves through a medium to a human ear. For traffic, or stationary noise, the medium of concern is air. Noise is defined as sound that is loud, unpleasant, unexpected, or unwanted.				

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Frequency and Hertz

A continuous sound is described by its frequency (pitch) and its amplitude (loudness). Frequency relates to the number of pressure oscillations per second. Low-frequency sounds are low in pitch (bass sounding) and high-frequency sounds are high in pitch (squeak). These oscillations per second (cycles) are commonly referred to as Hertz (Hz). The human ear can hear from the bass pitch starting out at 20 Hz all the way to the high pitch of 20,000 Hz.

Sound Pressure Levels and Decibels

The amplitude of a sound determines its loudness. The loudness of sound increases or decreases as the amplitude increases or decreases. Sound pressure amplitude is measured in units of micro-Newton per square inch meter (N/m2), also called micro-Pascal (µPa). One µPa is approximately one hundred billionths (0.00000000001) of normal atmospheric pressure. Sound pressure level (SPL or Lp) is used to describe in logarithmic units the ratio of actual sound pressures to a reference pressure squared. These units are called decibels abbreviated dB.

Addition of Decibels

Because decibels are on a logarithmic scale, sound pressure levels cannot be added or subtracted by simple plus or minus addition. When two sounds or equal SPL are combined, they will produce an SPL 3 dB greater than the original single SPL. In other words, sound energy must be doubled to produce a 3 dB increase. If two sounds differ by approximately 10 dB, the higher sound level is the predominant sound.

Sensitive Receptors

Noise-sensitive land uses include residential (single and multi-family dwellings, mobile home parks, dormitories, and similar uses); transient lodging (including hotels, motels, and similar uses); hospitals, nursing homes, convalescent hospitals, and other facilities for long-term medical care; public or private educational facilities, libraries, churches, and places of public assembly.

Human Response to Changes in Noise Levels

In general, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz, (A weighted scale) and it perceives a sound within that range as being more intense than a sound with a higher or lower frequency with the same magnitude. For purposes of this analysis, the A-scale weighting is typically reported in terms of A-weighted decibel (dBA). Typically, the human ear can barely perceive the change in noise level of 3 dB. A change in 5 dB is readily perceptible, and a change in 10 dB is perceived as being twice or half as loud. As previously discussed, a doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound energy (e.g., doubling the volume of traffic on a highway) would result in a barely perceptible change in sound level.

Noise Descriptors

Noise in daily environments fluctuates over time. Some noise levels occur in regular patterns, others are random. Some noise levels are constant while others are sporadic. Noise descriptors were created to describe the different time-varying noise levels.

A-Weighted Sound Level: The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

Ambient Noise Level: The composite of noise from all sources, near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Community Noise Equivalent Level (CNEL): The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five (5) decibels to sound levels in the evening from 7:00 PM to

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

10:00 PM and after addition of ten (10) decibels to sound levels in the night before 7:00 AM and after 10:00 PM.

Decibel (dB): A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A): A-weighted sound level (see definition above).

Equivalent Sound Level (LEQ): The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time varying noise level. The energy average noise level during the sample period.

Habitable Room: Any room meeting the requirements of the Uniform Building Code or other applicable regulations which is intended to be used for sleeping, living, cooking or dining purposes, excluding such enclosed spaces as closets, pantries, bath or toilet rooms, service rooms, connecting corridors, laundries, unfinished attics, foyers, storage spaces, cellars, utility rooms and similar spaces.

L(n): The A-weighted sound level exceeded during a certain percentage of the sample time. For example, L10 is the sound level exceeded 10 percent of the sample time. Similarly, L50, L90 and L99, etc.

Noise: *A*ny unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

Outdoor Living Area: Outdoor spaces that are associated with residential land uses typically used for passive recreational activities or other noise-sensitive uses. Such spaces include patio areas, barbecue areas, jacuzzi areas, etc. associated with residential uses; outdoor patient recovery or resting areas associated with hospitals, convalescent hospitals, or rest homes; outdoor areas associated with places of worship which have a significant role in services or other noise-sensitive activities; and outdoor school facilities routinely used for educational purposes which may be adversely impacted by noise. Outdoor areas usually not included in this definition are: front yard areas, driveways, greenbelts, maintenance areas and storage areas associated with residential land uses; exterior areas at hospitals that are not used for patient activities; outdoor areas associated with places of worship and principally used for short-term social gatherings; and, outdoor areas associated with school facilities that are not typically associated with educational uses prone to adverse noise impacts (e.g., school play yard areas).

Percent Noise Levels: See L(n).

Sound Level (Noise Level): The weighted sound pressure level obtained by use of a sound level meter having a standard frequency-filter for attenuating part of the sound spectrum.

Sound Level Meter: An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

Single Event Noise Exposure Level (SENEL): The dB(A) level which, if it lasted for one second, would produce the same A-weighted sound energy as the actual event.

Traffic Noise Prediction

Noise levels associated with traffic depends on a variety of factors: (1) volume of traffic, (2) speed of traffic, (3) auto, medium truck (2–3 axle) and heavy truck percentage (4 axle and greater), and sound propagation. The greater the volume of traffic, higher speeds, and truck percentages equate to a louder volume in noise. A doubling of the Average Daily Traffic (ADT) along a roadway will increase noise levels

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

by approximately 3 dB.

Sound Propagation

As sound propagates from a source it spreads geometrically. Sound from a small, localized source (i.e., a point source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates at a rate of 6 dB per doubling of distance. The movement of vehicles down a roadway makes the source of the sound appear to propagate from a line (i.e., line source) rather than a point source. This line source results in the noise propagating from a roadway in a cylindrical spreading versus a spherical spreading that results from a point source. The sound level attenuates for a line source at a rate of 3 dB per doubling of distance.

As noise propagates from the source, it is affected by the ground and atmosphere. Noise models use hard site (reflective surfaces) and soft site (absorptive surfaces) to help calculate predicted noise levels. Hard site conditions assume no excessive ground absorption between the noise source and the receiver. Soft site conditions such as grass, soft dirt or landscaping attenuate noise at a rate of 1.5 dB per doubling of distance. When added to the geometric spreading, the excess ground attenuation results in an overall noise attenuation of 4.5 dB per doubling of distance for a line source and 7.5 dB per doubling of distance for a point source.

Research has demonstrated that atmospheric conditions can have a significant effect on noise levels when noise receivers are located 200 feet from a noise source. Wind, temperature, air humidity and turbulence can further impact have far sound can travel.

Ground-Borne Vibration Fundamentals

Vibration Descriptors

Ground-borne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. The effects of ground-borne vibrations typically only cause a nuisance to people, but at extreme vibration levels, damage to buildings may occur. Although ground-borne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. Ground-borne noise is an effect of ground-borne vibration and only exists indoors, since it is produced from noise radiated from the motion of the walls and floors of a room and may also consist of the rattling of windows or dishes on shelves.

Several different methods are used to quantify vibration amplitude.

- PPV – Known as the peak particle velocity (PPV) which is the maximum instantaneous peak in vibration velocity, typically given in inches per second.
- RMS – Known as root mean squared (RMS) can be used to denote vibration amplitude.
- VdB – A commonly used abbreviation to describe the vibration level (VdB) for a vibration source.

Vibration Perception

Typically, developed areas are continuously affected by vibration velocities of 50 VdB or lower. These continuous vibrations are not noticeable to humans whose threshold of perception is around 65 VdB. Outdoor sources that may produce perceptible vibrations are usually caused by construction equipment, steel-wheeled trains, and traffic on rough roads, while smooth roads rarely produce perceptible groundborne noise or vibration. To counter the effects of ground-borne vibration, the Federal Transit Administration (FTA) has published guidance relative to vibration impacts. According to the FTA, fragile buildings can be exposed to ground-borne vibration levels of 0.3 inches per second without experiencing structural damage.

There are three main types of vibration propagation: surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water. P-waves, or compression waves, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse, or side-to-side and perpendicular to the direction of propagation. As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil but has been shown to be effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests.

Existing Noise Environment

Sensitive Receptors
The closest sensitive receptors to the Project site are existing residential uses located south of the Project site. The closest building is 160 feet east of the Project site.

Noise Measurements
One, 24-hour noise measurement was conducted at the Project site in order to document the existing noise environment; refer to Appendix I, Noise Impact Study, for the noise measurement location. The measurement includes the 1-hour Leq, Lmin, Lmax and other statistical data (e.g. L2, L8). The results of the noise measurement are presented in Table 5 of the Noise Study; refer to Appendix I. The noise measurement indicates that ambient noise levels in the Project vicinity range between 45.6 and 53.5 dBA Leq. The overall CNEL was 56.3 dBA CNEL. The field data indicates that the nearby freeway, SR-60, is the dominant noise source.

Regulatory Framework

The City of Moreno Valley outlines noise regulations and standards within the General Plan Noise Element; MVMC Title 11, *Peace, Morals and Safety*, MVMC Title 9 *Planning and Zoning*, and MVMC Title 8, *Buildings & Construction*; and the Moreno Valley Noise Ordinance.

City of Moreno Valley General Plan
General Plan Chapter 7, Noise, seeks to proactively address sources of noise in Moreno Valley and protect against excessive noise. The City utilizes noise level compatibility standards and noise standards to guide land use planning. The City incorporates proactive design practices that promote healthy indoor and outdoor noise environments. Policies within this chapter seek to promote the use of thoughtful planning and design to minimize unwanted noise in the community and promote a pleasant, healthy noise environment.

City of Moreno Valley Municipal Code
The City primarily regulates noise through the MVMC under Title 11, *Peace, Morals and Safety*, Chapter 11.80, *Noise Regulation*. Regulations are intended to ensure best practices in siting new development. This section states that it is unlawful and a violation of this chapter to maintain, make, cause, or allow the making of any sound that causes a noise disturbance. Maximum continuous and maximum impulsive noise level limits are specified in MVMC Section 11.80.030(B)(1), *Prohibited Acts*.

Title 9, *Planning and Zoning,* contains further regulations pertaining to noise generated by commercial uses; Section 9.10.140, *Noise and Sound*, requires that all commercial and industrial uses shall be operated so that noise created by any loudspeaker, bells, gongs, buzzers, or other noise attention or attracting devices shall not exceed fifty-five (55) dBA at any one time beyond the boundaries of the property.

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Title 8, *Buildings and Construction*, specifies appropriate times for varying construction activities. Section 8.14.040(E), *Miscellaneous Standards and Regulations*, states that construction within the City shall only occur from 7:00 a.m. to 7:00 p.m. from Monday through Friday excluding holidays and from 8:00 a.m. to 4:00 p.m. on Saturdays.

City of Moreno Valley – Noise Ordinance

MVMC Section 11.80.030, *Prohibited Acts*, outlines the City's exterior noise limits as it relates to stationary noise sources:

> No person shall maintain, create, operate or cause to be operated on private property any source of sound in such a manner as to create any non-impulsive sound which exceeds the limits set forth for the source land use category (as defined in Section 11.80.020) in Table 11.80.030-2 when measured at a distance of two hundred (200) feet or more from the real property line of the source of the sound, if the sound occurs on privately owned property, or from the source of the sound, if the sound occurs on public right of way, public space or other publicly owned property. Any source of sound in violation of this subsection shall be deemed prima facie to be a noise disturbance.

Table VIII-1: Allowable Exterior Noise Level

General Plan Land Use Designation	Maximum Decibel Level	
	8 a.m. – 10 p.m.	10 p.m. – 8 a.m.
Residential	60	55
Commercial	65	60

Response:

Construction Noise

The degree of construction noise may vary for different areas of the Project site and also vary depending on the construction activities. Project construction would occur in four phases, site preparation, grading, building construction, and architectural coating. Typical noise levels associated with construction equipment are shown in Table VIII-2, *Typical Construction Noise Levels*.

Construction noise associated with the proposed Project was calculated utilizing methodology presented in the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (2018) together with several key construction parameters including distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the project site. Construction activities are anticipated to include four phases site preparation, grading, building construction, and paving.

Construction noise associated with each phase of the Project was calculated at nearby sensitive receptors utilizing methodology presented in the Federal Highway Administration (FHWA) Construction Noise Model together with several key construction parameters including: distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the Project site. Construction equipment typically moves back and forth across the site; and it is an industry standard to use the acoustical center of the site to model average construction noise levels.

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Table VIII-2: Typical Construction Equipment Noise Levels

Type	Noise Levels (dBA) at 50 feet
Earth Moving	
Compactors (Ground)	80
Front Loaders	80
Backhoes	80
Tractors	84
Scrapers, Graders	85
Pavers	85
Trucks	84
Materials Handling	
Concrete Mixers	85
Concrete Pumps	82
Cranes	85
Stationary	
Pumps	77
Generators	82
Compressors	80
Impact Equipment	
Concrete Saws	90
Vibratory Pile Driver	95
Note: Referenced Noise Levels from the FHWA Construction Noise Handbook	

Construction activities are anticipated to include four phases: site preparation, grading, building construction, and architectural coating. Noise levels associated with each phase are shown in Table VIII-3, *Construction Noise Level by Phase (dBA, Leq)*.

Table VIII-3: Construction Noise Level by Phase (dBA, Leq)

Activity	Noise Levels at Nearest Sensitive Receptor		
	Southern Residence	North Businesses	East & West Industrial
Site Preparation	55	56	61
Grading	60	61	65
Building Construction	59	60	64
Paving	59	60	64
Note: Construction modeling worksheets are provided in Appendix I.			

Project construction noise would range between 55 to 60 dBA Leq at the southern residential property line which has an existing use as a nursery; 56 to 61 dBA Leq at the northern businesses' property line; and 61 to 65 dBA Leq at the east and west industrial building façades.

The Project would be required to adhere to MVMC Sections 11.80.030(D)(7), which states construction within the City shall only occur from 7:00 a.m. to 7:00 p.m. from Monday through Friday excluding holidays and from 8:00 a.m. to 4:00 p.m. on Saturdays. As the projected noise levels meet the residential and commercial daytime noise limits established in the MVMC, construction noise impacts would be less than significant.

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Operational Noise

Off-Site Traffic Noise Impacts

The potential off-site noise impacts caused by the increase in vehicular traffic as a result of proposed Project were calculated at a distance of 50 feet from affected road segments. The noise level at 50 feet both with and without Project generated vehicle traffic was compared and the increase calculated. The distance to the 55, 60, 65, and 70 dBA CNEL noise contours are also provided for reference; refer to Appendix I.

As shown in Table VIII-4, *Project Change in Existing Traffic Noise Levels*, the addition of Project-generated vehicle traffic to SR-60, Eucalyptus Avenue, and Redlands Boulevard would result in negligible increases in ambient noise levels above existing conditions and would not be significant.

Table VIII-4: Project Change in Existing Traffic Noise Levels

Roadway	Segment	Modeled Noise Levels (dBA CNEL) at 50 feet from the Centerline			
		Existing	Existing With Project	Change in Noise Level	Increase in 3 dB or more[1]
State Route 60	Moreno Beach to Redlands	86.9	87.0	0.1	No
Eucalyptus Avenue	Moreno Beach to Redlands	71.6	71.8	0.2	No
Redlands Boulevard	SR60 to Eucalyptus	75.7	75.7	0.0	No

Notes:
1. FHWA roadway noise modeling worksheets are provided in Appendix I.
2. Typical CEQA significance threshold

Off-site Traffic Noise Impact

Future noise levels associated with proposed traffic were modeled using FHWA Traffic Noise Model Calculations in order to evaluate the Project in light of the City's exterior standards. The Project site is currently within the conditionally acceptable range. This would not change with the increase in traffic levels associated with the proposed Project. There are no outdoor uses for the Project, therefore the impact would be less than significant.

Off-site Receptors Noise Impact

Existing and potential future residential land uses located south of the Project site are sensitive receptors that may be affected by Project operational noise. Worst-case operational noise was modeled using SoundPLAN acoustical modeling software. Three receptors representative of nonresidential adjacent sites and one receptor representative of the residential area south of the Project site were modeled to evaluate the proposed Project's operational impact; refer to Table VIII-5, *Operational Noise Levels (dBA, CNEL)*.

Operational noise levels at the western property line are expected to reach 51 dBA Leq at the residences and 41 to 50 dBA Leq at the adjacent nonresidential properties.

Existing plus Project noise level projections are anticipated to reach up to 52 dBA Leq at the nearest residential receptor and 47 to 52 dBA Leq at the nonresidential receptors. The Project-generated operational noise is expected to result in a maximum of 5 dB increase at the adjacent nonresidential sites and 6 dB at the residential site. This would not exceed the City's noise ordinance and therefore the impact would be less than significant.

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Table VIII-5: Operational Noise Levels (dBA, CNEL)

Receptor[1]	Existing Ambient Noise Level (dBA, Leq)[2]		Project Noise Level (dBA, Leq)[3]		Total Combined Noise Level (dBA, Leq)		Land Use Noise Limit (dBA, Leq)		Change in Noise Level as Result of Project	
	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
R1	47	46	41	41	48	47	65	60	1	1
R2	47	46	50	49	52	51	65	60	5	5
R3	47	46	46	46	50	49	65	60	3	3
R4	47	46	51	51	52	52	60	55	5	6

Notes:
1. Receptors 1-3 are commercial, and R4 is residential (defined by section 11.80.030).
2. LT1 quietest daytime/nighttime hours
3. See Exhibit F for the operational noise level projections at said receptors.

A discussed above, the Project would not generate a substantial temporary or permanent increase in ambient noise levels in excess of standards established by the City and impacts would be less than significant.

b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐

Response: Construction activities can produce vibration that may be felt by adjacent land uses. The construction of the proposed Project would not require the use of equipment such as pile drivers, which are known to generate substantial construction vibration levels. The primary vibration source during construction may be from a bull dozer. A large bull dozer has a vibration impact of 0.089 inches per second peak particle velocity (PPV) at 25 feet which is perceptible but below any risk to architectural damage.

The Caltrans Transportation and Construction Induced Vibration Guidance Manual provides general thresholds and guidelines as to the vibration damage potential from vibration impacts. Table VIII-6, *Guideline Vibration Damage Potential Threshold Criteria*, identifies the thresholds and Table VIII-7, *Vibration Source Levels for Construction Equipment*, identifies the approximate vibration levels for particular construction activities at a distance of 25 feet.

Table VIII-6: Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some older buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5
Source: Caltrans, *Transportation and Construction Vibration Guidance Manual*, Table 19, September 2013.		
Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.		

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Table VIII-7: Vibration Source Levels for Construction Equipment

Equipment	Peak Particle Velocity (inches/second) at 25 feet	Approximate Vibration Level LV (dVB) at 25 feet
Pile driver (impact)	1.518 (upper range)	112
	0.644 (typical)	104
Pile driver (sonic)	0.734 (upper range)	105
	0.170 (typical)	93
Clam shovel drop (slurry wall)	0.202	94
Hydromill	0.008 (in soil)	66
Slurry wall	0.017 (in rock)	75
Vibratory roller	0.21	94
Hoe ram	0.089	87
Large bulldozer	0.089	87
Caisson drill	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58
Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2018.		

As stated, the nearest existing building is 160 feet east of the Project site. At this distance, a large bulldozer would yield a worst-case 0.012 PPV (in/sec) which would not be perceptible or result in architectural damage. The Project would not result in the generation of excessive groundborne vibration or groundborne noise levels and impacts would be less than significant.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Response: The Project site is not located within an airport land use plan area or within two miles of a public or public use airport. The Project site is located approximately 5.9 miles northeast of MARB/Inland Port Airport. The Project site is not located within the MARB AIA and it not included on the MARB Land Use Compatibility Plan as a property that may be exposed to safety or noise hazards from operations at the MARB. Accordingly, the Project would not expose people working in the Project site to excessive noise levels associated with airport activities.

Sources:

1. City of Moreno Valley General Plan 2040, adopted June 15, 2021
   - Chapter 6 – Safety Element
   - Chapter 7 – Noise Element
2. Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021
3. Title 9 – Planning and Zoning of the Moreno Valley Municipal Code
4. March Air Reserve Base (MARB)/March Inland Port (MIP) Airport Land Use Compatibility Plan (ALUCP), adopted on November 13, 2014, http://www.rcaluc.org/Portals/13/17%20-%20Vol.%201%20March%20Air%20Reserve%20Base%20Final.pdf?ver=2016-08-15-145812-700

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

5. Pilot Travel Center Moreno Valley, MND Noise Impact Study, City of Moreno Valley, CA, prepared by MD Acoustics, LLC, August 3, 2021 (Appendix I)

XIV. POPULATION AND HOUSING – Would the project:

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of road or other infrastructure)?	☐	☐	☒	☐

The Project proposes the construction and operation of a travel center, which would involve the development of fueling facilities, travel amenities, a drive-thru restaurant, and parking facilities for passing motorists and commercial truck operators. The Project would not induce substantial unplanned population growth directly through new homes or indirectly through the extension of roads or other infrastructure. The Project site and surrounding area are currently served by adjacent roadways and utility infrastructure is located within the area for extension to the Project site. Development of the site with the proposed commercial use would be consistent with the General Plan land use designation and zoning for the site. The Project's employment growth could result in population growth within the City, as employees (and their families) may choose to relocate to the City. The proposed travel center is anticipated to have a total of 45 employees. It should be noted that estimating the number of future employees who would choose to relocate to the City would be highly speculative since many factors influence personal housing location decisions (i.e., family income levels and the cost and availability of suitable housing in the local area). Further the proposed use does not typically provide employment opportunities that involve substantial numbers of people needing to permanently locate to fill the positions, but would rather provide employment opportunities to people within the local community and surrounding areas.

Assuming 45 new employees (and their families) relocate to Moreno Valley, Project implementation could result in a potential population increase of approximately 174 persons based on 3.86 person per household. This is a conservative assumption, as it assumes all employees would relocate to the City along with their families instead of the more likely scenario of existing Moreno Valley or other nearby residents filling some of the new employment opportunities. The forecast population growth would increase the City's existing (2021) population of 209,426 persons by less than one percent (approximately 0.08 percent) to 209,600 persons. The Moreno Valley General Plan 2040 estimates a population of 256,000 persons by 2040, constituting an increase of 48,303 people (approximately 22 percent) over the 22-year period from 2018 to 2040. The Project would be within the population projections anticipated and planned for by the General Plan and would not induce substantial unplanned population growth in the area; therefore, impacts would be less than significant.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Response: The Project site is currently vacant and does not contain any housing. Therefore, the Project would not displace any existing people or housing, necessitating the construction of replacement housing elsewhere. No impact would occur.

Sources:

1. City of Moreno Valley General Plan 2040, adopted June 15, 2021
   - Chapter 2 – Land Use and Community Character Element
2. Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021
   - Section 4.14 – Population/Housing

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

3. State of California, Department of Finance, E-5 Population and Housing Estimates for Cities, Counties, and the State – January 1, 2011-2021, Sacramento, California, May 2021

XV. PUBLIC SERVICES – Would the project:

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

i) Fire protection?	☐	☐	☒	☐

Response: Fire and emergency medical services are provided by MVFD. The City also maintains contracts with Riverside County and CALFIRE for provision of services as part of an integrated regional fire protection system. MVFD is the primary response agency for fires and emergency medical service in the City and also provides plan check and inspection services for new and existing construction, among other services. There are seven fire stations strategically located throughout the community; the closest station to the Project site is Fire Station 58 Moreno Beach, located approximately less than one mile west of the Project site. The introduction of the proposed travel center to the Project site could increase the demand for fire protection and emergency medical services to the site when compared to existing conditions. However, Project implementation is not expected to result in the need for new or physically altered fire protection facilities in order to maintain response times. Development of the site with commercial uses has been anticipated by the General Plan. MVMC Section 3.42.060, *Fire Facilities Commercial and Industrial Development Impact Fees*, requires applicants for commercial and industrial projects to pay development impact fees for the purpose of acquiring, designing, constructing, improving and maintaining fire facilities provided for in the City's General Plan and its adopted capital improvement program. Payment of the fee would be required prior to issuance of a building permit. Payment of the development impact fee would provide for the Project's fair share cost contribution to facilities and equipment due to the increased demand for fire protection services.

As part of the development review process, the Applicant would be required to submit appropriate plans for plan review to ensure compliance with zoning, building, and fire codes. MVFD would review the Project for access requirements, minimum roadway widths, fire apparatus access roads, fire lanes, signage, access walkways, among other requirements to ensure adequate emergency access would be provided to and within the Project site. The Project would be required to comply with all applicable Building and Fire Code requirements and would submit construction plans to the MVFD and Moreno Valley Building and Safety Division for review and approval prior to issuance of any building permit. The proposed development would be required to comply with applicable City, County, and State code and ordinance requirements for fire protection. Implementation of all Fire Code requirements would further reduce potential impacts concerning fire protection services. The Project would not require the need for new or physically altered fire station facilities in order to maintain acceptable service ratios, response times or other performance objectives and impacts would be less than significant.

ii) Police protection?	☐	☐	☒	☐

Response: The Moreno Valley Police Department (MVPD) provides law enforcement services to the City through a contract with the County of Riverside for police protection services. MVPD operates from the Moreno Valley Station located in the Civic Center Complex at Alessandro and Frederick, approximately eight miles west of the Project site. The introduction of the proposed travel center to the site could increase the demand for police services to the site when compared to existing conditions. However, Project implementation is not expected to decrease response times or require the construction of new police protection facilities. Development of the site with commercial uses has been anticipated by the General Plan. MVMC Section 3.42.070, *Police Facilities Commercial and Industrial Development Impact Fees*, requires applicants for commercial and industrial projects to pay development impact fees for the purpose of acquiring, designing, constructing, improving and maintaining police service facilities provided for in the City's General Plan and its adopted capital improvement program. Payment of the fee

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

would be required prior to issuance of a building permit and would provide for the Project's fair share cost contribution to facilities and equipment due to the increased demand for police protection services. Further, as part of the development review process, MVPD would review the Project and provide comments regarding risks to security and ways to minimize those risks. The Project would not require the need for new or physically altered police facilities in order to maintain acceptable service ratios, response times or other performance objectives and impacts would be less than significant.

iii) Schools?	☐	☐	☒	☐

Response: The Project does not propose the development of residential uses; therefore, the Project would not result in new students to the local school districts. The Project would be subject to payment of school impact fees in accordance with Senate Bill 50 (SB 50). Pursuant to Government Code §65995(3)(h), payment of statutory fees is "...deemed to be full and complete mitigation of impacts of any legislative or adjudicative act, or both, involving, but not limited to, the planning, use or development of real property..." Developer fees collected by the local school district pursuant to SB 50 are used for the provision of additional and reconstructed or modernized school facilities. The Project Applicant would be required to pay all statutory fees in place at the time and demonstrate proof of payment to the City. With payment of the fees, Project impacts to schools would be less than significant.

iv) Parks?	☐	☐	☐	☒

Response: The City of Moreno Valley maintains approximately 481.5 acres of public parkland. The Project site is vacant and undeveloped with grasses primarily covering the site and does not currently provide public park or recreational opportunities. The Project proposes the construction and operation of a travel center for regional and local highway traveling users. Implementation of the Project would involve the development of fueling facilities, travel amenities, a drive-thru restaurant, and parking facilities for passing motorists and commercial truck operators. The Project would not result in direct substantial population growth or significant indirect population growth resulting in the need for new or physically altered park facilities. Therefore, no impacts to parks would occur.

v) Other public facilities?	☐	☐	☐	☒

Response: The proposed travel center would include fueling facilities, travel amenities, a drive-thru restaurant, and parking facilities for passing motorists and commercial truck operators. The Project would not result in direct substantial population growth or significant indirect population growth resulting in the need for new or physically altered public facilities to adequately serve the community. The proposed Project is consistent with the General Plan land use designation and zoning for the site and development of the Project site with commercial uses has been anticipated by the General Plan. Development of the site with commercial uses has been anticipated by the General Plan. MVMC, Section 3.42.080, *City Hall Facilities Commercial and Industrial Development Impact Fees*, Section 3.42.090, *Corporate Yard Facilities Commercial and Industrial Development Impact Fees*, and Section 3.42.100, *Maintenance Equipment Commercial and Industrial Development Impact Fees*, requires applicants for commercial and industrial projects to pay development impact fees for the purpose of acquiring, designing, constructing, improving and maintaining City Hall facilities and City corporate yard facilities and improvements provided for in the City's General Plan and its adopted capital improvement program and acquiring major maintenance equipment needs of the City provided for in its adopted capital improvement program. Payment of the fee would be required prior to issuance of a building permit. Therefore, no impacts to public facilities would occur.

Sources:

1. City of Moreno Valley General Plan 2040, adopted June 15, 2021
   - Chapter 5 – Parks & Public Services
     - Table PPS-1: Existing and Planned Parks and Recreation Facilities

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
- Map PPS-3: Public Facilities 2. Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021 3. Title 3 – Revenue and Finance of the Moreno Valley Municipal Code				
XVI. RECREATION – Would the project:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which have an adverse physical effect on the environment?	☐	☐	☐	☒
Response: Refer to Response XV(d). The Project proposes the development of a travel center, which would include fueling facilities, travel amenities, restaurants, and parking facilities for passing motorists and commercial truck operators. The development of recreational facilities is not proposed as part of the Project.				
Sources: 1. City of Moreno Valley General Plan 2040, adopted June 15, 2021 • Chapter 5 – Parks & Public Services - Table PPS-1: Existing and Planned Parks and Recreation Facilities 2. Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021				
XVII. TRANSPORTATION – Would the project:				
a) Conflict with program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
Response: <u>Roadway Facilities</u> Regional access to the Project site is provided via SR-60 located, immediately to the north, and Interstate 215, located approximately eight miles to the west. Local access to the site is provided by Redlands Boulevard, Eucalyptus Avenue, and Aldi Place. The General Plan identifies the Eucalyptus Avenue Extension as a planned improvement. Specifically, the planned changes include the construction of three through lanes (two lanes in the westbound direction and one lane in the eastbound direction), the addition of medians, left-turn pockets, dedicated right-turn lanes, drainage improvements, landscaping, sidewalks, and a Class I bike path. Further, interchange improvements at SR-60 and Redlands Boulevard are anticipated. As part of the Project, the existing median in Eucalyptus Avenue would be extended west from the roundabout at Redlands Boulevard to Aldi Place to restrict left hand turns onto Eucalyptus Avenue. The Project does not propose any other modifications to existing roadway facilities. Two new driveways would be constructed. The proposed driveway on Eucalyptus Avenue would be limited to right-turns in and out of the site. Truck access to the Project site would be provided from the second driveway on Aldi Place. There are no driveways situated south of Eucalyptus Avenue and the two driveways would not interfere with the operation of the roadway or the ability of vehicles to access the existing property to the west of				

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

the Project site on Aldi Place. The proposed travel center development would occur on the southern portion of the Project site to avoid potential conflicts with future improvements of the SR-60 and Redlands Boulevard interchange. Thus, the Project would not conflict with a program plan, ordinance or policy addressing the circulation system, including roadway facilities. Impacts would be less than significant.

Transit, Bicycle, and Pedestrian Facilities

There are no transit facilities located adjacent to the Project site. Riverside Transit Agency provides service along SR-60; however, there are not bus stops located within the Project area. The Project proposes the development of a travel center, which would include fueling facilities, travel amenities, a drive-thru restaurant, and parking facilities for passing motorists and commercial truck operators. The Project would not conflict with a program plan, ordinance or policy addressing transit facilities. Impacts would be less than significant.

General Plan Map C-2: Existing and Planned Bicycle and Pedestrian Network, identifies an existing Class II (Bike Lane) on Eucalyptus Avenue between Nason Street and Redlands Boulevard and a proposed Class II facility on Redlands Avenue between Cactus Avenue and Locust Avenue. Class II Bikeways are defined as striped lanes designated for the use of bicycles on a street or highway. immediate area. The City of Moreno Valley Bicycle Master Plan (adopted January 2015) also identifies Class II Bikeways on along Eucalyptus Avenue and Redlands Boulevard. The Project would maintain the existing right-of-way dedication along adjacent roadways and with the exception of extending the median on Eucalyptus Avenue west from the roundabout at Redlands Boulevard to Aldi Place, no other modifications to the adjacent roadways are proposed. Thus, the Project would not conflict with a program plan, ordinance or policy addressing bicycle pedestrian facilities. Impacts would be less than significant.

Pedestrian facilities, including a paved sidewalk and multi-use trail, are located west of the Project site on Eucalyptus Avenue, adjacent to the Aldi development. Sidewalks are also provided on the western side of Aldi Place, adjacent to the Aldi development and along Eucalyptus, adjacent to the Project site. General Plan Map PPS-1: Existing and Planned Parks and Recreational Facilities, identifies proposed trails on Eucalyptus Avenue between Quincy Street and Gilman Springs Road and along Redlands Boulevard, connecting to the Regional Trail in the north of the City and connecting to the existing trail just south of Cottonwood Avenue. As part of the Project, the multi-use trail segment along the northern side of Eucalyptus Avenue would be constructed, which would continue the existing trail segment west of Aldi Place to Redlands Boulevard, consistent with the General Plan. Thus, the Project would not conflict with a program plan, ordinance or policy addressing pedestrian facilities. Impacts would be less than significant.

b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐

Response: In response to Senate Bill (SB) 743, the City of Moreno Valley has adopted the Transportation Impact Analysis Preparation Guide for Vehicle Miles Traveled and Level of Service Assessment, June 2020, which relies on vehicle miles traveled (VMT) as the measure for determining a project significant transportation impact under the CEQA process. The City's Guide provides details on appropriate screening thresholds that can be used to identify when a proposed land use project is anticipated to result in a less than significant impact without conducting a more detailed level analysis. Screening thresholds are divided into the following three steps:

1) Transit Priority Area (TPA) Screening
2) Low VMT Area Screening
3) Project Type Screening

A land use project needs only meet one of the above screening thresholds to be presumed to not result in a significant impact under CEQA pursuant to SB 743.

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
The Project is considered a local serving retail project of less than 50,000 square feet and as a result, meets the Project Type screening threshold and is not anticipated to result in a significant impact under CEQA pursuant to SB 743. Therefore, the Project would not conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)(1) and impacts would be less than significant.				
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
Response: The Project does not propose any incompatible uses, as the Project proposes a travel center with fueling facilities, travel amenities, a drive-thru restaurant, and parking facilities, which is consistent with the General Plan land use designation and zoning for the site. Automobile access to the Project site would be provided from Eucalyptus Avenue and Aldi Place. The proposed driveway on Eucalyptus Avenue would be limited to right-turns in and out of the site. Truck access to the Project site would be provided from a second driveway on Aldi Place. As part of the Project, the existing median in Eucalyptus Avenue would be extended west from the roundabout at Redlands Boulevard to Aldi Place to restrict left hand turns onto Eucalyptus Avenue. This improvement would provide for upgraded traffic flow and reduced vehicle hazards within the area by limiting left hand turns directly onto Eucalyptus Avenue and instead directing vehicles to make left hand turns onto Eucalyptus Avenue from Aldi Place. All proposed roadway improvements would be reviewed by the City of Moreno Valley as part of the development review process to ensure standard roadway engineering practices and design requirements, including site distance, are met. The proposed improvements would be required to be designed and constructed in conformance with all applicable City design standards. The Project would not substantially increase hazards due to a geometric design feature or incompatible uses and impacts would be less than significant.				
d) Result in inadequate emergency access?	☐	☐	☒	☐
Response: Eucalyptus Avenue and Aldi Place provide primary access to the Project site and would serve as the primary evacuation and emergency access routes within the area. Redlands Boulevard and SR-60 (designated as an evacuation route by the General Plan) would also provide access to and out of the Project area. As discussed above, the Project proposes minor improvements to Eucalyptus Avenue, including extending the median west from the roundabout at Redlands Boulevard to Aldi Place to restrict left hand turns onto Eucalyptus Avenue. During construction activities associated with the proposed on- and off-site improvements, traffic lanes located immediately adjacent to the Project site may be temporarily closed or controlled by construction personnel. However, this would be temporary and emergency access to the Project site and surrounding area would be required to be maintained at all times. Additionally, all construction staging would occur within the boundaries of the Project site and would not interfere with circulation along SR-60, Redlands Boulevard, or any other nearby roadways. The proposed improvements to Eucalyptus Avenue would not impede or interfere with the evacuation plan. Prior to the issuance of a building permit, the Applicant would be required to submit appropriate plans for plan review to ensure compliance with zoning, building, and fire codes. The MVFD would review the Project for access requirements, minimum roadway widths, fire apparatus access roads, fire lanes, signage, access walkways, among other requirements to ensure adequate emergency access would be provided to and within the Project site. The Project would be required to comply with all applicable Building and Fire Code requirements and would submit construction plans to the Building and Safety Division for review and approval prior to issuance of any building permit. Approval by the Fire Department would ensure that Project construction and operation would not result in inadequate emergency access and impacts would be less than significant.				

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Sources:

1. City of Moreno Valley General Plan 2040, adopted June 15, 2021
   - Chapter 4 Circulation
     - Map C-2: Existing and Planned Bicycle and Pedestrian Network
     - Map C-3: Transit Lines and Facilities
   - Chapter 5 Parks & Public Services
     - Map PPS-1: Existing and Planned Parks and Recreation Facilities
   - Chapter 6 Safety
     - Map S-6: Emergency Evacuation Risk Assessment
2. Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021
3. Title 9 – Planning and Zoning of the Moreno Valley Municipal Code
4. Transportation Impact Analysis Preparation Guide for Vehicle Miles Traveled and Level of Service Assessment, City of Moreno Valley Transportation Engineering Division, June 2020
5. Moreno Valley Bicycle Master Plan, adopted January 2015
   - Figure 15: Recommended Class 2 Bicycle Lanes

XVIII. TRIBAL CULTURAL RESOURCES – Would the project:				
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or	☐	☒	☐	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Response: AB 52 requires that lead agencies evaluate a project's potential impact on "tribal cultural resources", which include "[s]ites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are eligible for inclusion in the California Register of Historical Resources or included in a local register of historical resources". AB 52 also gives lead agencies the discretion to determine, based on substantial evidence, whether a resource qualifies as a "tribal cultural resource." AB 52 applies whenever a lead agency adopts an environmental impact report, mitigated negative declaration, or negative declaration.

AB 52 also establishes a formal consultation process for California tribes regarding tribal cultural resources. Under AB 52 the lead agencies are required to "begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project". Native American tribes to be included in the process are those that have requested notice of projects proposed within the jurisdiction of the lead agency.

In compliance with AB 52, the City provided formal notification to those California Native American Tribal representatives requesting notification in accordance with AB 52. Under AB 52, Native American tribes have 30 days to respond and request further project information and formal consultation. The 30-day

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

consultation was initiated on September 13, 2021. The Rincon Band of Luiseño Indians contacted the City, but did not request formal consultation. The Soboba Band of Luiseño Indians and Pechanga Band of Luiseño Indians requested formal consultation under AB 52; no other tribes responded or requested consultation.

As noted in Section IV, the cultural resources records search conducted as part of the Cultural Resources Survey, identified 35 previously recorded prehistoric resources within one mile radius of the Project area. However, no cultural resources of historic origin were found within the Project site. The closest cultural resource was determined to be located 0.3 miles northeast of the Project site, where a prehistoric isolated flake was found in 2010. The NAHC SLF records search results (received on May 20, 2021) was completed with negative results (i.e., no sacred lands or resources important to Native Americans are recorded within the vicinity of the Project site). Letters were mailed to 24 Native American contacts describing the Project and requesting if they had knowledge regarding cultural resources of Native American origin within or near the Project site. The Quechan Indian Tribe responded via email on April 27, 2021, stating they have no comments regarding the proposed Project and defer to local tribes. The Rincon Band of Luiseño Indians responded in a letter delivered via email on May 11, 2021, stating that the Project site is within the traditional Luiseño use area and of interest to the Rincon Band, but they have no knowledge of resources in the Project vicinity. The Rincon Band asked that an archaeological records search be conducted, and a copy of the report provided to the Rincon Band. The Agua Caliente Band of Cahuilla Indians (ACBCI) responded in a letter attached to an email on May 20, 2021, stating that the proposed Project is within the tribe's traditional use area and requested that a cultural resources study be conducted by a qualified archaeologist, that copies of the records search results and any reports produced be provided. As discussed above, the City provided formal notification in accordance with AB 52. As a result, formal AB 52 consultation was requested by the Soboba Band of Luiseño Indians and Pechanga Band of Luiseño Indians.

The results of the records research, SLF search, and pedestrian survey, do not indicate any known tribal cultural resources (TCRs) with the study area. However, despite disturbances within the Project site and surrounding area, it is possible that intact TCRs could be inadvertently discovered during ground-disturbing activities, which could result in potential impacts. Mitigation Measures CUL-1 through CUL-5 have been incorporated to reduce potentially significant impacts to previously undiscovered archaeological and/or tribal cultural resources that may be accidentally encountered during Project implementation. Mitigation Measure CUL-1 requires the applicant retain a professional Archaeologist to conduct monitoring of all mass grading and trenching activities. Development of a Cultural Resources Management Plan (CRMP) would be required in consultation with the Project Archaeologist, the Soboba Band of Luiseño Indians, Pechanga Band of Luiseño Indians, the contractor, and the City. Mitigation Measure CUL-2 requires the developer secure agreements with the Soboba Band of Luiseño Indians and Pechanga Band of Luiseño Indians for tribal monitoring. Mitigation Measure CUL-3 requires either preservation-in-place or onsite reburial in the event that Native American cultural resources are discovered during grading. Mitigation Measure CUL-4 requires inclusion of a note on the Grading Plan requiring work be stopped within a 100-foot buffer around inadvertent discoveries until the Project Archaeologist and the Tribal Representatives can evaluate the find. Mitigation Measure CUL-5 requires work be stopped in the area of inadvertent discoveries and evaluation of the find, and as appropriate recommended alternative measure be implemented to avoid, minimize or mitigate negative effects on the historic or prehistoric resource. Implementation of Mitigation Measures CUL-1 through CUL-5 would reduce potential impacts to potential TCRs to a less than significant level.

Additionally, Mitigation Measure CUL-6 has been implemented to reduce potentially significant impacts in the event previously unknown human remains are unexpectedly discovered during Project construction activities. If human remains are uncovered, the contractor would be required to halt work in the immediate area and notify the County Coroner. If the Coroner, with the aid of a supervising Archaeologist, determines that the remains are or appear to be of a Native American, they shall contact the Native American Heritage Commission for further investigations and proper recovery of such

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

remains. With implementation of Mitigation Measure CUL-6 and mandatory compliance to California Health and Safety Code Section 7050.5 and Public Resources Code Section 5097.98, potential impacts to human remains, including human remains of Native American ancestry, would be less than significant.

Sources:

1. City of Moreno Valley General Plan 2040, adopted June 15, 2021
   - Chapter 10 – Open Space and Resource Conservation Element
2. Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021
3. Title 9 – Planning and Zoning of the Moreno Valley Municipal Code
4. Moreno Valley Municipal Code Title 7 – Cultural Preservation

XIX. UTILITIES AND SERVICE SYSTEMS – Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐

Response:

Water

The Project site is located within the EMWD service area. The Project site is currently undeveloped and does not generate water demand. Development of the proposed travel center site would require installation of water lines within the site and connection to an existing water main. The Project would install a new 2.5-inch water line on-site to serve the proposed development, which would connect to existing facilities within the adjacent right-of-way. The potential environmental effects associated with construction and operation of the Project, including the proposed water lines to serve the development are analyzed within this Initial Study and impacts have been determined to be less than significant with compliance with regulatory requirements and implementation of mitigation measures. Thus, the proposed Project would not require or result in relocation or construction of water facilities, the construction or relocation of which could cause significant environmental effects.

Refer to Response XIX(b) regarding water supply.

Wastewater and Wastewater Treatment

Wastewater collection services within most of Moreno Valley, including the Project site, are provided by EMWD. The wastewater generated by the proposed Project would be conveyed to the Moreno Valley Regional Water Reclamation Facility (MVRWRF) for treatment. The MVRWRF provides primary, secondary, and tertiary treatment for a design capacity of 16 million gallons per day (mgd) of wastewater and has a current flow of 11.5 mgd.

The Project site is undeveloped and does not currently generate wastewater requiring treatment. Development of the travel center would require installation of a new 6-inch sewer line within the Project site and connection to existing facilities within Eucalyptus Avenue. The potential environmental effects associated with construction and operation of the Project, including the proposed sewer line to serve the development are analyzed within this Initial Study and impacts have been determined to be less than significant with compliance with regulatory requirements and implementation of mitigation measures. Thus, the proposed Project would not require or result in relocation or construction of wastewater facilities, the construction or relocation of which could cause significant environmental effects.

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Refer to Response XIX(c) regarding wastewater treatment.

Stormwater Drainage

The Project site is tributary to a public storm drain system within Eucalyptus Avenue. Under existing conditions, the site drains in the southeast direction into two inlets connected to the public storm drain system in Eucalyptus Avenue. Under the proposed condition, the southern portion of the Project site would intercept flows from the northern (undeveloped) portion of the site. The north flows would be intercepted and routed south through a proposed storm drain system along the eastern boundary of the Project site. The approximately 9.55-acre portion of the Project site would be developed with the proposed travel center. This portion of the Project site has been subdivided into 11 drainage subareas for hydrologic analyses. Drainage from Drainage Area (DA)-1 and DA-2 predominantly drain in a southeast direction and would be conveyed by a proposed storm drain system into a proposed bioretention basin (BMP-1) within the southeast portion of the Project site. The bioretention area (DA-8) would also contribute to the flows into BMP-1. The flows from BMP-1 would then be conveyed south and confluence with the northern flows (DA-12) to collectively discharge into the existing 45-inch CMP southeast of the Project site. Drainage from DA-3, DA-4, DA-5, and DA-6 would predominantly drain in a southeast direction and be conveyed by a proposed storm drain system into a proposed bioretention basin (BMP-2) located within the southwest portion of the Project site. The bioretention area (DA-7) would also contribute to the flows into BMP-2. The flows from BMP-2 would then be conveyed south and discharge into the existing 36-inch CMP southwest of the Project site. Drainage areas DA-9, DA-10 and DA-11 would include the proposed driveways which would discharge minimal flows directly onto the adjacent streets. The potential environmental effects associated with construction and operation of the Project, including the proposed drainage facilities are analyzed within this Initial Study and impacts have been determined to be less than significant with compliance with regulatory requirements and implementation of mitigation measures. Thus, the proposed Project would not require or result in relocation or construction of stormwater drainage facilities, the construction or relocation of which could cause significant environmental effects.

Refer to Response X(c) regarding drainage patterns and the Project's proposed hydrology and drainage.

Electricity, Natural Gas, and Telecommunications

The Project would receive electrical service from Moreno Valley Utility (MVU) and natural gas service from Southern California Gas Company (SoCalGas). Telecommunication services are provided by a variety of companies and are typically selected by the individual customer. Transmission lines/infrastructure for these services are provided within the Project area. The proposed travel center would not require or result in the relocation or construction of new or expanded electrical power facilities, natural gas facilities, or telecommunications facilities. The Project would connect to existing electrical, natural gas, and telecommunications infrastructure within the area. The potential environmental effects associated with the proposed travel center's energy demand are analyzed within this Initial Study and impacts have been determined to be less than significant. The proposed Project would not require or result in relocation or construction of electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐

Response: The Project site is located within the EMWD service area and would connect to existing EMWD water facilities to serve the proposed travel center. EMWD's 2015 Urban Water Management Plan (UWMP) Tables ES-3, ES-4, and ES-5 shows that EMWD projects adequate existing supplies to meet demands during normal years throughout the planning period. Further, EMWD anticipates sufficient supply capabilities to meet the expected demands from 2020 through 2040 under normal, historic single-dry, and historic multiple-dry year conditions. Therefore, it is anticipated that existing supplies in

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

combination with identified future and potential water supply opportunities will enable the EMWD to meet all future water demands under all hydrologic conditions through the end of the planning period.

UWMP water demand forecasts are based on adopted General Plans. As discussed in Section XIV, the Project proposes development of a travel center, which would involve the development of fueling facilities, travel amenities, restaurants, and parking facilities for passing motorists and commercial truck operators. Development of the site with the proposed commercial use would be consistent with the General Plan land use designation and zoning for the site. The Project's forecast population growth could increase the City's existing (2021) population of 209,426 persons by less than one percent (approximately 0.08) to 209,600 persons. The Moreno Valley General Plan 2040 estimates a population of 256,000 persons by 2040, constituting an increase of 48,303 people (approximately 22 percent) over the 22-year period from 2018 to 2040. The City's projected population growth would be just slightly less than SCAG's 2040 growth projection of 256,600 persons. The Project would be within the population projections anticipated and planned for by the General Plan and SCAG and would not increase growth beyond what was anticipated in the UWMP. Sufficient water supplies would be available to serve the proposed travel center and impacts would be less than significant.

c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐

Response: Wastewater collection services within most of Moreno Valley, including the Project site, are provided by EMWD. The wastewater generated by the proposed Project would be conveyed to MVRWRF for treatment. MVRWRF has a design capacity of 16 million gallons per day (mgd) of wastewater and has a current flow of 11.5 mgd.

As discussed in Section XIV, the Project proposes development of a travel center, which would involve the development of fueling facilities, travel amenities, restaurants, and parking facilities for passing motorists and commercial truck operators. Development of the site with the proposed commercial use would be consistent with the General Plan land use designation and zoning for the site. The Project's forecast population growth could increase the City's existing (2021) population of 209,426 persons by less than one percent (approximately 0.08) to 209,600 persons. The Moreno Valley General Plan 2040 estimates a population of 256,000 persons by 2040, constituting an increase of 48,303 people (approximately 22 percent) over the 22-year period from 2018 to 2040. The City's projected population growth would be just slightly less than SCAG's 2040 growth projection of 256,600 persons. The Project would be within the population projections anticipated and planned for by the General Plan and SCAG and would not increase growth beyond EMWD's forecasted wastewater projections. Sufficient treatment capacity would be available to serve the proposed travel center and impacts would be less than significant.

d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

Response: Solid waste collection services are provided by Waste Management, Inc. Waste from the City is disposed of at a number of solid waste facilities, with the majority of waste disposed at the Riverside County Waste Management Department's (RCWMD) Badlands Landfill and El Sobrante landfill. The Project proposes the development of a travel center, which would include fueling facilities, travel amenities, a drive-thru restaurant, and parking facilities for passing motorists and commercial truck

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

operators. State law requires a 65 percent diversion rate for construction and demolition projects. Thus, the Project would be required to achieve the diversion rate during construction activities associated with the Project. Project operations would increase solid waste disposal demands over existing conditions. As stated, solid waste within the City is primarily disposed of at the Badlands landfill and El Sobrante landfill. In 2019, approximately 50 percent of solid waste from Moreno Valley was disposed of at the El Sobrante Landfill and approximately 47 percent was disposed of at the Badlands Sanitary Landfill. El Sobrante Landfill has a maximum permitted throughput of 16,054 tons per day. The facility's maximum capacity is 209,910,000 cubic yards, with a remaining capacity of 143,977,170 cubic yards. Badlands Sanitary Landfill has a maximum permitted throughput of 4,800 tons per day. The facility's maximum capacity is 34,400,000 cubic yards, with a remaining capacity of 15,748,799 cubic yards.

The Project would generate solid waste requiring collection and disposal at landfill facilities. The General Plan EIR determined that solid waste associated with buildout of the General Plan would not exceed regional forecasted demand and would be accommodated at the Badlands Sanitary Landfill and El Sobrante Landfills. The proposed Project is consistent with the General Plan land use designation for the Project site and development of the site with commercial uses has been anticipated by the General Plan.

The proposed Project would be required to comply with the City's requirements associated with solid waste reduction. MVMC Chapter 6.02, *Refuse Collection, Transfer and Disposal*, provides standards for the provision of solid waste (refuse) and recyclable material storage areas in compliance with state law (California Solid Waste Reuse and Recycling Access Act, Public Resources Code Sections 42900 through 42911). Additionally, the City's Building Code requires development projects to complete and submit a Waste Management and Recycling Plan for approval prior to issuance of building permits. The Waste Management and Recycling Plan would identify the project type, and estimate the amount of materials to be recycled during construction. The Project would also be required to complete a Diversion Report for review by the City's Building Department to demonstrate that the Project recycled a minimum of 50 percent of its construction waste.

The City has a per capita disposal rate target of 4.4 pounds per person per day. Since 2008, the City has met this target through its diversion programs with the most recent disposal rate (2019) of 4.4 pounds per person per day. The City would continue to implement its diversion programs and require compliance with all federal, State and local statutes and regulations for solid waste, including those identified under the most current CALGreen standards and in compliance with AB 939. Thus, the proposed Project would result in less than significant impacts concerning solid waste.

Sources:

1. City of Moreno Valley General Plan 2040, adopted June 15, 2021
2. Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021
3. Title 9 – Planning and Zoning of the Moreno Valley Municipal Code
4. Moreno Valley Regional Water Reclamation Facility, https://www.emwd.org/sites/main/files/file-attachments/mvrwrffactsheet.pdf?1620227235, accessed June 29, 2021
5. Eastern Municipal Water District, 2015 Urban Water Management Plan, 2016
6. CalRecycle, Jurisdiction Disposal and Alternative Daily Cover (ADC) Tons by Facility, https://www2.calrecycle.ca.gov/LGCentral/DisposalReporting/Destination/DisposalByFacility, accessed June 30, 2021
7. CalRecycle, SWIS Facility/Site Activity Details, https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/2280?siteID=2402, accessed June 30, 2021

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

8. CalRecycle, SWIS Facility/Site Activity Details, https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/2245?siteID=2367, accessed June 30, 2021
9. CalRecycle, Jurisdiction Review Reports, Jurisdiction Per Capital Disposal Rate Trends (Post 2006), https://www2.calrecycle.ca.gov/LGCentral/AnnualReporting/ReviewReports, accessed June 30, 2021

XX. WILDFIRE – If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, **would the project:**

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐

Response: According to the General Plan and CALFIRE Fire Hazard Severity Zone Maps, the Project site is not located in a State Responsibility Area (SRA) or lands classified as VHFHSZ; nor is the Project site located adjacent to SRAs or lands classified as a VHFHSZ. As discussed in Response IX(f), the City of Moreno Valley EOP outlines operations and procedures in the case of an emergency or disaster. Eucalyptus Avenue and Aldi Place provide direct access to the Project site. Eucalyptus Avenue intersects with Redlands Boulevard which provides direct access to SR-60 and would serve as the primary evacuation and emergency access route within the area. During construction activities associated with proposed Project, roadways adjacent to Project site may be temporarily controlled by construction personal; however, this would be temporary and emergency access to the Project site and surrounding area would be required to be maintained at all times. Further, all construction staging would occur within the boundaries of the Project site and would not interfere with circulation along SR-60, Redlands Boulevard, or any other nearby roadways. As part of the Project, the existing median in Eucalyptus Avenue would be extended west from the roundabout at Redlands Boulevard to Aldi Place to restrict left hand turns onto Eucalyptus Avenue. The Project does not include any characteristics or propose any changes to roads surrounding the Project that would physically impair or otherwise interfere with emergency response or evacuation plans in the Project vicinity; impacts would be less than significant.

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐

Response: The Project site is not located in or adjacent to an SRA or lands classified as VHFHSZ. The Project site and surrounding area are in a predominantly flat area of the City and experience occasional high wind conditions. However, the proposed Project would not exacerbate wildfire risks, exposing Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. The Project site has been identified for development and is located within an a developed/developing area of the City served by adjacent infrastructure. Impacts would be less than significant.

c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐

Response: The Project site is located adjacent to SR-60 and is served by roadways within the area. The Project would not require the installation or maintenance of infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; impacts would be less than significant.

d) Expose people or structures to significant risks, including downslope or downstream flooding or	☐	☐	☒	☐

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
landslides, as a result of runoff, post-fire slope instability, or drainage changes?				

Response: The Project site is not located in or adjacent to an SRA or lands classified as VHFHSZ. The Project site and surrounding area are in a relatively flat area of the City and would not be subject to downstream flooding or landslides as a result of runoff, post-fire slope instability, or drainage changes. Impacts would be less than significant.

Sources:

1. City of Moreno Valley General Plan 2040, adopted June 15, 2021
   - Chapter 6 – Safety Element
2. Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update Housing Element Update, and Climate Action Plan, certified May 20, 2021
   - Figure 4.18-1: California Fire Hazard Severity Zone
3. Title 9 – Planning and Zoning of the Moreno Valley Municipal Code
4. Local Hazard Mitigation Plan, City of Moreno Valley Fire Department, adopted October 4, 2011, amended 2017, http://www.moval.org/city_hall/departments/fire/pdfs/haz-mit-plan.pdf
5. City of Moreno Valley Emergency Operations Plan, Zuzzette Bricker, CEM, September 1, 2019.
6. CALFIRE, Very High Fire Hazard Severity Zones in LRA – Moreno Valley, California Department of Forestry and Fire Protection, 2009, https://osfm.fire.ca.gov/media/5917/moreno_valley.pdf

XXI. MANDATORY FINDINGS OF SIGNIFICANCE

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐

Response: As discussed throughout this Initial Study, the Project does not have the potential to substantially degrade the quality of the environmental or result in significant environmental impacts that cannot be reduced to a less than significant level with compliance with the established regulatory framework and implementation of mitigation measures.

As discussed in Section IV, Biological Resources, the Project would not substantially reduce the habitat of fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of a rare or endangered plant or animal. The Project would be required to implement Mitigation Measure BIO-1 and BIO-2 to address the potential for burrowing owl and nesting migratory birds, which would reduce potential impacts to a less than significant level.

As discussed in Section V, Cultural Resources, the Project would not eliminate important examples of the major periods of California history or prehistory. As also concluded in Section V and Section XVIII, Tribal Cultural Resources, the Project would be required to comply with Mitigation Measures CUL-1 through CUL-5 to address the potential for the inadvertent discovery of archaeological or tribal cultural resources, which would reduce potential impacts to a less than significant level.

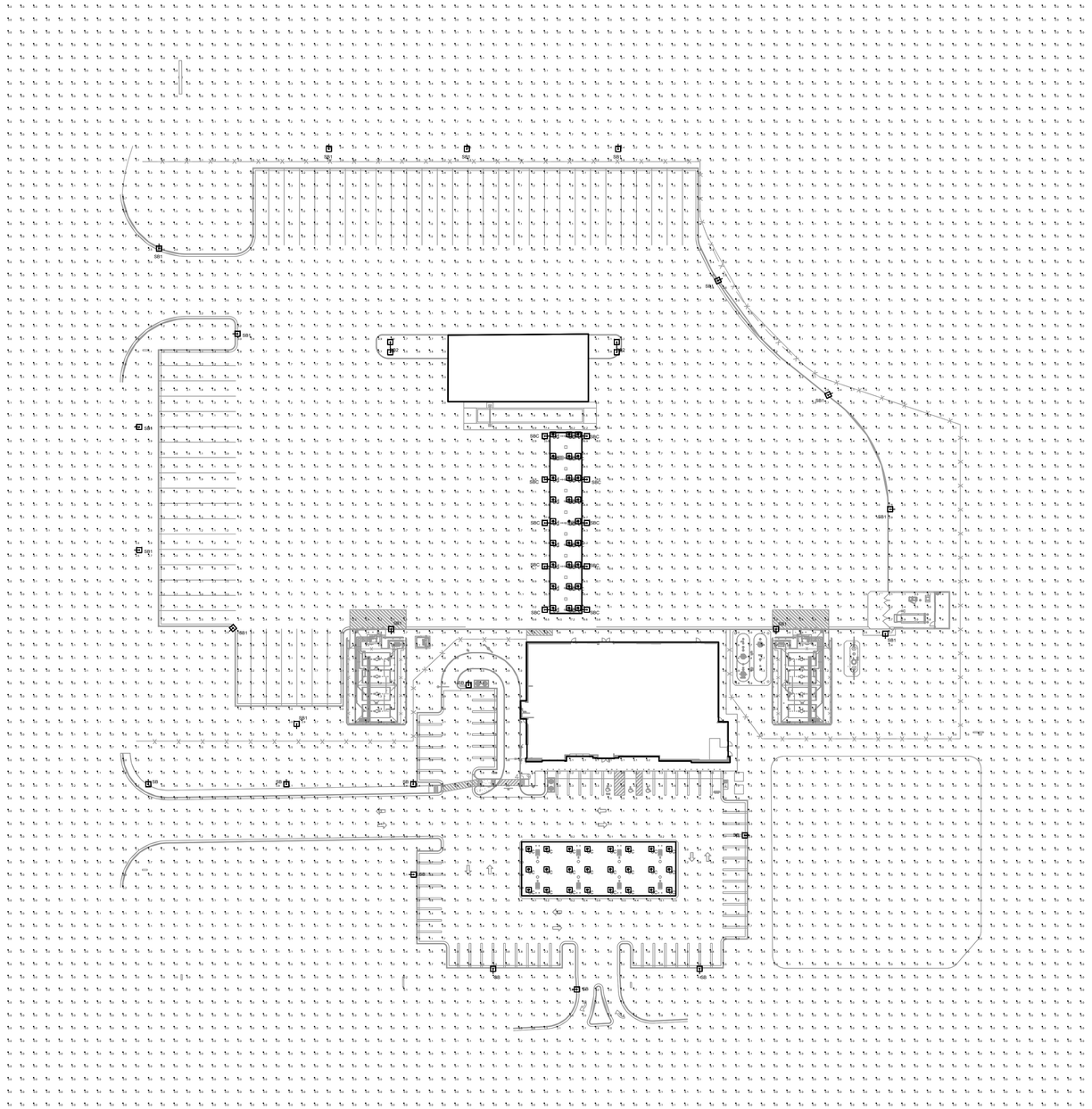
The Project would not degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to

ISSUES & SUPPORTING INFORMATION SOURCES:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory. Impacts would be less than significant with the implementation of mitigation.				
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current project, and the effects of probable future projects.)?	☐	☒	☐	☐
Response: Based on the analysis contained in this Initial Study, the proposed Project would not have cumulatively considerable impacts with implementation of Project mitigation measures. Compliance with the regulatory requirements and implementation of mitigation measures at the Project-level would reduce the potential for the incremental effects of the proposed Project to be considerable when viewed in connection with the effects of past projects, current projects, or probable future projects.				
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐
Response: Previous sections of this Initial Study reviewed the proposed Project's potential impacts to human beings related to several environmental topical areas. As determined throughout this Initial Study, the proposed Project would not result in any potentially significant impacts that cannot be mitigated or reduced with compliance with the established regulatory requirements and implementation of mitigation measures by the City. The Project would not cause a substantial adverse effect on human beings, either directly or indirectly and impacts would be less than significant.				

Appendix A
Lighting Study

Luminaire Schedule						
Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF	Description
	51	UC	SINGLE	N.A.	0.810	CPY250-A-xx-F-A-UL or BXCCAxA08-Ux
	9	SB	SINGLE	N.A.	0.810	OSQ-A-xx-4ME-U-57K-ULxxxxx CONFIGURED FROM OSQ-A-xx-4ME-U-40K-ULxxxxx
	2	SB2	BACK-BACK	N.A.	0.810	OSQ-A-xx-4ME-U-57K-ULxxxxx CONFIGURED FROM OSQ-A-xx-4ME-U-40K-ULxxxxx
	15	SB1	SINGLE	N.A.	0.810	OSQ-A-xx-4ME-U-57K-ULxxxxx CONFIGURED FROM OSQ-A-xx-4ME-U-40K-ULxxxxx
	10	SBC	SINGLE	N.A.	0.810	OSQ-A-xx-4ME-U-57K-ULxxxxx CONFIGURED FROM OSQ-A-xx-4ME-U-40K-ULxxxxx

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
CalcPts_1	Illuminance	Fc	1.27	35.2	0.0	N.A.	N.A.



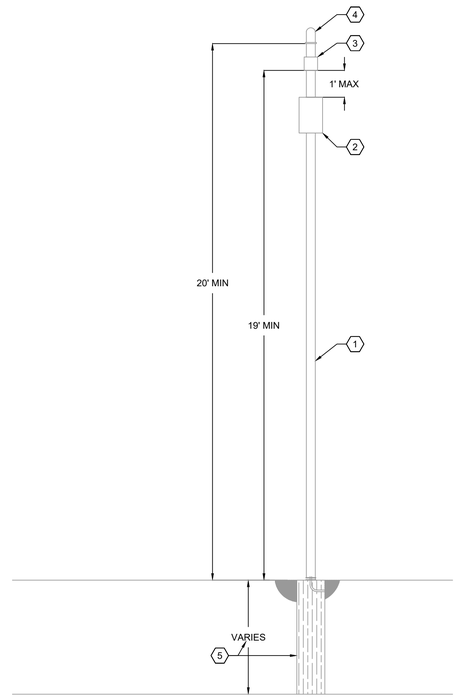
1 ES1.2 SITE PLAN - ELECTRICAL
SCALE: 1"=50'-0"

CONTRACTOR NOTE

1. THIS LIGHTING DESIGN IS BASED ON INFORMATION SUPPLIED BY OTHERS TO PAGE INTERWORKS, PA. SITE DETAILS PROVIDED HEREON ARE REPRODUCED ONLY AS A VISUALIZATION AID. FIELD DEVIATIONS MAY SIGNIFICANTLY AFFECT PREDICTED PERFORMANCE. PRIOR TO INSTALLATION, CRITICAL SITE INFORMATION (POLE LOCATIONS, ORIENTATION, MOUNTING HEIGHT, ETC.) SHOULD BE COORDINATED WITH THE CONTRACTOR AND/OR SPECIFIER RESPONSIBLE FOR THE PROJECT.
2. LUMINAIRE DATA IS TESTED TO INDUSTRY STANDARDS UNDER LABORATORY CONDITIONS. OPERATING VOLTAGE AND NORMAL MANUFACTURING TOLERANCES OF LAMP, BALLAST, AND LUMINAIRE MAY AFFECT FIELD RESULTS.

WIFI POWER POLE NOTES

1. CONTRACTOR IS TO SUPPLY 4"x4"x20' ALUMINUM POLE TO MOUNT WIRELESS ACCESS POINT EQUIPMENT TO IF SITE LIGHTING POLE IS NOT AVAILABLE.
2. CONTRACTOR SHALL PROVIDE A 12"x12"x6" NEMA 3R JUNCTION BOX. JUNCTION BOX SHALL HOUSE THE OWNER SUPPLIED CISCO POWER INJECTOR. PROVIDE A CONTINUOUSLY POWERED 110V GFCI RECEPTACLE MOUNTED INSIDE THE JUNCTION BOX TO POWER THE CISCO POWER INJECTOR. JUNCTION SHALL BE NO MORE THAN 1' AWAY FROM THE WIRELESS ACCESS POINT (CISCO MR66).
3. CONTRACTOR TO INSTALL OWNER SUPPLIED WIRELESS ACCESS POINT (ROUTER, CISCO MR66) ABOVE THE NEMA 3R JUNCTION BOX. ROUTE CAT 5E CABLES FOR CISCO POWER INJECTOR OUTPUT INTO WIRELESS ACCESS POINT.
4. CONTRACTOR IS TO INSTALL OWNER SUPPLIED ANTENNA AT LEAST 20' ABOVE GRADE. ANTENNA HAS FOUR (4) CABLES THAT WILL CONNECT TO THE FOUR (4) INPUT PORTS ON THE WIRELESS ACCESS POINT.
5. CONTRACTOR SHALL VERIFY POLE BASE REQUIREMENTS WITH STRUCTURAL ENGINEER BASED ON SITE SOIL CONDITIONS.



2 ES1.2 WIFI POWER POLE
SCALE: 3/8" = 1'-0"

PAGE
INTERWORKS, P.A.
ENGINEERS & CONSULTANTS
923 MAIN STREET, NORTH WILKESBORO, NC 28659
PHONE: 336-667-4225

FOR REFERENCE ONLY
5/28/21

PILOT COMPANY
DESIGN DEPARTMENT
5508 LONAS ROAD
KNOXVILLE, TENNESSEE 37909
(865) 588-7488

SITE PLAN
PHOTOMETRIC

PILOT TRAVEL CENTER

NWC EUCALYPTUS AVE & REDLANDS BLVD
MORENO VALLEY, CA 92555

DATE: 05/07/21 | DRAWN BY: MMB | PROJECT: 1316-01
REV: | DESIGN BY: JNP | PAGE# 21030
DATE: | REVISION DESCRIPTION: | INT.:

SHEET:
ES1.2

Appendix B
Air Quality, Energy and Greenhouse Gas Data

Moreno Valley Travel Center

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Fast Food Restaurant w/o Drive Thru	2.31	1000sqft	0.05	2,312.00	0
Convenience Market With Gas Pumps	16.00	Pump	17.19	2,258.80	0
Gasoline/Service Station	11.00	Pump	0.04	1,552.92	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	10			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Anticipated Operational Year: 2022

Land Use - Land uses as provided by applicant.

Construction Phase - Note: all exterior finishes are pre-finished, so no architectual coating phase.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Grading - No soil import/export, per the project applicant.

Vehicle Trips - Trip rates provided by traffic study (Kimley Horn).

Energy Use -

Construction Off-road Equipment Mitigation -

Fleet Mix - HHD uses allocated for truck refueling land use.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	300.00	76.00
tblConstructionPhase	NumDays	30.00	20.00
tblConstructionPhase	NumDays	30.00	15.00
tblConstructionPhase	NumDays	20.00	31.00
tblConstructionPhase	NumDays	10.00	5.00
tblLandUse	LandUseSquareFeet	2,310.00	2,312.00
tblLandUse	LotAcreage	0.05	17.19
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	CC_TL	10.10	50.00
tblVehicleTrips	CNW_TL	7.90	50.00
tblVehicleTrips	CW_TL	18.50	50.00
tblVehicleTrips	DV_TP	21.00	0.00

tblVehicleTrips	DV_TP	37.00	0.00
tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	PB_TP	65.00	0.00
tblVehicleTrips	PB_TP	12.00	0.00
tblVehicleTrips	PB_TP	59.00	0.00
tblVehicleTrips	PR_TP	14.00	100.00
tblVehicleTrips	PR_TP	51.00	100.00
tblVehicleTrips	PR_TP	14.00	100.00
tblVehicleTrips	ST_TR	204.47	30.13
tblVehicleTrips	ST_TR	696.00	102.06
tblVehicleTrips	ST_TR	168.56	69.09
tblVehicleTrips	SU_TR	166.88	30.13
tblVehicleTrips	SU_TR	500.00	102.06
tblVehicleTrips	SU_TR	168.56	69.09
tblVehicleTrips	WD_TR	542.60	30.13
tblVehicleTrips	WD_TR	716.00	102.06
tblVehicleTrips	WD_TR	168.56	69.09

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1570	1.5349	1.4384	2.6700e-003	0.2076	0.0723	0.2799	0.0906	0.0671	0.1577	0.0000	232.9221	232.9221	0.0650	0.0000	234.5473
Maximum	**0.1570**	**1.5349**	**1.4384**	**2.6700e-003**	**0.2076**	**0.0723**	**0.2799**	**0.0906**	**0.0671**	**0.1577**	**0.0000**	**232.9221**	**232.9221**	**0.0650**	**0.0000**	**234.5473**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1570	1.5349	1.4384	2.6700e-003	0.0798	0.0723	0.1521	0.0336	0.0671	0.1008	0.0000	232.9218	232.9218	0.0650	0.0000	234.5470
Maximum	**0.1570**	**1.5349**	**1.4384**	**2.6700e-003**	**0.0798**	**0.0723**	**0.1521**	**0.0336**	**0.0671**	**0.1008**	**0.0000**	**232.9218**	**232.9218**	**0.0650**	**0.0000**	**234.5470**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**61.57**	**0.00**	**45.67**	**62.87**	**0.01**	**36.11**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	2-7-2022	5-6-2022	1.5702	1.5702
2	5-7-2022	8-6-2022	0.4264	0.4264
		Highest	1.5702	1.5702

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0250	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.3000e-004	7.3000e-004	0.0000	0.0000	7.8000e-004
Energy	3.7100e-003	0.0337	0.0283	2.0000e-004		2.5600e-003	2.5600e-003		2.5600e-003	2.5600e-003	0.0000	85.7845	85.7845	2.7300e-003	1.0900e-003	86.1782
Mobile	0.9480	5.7245	18.2242	0.0725	6.2185	0.0593	6.2778	1.6669	0.0554	1.7223	0.0000	6,690.7379	6,690.7379	0.3195	0.0000	6,698.7246
Waste						0.0000	0.0000		0.0000	0.0000	6.6053	0.0000	6.6053	0.3904	0.0000	16.3644
Water						0.0000	0.0000		0.0000	0.0000	0.3219	5.0477	5.3696	0.0333	8.2000e-004	6.4467
Total	**0.9767**	**5.7582**	**18.2529**	**0.0727**	**6.2185**	**0.0619**	**6.2804**	**1.6669**	**0.0579**	**1.7248**	**6.9272**	**6,781.5709**	**6,788.4981**	**0.7458**	**1.9100e-003**	**6,807.7147**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0250	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.3000e-004	7.3000e-004	0.0000	0.0000	7.8000e-004
Energy	3.7100e-003	0.0337	0.0283	2.0000e-004		2.5600e-003	2.5600e-003		2.5600e-003	2.5600e-003	0.0000	85.7845	85.7845	2.7300e-003	1.0900e-003	86.1782
Mobile	0.9480	5.7245	18.2242	0.0725	6.2185	0.0593	6.2778	1.6669	0.0554	1.7223	0.0000	6,690.7379	6,690.7379	0.3195	0.0000	6,698.7246
Waste						0.0000	0.0000		0.0000	0.0000	6.6053	0.0000	6.6053	0.3904	0.0000	16.3644
Water						0.0000	0.0000		0.0000	0.0000	0.3219	5.0477	5.3696	0.0333	8.2000e-004	6.4467
Total	**0.9767**	**5.7582**	**18.2529**	**0.0727**	**6.2185**	**0.0619**	**6.2804**	**1.6669**	**0.0579**	**1.7248**	**6.9272**	**6,781.5709**	**6,788.4981**	**0.7458**	**1.9100e-003**	**6,807.7147**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	2/7/2022	2/11/2022	5	5	
2	Grading	Grading	2/14/2022	3/11/2022	5	20	
3	Building Construction	Building Construction	2/28/2022	6/13/2022	5	76	
4	Grading (second phase)	Grading	4/18/2022	5/6/2022	5	15	
5	Paving	Paving	5/9/2022	6/20/2022	5	31	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 50

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading (second phase)	Excavators	2	8.00	158	0.38
Grading (second phase)	Graders	1	8.00	187	0.41
Grading (second phase)	Rubber Tired Dozers	1	8.00	247	0.40
Grading (second phase)	Scrapers	2	8.00	367	0.48
Grading (second phase)	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading (second phase)	8	20.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	2.00	1.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0452	0.0000	0.0452	0.0248	0.0000	0.0248	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.9300e-003	0.0827	0.0492	1.0000e-004		4.0300e-003	4.0300e-003		3.7100e-003	3.7100e-003	0.0000	8.3599	8.3599	2.7000e-003	0.0000	8.4274
Total	**7.9300e-003**	**0.0827**	**0.0492**	**1.0000e-004**	**0.0452**	**4.0300e-003**	**0.0492**	**0.0248**	**3.7100e-003**	**0.0285**	**0.0000**	**8.3599**	**8.3599**	**2.7000e-003**	**0.0000**	**8.4274**

3.2 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	1.8000e-004	2.0500e-003	1.0000e-005	6.6000e-004	1.0000e-005	6.7000e-004	1.8000e-004	0.0000	1.8000e-004	0.0000	0.5753	0.5753	2.0000e-005	0.0000	0.5757
Total	**2.3000e-004**	**1.8000e-004**	**2.0500e-003**	**1.0000e-005**	**6.6000e-004**	**1.0000e-005**	**6.7000e-004**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**0.5753**	**0.5753**	**2.0000e-005**	**0.0000**	**0.5757**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0159	0.0000	0.0159	8.7100e-003	0.0000	8.7100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.9300e-003	0.0827	0.0492	1.0000e-004		4.0300e-003	4.0300e-003		3.7100e-003	3.7100e-003	0.0000	8.3598	8.3598	2.7000e-003	0.0000	8.4274
Total	**7.9300e-003**	**0.0827**	**0.0492**	**1.0000e-004**	**0.0159**	**4.0300e-003**	**0.0199**	**8.7100e-003**	**3.7100e-003**	**0.0124**	**0.0000**	**8.3598**	**8.3598**	**2.7000e-003**	**0.0000**	**8.4274**

3.2 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	1.8000e-004	2.0500e-003	1.0000e-005	6.6000e-004	1.0000e-005	6.7000e-004	1.8000e-004	0.0000	1.8000e-004	0.0000	0.5753	0.5753	2.0000e-005	0.0000	0.5757
Total	**2.3000e-004**	**1.8000e-004**	**2.0500e-003**	**1.0000e-005**	**6.6000e-004**	**1.0000e-005**	**6.7000e-004**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**0.5753**	**0.5753**	**2.0000e-005**	**0.0000**	**0.5757**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0867	0.0000	0.0867	0.0360	0.0000	0.0360	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0363	0.3884	0.2904	6.2000e-004		0.0164	0.0164		0.0150	0.0150	0.0000	54.5346	54.5346	0.0176	0.0000	54.9755
Total	**0.0363**	**0.3884**	**0.2904**	**6.2000e-004**	**0.0867**	**0.0164**	**0.1031**	**0.0360**	**0.0150**	**0.0510**	**0.0000**	**54.5346**	**54.5346**	**0.0176**	**0.0000**	**54.9755**

3.3 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0300e-003	8.0000e-004	9.1300e-003	3.0000e-005	2.9500e-003	2.0000e-005	2.9700e-003	7.8000e-004	2.0000e-005	8.1000e-004	0.0000	2.5569	2.5569	7.0000e-005	0.0000	2.5586
Total	**1.0300e-003**	**8.0000e-004**	**9.1300e-003**	**3.0000e-005**	**2.9500e-003**	**2.0000e-005**	**2.9700e-003**	**7.8000e-004**	**2.0000e-005**	**8.1000e-004**	**0.0000**	**2.5569**	**2.5569**	**7.0000e-005**	**0.0000**	**2.5586**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0304	0.0000	0.0304	0.0126	0.0000	0.0126	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0363	0.3884	0.2904	6.2000e-004		0.0164	0.0164		0.0150	0.0150	0.0000	54.5345	54.5345	0.0176	0.0000	54.9755
Total	**0.0363**	**0.3884**	**0.2904**	**6.2000e-004**	**0.0304**	**0.0164**	**0.0468**	**0.0126**	**0.0150**	**0.0277**	**0.0000**	**54.5345**	**54.5345**	**0.0176**	**0.0000**	**54.9755**

3.3 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0300e-003	8.0000e-004	9.1300e-003	3.0000e-005	2.9500e-003	2.0000e-005	2.9700e-003	7.8000e-004	2.0000e-005	8.1000e-004	0.0000	2.5569	2.5569	7.0000e-005	0.0000	2.5586
Total	**1.0300e-003**	**8.0000e-004**	**9.1300e-003**	**3.0000e-005**	**2.9500e-003**	**2.0000e-005**	**2.9700e-003**	**7.8000e-004**	**2.0000e-005**	**8.1000e-004**	**0.0000**	**2.5569**	**2.5569**	**7.0000e-005**	**0.0000**	**2.5586**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0648	0.5934	0.6218	1.0200e-003		0.0307	0.0307		0.0289	0.0289	0.0000	88.0556	88.0556	0.0211	0.0000	88.5830
Total	**0.0648**	**0.5934**	**0.6218**	**1.0200e-003**		**0.0307**	**0.0307**		**0.0289**	**0.0289**	**0.0000**	**88.0556**	**88.0556**	**0.0211**	**0.0000**	**88.5830**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	3.7700e-003	1.0300e-003	1.0000e-005	2.7000e-004	1.0000e-005	2.8000e-004	8.0000e-005	1.0000e-005	9.0000e-005	0.0000	1.0345	1.0345	6.0000e-005	0.0000	1.0360
Worker	3.9000e-004	3.0000e-004	3.4700e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.1000e-004	0.0000	0.9716	0.9716	3.0000e-005	0.0000	0.9723
Total	**5.1000e-004**	**4.0700e-003**	**4.5000e-003**	**2.0000e-005**	**1.3900e-003**	**2.0000e-005**	**1.4100e-003**	**3.8000e-004**	**2.0000e-005**	**4.0000e-004**	**0.0000**	**2.0061**	**2.0061**	**9.0000e-005**	**0.0000**	**2.0083**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0648	0.5934	0.6218	1.0200e-003		0.0307	0.0307		0.0289	0.0289	0.0000	88.0555	88.0555	0.0211	0.0000	88.5829
Total	**0.0648**	**0.5934**	**0.6218**	**1.0200e-003**		**0.0307**	**0.0307**		**0.0289**	**0.0289**	**0.0000**	**88.0555**	**88.0555**	**0.0211**	**0.0000**	**88.5829**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	3.7700e-003	1.0300e-003	1.0000e-005	2.7000e-004	1.0000e-005	2.8000e-004	8.0000e-005	1.0000e-005	9.0000e-005	0.0000	1.0345	1.0345	6.0000e-005	0.0000	1.0360
Worker	3.9000e-004	3.0000e-004	3.4700e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.1000e-004	0.0000	0.9716	0.9716	3.0000e-005	0.0000	0.9723
Total	**5.1000e-004**	**4.0700e-003**	**4.5000e-003**	**2.0000e-005**	**1.3900e-003**	**2.0000e-005**	**1.4100e-003**	**3.8000e-004**	**2.0000e-005**	**4.0000e-004**	**0.0000**	**2.0061**	**2.0061**	**9.0000e-005**	**0.0000**	**2.0083**

3.5 Grading (second phase) - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0651	0.0000	0.0651	0.0270	0.0000	0.0270	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0272	0.2913	0.2178	4.7000e-004		0.0123	0.0123		0.0113	0.0113	0.0000	40.9010	40.9010	0.0132	0.0000	41.2317
Total	**0.0272**	**0.2913**	**0.2178**	**4.7000e-004**	**0.0651**	**0.0123**	**0.0773**	**0.0270**	**0.0113**	**0.0383**	**0.0000**	**40.9010**	**40.9010**	**0.0132**	**0.0000**	**41.2317**

3.5 Grading (second phase) - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7000e-004	6.0000e-004	6.8400e-003	2.0000e-005	2.2100e-003	2.0000e-005	2.2300e-003	5.9000e-004	2.0000e-005	6.0000e-004	0.0000	1.9177	1.9177	5.0000e-005	0.0000	1.9190
Total	**7.7000e-004**	**6.0000e-004**	**6.8400e-003**	**2.0000e-005**	**2.2100e-003**	**2.0000e-005**	**2.2300e-003**	**5.9000e-004**	**2.0000e-005**	**6.0000e-004**	**0.0000**	**1.9177**	**1.9177**	**5.0000e-005**	**0.0000**	**1.9190**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0228	0.0000	0.0228	9.4700e-003	0.0000	9.4700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0272	0.2913	0.2178	4.7000e-004		0.0123	0.0123		0.0113	0.0113	0.0000	40.9009	40.9009	0.0132	0.0000	41.2316
Total	**0.0272**	**0.2913**	**0.2178**	**4.7000e-004**	**0.0228**	**0.0123**	**0.0351**	**9.4700e-003**	**0.0113**	**0.0208**	**0.0000**	**40.9009**	**40.9009**	**0.0132**	**0.0000**	**41.2316**

3.5 Grading (second phase) - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7000e-004	6.0000e-004	6.8400e-003	2.0000e-005	2.2100e-003	2.0000e-005	2.2300e-003	5.9000e-004	2.0000e-005	6.0000e-004	0.0000	1.9177	1.9177	5.0000e-005	0.0000	1.9190
Total	**7.7000e-004**	**6.0000e-004**	**6.8400e-003**	**2.0000e-005**	**2.2100e-003**	**2.0000e-005**	**2.2300e-003**	**5.9000e-004**	**2.0000e-005**	**6.0000e-004**	**0.0000**	**1.9177**	**1.9177**	**5.0000e-005**	**0.0000**	**1.9190**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0171	0.1724	0.2260	3.5000e-004		8.8000e-003	8.8000e-003		8.1000e-003	8.1000e-003	0.0000	31.0427	31.0427	0.0100	0.0000	31.2937
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0171**	**0.1724**	**0.2260**	**3.5000e-004**		**8.8000e-003**	**8.8000e-003**		**8.1000e-003**	**8.1000e-003**	**0.0000**	**31.0427**	**31.0427**	**0.0100**	**0.0000**	**31.2937**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2000e-003	9.3000e-004	0.0106	3.0000e-005	3.4300e-003	3.0000e-005	3.4600e-003	9.1000e-004	2.0000e-005	9.4000e-004	0.0000	2.9724	2.9724	8.0000e-005	0.0000	2.9744
Total	**1.2000e-003**	**9.3000e-004**	**0.0106**	**3.0000e-005**	**3.4300e-003**	**3.0000e-005**	**3.4600e-003**	**9.1000e-004**	**2.0000e-005**	**9.4000e-004**	**0.0000**	**2.9724**	**2.9724**	**8.0000e-005**	**0.0000**	**2.9744**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0171	0.1724	0.2260	3.5000e-004		8.8000e-003	8.8000e-003		8.1000e-003	8.1000e-003	0.0000	31.0427	31.0427	0.0100	0.0000	31.2937
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0171**	**0.1724**	**0.2260**	**3.5000e-004**		**8.8000e-003**	**8.8000e-003**		**8.1000e-003**	**8.1000e-003**	**0.0000**	**31.0427**	**31.0427**	**0.0100**	**0.0000**	**31.2937**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2000e-003	9.3000e-004	0.0106	3.0000e-005	3.4300e-003	3.0000e-005	3.4600e-003	9.1000e-004	2.0000e-005	9.4000e-004	0.0000	2.9724	2.9724	8.0000e-005	0.0000	2.9744
Total	**1.2000e-003**	**9.3000e-004**	**0.0106**	**3.0000e-005**	**3.4300e-003**	**3.0000e-005**	**3.4600e-003**	**9.1000e-004**	**2.0000e-005**	**9.4000e-004**	**0.0000**	**2.9724**	**2.9724**	**8.0000e-005**	**0.0000**	**2.9744**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9480	5.7245	18.2242	0.0725	6.2185	0.0593	6.2778	1.6669	0.0554	1.7223	0.0000	6,690.7379	6,690.7379	0.3195	0.0000	6,698.7246
Unmitigated	0.9480	5.7245	18.2242	0.0725	6.2185	0.0593	6.2778	1.6669	0.0554	1.7223	0.0000	6,690.7379	6,690.7379	0.3195	0.0000	6,698.7246

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Convenience Market With Gas Pumps	482.08	482.08	482.08	1,710,762	1,710,762
Fast Food Restaurant w/o Drive Thru	235.76	235.76	235.76	841,685	841,685
Gasoline/Service Station	759.99	759.99	759.99	13,831,818	13,831,818
Total	1,477.83	1,477.83	1,477.83	16,384,264	16,384,264

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Convenience Market With Gas	18.50	10.10	7.90	0.80	80.20	19.00	100	0	0
Fast Food Restaurant w/o Drive	18.50	10.10	7.90	1.50	79.50	19.00	100	0	0
Gasoline/Service Station	50.00	50.00	50.00	2.00	79.00	19.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Convenience Market With Gas Pumps	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Fast Food Restaurant w/o Drive Thru	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Gasoline/Service Station	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	49.0883	49.0883	2.0300e-003	4.2000e-004	49.2639
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	49.0883	49.0883	2.0300e-003	4.2000e-004	49.2639
NaturalGas Mitigated	3.7100e-003	0.0337	0.0283	2.0000e-004		2.5600e-003	2.5600e-003		2.5600e-003	2.5600e-003	0.0000	36.6963	36.6963	7.0000e-004	6.7000e-004	36.9143
NaturalGas Unmitigated	3.7100e-003	0.0337	0.0283	2.0000e-004		2.5600e-003	2.5600e-003		2.5600e-003	2.5600e-003	0.0000	36.6963	36.6963	7.0000e-004	6.7000e-004	36.9143

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Convenience Market With Gas Pumps	5014.54	3.0000e-005	2.5000e-004	2.1000e-004	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.2676	0.2676	1.0000e-005	0.0000	0.2692
Fast Food Restaurant w/o Drive Thru	632193	3.4100e-003	0.0310	0.0260	1.9000e-004		2.3600e-003	2.3600e-003		2.3600e-003	2.3600e-003	0.0000	33.7362	33.7362	6.5000e-004	6.2000e-004	33.9367
Gasoline/Service Station	50454.4	2.7000e-004	2.4700e-003	2.0800e-003	1.0000e-005		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004	0.0000	2.6924	2.6924	5.0000e-005	5.0000e-005	2.7084
Total		**3.7100e-003**	**0.0337**	**0.0283**	**2.0000e-004**		**2.5700e-003**	**2.5700e-003**		**2.5700e-003**	**2.5700e-003**	**0.0000**	**36.6963**	**36.6963**	**7.1000e-004**	**6.7000e-004**	**36.9143**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Convenience Market With Gas Pumps	5014.54	3.0000e-005	2.5000e-004	2.1000e-004	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.2676	0.2676	1.0000e-005	0.0000	0.2692
Fast Food Restaurant w/o Drive Thru	632193	3.4100e-003	0.0310	0.0260	1.9000e-004		2.3600e-003	2.3600e-003		2.3600e-003	2.3600e-003	0.0000	33.7362	33.7362	6.5000e-004	6.2000e-004	33.9367
Gasoline/Service Station	50454.4	2.7000e-004	2.4700e-003	2.0800e-003	1.0000e-005		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004	0.0000	2.6924	2.6924	5.0000e-005	5.0000e-005	2.7084
Total		**3.7100e-003**	**0.0337**	**0.0283**	**2.0000e-004**		**2.5700e-003**	**2.5700e-003**		**2.5700e-003**	**2.5700e-003**	**0.0000**	**36.6963**	**36.6963**	**7.1000e-004**	**6.7000e-004**	**36.9143**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Convenience Market With Gas Pumps	28528.6	9.0898	3.8000e-004	8.0000e-005	9.1224
Fast Food Restaurant w/o Drive Thru	109774	34.9763	1.4400e-003	3.0000e-004	35.1014
Gasoline/Service Station	15762.1	5.0222	2.1000e-004	4.0000e-005	5.0401
Total		**49.0883**	**2.0300e-003**	**4.2000e-004**	**49.2639**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Convenience Market With Gas Pumps	28528.6	9.0898	3.8000e-004	8.0000e-005	9.1224
Fast Food Restaurant w/o Drive Thru	109774	34.9763	1.4400e-003	3.0000e-004	35.1014
Gasoline/Service Station	15762.1	5.0222	2.1000e-004	4.0000e-005	5.0401
Total		**49.0883**	**2.0300e-003**	**4.2000e-004**	**49.2639**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0250	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.3000e-004	7.3000e-004	0.0000	0.0000	7.8000e-004
Unmitigated	0.0250	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.3000e-004	7.3000e-004	0.0000	0.0000	7.8000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.8400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0221					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e-005	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.3000e-004	7.3000e-004	0.0000	0.0000	7.8000e-004
Total	**0.0250**	**0.0000**	**3.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**7.3000e-004**	**7.3000e-004**	**0.0000**	**0.0000**	**7.8000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.8400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0221					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e-005	0.0000	3.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	7.3000e-004	7.3000e-004	0.0000	0.0000	7.8000e-004
Total	**0.0250**	**0.0000**	**3.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**7.3000e-004**	**7.3000e-004**	**0.0000**	**0.0000**	**7.8000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	5.3696	0.0333	8.2000e-004	6.4467
Unmitigated	5.3696	0.0333	8.2000e-004	6.4467

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Convenience Market With Gas Pumps	0.167315 / 0.102548	1.1102	5.5000e-003	1.4000e-004	1.2887
Fast Food Restaurant w/o Drive Thru	0.701163 / 0.0447551	3.2898	0.0230	5.7000e-004	4.0328
Gasoline/Service Station	0.146101 / 0.0895456	0.9695	4.8000e-003	1.2000e-004	1.1253
Total		**5.3696**	**0.0333**	**8.3000e-004**	**6.4467**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Convenience Market With Gas Pumps	0.167315 / 0.102548	1.1102	5.5000e-003	1.4000e-004	1.2887
Fast Food Restaurant w/o Drive Thru	0.701163 / 0.0447551	3.2898	0.0230	5.7000e-004	4.0328
Gasoline/Service Station	0.146101 / 0.0895456	0.9695	4.8000e-003	1.2000e-004	1.1253
Total		**5.3696**	**0.0333**	**8.3000e-004**	**6.4467**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	6.6053	0.3904	0.0000	16.3644
Unmitigated	6.6053	0.3904	0.0000	16.3644

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Fast Food Restaurant w/o Drive Thru	26.61	5.4016	0.3192	0.0000	13.3822
Gasoline/Service Station	5.93	1.2037	0.0711	0.0000	2.9822
Total		**6.6053**	**0.3904**	**0.0000**	**16.3644**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Fast Food Restaurant w/o Drive Thru	26.61	5.4016	0.3192	0.0000	13.3822
Gasoline/Service Station	5.93	1.2037	0.0711	0.0000	2.9822
Total		**6.6053**	**0.3904**	**0.0000**	**16.3644**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Moreno Valley Travel Center

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Fast Food Restaurant w/o Drive Thru	2.31	1000sqft	0.05	2,312.00	0
Convenience Market With Gas Pumps	16.00	Pump	17.19	2,258.80	0
Gasoline/Service Station	11.00	Pump	0.04	1,552.92	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	10			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Anticipated Operational Year: 2022

Land Use - Land uses as provided by applicant.

Construction Phase - Note: all exterior finishes are pre-finished, so no architectual coating phase.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Grading - No soil import/export, per the project applicant.

Vehicle Trips - Trip rates provided by traffic study (Kimley Horn).

Energy Use -

Construction Off-road Equipment Mitigation -

Fleet Mix - HHD uses allocated for truck refueling land use.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	300.00	76.00
tblConstructionPhase	NumDays	30.00	20.00
tblConstructionPhase	NumDays	30.00	15.00
tblConstructionPhase	NumDays	20.00	31.00
tblConstructionPhase	NumDays	10.00	5.00
tblLandUse	LandUseSquareFeet	2,310.00	2,312.00
tblLandUse	LotAcreage	0.05	17.19
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	CC_TL	10.10	50.00
tblVehicleTrips	CNW_TL	7.90	50.00
tblVehicleTrips	CW_TL	18.50	50.00
tblVehicleTrips	DV_TP	21.00	0.00

tblVehicleTrips	DV_TP	37.00	0.00
tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	PB_TP	65.00	0.00
tblVehicleTrips	PB_TP	12.00	0.00
tblVehicleTrips	PB_TP	59.00	0.00
tblVehicleTrips	PR_TP	14.00	100.00
tblVehicleTrips	PR_TP	51.00	100.00
tblVehicleTrips	PR_TP	14.00	100.00
tblVehicleTrips	ST_TR	204.47	30.13
tblVehicleTrips	ST_TR	696.00	102.06
tblVehicleTrips	ST_TR	168.56	69.09
tblVehicleTrips	SU_TR	166.88	30.13
tblVehicleTrips	SU_TR	500.00	102.06
tblVehicleTrips	SU_TR	168.56	69.09
tblVehicleTrips	WD_TR	542.60	30.13
tblVehicleTrips	WD_TR	716.00	102.06
tblVehicleTrips	WD_TR	168.56	69.09

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	5.4459	54.6338	46.5070	0.0925	18.3372	2.4466	19.9519	10.0025	2.2678	11.4880	0.0000	8,919.9867	8,919.9867	2.5667	0.0000	8,984.1538
Maximum	**5.4459**	**54.6338**	**46.5070**	**0.0925**	**18.3372**	**2.4466**	**19.9519**	**10.0025**	**2.2678**	**11.4880**	**0.0000**	**8,919.9867**	**8,919.9867**	**2.5667**	**0.0000**	**8,984.1538**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	5.4459	54.6338	46.5070	0.0925	6.6122	2.4466	8.2269	3.5575	2.2678	5.0430	0.0000	8,919.9867	8,919.9867	2.5667	0.0000	8,984.1538
Maximum	**5.4459**	**54.6338**	**46.5070**	**0.0925**	**6.6122**	**2.4466**	**8.2269**	**3.5575**	**2.2678**	**5.0430**	**0.0000**	**8,919.9867**	**8,919.9867**	**2.5667**	**0.0000**	**8,984.1538**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**63.94**	**0.00**	**58.77**	**64.43**	**0.00**	**56.10**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1371	3.0000e-005	3.0000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.4100e-003	6.4100e-003	2.0000e-005		6.8400e-003
Energy	0.0203	0.1847	0.1552	1.1100e-003		0.0140	0.0140		0.0140	0.0140		221.6478	221.6478	4.2500e-003	4.0600e-003	222.9649
Mobile	5.3917	29.5501	106.4186	0.4128	34.8402	0.3260	35.1663	9.3239	0.3043	9.6281		41,973.9396	41,973.9396	1.9660		42,023.0885
Total	**5.5491**	**29.7348**	**106.5767**	**0.4140**	**34.8402**	**0.3401**	**35.1803**	**9.3239**	**0.3183**	**9.6422**		**42,195.5938**	**42,195.5938**	**1.9702**	**4.0600e-003**	**42,246.0602**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1371	3.0000e-005	3.0000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.4100e-003	6.4100e-003	2.0000e-005		6.8400e-003
Energy	0.0203	0.1847	0.1552	1.1100e-003		0.0140	0.0140		0.0140	0.0140		221.6478	221.6478	4.2500e-003	4.0600e-003	222.9649
Mobile	5.3917	29.5501	106.4186	0.4128	34.8402	0.3260	35.1663	9.3239	0.3043	9.6281		41,973.9396	41,973.9396	1.9660		42,023.0885
Total	**5.5491**	**29.7348**	**106.5767**	**0.4140**	**34.8402**	**0.3401**	**35.1803**	**9.3239**	**0.3183**	**9.6422**		**42,195.5938**	**42,195.5938**	**1.9702**	**4.0600e-003**	**42,246.0602**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	2/7/2022	2/11/2022	5	5	
2	Grading	Grading	2/14/2022	3/11/2022	5	20	
3	Building Construction	Building Construction	2/28/2022	6/13/2022	5	76	
4	Grading (second phase)	Grading	4/18/2022	5/6/2022	5	15	
5	Paving	Paving	5/9/2022	6/20/2022	5	31	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 50

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading (second phase)	Excavators	2	8.00	158	0.38
Grading (second phase)	Graders	1	8.00	187	0.41
Grading (second phase)	Rubber Tired Dozers	1	8.00	247	0.40
Grading (second phase)	Scrapers	2	8.00	367	0.48
Grading (second phase)	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading (second phase)	8	20.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	2.00	1.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.2 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0915	0.0631	0.8807	2.6600e-003	0.2709	2.0800e-003	0.2730	0.0719	1.9200e-003	0.0738		265.0235	265.0235	7.2400e-003		265.2046
Total	**0.0915**	**0.0631**	**0.8807**	**2.6600e-003**	**0.2709**	**2.0800e-003**	**0.2730**	**0.0719**	**1.9200e-003**	**0.0738**		**265.0235**	**265.0235**	**7.2400e-003**		**265.2046**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.3413	0.0000	6.3413	3.4857	0.0000	3.4857			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**6.3413**	**1.6126**	**7.9538**	**3.4857**	**1.4836**	**4.9692**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.2 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0915	0.0631	0.8807	2.6600e-003	0.2709	2.0800e-003	0.2730	0.0719	1.9200e-003	0.0738		265.0235	265.0235	7.2400e-003		265.2046
Total	**0.0915**	**0.0631**	**0.8807**	**2.6600e-003**	**0.2709**	**2.0800e-003**	**0.2730**	**0.0719**	**1.9200e-003**	**0.0738**		**265.0235**	**265.0235**	**7.2400e-003**		**265.2046**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.3 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1016	0.0702	0.9785	2.9500e-003	0.3010	2.3100e-003	0.3034	0.0798	2.1300e-003	0.0820		294.4706	294.4706	8.0500e-003		294.6718
Total	**0.1016**	**0.0702**	**0.9785**	**2.9500e-003**	**0.3010**	**2.3100e-003**	**0.3034**	**0.0798**	**2.1300e-003**	**0.0820**		**294.4706**	**294.4706**	**8.0500e-003**		**294.6718**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0443	0.0000	3.0443	1.2624	0.0000	1.2624			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**3.0443**	**1.6349**	**4.6792**	**1.2624**	**1.5041**	**2.7665**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.3 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1016	0.0702	0.9785	2.9500e-003	0.3010	2.3100e-003	0.3034	0.0798	2.1300e-003	0.0820		294.4706	294.4706	8.0500e-003		294.6718
Total	**0.1016**	**0.0702**	**0.9785**	**2.9500e-003**	**0.3010**	**2.3100e-003**	**0.3034**	**0.0798**	**2.1300e-003**	**0.0820**		**294.4706**	**294.4706**	**8.0500e-003**		**294.6718**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.0900e-003	0.0975	0.0257	2.8000e-004	7.3300e-003	2.0000e-004	7.5200e-003	2.1100e-003	1.9000e-004	2.3000e-003		30.3249	30.3249	1.6700e-003		30.3668
Worker	0.0102	7.0100e-003	0.0979	3.0000e-004	0.0301	2.3000e-004	0.0303	7.9800e-003	2.1000e-004	8.2000e-003		29.4471	29.4471	8.0000e-004		29.4672
Total	**0.0133**	**0.1045**	**0.1236**	**5.8000e-004**	**0.0374**	**4.3000e-004**	**0.0379**	**0.0101**	**4.0000e-004**	**0.0105**		**59.7720**	**59.7720**	**2.4700e-003**		**59.8340**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.0900e-003	0.0975	0.0257	2.8000e-004	7.3300e-003	2.0000e-004	7.5200e-003	2.1100e-003	1.9000e-004	2.3000e-003		30.3249	30.3249	1.6700e-003		30.3668
Worker	0.0102	7.0100e-003	0.0979	3.0000e-004	0.0301	2.3000e-004	0.0303	7.9800e-003	2.1000e-004	8.2000e-003		29.4471	29.4471	8.0000e-004		29.4672
Total	**0.0133**	**0.1045**	**0.1236**	**5.8000e-004**	**0.0374**	**4.3000e-004**	**0.0379**	**0.0101**	**4.0000e-004**	**0.0105**		**59.7720**	**59.7720**	**2.4700e-003**		**59.8340**

3.5 Grading (second phase) - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.5 Grading (second phase) - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1016	0.0702	0.9785	2.9500e-003	0.3010	2.3100e-003	0.3034	0.0798	2.1300e-003	0.0820		294.4706	294.4706	8.0500e-003		294.6718
Total	**0.1016**	**0.0702**	**0.9785**	**2.9500e-003**	**0.3010**	**2.3100e-003**	**0.3034**	**0.0798**	**2.1300e-003**	**0.0820**		**294.4706**	**294.4706**	**8.0500e-003**		**294.6718**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0443	0.0000	3.0443	1.2624	0.0000	1.2624			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**3.0443**	**1.6349**	**4.6792**	**1.2624**	**1.5041**	**2.7665**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.5 Grading (second phase) - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1016	0.0702	0.9785	2.9500e-003	0.3010	2.3100e-003	0.3034	0.0798	2.1300e-003	0.0820		294.4706	294.4706	8.0500e-003		294.6718
Total	**0.1016**	**0.0702**	**0.9785**	**2.9500e-003**	**0.3010**	**2.3100e-003**	**0.3034**	**0.0798**	**2.1300e-003**	**0.0820**		**294.4706**	**294.4706**	**8.0500e-003**		**294.6718**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1028**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0762	0.0526	0.7339	2.2200e-003	0.2258	1.7400e-003	0.2275	0.0599	1.6000e-003	0.0615		220.8529	220.8529	6.0400e-003		221.0039
Total	**0.0762**	**0.0526**	**0.7339**	**2.2200e-003**	**0.2258**	**1.7400e-003**	**0.2275**	**0.0599**	**1.6000e-003**	**0.0615**		**220.8529**	**220.8529**	**6.0400e-003**		**221.0039**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1028**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0762	0.0526	0.7339	2.2200e-003	0.2258	1.7400e-003	0.2275	0.0599	1.6000e-003	0.0615		220.8529	220.8529	6.0400e-003		221.0039
Total	**0.0762**	**0.0526**	**0.7339**	**2.2200e-003**	**0.2258**	**1.7400e-003**	**0.2275**	**0.0599**	**1.6000e-003**	**0.0615**		**220.8529**	**220.8529**	**6.0400e-003**		**221.0039**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.3917	29.5501	106.4186	0.4128	34.8402	0.3260	35.1663	9.3239	0.3043	9.6281		41,973.9396	41,973.9396	1.9660		42,023.0885
Unmitigated	5.3917	29.5501	106.4186	0.4128	34.8402	0.3260	35.1663	9.3239	0.3043	9.6281		41,973.9396	41,973.9396	1.9660		42,023.0885

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Convenience Market With Gas Pumps	482.08	482.08	482.08	1,710,762	1,710,762
Fast Food Restaurant w/o Drive Thru	235.76	235.76	235.76	841,685	841,685
Gasoline/Service Station	759.99	759.99	759.99	13,831,818	13,831,818
Total	1,477.83	1,477.83	1,477.83	16,384,264	16,384,264

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Convenience Market With Gas	18.50	10.10	7.90	0.80	80.20	19.00	100	0	0
Fast Food Restaurant w/o Drive	18.50	10.10	7.90	1.50	79.50	19.00	100	0	0
Gasoline/Service Station	50.00	50.00	50.00	2.00	79.00	19.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Convenience Market With Gas Pumps	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Fast Food Restaurant w/o Drive Thru	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Gasoline/Service Station	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0203	0.1847	0.1552	1.1100e-003		0.0140	0.0140		0.0140	0.0140		221.6478	221.6478	4.2500e-003	4.0600e-003	222.9649
NaturalGas Unmitigated	0.0203	0.1847	0.1552	1.1100e-003		0.0140	0.0140		0.0140	0.0140		221.6478	221.6478	4.2500e-003	4.0600e-003	222.9649

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Convenience Market With Gas Pumps	13.7385	1.5000e-004	1.3500e-003	1.1300e-003	1.0000e-005		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		1.6163	1.6163	3.0000e-005	3.0000e-005	1.6259
Fast Food Restaurant w/o Drive Thru	1732.04	0.0187	0.1698	0.1426	1.0200e-003		0.0129	0.0129		0.0129	0.0129		203.7690	203.7690	3.9100e-003	3.7400e-003	204.9799
Gasoline/Service Station	138.231	1.4900e-003	0.0136	0.0114	8.0000e-005		1.0300e-003	1.0300e-003		1.0300e-003	1.0300e-003		16.2625	16.2625	3.1000e-004	3.0000e-004	16.3591
Total		**0.0203**	**0.1847**	**0.1552**	**1.1100e-003**		**0.0140**	**0.0140**		**0.0140**	**0.0140**		**221.6478**	**221.6478**	**4.2500e-003**	**4.0700e-003**	**222.9649**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Convenience Market With Gas Pumps	0.0137385	1.5000e-004	1.3500e-003	1.1300e-003	1.0000e-005		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		1.6163	1.6163	3.0000e-005	3.0000e-005	1.6259
Fast Food Restaurant w/o Drive Thru	1.73204	0.0187	0.1698	0.1426	1.0200e-003		0.0129	0.0129		0.0129	0.0129		203.7690	203.7690	3.9100e-003	3.7400e-003	204.9799
Gasoline/Service Station	0.138231	1.4900e-003	0.0136	0.0114	8.0000e-005		1.0300e-003	1.0300e-003		1.0300e-003	1.0300e-003		16.2625	16.2625	3.1000e-004	3.0000e-004	16.3591
Total		**0.0203**	**0.1847**	**0.1552**	**1.1100e-003**		**0.0140**	**0.0140**		**0.0140**	**0.0140**		**221.6478**	**221.6478**	**4.2500e-003**	**4.0700e-003**	**222.9649**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1371	3.0000e-005	3.0000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.4100e-003	6.4100e-003	2.0000e-005		6.8400e-003
Unmitigated	0.1371	3.0000e-005	3.0000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.4100e-003	6.4100e-003	2.0000e-005		6.8400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0156					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1213					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.8000e-004	3.0000e-005	3.0000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.4100e-003	6.4100e-003	2.0000e-005		6.8400e-003
Total	**0.1371**	**3.0000e-005**	**3.0000e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**6.4100e-003**	**6.4100e-003**	**2.0000e-005**		**6.8400e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0156					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1213					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.8000e-004	3.0000e-005	3.0000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.4100e-003	6.4100e-003	2.0000e-005		6.8400e-003
Total	**0.1371**	**3.0000e-005**	**3.0000e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**6.4100e-003**	**6.4100e-003**	**2.0000e-005**		**6.8400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Moreno Valley Travel Center

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Fast Food Restaurant w/o Drive Thru	2.31	1000sqft	0.05	2,312.00	0
Convenience Market With Gas Pumps	16.00	Pump	17.19	2,258.80	0
Gasoline/Service Station	11.00	Pump	0.04	1,552.92	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	10			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Anticipated Operational Year: 2022

Land Use - Land uses as provided by applicant.

Construction Phase - Note: all exterior finishes are pre-finished, so no architectual coating phase.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Grading - No soil import/export, per the project applicant.

Vehicle Trips - Trip rates provided by traffic study (Kimley Horn).

Energy Use -

Construction Off-road Equipment Mitigation -

Fleet Mix - HHD uses allocated for truck refueling land use.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	300.00	76.00
tblConstructionPhase	NumDays	30.00	20.00
tblConstructionPhase	NumDays	30.00	15.00
tblConstructionPhase	NumDays	20.00	31.00
tblConstructionPhase	NumDays	10.00	5.00
tblLandUse	LandUseSquareFeet	2,310.00	2,312.00
tblLandUse	LotAcreage	0.05	17.19
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	CC_TL	10.10	50.00
tblVehicleTrips	CNW_TL	7.90	50.00
tblVehicleTrips	CW_TL	18.50	50.00
tblVehicleTrips	DV_TP	21.00	0.00

tblVehicleTrips	DV_TP	37.00	0.00
tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	PB_TP	65.00	0.00
tblVehicleTrips	PB_TP	12.00	0.00
tblVehicleTrips	PB_TP	59.00	0.00
tblVehicleTrips	PR_TP	14.00	100.00
tblVehicleTrips	PR_TP	51.00	100.00
tblVehicleTrips	PR_TP	14.00	100.00
tblVehicleTrips	ST_TR	204.47	30.13
tblVehicleTrips	ST_TR	696.00	102.06
tblVehicleTrips	ST_TR	168.56	69.09
tblVehicleTrips	SU_TR	166.88	30.13
tblVehicleTrips	SU_TR	500.00	102.06
tblVehicleTrips	SU_TR	168.56	69.09
tblVehicleTrips	WD_TR	542.60	30.13
tblVehicleTrips	WD_TR	716.00	102.06
tblVehicleTrips	WD_TR	168.56	69.09

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	5.4604	54.6420	46.4088	0.0924	18.3372	2.4467	19.9519	10.0025	2.2678	11.4880	0.0000	8,900.2610	8,900.2610	2.5662	0.0000	8,964.4166
Maximum	**5.4604**	**54.6420**	**46.4088**	**0.0924**	**18.3372**	**2.4467**	**19.9519**	**10.0025**	**2.2678**	**11.4880**	**0.0000**	**8,900.2610**	**8,900.2610**	**2.5662**	**0.0000**	**8,964.4166**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	5.4604	54.6420	46.4088	0.0924	6.6122	2.4467	8.2269	3.5575	2.2678	5.0430	0.0000	8,900.2610	8,900.2610	2.5662	0.0000	8,964.4166
Maximum	**5.4604**	**54.6420**	**46.4088**	**0.0924**	**6.6122**	**2.4467**	**8.2269**	**3.5575**	**2.2678**	**5.0430**	**0.0000**	**8,900.2610**	**8,900.2610**	**2.5662**	**0.0000**	**8,964.4166**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**63.94**	**0.00**	**58.77**	**64.43**	**0.00**	**56.10**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1371	3.0000e-005	3.0000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.4100e-003	6.4100e-003	2.0000e-005		6.8400e-003
Energy	0.0203	0.1847	0.1552	1.1100e-003		0.0140	0.0140		0.0140	0.0140		221.6478	221.6478	4.2500e-003	4.0600e-003	222.9649
Mobile	5.2451	30.8449	97.9020	0.3934	34.8402	0.3266	35.1668	9.3239	0.3048	9.6286		40,028.9868	40,028.9868	1.9303		40,077.2453
Total	**5.4025**	**31.0296**	**98.0602**	**0.3945**	**34.8402**	**0.3406**	**35.1809**	**9.3239**	**0.3188**	**9.6427**		**40,250.6410**	**40,250.6410**	**1.9346**	**4.0600e-003**	**40,300.2170**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1371	3.0000e-005	3.0000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.4100e-003	6.4100e-003	2.0000e-005		6.8400e-003
Energy	0.0203	0.1847	0.1552	1.1100e-003		0.0140	0.0140		0.0140	0.0140		221.6478	221.6478	4.2500e-003	4.0600e-003	222.9649
Mobile	5.2451	30.8449	97.9020	0.3934	34.8402	0.3266	35.1668	9.3239	0.3048	9.6286		40,028.9868	40,028.9868	1.9303		40,077.2453
Total	**5.4025**	**31.0296**	**98.0602**	**0.3945**	**34.8402**	**0.3406**	**35.1809**	**9.3239**	**0.3188**	**9.6427**		**40,250.6410**	**40,250.6410**	**1.9346**	**4.0600e-003**	**40,300.2170**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	2/7/2022	2/11/2022	5	5	
2	Grading	Grading	2/14/2022	3/11/2022	5	20	
3	Building Construction	Building Construction	2/28/2022	6/13/2022	5	76	
4	Grading (second phase)	Grading	4/18/2022	5/6/2022	5	15	
5	Paving	Paving	5/9/2022	6/20/2022	5	31	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 50

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading (second phase)	Excavators	2	8.00	158	0.38
Grading (second phase)	Graders	1	8.00	187	0.41
Grading (second phase)	Rubber Tired Dozers	1	8.00	247	0.40
Grading (second phase)	Scrapers	2	8.00	367	0.48
Grading (second phase)	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading (second phase)	8	20.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	2.00	1.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.2 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1032	0.0699	0.7982	2.5000e-003	0.2709	2.0800e-003	0.2730	0.0719	1.9200e-003	0.0738		249.4992	249.4992	6.7800e-003		249.6688
Total	**0.1032**	**0.0699**	**0.7982**	**2.5000e-003**	**0.2709**	**2.0800e-003**	**0.2730**	**0.0719**	**1.9200e-003**	**0.0738**		**249.4992**	**249.4992**	**6.7800e-003**		**249.6688**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.3413	0.0000	6.3413	3.4857	0.0000	3.4857			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**6.3413**	**1.6126**	**7.9538**	**3.4857**	**1.4836**	**4.9692**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.2 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1032	0.0699	0.7982	2.5000e-003	0.2709	2.0800e-003	0.2730	0.0719	1.9200e-003	0.0738		249.4992	249.4992	6.7800e-003		249.6688
Total	**0.1032**	**0.0699**	**0.7982**	**2.5000e-003**	**0.2709**	**2.0800e-003**	**0.2730**	**0.0719**	**1.9200e-003**	**0.0738**		**249.4992**	**249.4992**	**6.7800e-003**		**249.6688**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.3 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1146	0.0777	0.8869	2.7800e-003	0.3010	2.3100e-003	0.3034	0.0798	2.1300e-003	0.0820		277.2214	277.2214	7.5400e-003		277.4098
Total	**0.1146**	**0.0777**	**0.8869**	**2.7800e-003**	**0.3010**	**2.3100e-003**	**0.3034**	**0.0798**	**2.1300e-003**	**0.0820**		**277.2214**	**277.2214**	**7.5400e-003**		**277.4098**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0443	0.0000	3.0443	1.2624	0.0000	1.2624			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**3.0443**	**1.6349**	**4.6792**	**1.2624**	**1.5041**	**2.7665**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.3 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1146	0.0777	0.8869	2.7800e-003	0.3010	2.3100e-003	0.3034	0.0798	2.1300e-003	0.0820		277.2214	277.2214	7.5400e-003		277.4098
Total	**0.1146**	**0.0777**	**0.8869**	**2.7800e-003**	**0.3010**	**2.3100e-003**	**0.3034**	**0.0798**	**2.1300e-003**	**0.0820**		**277.2214**	**277.2214**	**7.5400e-003**		**277.4098**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.2300e-003	0.0974	0.0283	2.8000e-004	7.3300e-003	2.0000e-004	7.5300e-003	2.1100e-003	1.9000e-004	2.3000e-003		29.5734	29.5734	1.7800e-003		29.6178
Worker	0.0115	7.7600e-003	0.0887	2.8000e-004	0.0301	2.3000e-004	0.0303	7.9800e-003	2.1000e-004	8.2000e-003		27.7221	27.7221	7.5000e-004		27.7410
Total	**0.0147**	**0.1052**	**0.1170**	**5.6000e-004**	**0.0374**	**4.3000e-004**	**0.0379**	**0.0101**	**4.0000e-004**	**0.0105**		**57.2955**	**57.2955**	**2.5300e-003**		**57.3587**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.2300e-003	0.0974	0.0283	2.8000e-004	7.3300e-003	2.0000e-004	7.5300e-003	2.1100e-003	1.9000e-004	2.3000e-003		29.5734	29.5734	1.7800e-003		29.6178
Worker	0.0115	7.7600e-003	0.0887	2.8000e-004	0.0301	2.3000e-004	0.0303	7.9800e-003	2.1000e-004	8.2000e-003		27.7221	27.7221	7.5000e-004		27.7410
Total	**0.0147**	**0.1052**	**0.1170**	**5.6000e-004**	**0.0374**	**4.3000e-004**	**0.0379**	**0.0101**	**4.0000e-004**	**0.0105**		**57.2955**	**57.2955**	**2.5300e-003**		**57.3587**

3.5 Grading (second phase) - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.5 Grading (second phase) - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1146	0.0777	0.8869	2.7800e-003	0.3010	2.3100e-003	0.3034	0.0798	2.1300e-003	0.0820		277.2214	277.2214	7.5400e-003		277.4098
Total	**0.1146**	**0.0777**	**0.8869**	**2.7800e-003**	**0.3010**	**2.3100e-003**	**0.3034**	**0.0798**	**2.1300e-003**	**0.0820**		**277.2214**	**277.2214**	**7.5400e-003**		**277.4098**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.0443	0.0000	3.0443	1.2624	0.0000	1.2624			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**3.0443**	**1.6349**	**4.6792**	**1.2624**	**1.5041**	**2.7665**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.5 Grading (second phase) - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1146	0.0777	0.8869	2.7800e-003	0.3010	2.3100e-003	0.3034	0.0798	2.1300e-003	0.0820		277.2214	277.2214	7.5400e-003		277.4098
Total	**0.1146**	**0.0777**	**0.8869**	**2.7800e-003**	**0.3010**	**2.3100e-003**	**0.3034**	**0.0798**	**2.1300e-003**	**0.0820**		**277.2214**	**277.2214**	**7.5400e-003**		**277.4098**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1028**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0860	0.0582	0.6652	2.0900e-003	0.2258	1.7400e-003	0.2275	0.0599	1.6000e-003	0.0615		207.9160	207.9160	5.6500e-003		208.0574
Total	**0.0860**	**0.0582**	**0.6652**	**2.0900e-003**	**0.2258**	**1.7400e-003**	**0.2275**	**0.0599**	**1.6000e-003**	**0.0615**		**207.9160**	**207.9160**	**5.6500e-003**		**208.0574**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1028**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0860	0.0582	0.6652	2.0900e-003	0.2258	1.7400e-003	0.2275	0.0599	1.6000e-003	0.0615		207.9160	207.9160	5.6500e-003		208.0574
Total	**0.0860**	**0.0582**	**0.6652**	**2.0900e-003**	**0.2258**	**1.7400e-003**	**0.2275**	**0.0599**	**1.6000e-003**	**0.0615**		**207.9160**	**207.9160**	**5.6500e-003**		**208.0574**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.2451	30.8449	97.9020	0.3934	34.8402	0.3266	35.1668	9.3239	0.3048	9.6286		40,028.9868	40,028.9868	1.9303		40,077.2453
Unmitigated	5.2451	30.8449	97.9020	0.3934	34.8402	0.3266	35.1668	9.3239	0.3048	9.6286		40,028.9868	40,028.9868	1.9303		40,077.2453

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Convenience Market With Gas Pumps	482.08	482.08	482.08	1,710,762	1,710,762
Fast Food Restaurant w/o Drive Thru	235.76	235.76	235.76	841,685	841,685
Gasoline/Service Station	759.99	759.99	759.99	13,831,818	13,831,818
Total	1,477.83	1,477.83	1,477.83	16,384,264	16,384,264

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Convenience Market With Gas	18.50	10.10	7.90	0.80	80.20	19.00	100	0	0
Fast Food Restaurant w/o Drive	18.50	10.10	7.90	1.50	79.50	19.00	100	0	0
Gasoline/Service Station	50.00	50.00	50.00	2.00	79.00	19.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Convenience Market With Gas Pumps	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Fast Food Restaurant w/o Drive Thru	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Gasoline/Service Station	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0203	0.1847	0.1552	1.1100e-003		0.0140	0.0140		0.0140	0.0140		221.6478	221.6478	4.2500e-003	4.0600e-003	222.9649
NaturalGas Unmitigated	0.0203	0.1847	0.1552	1.1100e-003		0.0140	0.0140		0.0140	0.0140		221.6478	221.6478	4.2500e-003	4.0600e-003	222.9649

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Convenience Market With Gas Pumps	13.7385	1.5000e-004	1.3500e-003	1.1300e-003	1.0000e-005		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		1.6163	1.6163	3.0000e-005	3.0000e-005	1.6259
Fast Food Restaurant w/o Drive Thru	1732.04	0.0187	0.1698	0.1426	1.0200e-003		0.0129	0.0129		0.0129	0.0129		203.7690	203.7690	3.9100e-003	3.7400e-003	204.9799
Gasoline/Service Station	138.231	1.4900e-003	0.0136	0.0114	8.0000e-005		1.0300e-003	1.0300e-003		1.0300e-003	1.0300e-003		16.2625	16.2625	3.1000e-004	3.0000e-004	16.3591
Total		**0.0203**	**0.1847**	**0.1552**	**1.1100e-003**		**0.0140**	**0.0140**		**0.0140**	**0.0140**		**221.6478**	**221.6478**	**4.2500e-003**	**4.0700e-003**	**222.9649**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Convenience Market With Gas Pumps	0.0137385	1.5000e-004	1.3500e-003	1.1300e-003	1.0000e-005		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004		1.6163	1.6163	3.0000e-005	3.0000e-005	1.6259
Fast Food Restaurant w/o Drive Thru	1.73204	0.0187	0.1698	0.1426	1.0200e-003		0.0129	0.0129		0.0129	0.0129		203.7690	203.7690	3.9100e-003	3.7400e-003	204.9799
Gasoline/Service Station	0.138231	1.4900e-003	0.0136	0.0114	8.0000e-005		1.0300e-003	1.0300e-003		1.0300e-003	1.0300e-003		16.2625	16.2625	3.1000e-004	3.0000e-004	16.3591
Total		**0.0203**	**0.1847**	**0.1552**	**1.1100e-003**		**0.0140**	**0.0140**		**0.0140**	**0.0140**		**221.6478**	**221.6478**	**4.2500e-003**	**4.0700e-003**	**222.9649**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1371	3.0000e-005	3.0000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.4100e-003	6.4100e-003	2.0000e-005		6.8400e-003
Unmitigated	0.1371	3.0000e-005	3.0000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.4100e-003	6.4100e-003	2.0000e-005		6.8400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0156					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1213					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.8000e-004	3.0000e-005	3.0000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.4100e-003	6.4100e-003	2.0000e-005		6.8400e-003
Total	**0.1371**	**3.0000e-005**	**3.0000e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**6.4100e-003**	**6.4100e-003**	**2.0000e-005**		**6.8400e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0156					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1213					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.8000e-004	3.0000e-005	3.0000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		6.4100e-003	6.4100e-003	2.0000e-005		6.8400e-003
Total	**0.1371**	**3.0000e-005**	**3.0000e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**6.4100e-003**	**6.4100e-003**	**2.0000e-005**		**6.8400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC2017 (v1.0.2) Emissions Inventory
Region Type: County
Region: LOS ANGELES
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption. Note 'day' in the unit is operation day.

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Fuel Consumption	**MPG (Derived)**	
LOS ANGELES	2022	All Other Buses	Aggregated	Aggregated	DSL	2,427	146,502	14	**10.21**	
LOS ANGELES	2022	LDA	Aggregated	Aggregated	GAS	4,040,505	154,312,636	5,097	**30.28**	
LOS ANGELES	2022	LDA	Aggregated	Aggregated	DSL	35,581	1,405,949	30	**47.31**	
LOS ANGELES	2022	LDA	Aggregated	Aggregated	ELEC	79,346	3,237,232	-	**#DIV/0!**	
LOS ANGELES	2022	LDT1	Aggregated	Aggregated	GAS	466,456	17,402,686	667	**26.11**	
LOS ANGELES	2022	LDT1	Aggregated	Aggregated	DSL	276	6,756	0	**21.82**	
LOS ANGELES	2022	LDT1	Aggregated	Aggregated	ELEC	3,551	146,697	-	**#DIV/0!**	
LOS ANGELES	2022	LDT2	Aggregated	Aggregated	GAS	1,395,328	52,851,239	2,173	**24.32**	
LOS ANGELES	2022	LDT2	Aggregated	Aggregated	DSL	9,029	384,253	11	**34.80**	
LOS ANGELES	2022	LDT2	Aggregated	Aggregated	ELEC	14,573	476,540	-	**#DIV/0!**	
LOS ANGELES	2022	LHD1	Aggregated	Aggregated	GAS	107,665	3,912,115	374	**10.45**	
LOS ANGELES	2022	LHD1	Aggregated	Aggregated	DSL	66,439	2,829,556	130	**21.74**	
LOS ANGELES	2022	LHD2	Aggregated	Aggregated	GAS	18,107	636,816	70	**9.10**	
LOS ANGELES	2022	LHD2	Aggregated	Aggregated	DSL	26,822	1,100,164	56	**19.58**	
LOS ANGELES	2022	MCY	Aggregated	Aggregated	GAS	181,917	1,290,804	36	**35.77**	
LOS ANGELES	2022	MDV	Aggregated	Aggregated	GAS	941,584	33,063,464	1,673	**19.77**	
LOS ANGELES	2022	MDV	Aggregated	Aggregated	DSL	19,913	791,157	29	**26.88**	
LOS ANGELES	2022	MDV	Aggregated	Aggregated	ELEC	7,530	254,508	-	**#DIV/0!**	
LOS ANGELES	2022	MH	Aggregated	Aggregated	GAS	19,672	198,292	39	**5.13**	
LOS ANGELES	2022	MH	Aggregated	Aggregated	DSL	6,143	64,186	6	**10.53**	
LOS ANGELES	2022	Motor Coach	Aggregated	Aggregated	DSL	690	93,044	14	**6.51**	
LOS ANGELES	2022	OBUS	Aggregated	Aggregated	GAS	4,028	167,753	34	**5.00**	
LOS ANGELES	2022	PTO	Aggregated	Aggregated	DSL	-	79,209	16	**4.93**	
LOS ANGELES	2022	SBUS	Aggregated	Aggregated	GAS	1,394	56,948	6	**9.20**	
LOS ANGELES	2022	SBUS	Aggregated	Aggregated	DSL	3,867	122,197	16	**7.61**	**MHD**
LOS ANGELES	2022	T6 Ag	Aggregated	Aggregated	DSL	12	102	0	**8.37**	**8.970169**
LOS ANGELES	2022	T6 CAIRP heavy	Aggregated	Aggregated	DSL	339	67,084	6	**11.55**	
LOS ANGELES	2022	T6 CAIRP small	Aggregated	Aggregated	DSL	182	9,464	1	**10.81**	
LOS ANGELES	2022	T6 instate construction heavy	Aggregated	Aggregated	DSL	2,542	170,127	17	**10.18**	
LOS ANGELES	2022	T6 instate construction small	Aggregated	Aggregated	DSL	8,462	450,146	44	**10.24**	
LOS ANGELES	2022	T6 instate heavy	Aggregated	Aggregated	DSL	10,547	1,455,515	132	**11.04**	
LOS ANGELES	2022	T6 instate small	Aggregated	Aggregated	DSL	38,737	1,972,425	191	**10.34**	
LOS ANGELES	2022	T6 OOS heavy	Aggregated	Aggregated	DSL	196	38,839	3	**11.56**	
LOS ANGELES	2022	T6 OOS small	Aggregated	Aggregated	DSL	104	5,388	0	**10.79**	
LOS ANGELES	2022	T6 Public	Aggregated	Aggregated	DSL	4,527	70,713	9	**8.16**	
LOS ANGELES	2022	T6 utility	Aggregated	Aggregated	DSL	1,014	17,106	2	**9.69**	
LOS ANGELES	2022	T6TS	Aggregated	Aggregated	GAS	14,670	811,415	161	**5.05**	**HHD**
LOS ANGELES	2022	T7 Ag	Aggregated	Aggregated	DSL	5	103	0	**5.56**	**6.413361**
LOS ANGELES	2022	T7 CAIRP	Aggregated	Aggregated	DSL	6,382	1,134,601	165	**6.89**	
LOS ANGELES	2022	T7 CAIRP construction	Aggregated	Aggregated	DSL	678	122,204	17	**7.32**	
LOS ANGELES	2022	T7 NNOOS	Aggregated	Aggregated	DSL	6,909	1,383,135	190	**7.27**	
LOS ANGELES	2022	T7 NOOS	Aggregated	Aggregated	DSL	2,521	445,790	66	**6.72**	
LOS ANGELES	2022	T7 POLA	Aggregated	Aggregated	DSL	8,290	1,076,132	189	**5.68**	
LOS ANGELES	2022	T7 Public	Aggregated	Aggregated	DSL	5,502	111,458	19	**5.81**	
LOS ANGELES	2022	T7 Single	Aggregated	Aggregated	DSL	6,004	398,913	61	**6.55**	
LOS ANGELES	2022	T7 single construction	Aggregated	Aggregated	DSL	4,340	303,165	45	**6.76**	
LOS ANGELES	2022	T7 SWCV	Aggregated	Aggregated	DSL	1,393	56,894	28	**2.03**	
LOS ANGELES	2022	T7 SWCV	Aggregated	Aggregated	NG	2,627	106,987	48	**2.24**	
LOS ANGELES	2022	T7 tractor	Aggregated	Aggregated	DSL	12,304	1,664,071	233	**7.13**	
LOS ANGELES	2022	T7 tractor construction	Aggregated	Aggregated	DSL	3,625	250,084	38	**6.62**	
LOS ANGELES	2022	T7 utility	Aggregated	Aggregated	DSL	407	8,267	1	**6.30**	
LOS ANGELES	2022	T7IS	Aggregated	Aggregated	GAS	55	5,861	1	**4.11**	
LOS ANGELES	2022	UBUS	Aggregated	Aggregated	GAS	464	33,581	8	**4.23**	
LOS ANGELES	2022	UBUS	Aggregated	Aggregated	DSL	37	5,105	1	**6.33**	
LOS ANGELES	2022	UBUS	Aggregated	Aggregated	ELEC	14	1,218	-	**#DIV/0!**	
LOS ANGELES	2022	UBUS	Aggregated	Aggregated	NG	4,177	442,636	113	**3.93**	

EMFAC2017 (v1.0.2) Emissions Inventory
Region Type: County
Region: LOS ANGELES
Calendar Year: 2020
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption. Note 'day' in the unit is operation day.

Region	Calendar Y	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Fuel Consumption	MPG (Derived)	
LOS ANGELES	2020	All Other Buses	Aggregated	Aggregated	DSL	2,343	137,564	14	**9.75**	
LOS ANGELES	2020	LDA	Aggregated	Aggregated	GAS	3,953,775	155,194,410	5,389	**28.80**	
LOS ANGELES	2020	LDA	Aggregated	Aggregated	DSL	31,076	1,254,452	28	**44.95**	
LOS ANGELES	2020	LDA	Aggregated	Aggregated	ELEC	57,357	2,261,367	-	**#DIV/0!**	
LOS ANGELES	2020	LDT1	Aggregated	Aggregated	GAS	437,140	16,649,906	670	**24.85**	
LOS ANGELES	2020	LDT1	Aggregated	Aggregated	DSL	319	7,980	0	**21.40**	
LOS ANGELES	2020	LDT1	Aggregated	Aggregated	ELEC	1,699	63,018	-	**#DIV/0!**	
LOS ANGELES	2020	LDT2	Aggregated	Aggregated	GAS	1,346,079	52,129,905	2,299	**22.68**	
LOS ANGELES	2020	LDT2	Aggregated	Aggregated	DSL	7,213	323,322	10	**32.92**	
LOS ANGELES	2020	LDT2	Aggregated	Aggregated	ELEC	8,126	276,686	-	**#DIV/0!**	
LOS ANGELES	2020	LHD1	Aggregated	Aggregated	GAS	108,459	4,003,593	391	**10.25**	
LOS ANGELES	2020	LHD1	Aggregated	Aggregated	DSL	56,903	2,486,530	118	**21.11**	
LOS ANGELES	2020	LHD2	Aggregated	Aggregated	GAS	17,784	634,396	71	**8.93**	
LOS ANGELES	2020	LHD2	Aggregated	Aggregated	DSL	22,880	965,315	51	**19.02**	
LOS ANGELES	2020	MCY	Aggregated	Aggregated	GAS	167,287	1,221,839	34	**35.85**	
LOS ANGELES	2020	MDV	Aggregated	Aggregated	GAS	921,419	33,053,258	1,783	**18.54**	
LOS ANGELES	2020	MDV	Aggregated	Aggregated	DSL	16,089	669,900	26	**25.38**	
LOS ANGELES	2020	MDV	Aggregated	Aggregated	ELEC	2,584	90,675	-	**#DIV/0!**	
LOS ANGELES	2020	MH	Aggregated	Aggregated	GAS	19,817	197,548	40	**4.98**	
LOS ANGELES	2020	MH	Aggregated	Aggregated	DSL	5,531	58,524	6	**10.25**	
LOS ANGELES	2020	Motor Coach	Aggregated	Aggregated	DSL	702	89,665	14	**6.20**	
LOS ANGELES	2020	OBUS	Aggregated	Aggregated	GAS	4,050	176,715	36	**4.87**	
LOS ANGELES	2020	PTO	Aggregated	Aggregated	DSL	-	77,604	16	**4.73**	
LOS ANGELES	2020	SBUS	Aggregated	Aggregated	GAS	1,187	49,914	6	**9.00**	
LOS ANGELES	2020	SBUS	Aggregated	Aggregated	DSL	3,809	120,609	16	**7.46**	**MHD**
LOS ANGELES	2020	T6 Ag	Aggregated	Aggregated	DSL	12	107	0	**8.40**	**8.491201**
LOS ANGELES	2020	T6 CAIRP heavy	Aggregated	Aggregated	DSL	325	64,529	6	**10.93**	
LOS ANGELES	2020	T6 CAIRP small	Aggregated	Aggregated	DSL	171	9,062	1	**10.32**	
LOS ANGELES	2020	T6 instate construction heavy	Aggregated	Aggregated	DSL	2,426	164,958	17	**9.61**	
LOS ANGELES	2020	T6 instate construction small	Aggregated	Aggregated	DSL	8,537	435,827	45	**9.75**	
LOS ANGELES	2020	T6 instate heavy	Aggregated	Aggregated	DSL	10,102	1,359,860	132	**10.31**	
LOS ANGELES	2020	T6 instate small	Aggregated	Aggregated	DSL	37,541	1,865,391	190	**9.82**	
LOS ANGELES	2020	T6 OOS heavy	Aggregated	Aggregated	DSL	186	37,251	3	**10.94**	
LOS ANGELES	2020	T6 OOS small	Aggregated	Aggregated	DSL	99	5,170	1	**10.30**	
LOS ANGELES	2020	T6 Public	Aggregated	Aggregated	DSL	4,476	69,103	9	**7.85**	
LOS ANGELES	2020	T6 utility	Aggregated	Aggregated	DSL	1,007	16,810	2	**9.16**	
LOS ANGELES	2020	T6TS	Aggregated	Aggregated	GAS	14,534	804,969	164	**4.90**	**HHD**
LOS ANGELES	2020	T7 Ag	Aggregated	Aggregated	DSL	4	121	0	**5.57**	**6.140757**
LOS ANGELES	2020	T7 CAIRP	Aggregated	Aggregated	DSL	6,042	1,093,836	164	**6.66**	
LOS ANGELES	2020	T7 CAIRP construction	Aggregated	Aggregated	DSL	644	118,491	17	**7.03**	
LOS ANGELES	2020	T7 NNOOS	Aggregated	Aggregated	DSL	6,606	1,333,461	194	**6.88**	
LOS ANGELES	2020	T7 NOOS	Aggregated	Aggregated	DSL	2,375	429,768	66	**6.51**	
LOS ANGELES	2020	T7 POLA	Aggregated	Aggregated	DSL	7,813	956,448	173	**5.52**	
LOS ANGELES	2020	T7 Public	Aggregated	Aggregated	DSL	5,389	109,151	19	**5.64**	
LOS ANGELES	2020	T7 Single	Aggregated	Aggregated	DSL	5,737	390,830	63	**6.20**	
LOS ANGELES	2020	T7 single construction	Aggregated	Aggregated	DSL	4,168	293,954	46	**6.35**	
LOS ANGELES	2020	T7 SWCV	Aggregated	Aggregated	DSL	1,728	70,608	35	**2.02**	
LOS ANGELES	2020	T7 SWCV	Aggregated	Aggregated	NG	2,261	92,031	42	**2.17**	
LOS ANGELES	2020	T7 tractor	Aggregated	Aggregated	DSL	11,762	1,618,822	240	**6.74**	
LOS ANGELES	2020	T7 tractor construction	Aggregated	Aggregated	DSL	3,451	242,486	38	**6.33**	
LOS ANGELES	2020	T7 utility	Aggregated	Aggregated	DSL	400	8,126	1	**5.99**	
LOS ANGELES	2020	T7IS	Aggregated	Aggregated	GAS	62	5,725	1	**3.88**	
LOS ANGELES	2020	UBUS	Aggregated	Aggregated	GAS	456	33,185	8	**4.15**	
LOS ANGELES	2020	UBUS	Aggregated	Aggregated	DSL	41	5,505	1	**6.42**	
LOS ANGELES	2020	UBUS	Aggregated	Aggregated	ELEC	14	1,218	-	**#DIV/0!**	
LOS ANGELES	2020	UBUS	Aggregated	Aggregated	NG	4,123	436,939	111	**3.95**	

On-road Mobile (Operational) Energy Usage

Note: Assumes that all vehicles that are generated as part of proposed project use gasoline as a fuel source (for simplicity), since the vast majority of vehicles generated by the project would use gasoline.

Unmitigated:

Therefore:

Average Daily VMT:

44,888 Note: Estimated via CalEEMod output (16,384,264 annual VMT, divided by 365 days per year).

Step 2: Given:

Fleet Mix (CalEEMod Output)

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
54.65%	4.50%	20.40%	12.04%	1.57%	0.62%	2.01%	3.07%	0.25%	0.22%	0.51%	0.07%	0.09%

And:

Gasoline MPG Factors for each Vehicle Class - Year 2022 (EMFAC2017 Output)

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
30.28	26.11	24.32	19.77	10.45	9.10	N/A	N/A	5.00	4.11	35.77	9.20	5.13

Therefore:

Weighted Average MPG Factors

Gasoline: **25.50** Diesel **6.41**

Therefore:

855 **daily gallons of gasoline**

or

312,157 **annual gallons of gasoline**

Therefore:

3,599 **daily gallons of diesel**

or

1,313,631 **annual gallons of diesel**

Off-road (i.e. On-site) Mobile (Construction) Energy Usage

Note: For the sake of simplicity, and as a conservative estimation, it was assumed that all off-road vehicles use diesel fuel as an energy source.
Site preparation and grading off-road mobile vehicle on-site gallons of fuel are calculated below.

Given Factor:	**63.4**	**metric tons**	**CO2** **(provided in CalEEMod Output File)**	
Conversion Factor:	2204.6262	pounds	per metric ton	
Intermediate Result:	**139,795**	**pounds**	**CO2**	
Conversion Factor:	22.38	pounds	CO2 per 1 gallon of diesel fuel	Source: U.S. EIA, 2016
Final Result:	**6,246.44**	**gallons**	**diesel fuel**	http://www.eia.gov/tools/faqs/faq.cfm?id=307&t=11

Mitigated Onsite Scenario	Total CO2 (MT/yr) (provided in CalEEMod Output File)	
Site Preparation	8.4300	Note: no distinct site preparation phase for this project (site preparation is included in demolation phase).
Grading	54.9800	

On-road Mobile (Construction) Energy Usage - Site Preparation

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

18

Worker Trip Length (miles) (CalEEMod Output)

14.7

Therefore:

Average Worker Daily VMT:

265

Step 2: Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class (EMFAC2017 Output) - Year 2020

LDA	LDT1	LDT2
28.80	24.85	22.68

Therefore:

Weighted Average Worker MPG Factor

26.3

Step 3: **Therefore:**

10 Worker daily gallons of gasoline

Step 4: 5 **# of Days (CalEEMod Output)**

Therefore:

Result: **50** **Total gallons of gasoline**

On-road Mobile (Construction) Energy Usage - Grading (Phase 1)

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

20

Worker Trip Length (miles) (CalEEMod Output)

14.7

Therefore:

Average Worker Daily VMT:

294

Step 2: Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class (from EMFAC2017) - Year 2020

LDA	LDT1	LDT2
28.80	24.85	22.68

Therefore:

Weighted Average Worker MPG Factor

26.28

Step 3: **Therefore:**

11 Worker daily gallons of gasoline

Step 4: 20 **# of Days (CalEEMod Output)**

Therefore:

Result: **224** **Total gallons of gasoline**

On-road Mobile (Construction) Energy Usage - Grading (Phase 2)

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

20

Worker Trip Length (miles) (CalEEMod Output)

14.7

Therefore:

Average Worker Daily VMT:

294

Step 2: Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class (from EMFAC2017) - Year 2020

LDA	LDT1	LDT2
28.80	24.85	22.68

Therefore:

Weighted Average Worker MPG Factor

26.28

Step 3: **Therefore:**

11 Worker daily gallons of gasoline

Step 4: 15 **# of Days (CalEEMod Output)**

Therefore:

Result: **168** **Total gallons of gasoline**

On-road Mobile (Construction) Energy Usage - Building Construction

Step 1:

Total Daily Worker Trips (CalEEMod Output)

2

Total Daily Vendor Trips (CalEEMod Output)

1

Worker Trip Length (miles) (CalEEMod Output)

14.7

Vendor Trip Length (miles) (CalEEMod Output)

6.9

Therefore:

Average Worker Daily VMT:

29

Average Vendor Daily VMT:

7

Step 2:

Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

Assumed Fleet Mix for Vendors

Fleet Mix for Workers (CalEEMod Output)

MHD	HHD
0%	100%

And:

MPG Factors for each Vehicle Class (from EMFAC2017) - Year 2020

Gasoline:

LDA	LDT1	LDT2
28.80	24.85	22.68

Diesel:

MHD	HHD
8.49	6.14

Therefore:

Weighted Average Worker (Gasoline) MPG Factor

26.28

Weighted Average Vendor (Diesel) MPG Factor

6.14

Step 3:

Therefore:

1 Worker daily gallons of gasoline

Therefore:

1 Vendor daily gallons of diesel

Step 4:

76 **# of Days (CalEEMod Output)**

Therefore:

85 Total gallons of gasoline

Therefore:

85 Total gallons of diesel

On-road Mobile (Construction) Energy Usage - Paving

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

15

Worker Trip Length (miles) (CalEEMod Output)

14.7

Therefore:

Average Worker Daily VMT:

221

Step 2: Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class (from EMFAC2017) - Year 2020

LDA	LDT1	LDT2
28.80	24.85	22.68

Therefore:

Weighted Average Worker MPG Factor

26.3

Step 3: **Therefore:**

8 Worker daily gallons of gasoline

Step 4: 31 **# of Days (CalEEMod Output)**

Therefore:

Result: **260** **Total gallons of gasoline**

Appendix C
Health Risk Assessment

ANALYSIS OF PUBLIC HEALTH RISKS

FOR THE

PILOT TRAVEL CENTER

MORENO VALLEY, CALIFORNIA

AUGUST 6, 2021

PROJECT TITLE

Pilot Travel Center Project

PREPARED BY:

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APPENDICES:

INTRODUCTION

This Health Risk Assessment (HRA) was prepared to assess potential public health risks that may be present at the proposed Pilot Travel Center Project in the city of Moreno Valley, Riverside County, California. This report analyzes the emissions of toxic air pollutants within the project area and their impacts on public health.

SCOPE OF RISK ASSESSMENT

Preparation of risk assessments is a three-step process. The first step is to identify potential contaminants that may lead to public health risks. The second step is to assess the magnitude of contaminants that may reach the public (exposure assessment). The last step is to calculate the magnitude of the health risk as a result of exposure to harmful contaminants on the basis of the toxicology of the contaminants.

The Office of Environmental Health Hazard Assessment and the South Coast Air Quality Management District (SCAQMD) provide guidance on the procedures that should be used, including, toxicological data for individual contaminants. While this risk assessment uses certain procedures and data from these Guidelines, this assessment is not intended to satisfy the reporting requirements under AB-2588 "Air Toxics" Hot Spots program.

The health risks that are evaluated in this study include:

- Residential Cancer Risk (30-year exposure);
- Workplace Cancer Risk (25-year exposure; start at age 16); and
- Acute and Chronic Hazard Indices.

The 30-year risk applies to residential areas where exposure may potentially occur 24 hours/day, 365 days/year. The 25-year risk is applicable to workplace exposure and therefore accounts for a reduced exposure for the fact that individuals typically would be exposed only during working hours. Non-cancer risks can be described as acute (short-term, exposure) or chronic health impacts.

SIGNIFICANCE CRITERIA

The following significance criteria shown in Table 1, based on guidance from the SCAQMD, are used in this report to assess the significance of public health risks.

TABLE 1: THRESHOLDS OF SIGNIFICANCE FOR PUBLIC HEALTH RISKS

Risk Metric	*Significance Threshold*
Residential Cancer Risk	10 per million
Workplace Cancer Risk	10 per million
Chronic and Acute non-cancer hazard Indices	non-cancer health hazard exposure index of 1.0

SOURCE: SCAQMD, 2015.

As shown in Table 1, a project that contributes a cancer risk in excess of 10 new cases in a population of one million persons at identified receptors, or a non-cancer hazard index of greater than or equal to 1.0 would be considered to have a significant project-level impact.

EMISSION SOURCES AND EXPOSURE

The source of toxic air pollutants (TACs) from the proposed Project is diesel particulate matter (DPM) from on-site truck idle and mobile emissions, and off-site mobile emissions. The Project would also generate truck trips that contain Truck Refrigeration Units (TRUs), which also generate DPM. Furthermore, gasoline refueling, storage, spillage and tank breathing would generate benzene emissions.

Based on numerous studies by the California Air Resources Board (ARB), DPM represents the largest single contributor to public health risks. Additionally, in its comprehensive assessment of diesel exhaust, OEHHA analyzed more than 30 studies of people who worked around diesel equipment, including truck drivers, railroad workers, and equipment operators. The studies showed these workers were more likely to develop lung cancer than workers who were not exposed to diesel emissions. These studies provide strong evidence that long-term occupational exposure to diesel exhaust increases the risk of lung cancer. Exposure to diesel exhaust can have immediate health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. In studies with human volunteers, diesel exhaust particles made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks.

CARB identified DPM as a TAC in 1998. Mobile sources (including trucks, buses, automobiles, trains, ships, and farm equipment) are by far the largest source of diesel emissions. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Diesel exhaust is composed of two phases, either gas or particulate; both contribute to the risk. The gas phase is composed of many of the urban HAPs, such as acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde, and polycyclic aromatic hydrocarbons. The particulate phase has many different types that can be classified by size or composition. The sizes of diesel particulates of greatest health concern are fine and ultrafine particles. These particles may be composed of elemental carbon with adsorbed compounds such as organics, sulfates, nitrates, metals, and other trace elements. Diesel exhaust is emitted from a broad range of on- and off-road diesel engines. As the Project would accommodate daily visits from heavy-duty diesel trucks during operations, an analysis of DPM was performed using the USEPA-approved AERMOD model.

The significance thresholds for TAC exposure requires an evaluation of non-cancer risk stated in terms of a hazard index. Non-cancer chronic impacts are calculated by dividing the annual average concentration by the REL for that substance. The potential for acute non-cancer hazards is evaluated by comparing the maximum short-term exposure level to an acute REL. RELs are designed to protect sensitive individuals within the population. The calculation of acute non-

cancer impacts is similar to the procedure for chronic non-cancer impacts. An acute or chronic hazard index of 1.0 is considered individually significant. The hazard index is calculated by dividing the acute or chronic exposure by the reference exposure level.

Vehicle DPM emissions were estimated using emission factors for course particulate matter (PM) generated with the 2021 version of the EMission FACtor model (EMFAC) developed by CARB. EMFAC 2021 is a mathematical model that was developed to calculate emission rates from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by CARB to project changes in future emissions from on-road mobile sources. The most recent version of this model, EMFAC 2021, incorporates regional motor vehicle data, information and estimates regarding the distribution of vehicle miles traveled by speed, and number of starts per day. The most important improvement in EMFAC 2021 is the integration of the new data and methods to estimate emissions from diesel trucks and buses. The model includes the emissions benefits of the truck and bus rule and the previously adopted rules for other on-road diesel equipment.

For this Project, annual average PM (idling and mobile) emission factors were generated by running EMFAC 2021 for vehicles in the Basin within Riverside County, for year 2022. EMFAC generates emission factors in terms of grams of pollutant emitted per vehicle activity and can calculate a matrix of emission factors at specific values of vehicle speed, temperature, and relative humidity. The model was run for speeds traveled on and within the vicinity of the Project site. Idling was assumed to occur for a maximum of five minutes per hour.

Emissions from the following sources of TACs were analyzed and are shown in Table 2:

- Truck on-site mobile emissions
- Truck on-site idling emissions
- Truck off-site mobile emissions
- TRU generated emissions
- Gasoline refueling operations

TABLE 2: EMISSION SOURCE ASSUMPTIONS

Source Type / Emission	Configuration	Assumptions
On-site Mobile Diesel Truck Circulation (DPM) *Modeled as line-volume sources* Configuration = Separated 2W	Plume height = 30 ft Plume width = 30 ft Length = based on path of travel Surface-Based/Elevated = Surface-based	• On-site travel of 760 trucks trips per day; 380 trucks visiting the site per day (Kimley-Horn & Associates, 2021). • Traveling distance based on proposed site plan layout. • PM mobile emissions factor provided by EMFAC 2021
On-site Diesel Truck Idling (DPM) *Modeled as volume sources* Release Height = 6.0 ft	On-site Idle of 380 trucks per day (Kimley-Horn & Associates, 2021).	• 5 minutes idling per vehicle • Emissions Factors based on EMFAC 2021
Off-site Mobile Diesel Truck Travel (DPM) *Modeled as line-volume sources* Configuration = Separated 2W	Plume height = 30 ft Plume width = 30 ft Length = based on path of travel Surface-Based/Elevated = Surface-based	• Off-site travel of 760 trucks trips per day; 380 trucks visiting the site per day (Kimley-Horn & Associates, 2021). • PM mobile emissions factor provided by EMFAC 2021
TRUs (DPM)	*Modeled as point sources* Release Height = 12 ft Diameter = 0.1 meter Velocity = 57.1 m/s @ 1500 rpm Temperature = 366 K	• Trucks are assumed to run their TRUs for 15 minutes per hour. • 34 hp rated TRUs • Emission factor (Source: ARB Guidelines for in-use Diesel-Fueled Transport Refrigeration Units TRU) • 0.53 load factor • 50 % of the 54 truck parking spaces occupied during nighttime (8 hours) • 15 % of the 54 Parking spaces occupied during Daytime (16 hours) • 15% of trucks have TRUs bases on fleet mix (Source: ATA)

Gasoline Service Activities (Benzene)	*Underground tank loading (point source)* Release Height = 3.66 m Temperature = 291 K Diameter = 0.0508 m Velocity = 0.00035 m/s *Underground tank breathing (point source)* Release Height = 3.66 m Temperature = 288.71 K Diameter = 0.0508 m Velocity = 0.000106 m/s *Vehicle refueling (volume source)* 1. Release Height = 4 m Length = 36 m Lateral = 8.37 m Vertical = 1.86 m *Spillage (volume source)* 1. Release Height = 4 m Length = 36 m Lateral = 8.37 m Vertical = 1.86 m	• 1,800 gallons of gasoline pumped per pump per day • Total of 16 gasoline fueling pumps.

DAILY TRUCK TRIPS

The total diesel truck trips generated by the proposed Project is based on a Traffic Impact Analysis for the proposed Project prepared by Kimley-Horn & Associates (2021). An estimate of 380 truck trips per day was used, which is based the 760 individual trips generated from heavy-duty trucks by the Project (Kimley Horn & Associates, 2021). Each heavy-duty truck trip was assumed to generate 380 round trips, for a total of 760 individual trips.

EMISSION RATES

Table 3 provides emission factors and the resultant emissions. For calculations, data outputs, and reference documents please see Appendices 1 and 2 of this HRA.

TABLE 3: EMISSION RATES BY SOURCE

Source	Pollutant	Volume/Size	Emission Factor	Emissions (lbs/yr)
On-site Diesel Truck (Mobile) Circulation	Diesel Particulate Matter (DPM)	380 trucks per day traveling 0.34 miles	0.01408049529612 g/mile	1.45
On-site Diesel Truck Idling	Diesel Particulate Matter (DPM)	380 trucks per day idling 5 minutes	0.00029167 g/hr -vehicle	0.09
Off-site Diesel Truck (Mobile) Travel	Diesel Particulate Matter (DPM)	380 trucks per day	0.01204949 g/mile	8.27
TRUs	Diesel Particulate Matter (DPM)	Based on the 54 truck parking spaces	0.02 g/hp-hr	0.94
Gasoline Service Activities	Benzene	16 pumps	Various (see Appendix 1)	Various (see Appendix 1)

SOURCES: EMFAC 2021 (V.1.01); KIMLEY-HORN & ASSOCIATES, 2021. SEE TABLE 2 OF THIS DOCUMENT AND APPENDIX 1 FOR FURTHER DETAIL.

NOTES: LBS = POUNDS; YR = YEAR; G = GRAMS; HP = HORSEPOWER

EXPOSURE ASSESSMENT

Exposure assessment involves translating the emission rate (e.g., lbs/hr, g/hr) of individual toxic air contaminants into the concentration (e.g., grams/cubic meter g /sec m^2 or parts per million) of each toxic air contaminant. The key step in performing an exposure assessment is the application of an air dispersion model. The dispersion model incorporates the local meteorological data (wind speed, wind direction, local temperature, inversions, etc.), stack height, exhaust flow characteristics, and other features such as terrain and building downwash into the dispersion of individual air contaminant. The Lakes Environmental AERMOD Version 10.0.1 (AERMOD Version 19191) dispersion model was employed for this assessment.

AERMOD is a steady-state, multiple-source, Gaussian dispersion model designed for use with emission sources situated in terrain where ground elevations can exceed the stack heights of the emission sources (not a factor in this case). AERMOD requires hourly meteorological data consisting of wind vector, wind speed, temperature, stability class, and mixing height. Surface and upper air meteorological data provided by the SCAQMD for Perris Meteorological Station was selected as being the most representative meteorology based on proximity to the Project site as well as being within the same SCAQMD source receptor area (SRA). The SCAQMD divides the Basin into 38 SRAs to forecast and report air quality. Both the Project site and the Perris Meteorological Station are located in SCAQMD SRA 24, known as the Perris Valley.

RISK ASSESSMENT

Once the emissions rates of individual air contaminants has been calculated, and an air dispersion model has been run through AERMOD, the next step in determining health risks is to determine the cancer risk, and acute and chronic incident rates. The Hotspots Analysis and Reporting Program (HARP) is a software suite used to assist with the programmatic requirements of the Air Toxics "Hot Spots" Program [Assembly Bill (AB) 2588]. HARP combines the tools needed to implement the requirements of AB 2588, such as reporting a facilities emissions inventory, determining a facilities prioritization score, conducting air dispersion modeling, and performing a facility health risk assessment. This study utilized the HARP2 Air Dispersion and Risk Tool with dispersion plot files created in AERMOD. Period and 1-hour dispersion files we used in combination with HARP-2 risk modelling software to calculate risk scenarios for residential, and workplace cancer rates, as well as acute and chronic incidences. After the risk assessment was complete HARP-2, plot files were then imported back into AREMOD for spatial and visual representation, and analysis of impact areas.

The Intake Rate Percentile sets the intake rate at which a person is exposed to the air pollutant. This study utilized the 'OEHHA Derived Method' intake rate percentile to assess risk each scenario, per OEHHA guidance. Additionally, the 'SCAQMD Mandatory minimum pathways' were selected for pathways to evaluate.

RISK ASSESSMENT RESULTS

The results of the risk analysis indicate that cancer risks vary depending on the exposure scenario (residential or worker) and on location. In general, locations nearest the Project site have the greatest exposure and the associated risks are considerably lower as distance from the Project site increases. Table 4 displays the residential and workplace cancer risk, and acute and chronic incidence rate results at nearest receptors. Figures 1 through 3 display a spatial representation of the associated risk by selected risk scenarios.

TABLE 4: SUMMARY OF MAXIMUM HEALTH RISKS

Risk Metric	Maximum Risk (per million persons)	Significance Threshold	Is Threshold Exceeded?
Residential Cancer Risk (30-year exposure)[1]	5.45	10 per million	No
Workplace Cancer Risk (25-year exposure)	0.39	10 per million	No
Chronic (non-cancer)	<0.01	Hazard Index ≥1	No
Acute (non-cancer) [2]	0.96	Hazard Index ≥1	No

SOURCES: AERMOD 10.0.1 (V.19191) (LAKES ENVIRONMENTAL SOFTWARE, 2021); HARP-2 AIR DISPERSION AND RISK TOOL

NOTES: [1]THE MAXIMUM RESIDENTIAL CANCER RISK WOULD BE FOR A RESIDENCE LOCATED APPROXIMATELY 700 FEET TO THE NORTH OF THE PROJECT SITE. THE INCREMENTAL RESIDENTIAL CANCER RISK (30-YEAR EXPOSURE) AT THIS LOCATION IS AS PROVIDED WITHIN THIS TABLE. [2]THE RECEPTOR WITH THE HIGHEST ACUTE (NON-CANCER) RISK IS LOCATED APPROXIMATELY 330 FEET TO THE NORTH OF THE PROJECT SITE.

The primary sources of TAC emissions from the Project result from DPM from on-site and off-site truck travel, and benzene for gasoline refueling. Idling of the trucks on-site generated the least emissions.

Overall, the results show that residential 30-year cancer risk would remain below 10 in a million at areas near the Project site that contain residential receptors. Furthermore, it is very unlikely any individual would remain at the same location for 30 years; therefore, this result represents a conservative estimate.

Variation of risk at all locations for workplace cancer is shown in Figure 2. Overall, the results show that 25-year workplace cancer risk using the 'OEHHA Derived Method" method would remain below 10 in a million threshold. The nearest workplace receptor is located just to the north of the Project site, which would experience a workplace cancer risk of below 10 in a million. This maximum risk level represents the worst-case scenario for 25-year workplace cancer risk.

Chronic or long-term exposure DPM can result is non-cancer health effects. Chronic non-cancer hazard results show that chronic risk on and near the Project site would remain below the hazard index of ≥1, with a maximum value of approximately less than 0.01. Acute non-cancer health effects were 0.96, also below the hazard index of ≥1.

CUMULATIVE RISKS

It is worth noting that the SCAQMD has conducted an in-depth analysis of TACs and their resulting health risks for all of Southern California. This study, the Multiple Air Toxics Exposure Study in the South Coast Air Basin, MATES IV," shows that cancer risk has decreased more than 50 percent between MATES III (2008) and MATES IV (2015).

MATES-IV is the most comprehensive dataset documenting the ambient air toxic levels and health risks associated with the Basin emissions. Therefore, MATES-IV study represents the baseline health risk for a cumulative analysis. MATES-IV estimates the average excess cancer risk level from exposure to TACs is less than 400 in one million basin-wide. These model estimates were based on monitoring data collected at 10 fixed sites within the Basin. None of the fixed monitoring sites are within the local area of the Project site. However, MATES-IV has extrapolated the excess cancer risk levels throughout the basin by modeling the specific grids. According to the latest online MATES-IV Carcinogenic Risk Interactive Map, MATES-IV modeling predicted an excess cancer risk of 1,067.39 in one million for the grid that contains the Project site. DPM is included in this cancer risk along with all other TAC sources. DPM accounts for 68 percent of the total risk shown in MATES-IV. The proposed Project would incrementally increase this risk to those living and working in the immediate vicinity of the proposed Project, as well as those in the surrounding environs, up to the maximum risks as disclosed in Table 4 (previous).

REPORT PREPARERS

This document was prepared by De Novo Planning Group, Inc. of El Dorado Hills under the direction of the City of Moreno Valley. De Novo Planning Group staff participating in document preparation included the following:

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Appendix 1: Emissions Rates and Emission Calculations

Source: EMFAC2021 (v1.0.1) Emission Rates
Region Type: County
Region: Riverside
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: miles/day for CVMT and EVMT, g/mile for RUNEX, PMBW and PMTW, mph for Speed

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Total VMT	CVMT	EVMT	PM10_RUNEX
Riverside	2022	T7 Tractor Class 8	Aggregate	40	Diesel	12452.3919	12452.39	0	0.012049491

Source: EMFAC2021 (v1.0.1) Emission Rates
Region Type: County
Region: Riverside
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: miles/day for CVMT and EVMT, g/mile for RUNEX, PMBW and PMTW, mph for Speed

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Total VMT	CVMT	EVMT	PM10_RUNEX
Riverside	2022	T7 Tractor Class 8	Aggregate	10	Diesel	302.3218403	302.3218	0	0.014080495

Mobile 1 Mobile

pounds per gram: 0.002205

Line Volume Source #1 (on-site):

Assumptions:			Source:
1. Average distanced travelled per truck:	0.336224	miles	AERMOD
2. # of trucks per day visiting the project site:	380	trucks	Traffic Impact Analysis (Kimley Horn)
3. PM10 Mobile Emissions Factors (Los Angeles County, 10 MPH, T7 Tractor Class 8, Year 2022):			EMFAC2021

Year: 2022 0.0140805 g/mile

Therefore:
Total daily PM10 On-site Mobile Emissions Generated by the project:

1.79899617 g/day-all trucks
0.0039661 lbs/day-all trucks
1.44762757 lbs/year-all trucks

Max Hr Emissions
Two times the average trip generation over the course of 1 hour, based on the given 24-hour daily totals (conservative estimate)

0.000331 lbs/hour-all trucks

Line Volume Source #2 (off-site from west):

Assumptions:			Source:
1. Average distanced travelled per truck:	1.069753	miles	AERMOD
2. # of trucks per day visiting the project site:	380	trucks	Traffic Impact Analysis (Kimley Horn)
3. PM10 Mobile Emissions Factors (Los Angeles County, 40 MPH, T7 Tractor Class 8, Year 2022):			EMFAC2021

Year: 2022 0.01204949 g/mile

Therefore:
Total daily PM10 On-site Mobile Emissions Generated by the project:

4.89819205 g/day-all trucks
0.01079865 lbs/day-all trucks
3.94150803 lbs/year-all trucks

Max Hr Emissions
Two times the average trip generation over the course of 1 hour, based on the given 24-hour daily totals (conservative estimate)

0.000900 lbs/hour-all trucks

Line Volume Source #2 (off-site from west):

Assumptions:			Source:
1. Average distanced travelled per truck:	1.175386	miles	AERMOD
2. # of trucks per day visiting the project site:	380	trucks	Traffic Impact Analysis (Kimley Horn)
3. PM10 Mobile Emissions Factors (Los Angeles County, 40 MPH, T7 Tractor Class 8, Year 2022):			EMFAC2021

Year: 2022 0.01204949 g/mile

Therefore:
Total daily PM10 On-site Mobile Emissions Generated by the project:

5.38186512 g/day-all trucks
0.01186497 lbs/day-all trucks
4.33071313 lbs/year-all trucks

Max Hr Emissions
Two times the average trip generation over the course of 1 hour, based on the given 24-hour daily totals (conservative estimate)

0.000989 lbs/hour-all trucks

Truck Idling

Idling Emission Rates taken from tables 3.2-41 and 42, of the EMFAC2014 Volume III - Technical Documentation Guidebook:
http://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf

Idling Emissions: pounds per gram: 0.002205

Table 3.2-40: Revised HHD Diesel Truck Low Idle Emission Rates (after 2009)	PM10	**0.001**	g/hr-truck	
Table 3.2-41: High Idle Emissions Rates for Summer (2009 and later)	PM10	**0.003**	g/hr-truck	Note: using an average of the summer and winter high idle emissions rates for the emission factor calcs
Table 3.2-42: High Idle Emissions Rates for Winter (2009 and later)	PM10	**0.004**	g/hr-truck	

0.000291667	g/5 minutes-truck	Note: assuming 5 minutes of idling per truck
0.000291667	g/day-truck	
24	hours in day	
380	# of trucks	
0.110833333	g/day-all trucks	
40.45416667	g/year-all trucks	
0.089186065	**lbs/year-all trucks**	
0.004618056	g/hr-all trucks	
7.69676E-05	g/min-all trucks	
1.28279E-06	g/sec-all trucks	

As provided by the Kimley Horn Traffic Study (2021): 93.00 Peak hour truck trips (maximum peak hour truck trips is used for the sake of a conservative analysis)

0.027125	g/5 minutes-vehicles combined	
0.0000598	lbs/5 minutes-vehicles combined	

Annual Emissions:	**0.011148258**	lbs/year-all trucks for each of the	**8** idling points
Max Hr Emissions:	**0.0000075**	for each sampling point, for max 1 hr	

Truck TRU

pounds per gram: 0.002205

0.02	g/hp-hr source: ARB	
34	hp rated TRU engines	
54	truck parking spaces as per site plan	
0.15	15% of trucks are refrigerated trucks (based on the # of 500,000 trucks in the U.S being reefers and approximately 3.2 million trucks in use nationwide).	Source ATA
0.5	Assume 50% of parking spaces are full during the nighttime	
0.15	Assume 15% of parking spaces are full during the daytime	
0.53	Load Factor of 0.53 based Walmart Riverwalk Marketplace HRA Impact Sciences, Inc	
0.25	Trucks are expected to run their TRUs for 15 minutes per hour (Leland Vilalvazo, phone conversation)	On/Off Cycle Factor
4.05	# of refrigerated trucks parked at nighttime during any given hour	
1.215	# of refrigerated trucks parked at daytime during any given hour	
8	Hours in a night	
16	Hours in a day	
2.91924	**Nighttime Emissions (g/day)**	
1.751544	**Daytime Emissions (g/day)**	

Total		
4.670784	**Emissions (g/day)**	
1,705	**Emissions (g/year)**	
3.759	**Emissions (lbs/year)**	
0.940	**Emissions (lbs/year)**	Note: Split over 4 point sources

Total Max 1 Hr		
0.364905	**Emissions (g/hr)**	
0.364905	**Emissions (g/hour)**	
0.00080	**Emissions (lbs/hour)**	
0.00020	**Emissions (lbs/hour)**	Note: Split over 4 point sources

Breathing loss (U/G tank)

	657,000	gallons of gasoline pumped per pump (conservative factor provided by the SJVAPCD).
	16	pumps at 8 stations
emission factor:	0.025	lbs gasoline vapor/thousand gallons of gasoline (source: SJVAPCD).
	0.000075	lbs benzene/thousand gallons of gasoline (source: SJVAPCD).
	788	thousand lbs of gasoline vapor/year
Annual result:	0.788	lbs of benzene vapor/year
	0.788	lbs of gasoline vapor/year
	365	days in a year
	24	hours in a day
Max Hr result:	0.00009	max lbs of benzene vapor/hr

U/G Tank filling (Loading) loss (98%)

	657,000	1,800 gallons of gasoline pumped per pump (conservative factor provided by SJVAPCD), equ. to 657,000 gallons per year
	16	pumps at 8stations
emission factor:	0.084	lbs gasoline vapor/thousand gallons of gasoline (source: SJVAPCD).
	0.000252	lbs benzene/thousand gallons of gasoline (source: SJVAPCD)
	2,649	thousand lbs of benzene vapor/year
Annual result:	2.649	lbs of benzene vapor/year
	2.649	lbs of benzene vapor/year
	365	days in a year
	24	hours in a day
Max Hr result:	0.0003024	max lbs of vapor/hr

Passenger Vehicle - Gasoline Dispensor

Refueling Vehicle fueling loss (95%) (Passenger Vehicle)

	1,800	gallons gasoline pumped per pump/per day (conservative factor provided by SJVAPCD).
	657,000	gallons gasoline pumped per pump/per year (conservative factor provided by SJVAPCD).
	16	pumps at 8 stations.
emission factor:		
	0.00126	Benzene Emission Factor (lb/1,000 gal) (source: SJVAPCD).
	13,245	thousand lbs of benzene vapor/year
Annual result:	13.25	lbs of Benzene/year (total)
	1.66	lbs of Benzene/year (for each pump station)
	1,800.00	gasoline per pump per day
	75.00	max hour per pump average
	0.00126	Benzene Emission Factor (lb/1,000 gal) (source: SJVAPCD)
	16	pumps
Max Hr result:	0.001512	max lbs of benzene/hr
	0.000189	lbs/pump station

Spillage (Passenger Vehicle)

	657,000	1,800 per-pump/day of gasoline pumped (conservative factor provided by SJVAPCD).
	16	pumps at 8 stations
emission factor:		
	0.0042	Benzene Emission Factor (lb/1,000 gal) (source: SJVAPCD).
	44,150	thousand lbs of benzene vapor/year
Annual result:	44.15	lbs of Benzene/year (total)
	5.52	lbs of Benzene/year (for each pump station)
	1,800.00	gasoline per pump per day (source: SJVAPCD).
	75.00	max hour per pump average
	0.0042	
Note: The 6 idling poin	16	pumps
Max Hr result:	0.00504	max lbs of benzene/hr
	0.00063	lbs/pump station

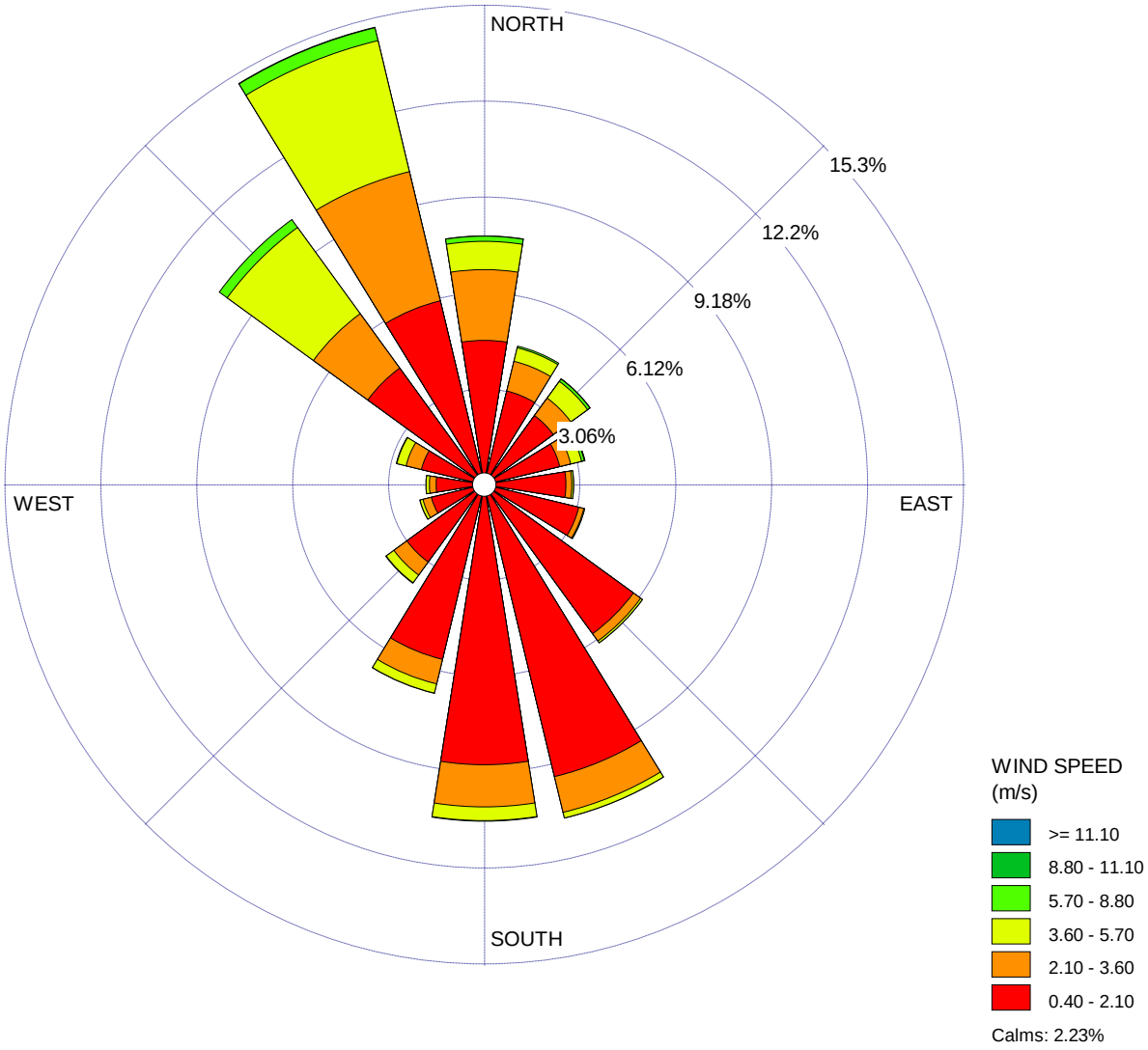
Sum of Refueliing Vehicle fuling loss and Spillage Combined

Annual result:	**57.396**	lbs of benzene vapor/year
Max Hr result:	**0.00504**	max lbs of vapor/hr

Appendix 2: Wind Rose

WIND ROSE PLOT:
Station #3171

DISPLAY:
Wind Speed
Direction (blowing from)



COMMENTS:	DATA PERIOD: **Start Date: 1/1/2010 - 00:00** **End Date: 12/31/2016 - 23:59**	COMPANY NAME: **South Coast Air Quality Management District**	
		MODELER: **Melissa Sheffer**	
	CALM WINDS: **2.23%**	TOTAL COUNT: **43476 hrs.**	
	AVG. WIND SPEED: **1.65 m/s**	DATE: **5/25/2017**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

Appendix 3: AERMOD Output File

```
** Lakes Environmental AERMOD MPI
**
****************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 10.0.1
** Lakes Environmental Software Inc.
** Date: 8/6/2021
** File: C:\Users\Smith\Dropbox\My PC (DESKTOP-977GSBU)\Documents\HRA\Moreno Valley\Moreno Valley.ADI
**
****************************************
**
**
****************************************
** AERMOD Control Pathway
****************************************
**
**
CO STARTING
  TITLEONE C:\Users\Smith\Dropbox\My PC (DESKTOP-977GSBU)\Documents\HRA\Moreno
  MODELOPT CONC FLAT
  AVERTIME 1 PERIOD
  POLLUTID OTHER
  RUNORNOT RUN
  ERRORFIL "Moreno Valley.err"
CO FINISHED
**
****************************************
** AERMOD Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
** ----------------------------------------------------------------
** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE1
** DESCRSRC On-site Mobile
** PREFIX
** Length of Side = 9.14
** Configuration = Adjacent
** Emission Rate = 1.0
** Vertical Dimension = 9.14
** SZINIT = 4.25
** Nodes = 7
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** 485284.430, 3755219.544, 0.00, 3.66, 4.25
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** 485326.539, 3755160.667, 0.00, 3.66, 4.25
** 485326.539, 3755215.073, 0.00, 3.66, 4.25
** 485284.803, 3755214.327, 0.00, 3.66, 4.25
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LOCATION	L0000003	VOLUME	485284.430	3755046.394 0.0
LOCATION	L0000004	VOLUME	485284.430	3755055.538 0.0
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LOCATION	L0000007	VOLUME	485284.430	3755082.970 0.0
LOCATION	L0000008	VOLUME	485284.430	3755092.114 0.0
LOCATION	L0000009	VOLUME	485284.430	3755101.258 0.0
LOCATION	L0000010	VOLUME	485284.430	3755110.402 0.0
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** End of LINE VOLUME Source ID = SLINE1
** ------------------------------------------------------------------
** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE3
** DESCRSRC Off-site Mobile (from west)
** PREFIX
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** Configuration = Adjacent
** Emission Rate = 1.0
** Vertical Dimension = 9.14
** SZINIT = 4.25
** Nodes = 10
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** End of LINE VOLUME Source ID = SLINE3
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** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = SLINE4
** DESCRSRC Off-site Mobile (from east)
** PREFIX
** Length of Side = 9.14
** Configuration = Adjacent
** Emission Rate = 1.0
** Vertical Dimension = 9.14
** SZINIT = 4.25

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LOCATION	L0000583	VOLUME	485515.598	3755254.033 0.0
LOCATION	L0000584	VOLUME	485515.638	3755244.889 0.0

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  LOCATION L0000585     VOLUME   485515.677 3755235.745 0.0
  LOCATION L0000586     VOLUME   485515.717 3755226.601 0.0
  LOCATION L0000587     VOLUME   485515.756 3755217.457 0.0
  LOCATION L0000588     VOLUME   485515.796 3755208.313 0.0
  LOCATION L0000589     VOLUME   485515.835 3755199.169 0.0
  LOCATION L0000590     VOLUME   485515.875 3755190.025 0.0
  LOCATION L0000591     VOLUME   485515.914 3755180.881 0.0
  LOCATION L0000592     VOLUME   485515.954 3755171.737 0.0
  LOCATION L0000593     VOLUME   485515.993 3755162.593 0.0
  LOCATION L0000594     VOLUME   485516.033 3755153.449 0.0
  LOCATION L0000595     VOLUME   485516.072 3755144.306 0.0
  LOCATION L0000596     VOLUME   485516.112 3755135.162 0.0
  LOCATION L0000597     VOLUME   485516.151 3755126.018 0.0
  LOCATION L0000598     VOLUME   485516.191 3755116.874 0.0
  LOCATION L0000599     VOLUME   485516.230 3755107.730 0.0
  LOCATION L0000600     VOLUME   485516.270 3755098.586 0.0
  LOCATION L0000601     VOLUME   485516.309 3755089.442 0.0
  LOCATION L0000602     VOLUME   485516.349 3755080.298 0.0
  LOCATION L0000603     VOLUME   485516.388 3755071.154 0.0
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  LOCATION L0000605     VOLUME   485516.467 3755052.866 0.0
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  LOCATION L0000608     VOLUME   485516.586 3755025.435 0.0
  LOCATION L0000609     VOLUME   485515.396 3755017.522 0.0
  LOCATION L0000610     VOLUME   485506.253 3755017.577 0.0
  LOCATION L0000611     VOLUME   485497.109 3755017.632 0.0
  LOCATION L0000612     VOLUME   485487.965 3755017.687 0.0
  LOCATION L0000613     VOLUME   485478.821 3755017.742 0.0
  LOCATION L0000614     VOLUME   485469.677 3755017.797 0.0
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  LOCATION L0000616     VOLUME   485451.390 3755017.907 0.0
  LOCATION L0000617     VOLUME   485442.246 3755017.962 0.0
  LOCATION L0000618     VOLUME   485433.102 3755018.017 0.0
  LOCATION L0000619     VOLUME   485423.958 3755018.073 0.0
  LOCATION L0000620     VOLUME   485414.814 3755018.128 0.0
  LOCATION L0000621     VOLUME   485405.670 3755018.183 0.0
  LOCATION L0000622     VOLUME   485396.527 3755018.238 0.0
  LOCATION L0000623     VOLUME   485387.383 3755018.293 0.0
  LOCATION L0000624     VOLUME   485378.239 3755018.348 0.0
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  LOCATION L0000626     VOLUME   485359.951 3755018.458 0.0
  LOCATION L0000627     VOLUME   485350.807 3755018.513 0.0
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  LOCATION L0000634     VOLUME   485286.801 3755018.899 0.0
** End of LINE VOLUME Source ID = SLINE4
  LOCATION VOL1       VOLUME   485324.600  3755251.130       0.0
** DESCRSRC Idling 1
  LOCATION VOL2       VOLUME   485345.000  3755251.130       0.0
** DESCRSRC Idling 2
  LOCATION VOL3       VOLUME   485365.000  3755251.130       0.0
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** DESCRSRC Idling 3
  LOCATION VOL4      VOLUME    485385.000  3755251.130       0.0
** DESCRSRC Idling 4
  LOCATION VOL5      VOLUME    485293.000  3755200.000       0.0
** DESCRSRC Idling 5
  LOCATION VOL6      VOLUME    485293.000  3755180.000       0.0
** DESCRSRC Idling 6
  LOCATION VOL7      VOLUME    485293.000  3755160.000       0.0
** DESCRSRC Idling 7
  LOCATION VOL8      VOLUME    485310.000  3755150.000       0.0
** DESCRSRC Idling 8
  LOCATION STCK1     POINT     485324.460  3755251.570       0.0
** DESCRSRC TRU 1
  LOCATION STCK2     POINT     485364.920  3755251.280       0.0
** DESCRSRC TRU 2
  LOCATION STCK3     POINT     485293.240  3755180.180       0.0
** DESCRSRC TRU 3
  LOCATION STCK4     POINT     485309.980  3755150.480       0.0
** DESCRSRC TRU 4
  LOCATION STCK5     POINT     485369.910  3755059.630       0.0
** DESCRSRC Underground tank loading
  LOCATION STCK6     POINT     485369.910  3755059.630       0.0
** DESCRSRC Underground tank breathing
  LOCATION VOL9      VOLUME    485369.810  3755059.530       0.0
** DESCRSRC Benzene refueling and spillage
** Source Parameters **
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  SRCPARAM L0000007  0.0169491525  3.66  4.25  4.25
  SRCPARAM L0000008  0.0169491525  3.66  4.25  4.25
  SRCPARAM L0000009  0.0169491525  3.66  4.25  4.25
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SRCPARAM STCK6         1.0    3.660  288.710   0.00011    0.051
SRCPARAM VOL9          1.0    4.000    8.370    1.860
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SRCGROUP SLINE3  L0000396 L0000397 L0000398 L0000399 L0000400 L0000401
SRCGROUP SLINE3  L0000402 L0000403 L0000404 L0000405 L0000406 L0000407
SRCGROUP SLINE3  L0000408 L0000409 L0000410 L0000411 L0000412 L0000413
SRCGROUP SLINE3  L0000414 L0000415 L0000416 L0000417 L0000418 L0000419
SRCGROUP SLINE3  L0000420 L0000421 L0000422 L0000423 L0000424 L0000425
SRCGROUP SLINE3  L0000426 L0000427
SRCGROUP SLINE4  L0000428 L0000429 L0000430 L0000431 L0000432 L0000433
SRCGROUP SLINE4  L0000434 L0000435 L0000436 L0000437 L0000438 L0000439
SRCGROUP SLINE4  L0000440 L0000441 L0000442 L0000443 L0000444 L0000445
SRCGROUP SLINE4  L0000446 L0000447 L0000448 L0000449 L0000450 L0000451
SRCGROUP SLINE4  L0000452 L0000453 L0000454 L0000455 L0000456 L0000457
SRCGROUP SLINE4  L0000458 L0000459 L0000460 L0000461 L0000462 L0000463
SRCGROUP SLINE4  L0000464 L0000465 L0000466 L0000467 L0000468 L0000469
SRCGROUP SLINE4  L0000470 L0000471 L0000472 L0000473 L0000474 L0000475
SRCGROUP SLINE4  L0000476 L0000477 L0000478 L0000479 L0000480 L0000481
SRCGROUP SLINE4  L0000482 L0000483 L0000484 L0000485 L0000486 L0000487
SRCGROUP SLINE4  L0000488 L0000489 L0000490 L0000491 L0000492 L0000493
SRCGROUP SLINE4  L0000494 L0000495 L0000496 L0000497 L0000498 L0000499
SRCGROUP SLINE4  L0000500 L0000501 L0000502 L0000503 L0000504 L0000505
SRCGROUP SLINE4  L0000506 L0000507 L0000508 L0000509 L0000510 L0000511
SRCGROUP SLINE4  L0000512 L0000513 L0000514 L0000515 L0000516 L0000517
SRCGROUP SLINE4  L0000518 L0000519 L0000520 L0000521 L0000522 L0000523
SRCGROUP SLINE4  L0000524 L0000525 L0000526 L0000527 L0000528 L0000529
```

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  SRCGROUP SLINE4   L0000530 L0000531 L0000532 L0000533 L0000534 L0000535
  SRCGROUP SLINE4   L0000536 L0000537 L0000538 L0000539 L0000540 L0000541
  SRCGROUP SLINE4   L0000542 L0000543 L0000544 L0000545 L0000546 L0000547
  SRCGROUP SLINE4   L0000548 L0000549 L0000550 L0000551 L0000552 L0000553
  SRCGROUP SLINE4   L0000554 L0000555 L0000556 L0000557 L0000558 L0000559
  SRCGROUP SLINE4   L0000560 L0000561 L0000562 L0000563 L0000564 L0000565
  SRCGROUP SLINE4   L0000566 L0000567 L0000568 L0000569 L0000570 L0000571
  SRCGROUP SLINE4   L0000572 L0000573 L0000574 L0000575 L0000576 L0000577
  SRCGROUP SLINE4   L0000578 L0000579 L0000580 L0000581 L0000582 L0000583
  SRCGROUP SLINE4   L0000584 L0000585 L0000586 L0000587 L0000588 L0000589
  SRCGROUP SLINE4   L0000590 L0000591 L0000592 L0000593 L0000594 L0000595
  SRCGROUP SLINE4   L0000596 L0000597 L0000598 L0000599 L0000600 L0000601
  SRCGROUP SLINE4   L0000602 L0000603 L0000604 L0000605 L0000606 L0000607
  SRCGROUP SLINE4   L0000608 L0000609 L0000610 L0000611 L0000612 L0000613
  SRCGROUP SLINE4   L0000614 L0000615 L0000616 L0000617 L0000618 L0000619
  SRCGROUP SLINE4   L0000620 L0000621 L0000622 L0000623 L0000624 L0000625
  SRCGROUP SLINE4   L0000626 L0000627 L0000628 L0000629 L0000630 L0000631
  SRCGROUP SLINE4   L0000632 L0000633 L0000634
  SRCGROUP STCK1    STCK1
  SRCGROUP STCK2    STCK2
  SRCGROUP STCK3    STCK3
  SRCGROUP STCK4    STCK4
  SRCGROUP STCK5    STCK5
  SRCGROUP STCK6    STCK6
  SRCGROUP VOL1     VOL1
  SRCGROUP VOL2     VOL2
  SRCGROUP VOL3     VOL3
  SRCGROUP VOL4     VOL4
  SRCGROUP VOL5     VOL5
  SRCGROUP VOL6     VOL6
  SRCGROUP VOL7     VOL7
  SRCGROUP VOL8     VOL8
  SRCGROUP VOL9     VOL9
  SRCGROUP ALL
SO FINISHED
**
**********************************************
** AERMOD Receptor Pathway
**********************************************
**
**
RE STARTING
** DESCRREC "" ""
  DISCCART    485093.55   3755491.26
  DISCCART    485235.70   3755497.85
  DISCCART    485367.49   3755576.92
  DISCCART    485383.96   3755577.39
  DISCCART    485397.61   3755578.33
  DISCCART    485413.14   3755577.86
  DISCCART    485431.97   3755578.80
  DISCCART    485449.38   3755579.27
  DISCCART    485464.45   3755580.21
  DISCCART    485525.18   3755702.36
  DISCCART    485607.91   3755706.92
  DISCCART    485568.82   3755774.67
  DISCCART    485536.25   3755800.73
```

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   DISCCART    485534.95   3755835.91
   DISCCART    485538.86   3755736.89
   DISCCART    485489.91   3754619.57
   DISCCART    484492.95   3755473.69
   DISCCART    484492.95   3755525.55
   DISCCART    484491.69   3755579.94
   DISCCART    484485.36   3755635.59
   DISCCART    484496.75   3755682.39
   DISCCART    484498.01   3755725.40
   DISCCART    484501.81   3755767.14
   DISCCART    484503.07   3755797.50
   DISCCART    484504.34   3755829.12
RE FINISHED
**
**********************************************
** AERMOD Meteorology Pathway
**********************************************
**
**
ME STARTING
   SURFFILE "Met Data\PERI_v9.SFC"
   PROFFILE "Met Data\PERI_v9.PFL"
   SURFDATA 3171 2010 PERI
   UAIRDATA 3190 2010
   SITEDATA 99999 2010
   PROFBASE 443.0 METERS
ME FINISHED
**
**********************************************
** AERMOD Output Pathway
**********************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST "Moreno Valley.AD\01H1GALL.PLT" 31
   PLOTFILE 1 SLINE1 1ST "Moreno Valley.AD\01H1G001.PLT" 32
   PLOTFILE 1 SLINE3 1ST "Moreno Valley.AD\01H1G002.PLT" 33
   PLOTFILE 1 SLINE4 1ST "Moreno Valley.AD\01H1G003.PLT" 34
   PLOTFILE 1 STCK1 1ST "Moreno Valley.AD\01H1G004.PLT" 35
   PLOTFILE 1 STCK2 1ST "Moreno Valley.AD\01H1G005.PLT" 36
   PLOTFILE 1 STCK3 1ST "Moreno Valley.AD\01H1G006.PLT" 37
   PLOTFILE 1 STCK4 1ST "Moreno Valley.AD\01H1G007.PLT" 38
   PLOTFILE 1 STCK5 1ST "Moreno Valley.AD\01H1G008.PLT" 39
   PLOTFILE 1 STCK6 1ST "Moreno Valley.AD\01H1G009.PLT" 40
   PLOTFILE 1 VOL1 1ST "Moreno Valley.AD\01H1G010.PLT" 41
   PLOTFILE 1 VOL2 1ST "Moreno Valley.AD\01H1G011.PLT" 42
   PLOTFILE 1 VOL3 1ST "Moreno Valley.AD\01H1G012.PLT" 43
   PLOTFILE 1 VOL4 1ST "Moreno Valley.AD\01H1G013.PLT" 44
   PLOTFILE 1 VOL5 1ST "Moreno Valley.AD\01H1G014.PLT" 45
   PLOTFILE 1 VOL6 1ST "Moreno Valley.AD\01H1G015.PLT" 46
   PLOTFILE 1 VOL7 1ST "Moreno Valley.AD\01H1G016.PLT" 47
   PLOTFILE 1 VOL8 1ST "Moreno Valley.AD\01H1G017.PLT" 48
   PLOTFILE 1 VOL9 1ST "Moreno Valley.AD\01H1G018.PLT" 49
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  PLOTFILE PERIOD ALL "Moreno Valley.AD\PE00GALL.PLT" 50
  PLOTFILE PERIOD SLINE1 "Moreno Valley.AD\PE00G001.PLT" 51
  PLOTFILE PERIOD SLINE3 "Moreno Valley.AD\PE00G002.PLT" 52
  PLOTFILE PERIOD SLINE4 "Moreno Valley.AD\PE00G003.PLT" 53
  PLOTFILE PERIOD STCK1 "Moreno Valley.AD\PE00G004.PLT" 54
  PLOTFILE PERIOD STCK2 "Moreno Valley.AD\PE00G005.PLT" 55
  PLOTFILE PERIOD STCK3 "Moreno Valley.AD\PE00G006.PLT" 56
  PLOTFILE PERIOD STCK4 "Moreno Valley.AD\PE00G007.PLT" 57
  PLOTFILE PERIOD STCK5 "Moreno Valley.AD\PE00G008.PLT" 58
  PLOTFILE PERIOD STCK6 "Moreno Valley.AD\PE00G009.PLT" 59
  PLOTFILE PERIOD VOL1 "Moreno Valley.AD\PE00G010.PLT" 60
  PLOTFILE PERIOD VOL2 "Moreno Valley.AD\PE00G011.PLT" 61
  PLOTFILE PERIOD VOL3 "Moreno Valley.AD\PE00G012.PLT" 62
  PLOTFILE PERIOD VOL4 "Moreno Valley.AD\PE00G013.PLT" 63
  PLOTFILE PERIOD VOL5 "Moreno Valley.AD\PE00G014.PLT" 64
  PLOTFILE PERIOD VOL6 "Moreno Valley.AD\PE00G015.PLT" 65
  PLOTFILE PERIOD VOL7 "Moreno Valley.AD\PE00G016.PLT" 66
  PLOTFILE PERIOD VOL8 "Moreno Valley.AD\PE00G017.PLT" 67
  PLOTFILE PERIOD VOL9 "Moreno Valley.AD\PE00G018.PLT" 68
  SUMMFILE "Moreno Valley.sum"
OU FINISHED


 *** Message Summary For AERMOD Model Setup ***

 --------- Summary of Total Messages --------

 A Total of         0 Fatal Error Message(s)
 A Total of        14 Warning Message(s)
 A Total of         0 Informational Message(s)


  ******** FATAL ERROR MESSAGES ********
         ***  NONE  ***


  ********   WARNING MESSAGES   ********
 SO W320   1045      VPARM: Input Parameter May Be Out-of-Range for Parameter      SZINIT
 SO W320   1046      VPARM: Input Parameter May Be Out-of-Range for Parameter      SZINIT
 SO W320   1047      VPARM: Input Parameter May Be Out-of-Range for Parameter      SZINIT
 SO W320   1048      VPARM: Input Parameter May Be Out-of-Range for Parameter      SZINIT
 SO W320   1049      VPARM: Input Parameter May Be Out-of-Range for Parameter      SZINIT
 SO W320   1050      VPARM: Input Parameter May Be Out-of-Range for Parameter      SZINIT
 SO W320   1051      VPARM: Input Parameter May Be Out-of-Range for Parameter      SZINIT
 SO W320   1052      VPARM: Input Parameter May Be Out-of-Range for Parameter      SZINIT
 SO W320   1053      PPARM: Input Parameter May Be Out-of-Range for Parameter        VS
 SO W320   1054      PPARM: Input Parameter May Be Out-of-Range for Parameter        VS
 SO W320   1055      PPARM: Input Parameter May Be Out-of-Range for Parameter        VS
 SO W320   1056      PPARM: Input Parameter May Be Out-of-Range for Parameter        VS
 ME W186   1201      MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used      0.50
 ME W187   1201      MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

 ************************************
 *** SETUP Finishes Successfully ***
 ************************************
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*** AERMOD - VERSION 19191 *** *** C:\Users\Smith\Dropbox\My PC (DESKTOP-977GSBU)\Documents\HRA\Moreno *** 08/06/21
*** AERMET - VERSION 16216 *** *** *** 14:17:39

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** MODEL SETUP OPTIONS SUMMARY ***

**Model Is Setup For Calculation of Average CONCentration Values.

-- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:
1. Stack-tip Downwash.
2. Model Assumes Receptors on FLAT Terrain.
3. Use Calms Processing Routine.
4. Use Missing Data Processing Routine.
5. No Exponential Decay.

**Other Options Specified:
ADJ_U* - Use ADJ_U* option for SBL in AERMET
CCVR_Sub - Meteorological data includes CCVR substitutions
TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: OTHER

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates PERIOD Averages

**This Run Includes: 469 Source(s); 19 Source Group(s); and 25 Receptor(s)

with: 6 POINT(s), including
0 POINTCAP(s) and 0 POINTHOR(s)
and: 463 VOLUME source(s)
and: 0 AREA type source(s)
and: 0 LINE source(s)
and: 0 RLINE/RLINEXT source(s)
and: 0 OPENPIT source(s)
and: 0 BUOYANT LINE source(s) with 0 line(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 16216

**Output Options Selected:
Model Outputs Tables of PERIOD Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 443.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 3.8 MB of RAM.

**Input Runstream File: aermod.inp
**Output Print File: aermod.out

**Detailed Error/Message File: Moreno Valley.err
**File for Summary of Results: Moreno Valley.sum

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	EMIS RATE CAP/ HOR VARY BY SCALAR
STCK1	0	0.10000E+01	485324.5	3755251.6	443.0	3.66	366.00	57.10	0.10	NO	NO	NO
STCK2	0	0.10000E+01	485364.9	3755251.3	443.0	3.66	366.00	57.10	0.10	NO	NO	NO
STCK3	0	0.10000E+01	485293.2	3755180.2	443.0	3.66	366.00	57.10	0.10	NO	NO	NO
STCK4	0	0.10000E+01	485310.0	3755150.5	443.0	3.66	366.00	57.10	0.10	NO	NO	NO
STCK5	0	0.10000E+01	485369.9	3755059.6	443.0	3.66	291.00	0.00	0.05	NO	NO	NO
STCK6	0	0.10000E+01	485369.9	3755059.6	443.0	3.66	288.71	0.00	0.05	NO	NO	NO

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY

L0000001	0	0.16949E-01	485284.4	3755028.1	443.0	3.66	4.25	4.25	NO
L0000002	0	0.16949E-01	485284.4	3755037.2	443.0	3.66	4.25	4.25	NO
L0000003	0	0.16949E-01	485284.4	3755046.4	443.0	3.66	4.25	4.25	NO
L0000004	0	0.16949E-01	485284.4	3755055.5	443.0	3.66	4.25	4.25	NO
L0000005	0	0.16949E-01	485284.4	3755064.7	443.0	3.66	4.25	4.25	NO
L0000006	0	0.16949E-01	485284.4	3755073.8	443.0	3.66	4.25	4.25	NO
L0000007	0	0.16949E-01	485284.4	3755083.0	443.0	3.66	4.25	4.25	NO
L0000008	0	0.16949E-01	485284.4	3755092.1	443.0	3.66	4.25	4.25	NO
L0000009	0	0.16949E-01	485284.4	3755101.3	443.0	3.66	4.25	4.25	NO
L0000010	0	0.16949E-01	485284.4	3755110.4	443.0	3.66	4.25	4.25	NO
L0000011	0	0.16949E-01	485284.4	3755119.5	443.0	3.66	4.25	4.25	NO
L0000012	0	0.16949E-01	485284.4	3755128.7	443.0	3.66	4.25	4.25	NO
L0000013	0	0.16949E-01	485284.4	3755137.8	443.0	3.66	4.25	4.25	NO
L0000014	0	0.16949E-01	485284.4	3755147.0	443.0	3.66	4.25	4.25	NO
L0000015	0	0.16949E-01	485284.4	3755156.1	443.0	3.66	4.25	4.25	NO
L0000016	0	0.16949E-01	485284.4	3755165.3	443.0	3.66	4.25	4.25	NO
L0000017	0	0.16949E-01	485284.4	3755174.4	443.0	3.66	4.25	4.25	NO
L0000018	0	0.16949E-01	485284.4	3755183.6	443.0	3.66	4.25	4.25	NO
L0000019	0	0.16949E-01	485284.4	3755192.7	443.0	3.66	4.25	4.25	NO
L0000020	0	0.16949E-01	485284.4	3755201.8	443.0	3.66	4.25	4.25	NO
L0000021	0	0.16949E-01	485284.4	3755211.0	443.0	3.66	4.25	4.25	NO
L0000022	0	0.16949E-01	485285.0	3755219.5	443.0	3.66	4.25	4.25	NO
L0000023	0	0.16949E-01	485294.2	3755219.6	443.0	3.66	4.25	4.25	NO
L0000024	0	0.16949E-01	485303.3	3755219.7	443.0	3.66	4.25	4.25	NO
L0000025	0	0.16949E-01	485312.4	3755219.8	443.0	3.66	4.25	4.25	NO
L0000026	0	0.16949E-01	485321.6	3755219.9	443.0	3.66	4.25	4.25	NO
L0000027	0	0.16949E-01	485330.7	3755220.0	443.0	3.66	4.25	4.25	NO
L0000028	0	0.16949E-01	485339.9	3755220.1	443.0	3.66	4.25	4.25	NO
L0000029	0	0.16949E-01	485349.0	3755220.2	443.0	3.66	4.25	4.25	NO
L0000030	0	0.16949E-01	485358.2	3755220.3	443.0	3.66	4.25	4.25	NO
L0000031	0	0.16949E-01	485367.3	3755220.3	443.0	3.66	4.25	4.25	NO
L0000032	0	0.16949E-01	485376.5	3755220.4	443.0	3.66	4.25	4.25	NO
L0000033	0	0.16949E-01	485385.6	3755220.5	443.0	3.66	4.25	4.25	NO
L0000034	0	0.16949E-01	485394.7	3755220.6	443.0	3.66	4.25	4.25	NO
L0000035	0	0.16949E-01	485400.3	3755217.1	443.0	3.66	4.25	4.25	NO
L0000036	0	0.16949E-01	485400.2	3755208.0	443.0	3.66	4.25	4.25	NO
L0000037	0	0.16949E-01	485400.1	3755198.8	443.0	3.66	4.25	4.25	NO
L0000038	0	0.16949E-01	485399.9	3755189.7	443.0	3.66	4.25	4.25	NO
L0000039	0	0.16949E-01	485399.8	3755180.5	443.0	3.66	4.25	4.25	NO
L0000040	0	0.16949E-01	485399.7	3755171.4	443.0	3.66	4.25	4.25	NO

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000041	0	0.16949E-01	485399.6	3755162.2	443.0	3.66	4.25	4.25	NO	
L0000042	0	0.16949E-01	485392.0	3755160.7	443.0	3.66	4.25	4.25	NO	

L0000043	0	0.16949E-01	485382.9	3755160.7	443.0	3.66	4.25	4.25	NO
L0000044	0	0.16949E-01	485373.7	3755160.7	443.0	3.66	4.25	4.25	NO
L0000045	0	0.16949E-01	485364.6	3755160.7	443.0	3.66	4.25	4.25	NO
L0000046	0	0.16949E-01	485355.4	3755160.7	443.0	3.66	4.25	4.25	NO
L0000047	0	0.16949E-01	485346.3	3755160.7	443.0	3.66	4.25	4.25	NO
L0000048	0	0.16949E-01	485337.1	3755160.7	443.0	3.66	4.25	4.25	NO
L0000049	0	0.16949E-01	485328.0	3755160.7	443.0	3.66	4.25	4.25	NO
L0000050	0	0.16949E-01	485326.5	3755168.3	443.0	3.66	4.25	4.25	NO
L0000051	0	0.16949E-01	485326.5	3755177.5	443.0	3.66	4.25	4.25	NO
L0000052	0	0.16949E-01	485326.5	3755186.6	443.0	3.66	4.25	4.25	NO
L0000053	0	0.16949E-01	485326.5	3755195.8	443.0	3.66	4.25	4.25	NO
L0000054	0	0.16949E-01	485326.5	3755204.9	443.0	3.66	4.25	4.25	NO
L0000055	0	0.16949E-01	485326.5	3755214.1	443.0	3.66	4.25	4.25	NO
L0000056	0	0.16949E-01	485318.4	3755214.9	443.0	3.66	4.25	4.25	NO
L0000057	0	0.16949E-01	485309.3	3755214.8	443.0	3.66	4.25	4.25	NO
L0000058	0	0.16949E-01	485300.1	3755214.6	443.0	3.66	4.25	4.25	NO
L0000059	0	0.16949E-01	485291.0	3755214.4	443.0	3.66	4.25	4.25	NO
L0000240	0	0.53191E-02	484369.3	3755421.6	443.0	3.66	4.25	4.25	NO
L0000241	0	0.53191E-02	484378.5	3755421.6	443.0	3.66	4.25	4.25	NO
L0000242	0	0.53191E-02	484387.6	3755421.5	443.0	3.66	4.25	4.25	NO
L0000243	0	0.53191E-02	484396.8	3755421.5	443.0	3.66	4.25	4.25	NO
L0000244	0	0.53191E-02	484405.9	3755421.5	443.0	3.66	4.25	4.25	NO
L0000245	0	0.53191E-02	484415.1	3755421.4	443.0	3.66	4.25	4.25	NO
L0000246	0	0.53191E-02	484424.2	3755421.4	443.0	3.66	4.25	4.25	NO
L0000247	0	0.53191E-02	484433.4	3755421.4	443.0	3.66	4.25	4.25	NO
L0000248	0	0.53191E-02	484442.5	3755421.3	443.0	3.66	4.25	4.25	NO
L0000249	0	0.53191E-02	484451.6	3755421.3	443.0	3.66	4.25	4.25	NO
L0000250	0	0.53191E-02	484460.8	3755421.3	443.0	3.66	4.25	4.25	NO
L0000251	0	0.53191E-02	484469.9	3755421.2	443.0	3.66	4.25	4.25	NO
L0000252	0	0.53191E-02	484479.1	3755421.2	443.0	3.66	4.25	4.25	NO
L0000253	0	0.53191E-02	484488.2	3755421.2	443.0	3.66	4.25	4.25	NO
L0000254	0	0.53191E-02	484497.4	3755421.1	443.0	3.66	4.25	4.25	NO
L0000255	0	0.53191E-02	484506.5	3755421.1	443.0	3.66	4.25	4.25	NO
L0000256	0	0.53191E-02	484515.6	3755421.1	443.0	3.66	4.25	4.25	NO
L0000257	0	0.53191E-02	484524.8	3755421.1	443.0	3.66	4.25	4.25	NO
L0000258	0	0.53191E-02	484533.9	3755421.0	443.0	3.66	4.25	4.25	NO
L0000259	0	0.53191E-02	484543.1	3755421.0	443.0	3.66	4.25	4.25	NO
L0000260	0	0.53191E-02	484552.2	3755421.0	443.0	3.66	4.25	4.25	NO

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000261	0	0.53191E-02	484561.4	3755420.9	443.0	3.66	4.25	4.25	NO	
L0000262	0	0.53191E-02	484570.5	3755420.9	443.0	3.66	4.25	4.25	NO	
L0000263	0	0.53191E-02	484579.7	3755420.9	443.0	3.66	4.25	4.25	NO	
L0000264	0	0.53191E-02	484588.8	3755420.8	443.0	3.66	4.25	4.25	NO	

L0000265	0	0.53191E-02	484597.9	3755420.8	443.0	3.66	4.25	4.25	NO
L0000266	0	0.53191E-02	484607.1	3755420.8	443.0	3.66	4.25	4.25	NO
L0000267	0	0.53191E-02	484616.2	3755420.7	443.0	3.66	4.25	4.25	NO
L0000268	0	0.53191E-02	484625.4	3755420.7	443.0	3.66	4.25	4.25	NO
L0000269	0	0.53191E-02	484634.5	3755420.7	443.0	3.66	4.25	4.25	NO
L0000270	0	0.53191E-02	484643.7	3755420.6	443.0	3.66	4.25	4.25	NO
L0000271	0	0.53191E-02	484652.8	3755420.6	443.0	3.66	4.25	4.25	NO
L0000272	0	0.53191E-02	484662.0	3755420.6	443.0	3.66	4.25	4.25	NO
L0000273	0	0.53191E-02	484671.1	3755420.5	443.0	3.66	4.25	4.25	NO
L0000274	0	0.53191E-02	484680.2	3755420.5	443.0	3.66	4.25	4.25	NO
L0000275	0	0.53191E-02	484689.4	3755420.5	443.0	3.66	4.25	4.25	NO
L0000276	0	0.53191E-02	484698.5	3755420.5	443.0	3.66	4.25	4.25	NO
L0000277	0	0.53191E-02	484707.7	3755420.4	443.0	3.66	4.25	4.25	NO
L0000278	0	0.53191E-02	484716.8	3755420.4	443.0	3.66	4.25	4.25	NO
L0000279	0	0.53191E-02	484726.0	3755420.4	443.0	3.66	4.25	4.25	NO
L0000280	0	0.53191E-02	484735.1	3755420.3	443.0	3.66	4.25	4.25	NO
L0000281	0	0.53191E-02	484744.2	3755420.3	443.0	3.66	4.25	4.25	NO
L0000282	0	0.53191E-02	484753.4	3755420.3	443.0	3.66	4.25	4.25	NO
L0000283	0	0.53191E-02	484762.5	3755420.2	443.0	3.66	4.25	4.25	NO
L0000284	0	0.53191E-02	484771.7	3755420.2	443.0	3.66	4.25	4.25	NO
L0000285	0	0.53191E-02	484780.8	3755420.2	443.0	3.66	4.25	4.25	NO
L0000286	0	0.53191E-02	484790.0	3755420.1	443.0	3.66	4.25	4.25	NO
L0000287	0	0.53191E-02	484799.1	3755420.1	443.0	3.66	4.25	4.25	NO
L0000288	0	0.53191E-02	484808.3	3755420.1	443.0	3.66	4.25	4.25	NO
L0000289	0	0.53191E-02	484817.4	3755420.0	443.0	3.66	4.25	4.25	NO
L0000290	0	0.53191E-02	484826.5	3755420.0	443.0	3.66	4.25	4.25	NO
L0000291	0	0.53191E-02	484835.7	3755420.0	443.0	3.66	4.25	4.25	NO
L0000292	0	0.53191E-02	484844.8	3755419.9	443.0	3.66	4.25	4.25	NO
L0000293	0	0.53191E-02	484854.0	3755419.9	443.0	3.66	4.25	4.25	NO
L0000294	0	0.53191E-02	484863.1	3755419.9	443.0	3.66	4.25	4.25	NO
L0000295	0	0.53191E-02	484872.3	3755419.9	443.0	3.66	4.25	4.25	NO
L0000296	0	0.53191E-02	484881.4	3755419.8	443.0	3.66	4.25	4.25	NO
L0000297	0	0.53191E-02	484890.5	3755419.8	443.0	3.66	4.25	4.25	NO
L0000298	0	0.53191E-02	484899.7	3755419.8	443.0	3.66	4.25	4.25	NO
L0000299	0	0.53191E-02	484908.8	3755419.7	443.0	3.66	4.25	4.25	NO
L0000300	0	0.53191E-02	484918.0	3755419.7	443.0	3.66	4.25	4.25	NO

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000301	0	0.53191E-02	484927.1	3755419.7	443.0	3.66	4.25	4.25	NO	
L0000302	0	0.53191E-02	484936.3	3755419.6	443.0	3.66	4.25	4.25	NO	
L0000303	0	0.53191E-02	484945.4	3755419.6	443.0	3.66	4.25	4.25	NO	
L0000304	0	0.53191E-02	484954.6	3755419.6	443.0	3.66	4.25	4.25	NO	
L0000305	0	0.53191E-02	484963.7	3755419.5	443.0	3.66	4.25	4.25	NO	
L0000306	0	0.53191E-02	484972.8	3755419.5	443.0	3.66	4.25	4.25	NO	

L0000307	0	0.53191E-02	484982.0	3755419.5	443.0	3.66	4.25	4.25	NO
L0000308	0	0.53191E-02	484991.1	3755419.4	443.0	3.66	4.25	4.25	NO
L0000309	0	0.53191E-02	485000.3	3755419.4	443.0	3.66	4.25	4.25	NO
L0000310	0	0.53191E-02	485009.4	3755419.4	443.0	3.66	4.25	4.25	NO
L0000311	0	0.53191E-02	485018.6	3755419.3	443.0	3.66	4.25	4.25	NO
L0000312	0	0.53191E-02	485027.7	3755419.3	443.0	3.66	4.25	4.25	NO
L0000313	0	0.53191E-02	485036.9	3755419.3	443.0	3.66	4.25	4.25	NO
L0000314	0	0.53191E-02	485046.0	3755419.2	443.0	3.66	4.25	4.25	NO
L0000315	0	0.53191E-02	485055.1	3755419.2	443.0	3.66	4.25	4.25	NO
L0000316	0	0.53191E-02	485064.3	3755419.2	443.0	3.66	4.25	4.25	NO
L0000317	0	0.53191E-02	485073.4	3755419.2	443.0	3.66	4.25	4.25	NO
L0000318	0	0.53191E-02	485082.6	3755419.1	443.0	3.66	4.25	4.25	NO
L0000319	0	0.53191E-02	485091.7	3755419.1	443.0	3.66	4.25	4.25	NO
L0000320	0	0.53191E-02	485100.9	3755419.1	443.0	3.66	4.25	4.25	NO
L0000321	0	0.53191E-02	485110.0	3755419.0	443.0	3.66	4.25	4.25	NO
L0000322	0	0.53191E-02	485119.1	3755419.0	443.0	3.66	4.25	4.25	NO
L0000323	0	0.53191E-02	485128.3	3755419.0	443.0	3.66	4.25	4.25	NO
L0000324	0	0.53191E-02	485137.4	3755418.9	443.0	3.66	4.25	4.25	NO
L0000325	0	0.53191E-02	485146.6	3755418.9	443.0	3.66	4.25	4.25	NO
L0000326	0	0.53191E-02	485155.7	3755418.9	443.0	3.66	4.25	4.25	NO
L0000327	0	0.53191E-02	485164.9	3755418.8	443.0	3.66	4.25	4.25	NO
L0000328	0	0.53191E-02	485174.0	3755418.8	443.0	3.66	4.25	4.25	NO
L0000329	0	0.53191E-02	485183.2	3755418.8	443.0	3.66	4.25	4.25	NO
L0000330	0	0.53191E-02	485192.3	3755418.7	443.0	3.66	4.25	4.25	NO
L0000331	0	0.53191E-02	485201.4	3755418.7	443.0	3.66	4.25	4.25	NO
L0000332	0	0.53191E-02	485210.6	3755418.7	443.0	3.66	4.25	4.25	NO
L0000333	0	0.53191E-02	485219.7	3755418.6	443.0	3.66	4.25	4.25	NO
L0000334	0	0.53191E-02	485228.9	3755418.6	443.0	3.66	4.25	4.25	NO
L0000335	0	0.53191E-02	485238.0	3755418.6	443.0	3.66	4.25	4.25	NO
L0000336	0	0.53191E-02	485247.2	3755418.6	443.0	3.66	4.25	4.25	NO
L0000337	0	0.53191E-02	485256.3	3755418.5	443.0	3.66	4.25	4.25	NO
L0000338	0	0.53191E-02	485265.5	3755418.5	443.0	3.66	4.25	4.25	NO
L0000339	0	0.53191E-02	485274.6	3755418.5	443.0	3.66	4.25	4.25	NO
L0000340	0	0.53191E-02	485283.7	3755418.4	443.0	3.66	4.25	4.25	NO

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000341	0	0.53191E-02	485292.9	3755418.4	443.0	3.66	4.25	4.25	NO	
L0000342	0	0.53191E-02	485302.0	3755418.4	443.0	3.66	4.25	4.25	NO	
L0000343	0	0.53191E-02	485311.1	3755417.9	443.0	3.66	4.25	4.25	NO	
L0000344	0	0.53191E-02	485320.2	3755416.8	443.0	3.66	4.25	4.25	NO	
L0000345	0	0.53191E-02	485329.3	3755415.7	443.0	3.66	4.25	4.25	NO	
L0000346	0	0.53191E-02	485338.4	3755414.6	443.0	3.66	4.25	4.25	NO	
L0000347	0	0.53191E-02	485347.5	3755413.5	443.0	3.66	4.25	4.25	NO	
L0000348	0	0.53191E-02	485356.5	3755412.4	443.0	3.66	4.25	4.25	NO	

L0000349	0	0.53191E-02	485365.6	3755411.3	443.0	3.66	4.25	4.25	NO
L0000350	0	0.53191E-02	485374.7	3755410.2	443.0	3.66	4.25	4.25	NO
L0000351	0	0.53191E-02	485383.8	3755409.1	443.0	3.66	4.25	4.25	NO
L0000352	0	0.53191E-02	485392.8	3755408.0	443.0	3.66	4.25	4.25	NO
L0000353	0	0.53191E-02	485401.9	3755406.9	443.0	3.66	4.25	4.25	NO
L0000354	0	0.53191E-02	485410.0	3755402.7	443.0	3.66	4.25	4.25	NO
L0000355	0	0.53191E-02	485418.1	3755398.4	443.0	3.66	4.25	4.25	NO
L0000356	0	0.53191E-02	485426.2	3755394.1	443.0	3.66	4.25	4.25	NO
L0000357	0	0.53191E-02	485433.3	3755389.1	443.0	3.66	4.25	4.25	NO
L0000358	0	0.53191E-02	485436.0	3755380.3	443.0	3.66	4.25	4.25	NO
L0000359	0	0.53191E-02	485438.6	3755371.6	443.0	3.66	4.25	4.25	NO
L0000360	0	0.53191E-02	485441.2	3755362.8	443.0	3.66	4.25	4.25	NO
L0000361	0	0.53191E-02	485443.8	3755354.0	443.0	3.66	4.25	4.25	NO
L0000362	0	0.53191E-02	485446.5	3755345.3	443.0	3.66	4.25	4.25	NO
L0000363	0	0.53191E-02	485449.1	3755336.5	443.0	3.66	4.25	4.25	NO
L0000364	0	0.53191E-02	485451.7	3755327.8	443.0	3.66	4.25	4.25	NO
L0000365	0	0.53191E-02	485452.4	3755318.7	443.0	3.66	4.25	4.25	NO
L0000366	0	0.53191E-02	485452.4	3755309.6	443.0	3.66	4.25	4.25	NO
L0000367	0	0.53191E-02	485452.4	3755300.4	443.0	3.66	4.25	4.25	NO
L0000368	0	0.53191E-02	485452.4	3755291.3	443.0	3.66	4.25	4.25	NO
L0000369	0	0.53191E-02	485452.4	3755282.2	443.0	3.66	4.25	4.25	NO
L0000370	0	0.53191E-02	485452.4	3755273.0	443.0	3.66	4.25	4.25	NO
L0000371	0	0.53191E-02	485452.4	3755263.9	443.0	3.66	4.25	4.25	NO
L0000372	0	0.53191E-02	485452.4	3755254.7	443.0	3.66	4.25	4.25	NO
L0000373	0	0.53191E-02	485452.4	3755245.6	443.0	3.66	4.25	4.25	NO
L0000374	0	0.53191E-02	485452.4	3755236.4	443.0	3.66	4.25	4.25	NO
L0000375	0	0.53191E-02	485452.4	3755227.3	443.0	3.66	4.25	4.25	NO
L0000376	0	0.53191E-02	485456.5	3755219.7	443.0	3.66	4.25	4.25	NO
L0000377	0	0.53191E-02	485462.6	3755212.9	443.0	3.66	4.25	4.25	NO
L0000378	0	0.53191E-02	485468.7	3755206.0	443.0	3.66	4.25	4.25	NO
L0000379	0	0.53191E-02	485474.7	3755199.2	443.0	3.66	4.25	4.25	NO
L0000380	0	0.53191E-02	485482.0	3755194.8	443.0	3.66	4.25	4.25	NO

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000381	0	0.53191E-02	485491.1	3755194.3	443.0	3.66	4.25	4.25	NO	
L0000382	0	0.53191E-02	485500.2	3755193.9	443.0	3.66	4.25	4.25	NO	
L0000383	0	0.53191E-02	485509.4	3755193.5	443.0	3.66	4.25	4.25	NO	
L0000384	0	0.53191E-02	485512.7	3755187.6	443.0	3.66	4.25	4.25	NO	
L0000385	0	0.53191E-02	485512.6	3755178.4	443.0	3.66	4.25	4.25	NO	
L0000386	0	0.53191E-02	485512.5	3755169.3	443.0	3.66	4.25	4.25	NO	
L0000387	0	0.53191E-02	485512.5	3755160.1	443.0	3.66	4.25	4.25	NO	
L0000388	0	0.53191E-02	485512.4	3755151.0	443.0	3.66	4.25	4.25	NO	
L0000389	0	0.53191E-02	485512.3	3755141.9	443.0	3.66	4.25	4.25	NO	
L0000390	0	0.53191E-02	485512.2	3755132.7	443.0	3.66	4.25	4.25	NO	

L0000391	0	0.53191E-02	485512.1	3755123.6	443.0	3.66	4.25	4.25	NO
L0000392	0	0.53191E-02	485512.0	3755114.4	443.0	3.66	4.25	4.25	NO
L0000393	0	0.53191E-02	485511.9	3755105.3	443.0	3.66	4.25	4.25	NO
L0000394	0	0.53191E-02	485511.9	3755096.1	443.0	3.66	4.25	4.25	NO
L0000395	0	0.53191E-02	485511.8	3755087.0	443.0	3.66	4.25	4.25	NO
L0000396	0	0.53191E-02	485511.7	3755077.8	443.0	3.66	4.25	4.25	NO
L0000397	0	0.53191E-02	485511.6	3755068.7	443.0	3.66	4.25	4.25	NO
L0000398	0	0.53191E-02	485511.5	3755059.6	443.0	3.66	4.25	4.25	NO
L0000399	0	0.53191E-02	485511.4	3755050.4	443.0	3.66	4.25	4.25	NO
L0000400	0	0.53191E-02	485511.3	3755041.3	443.0	3.66	4.25	4.25	NO
L0000401	0	0.53191E-02	485511.3	3755032.1	443.0	3.66	4.25	4.25	NO
L0000402	0	0.53191E-02	485511.2	3755023.0	443.0	3.66	4.25	4.25	NO
L0000403	0	0.53191E-02	485506.1	3755018.8	443.0	3.66	4.25	4.25	NO
L0000404	0	0.53191E-02	485497.0	3755018.8	443.0	3.66	4.25	4.25	NO
L0000405	0	0.53191E-02	485487.9	3755018.8	443.0	3.66	4.25	4.25	NO
L0000406	0	0.53191E-02	485478.7	3755018.8	443.0	3.66	4.25	4.25	NO
L0000407	0	0.53191E-02	485469.6	3755018.8	443.0	3.66	4.25	4.25	NO
L0000408	0	0.53191E-02	485460.4	3755018.8	443.0	3.66	4.25	4.25	NO
L0000409	0	0.53191E-02	485451.3	3755018.8	443.0	3.66	4.25	4.25	NO
L0000410	0	0.53191E-02	485442.1	3755018.8	443.0	3.66	4.25	4.25	NO
L0000411	0	0.53191E-02	485433.0	3755018.8	443.0	3.66	4.25	4.25	NO
L0000412	0	0.53191E-02	485423.8	3755018.8	443.0	3.66	4.25	4.25	NO
L0000413	0	0.53191E-02	485414.7	3755018.8	443.0	3.66	4.25	4.25	NO
L0000414	0	0.53191E-02	485405.6	3755018.8	443.0	3.66	4.25	4.25	NO
L0000415	0	0.53191E-02	485396.4	3755018.8	443.0	3.66	4.25	4.25	NO
L0000416	0	0.53191E-02	485387.3	3755018.8	443.0	3.66	4.25	4.25	NO
L0000417	0	0.53191E-02	485378.1	3755018.8	443.0	3.66	4.25	4.25	NO
L0000418	0	0.53191E-02	485369.0	3755018.8	443.0	3.66	4.25	4.25	NO
L0000419	0	0.53191E-02	485359.8	3755018.8	443.0	3.66	4.25	4.25	NO
L0000420	0	0.53191E-02	485350.7	3755018.8	443.0	3.66	4.25	4.25	NO

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000421	0	0.53191E-02	485341.6	3755018.8	443.0	3.66	4.25	4.25	NO	
L0000422	0	0.53191E-02	485332.4	3755018.8	443.0	3.66	4.25	4.25	NO	
L0000423	0	0.53191E-02	485323.3	3755018.8	443.0	3.66	4.25	4.25	NO	
L0000424	0	0.53191E-02	485314.1	3755018.8	443.0	3.66	4.25	4.25	NO	
L0000425	0	0.53191E-02	485305.0	3755018.8	443.0	3.66	4.25	4.25	NO	
L0000426	0	0.53191E-02	485295.8	3755018.8	443.0	3.66	4.25	4.25	NO	
L0000427	0	0.53191E-02	485286.7	3755018.8	443.0	3.66	4.25	4.25	NO	
L0000428	0	0.48309E-02	486359.1	3755454.4	443.0	3.66	4.25	4.25	NO	
L0000429	0	0.48309E-02	486350.0	3755454.4	443.0	3.66	4.25	4.25	NO	
L0000430	0	0.48309E-02	486340.8	3755454.4	443.0	3.66	4.25	4.25	NO	
L0000431	0	0.48309E-02	486331.7	3755454.3	443.0	3.66	4.25	4.25	NO	
L0000432	0	0.48309E-02	486322.6	3755454.3	443.0	3.66	4.25	4.25	NO	

L0000433	0	0.48309E-02	486313.4	3755454.3	443.0	3.66	4.25	4.25	NO
L0000434	0	0.48309E-02	486304.3	3755454.3	443.0	3.66	4.25	4.25	NO
L0000435	0	0.48309E-02	486295.1	3755454.3	443.0	3.66	4.25	4.25	NO
L0000436	0	0.48309E-02	486286.0	3755454.2	443.0	3.66	4.25	4.25	NO
L0000437	0	0.48309E-02	486276.8	3755454.2	443.0	3.66	4.25	4.25	NO
L0000438	0	0.48309E-02	486267.7	3755454.2	443.0	3.66	4.25	4.25	NO
L0000439	0	0.48309E-02	486258.6	3755454.2	443.0	3.66	4.25	4.25	NO
L0000440	0	0.48309E-02	486249.4	3755454.2	443.0	3.66	4.25	4.25	NO
L0000441	0	0.48309E-02	486240.3	3755454.1	443.0	3.66	4.25	4.25	NO
L0000442	0	0.48309E-02	486231.1	3755454.1	443.0	3.66	4.25	4.25	NO
L0000443	0	0.48309E-02	486222.0	3755454.1	443.0	3.66	4.25	4.25	NO
L0000444	0	0.48309E-02	486212.8	3755454.1	443.0	3.66	4.25	4.25	NO
L0000445	0	0.48309E-02	486203.7	3755454.1	443.0	3.66	4.25	4.25	NO
L0000446	0	0.48309E-02	486194.5	3755454.0	443.0	3.66	4.25	4.25	NO
L0000447	0	0.48309E-02	486185.4	3755454.0	443.0	3.66	4.25	4.25	NO
L0000448	0	0.48309E-02	486176.3	3755454.0	443.0	3.66	4.25	4.25	NO
L0000449	0	0.48309E-02	486167.1	3755454.0	443.0	3.66	4.25	4.25	NO
L0000450	0	0.48309E-02	486158.0	3755454.0	443.0	3.66	4.25	4.25	NO
L0000451	0	0.48309E-02	486148.8	3755453.9	443.0	3.66	4.25	4.25	NO
L0000452	0	0.48309E-02	486139.7	3755453.9	443.0	3.66	4.25	4.25	NO
L0000453	0	0.48309E-02	486130.5	3755453.9	443.0	3.66	4.25	4.25	NO
L0000454	0	0.48309E-02	486121.4	3755453.9	443.0	3.66	4.25	4.25	NO
L0000455	0	0.48309E-02	486112.2	3755453.9	443.0	3.66	4.25	4.25	NO
L0000456	0	0.48309E-02	486103.1	3755453.8	443.0	3.66	4.25	4.25	NO
L0000457	0	0.48309E-02	486094.0	3755453.8	443.0	3.66	4.25	4.25	NO
L0000458	0	0.48309E-02	486084.8	3755453.8	443.0	3.66	4.25	4.25	NO
L0000459	0	0.48309E-02	486075.7	3755453.8	443.0	3.66	4.25	4.25	NO
L0000460	0	0.48309E-02	486066.5	3755453.8	443.0	3.66	4.25	4.25	NO

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	BASE X (METERS)	Y (METERS)	ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000461	0	0.48309E-02	486057.4	3755453.7	443.0	3.66	4.25	4.25	NO	
L0000462	0	0.48309E-02	486048.2	3755453.7	443.0	3.66	4.25	4.25	NO	
L0000463	0	0.48309E-02	486039.1	3755453.7	443.0	3.66	4.25	4.25	NO	
L0000464	0	0.48309E-02	486030.0	3755453.7	443.0	3.66	4.25	4.25	NO	
L0000465	0	0.48309E-02	486020.8	3755453.7	443.0	3.66	4.25	4.25	NO	
L0000466	0	0.48309E-02	486011.7	3755453.6	443.0	3.66	4.25	4.25	NO	
L0000467	0	0.48309E-02	486002.5	3755453.6	443.0	3.66	4.25	4.25	NO	
L0000468	0	0.48309E-02	485993.4	3755453.6	443.0	3.66	4.25	4.25	NO	
L0000469	0	0.48309E-02	485984.2	3755453.6	443.0	3.66	4.25	4.25	NO	
L0000470	0	0.48309E-02	485975.1	3755453.5	443.0	3.66	4.25	4.25	NO	
L0000471	0	0.48309E-02	485965.9	3755453.5	443.0	3.66	4.25	4.25	NO	
L0000472	0	0.48309E-02	485956.8	3755453.5	443.0	3.66	4.25	4.25	NO	
L0000473	0	0.48309E-02	485947.7	3755453.5	443.0	3.66	4.25	4.25	NO	
L0000474	0	0.48309E-02	485938.5	3755453.5	443.0	3.66	4.25	4.25	NO	

L0000475	0	0.48309E-02	485929.4	3755453.4	443.0	3.66	4.25	4.25	NO
L0000476	0	0.48309E-02	485920.2	3755453.4	443.0	3.66	4.25	4.25	NO
L0000477	0	0.48309E-02	485911.1	3755453.4	443.0	3.66	4.25	4.25	NO
L0000478	0	0.48309E-02	485901.9	3755453.4	443.0	3.66	4.25	4.25	NO
L0000479	0	0.48309E-02	485892.8	3755453.4	443.0	3.66	4.25	4.25	NO
L0000480	0	0.48309E-02	485883.6	3755453.3	443.0	3.66	4.25	4.25	NO
L0000481	0	0.48309E-02	485874.5	3755453.3	443.0	3.66	4.25	4.25	NO
L0000482	0	0.48309E-02	485865.4	3755453.3	443.0	3.66	4.25	4.25	NO
L0000483	0	0.48309E-02	485856.2	3755453.3	443.0	3.66	4.25	4.25	NO
L0000484	0	0.48309E-02	485847.1	3755453.3	443.0	3.66	4.25	4.25	NO
L0000485	0	0.48309E-02	485837.9	3755453.2	443.0	3.66	4.25	4.25	NO
L0000486	0	0.48309E-02	485828.8	3755453.2	443.0	3.66	4.25	4.25	NO
L0000487	0	0.48309E-02	485819.6	3755453.2	443.0	3.66	4.25	4.25	NO
L0000488	0	0.48309E-02	485810.5	3755453.2	443.0	3.66	4.25	4.25	NO
L0000489	0	0.48309E-02	485801.4	3755453.2	443.0	3.66	4.25	4.25	NO
L0000490	0	0.48309E-02	485792.2	3755453.1	443.0	3.66	4.25	4.25	NO
L0000491	0	0.48309E-02	485783.1	3755453.1	443.0	3.66	4.25	4.25	NO
L0000492	0	0.48309E-02	485773.9	3755453.1	443.0	3.66	4.25	4.25	NO
L0000493	0	0.48309E-02	485764.8	3755453.1	443.0	3.66	4.25	4.25	NO
L0000494	0	0.48309E-02	485755.6	3755453.1	443.0	3.66	4.25	4.25	NO
L0000495	0	0.48309E-02	485746.5	3755453.0	443.0	3.66	4.25	4.25	NO
L0000496	0	0.48309E-02	485737.3	3755453.0	443.0	3.66	4.25	4.25	NO
L0000497	0	0.48309E-02	485728.2	3755453.0	443.0	3.66	4.25	4.25	NO
L0000498	0	0.48309E-02	485719.1	3755453.7	443.0	3.66	4.25	4.25	NO
L0000499	0	0.48309E-02	485710.0	3755454.8	443.0	3.66	4.25	4.25	NO
L0000500	0	0.48309E-02	485700.9	3755455.9	443.0	3.66	4.25	4.25	NO

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000501	0	0.48309E-02	485691.9	3755457.0	443.0	3.66	4.25	4.25	NO	
L0000502	0	0.48309E-02	485682.8	3755458.1	443.0	3.66	4.25	4.25	NO	
L0000503	0	0.48309E-02	485673.7	3755459.3	443.0	3.66	4.25	4.25	NO	
L0000504	0	0.48309E-02	485664.6	3755460.4	443.0	3.66	4.25	4.25	NO	
L0000505	0	0.48309E-02	485655.6	3755461.5	443.0	3.66	4.25	4.25	NO	
L0000506	0	0.48309E-02	485646.5	3755462.6	443.0	3.66	4.25	4.25	NO	
L0000507	0	0.48309E-02	485637.4	3755463.7	443.0	3.66	4.25	4.25	NO	
L0000508	0	0.48309E-02	485629.4	3755467.3	443.0	3.66	4.25	4.25	NO	
L0000509	0	0.48309E-02	485622.2	3755472.9	443.0	3.66	4.25	4.25	NO	
L0000510	0	0.48309E-02	485615.0	3755478.6	443.0	3.66	4.25	4.25	NO	
L0000511	0	0.48309E-02	485607.8	3755484.2	443.0	3.66	4.25	4.25	NO	
L0000512	0	0.48309E-02	485600.6	3755489.9	443.0	3.66	4.25	4.25	NO	
L0000513	0	0.48309E-02	485593.8	3755495.7	443.0	3.66	4.25	4.25	NO	
L0000514	0	0.48309E-02	485592.9	3755504.8	443.0	3.66	4.25	4.25	NO	
L0000515	0	0.48309E-02	485592.0	3755513.9	443.0	3.66	4.25	4.25	NO	
L0000516	0	0.48309E-02	485591.1	3755523.0	443.0	3.66	4.25	4.25	NO	

L0000517	0	0.48309E-02	485590.2	3755532.1	443.0	3.66	4.25	4.25	NO
L0000518	0	0.48309E-02	485589.3	3755541.2	443.0	3.66	4.25	4.25	NO
L0000519	0	0.48309E-02	485588.4	3755550.3	443.0	3.66	4.25	4.25	NO
L0000520	0	0.48309E-02	485587.5	3755559.4	443.0	3.66	4.25	4.25	NO
L0000521	0	0.48309E-02	485586.5	3755568.5	443.0	3.66	4.25	4.25	NO
L0000522	0	0.48309E-02	485585.6	3755577.6	443.0	3.66	4.25	4.25	NO
L0000523	0	0.48309E-02	485584.7	3755586.7	443.0	3.66	4.25	4.25	NO
L0000524	0	0.48309E-02	485583.8	3755595.8	443.0	3.66	4.25	4.25	NO
L0000525	0	0.48309E-02	485582.9	3755604.9	443.0	3.66	4.25	4.25	NO
L0000526	0	0.48309E-02	485582.0	3755614.0	443.0	3.66	4.25	4.25	NO
L0000527	0	0.48309E-02	485581.1	3755623.1	443.0	3.66	4.25	4.25	NO
L0000528	0	0.48309E-02	485580.2	3755632.2	443.0	3.66	4.25	4.25	NO
L0000529	0	0.48309E-02	485579.3	3755641.3	443.0	3.66	4.25	4.25	NO
L0000530	0	0.48309E-02	485577.8	3755650.1	443.0	3.66	4.25	4.25	NO
L0000531	0	0.48309E-02	485570.4	3755655.4	443.0	3.66	4.25	4.25	NO
L0000532	0	0.48309E-02	485562.9	3755660.7	443.0	3.66	4.25	4.25	NO
L0000533	0	0.48309E-02	485555.5	3755666.1	443.0	3.66	4.25	4.25	NO
L0000534	0	0.48309E-02	485547.9	3755670.7	443.0	3.66	4.25	4.25	NO
L0000535	0	0.48309E-02	485538.7	3755669.9	443.0	3.66	4.25	4.25	NO
L0000536	0	0.48309E-02	485529.6	3755669.2	443.0	3.66	4.25	4.25	NO
L0000537	0	0.48309E-02	485520.5	3755668.5	443.0	3.66	4.25	4.25	NO
L0000538	0	0.48309E-02	485513.8	3755665.5	443.0	3.66	4.25	4.25	NO
L0000539	0	0.48309E-02	485513.9	3755656.4	443.0	3.66	4.25	4.25	NO
L0000540	0	0.48309E-02	485513.9	3755647.2	443.0	3.66	4.25	4.25	NO

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	BASE X (METERS)	Y (METERS)	ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000541	0	0.48309E-02	485513.9	3755638.1	443.0	3.66	4.25	4.25	NO	
L0000542	0	0.48309E-02	485514.0	3755628.9	443.0	3.66	4.25	4.25	NO	
L0000543	0	0.48309E-02	485514.0	3755619.8	443.0	3.66	4.25	4.25	NO	
L0000544	0	0.48309E-02	485514.1	3755610.6	443.0	3.66	4.25	4.25	NO	
L0000545	0	0.48309E-02	485514.1	3755601.5	443.0	3.66	4.25	4.25	NO	
L0000546	0	0.48309E-02	485514.1	3755592.4	443.0	3.66	4.25	4.25	NO	
L0000547	0	0.48309E-02	485514.2	3755583.2	443.0	3.66	4.25	4.25	NO	
L0000548	0	0.48309E-02	485514.2	3755574.1	443.0	3.66	4.25	4.25	NO	
L0000549	0	0.48309E-02	485514.3	3755564.9	443.0	3.66	4.25	4.25	NO	
L0000550	0	0.48309E-02	485514.3	3755555.8	443.0	3.66	4.25	4.25	NO	
L0000551	0	0.48309E-02	485514.3	3755546.6	443.0	3.66	4.25	4.25	NO	
L0000552	0	0.48309E-02	485514.4	3755537.5	443.0	3.66	4.25	4.25	NO	
L0000553	0	0.48309E-02	485514.4	3755528.3	443.0	3.66	4.25	4.25	NO	
L0000554	0	0.48309E-02	485514.5	3755519.2	443.0	3.66	4.25	4.25	NO	
L0000555	0	0.48309E-02	485514.5	3755510.1	443.0	3.66	4.25	4.25	NO	
L0000556	0	0.48309E-02	485514.5	3755500.9	443.0	3.66	4.25	4.25	NO	
L0000557	0	0.48309E-02	485514.6	3755491.8	443.0	3.66	4.25	4.25	NO	
L0000558	0	0.48309E-02	485514.6	3755482.6	443.0	3.66	4.25	4.25	NO	

L0000559	0	0.48309E-02	485514.6	3755473.5	443.0	3.66	4.25	4.25	NO
L0000560	0	0.48309E-02	485514.7	3755464.3	443.0	3.66	4.25	4.25	NO
L0000561	0	0.48309E-02	485514.7	3755455.2	443.0	3.66	4.25	4.25	NO
L0000562	0	0.48309E-02	485514.8	3755446.1	443.0	3.66	4.25	4.25	NO
L0000563	0	0.48309E-02	485514.8	3755436.9	443.0	3.66	4.25	4.25	NO
L0000564	0	0.48309E-02	485514.8	3755427.8	443.0	3.66	4.25	4.25	NO
L0000565	0	0.48309E-02	485514.9	3755418.6	443.0	3.66	4.25	4.25	NO
L0000566	0	0.48309E-02	485514.9	3755409.5	443.0	3.66	4.25	4.25	NO
L0000567	0	0.48309E-02	485515.0	3755400.3	443.0	3.66	4.25	4.25	NO
L0000568	0	0.48309E-02	485515.0	3755391.2	443.0	3.66	4.25	4.25	NO
L0000569	0	0.48309E-02	485515.0	3755382.0	443.0	3.66	4.25	4.25	NO
L0000570	0	0.48309E-02	485515.1	3755372.9	443.0	3.66	4.25	4.25	NO
L0000571	0	0.48309E-02	485515.1	3755363.8	443.0	3.66	4.25	4.25	NO
L0000572	0	0.48309E-02	485515.2	3755354.6	443.0	3.66	4.25	4.25	NO
L0000573	0	0.48309E-02	485515.2	3755345.5	443.0	3.66	4.25	4.25	NO
L0000574	0	0.48309E-02	485515.2	3755336.3	443.0	3.66	4.25	4.25	NO
L0000575	0	0.48309E-02	485515.3	3755327.2	443.0	3.66	4.25	4.25	NO
L0000576	0	0.48309E-02	485515.3	3755318.0	443.0	3.66	4.25	4.25	NO
L0000577	0	0.48309E-02	485515.4	3755308.9	443.0	3.66	4.25	4.25	NO
L0000578	0	0.48309E-02	485515.4	3755299.8	443.0	3.66	4.25	4.25	NO
L0000579	0	0.48309E-02	485515.4	3755290.6	443.0	3.66	4.25	4.25	NO
L0000580	0	0.48309E-02	485515.5	3755281.5	443.0	3.66	4.25	4.25	NO

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000581	0	0.48309E-02	485515.5	3755272.3	443.0	3.66	4.25	4.25	NO	
L0000582	0	0.48309E-02	485515.6	3755263.2	443.0	3.66	4.25	4.25	NO	
L0000583	0	0.48309E-02	485515.6	3755254.0	443.0	3.66	4.25	4.25	NO	
L0000584	0	0.48309E-02	485515.6	3755244.9	443.0	3.66	4.25	4.25	NO	
L0000585	0	0.48309E-02	485515.7	3755235.7	443.0	3.66	4.25	4.25	NO	
L0000586	0	0.48309E-02	485515.7	3755226.6	443.0	3.66	4.25	4.25	NO	
L0000587	0	0.48309E-02	485515.8	3755217.5	443.0	3.66	4.25	4.25	NO	
L0000588	0	0.48309E-02	485515.8	3755208.3	443.0	3.66	4.25	4.25	NO	
L0000589	0	0.48309E-02	485515.8	3755199.2	443.0	3.66	4.25	4.25	NO	
L0000590	0	0.48309E-02	485515.9	3755190.0	443.0	3.66	4.25	4.25	NO	
L0000591	0	0.48309E-02	485515.9	3755180.9	443.0	3.66	4.25	4.25	NO	
L0000592	0	0.48309E-02	485516.0	3755171.7	443.0	3.66	4.25	4.25	NO	
L0000593	0	0.48309E-02	485516.0	3755162.6	443.0	3.66	4.25	4.25	NO	
L0000594	0	0.48309E-02	485516.0	3755153.4	443.0	3.66	4.25	4.25	NO	
L0000595	0	0.48309E-02	485516.1	3755144.3	443.0	3.66	4.25	4.25	NO	
L0000596	0	0.48309E-02	485516.1	3755135.2	443.0	3.66	4.25	4.25	NO	
L0000597	0	0.48309E-02	485516.2	3755126.0	443.0	3.66	4.25	4.25	NO	
L0000598	0	0.48309E-02	485516.2	3755116.9	443.0	3.66	4.25	4.25	NO	
L0000599	0	0.48309E-02	485516.2	3755107.7	443.0	3.66	4.25	4.25	NO	
L0000600	0	0.48309E-02	485516.3	3755098.6	443.0	3.66	4.25	4.25	NO	

L0000601	0	0.48309E-02	485516.3	3755089.4	443.0	3.66	4.25	4.25	NO
L0000602	0	0.48309E-02	485516.3	3755080.3	443.0	3.66	4.25	4.25	NO
L0000603	0	0.48309E-02	485516.4	3755071.2	443.0	3.66	4.25	4.25	NO
L0000604	0	0.48309E-02	485516.4	3755062.0	443.0	3.66	4.25	4.25	NO
L0000605	0	0.48309E-02	485516.5	3755052.9	443.0	3.66	4.25	4.25	NO
L0000606	0	0.48309E-02	485516.5	3755043.7	443.0	3.66	4.25	4.25	NO
L0000607	0	0.48309E-02	485516.5	3755034.6	443.0	3.66	4.25	4.25	NO
L0000608	0	0.48309E-02	485516.6	3755025.4	443.0	3.66	4.25	4.25	NO
L0000609	0	0.48309E-02	485515.4	3755017.5	443.0	3.66	4.25	4.25	NO
L0000610	0	0.48309E-02	485506.3	3755017.6	443.0	3.66	4.25	4.25	NO
L0000611	0	0.48309E-02	485497.1	3755017.6	443.0	3.66	4.25	4.25	NO
L0000612	0	0.48309E-02	485488.0	3755017.7	443.0	3.66	4.25	4.25	NO
L0000613	0	0.48309E-02	485478.8	3755017.7	443.0	3.66	4.25	4.25	NO
L0000614	0	0.48309E-02	485469.7	3755017.8	443.0	3.66	4.25	4.25	NO
L0000615	0	0.48309E-02	485460.5	3755017.9	443.0	3.66	4.25	4.25	NO
L0000616	0	0.48309E-02	485451.4	3755017.9	443.0	3.66	4.25	4.25	NO
L0000617	0	0.48309E-02	485442.2	3755018.0	443.0	3.66	4.25	4.25	NO
L0000618	0	0.48309E-02	485433.1	3755018.0	443.0	3.66	4.25	4.25	NO
L0000619	0	0.48309E-02	485424.0	3755018.1	443.0	3.66	4.25	4.25	NO
L0000620	0	0.48309E-02	485414.8	3755018.1	443.0	3.66	4.25	4.25	NO

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	BASE X (METERS)	BASE Y (METERS)	RELEASE ELEV. (METERS)	INIT. HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000621	0	0.48309E-02	485405.7	3755018.2	443.0	3.66	4.25	4.25	NO	
L0000622	0	0.48309E-02	485396.5	3755018.2	443.0	3.66	4.25	4.25	NO	
L0000623	0	0.48309E-02	485387.4	3755018.3	443.0	3.66	4.25	4.25	NO	
L0000624	0	0.48309E-02	485378.2	3755018.3	443.0	3.66	4.25	4.25	NO	
L0000625	0	0.48309E-02	485369.1	3755018.4	443.0	3.66	4.25	4.25	NO	
L0000626	0	0.48309E-02	485360.0	3755018.5	443.0	3.66	4.25	4.25	NO	
L0000627	0	0.48309E-02	485350.8	3755018.5	443.0	3.66	4.25	4.25	NO	
L0000628	0	0.48309E-02	485341.7	3755018.6	443.0	3.66	4.25	4.25	NO	
L0000629	0	0.48309E-02	485332.5	3755018.6	443.0	3.66	4.25	4.25	NO	
L0000630	0	0.48309E-02	485323.4	3755018.7	443.0	3.66	4.25	4.25	NO	
L0000631	0	0.48309E-02	485314.2	3755018.7	443.0	3.66	4.25	4.25	NO	
L0000632	0	0.48309E-02	485305.1	3755018.8	443.0	3.66	4.25	4.25	NO	
L0000633	0	0.48309E-02	485295.9	3755018.8	443.0	3.66	4.25	4.25	NO	
L0000634	0	0.48309E-02	485286.8	3755018.9	443.0	3.66	4.25	4.25	NO	
VOL1	0	0.10000E+01	485324.6	3755251.1	443.0	3.66	0.59	0.00	NO	
VOL2	0	0.10000E+01	485345.0	3755251.1	443.0	3.66	0.59	0.00	NO	
VOL3	0	0.10000E+01	485365.0	3755251.1	443.0	3.66	0.59	0.00	NO	
VOL4	0	0.10000E+01	485385.0	3755251.1	443.0	3.66	0.59	0.00	NO	
VOL5	0	0.10000E+01	485293.0	3755200.0	443.0	3.66	0.59	0.00	NO	
VOL6	0	0.10000E+01	485293.0	3755180.0	443.0	3.66	0.59	0.00	NO	
VOL7	0	0.10000E+01	485293.0	3755160.0	443.0	3.66	0.59	0.00	NO	
VOL8	0	0.10000E+01	485310.0	3755150.0	443.0	3.66	0.59	0.00	NO	

VOL9 0 0.10000E+01 485369.8 3755059.5 443.0 4.00 8.37 1.86 NO

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID SOURCE IDs
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SLINE1 L0000001 , L0000002 , L0000003 , L0000004 , L0000005 , L0000006 , L0000007 , L0000008
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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID SOURCE IDs

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*** AERMOD - VERSION 19191 *** *** C:\Users\Smith\Dropbox\My PC (DESKTOP-977GSBU)\Documents\HRA\Moreno *** 08/06/21

*** AERMET - VERSION 16216 *** *** *** 14:17:39

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID SOURCE IDs

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STCK1 STCK1 ,

STCK2 STCK2 ,

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID SOURCE IDs

STCK3 STCK3 ,

STCK4 STCK4 ,

STCK5 STCK5 ,

STCK6 STCK6 ,

VOL1 VOL1 ,

VOL2 VOL2 ,

VOL3 VOL3 ,

VOL4 VOL4 ,

VOL5 VOL5 ,

VOL6 VOL6 ,

VOL7 VOL7 ,

VOL8 VOL8 ,

VOL9 VOL9 ,

ALL L0000001 , L0000002 , L0000003 , L0000004 , L0000005 , L0000006 , L0000007 , L0000008

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID SOURCE IDs
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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID SOURCE IDs
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L0000629 , L0000630 , L0000631 , L0000632 , L0000633 , L0000634 , VOL1 , VOL2 ,

VOL3 , VOL4 , VOL5 , VOL6 , VOL7 , VOL8 , STCK1 , STCK2 ,

STCK3 , STCK4 , STCK5 , STCK6 , VOL9 ,

*** AERMOD - VERSION 19191 *** *** C:\Users\Smith\Dropbox\My PC (DESKTOP-977GSBU)\Documents\HRA\Moreno *** 08/06/21
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PAGE 22
*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(485093.5, 3755491.3, 443.0, 443.0, 0.0); (485235.7, 3755497.8, 443.0, 443.0, 0.0);
(485367.5, 3755576.9, 443.0, 443.0, 0.0); (485384.0, 3755577.4, 443.0, 443.0, 0.0);
(485397.6, 3755578.3, 443.0, 443.0, 0.0); (485413.1, 3755577.9, 443.0, 443.0, 0.0);
(485432.0, 3755578.8, 443.0, 443.0, 0.0); (485449.4, 3755579.3, 443.0, 443.0, 0.0);
(485464.5, 3755580.2, 443.0, 443.0, 0.0); (485525.2, 3755702.4, 443.0, 443.0, 0.0);
(485607.9, 3755706.9, 443.0, 443.0, 0.0); (485568.8, 3755774.7, 443.0, 443.0, 0.0);
(485536.2, 3755800.7, 443.0, 443.0, 0.0); (485535.0, 3755835.9, 443.0, 443.0, 0.0);
(485538.9, 3755736.9, 443.0, 443.0, 0.0); (485489.9, 3754619.6, 443.0, 443.0, 0.0);
(484493.0, 3755473.7, 443.0, 443.0, 0.0); (484493.0, 3755525.5, 443.0, 443.0, 0.0);
(484491.7, 3755579.9, 443.0, 443.0, 0.0); (484485.4, 3755635.6, 443.0, 443.0, 0.0);
(484496.8, 3755682.4, 443.0, 443.0, 0.0); (484498.0, 3755725.4, 443.0, 443.0, 0.0);
(484501.8, 3755767.1, 443.0, 443.0, 0.0); (484503.1, 3755797.5, 443.0, 443.0, 0.0);
(484504.3, 3755829.1, 443.0, 443.0, 0.0);

*** AERMOD - VERSION 19191 *** *** C:\Users\Smith\Dropbox\My PC (DESKTOP-977GSBU)\Documents\HRA\Moreno *** 08/06/21
*** AERMET - VERSION 16216 *** *** *** 14:17:39
PAGE 23
*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
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NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

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*** AERMET - VERSION 16216 *** *** *** 14:17:39

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: Met Data\PERI_v9.SFC Met Version: 16216
Profile file: Met Data\PERI_v9.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 3171 Upper air station no.: 3190
Name: PERI Name: UNKNOWN
Year: 2010 Year: 2010

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
10	01	01	1	01	-7.9	0.125	-9.000	-9.000	-999.	106.	21.2	0.19	0.61	1.00	1.30	335.	9.1	282.5	5.5
10	01	01	1	02	-3.9	0.088	-9.000	-9.000	-999.	62.	15.1	0.19	0.61	1.00	0.90	142.	9.1	280.9	5.5
10	01	01	1	03	-3.9	0.088	-9.000	-9.000	-999.	62.	15.1	0.19	0.61	1.00	0.90	324.	9.1	280.4	5.5
10	01	01	1	04	-1.3	0.064	-9.000	-9.000	-999.	39.	18.3	0.19	0.61	1.00	0.40	294.	9.1	278.8	5.5
10	01	01	1	05	-3.9	0.088	-9.000	-9.000	-999.	62.	15.0	0.19	0.61	1.00	0.90	205.	9.1	278.1	5.5
10	01	01	1	06	-1.3	0.065	-9.000	-9.000	-999.	39.	18.3	0.19	0.61	1.00	0.40	3.	9.1	277.0	5.5
10	01	01	1	07	-8.0	0.125	-9.000	-9.000	-999.	106.	21.0	0.19	0.61	1.00	1.30	99.	9.1	277.0	5.5
10	01	01	1	08	-3.3	0.086	-9.000	-9.000	-999.	61.	16.8	0.19	0.61	0.54	0.90	319.	9.1	278.8	5.5
10	01	01	1	09	20.1	0.128	0.307	0.010	49.	110.	-9.0	0.19	0.61	0.33	0.90	239.	9.1	284.2	5.5
10	01	01	1	10	56.7	0.087	0.560	0.010	107.	62.	-1.0	0.19	0.61	0.26	0.40	188.	9.1	289.2	5.5
10	01	01	1	11	81.5	0.323	0.867	0.008	277.	441.	-35.9	0.19	0.61	0.23	2.70	310.	9.1	290.9	5.5
10	01	01	1	12	97.1	0.281	1.058	0.008	421.	357.	-19.7	0.19	0.61	0.22	2.20	357.	9.1	293.1	5.5
10	01	01	1	13	92.2	0.279	1.117	0.008	523.	354.	-20.4	0.19	0.61	0.22	2.20	356.	9.1	293.8	5.5
10	01	01	1	14	77.6	0.275	1.102	0.008	595.	347.	-23.2	0.19	0.61	0.23	2.20	50.	9.1	294.2	5.5
10	01	01	1	15	54.9	0.230	1.006	0.008	640.	266.	-19.2	0.19	0.61	0.27	1.80	53.	9.1	293.8	5.5
10	01	01	1	16	12.3	0.206	0.613	0.008	648.	225.	-61.5	0.19	0.61	0.36	1.80	11.	9.1	292.5	5.5
10	01	01	1	17	-3.6	0.087	-9.000	-9.000	-999.	71.	15.6	0.19	0.61	0.64	0.90	351.	9.1	290.4	5.5
10	01	01	1	18	-3.8	0.087	-9.000	-9.000	-999.	62.	15.2	0.19	0.61	1.00	0.90	186.	9.1	287.5	5.5
10	01	01	1	19	-3.8	0.087	-9.000	-9.000	-999.	62.	15.2	0.19	0.61	1.00	0.90	275.	9.1	285.9	5.5
10	01	01	1	20	-1.2	0.064	-9.000	-9.000	-999.	39.	18.1	0.19	0.61	1.00	0.40	181.	9.1	285.4	5.5
10	01	01	1	21	-7.8	0.125	-9.000	-9.000	-999.	106.	21.3	0.19	0.61	1.00	1.30	318.	9.1	284.9	5.5
10	01	01	1	22	-3.8	0.088	-9.000	-9.000	-999.	62.	15.1	0.19	0.61	1.00	0.90	196.	9.1	283.1	5.5
10	01	01	1	23	-3.8	0.088	-9.000	-9.000	-999.	62.	15.1	0.19	0.61	1.00	0.90	330.	9.1	281.4	5.5
10	01	01	1	24	-7.9	0.125	-9.000	-9.000	-999.	106.	21.2	0.19	0.61	1.00	1.30	332.	9.1	280.9	5.5

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
10	01	01	01	5.5	0	-999.	-99.00	282.6	99.0	-99.00	-99.00

10 01 01 01 9.1 1 335. 1.30 -999.0 99.0 -99.00 -99.00

F indicates top of profile (=1) or below (=0)
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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROU
SLINE1 ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
485093.55	3755491.26	19.62689	485235.70	3755497.85	29.98495
485367.49	3755576.92	19.86638	485383.96	3755577.39	19.31023
485397.61	3755578.33	18.79269	485413.14	3755577.86	18.30368
485431.97	3755578.80	17.59126	485449.38	3755579.27	16.95246
485464.45	3755580.21	16.36531	485525.18	3755702.36	10.17345
485607.91	3755706.92	8.63693	485568.82	3755774.67	8.00804
485536.25	3755800.73	7.93287	485534.95	3755835.91	7.36452
485538.86	3755736.89	9.14128	485489.91	3754619.57	12.01832
484492.95	3755473.69	3.69212	484492.95	3755525.55	3.60294
484491.69	3755579.94	3.50029	484485.36	3755635.59	3.36698
484496.75	3755682.39	3.34996	484498.01	3755725.40	3.28272
484501.81	3755767.14	3.23321	484503.07	3755797.50	3.19071
484504.34	3755829.12	3.14781			

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROU
SLINE3 ***
INCLUDING SOURCE(S): L0000240 , L0000241 , L0000242 , L0000243 , L0000244 ,
L0000245 , L0000246 , L0000247 , L0000248 , L0000249 , L0000250 , L0000251 , L0000252
L0000253 , L0000254 , L0000255 , L0000256 , L0000257 , L0000258 , L0000259 , L0000260
L0000261 , L0000262 , L0000263 , L0000264 , L0000265 , L0000266 , L0000267 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
485093.55	3755491.26	42.61169	485235.70	3755497.85	41.15136
485367.49	3755576.92	23.08666	485383.96	3755577.39	22.32812

485397.61	3755578.33	21.54661	485413.14	3755577.86	20.74809
485431.97	3755578.80	19.54717	485449.38	3755579.27	18.45821
485464.45	3755580.21	17.48932	485525.18	3755702.36	9.83875
485607.91	3755706.92	8.05643	485568.82	3755774.67	7.55823
485536.25	3755800.73	7.58841	485534.95	3755835.91	7.05205
485538.86	3755736.89	8.74913	485489.91	3754619.57	7.94571
484492.95	3755473.69	44.77551	484492.95	3755525.55	26.84222
484491.69	3755579.94	18.77592	484485.36	3755635.59	14.21882
484496.75	3755682.39	12.05926	484498.01	3755725.40	10.48255
484501.81	3755767.14	9.33332	484503.07	3755797.50	8.63108
484504.34	3755829.12	8.00352			

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROU SLINE4 ***

INCLUDING SOURCE(S): L0000428 , L0000429 , L0000430 , L0000431 , L0000432 ,
L0000433 , L0000434 , L0000435 , L0000436 , L0000437 , L0000438 , L0000439 , L0000440
L0000441 , L0000442 , L0000443 , L0000444 , L0000445 , L0000446 , L0000447 , L0000448
L0000449 , L0000450 , L0000451 , L0000452 , L0000453 , L0000454 , L0000455 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
485093.55	3755491.26	7.99277	485235.70	3755497.85	12.95918
485367.49	3755576.92	23.43510	485383.96	3755577.39	26.14776
485397.61	3755578.33	28.85641	485413.14	3755577.86	32.69236
485431.97	3755578.80	38.75389	485449.38	3755579.27	46.58652
485464.45	3755580.21	56.22863	485525.18	3755702.36	67.59378
485607.91	3755706.92	40.63143	485568.82	3755774.67	28.25348
485536.25	3755800.73	24.57206	485534.95	3755835.91	19.92874
485538.86	3755736.89	42.36668	485489.91	3754619.57	6.88956
484492.95	3755473.69	2.30387	484492.95	3755525.55	2.29166
484491.69	3755579.94	2.26992	484485.36	3755635.59	2.22723
484496.75	3755682.39	2.23971	484498.01	3755725.40	2.21937
484501.81	3755767.14	2.20495	484503.07	3755797.50	2.18849
484504.34	3755829.12	2.17021			

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROU STCK1 ***

INCLUDING SOURCE(S): STCK1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
485093.55	3755491.26	8.21478	485235.70	3755497.85	13.41634
485367.49	3755576.92	10.67929	485383.96	3755577.39	10.26549
485397.61	3755578.33	9.95995	485413.14	3755577.86	9.62764
485431.97	3755578.80	9.25848	485449.38	3755579.27	8.92133
485464.45	3755580.21	8.62973	485525.18	3755702.36	7.53787
485607.91	3755706.92	6.20911	485568.82	3755774.67	6.64594
485536.25	3755800.73	6.96079	485534.95	3755835.91	6.79303
485538.86	3755736.89	7.20435	485489.91	3754619.57	6.91087
484492.95	3755473.69	2.52784	484492.95	3755525.55	2.55360
484491.69	3755579.94	2.58164	484485.36	3755635.59	2.59795
484496.75	3755682.39	2.67928	484498.01	3755725.40	2.72191
484501.81	3755767.14	2.77636	484503.07	3755797.50	2.81094
484504.34	3755829.12	2.84784			

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROU STCK2 ***

INCLUDING SOURCE(S): STCK2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
485093.55	3755491.26	7.24793	485235.70	3755497.85	11.99094
485367.49	3755576.92	11.90611	485383.96	3755577.39	11.37922
485397.61	3755578.33	10.97519	485413.14	3755577.86	10.55022
485431.97	3755578.80	10.10154	485449.38	3755579.27	9.72788
485464.45	3755580.21	9.42938	485525.18	3755702.36	8.19859
485607.91	3755706.92	6.83872	485568.82	3755774.67	7.18982
485536.25	3755800.73	7.45512	485534.95	3755835.91	7.23667
485538.86	3755736.89	7.80472	485489.91	3754619.57	6.60814
484492.95	3755473.69	2.39989	484492.95	3755525.55	2.42133
484491.69	3755579.94	2.44373	484485.36	3755635.59	2.45521
484496.75	3755682.39	2.52625	484498.01	3755725.40	2.56248
484501.81	3755767.14	2.60919	484503.07	3755797.50	2.63852
484504.34	3755829.12	2.66981			

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROU STCK3 ***

INCLUDING SOURCE(S): STCK3 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
485093.55	3755491.26	10.77283	485235.70	3755497.85	13.59293
485367.49	3755576.92	9.98559	485383.96	3755577.39	9.67415
485397.61	3755578.33	9.42156	485413.14	3755577.86	9.14220
485431.97	3755578.80	8.79791	485449.38	3755579.27	8.47710
485464.45	3755580.21	8.19524	485525.18	3755702.36	6.81717
485607.91	3755706.92	5.71470	485568.82	3755774.67	6.01609
485536.25	3755800.73	6.26025	485534.95	3755835.91	6.10357
485538.86	3755736.89	6.50735	485489.91	3754619.57	8.15777
484492.95	3755473.69	2.67696	484492.95	3755525.55	2.71601
484491.69	3755579.94	2.75829	484485.36	3755635.59	2.78359
484496.75	3755682.39	2.88129	484498.01	3755725.40	2.93315
484501.81	3755767.14	2.99848	484503.07	3755797.50	3.03941
484504.34	3755829.12	3.08184			

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROU STCK4 ***

INCLUDING SOURCE(S): STCK4 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
485093.55	3755491.26	10.57247	485235.70	3755497.85	13.60749
485367.49	3755576.92	10.10860	485383.96	3755577.39	9.80041
485397.61	3755578.33	9.55098	485413.14	3755577.86	9.28604
485431.97	3755578.80	8.95934	485449.38	3755579.27	8.66072
485464.45	3755580.21	8.39846	485525.18	3755702.36	6.90503
485607.91	3755706.92	5.86689	485568.82	3755774.67	6.08046
485536.25	3755800.73	6.27633	485534.95	3755835.91	6.09860
485538.86	3755736.89	6.57537	485489.91	3754619.57	8.60377
484492.95	3755473.69	2.63535	484492.95	3755525.55	2.67479
484491.69	3755579.94	2.71613	484485.36	3755635.59	2.73975
484496.75	3755682.39	2.83427	484498.01	3755725.40	2.88368
484501.81	3755767.14	2.94594	484503.07	3755797.50	2.98448
484504.34	3755829.12	3.02410			

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROU STCK5 ***

INCLUDING SOURCE(S): STCK5 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
485093.55	3755491.26	13.58654	485235.70	3755497.85	18.75826
485367.49	3755576.92	13.90340	485383.96	3755577.39	13.61845
485397.61	3755578.33	13.35426	485413.14	3755577.86	13.11755
485431.97	3755578.80	12.76964	485449.38	3755579.27	12.46700
485464.45	3755580.21	12.18685	485525.18	3755702.36	8.21310
485607.91	3755706.92	7.33067	485568.82	3755774.67	6.69415
485536.25	3755800.73	6.56152	485534.95	3755835.91	6.12498
485538.86	3755736.89	7.48570	485489.91	3754619.57	17.47659
484492.95	3755473.69	3.25142	484492.95	3755525.55	3.17128
484491.69	3755579.94	3.07978	484485.36	3755635.59	2.96475
484496.75	3755682.39	2.94749	484498.01	3755725.40	2.89266
484501.81	3755767.14	2.85413	484503.07	3755797.50	2.82126
484504.34	3755829.12	2.78815			

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROU STCK6 ***

INCLUDING SOURCE(S): STCK6 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
485093.55	3755491.26	13.58649	485235.70	3755497.85	18.75818
485367.49	3755576.92	13.90334	485383.96	3755577.39	13.61839
485397.61	3755578.33	13.35420	485413.14	3755577.86	13.11749
485431.97	3755578.80	12.76958	485449.38	3755579.27	12.46694
485464.45	3755580.21	12.18680	485525.18	3755702.36	8.21307
485607.91	3755706.92	7.33064	485568.82	3755774.67	6.69412
485536.25	3755800.73	6.56150	485534.95	3755835.91	6.12495
485538.86	3755736.89	7.48567	485489.91	3754619.57	17.47653
484492.95	3755473.69	3.25141	484492.95	3755525.55	3.17127
484491.69	3755579.94	3.07977	484485.36	3755635.59	2.96474
484496.75	3755682.39	2.94748	484498.01	3755725.40	2.89265
484501.81	3755767.14	2.85412	484503.07	3755797.50	2.82125
484504.34	3755829.12	2.78815			

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP:

VOL1 ***

INCLUDING SOURCE(S): VOL1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
485093.55	3755491.26	23.85679	485235.70	3755497.85	46.73916
485367.49	3755576.92	27.79229	485383.96	3755577.39	26.76192
485397.61	3755578.33	25.83458	485413.14	3755577.86	24.95060
485431.97	3755578.80	23.68727	485449.38	3755579.27	22.54753
485464.45	3755580.21	21.51069	485525.18	3755702.36	12.44784
485607.91	3755706.92	10.15114	485568.82	3755774.67	9.50564
485536.25	3755800.73	9.48412	485534.95	3755835.91	8.75249
485538.86	3755736.89	11.04473	485489.91	3754619.57	9.52525
484492.95	3755473.69	3.84584	484492.95	3755525.55	3.76203
484491.69	3755579.94	3.66079	484485.36	3755635.59	3.52488
484496.75	3755682.39	3.51155	484498.01	3755725.40	3.44038
484501.81	3755767.14	3.38562	484503.07	3755797.50	3.33785
484504.34	3755829.12	3.28939			

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROU

VOL2 ***

INCLUDING SOURCE(S): VOL2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
485093.55	3755491.26	21.46555	485235.70	3755497.85	43.48425
485367.49	3755576.92	28.96210	485383.96	3755577.39	27.95621
485397.61	3755578.33	27.03760	485413.14	3755577.86	26.18179
485431.97	3755578.80	24.94111	485449.38	3755579.27	23.82522
485464.45	3755580.21	22.79608	485525.18	3755702.36	13.00185
485607.91	3755706.92	10.66211	485568.82	3755774.67	9.87918
485536.25	3755800.73	9.80428	485534.95	3755835.91	9.01946
485538.86	3755736.89	11.49942	485489.91	3754619.57	9.46471
484492.95	3755473.69	3.70298	484492.95	3755525.55	3.62511
484491.69	3755579.94	3.53049	484485.36	3755635.59	3.40310
484496.75	3755682.39	3.39157	484498.01	3755725.40	3.32504
484501.81	3755767.14	3.27354	484503.07	3755797.50	3.22819
484504.34	3755829.12	3.18190			

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: VOL3 ***

INCLUDING SOURCE(S): VOL3 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
485093.55	3755491.26	19.43326	485235.70	3755497.85	39.87013
485367.49	3755576.92	30.03451	485383.96	3755577.39	29.08941
485397.61	3755578.33	28.18967	485413.14	3755577.86	27.35983
485431.97	3755578.80	26.13613	485449.38	3755579.27	25.04456
485464.45	3755580.21	24.03082	485525.18	3755702.36	13.53782
485607.91	3755706.92	11.17747	485568.82	3755774.67	10.24299
485536.25	3755800.73	10.11114	485534.95	3755835.91	9.27472
485538.86	3755736.89	11.93929	485489.91	3754619.57	9.38003
484492.95	3755473.69	3.57098	484492.95	3755525.55	3.49846
484491.69	3755579.94	3.40978	484485.36	3755635.59	3.29003
484496.75	3755682.39	3.28007	484498.01	3755725.40	3.21779
484501.81	3755767.14	3.16939	484503.07	3755797.50	3.12637
484504.34	3755829.12	3.08217			

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROU VOL4 ***

INCLUDING SOURCE(S): VOL4 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
485093.55	3755491.26	17.67228	485235.70	3755497.85	36.17897
485367.49	3755576.92	30.94472	485383.96	3755577.39	30.13706
485397.61	3755578.33	29.29464	485413.14	3755577.86	28.50890
485431.97	3755578.80	27.30321	485449.38	3755579.27	26.23073
485464.45	3755580.21	25.23168	485525.18	3755702.36	14.06209
485607.91	3755706.92	11.70274	485568.82	3755774.67	10.60131
485536.25	3755800.73	10.41011	485534.95	3755835.91	9.52340
485538.86	3755736.89	12.36984	485489.91	3754619.57	9.27382
484492.95	3755473.69	3.44636	484492.95	3755525.55	3.37875
484491.69	3755579.94	3.29553	484485.36	3755635.59	3.18278
484496.75	3755682.39	3.17422	484498.01	3755725.40	3.11591
484501.81	3755767.14	3.07048	484503.07	3755797.50	3.02973
484504.34	3755829.12	2.98758			

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROU
VOL5 ***

INCLUDING SOURCE(S): VOL5 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
485093.55	3755491.26	24.76351	485235.70	3755497.85	36.83127
485367.49	3755576.92	20.75207	485383.96	3755577.39	20.04990
485397.61	3755578.33	19.42031	485413.14	3755577.86	18.80861
485431.97	3755578.80	17.94617	485449.38	3755579.27	17.16850
485464.45	3755580.21	16.46585	485525.18	3755702.36	10.22651
485607.91	3755706.92	8.50601	485568.82	3755774.67	8.03042
485536.25	3755800.73	8.03137	485534.95	3755835.91	7.47517
485538.86	3755736.89	9.19411	485489.91	3754619.57	10.98794
484492.95	3755473.69	3.99247	484492.95	3755525.55	3.89367
484491.69	3755579.94	3.77921	484485.36	3755635.59	3.62871
484496.75	3755682.39	3.60785	484498.01	3755725.40	3.53046
484501.81	3755767.14	3.47366	484503.07	3755797.50	3.42574
484504.34	3755829.12	3.37798			

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROU
VOL6 ***

INCLUDING SOURCE(S): VOL6 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
485093.55	3755491.26	23.45511	485235.70	3755497.85	33.09973
485367.49	3755576.92	19.16156	485383.96	3755577.39	18.55448
485397.61	3755578.33	18.00982	485413.14	3755577.86	17.48391
485431.97	3755578.80	16.73807	485449.38	3755579.27	16.06437
485464.45	3755580.21	15.45181	485525.18	3755702.36	9.75317
485607.91	3755706.92	8.18521	485568.82	3755774.67	7.71205
485536.25	3755800.73	7.69976	485534.95	3755835.91	7.17603
485538.86	3755736.89	8.79377	485489.91	3754619.57	11.63115
484492.95	3755473.69	3.95468	484492.95	3755525.55	3.85500
484491.69	3755579.94	3.73994	484485.36	3755635.59	3.58974
484496.75	3755682.39	3.56797	484498.01	3755725.40	3.49198
484501.81	3755767.14	3.43697	484503.07	3755797.50	3.39063
484504.34	3755829.12	3.34440			

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROU
VOL7 ***
INCLUDING SOURCE(S): VOL7 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
485093.55	3755491.26	22.19940	485235.70	3755497.85	29.92135
485367.49	3755576.92	17.75543	485383.96	3755577.39	17.22654
485397.61	3755578.33	16.75192	485413.14	3755577.86	16.29644
485431.97	3755578.80	15.64736	485449.38	3755579.27	15.06055
485464.45	3755580.21	14.52416	485525.18	3755702.36	9.31003
485607.91	3755706.92	7.87922	485568.82	3755774.67	7.41099
485536.25	3755800.73	7.38780	485534.95	3755835.91	6.89436
485538.86	3755736.89	8.41758	485489.91	3754619.57	12.32898
484492.95	3755473.69	3.91647	484492.95	3755525.55	3.81606
484491.69	3755579.94	3.70041	484485.36	3755635.59	3.55080
484496.75	3755682.39	3.52869	484498.01	3755725.40	3.45446
484501.81	3755767.14	3.40139	484503.07	3755797.50	3.35656
484504.34	3755829.12	3.31173			

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROU
VOL8 ***
INCLUDING SOURCE(S): VOL8 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
485093.55	3755491.26	20.28189	485235.70	3755497.85	28.41904
485367.49	3755576.92	17.59042	485383.96	3755577.39	17.09824
485397.61	3755578.33	16.65678	485413.14	3755577.86	16.24226
485431.97	3755578.80	15.64499	485449.38	3755579.27	15.10621
485464.45	3755580.21	14.60844	485525.18	3755702.36	9.36681
485607.91	3755706.92	7.98886	485568.82	3755774.67	7.46051
485536.25	3755800.73	7.40772	485534.95	3755835.91	6.90427
485538.86	3755736.89	8.46563	485489.91	3754619.57	12.77239
484492.95	3755473.69	3.77676	484492.95	3755525.55	3.68181
484491.69	3755579.94	3.57245	484485.36	3755635.59	3.43087
484496.75	3755682.39	3.40975	484498.01	3755725.40	3.33928
484501.81	3755767.14	3.28878	484503.07	3755797.50	3.24616

484504.34 3755829.12 3.20357

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROU VOL9 ***

INCLUDING SOURCE(S): VOL9 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
485093.55	3755491.26	13.61020	485235.70	3755497.85	18.70067
485367.49	3755576.92	13.93533	485383.96	3755577.39	13.65679
485397.61	3755578.33	13.39593	485413.14	3755577.86	13.16084
485431.97	3755578.80	12.81241	485449.38	3755579.27	12.50749
485464.45	3755580.21	12.22460	485525.18	3755702.36	8.24439
485607.91	3755706.92	7.35634	485568.82	3755774.67	6.72320
485536.25	3755800.73	6.59415	485534.95	3755835.91	6.15906
485538.86	3755736.89	7.51563	485489.91	3754619.57	17.47173
484492.95	3755473.69	3.27602	484492.95	3755525.55	3.19539
484491.69	3755579.94	3.10389	484485.36	3755635.59	2.98902
484496.75	3755682.39	2.97262	484498.01	3755725.40	2.91789
484501.81	3755767.14	2.87923	484503.07	3755797.50	2.84599
484504.34	3755829.12	2.81232			

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROU ALL ***

INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
485093.55	3755491.26	320.95038	485235.70	3755497.85	487.46420
485367.49	3755576.92	343.80289	485383.96	3755577.39	336.67274
485397.61	3755578.33	330.40310	485413.14	3755577.86	325.57847
485431.97	3755578.80	319.40551	485449.38	3755579.27	316.27332
485464.45	3755580.21	315.95387	485525.18	3755702.36	233.44133
485607.91	3755706.92	180.22464	485568.82	3755774.67	160.70663
485536.25	3755800.73	157.09929	485534.95	3755835.91	144.00607

485538.86	3755736.89	192.56027	485489.91	3754619.57	194.92328
484492.95	3755473.69	100.99693	484492.95	3755525.55	82.15139
484491.69	3755579.94	72.99798	484485.36	3755635.59	66.90897
484496.75	3755682.39	64.90931	484498.01	3755725.40	62.70436
484501.81	3755767.14	61.18878	484503.07	3755797.50	60.11335
484504.34	3755829.12	59.11249			

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROU SLINE1 ***

INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 , L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 , L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 , L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
485093.55	3755491.26	240.78666	(10012008)	485235.70	3755497.85	294.85090	(16080506)
485367.49	3755576.92	249.09364	(16010708)	485383.96	3755577.39	247.86910	(14011408)
485397.61	3755578.33	246.07880	(14102307)	485413.14	3755577.86	245.88149	(14102807)
485431.97	3755578.80	241.12765	(10123108)	485449.38	3755579.27	240.72281	(16011008)
485464.45	3755580.21	237.28579	(10080406)	485525.18	3755702.36	168.26147	(10010722)
485607.91	3755706.92	156.74288	(10012408)	485568.82	3755774.67	151.11868	(16100307)
485536.25	3755800.73	139.28298	(10080406)	485534.95	3755835.91	130.60936	(10080406)
485538.86	3755736.89	156.31327	(16100307)	485489.91	3754619.57	153.62341	(16051106)
484492.95	3755473.69	93.05568	(16041007)	484492.95	3755525.55	107.00245	(16032907)
484491.69	3755579.94	123.82383	(16032907)	484485.36	3755635.59	125.62763	(16032907)
484496.75	3755682.39	114.21720	(16032907)	484498.01	3755725.40	96.23348	(16032907)
484501.81	3755767.14	77.34372	(16091607)	484503.07	3755797.50	74.04403	(11010308)
484504.34	3755829.12	71.46009	(15051420)				

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROU SLINE3 ***

INCLUDING SOURCE(S): L0000240 , L0000241 , L0000242 , L0000243 , L0000244 , L0000245 , L0000246 , L0000247 , L0000248 , L0000249 , L0000250 , L0000251 , L0000252 , L0000253 , L0000254 , L0000255 , L0000256 , L0000257 , L0000258 , L0000259 , L0000260 , L0000261 , L0000262 , L0000263 , L0000264 , L0000265 , L0000266 , L0000267 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M) Y-COORD (M) CONC (YYMMDDHH) X-COORD (M) Y-COORD (M) CONC (YYMMDDHH)

485093.55	3755491.26	166.36582	(10052424)	485235.70	3755497.85	174.65228	(15050823)
485367.49	3755576.92	138.99953	(15080806)	485383.96	3755577.39	138.01084	(16110107)
485397.61	3755578.33	135.70324	(15042606)	485413.14	3755577.86	132.85606	(14080606)
485431.97	3755578.80	126.72608	(16102707)	485449.38	3755579.27	121.74741	(11080706)
485464.45	3755580.21	116.50507	(11010808)	485525.18	3755702.36	75.78507	(14030208)
485607.91	3755706.92	63.40005	(16011008)	485568.82	3755774.67	67.10270	(14030208)
485536.25	3755800.73	70.00099	(14030208)	485534.95	3755835.91	68.36965	(15052506)
485538.86	3755736.89	72.80799	(14030208)	485489.91	3754619.57	71.91746	(11011321)
484492.95	3755473.69	192.63694	(11042904)	484492.95	3755525.55	127.03209	(16012420)
484491.69	3755579.94	111.28101	(16032907)	484485.36	3755635.59	104.36988	(16032907)
484496.75	3755682.39	100.30535	(16032907)	484498.01	3755725.40	94.98654	(16032907)
484501.81	3755767.14	88.09351	(16032907)	484503.07	3755797.50	81.96432	(16032907)
484504.34	3755829.12	74.71926	(16032907)				

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SLINE4 ***

INCLUDING SOURCE(S): L0000428 , L0000429 , L0000430 , L0000431 , L0000432 , L0000433 , L0000434 , L0000435 , L0000436 , L0000437 , L0000438 , L0000439 , L0000440 , L0000441 , L0000442 , L0000443 , L0000444 , L0000445 , L0000446 , L0000447 , L0000448 , L0000449 , L0000450 , L0000451 , L0000452 , L0000453 , L0000454 , L0000455 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M) Y-COORD (M) CONC (YYMMDDHH) X-COORD (M) Y-COORD (M) CONC (YYMMDDHH)

485093.55	3755491.26	83.61940	(16122222)	485235.70	3755497.85	111.72132	(16101804)
485367.49	3755576.92	161.36436	(10122808)	485383.96	3755577.39	170.68030	(11042904)
485397.61	3755578.33	179.17048	(11042904)	485413.14	3755577.86	190.49784	(10122121)
485431.97	3755578.80	206.36686	(10041006)	485449.38	3755579.27	223.91489	(11072302)
485464.45	3755580.21	242.47818	(15040621)	485525.18	3755702.36	345.48571	(16101507)
485607.91	3755706.92	241.93019	(16011008)	485568.82	3755774.67	215.34330	(15020501)
485536.25	3755800.73	194.10793	(11080706)	485534.95	3755835.91	168.25837	(11080706)
485538.86	3755736.89	267.09204	(11010808)	485489.91	3754619.57	81.64220	(11011208)
484492.95	3755473.69	47.92501	(15112608)	484492.95	3755525.55	52.55854	(15112608)
484491.69	3755579.94	53.91115	(15112608)	484485.36	3755635.59	54.27184	(16041007)
484496.75	3755682.39	63.02492	(16041007)	484498.01	3755725.40	68.95419	(16041007)
484501.81	3755767.14	71.92427	(16041007)	484503.07	3755797.50	71.71545	(16041007)
484504.34	3755829.12	69.34056	(16041007)				

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP:

STCK1 ***

INCLUDING SOURCE(S): STCK1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
485093.55	3755491.26	194.95989	(14072520)	485235.70	3755497.85	227.45856	(15061106)
485367.49	3755576.92	195.47840	(16092719)	485383.96	3755577.39	190.88182	(16031519)
485397.61	3755578.33	187.23330	(16031519)	485413.14	3755577.86	193.98043	(11082722)
485431.97	3755578.80	191.72288	(10071523)	485449.38	3755579.27	186.29233	(10071523)
485464.45	3755580.21	177.24122	(16102320)	485525.18	3755702.36	161.32505	(14091620)
485607.91	3755706.92	151.96857	(14091504)	485568.82	3755774.67	149.79755	(14091620)
485536.25	3755800.73	145.29874	(16021618)	485534.95	3755835.91	141.40733	(15090921)
485538.86	3755736.89	155.44820	(14091620)	485489.91	3754619.57	136.91346	(16072723)
484492.95	3755473.69	110.16747	(15091020)	484492.95	3755525.55	107.07141	(10080122)
484491.69	3755579.94	105.59745	(14062720)	484485.36	3755635.59	102.53770	(16090220)
484496.75	3755682.39	101.48416	(10092803)	484498.01	3755725.40	99.04603	(15102820)
484501.81	3755767.14	98.93217	(11082920)	484503.07	3755797.50	95.40640	(14081420)
484504.34	3755829.12	95.42217	(14051621)				

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROU

STCK2 ***

INCLUDING SOURCE(S): STCK2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
485093.55	3755491.26	184.95166	(14070719)	485235.70	3755497.85	212.95738	(10101007)
485367.49	3755576.92	194.29678	(15092707)	485383.96	3755577.39	200.62075	(10092507)
485397.61	3755578.33	197.95040	(16092719)	485413.14	3755577.86	190.89784	(16092719)
485431.97	3755578.80	190.00816	(16031519)	485449.38	3755579.27	191.70097	(11082722)
485464.45	3755580.21	191.95423	(11082722)	485525.18	3755702.36	161.54011	(15090921)
485607.91	3755706.92	155.02673	(15062724)	485568.82	3755774.67	149.57431	(16021618)
485536.25	3755800.73	146.60063	(16062723)	485534.95	3755835.91	143.51215	(16062723)
485538.86	3755736.89	156.63469	(15090921)	485489.91	3754619.57	137.69399	(14082722)
484492.95	3755473.69	106.61386	(15091020)	484492.95	3755525.55	103.54932	(15070102)
484491.69	3755579.94	102.18434	(11090521)	484485.36	3755635.59	99.09604	(16090220)
484496.75	3755682.39	99.03976	(15091920)	484498.01	3755725.40	96.07620	(10092803)
484501.81	3755767.14	95.00563	(15091322)	484503.07	3755797.50	94.20839	(11082920)
484504.34	3755829.12	91.32777	(14051621)				

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROU
STCK3 ***

INCLUDING SOURCE(S): STCK3 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
485093.55	3755491.26	184.49828	(16072320)	485235.70	3755497.85	202.48704	(15040207)
485367.49	3755576.92	169.99551	(15082621)	485383.96	3755577.39	168.73854	(15082722)
485397.61	3755578.33	169.24780	(15082722)	485413.14	3755577.86	168.78026	(16062723)
485431.97	3755578.80	167.47507	(15090921)	485449.38	3755579.27	167.12487	(16021618)
485464.45	3755580.21	166.98821	(15100921)	485525.18	3755702.36	149.51118	(14091620)
485607.91	3755706.92	139.76507	(14091504)	485568.82	3755774.67	138.02995	(14091620)
485536.25	3755800.73	134.55138	(16021618)	485534.95	3755835.91	130.38981	(15090921)
485538.86	3755736.89	143.50685	(14091620)	485489.91	3754619.57	143.65930	(16061823)
484492.95	3755473.69	111.18780	(11090521)	484492.95	3755525.55	107.77047	(16090220)
484491.69	3755579.94	106.46591	(15091920)	484485.36	3755635.59	101.15585	(15102820)
484496.75	3755682.39	101.76441	(11082920)	484498.01	3755725.40	98.76883	(14051621)
484501.81	3755767.14	97.37684	(15062220)	484503.07	3755797.50	95.39124	(11082705)
484504.34	3755829.12	93.22380	(16082520)				

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROU
STCK4 ***

INCLUDING SOURCE(S): STCK4 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
485093.55	3755491.26	172.51180	(16072320)	485235.70	3755497.85	186.20341	(10082701)
485367.49	3755576.92	163.54722	(15090922)	485383.96	3755577.39	167.23151	(15082621)
485397.61	3755578.33	164.31279	(15082621)	485413.14	3755577.86	166.80147	(15082722)
485431.97	3755578.80	166.35392	(16062723)	485449.38	3755579.27	161.57626	(10092801)
485464.45	3755580.21	164.42803	(15090921)	485525.18	3755702.36	145.11586	(16021618)
485607.91	3755706.92	138.85405	(15062724)	485568.82	3755774.67	133.35791	(16021618)
485536.25	3755800.73	131.17633	(15090921)	485534.95	3755835.91	125.71857	(15082804)
485538.86	3755736.89	139.73549	(16021618)	485489.91	3754619.57	148.06276	(16093021)
484492.95	3755473.69	107.27803	(14062720)	484492.95	3755525.55	104.88190	(16090220)
484491.69	3755579.94	102.52625	(10092803)	484485.36	3755635.59	99.27623	(15091322)
484496.75	3755682.39	97.52571	(11082920)	484498.01	3755725.40	96.10578	(14051621)
484501.81	3755767.14	94.56365	(15062220)	484503.07	3755797.50	92.12255	(11082705)

484504.34 3755829.12 90.77761 (16082520)
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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROU STCK5 ***
INCLUDING SOURCE(S): STCK5 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
485093.55	3755491.26	218.16945	(16101807)	485235.70	3755497.85	256.41720	(10101807)
485367.49	3755576.92	216.00570	(11080706)	485383.96	3755577.39	222.51912	(16060206)
485397.61	3755578.33	220.62280	(16060206)	485413.14	3755577.86	216.20920	(15030108)
485431.97	3755578.80	212.67015	(16010708)	485449.38	3755579.27	211.81519	(14011408)
485464.45	3755580.21	209.22458	(14102307)	485525.18	3755702.36	153.68746	(16050606)
485607.91	3755706.92	152.54062	(16100307)	485568.82	3755774.67	130.33384	(10123108)
485536.25	3755800.73	139.61466	(14030208)	485534.95	3755835.91	139.95519	(14030208)
485538.86	3755736.89	141.71248	(16050606)	485489.91	3754619.57	258.01237	(15080206)
484492.95	3755473.69	128.57078	(16032907)	484492.95	3755525.55	135.97416	(16032907)
484491.69	3755579.94	123.84663	(16032907)	484485.36	3755635.59	99.33235	(16032907)
484496.75	3755682.39	79.33060	(16091607)	484498.01	3755725.40	75.60016	(11010308)
484501.81	3755767.14	74.07117	(16012409)	484503.07	3755797.50	81.22982	(16012409)
484504.34	3755829.12	86.50768	(16012409)				

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROU STCK6 ***
INCLUDING SOURCE(S): STCK6 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
485093.55	3755491.26	218.17121	(16101807)	485235.70	3755497.85	256.41916	(10101807)
485367.49	3755576.92	216.00775	(11080706)	485383.96	3755577.39	222.57063	(16060206)
485397.61	3755578.33	220.67374	(16060206)	485413.14	3755577.86	216.26920	(15030108)
485431.97	3755578.80	212.67242	(16010708)	485449.38	3755579.27	211.81758	(14011408)
485464.45	3755580.21	209.22617	(14102307)	485525.18	3755702.36	153.68864	(16050606)
485607.91	3755706.92	152.55550	(16100307)	485568.82	3755774.67	130.33563	(10123108)
485536.25	3755800.73	139.63596	(14030208)	485534.95	3755835.91	139.97578	(14030208)
485538.86	3755736.89	141.71350	(16050606)	485489.91	3754619.57	258.01321	(15080206)

484492.95	3755473.69	128.68545	(16032907)	484492.95	3755525.55	136.09344	(16032907)
484491.69	3755579.94	123.95292	(16032907)	484485.36	3755635.59	99.41518	(16032907)
484496.75	3755682.39	79.33352	(16091607)	484498.01	3755725.40	75.60091	(11010308)
484501.81	3755767.14	74.07476	(16012409)	484503.07	3755797.50	81.23383	(16012409)
484504.34	3755829.12	86.51197	(16012409)				

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROU VOL1 ***

INCLUDING SOURCE(S): VOL1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
485093.55	3755491.26	393.65625	(10050206)	485235.70	3755497.85	548.17496	(11050706)
485367.49	3755576.92	399.26797	(16010708)	485383.96	3755577.39	397.35733	(14102307)
485397.61	3755578.33	392.24031	(16050606)	485413.14	3755577.86	384.32757	(10123108)
485431.97	3755578.80	377.57212	(10080406)	485449.38	3755579.27	364.32915	(15011908)
485464.45	3755580.21	357.26943	(10102107)	485525.18	3755702.36	226.84919	(15042706)
485607.91	3755706.92	202.40757	(10050406)	485568.82	3755774.67	183.49091	(15042706)
485536.25	3755800.73	176.96751	(15011908)	485534.95	3755835.91	163.57139	(11042903)
485538.86	3755736.89	205.03191	(10102107)	485489.91	3754619.57	154.82427	(15080206)
484492.95	3755473.69	143.88329	(16041007)	484492.95	3755525.55	113.18513	(16041007)
484491.69	3755579.94	104.49684	(14122809)	484485.36	3755635.59	128.99454	(16032907)
484496.75	3755682.39	142.55375	(16032907)	484498.01	3755725.40	135.95176	(16032907)
484501.81	3755767.14	117.33084	(16032907)	484503.07	3755797.50	100.03826	(16032907)
484504.34	3755829.12	86.39293	(16091607)				

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROU VOL2 ***

INCLUDING SOURCE(S): VOL2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
485093.55	3755491.26	371.17976	(16042306)	485235.70	3755497.85	530.29727	(16102107)
485367.49	3755576.92	407.05216	(16102207)	485383.96	3755577.39	402.46256	(16010708)
485397.61	3755578.33	398.80883	(14011408)	485413.14	3755577.86	393.75092	(14102807)
485431.97	3755578.80	382.41740	(10123108)	485449.38	3755579.27	378.09050	(10080406)

485464.45	3755580.21	364.03827 (11042903)	485525.18	3755702.36	230.81048 (10102107)
485607.91	3755706.92	208.62791 (10081806)	485568.82	3755774.67	186.73846 (10102107)
485536.25	3755800.73	180.29732 (10080406)	485534.95	3755835.91	168.66359 (10080406)
485538.86	3755736.89	208.14799 (10102107)	485489.91	3754619.57	156.52149 (16121008)
484492.95	3755473.69	143.09087 (16041007)	484492.95	3755525.55	115.43465 (16041007)
484491.69	3755579.94	98.45650 (14122809)	484485.36	3755635.59	122.31160 (16032907)
484496.75	3755682.39	139.24706 (16032907)	484498.01	3755725.40	136.49072 (16032907)
484501.81	3755767.14	121.11786 (16032907)	484503.07	3755797.50	105.22186 (16032907)
484504.34	3755829.12	89.48819 (16091607)			

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROU VOL3 ***

INCLUDING SOURCE(S): VOL3 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC (YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC (YYMMDDHH)
485093.55	3755491.26	350.70270 (16123108)	485235.70	3755497.85	504.52483 (14072506)
485367.49	3755576.92	406.75422 (11080706)	485383.96	3755577.39	406.12597 (16101507)
485397.61	3755578.33	403.16238 (16010708)	485413.14	3755577.86	400.01267 (14011408)
485431.97	3755578.80	393.01471 (14102307)	485449.38	3755579.27	382.93108 (16050606)
485464.45	3755580.21	378.04641 (16011008)	485525.18	3755702.36	235.44302 (10080406)
485607.91	3755706.92	213.01716 (16121808)	485568.82	3755774.67	188.88222 (15011908)
485536.25	3755800.73	184.22989 (10080406)	485534.95	3755835.91	170.05490 (10123108)
485538.86	3755736.89	211.94844 (11042903)	485489.91	3754619.57	155.99768 (15042406)
484492.95	3755473.69	142.04124 (16041007)	484492.95	3755525.55	117.31122 (16041007)
484491.69	3755579.94	92.73582 (10030124)	484485.36	3755635.59	115.65539 (16032907)
484496.75	3755682.39	135.32003 (16032907)	484498.01	3755725.40	136.10093 (16032907)
484501.81	3755767.14	124.01359 (16032907)	484503.07	3755797.50	109.71926 (16032907)
484504.34	3755829.12	92.58614 (16032907)			

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROU VOL4 ***

INCLUDING SOURCE(S): VOL4 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC (YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC (YYMMDDHH)

485093.55	3755491.26	331.89314	(11121208)	485235.70	3755497.85	482.74612	(16101607)
485367.49	3755576.92	406.83000	(16102707)	485383.96	3755577.39	406.26306	(11080706)
485397.61	3755578.33	404.85447	(11010808)	485413.14	3755577.86	404.80588	(16050506)
485431.97	3755578.80	398.08202	(14011408)	485449.38	3755579.27	393.67121	(14102307)
485464.45	3755580.21	386.64799	(16050606)	485525.18	3755702.36	242.65008	(16011008)
485607.91	3755706.92	220.34544	(10010808)	485568.82	3755774.67	192.18012	(10080406)
485536.25	3755800.73	186.02658	(10123108)	485534.95	3755835.91	170.83721	(10042306)
485538.86	3755736.89	218.84847	(10080406)	485489.91	3754619.57	158.46951	(15042406)
484492.95	3755473.69	140.75201	(16041007)	484492.95	3755525.55	118.87249	(16041007)
484491.69	3755579.94	90.26226	(15040621)	484485.36	3755635.59	108.99747	(16032907)
484496.75	3755682.39	130.83722	(16032907)	484498.01	3755725.40	134.87053	(16032907)
484501.81	3755767.14	126.08490	(16032907)	484503.07	3755797.50	113.57201	(16032907)
484504.34	3755829.12	97.54315	(16032907)				

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROU VOL5 ***

INCLUDING SOURCE(S): VOL5 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
485093.55	3755491.26	364.47658	(14081506)	485235.70	3755497.85	450.22934	(16110107)
485367.49	3755576.92	324.37229	(14102307)	485383.96	3755577.39	319.50984	(16050606)
485397.61	3755578.33	313.28031	(10123108)	485413.14	3755577.86	310.61074	(10080406)
485431.97	3755578.80	298.75166	(15011908)	485449.38	3755579.27	294.41341	(10102107)
485464.45	3755580.21	288.11153	(15042706)	485525.18	3755702.36	194.75693	(15042706)
485607.91	3755706.92	174.56176	(10050406)	485568.82	3755774.67	160.23072	(10010808)
485536.25	3755800.73	164.06832	(16100307)	485534.95	3755835.91	156.53687	(16100307)
485538.86	3755736.89	177.77908	(15042706)	485489.91	3754619.57	168.09571	(15081206)
484492.95	3755473.69	109.59942	(16041007)	484492.95	3755525.55	112.79211	(14122809)
484491.69	3755579.94	139.20903	(16032907)	484485.36	3755635.59	144.61053	(16032907)
484496.75	3755682.39	129.54156	(16032907)	484498.01	3755725.40	105.26620	(16032907)
484501.81	3755767.14	87.39890	(11042902)	484503.07	3755797.50	86.50553	(11010308)
484504.34	3755829.12	83.09620	(15051420)				

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROU VOL6 ***

INCLUDING SOURCE(S): VOL6 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M) Y-COORD (M) CONC (YYMMDDHH) X-COORD (M) Y-COORD (M) CONC (YYMMDDHH)

485093.55	3755491.26	340.53756	(16101807)	485235.70	3755497.85	412.39223	(16101907)
485367.49	3755576.92	302.41523	(14102307)	485383.96	3755577.39	298.91918	(16050606)
485397.61	3755578.33	290.76432	(10123108)	485413.14	3755577.86	290.22921	(16011008)
485431.97	3755578.80	282.27594	(10080406)	485449.38	3755579.27	275.31445	(15011908)
485464.45	3755580.21	271.45606	(10102107)	485525.18	3755702.36	184.85792	(15042706)
485607.91	3755706.92	168.69298	(10050406)	485568.82	3755774.67	153.89603	(15042706)
485536.25	3755800.73	160.20604	(16100307)	485534.95	3755835.91	151.27677	(16100307)
485538.86	3755736.89	169.34671	(10102107)	485489.91	3754619.57	174.01921	(16111602)
484492.95	3755473.69	105.39881	(15040621)	484492.95	3755525.55	123.44585	(16032907)
484491.69	3755579.94	144.47290	(16032907)	484485.36	3755635.59	140.78676	(16032907)
484496.75	3755682.39	119.06368	(16032907)	484498.01	3755725.40	94.09207	(16091607)
484501.81	3755767.14	87.00936	(11010308)	484503.07	3755797.50	84.20771	(11010308)
484504.34	3755829.12	82.70022	(11121208)				

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROU VOL7 ***

INCLUDING SOURCE(S): VOL7 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M) Y-COORD (M) CONC (YYMMDDHH) X-COORD (M) Y-COORD (M) CONC (YYMMDDHH)

485093.55	3755491.26	320.80233	(16101607)	485235.70	3755497.85	379.54599	(16101907)
485367.49	3755576.92	281.99306	(14102307)	485383.96	3755577.39	279.26177	(16050606)
485397.61	3755578.33	274.69472	(16050606)	485413.14	3755577.86	272.09124	(10123108)
485431.97	3755578.80	267.58281	(10080406)	485449.38	3755579.27	259.15178	(15011908)
485464.45	3755580.21	255.26143	(10102107)	485525.18	3755702.36	177.70922	(10102107)
485607.91	3755706.92	161.94582	(10081806)	485568.82	3755774.67	153.59006	(16100307)
485536.25	3755800.73	155.56146	(16100307)	485534.95	3755835.91	145.54785	(16100307)
485538.86	3755736.89	166.64571	(16100307)	485489.91	3754619.57	182.24738	(14110501)
484492.95	3755473.69	107.08329	(14122809)	484492.95	3755525.55	133.83786	(16032907)
484491.69	3755579.94	146.19660	(16032907)	484485.36	3755635.59	134.03098	(16032907)
484496.75	3755682.39	107.41786	(16032907)	484498.01	3755725.40	87.10362	(11051704)
484501.81	3755767.14	85.47745	(11010308)	484503.07	3755797.50	82.68694	(11121208)
484504.34	3755829.12	87.39015	(16012409)				

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROU VOL8 ***

INCLUDING SOURCE(S): VOL8 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
485093.55	3755491.26	301.18774	(16101807)	485235.70	3755497.85	359.04735	(11011808)
485367.49	3755576.92	273.90055	(14011408)	485383.96	3755577.39	273.03469	(14011408)
485397.61	3755578.33	270.45252	(14102307)	485413.14	3755577.86	268.18015	(16050606)
485431.97	3755578.80	262.73656	(10123108)	485449.38	3755579.27	259.48627	(10080406)
485464.45	3755580.21	250.98435	(11042903)	485525.18	3755702.36	175.27312	(15011908)
485607.91	3755706.92	161.04730	(16121808)	485568.82	3755774.67	158.66409	(16100307)
485536.25	3755800.73	147.03491	(16100307)	485534.95	3755835.91	134.96388	(10080406)
485538.86	3755736.89	166.95482	(16100307)	485489.91	3754619.57	190.61794	(15081206)
484492.95	3755473.69	106.79534	(14122809)	484492.95	3755525.55	132.46886	(16032907)
484491.69	3755579.94	143.84504	(16032907)	484485.36	3755635.59	131.79665	(16032907)
484496.75	3755682.39	105.97553	(16032907)	484498.01	3755725.40	85.93134	(16091607)
484501.81	3755767.14	83.27139	(11010308)	484503.07	3755797.50	80.29339	(15051420)
484504.34	3755829.12	84.87341	(16012409)				

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROU VOL9 ***

INCLUDING SOURCE(S): VOL9 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
485093.55	3755491.26	209.21179	(16101807)	485235.70	3755497.85	245.70185	(16040207)
485367.49	3755576.92	209.51468	(16060206)	485383.96	3755577.39	216.09542	(16060206)
485397.61	3755578.33	214.30501	(16060206)	485413.14	3755577.86	210.02105	(15030108)
485431.97	3755578.80	203.93547	(16010708)	485449.38	3755579.27	203.08817	(14011408)
485464.45	3755580.21	200.67354	(14102307)	485525.18	3755702.36	147.75380	(16050606)
485607.91	3755706.92	148.56763	(16100307)	485568.82	3755774.67	125.63575	(10123108)
485536.25	3755800.73	136.73779	(14030208)	485534.95	3755835.91	136.80361	(14030208)
485538.86	3755736.89	136.48155	(16050606)	485489.91	3754619.57	246.95475	(15080206)
484492.95	3755473.69	126.21205	(16032907)	484492.95	3755525.55	132.82711	(16032907)
484491.69	3755579.94	121.46398	(16032907)	484485.36	3755635.59	98.52152	(16032907)
484496.75	3755682.39	78.09210	(16091607)	484498.01	3755725.40	73.14987	(11010308)
484501.81	3755767.14	73.16542	(16012409)	484503.07	3755797.50	79.74896	(16012409)
484504.34	3755829.12	84.55163	(16012409)				

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*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***

INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 , L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 , L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 , L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
485093.55	3755491.26	3519.54868	(15083020)	485235.70	3755497.85	4449.66725	(14073122)
485367.49	3755576.92	3953.67013	(15082622)	485383.96	3755577.39	3927.80901	(14050222)
485397.61	3755578.33	3909.20007	(10081923)	485413.14	3755577.86	3864.93858	(11091822)
485431.97	3755578.80	3845.73298	(15082722)	485449.38	3755579.27	3785.80980	(16062723)
485464.45	3755580.21	3720.42540	(16062005)	485525.18	3755702.36	2914.57470	(15090921)
485607.91	3755706.92	2685.17475	(15062724)	485568.82	3755774.67	2455.84083	(16021618)
485536.25	3755800.73	2350.48170	(10080406)	485534.95	3755835.91	2212.66224	(10092801)
485538.86	3755736.89	2675.54832	(15090921)	485489.91	3754619.57	2716.56490	(11082823)
484492.95	3755473.69	1604.16301	(10080122)	484492.95	3755525.55	1508.07741	(14062720)
484491.69	3755579.94	1649.95347	(16032907)	484485.36	3755635.59	1671.89242	(16032907)
484496.75	3755682.39	1558.69829	(16032907)	484498.01	3755725.40	1367.49198	(16032907)
484501.81	3755767.14	1309.02705	(15081920)	484503.07	3755797.50	1283.94247	(15062220)
484504.34	3755829.12	1260.80322	(11082705)				

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE SUMMARY OF MAXIMUM PERIOD (43824 HRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	NETWORK RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE GRID-ID
SLINE1	1ST HIGHEST VALUE IS	29.98495 AT (485235.70, 3755497.85, 443.00, 443.00, 0.00)	DC
	2ND HIGHEST VALUE IS	19.86638 AT (485367.49, 3755576.92, 443.00, 443.00, 0.00)	DC
	3RD HIGHEST VALUE IS	19.62689 AT (485093.55, 3755491.26, 443.00, 443.00, 0.00)	DC
	4TH HIGHEST VALUE IS	19.31023 AT (485383.96, 3755577.39, 443.00, 443.00, 0.00)	DC
	5TH HIGHEST VALUE IS	18.79269 AT (485397.61, 3755578.33, 443.00, 443.00, 0.00)	DC
	6TH HIGHEST VALUE IS	18.30368 AT (485413.14, 3755577.86, 443.00, 443.00, 0.00)	DC
	7TH HIGHEST VALUE IS	17.59126 AT (485431.97, 3755578.80, 443.00, 443.00, 0.00)	DC
	8TH HIGHEST VALUE IS	16.95246 AT (485449.38, 3755579.27, 443.00, 443.00, 0.00)	DC
	9TH HIGHEST VALUE IS	16.36531 AT (485464.45, 3755580.21, 443.00, 443.00, 0.00)	DC
	10TH HIGHEST VALUE IS	12.01832 AT (485489.91, 3754619.57, 443.00, 443.00, 0.00)	DC
SLINE3	1ST HIGHEST VALUE IS	44.77551 AT (484492.95, 3755473.69, 443.00, 443.00, 0.00)	DC

2ND HIGHEST VALUE IS 42.61169 AT (485093.55, 3755491.26, 443.00, 443.00, 0.00) DC
3RD HIGHEST VALUE IS 41.15136 AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC
4TH HIGHEST VALUE IS 26.84222 AT (484492.95, 3755525.55, 443.00, 443.00, 0.00) DC
5TH HIGHEST VALUE IS 23.08666 AT (485367.49, 3755576.92, 443.00, 443.00, 0.00) DC
6TH HIGHEST VALUE IS 22.32812 AT (485383.96, 3755577.39, 443.00, 443.00, 0.00) DC
7TH HIGHEST VALUE IS 21.54661 AT (485397.61, 3755578.33, 443.00, 443.00, 0.00) DC
8TH HIGHEST VALUE IS 20.74809 AT (485413.14, 3755577.86, 443.00, 443.00, 0.00) DC
9TH HIGHEST VALUE IS 19.54717 AT (485431.97, 3755578.80, 443.00, 443.00, 0.00) DC
10TH HIGHEST VALUE IS 18.77592 AT (484491.69, 3755579.94, 443.00, 443.00, 0.00) DC

SLINE4 1ST HIGHEST VALUE IS 67.59378 AT (485525.18, 3755702.36, 443.00, 443.00, 0.00) DC
2ND HIGHEST VALUE IS 56.22863 AT (485464.45, 3755580.21, 443.00, 443.00, 0.00) DC
3RD HIGHEST VALUE IS 46.58652 AT (485449.38, 3755579.27, 443.00, 443.00, 0.00) DC
4TH HIGHEST VALUE IS 42.36668 AT (485538.86, 3755736.89, 443.00, 443.00, 0.00) DC
5TH HIGHEST VALUE IS 40.63143 AT (485607.91, 3755706.92, 443.00, 443.00, 0.00) DC
6TH HIGHEST VALUE IS 38.75389 AT (485431.97, 3755578.80, 443.00, 443.00, 0.00) DC
7TH HIGHEST VALUE IS 32.69236 AT (485413.14, 3755577.86, 443.00, 443.00, 0.00) DC
8TH HIGHEST VALUE IS 28.85641 AT (485397.61, 3755578.33, 443.00, 443.00, 0.00) DC
9TH HIGHEST VALUE IS 28.25348 AT (485568.82, 3755774.67, 443.00, 443.00, 0.00) DC
10TH HIGHEST VALUE IS 26.14776 AT (485383.96, 3755577.39, 443.00, 443.00, 0.00) DC

STCK1 1ST HIGHEST VALUE IS 13.41634 AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC
2ND HIGHEST VALUE IS 10.67929 AT (485367.49, 3755576.92, 443.00, 443.00, 0.00) DC
3RD HIGHEST VALUE IS 10.26549 AT (485383.96, 3755577.39, 443.00, 443.00, 0.00) DC
4TH HIGHEST VALUE IS 9.95995 AT (485397.61, 3755578.33, 443.00, 443.00, 0.00) DC
5TH HIGHEST VALUE IS 9.62764 AT (485413.14, 3755577.86, 443.00, 443.00, 0.00) DC
6TH HIGHEST VALUE IS 9.25848 AT (485431.97, 3755578.80, 443.00, 443.00, 0.00) DC
7TH HIGHEST VALUE IS 8.92133 AT (485449.38, 3755579.27, 443.00, 443.00, 0.00) DC
8TH HIGHEST VALUE IS 8.62973 AT (485464.45, 3755580.21, 443.00, 443.00, 0.00) DC
9TH HIGHEST VALUE IS 8.21478 AT (485093.55, 3755491.26, 443.00, 443.00, 0.00) DC
10TH HIGHEST VALUE IS 7.53787 AT (485525.18, 3755702.36, 443.00, 443.00, 0.00) DC

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE SUMMARY OF MAXIMUM PERIOD (43824 HRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	NETWORK RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

STCK2 1ST HIGHEST VALUE IS 11.99094 AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC
2ND HIGHEST VALUE IS 11.90611 AT (485367.49, 3755576.92, 443.00, 443.00, 0.00) DC
3RD HIGHEST VALUE IS 11.37922 AT (485383.96, 3755577.39, 443.00, 443.00, 0.00) DC
4TH HIGHEST VALUE IS 10.97519 AT (485397.61, 3755578.33, 443.00, 443.00, 0.00) DC
5TH HIGHEST VALUE IS 10.55022 AT (485413.14, 3755577.86, 443.00, 443.00, 0.00) DC
6TH HIGHEST VALUE IS 10.10154 AT (485431.97, 3755578.80, 443.00, 443.00, 0.00) DC
7TH HIGHEST VALUE IS 9.72788 AT (485449.38, 3755579.27, 443.00, 443.00, 0.00) DC
8TH HIGHEST VALUE IS 9.42938 AT (485464.45, 3755580.21, 443.00, 443.00, 0.00) DC
9TH HIGHEST VALUE IS 8.19859 AT (485525.18, 3755702.36, 443.00, 443.00, 0.00) DC

10TH HIGHEST VALUE IS 7.80472 AT (485538.86, 3755736.89, 443.00, 443.00, 0.00) DC

STCK3 1ST HIGHEST VALUE IS 13.59293 AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC
2ND HIGHEST VALUE IS 10.77283 AT (485093.55, 3755491.26, 443.00, 443.00, 0.00) DC
3RD HIGHEST VALUE IS 9.98559 AT (485367.49, 3755576.92, 443.00, 443.00, 0.00) DC
4TH HIGHEST VALUE IS 9.67415 AT (485383.96, 3755577.39, 443.00, 443.00, 0.00) DC
5TH HIGHEST VALUE IS 9.42156 AT (485397.61, 3755578.33, 443.00, 443.00, 0.00) DC
6TH HIGHEST VALUE IS 9.14220 AT (485413.14, 3755577.86, 443.00, 443.00, 0.00) DC
7TH HIGHEST VALUE IS 8.79791 AT (485431.97, 3755578.80, 443.00, 443.00, 0.00) DC
8TH HIGHEST VALUE IS 8.47710 AT (485449.38, 3755579.27, 443.00, 443.00, 0.00) DC
9TH HIGHEST VALUE IS 8.19524 AT (485464.45, 3755580.21, 443.00, 443.00, 0.00) DC
10TH HIGHEST VALUE IS 8.15777 AT (485489.91, 3754619.57, 443.00, 443.00, 0.00) DC

STCK4 1ST HIGHEST VALUE IS 13.60749 AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC
2ND HIGHEST VALUE IS 10.57247 AT (485093.55, 3755491.26, 443.00, 443.00, 0.00) DC
3RD HIGHEST VALUE IS 10.10860 AT (485367.49, 3755576.92, 443.00, 443.00, 0.00) DC
4TH HIGHEST VALUE IS 9.80041 AT (485383.96, 3755577.39, 443.00, 443.00, 0.00) DC
5TH HIGHEST VALUE IS 9.55098 AT (485397.61, 3755578.33, 443.00, 443.00, 0.00) DC
6TH HIGHEST VALUE IS 9.28604 AT (485413.14, 3755577.86, 443.00, 443.00, 0.00) DC
7TH HIGHEST VALUE IS 8.95934 AT (485431.97, 3755578.80, 443.00, 443.00, 0.00) DC
8TH HIGHEST VALUE IS 8.66072 AT (485449.38, 3755579.27, 443.00, 443.00, 0.00) DC
9TH HIGHEST VALUE IS 8.60377 AT (485489.91, 3754619.57, 443.00, 443.00, 0.00) DC
10TH HIGHEST VALUE IS 8.39846 AT (485464.45, 3755580.21, 443.00, 443.00, 0.00) DC

STCK5 1ST HIGHEST VALUE IS 18.75826 AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC
2ND HIGHEST VALUE IS 17.47659 AT (485489.91, 3754619.57, 443.00, 443.00, 0.00) DC
3RD HIGHEST VALUE IS 13.90340 AT (485367.49, 3755576.92, 443.00, 443.00, 0.00) DC
4TH HIGHEST VALUE IS 13.61845 AT (485383.96, 3755577.39, 443.00, 443.00, 0.00) DC
5TH HIGHEST VALUE IS 13.58654 AT (485093.55, 3755491.26, 443.00, 443.00, 0.00) DC
6TH HIGHEST VALUE IS 13.35426 AT (485397.61, 3755578.33, 443.00, 443.00, 0.00) DC
7TH HIGHEST VALUE IS 13.11755 AT (485413.14, 3755577.86, 443.00, 443.00, 0.00) DC
8TH HIGHEST VALUE IS 12.76964 AT (485431.97, 3755578.80, 443.00, 443.00, 0.00) DC
9TH HIGHEST VALUE IS 12.46700 AT (485449.38, 3755579.27, 443.00, 443.00, 0.00) DC
10TH HIGHEST VALUE IS 12.18685 AT (485464.45, 3755580.21, 443.00, 443.00, 0.00) DC

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE SUMMARY OF MAXIMUM PERIOD (43824 HRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID
STCK6	1ST HIGHEST VALUE IS	18.75818 AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC
	2ND HIGHEST VALUE IS	17.47653 AT (485489.91, 3754619.57, 443.00, 443.00, 0.00) DC
	3RD HIGHEST VALUE IS	13.90334 AT (485367.49, 3755576.92, 443.00, 443.00, 0.00) DC
	4TH HIGHEST VALUE IS	13.61839 AT (485383.96, 3755577.39, 443.00, 443.00, 0.00) DC
	5TH HIGHEST VALUE IS	13.58649 AT (485093.55, 3755491.26, 443.00, 443.00, 0.00) DC
	6TH HIGHEST VALUE IS	13.35420 AT (485397.61, 3755578.33, 443.00, 443.00, 0.00) DC

7TH HIGHEST VALUE IS 13.11749 AT (485413.14, 3755577.86, 443.00, 443.00, 0.00) DC
8TH HIGHEST VALUE IS 12.76958 AT (485431.97, 3755578.80, 443.00, 443.00, 0.00) DC
9TH HIGHEST VALUE IS 12.46694 AT (485449.38, 3755579.27, 443.00, 443.00, 0.00) DC
10TH HIGHEST VALUE IS 12.18680 AT (485464.45, 3755580.21, 443.00, 443.00, 0.00) DC

VOL1 1ST HIGHEST VALUE IS 46.73916 AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC
2ND HIGHEST VALUE IS 27.79229 AT (485367.49, 3755576.92, 443.00, 443.00, 0.00) DC
3RD HIGHEST VALUE IS 26.76192 AT (485383.96, 3755577.39, 443.00, 443.00, 0.00) DC
4TH HIGHEST VALUE IS 25.83458 AT (485397.61, 3755578.33, 443.00, 443.00, 0.00) DC
5TH HIGHEST VALUE IS 24.95060 AT (485413.14, 3755577.86, 443.00, 443.00, 0.00) DC
6TH HIGHEST VALUE IS 23.85679 AT (485093.55, 3755491.26, 443.00, 443.00, 0.00) DC
7TH HIGHEST VALUE IS 23.68727 AT (485431.97, 3755578.80, 443.00, 443.00, 0.00) DC
8TH HIGHEST VALUE IS 22.54753 AT (485449.38, 3755579.27, 443.00, 443.00, 0.00) DC
9TH HIGHEST VALUE IS 21.51069 AT (485464.45, 3755580.21, 443.00, 443.00, 0.00) DC
10TH HIGHEST VALUE IS 12.44784 AT (485525.18, 3755702.36, 443.00, 443.00, 0.00) DC

VOL2 1ST HIGHEST VALUE IS 43.48425 AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC
2ND HIGHEST VALUE IS 28.96210 AT (485367.49, 3755576.92, 443.00, 443.00, 0.00) DC
3RD HIGHEST VALUE IS 27.95621 AT (485383.96, 3755577.39, 443.00, 443.00, 0.00) DC
4TH HIGHEST VALUE IS 27.03760 AT (485397.61, 3755578.33, 443.00, 443.00, 0.00) DC
5TH HIGHEST VALUE IS 26.18179 AT (485413.14, 3755577.86, 443.00, 443.00, 0.00) DC
6TH HIGHEST VALUE IS 24.94111 AT (485431.97, 3755578.80, 443.00, 443.00, 0.00) DC
7TH HIGHEST VALUE IS 23.82522 AT (485449.38, 3755579.27, 443.00, 443.00, 0.00) DC
8TH HIGHEST VALUE IS 22.79608 AT (485464.45, 3755580.21, 443.00, 443.00, 0.00) DC
9TH HIGHEST VALUE IS 21.46555 AT (485093.55, 3755491.26, 443.00, 443.00, 0.00) DC
10TH HIGHEST VALUE IS 13.00185 AT (485525.18, 3755702.36, 443.00, 443.00, 0.00) DC

VOL3 1ST HIGHEST VALUE IS 39.87013 AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC
2ND HIGHEST VALUE IS 30.03451 AT (485367.49, 3755576.92, 443.00, 443.00, 0.00) DC
3RD HIGHEST VALUE IS 29.08941 AT (485383.96, 3755577.39, 443.00, 443.00, 0.00) DC
4TH HIGHEST VALUE IS 28.18967 AT (485397.61, 3755578.33, 443.00, 443.00, 0.00) DC
5TH HIGHEST VALUE IS 27.35983 AT (485413.14, 3755577.86, 443.00, 443.00, 0.00) DC
6TH HIGHEST VALUE IS 26.13613 AT (485431.97, 3755578.80, 443.00, 443.00, 0.00) DC
7TH HIGHEST VALUE IS 25.04456 AT (485449.38, 3755579.27, 443.00, 443.00, 0.00) DC
8TH HIGHEST VALUE IS 24.03082 AT (485464.45, 3755580.21, 443.00, 443.00, 0.00) DC
9TH HIGHEST VALUE IS 19.43326 AT (485093.55, 3755491.26, 443.00, 443.00, 0.00) DC
10TH HIGHEST VALUE IS 13.53782 AT (485525.18, 3755702.36, 443.00, 443.00, 0.00) DC

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE SUMMARY OF MAXIMUM PERIOD (43824 HRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE	NETWORK GRID-ID

VOL4 1ST HIGHEST VALUE IS 36.17897 AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC
2ND HIGHEST VALUE IS 30.94472 AT (485367.49, 3755576.92, 443.00, 443.00, 0.00) DC
3RD HIGHEST VALUE IS 30.13706 AT (485383.96, 3755577.39, 443.00, 443.00, 0.00) DC

4TH HIGHEST VALUE IS 29.29464 AT (485397.61, 3755578.33, 443.00, 443.00, 0.00) DC
5TH HIGHEST VALUE IS 28.50890 AT (485413.14, 3755577.86, 443.00, 443.00, 0.00) DC
6TH HIGHEST VALUE IS 27.30321 AT (485431.97, 3755578.80, 443.00, 443.00, 0.00) DC
7TH HIGHEST VALUE IS 26.23073 AT (485449.38, 3755579.27, 443.00, 443.00, 0.00) DC
8TH HIGHEST VALUE IS 25.23168 AT (485464.45, 3755580.21, 443.00, 443.00, 0.00) DC
9TH HIGHEST VALUE IS 17.67228 AT (485093.55, 3755491.26, 443.00, 443.00, 0.00) DC
10TH HIGHEST VALUE IS 14.06209 AT (485525.18, 3755702.36, 443.00, 443.00, 0.00) DC

VOL5 1ST HIGHEST VALUE IS 36.83127 AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC
2ND HIGHEST VALUE IS 24.76351 AT (485093.55, 3755491.26, 443.00, 443.00, 0.00) DC
3RD HIGHEST VALUE IS 20.75207 AT (485367.49, 3755576.92, 443.00, 443.00, 0.00) DC
4TH HIGHEST VALUE IS 20.04990 AT (485383.96, 3755577.39, 443.00, 443.00, 0.00) DC
5TH HIGHEST VALUE IS 19.42031 AT (485397.61, 3755578.33, 443.00, 443.00, 0.00) DC
6TH HIGHEST VALUE IS 18.80861 AT (485413.14, 3755577.86, 443.00, 443.00, 0.00) DC
7TH HIGHEST VALUE IS 17.94617 AT (485431.97, 3755578.80, 443.00, 443.00, 0.00) DC
8TH HIGHEST VALUE IS 17.16850 AT (485449.38, 3755579.27, 443.00, 443.00, 0.00) DC
9TH HIGHEST VALUE IS 16.46585 AT (485464.45, 3755580.21, 443.00, 443.00, 0.00) DC
10TH HIGHEST VALUE IS 10.98794 AT (485489.91, 3754619.57, 443.00, 443.00, 0.00) DC

VOL6 1ST HIGHEST VALUE IS 33.09973 AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC
2ND HIGHEST VALUE IS 23.45511 AT (485093.55, 3755491.26, 443.00, 443.00, 0.00) DC
3RD HIGHEST VALUE IS 19.16156 AT (485367.49, 3755576.92, 443.00, 443.00, 0.00) DC
4TH HIGHEST VALUE IS 18.55448 AT (485383.96, 3755577.39, 443.00, 443.00, 0.00) DC
5TH HIGHEST VALUE IS 18.00982 AT (485397.61, 3755578.33, 443.00, 443.00, 0.00) DC
6TH HIGHEST VALUE IS 17.48391 AT (485413.14, 3755577.86, 443.00, 443.00, 0.00) DC
7TH HIGHEST VALUE IS 16.73807 AT (485431.97, 3755578.80, 443.00, 443.00, 0.00) DC
8TH HIGHEST VALUE IS 16.06437 AT (485449.38, 3755579.27, 443.00, 443.00, 0.00) DC
9TH HIGHEST VALUE IS 15.45181 AT (485464.45, 3755580.21, 443.00, 443.00, 0.00) DC
10TH HIGHEST VALUE IS 11.63115 AT (485489.91, 3754619.57, 443.00, 443.00, 0.00) DC

VOL7 1ST HIGHEST VALUE IS 29.92135 AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC
2ND HIGHEST VALUE IS 22.19940 AT (485093.55, 3755491.26, 443.00, 443.00, 0.00) DC
3RD HIGHEST VALUE IS 17.75543 AT (485367.49, 3755576.92, 443.00, 443.00, 0.00) DC
4TH HIGHEST VALUE IS 17.22654 AT (485383.96, 3755577.39, 443.00, 443.00, 0.00) DC
5TH HIGHEST VALUE IS 16.75192 AT (485397.61, 3755578.33, 443.00, 443.00, 0.00) DC
6TH HIGHEST VALUE IS 16.29644 AT (485413.14, 3755577.86, 443.00, 443.00, 0.00) DC
7TH HIGHEST VALUE IS 15.64736 AT (485431.97, 3755578.80, 443.00, 443.00, 0.00) DC
8TH HIGHEST VALUE IS 15.06055 AT (485449.38, 3755579.27, 443.00, 443.00, 0.00) DC
9TH HIGHEST VALUE IS 14.52416 AT (485464.45, 3755580.21, 443.00, 443.00, 0.00) DC
10TH HIGHEST VALUE IS 12.32898 AT (485489.91, 3754619.57, 443.00, 443.00, 0.00) DC

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE SUMMARY OF MAXIMUM PERIOD (43824 HRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	NETWORK RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID

VOL8 1ST HIGHEST VALUE IS 28.41904 AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC
2ND HIGHEST VALUE IS 20.28189 AT (485093.55, 3755491.26, 443.00, 443.00, 0.00) DC
3RD HIGHEST VALUE IS 17.59042 AT (485367.49, 3755576.92, 443.00, 443.00, 0.00) DC
4TH HIGHEST VALUE IS 17.09824 AT (485383.96, 3755577.39, 443.00, 443.00, 0.00) DC
5TH HIGHEST VALUE IS 16.65678 AT (485397.61, 3755578.33, 443.00, 443.00, 0.00) DC
6TH HIGHEST VALUE IS 16.24226 AT (485413.14, 3755577.86, 443.00, 443.00, 0.00) DC
7TH HIGHEST VALUE IS 15.64499 AT (485431.97, 3755578.80, 443.00, 443.00, 0.00) DC
8TH HIGHEST VALUE IS 15.10621 AT (485449.38, 3755579.27, 443.00, 443.00, 0.00) DC
9TH HIGHEST VALUE IS 14.60844 AT (485464.45, 3755580.21, 443.00, 443.00, 0.00) DC
10TH HIGHEST VALUE IS 12.77239 AT (485489.91, 3754619.57, 443.00, 443.00, 0.00) DC

VOL9 1ST HIGHEST VALUE IS 18.70067 AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC
2ND HIGHEST VALUE IS 17.47173 AT (485489.91, 3754619.57, 443.00, 443.00, 0.00) DC
3RD HIGHEST VALUE IS 13.93533 AT (485367.49, 3755576.92, 443.00, 443.00, 0.00) DC
4TH HIGHEST VALUE IS 13.65679 AT (485383.96, 3755577.39, 443.00, 443.00, 0.00) DC
5TH HIGHEST VALUE IS 13.61020 AT (485093.55, 3755491.26, 443.00, 443.00, 0.00) DC
6TH HIGHEST VALUE IS 13.39593 AT (485397.61, 3755578.33, 443.00, 443.00, 0.00) DC
7TH HIGHEST VALUE IS 13.16084 AT (485413.14, 3755577.86, 443.00, 443.00, 0.00) DC
8TH HIGHEST VALUE IS 12.81241 AT (485431.97, 3755578.80, 443.00, 443.00, 0.00) DC
9TH HIGHEST VALUE IS 12.50749 AT (485449.38, 3755579.27, 443.00, 443.00, 0.00) DC
10TH HIGHEST VALUE IS 12.22460 AT (485464.45, 3755580.21, 443.00, 443.00, 0.00) DC

ALL 1ST HIGHEST VALUE IS 487.46420 AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC
2ND HIGHEST VALUE IS 343.80289 AT (485367.49, 3755576.92, 443.00, 443.00, 0.00) DC
3RD HIGHEST VALUE IS 336.67274 AT (485383.96, 3755577.39, 443.00, 443.00, 0.00) DC
4TH HIGHEST VALUE IS 330.40310 AT (485397.61, 3755578.33, 443.00, 443.00, 0.00) DC
5TH HIGHEST VALUE IS 325.57847 AT (485413.14, 3755577.86, 443.00, 443.00, 0.00) DC
6TH HIGHEST VALUE IS 320.95038 AT (485093.55, 3755491.26, 443.00, 443.00, 0.00) DC
7TH HIGHEST VALUE IS 319.40551 AT (485431.97, 3755578.80, 443.00, 443.00, 0.00) DC
8TH HIGHEST VALUE IS 316.27332 AT (485449.38, 3755579.27, 443.00, 443.00, 0.00) DC
9TH HIGHEST VALUE IS 315.95387 AT (485464.45, 3755580.21, 443.00, 443.00, 0.00) DC
10TH HIGHEST VALUE IS 233.44133 AT (485525.18, 3755702.36, 443.00, 443.00, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
*** AERMOD - VERSION 19191 *** *** C:\Users\Smith\Dropbox\My PC (DESKTOP-977GSBU)\Documents\HRA\Moreno *** 08/06/21
*** AERMET - VERSION 16216 *** *** *** 14:17:39

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	NETWORK RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID
SLINE1	HIGH 1ST HIGH VALUE IS	294.85090 ON 16080506:	AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC

SLINE3 HIGH 1ST HIGH VALUE IS 192.63694 ON 11042904: AT (484492.95, 3755473.69, 443.00, 443.00, 0.00) DC

SLINE4 HIGH 1ST HIGH VALUE IS 345.48571 ON 16101507: AT (485525.18, 3755702.36, 443.00, 443.00, 0.00) DC

STCK1 HIGH 1ST HIGH VALUE IS 227.45856 ON 15061106: AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC

STCK2 HIGH 1ST HIGH VALUE IS 212.95738 ON 10101007: AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC

STCK3 HIGH 1ST HIGH VALUE IS 202.48704 ON 15040207: AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC

STCK4 HIGH 1ST HIGH VALUE IS 186.20341 ON 10082701: AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC

STCK5 HIGH 1ST HIGH VALUE IS 258.01237 ON 15080206: AT (485489.91, 3754619.57, 443.00, 443.00, 0.00) DC

STCK6 HIGH 1ST HIGH VALUE IS 258.01321 ON 15080206: AT (485489.91, 3754619.57, 443.00, 443.00, 0.00) DC

VOL1 HIGH 1ST HIGH VALUE IS 548.17496 ON 11050706: AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC

VOL2 HIGH 1ST HIGH VALUE IS 530.29727 ON 16102107: AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC

VOL3 HIGH 1ST HIGH VALUE IS 504.52483 ON 14072506: AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC

VOL4 HIGH 1ST HIGH VALUE IS 482.74612 ON 16101607: AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC

VOL5 HIGH 1ST HIGH VALUE IS 450.22934 ON 16110107: AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC

VOL6 HIGH 1ST HIGH VALUE IS 412.39223 ON 16101907: AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC

VOL7 HIGH 1ST HIGH VALUE IS 379.54599 ON 16101907: AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC

VOL8 HIGH 1ST HIGH VALUE IS 359.04735 ON 11011808: AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC

VOL9 HIGH 1ST HIGH VALUE IS 246.95475 ON 15080206: AT (485489.91, 3754619.57, 443.00, 443.00, 0.00) DC

ALL HIGH 1ST HIGH VALUE IS 4449.66725 ON 14073122: AT (485235.70, 3755497.85, 443.00, 443.00, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
*** AERMOD - VERSION 19191 *** *** C:\Users\Smith\Dropbox\My PC (DESKTOP-977GSBU)\Documents\HRA\Moreno *** 08/06/21
*** AERMET - VERSION 16216 *** *** *** 14:17:39

*** MODELOPTs: NonDFAULT CONC FLAT RURAL ADJ_U*

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 16 Warning Message(s)
A Total of 2028 Informational Message(s)

A Total of 43824 Hours Were Processed

A Total of 978 Calm Hours Identified

A Total of 1050 Missing Hours Identified (2.40 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********

SO W320	1045	VPARM: Input Parameter May Be Out-of-Range for Parameter	SZINIT
SO W320	1046	VPARM: Input Parameter May Be Out-of-Range for Parameter	SZINIT
SO W320	1047	VPARM: Input Parameter May Be Out-of-Range for Parameter	SZINIT
SO W320	1048	VPARM: Input Parameter May Be Out-of-Range for Parameter	SZINIT
SO W320	1049	VPARM: Input Parameter May Be Out-of-Range for Parameter	SZINIT
SO W320	1050	VPARM: Input Parameter May Be Out-of-Range for Parameter	SZINIT
SO W320	1051	VPARM: Input Parameter May Be Out-of-Range for Parameter	SZINIT
SO W320	1052	VPARM: Input Parameter May Be Out-of-Range for Parameter	SZINIT
SO W320	1053	PPARM: Input Parameter May Be Out-of-Range for Parameter	VS
SO W320	1054	PPARM: Input Parameter May Be Out-of-Range for Parameter	VS
SO W320	1055	PPARM: Input Parameter May Be Out-of-Range for Parameter	VS
SO W320	1056	PPARM: Input Parameter May Be Out-of-Range for Parameter	VS
ME W186	1201	MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used	0.50
ME W187	1201	MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET	
MX W450	17521	CHKDAT: Record Out of Sequence in Meteorological File at:	14010101
MX W450	17521	CHKDAT: Record Out of Sequence in Meteorological File at:	2 year gap

****
*** AERMOD Finishes Successfully ***
****

Appendix 4: HARP2 Output File

HARP2 - HRACalc (dated 21081) 8/6/2021 3:40:31 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: NCAcute
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER
Exposure duration are only adjusted for cancer assessments

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer a noncancer chronic assessments.

Inhalation: True
Soil: False
Dermal: False
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: LongTerm24HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
NOTE: Exposure duration (i.e., start age, end age, ED, & FAH) are only adjusted for cancer assessments.

****
TIER 2 SETTINGS
Tier2 not used.

****

Calculating acute risk

Acute risk breakdown by pollutant and receptor saved to: C:\Users\Smith\Dropbox\My PC (DESKTOP-977GSBU)\Documents\HRA\Moreno Valley\HARP2\MORENO VALLEY\hra\AcuteNCAcuteRisk.csv
Acute risk total by receptor saved to: C:\Users\Smith\Dropbox\My PC (DESKTOP-977GSBU)\Documents\HRA\Moreno Valley\HARP2\MORENO VALLEY\hra\AcuteNCAcuteRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 21081) 8/6/2021 3:40:23 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: NCChronic
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER
Exposure duration are only adjusted for cancer assessments

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer a noncancer chronic assessments.

Inhalation: True
Soil: False
Dermal: False
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: LongTerm24HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
NOTE: Exposure duration (i.e., start age, end age, ED, & FAH) are only adjusted for cancer assessments.

****
TIER 2 SETTINGS
Tier2 not used.

****

Calculating chronic risk

Chronic risk breakdown by pollutant and receptor saved to: C:\Users\Smith\Dropbox\My PC (DESKTOP-977GSBU)\Documents\HRA\Moreno Valley\HARP2\MORENO VALLEY\hra\ChronicNCChronicRisk.csv
Chronic risk total by receptor saved to: C:\Users\Smith\Dropbox\My PC (DESKTOP-977GSBU)\Documents\HRA\Moreno Valley\HARP2\MORENO VALLEY\hra\ChronicNCChronicRiskSumByRec.c
HRA ran successfully

HARP2 - HRACalc (dated 21081) 8/6/2021 3:34:44 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: Cancer
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 30

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 14
16<30 Years Bin: 14
16 to 70 Years Bin: 0

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer a noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: True
Water: False
Fish: False
Homegrown crops: True
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: LongTerm24HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: ON

****
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.05
Soil mixing depth (m): 0.01
Dermal climate: Mixed

****
HOMEGROWN CROP PATHWAY SETTINGS

Household type: HouseholdsthatGarden
Fraction leafy: 0.137
Fraction exposed: 0.137
Fraction protected: 0.137
Fraction root: 0.137

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: C:\Users\Smith\Dropbox\My PC (DESKTOP-977GSBU)\Documents\HRA\Moreno Valley\HARP2\MORENO VALLEY\hra\Residential CancerCancerRisk.csv
Cancer risk total by receptor saved to: C:\Users\Smith\Dropbox\My PC (DESKTOP-977GSBU)\Documents\HRA\Moreno Valley\HARP2\MORENO VALLEY\hra\Residential CancerCancerRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 21081) 8/6/2021 3:39:38 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Worker
Scenario: Cancer
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: 16
Total Exposure Duration: 25

Exposure Duration Bin Distribution
3rd Trimester Bin: 0
0<2 Years Bin: 0
2<9 Years Bin: 0
2<16 Years Bin: 0
16<30 Years Bin: 0
16 to 70 Years Bin: 25

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer a noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: Moderate8HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: OFF

****
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.05
Soil mixing depth (m): 0.01
Dermal climate: Mixed

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: C:\Users\Smith\Dropbox\My PC (DESKTOP-977GSBU)\Documents\HRA\Moreno Valley\HARP2\MORENO VALLEY\hra\Worker CancerCancerRisk.csv
Cancer risk total by receptor saved to: C:\Users\Smith\Dropbox\My PC (DESKTOP-977GSBU)\Documents\HRA\Moreno Valley\HARP2\MORENO VALLEY\hra\Worker CancerCancerRiskSumByRec.csv
HRA ran successfully

Appendix D
Biological Technical Report and MSHCP Consistency Analysis

Biological Technical Report and MSHCP Consistency Analysis

Moreno Valley Pilot Travel Center

Riverside County, California
APNs 488-330-030, 488-330-035,
488-330-036, 488-330-037, & 488-330-038

Prepared for:

De Novo Planning Group
1020 Suncast Lane, Suite 106
El Dorado Hills, CA 95762

Prepared By:

ECORP Consulting, Inc.
215 North 5th Street
Redlands, California 92374

July 29, 2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

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1.0 INTRODUCTION

ECORP Consulting, Inc. was retained by De Novo Planning Group to provide California Environmental Quality Act (CEQA) services for the proposed Moreno Valley Pilot Travel Center (Project) located in the City of Moreno Valley, Riverside County, California. A reconnaissance-level biological survey of the Project site was conducted to document the existing biological resources, to assess the habitat for its potential to support sensitive plant and wildlife species, and to determine whether Project-related impacts would occur to sensitive biological resources, as required under CEQA. A burrowing owl (*Athene cunicularia*) habitat assessment of the Project site was conducted concurrently with the biological reconnaissance survey to determine if any suitable burrowing owl habitat or suitable burrowing owl burrows were present. The surveys were conducted in accordance with the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). The MSHCP provides information on plant and wildlife species of concern to the County of Riverside (referred to as Planning Species) and outlines goals for their conservation. Information on the MSHCP can be found at www.rctlma.org (Riverside County Transportation and Land Management Agency [RCTLMA] 2021). The purpose of the studies is to comply with the requirements of the MSHCP and identify any biological resources that may require mitigation prior to impacts from development.

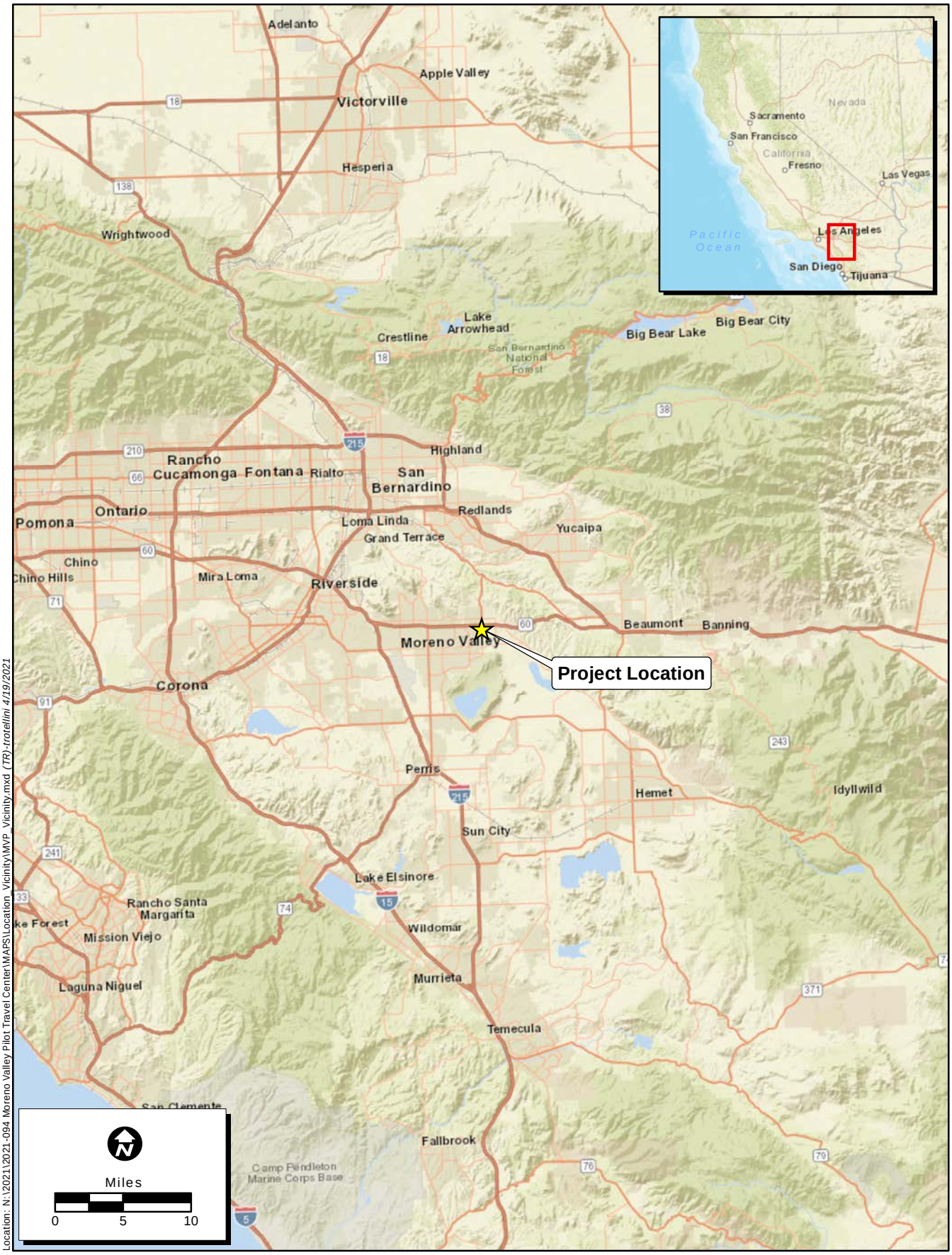
1.1 Project Location

Per engineering calculations, the Project site consists of an approximately 17.28-acre area comprised of Assessor's Parcel Numbers (APN) 488-330-030, 488-330-035, 488-330-036, 488-330-037, and 488-330-038. Included is a 1.61-acre portion of the right-of-way for extension of the median on Eucalyptus Avenue. The Project is located within the City of Moreno Valley, west of Redlands Boulevard in Riverside County (Figures 1 and 2). The Project site is north of a vacant lot and a nearby residential community, south of Moreno Valley Freeway (State Route 60), and east of Auto Mall Parkway and vacant lots. The Project is depicted on the U.S. Geological Survey (USGS) Sunnymead 7.5-minute topographic quadrangle. Elevation at the Project site is approximately 1,750 feet above mean sea level.

1.2 Project Description

The proposed Project proposes the construction and operation of the Pilot Travel Center on the southern portion of the 17.28-acre site for regional and local highway traveling users. Implementation of the Project would involve the development of fueling facilities, travel amenities, a drive-thru restaurant, and parking facilities for passing motorists and commercial truck operators.

The northern portion of the Project site would remain undeveloped. During construction activities, soil materials from the southern portion of the site would be deposited within the northern portion of the site and minor grading would occur to maintain existing drainage conditions.



Location: N:\2021\2021-094 Moreno Valley Pilot Travel Center\MAPS\Location_Vicinity\MVP_Vicinity.mxd (TR)-trotellini 4/19/2021

Map Date: 4/19/2021

Sources:

Figure 1. Project Vicinity

2021-094 Moreno Valley Pilot Travel Center

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Location: N:\2021\2021-094 Moreno Valley Pilot Travel Center\MAPS\Location_Vicinity\MVP_Location.mxd (TR)-rtotellini 7/29/2021

Map Date: 5/3/2021

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community NAIP (2020)

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Figure 2. Project Location

Moreno Valley Pilot Travel Center 2021-094

Attachment: Appendix D - Biological / MSHCP (5613 : Pilot Travel Center Project)

2.0 SPECIAL-STATUS SPECIES REGULATIONS

The biological reconnaissance survey was conducted to identify potential constraints to Project development and ensure compliance with state and federal regulations regarding listed, protected, and sensitive species. The regulations are detailed below.

2.1 Federal Regulations

2.1.1 The Federal Endangered Species Act

The federal Endangered Species Act (ESA) protects plants and animals that are listed as endangered or threatened by the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service. Section 9 of the ESA prohibits the taking of endangered wildlife, where taking is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct" (50 Code of Federal Regulations [CFR] 17.3). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any endangered plant on federal land and removing, cutting, digging up, damaging, or destroying any endangered plant on non-federal land in knowing violation of state law (16 U.S. Code 1538). Under Section 7 of the ESA, federal agencies are required to consult with the USFWS if their actions, including permit approvals or funding, could adversely affect a listed (or proposed) species (including plants) or its critical habitat. Through consultation and the issuance of a biological opinion, the USFWS may issue an incidental take statement allowing take of the species that is incidental to an otherwise authorized activity provided the activity will not jeopardize the continued existence of the species. Section 10 of the ESA provides for issuance of incidental take permits where no other federal actions are necessary provided a habitat conservation plan (HCP) is developed.

2.1.2 Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) implements international treaties between the United States and other nations devised to protect migratory birds, any of their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. As authorized by the MBTA, the USFWS issues permits to qualified applicants for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, education, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal. The regulations governing migratory bird permits can be found in 50 CFR Part 13 General Permit Procedures and 50 CFR Part 21 Migratory Bird Permits. The State of California has incorporated the protection of birds of prey in Sections 3800, 3513, and 3503.5 of the California Fish and Game Code.

2.1.3 Federal Clean Water Act

Tiering off of the Rivers and Harbors Act of 1899, which primarily pertains to discharge of fill into navigable waters, the federal Clean Water Act's (CWA) purpose is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." The USACE regulates discharge of dredged or fill material into Waters of the U.S. under Section 404 of the CWA. "Discharges of fill material" is defined as the addition of fill material into Waters of the U.S., including, but not limited to the following: placement of fill necessary for the construction of any structure, or impoundment requiring rock, sand,

dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes, and subaqueous utility lines [33 CFR § 328.2(f)]. In addition, Section 401 of the CWA (33 U.S. Code 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into Waters of the U.S. to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

Substantial impacts to wetlands, more than 0.5 acre of impact, may require an individual permit. Projects that only minimally affect wetlands, less than 0.5 acre of impact, may meet the conditions of one of the existing Nationwide Permits. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions; this certification or waiver is issued by the local Regional Water Quality Control Board (RWQCB) under the authority of the State Water Resources Control Board (SWRCB). For this project, the Colorado River RWQCB has jurisdiction.

Recently a new ruling called the Navigable Waters Protection Rule came into effect June 22, 2020. Under this ruling, the definition of the term "waters of the United States" encompasses:

- The territorial seas and traditional navigable waters;
- Perennial and intermittent tributaries that contribute surface water flow to such waters;
- Certain lakes, ponds, and impoundments of jurisdictional waters; and
- Wetlands adjacent to other jurisdictional waters.

This latest Rule also excludes several waters and other features not mentioned in the above definition, including "ephemeral features that flow only in direct response to precipitation, including ephemeral streams, swales, gullies, rills, and pools."

2.2 State and Local Regulations

2.2.1 California Endangered Species Act

The California ESA generally parallels the main provisions of the ESA but, unlike its federal counterpart, the California ESA applies the take prohibitions to species proposed for listing (called "candidates" by the State). Section 2080 of the California Fish and Game Code prohibits the taking, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or in the regulations. Take is defined in Section 86 of the California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." The California ESA allows for take incidental to otherwise lawful development projects. State lead agencies are required to consult with California Department of Fish and Wildlife (CDFW) to ensure that any action they undertake is not likely to jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of essential habitat.

2.2.2 Fully Protected Species

The State of California first began to designate species as "fully protected" prior to the creation of the federal and California ESAs. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction, and included fish, amphibians

and reptiles, birds, and mammals. Most fully protected species have since been listed as threatened or endangered under federal and/or California ESAs. The regulations that implement the Fully Protected Species Statute (California Fish and Game Code § 4700) provide that fully protected species may not be taken or possessed at any time. Furthermore, CDFW prohibits any state agency from issuing incidental take permits for fully protected species, except for necessary scientific research.

2.2.3 Native Plant Protection Act

The Native Plant Protection Act (NPPA) of 1977 (California Fish and Game Code §§ 1900-1913) was created with the intent to "preserve, protect and enhance rare and endangered plants in this State." The NPPA is administered by CDFW. The Fish and Wildlife Commission has the authority to designate native plants as "endangered" or "rare" and to protect endangered and rare plants from take. The California ESA of 1984 (California Fish and Game Code § 2050-2116) provided further protection for rare and endangered plant species, but the NPPA remains part of the California Fish and Game Code.

2.2.4 California Fish and Game Code

Streambed Alteration Agreement

Section 1602 of the California Fish and Game Code requires that a Notification of Lake or Streambed Alteration be submitted to CDFW for "any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake." The CDFW reviews the proposed actions and, if necessary, submits to the Applicant a proposal for measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by CDFW and the Applicant is the Streambed Alteration Agreement (SAA). Often, projects that require an SAA also require a permit from the USACE under Section 404 of the CWA. In these instances, the conditions of the Section 404 permit and the SAA may overlap.

Migratory Birds

The CDFW enforces the protection of nongame native birds in §§ 3503, 3503.5, and 3800 of the California Fish and Game Code. Section 3513 of the California Fish and Game Code prohibits the possession or take of birds listed under the MBTA. These sections mandate the protection of California nongame native birds' nests and also make it unlawful to take these birds. All raptor species are protected from "take" pursuant to California Fish and Game Code § 3503.5 and are also protected at the federal level by the MBTA of 1918 (USFWS 1918).

2.2.5 Western Riverside County Multiple Species Habitat Conservation Plan

The Western Riverside County MSHCP is a comprehensive, multi-jurisdictional HCP focusing on conservation of species and their associated habitats in western Riverside County. The MSHCP identifies 146 species, referred to as "Covered Species," for which the federal and California ESAs "take" authorization has been granted to signatories to the plan as long as they comply with its requirements. Of the 146 Covered Species within the MSHCP, 118 are considered to be "adequately conserved." The remaining 28 Covered Species will be considered to be adequately conserved when certain landmark conservation requirements are met during the course of future development. The goal of the MSHCP is to maintain the biological and ecological diversity within a rapidly urbanizing region while also

improving the future economic development in the county by providing an efficient, streamlined regulatory process through which development can proceed in and efficient way.

The approval of the MSHCP and execution of the Implementing Agreement (IA) by the wildlife agencies allows signatories of the IA to issue "take" authorizations for all species covered by the MSHCP, including state- and federally listed species, as well as other identified sensitive species and/or their habitats. Each city of local jurisdiction will impose a Development Mitigation Fee for projects within their jurisdiction. With payment of the mitigation fee to the county and compliance with the survey requirements of the MSHCP where required, full mitigation in compliance with CEQA, National Environmental Policy Act (NEPA), the California ESA, and the ESA will be granted. The Development Mitigation Fee varies according to project size and project description and is dependent on development density (Riverside County Ordinance No. 810.2). Payment of the mitigation fee and compliance with the requirements of Section 6.0 of the MSHCP are intended to provide full mitigation under CEQA, NEPA, and the California and federal ESAs for impacts to the species and habitats covered by the MSHCP, pursuant to agreements with USFWS, CDFW, and/or any other appropriate participating regulatory agencies as set forth in the IA for the MSHCP.

2.2.6 CEQA Significance Criteria

Section 15064.7 of the CEQA Guidelines encourages local agencies to develop and publish the thresholds that the agency uses in determining the significance of environmental effects caused by projects under its review. However, agencies may also rely upon the guidance provided by the expanded Initial Study checklist contained in Appendix G of the CEQA Guidelines. Appendix G provides examples of impacts that would normally be considered significant. Based on these examples, impacts to biological resources would normally be considered significant if the project would:

- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by CDFW or USFWS;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS;
- have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and
- conflict with the provisions of an adopted HCP, Natural Community Conservation Plan (NCCP), or other approved local, regional or state HCP.

An evaluation of whether an impact on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local context. Substantial impacts would be those that would diminish, or result in the loss of, an important biological resource, or those that would obviously conflict with local, state, or federal resource conservation plans, goals, or regulations. Impacts are sometimes locally important but not significant according to CEQA. The reason for this is that although the impacts would result in an adverse alteration of existing conditions, they would not substantially diminish, or result in the permanent loss of an important resource on a population-wide or region-wide basis.

3.0 METHODS

3.1 Literature Review

Prior to conducting the biological reconnaissance survey, ECORP biologists performed a literature review using the CDFW's California Natural Diversity Data Base (CNDDB; CDFW 2021a; CDFW 2021d) and the California Native Plant Society's (CNPS) Electronic Inventory (CNPSEI; CNPS 2021) to determine the special-status plant and wildlife species that have been documented in the vicinity of the Project site. ECORP searched CNDDB and CNPSEI records within the Project site boundaries as depicted on USGS 7.5-minute Sunnymead topographic quadrangle, plus the surrounding eight topographic quadrangles, including San Bernardino South, Redlands, Yucaipa, El Casco, Lakeview, Perris, Steele Peak, and Riverside East. The CNDDB and CNPSEI contain records of reported occurrences of federally or state-listed endangered, threatened, proposed endangered or threatened species, California Species of Special Concern (SSC), and/or other special-status species or habitat that may occur within or in the vicinity of the Project. Additional information was gathered from the following sources and includes, but is not limited to:

- *State and Federally Listed Endangered and Threatened Animals of California* (CDFW 2021b);
- *Special Animals List* (CDFW 2021c);
- *The Jepson Manual: Vascular Plants of California* (Baldwin et al. 2012);
- *The Manual of California Vegetation*, 2nd Edition (Sawyer et al. 2009); and
- various online websites (e.g., CalFlora 2021).

Using this information and observations in the field, a list of special-status plant and animal species that have potential to occur within the Project site was generated. For the purposes of this assessment, special-status species are defined as plants or animals that:

- have been designated as either rare, threatened, or endangered by CDFW, CNPS, or the USFWS, and/or are protected under either the federal or California ESAs;
- are candidate species being considered or proposed for listing under these same acts;
- are fully protected by the California Fish and Game Code, §§ 3511, 4700, 5050, or 5515;
- are of expressed concern to resource and regulatory agencies or local jurisdictions; and/or
- are covered species under the MSHCP.

Special-status species reported for the region in the literature review or for which suitable habitat occurs on the site were assessed for their potential to occur within the Project site based on the following guidelines:

Present: The species was observed on the site during a site visit or focused survey.

High: Habitat (including soils and elevation factors) for the species occurs within the Project site and a known occurrence has recently been recorded (within the last 20 years) within five miles of the area.

Moderate: Habitat (including soils and elevation factors) for the species occurs within the Project site and a documented observation occurs within the database search, but not within five miles of the area; a historic documented observation (more than 20 years old) was recorded within five miles of the Project site; or a recently documented observation occurs within five miles of the area and marginal or limited amounts of habitat occurs in the Project site.

Low: Limited or marginal habitat for the species occurs within the Project site and a recently documented observation occurs within the database search, but not within five miles of the area; a historic documented observation (more than 20 years old) was recorded within five miles of the Project site; or suitable habitat strongly associated with the species occurs on site, but no records or only historic records were found within the database search.

Presumed Absent: Species was not observed during a site visit or focused surveys conducted in accordance with protocol guidelines at an appropriate time for identification; habitat (including soils and elevation factors) does not exist on site; or the known geographic range of the species does not include the Project site.

Note that location information on some special-status species may be of questionable accuracy or unavailable. Therefore, for survey purposes, the environmental factors associated with a species' occurrence requirements may be considered sufficient reason to give a species a positive potential for occurrence. In addition, just because a record of a species does not exist in the databases does not mean it does not occur. In many cases, records may not be present in the databases because an area has not been surveyed for that species.

A review of the Natural Resources Conservation Service (NRCS 2021) Web Soil Survey, National Wetlands Inventory (NWI) (USFWS 2021), and the corresponding USGS topographic maps was also conducted to determine if there were any blue line streams or drainages present on the Project site that potentially fall under the jurisdiction of either federal or State agencies.

3.2 Western Riverside County MSHCP Consistency Analysis

Data regarding the Project site were reviewed to determine consistency with the MSHCP. The Western Riverside County Regional Conservation Authority (RCA) MSHCP Information Map was queried to determine requirements for habitat assessment(s), potential focused survey(s), or other issues related to biological resources that could exist on the Project site (RCA 2021).

Section 6.0 of the MSHCP also requires that an assessment of the Project site be completed to identify any potential Project-related effects on biological resources, including burrowing owl, riparian/riverine areas, vernal pools, and fairy shrimp, if applicable. In addition, the MSHCP requires that an

Urban/Wildlands Interface analysis be conducted to address the indirect effects associated with locating proposed development in the proximity of MSHCP Conservation Areas.

3.3 Field Survey

3.3.1 Biological Reconnaissance Survey

The biological reconnaissance survey was conducted by walking the entire Project site and surrounding areas to identify the vegetation communities and wildlife habitats on the Project site. The biologist(s) documented the plant and wildlife species present on the Project site, and the location and condition of the Project site were assessed for the potential to provide habitat for special-status plant and wildlife species. Data were recorded on a Global Positioning System (GPS) unit, field notebooks, and/or maps. Photographs were also taken during the survey to provide visual representation of the various vegetation communities and site conditions within the Project site. The Project site was also examined to assess its potential to facilitate wildlife movement or function as a movement corridor for wildlife moving throughout the region. In addition, the biologist mapped the vegetation communities present on the Project site.

Plant and wildlife species, including any special-status species that were observed during the survey, were recorded. Plant nomenclature follows that of *The Jepson Manual: Vascular Plants of California* (Baldwin et al. 2012). Wildlife nomenclature follows Society for the Study of Amphibians and Reptiles (SSAR 2017), *Check-list of North American Birds* (Chesser et al. 2020), and the *Revised Checklist of North American Mammals North of Mexico* (Bradley et al. 2014).

In instances where a special-status species was observed, the date, species, location and habitat, and GPS coordinates were recorded. The locations of special-status species observations were recorded using a handheld GPS in NAD 83, Universal Transverse Mercator coordinates, Zone 11S.

3.3.2 Burrowing Owl Habitat Assessment

The Project site is located within a MSHCP burrowing owl survey area. Focused surveys for burrowing owl are required as part of the Project review process where suitable habitat is present (RCTLMA 2021). In order to determine if suitable habitat is present, a burrowing owl habitat assessment was conducted concurrently with the biological reconnaissance survey. The site and a 500-foot buffer were walked using transects spaced 20 meters apart to identify the presence of owl habitat and search for presence of potential burrows (i.e., of suitable size and shape for burrowing owl use). Areas that were not accessible by foot were scanned using binoculars for suitable habitat, including presence of burrows. Areas north of Moreno Valley Freeway (State Route 60) were not surveyed.

4.0 RESULTS

Summarized below are the results of the literature review and field surveys, including site characteristics, vegetation communities, plants, wildlife, special-status species, and special-status habitats (including any potential wildlife corridors).

4.1 Literature Review

4.1.1 Special-Status Plants and Wildlife

The CNDDB and CNPSEI searches were conducted on April 9, 2021. The database searches identified 57 special-status plant species and 58 special-status wildlife species that could occur on and/or near the Project site. A list was generated from the results of the literature review and the Project site was evaluated for suitable habitat that could support any of the special-status plant or wildlife species on the list. Appendix A contains a list of the special-status plant species with potential to occur on and/or near the Project site and Appendix B contains a list of the special-status wildlife species with potential to occur on and/or near the Project site.

4.1.2 U.S. Fish and Wildlife Service Designated Critical Habitat

The Project site is not located within any USFWS-designated critical habitat. The nearest designated critical habitat is located approximately 5 miles to the north for southwestern willow flycatcher (*Empidonax traillii extimus*).

4.1.3 State or Federally Protected Wetlands and Waters of the United States

The Project site does not include any state or federally protected wetlands or waters of the United States (USFWS 2021).

4.2 Biological Reconnaissance Survey

The biological reconnaissance survey was conducted on April 13, 2021, by ECORP biologist Corrina Tapia. Summarized below are the results of the biological reconnaissance survey, including site characteristics, plants and plant communities, wildlife, special-status species, and special-status habitats (including any potential wildlife corridors). Weather conditions during the survey are summarized in Table 1.

Table 1. Weather Conditions during the Survey

Date	Time		Temperature (˚F)		Cloud Cover (%)		Wind Speed (mph)	
	Start	End	Start	End	Start	End	Start	End
4/13/2021	1010	1123	54	56	100	100	0-3	0-3

4.2.1 Property Characteristics

The Project site consists of an undeveloped lot containing ruderal vegetation that was heavily disturbed. Minimal amounts of trash were found throughout the site. At the time of the survey, the entire Project site appeared to have been previously disced. Soil types within the Project site consist of San Emigdio loam, 2 to 8 percent slopes (SgC) and San Emigdio fine sandy loam, 2 to 8 percent slopes, eroded (SeC2) (NRCS 2021). To the north of the Project site was State Route (SR-) 60, to the east was industrial and commercial development, to the west was commercial development and a parking lot, and to the south was undeveloped and residential. There was fencing along the eastern boundary of the Project site and along the eastern boundary (north of Eucalyptus and west of Redlands Boulevard) there was asphalt and gravel. Minimal amounts of native vegetation were identified within and adjacent

to the Project site. No aquatic resources were observed during the biological reconnaissance survey. Representative site photographs are included in Appendix C.

4.2.2 Vegetation Communities

The Project site is within an urban environment that is generally subjected to repeated and ongoing disturbance from human activities. No native or non-native vegetation communities were identified on the Project site. The entire Project site is classified as disturbed.

Disturbed is not a vegetation classification, but rather a land cover type. The dominant plant species observed on the Project site were non-native or invasive weedy species. Of the eight plant species observed on the Project site, many were non-native species. There were three isolated, small stands of trees within the Project site: one Peruvian pepper tree (*Schinus molle*), a small stand of eucalyptus (*Eucalyptus* spp.), and two palo verde trees (*Parkinsonia acleata*). Additionally, there were ornamental trees and shrubs along the western boundary of the Project site, in the 500-foot buffer. Soils throughout the entire site appeared to have been previously mechanically disturbed.

4.2.3 Plants Observed

Plant species observed on the Project site were generally characteristic of disturbed urban areas. Plant species observed on the Project site included mustard (*Brassica* spp.), stinknet (*Oncosiphon pilulifer*), grass species (*Bromus* spp.), lupine (*Lupinus* spp.), fiddleneck (*Amsinckia tessellata*), and various ornamental tree species such as palm (*Washingtonia* spp.), Peruvian pepper (*Schinus molle*), and pine (*Pinus* spp.). Of the eight plant species observed on the Project site, only fiddleneck and lupine are native; the remaining six species are non-native.

4.2.4 Wildlife Observed

The Project site provides habitat only for species adapted to disturbances and urban environments. Eleven bird species were observed during the biological reconnaissance survey: red-tailed hawk (*Buteo jamaicensis*), Anna's hummingbird (*Calypte anna*), common raven (*Corvus corax*), horned lark (*Eremophila alpestris*), house finch (*Haemorhous mexicanus*), lesser goldfinch (*Spinus psaltria*), western meadowlark (*Sturnella neglecta*), European starling (*Sturnus vulgaris*), Cassin's kingbird (*Tyrannus vociferans*), mourning dove (*Zenaida macroura*), and Botta's pocket gopher (*Thomomys bottae*).

4.2.5 Potential for Special-Status Plant to Occur on the Project Site

The literature review and database searches identified 57 special-status plant species and 58 special-status wildlife species that occur on or near the Project site. However, due to the high level of disturbance at the Project site and the current lack of suitable habitat for the special-status plant and wildlife species, many of the species are presumed absent from the Project site.

Special-Status Plants

There were 57 special-status plant species (of those, 10 are federally and/or state listed and 29 are covered by the MSHCP) that appeared in the literature review and database searches for the Project site (CDFW 2021a, CNPS 2021). A list was generated from the results of the literature review and the Project was evaluated for suitable habitat that could support any of the special-status plant species on the list.

All of the special-status plant species identified in the literature review were presumed absent due to lack of suitable habitat. Descriptions of the CNPS designations are found in Table 2.

Table 2. CNPS Status Designations

List Designation	Meaning
1A	Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere
1B	Plants Rare, Threatened, or Endangered in California and Elsewhere
2A	Plants Presumed Extirpated in California, But Common Elsewhere
2B	Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
3	Plants about which we need more information; a review list
4	Plants of limited distribution; a watch list
List 1B, 2, and 4 extension meanings:	
.1	Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2	Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

Note: According to CNPS (Skinner and Pavlik 1994), plants on Lists 1B and 2 meet definitions for listing as threatened or endangered under Section 1901, Chapter 10 of the California FGC (CDFW 1984). This interpretation is inconsistent with other definitions.

Plant Species Presumed Absent

The following species are presumed absent from the Project site due to the lack of suitable habitat, soil type, and/or elevation range at the Project site:

- Alvin Meadow bedstraw (*Galium californicum* ssp. *primum*), CNPS 1B.2, MSHCP Covered Species
- Bristly sedge (*Carex comosa*), CNPS 2B.1
- California satintail (*Imperata brevifolia*), CNPS 2B.1
- California screw-moss (*Tortula californica*), CNPS 1B.2
- Chaparral ragwort (*Senecio aphanaztis*), CNPS 2B.2
- Chaparral sand-verbena (*Abronia villosa* var. *aurita*), CNPS 1B.1
- Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*), CNPS 1B.1, MSHCP Covered Species
- Coulter's matilija poppy (*Romneya coulteri*), CNPS 4.2, MSHCP Covered Species
- Crowned muilla (*Muilla coronata*), CNPS 4.2
- Davidson's saltscale (*Atriplex serenana* var. *davidsonii*), CNPS 1B.2, MSHCP Covered Species
- Gambel's water cress (*Nasturtium gambelii*), federally listed endangered, state-listed threatened, CNPS 1B.1

- Hall's monardella (*Monardella macrantha ssp. hallii),* CNPS 1B.3, MSHCP Covered Species
- Heart-leaved pitcher sage (*Lepechinia cardiophylla*), CNPS 1B.1, MSHCP Covered Species
- Horn's milk-vetch (*Astragalus hornii* var. *hornii*), CNPS 1B.1
- Jaeger's bush milk-vetch (*Astragalus pachypus* var. *jaegeri*), CNPS 1B.1, MSHCP Covered Species
- Little mousetail (*Myosurus minimus* ssp. *apus*), CNPS 3.1, MSHCP Covered Species
- Long-spined spineflower (*Chorizanthe polygonoides* var. *longispina*), CNPS 1B.2, MSHCP Covered Species
- Los Angeles sunflower (*Helianthus nuttallii* ssp. *parishii*), CNPS 1A
- Marsh sandwort (*Arenaria paludicola*), federally listed Endangered, state-listed Endangered, CNPS 1B.1
- Mesa horkelia (*Horkelia cuneata* var. *puberula*), CNPS 1B.1
- Mud nama (*Nama stenocarpa*), CNPS 2B.2, MSHCP Covered Species
- Munz's onion (*Allium munzii*), federally listed Endangered, state-listed Threatened, CNPS 1B.1, MSHCP Covered Species
- Nevin's barberry (*Berberis nevinii*), federally listed Endangered, state-listed Endangered, CNPS 1B.1, MSHCP Covered Species
- Ocellated Humboldt lily (*Lilium homboldtii* ssp. *ocellatum*), CNPS 4.2, MSHCP Covered Species
- Palmer's grapplinghook (*Harpagonella palmeri*), CNPS 4.2, MSHCP Covered Species
- Paniculate tarplant (*Deinandra paniculata*), CNPS 4.2
- Parish's brittlescale (*Atriplex parishii*), CNPS 1B.1, MSHCP Covered Species
- Parish's bush-mallow (*Malacothamnus parishii*), CNPS 1A
- Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*), state-listed Rare, CNPS 1B.2
- Parish's gooseberry (*Ribes divaricatum* var. *parishii*), CNPS 1B.1
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*), CNPS 1B.1, MSHCP Covered Species
- Payson's jewelflower (*Caulanthus simulans*), CNPS 4.2, MSHCP Covered Species
- Peninsular spineflower (*Chorizanthe leptotheca*), CNPS 4.2, MSHCP Covered Species
- Peruvian dodder (*Cuscuta obtusiflora* var. *glandulosa*), CNPS 2B.2
- Plummer's mariposa lily (*Calochortus plummerae*), CNPS 4.2, MSHCP Covered Species
- Prairie wedge grass (*Sphenopholis obtusata*), CNPS 2B.2
- Pringle's monardella (*Monardella pringlei*), CNPS 1A
- Salt marsh bird's-beak (*Chloropyron maritimum* ssp. *maritimum*), federally listed Endangered, state-listed Endangered, CNPS 1B.2
- Salt spring checkerbloom (*Sidalcea neomexicana*), CNPS 2B.2
- San Bernardino aster (*Symphyotrichum defoliatum*), CNPS ranking of 1B.2

- San Diego sagewort (*Artemisia palmeri*), CNPS 4.2
- San Jacinto Valley crownscale (*Atriplex coronata* var. *notatior*), federally listed Endangered, CNPS 1B.1, MSHCP Covered Species.
- Santa Ana River woollystar (*Eriastrum densifolium* ssp. *sanctorum*), federally listed Endangered, state-listed Endangered, SNPS 1B.1, MSHCP Covered Species
- Slender-horned spineflower (*Dodecahema leptoceras*), federally listed Endangered, state-listed Endangered, CNPS 1B.1, MSHCP Covered Species
- Small-flowered morning glory (*Convolvulus simulans*), CNPS 4.2, MSHCP Covered Species
- Smooth tarplant (*Centromadia pungens* ssp. *laevis*), CNPS 1B.1, MSHCP Covered Species
- Snake cholla (*Cylindropuntia californica* var. *californical*), CNPS 1B.1
- South Coast saltscale (*Atriplex pacifica*), CNPS 1B.2
- Southern California black walnut (*Juglans californica*), CNPS 4.2, MSHCP Covered Species
- Spreading navarretia (*Navarretia fossalis*), federally listed Threatened species, CNPS 1B.1, MSHCP Covered Species
- Thread-leaved brodiaea (*Brodiaea filifolia*), federally listed Threatened, state-listed Endangered, CNPS 1B.1, MSHCP Covered Species.
- Vernal barley (*Hordeum intercedens*), CNPS 3.2, MSHCP Covered Species
- Western spleenwort (*Asplenium vespertinum*), CNPS 4.2
- White-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*), CNPS 1B.2
- Woven-spored lichen (*Texosporium sancti-jacobi*), CNPS 3
- Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*), CNPS 2B.1, MSHCP Covered Species
- Yucaipa onion (*Allium marvinii*), CNPS 1B.1, MSHCP Covered Species

A complete list of the 57 special-status plant species, with details regarding habitat requirements and potential for occurrence designations, is included as Appendix A.

4.2.6 Potential for Special-Status Wildlife to Occur on the Project Site

There were 58 special-status wildlife species (of those, 16 are federally and/or state listed and 29 are covered by the MSHCP) that appeared in the literature review and database searches for the Project site. Previous mechanical disturbances on the site, proximity to residential development, the presence of anthropogenic influences on the site, and the lack of suitable habitat likely preclude many of these species from occurring.

Wildlife Species with a Low Potential to Occur

The following species has a low potential to occur on the Project site because either habitat for the species occurs onsite and a known occurrence has been reported in the database, but not within five miles of the site; a historic documented observation was recorded within five miles of the Project site;

or a known recently documented occurrence has been reported within five miles of the site and marginal or limited amounts of habitat occurs onsite.

Burrowing owl

Burrowing owl is an MSHCP Covered Species and a CDFW Species of Special Concern. Burrowing owls historically occurred throughout much of California and the western United States; however, many former California populations have been extirpated. The burrowing owl inhabits open habitats, primarily grasslands and deserts. Burrowing owls require burrows for roosting and nesting cover. Although they often nest in abandoned California ground squirrel (*Otospermophilus beecheyi*) burrows, they will also use other small mammal burrows, pipes, culverts, and nest boxes, particularly where burrows are scarce (Zeiner et al. 1990). During the biological reconnaissance survey, a burrowing owl habitat assessment was conducted. Although the site was generally lacking small mammal burrows or burrow-type structures, there were few burrows belonging to Botta's pocket gopher (*Thomomys bottae*) located within and adjacent to the Project site. None of these burrows were suitable for burrowing owl; they were too small in size. Soils within and adjacent to the Project site appeared mechanically disturbed and compacted in some areas as a result. The Project site did not provide suitable burrowing owl habitat at the time of the survey; however, due to the mobile nature of the burrowing owl, it is possible for the burrowing owl to be present in the future if suitable burrows or burrow structures are created on the site. The literature review identified one burrowing owl within five miles of the Project site in 2006 (OCC# 1079; CDFW 2021). Due to the current lack of suitable habitat (lack of suitable burrows) and the recent documented occurrence of the species within five miles of the Project site, burrowing owl was determined to have a low potential to occur.

Wildlife Species Presumed Absent

These species were not present at the site during the site visit and/or habitat was not present or suitable. For some species, there were historic or recent sightings; however, due to the lack of suitable habitat within the Project site, these species are presumed absent:

- American badger (*Taxidea taxus*), CDFW Species of Special Concern (SSC)
- Arroyo chub (*Gila orcuttii*), CDFW SSC, MSHCP Covered Species
- Bald eagle (*Haliaeetus leucocephalus*), state-listed Endangered, CDFW Fully Protected (FP), MSHCP Covered Species
- Bell's sage sparrow (*Artemisiospiza belli belli*), MSHCP Covered Species
- California black rail (*Laterallus jamaicensis coturniculus*), state-listed Threatened, CDFW FP
- California glossy snake (*Arizona elegans occidentalis*), CDFW SSC
- California horned lark (*Eremophila alpestris actia*), MSHCP Covered Species
- Coast horned lizard (*Phrynosoma blainvillii*), CDFW SSC, MSHCP Covered Species
- Coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*), CDFW SSC, MSHCP Covered Species

- Coastal California gnatcatcher (*Polioptila californica californica*), federally listed Threatened, CDFW SSC, MSHCP Covered Species
- Coastal whiptail (*Aspidoscelis tigris stejnegeri*), CDFW SSC, MSHCP Covered Species
- Coast patch-nosed snake (*salvadora hexalepis virgultea*), CDFW SSC
- Cooper's hawk (*Accipiter cooperii*), MSHCP Covered Species
- Crotch bumble bee (*Bombus crotchii*), state-listed Candidate
- Dehli sands flower-loving fly (*Rhaphiomidas terminates abdominalis*), federally listed Endangered, MSHCP Covered Species
- Ferruginous hawk (*Buteo regalis*), MSHCP Covered Species
- Golden eagle (*Aquila chrysaetos*), CDFW FP, MSHCP Covered Species
- Least Bell's vireo (*Vireo bellii pusillus*), federally listed Endangered, state-listed Endangered, MSHCP Covered Species
- Lesser long-nosed bat (*Leptonycteris yerbabuenae*), federally delisted, CDFW SSC
- Loggerhead shrike (*Lanius ludovicianus*), CDFW SSC, MSHCP Covered Species
- Long-eared owl (*Asio otus*), CDFW SSC
- Los Angeles pocket mouse (*Perognathus longimembris brevinasus*), CDFW SSC, MSHCP Covered Species
- Merlin (*Falco columbarius*), MSHCP Covered Species
- Northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*), CDFW SSC, MSHCP Covered Species
- Orange-throated whiptail (*Aspidoscelis hyperythra*), MSHCP Covered Species
- Pallid bat (*Antrozous pallidus*), CDFW SSC
- Pallid San Diego pocket mouse (*Chaetodipus fallax pallidus*), CDFW SSC
- Pocketed free-tailed bat (*Nyctinomops feromosaccus*), CDFW SSC
- Quino checkerspot butterfly (*Euphydryas editha quino*), federally listed Endangered, MSHCP Covered Species
- Red-diamond rattlesnake (*Crotalus ruber*), CDFW SSC, MSHCP Covered Species
- Riverside fairy shrimp (*Streptocephalus woottoni*), federally listed Endangered, MSHCP Covered Species
- San Bernardino kangaroo rat (*Dipodomys merriami parvus*), federally listed Endangered, state-listed Candidate Endangered, CDFW SSC, MSHCP Covered Species

- San Diego banded gecko (*Coleonyx variegatus abbotti*), CDFW SSC, MSHCP Covered Species
- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), CDFW SCC, MSHCP Covered Species
- San Diego desert woodrat (*Neotoma lepida intermedia*), CDFW SSC, MSHCP Covered Species
- Santa Ana speckled dace (*Rhinichthys osculus* ssp. 3), CDFW SSC
- Santa Ana sucker (*Catostomus santaanae*), federally listed Threatened, MSHCP Covered Species
- Southern California legless lizard (*Anniella stebbinsi*), CDFW SSC
- Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), MSHCP Covered Species
- Southern grasshopper mouse (*Onychomys torridus ramona*), CDFW SSC
- Southern mountain yellow-legged frog (*Rana muscosa*), federally listed Endangered, state-listed Endangered, MSHCP Covered Species
- Southwestern willow flycatcher (*Empidonax traillii extimus*), federally listed Endangered, state-listed Endangered, MSHCP Covered Species
- Steelhead- southern California DPS (*Oncorhynchus mykiss irideus* pop. 10), federally listed Endangered
- Stephens' kangaroo rat (*Dipodomys stephensi*), federally listed Endangered, state-listed Threatened, MSHCP Covered Species
- Swainson's hawk (*Buteo swainsoni*), state-listed Threatened, MSHCP Covered Species
- Tricolored blackbird (*Agelaius tricolor*), state-listed Threatened, CDFW SSC, MSHCP Covered Species
- Two-striped gartersnake (*Thamnophis hammondii*), CDFW SSC
- Western mastiff bat (*Eumops perotis californicus*), CDFW SSC
- Western pond turtle (*Emys marmorata*), CDFW SSC, MSHCP Covered Species
- Western spadefoot (*Spea hammondii*), CDFW SSC, MSHCP Covered Species
- Western yellow bat (*Lasiurus xanthinus*), CDFW SSC
- Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), federally listed Threatened, state-listed Endangered, MSHCP Covered Species
- White-faced ibis (*Plegadis chihi*), MSHCP Covered Species
- White-tailed kite (*Elanus leucurus*), CDFW FP, MSHCP Covered Species
- Yellow-breasted chat (*Icteria virens*), CDFW SSC, MSHCP Covered Species

- Yellow-headed blackbird (*Xanthocephalus xanthocephalus*), CDFW SSC
- Yellow warbler (*Setophaga petechia*), CDFW SSC, MSHCP Covered Species

A complete list of the 58 special-status wildlife species, with details regarding habitat requirements and potential for occurrence designations, is included as Appendix B. None of the sensitive wildlife species with a potential to occur in the area were observed during the reconnaissance survey.

4.3 Burrowing Owl Habitat Assessment

The burrowing owl habitat assessment was conducted concurrently with the biological reconnaissance survey on April 13, 2021, by ECORP biologist Corrina Tapia. Weather conditions during the assessment are summarized in Table 1 (Section 4.2). Botta's pocket gopher burrows were present in low numbers in the Project site; however, these were too small for burrowing owl and therefore not suitable. No burrowing owl sign such as whitewash, feathers, or pellets were observed at any of the burrows (Figure 3). The Project site contained non-native and weedy vegetation and was waist-high in the southern buffer. The Project site did not provide suitable habitat for burrowing owl at the time of the habitat assessment due to the lack of burrows and recently mechanically disturbed soils.

4.4 Raptors and Migratory Birds

Potential nesting habitat for migratory birds and raptors protected by the MBTA and California Fish and Game Code was present in the northern portion of the Project site and adjacent to the Project site, within the 500-foot buffer, in palm trees and other ornamental trees and shrubs. Suitable nesting habitat for ground nesting bird species, such as mourning doves, was present on the Project site. Raptors typically breed between February and August, and songbirds and other passerines generally nest between March and August.

4.5 Wildlife Movement Corridors, Linkages, and Significant Ecological Areas

The concept of habitat corridors addresses the linkage between large blocks of habitat that allow the safe movement of mammals and other wildlife species from one habitat area to another. The definition of a corridor is varied, but corridors may include such areas as greenbelts, refuge systems, underpasses, and biogeographic land bridges, for example. In general, a corridor is described as a linear habitat, embedded in a dissimilar matrix, which connects two or more large blocks of habitat. Wildlife movement corridors are critical for the survivorship of ecological systems for several reasons. Corridors can connect water, food, and cover sources, spatially linking these three resources with wildlife in different areas. In addition, wildlife movement between habitat areas provides for the potential of genetic exchange between wildlife species populations, thereby maintaining genetic variability and adaptability to maximize the success of wildlife responses to changing environmental conditions. This is especially critical for small populations subject to loss of variability from genetic drift and effects of inbreeding. Naturally, the nature of corridor use and wildlife movement patterns varies greatly among species.

The Project site was assessed for its ability to function as a wildlife corridor. The Project site is disturbed and is generally surrounded by industrial development and paved roadways. Although there are portions of the Project site that are undeveloped, these areas are surrounded by development and

isolated from large, contiguous blocks of native habitat. SR-60 is to the north of the Project site and is a large barrier to wildlife movement. Additionally, the lack of vegetative cover within the Project site, the urban nature of the Project site, and the high density of non-native, weedy vegetation in portions of the Project buffer would likely deter wildlife from moving through the area. Therefore, the Project site would not be considered a linkage or corridor between conserved natural habitat areas.

5.0 IMPACT ANALYSIS

All areas where construction and/or grading are currently proposed to take place are highly disturbed areas. Potential impacts to sensitive biological resources resulting from construction activities are presented below.

5.1 Special-Status Species

The Project site, consisting of disturbed land, was devoid of native vegetation communities. Of the 57 special-status plant species identified in the literature search, all were presumed absent due to lack of suitable habitat. The removal of non-native vegetation on the Project site will not contribute to the overall decline of any of the special-status plant species identified in the literature review and database searches. No significant impacts to special-status plant species are anticipated to result from the development of this Project.

Of the 58 special-status wildlife species identified in the literature search, one was found to have a low potential to occur: burrowing owl. During the survey and burrowing owl habitat assessment, no suitable burrows or burrow-like structures were observed on or adjacent to the Project site. Burrows belonging to Botta's pocket gopher were present in areas; however, these were too small to be suitable for burrowing owl use. Furthermore, the soils within Project site appeared to have been previously mechanically disturbed (e.g., disced), which further reduced the site's suitability for burrowing owl. Because of these factors, the site did not provide suitable burrowing owl habitat at the time of the survey. However, due to the mobile nature of the species, it is possible that burrowing owl could use the site prior to the start of Project activities, especially if burrows or burrow-like structures are incidentally created or formed prior to the start of construction. If burrowing owl are found to be using or nesting on the Project site prior to the start of construction due to a change in potential burrow presence, direct impacts in the form of ground disturbance, vegetation removal, habitat loss, and mortality and indirect impacts from construction noise and vibrations may occur. In order to avoid potentially significant impacts to burrowing owl, it is recommended that Mitigation Measure BIO-1 be implemented. The Mitigation Measures for the proposed Project are discussed in Section 6 below.

The remaining 57 special-status wildlife species are presumed absent from occurring on or adjacent to the site due to the lack of suitable habitat, including the evidence mechanical disturbances to the soils on the site, proximity to SR-60 and the surrounding industrial and residential development, and the presence of anthropogenic disturbances associated with the commercial and industrial development surrounding the site. No significant impacts to the remaining 57 special-status wildlife species are anticipated to result from the development of this Project.

The trees on and immediately adjacent to the Project site could provide nesting habitat for nesting birds and raptors protected by the MBTA and California Fish and Game Code. Furthermore, the Project

site could provide nesting habitat for ground-nesting bird species. If construction of the proposed Project occurs during the bird breeding season (typically February 1 through August 31), ground-disturbing construction activities could directly affect birds protected by the MBTA and their nests through the removal of habitat on the Project site, and indirectly through increased noise, vibrations, and increased human activity. Impacts to nesting birds would be less than significant with the implementation of Mitigation Measure BIO-2.

5.2 Sensitive Natural Communities

The Project site consists of disturbed land that supports mostly non-native grass and forb species. The Project site does not contain any riparian habitat or other sensitive natural communities that would need to be preserved. No impacts to sensitive natural communities are anticipated to result from the development of this Project.

5.3 State or Federally Protected Wetlands and Waters of the United States

No state or federally protected wetlands or waters of the United States were identified on the Project site; therefore, no impacts would occur.

5.4 Wildlife Corridors and Nursery Sites

The Project site is located within and adjacent to areas containing existing disturbances (e.g., paved roads and residential, commercial, and industrial developments). The Project site is heavily disturbed and/or developed and contains poor vegetative cover that would facilitate wildlife movement. No migratory wildlife corridors or native wildlife nursery sites were identified within the Project site. No impacts to these resources are expected to occur during the development of the Project site.

5.5 Habitat Conservation Plans and Natural Community Conservation Plans

The Project site is located within the planning area for the Western Riverside MSHCP. The Project site is not located within any Conservation Areas, Criteria Cells, or Subunit designations according to the MSHCP.

5.5.1 Western Riverside County MSHCP Consistency Analysis

The Project site is located within the planning area for the MSHCP, but outside of any Cell Groups, Criteria Cells, and Subunit designations. Section 6.0 of the MSHCP requires assessment of the potential effects from the Project on biological resources including riparian/riverine areas, vernal pools, and fairy shrimp, burrowing owl, and Narrow Endemic Plant Species. In addition, the MSHCP requires an Urban/Wildlands Interface analysis be conducted in order to address the indirect effects associated with locating proposed development in proximity of MSHCP Conservation Areas. These resources were assessed during the reconnaissance survey and are discussed below in relation to the Project.

The proposed Project consists of construction of a retail fuel center including fueling facilities, travel amenities, a drive-thru restaurant, and parking facilities on an approximately 17.28-acre Project site in the City of Moreno Valley, California. Since development of the Project site is a covered activity within the MSHCP, it is an allowable use that has been contemplated within the MSHCP. However, projects that are covered still need to comply with MSHCP requirements.

Riparian/Riverine, Vernal Pool, and Fairy Shrimp Habitat Assessment (MSHCP Section 6.1.2)

In accordance with Section 6.1.2 of the MSHCP, a habitat assessment was performed for riparian and riverine communities, vernal pools, and fairy shrimp. The Project site, consisting of San Emigdio loam, 2 to 8 percent slopes (SgC) and San Emigdio fine sandy loam, 2 to 8 percent slopes, eroded (SeC2), was lacking clay soils and did not contain vernal pool habitat or suitable habitat for fairy shrimp. Additionally, no riparian vegetation was observed on the Project site. No defined channels or drainages were identified on the Project site and the Project site did not contain any riverine resources.

Narrow Endemic Plant Species (MSHCP Section 6.1.3)

The RCA MHSCP Information Map was reviewed to determine whether the Project site is located within a Narrow Endemic Plant Species Survey Area (NEPSSA), in accordance with Section 6.1.3 of the MSHCP. The Project site is not located within a NEPSSA or a Criteria Area. Further, all of the plant species identified in the literature review were determined to be presumed absent from the Project site due to the lack of suitable habitat and high level of disturbance.

Burrowing Owl Habitat Assessment (MSHCP Section 6.3.2)

In accordance with Section 6.3.2 of the MSHCP, a habitat assessment for burrowing owl was performed. Additionally, the RCA MSHCP Information Map was reviewed to identify areas within the Project site that may fall within the designated burrowing owl survey areas. The Project site is located within the MSHCP-designated burrowing owl survey area (Figure 3). Burrowing owls or suitably sized burrows were not identified on the Project site during the burrowing owl habitat assessment that was performed in accordance with the MSHCP burrowing owl guidelines (County of Riverside 2006) during the biological reconnaissance survey.

Location: N:\2021\2021-094 Moreno Valley Pilot Travel Center\MAPS\Biological Resources\MVP_WRMSHCP_BUOW.mxd (TR)-trotellini 7/29/2021

Map Date: 7/29/2021

Service Layer Credits: NAIP (2020)

Figure 3. Western Riverside MSHCP Burrowing Owl Survey Area

Moreno Valley Pilot Travel Center 2021-094

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Due to the lack of suitable habitat and burrows on and adjacent to the Project site, focused burrowing owl surveys will not be required for the Project. However, due to the mobile nature of burrowing owls, this species could begin using the site prior to the start of Project construction activities. Therefore, a pre-construction survey for burrowing owls will need to be completed prior to construction activities in accordance with the MSHCP burrowing owl survey guidelines (County of Riverside 2006). Implementation of Mitigation Measure BIO-2 would keep the Project in compliance with the MSHCP requirements in Section 6.3.2.

Urban/Wildlands Interface Guidelines (MSHCP Section 6.1.4)

The requirements for Urban/Wildlands Interface for the management of edge factors do not apply to the Project site because the Project site is not situated adjacent to any wildlands or MSHCP-designated Conservation Areas. The Project site is relatively isolated from larger, contiguous blocks of native habitat and completely surrounded by residential development, urban development, and other anthropogenic land use. A net long-term increase of edge impacts is not expected as a result of this Project.

Additional Surveys (MSHCP Section 6.3.2)

The RCA MSHCP Information Map was reviewed to determine if the Project site was located with any other MSHCP designated survey areas beyond burrowing owl. The Information Map revealed that the Project site is not located within the amphibian species, criteria area species, or mammalian species survey areas. Therefore, no further habitat assessments or surveys are required.

6.0 MITIGATION MEASURES

The following mitigation measures would reduce impacts to sensitive biological resources to a less than significant level.

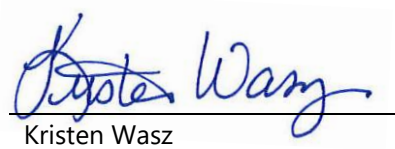
BIO-1 Preconstruction Burrowing Owl Survey: A pre-construction survey for burrowing owls shall be completed within the Project site no more than 30 days prior to construction activities in accordance with the Western Riverside MSHCP burrowing owl survey guidelines (County of Riverside 2006). If burrowing owls are observed during the preconstruction survey and impacts to the owls or occupied burrows are unavoidable, a specific mitigation methodology for the owls shall be determined in coordination with CDFW in order to reduce impacts to a level that is less than significant. Mitigation measures for any burrowing owls present could include avoidance of the owl burrows during the nesting season and/or passive relocation of burrowing owls.

BIO-2 Preconstruction Survey for Nesting Birds: Wherever feasible, any ground disturbance activities shall be conducted during the non-breeding season for birds (approximately September 1 through January 31) in order to avoid violations of the MBTA and California Fish and Game Code §§ 3503, 3503.5 and 3513. If activities with the potential to disrupt nesting birds are scheduled to occur during the bird breeding season (February 1 through August 31), a preconstruction nesting bird survey shall be conducted by a qualified biologist who is experienced in the identification of avian species and conducting nesting bird surveys no more than three (3) days prior to the start of construction activities. The nest surveys

shall include the Project site and adjacent areas where Project activities have the potential to cause nest failure. If no nesting birds are observed during the survey, site preparation and construction activities may begin. If nesting birds (including nesting raptors) are found to be present, avoidance or minimization measures shall be undertaken to avoid potential Project-related impacts. Measures may include establishment of an avoidance buffer until nesting has been completed and periodic nest monitoring by the Project biologist. The width of the avoidance buffer will be determined by the Project biologist. Typically, this is 300 feet from the nest site in all directions (500 feet is typically recommended by CDFW for raptors), until the juveniles have fledged and there has been no evidence of a second attempt at nesting. The monitoring biologist will monitor the nest(s) during construction and document any findings.

7.0 CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. Field work conducted for this assessment was performed by me or under my direct supervision. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project applicant or the applicant's representative and that I have no financial interest in the project.

Signed:  Date: July 29, 2021

Kristen Wasz
Senior Biologist

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LIST OF APPENDICES

APPENDIX A

Sensitive Plant Species Potential for Occurrence

Table 1: Plant Species Identified and Potential to Occur in the Project Area.

Scientific Name Common Name	Status	Bloom Period (Elevation [meters])	General Habitat Description	Potential to Occur
Abronia villosa var. aurita Chaparral sand-verbena	US: none CA: none CNPS: 1B.1	(Jan)Mar- Sep (75- 1600)	Occurs in chaparral, coastal scrub, and desert dunes.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Allium marvinii Yucaipa onion	US: none CA: none CNPS: 1B.2 MSHCP Covered	April-May (760-1065)	Occurs in chaparral, often found in clay and openings.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Allium munzii Munz's onion	US: END CA: THR CNPS: 1B.1 MSHCP Covered	Mar-May (297- 1070)	Occurs in chaparral, woodlands, grasslands, and coastal scrub.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Arenaria paludicola Marsh sandwort	US: END CA: END CNPS: 1B.1	May-Aug (3- 170)	Occurs in freshwater and wetland habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Artemisia palmeri San Diego sagewort	US: none CA: none CNPS: 4.2	(Feb)May- Sep (15- 915)	Occurs in chaparral, coastal scrub, and riparian forest, scrub, and woodland habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Asplenium vespertinum Western spleenwort	US: none CA: none CNPS: 4.2	Feb-Jun (180- 1000)	Occurs in chaparral, cismontane woodland, and coastal scrub habitats. Found in rocky areas.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Astragalus hornii var. hornii Horn's milk-vetch	US: none CA: none CNPS: 1B.1	May-Oct (60- 850)	Occurs in alkali playa, meadows and seeps, and wetland habitats	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Astragalus pachypus var. jaegeri Jaeger's bush milk-vetch	US: none CA: none CNPS: 1B.1 MSHCP Covered	Dec-Jun (365- 975)	Occurs in chaparral, woodland, grassland, and coastal scrub habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.

Scientific Name Common Name	Status	Bloom Period (Elevation [meters])	General Habitat Description	Potential to Occur
Atriplex coronate var. notatior San Jacinto Valley crownscale	US: END CA: none CNPS: 1B.1 MSHCP Covered	Apr-Aug (139- 500)	Found in alkali playa, grasslands, vernal pool, and wetlands.	Presumed Absent. Historic documented observation in 2012 (OCC# 5) within 5 miles of the project site. OCC# 5 observed near San Jacinto Wildlife Area. Due to a lack of suitable habitat, this species is presumed absent.
Atriplex pacifica South Coast saltscale	US: none CA: none CNPS: 1B.2	Mar-Oct (0- 140)	Found in coastal dune and scrub, and playa habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Atriplex parishii Parish's brittlescale	US: none CA: none CNPS: 1B.1 MSHCP Covered	June-Oct (25-1900)	Occurs in alkaline areas in chenopod scrub, playas, and vernal pools.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Atriplex serenana var. davidsonii Davidson's saltscale	US: none CA: none CNPS: 1B.2 MSHCP Covered	Apr-Oct (10- 200)	Occurs in coastal scrub habitat.	Presumed Absent. Historic documented observation in 2010 (OCC# 27) within 5 miles of the project site. OCC# 27 observed in San Jacinto Wildlife Area, on the E side of David Rd. Due to a lack of suitable habitat, this species is presumed absent.
Berberis nevinii Nevin's barberry	US: END CA: END CNPS: 1B.1 MSHCP Covered	(Feb) Mar-Jun (70-825)	Occurs in chaparral, woodland, riparian scrub, and coastal scrub habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Brodiaea filifolia Thread-leaved brodiaea	US: THR CA: END CNPS: 1B.1 MSHCP Covered	Mar-Jun (25- 1120)	Occurs in chaparral, woodland, grassland, vernal pool, and wetland habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.

Scientific Name Common Name	Status	Bloom Period (Elevation [meters])	General Habitat Description	Potential to Occur
Calochortus plummerae Plummer's mariposa lily	US: none CA: none CNPS: 4.2 MSHCP Covered	May-July (100-1700)	Occurs in chaparral, cismontane woodlands, coastal scrub, lower montane coniferous forest, and valley and foothill grasslands. Often found in granitic, rocky areas.	Presumed Absent. Historic documented observation in 1932 (OCC# 6) within 5 miles of the project site. OCC# 6 observed along HWY 60, 1 mile E of Gilman Springs Rd. Due to a lack of suitable habitat, this species is presumed absent.
Carex comosa Bristly sedge	US: none CA: none CNPS: 2B.1	May-Sep (0- 625)	Occurs in coastal prairie, freshwater marsh, swamp, grassland, and wetland habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Caulanthus simulans Payson's jewelflower	US: none CA: none CNPS: 4.2 MSHCP Covered	(Feb)Mar-May(Jun) (90- 2200)	Occurs in coastal scrub and chaparral habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Centromadia pungens ssp. laevis Smooth tarplant	US: none CA: none CNPS: 1B.1 MSHCP Covered	Apr-Sep (0- 640)	Occurs in alkali playa, chenopod scrub, meadow, seep, riparian woodlands, grassland, and wetland habitats.	Presumed Absent. Historic documented observation in 2018 (OCC# 102) within 5 miles of the project site. OCC# 102 observed near San Timoteo Canyon Rd and Railroad Crossing Junction. Due to a lack of suitable habitat, this species is presumed absent.
Chloropyron maritimum ssp. maritimum Salt marsh bird's-beak	US: END CA: END CNPS: 1B.2	May-Oct(Nov) (0- 30)	Occurs in coastal dune, marsh, swamp, salt marsh, and wetland habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Chorizanthe leptotheca Peninsular spineflower	US: none CA: none CNPS: 4.2 MSHCP Covered	May-Aug (300- 1900)	Occurs in chaparral, coastal scrub, and montane coniferous forests. Found in granitic soils and in alluvial fans.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.

Scientific Name Common Name	Status	Bloom Period (Elevation [meters])	General Habitat Description	Potential to Occur
Chorizanthe parryi var. *parryi* Parry's Spineflower	US: none CA: none CNPS: 1B.1 MSHCP Covered	April-June (275-1220)	Occurs in chaparral, cismontane woodlands, coastal scrub, and valley and foothill grasslands with sandy or rocky soils and openings.	Presumed Absent. One historic documented observation in 1950 (OCC# 20) within 5 miles of the project site. OCC# 20 observed in the hills NE of Reche Canyon Summit. Due to a lack of suitable habitat, this species is presumed absent.
Chorizanthe polygonoides var. longispina Long-spined spineflower	US: none CA: none CNPS: 1B.2 MSHCP Covered	Apr-Jul (30- 1530)	Occurs in chaparral, coastal scrub, meadow, seep, grassland, and vernal pool habitat.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Chorizanthe xanti var. leucotheca White-bracted Spineflower	US: none CA: none CNPS: 1B.2	April-June (300-1200)	Occurs in coastal scrub (alluvial fans), Mojavean desert scrub and pinyon-juniper woodlands. Often found in sandy or gravelly soils.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Convolvulus simulans Small-flowered morning-glory	US: none CA: none CNPS: 4.2 MSHCP Covered	Mar-Jul (30- 740)	Occurs in chaparral, coastal scrub, and grassland habitats. Prefers clay and serpentine soils.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Cuscuta obtusiflora var. glandulosa Peruvian dodder	US: none CA: none CNPS: 2B.2	Jul-Oct (15- 280)	Occurs in marsh, swamp, and wetland habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Cylindropuntia californica var. californica Snake cholla	US: none CA: none CNPS: 1B.1	Apr-May (30- 150)	Occurs in chaparral and coastal scrub habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Deinandra paniculata Paniculate tarplant	US: none CA: none CNPS: 4.2	(Mar)-Apr-Nov(Dec) (25- 940)	Occurs in coastal scrub, grassland, and vernal pool habitat. Found in sandy soils.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Dodecahema leptoceras Slender-horned Spineflower	US: END CA: END CNPS: 1B.1 MSHCP Covered	April-June (200-760)	Occurs in chaparral, coastal scrub, and cismontane woodland habitats. Often found in sandy areas.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.

Scientific Name Common Name	Status	Bloom Period (Elevation [meters])	General Habitat Description	Potential to Occur
Eriastrum densifolium ssp. *sanctorum* Santa Ana River Woolly-star	US: END CA: END CNPS: 1B.1 MSHCP Covered	April-Sept (91-610)	Occurs in alluvial fan sage scrub and chaparral habitats, typically in sandy or gravelly substrates.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Gallium californicum ssp. primum Alvin meadow bedstraw	US: none CA: none CNPS: 1B.2 MSHCP Covered	May-Jul (1350- 1700)	Occurs in chaparral and montane coniferous forest habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Harpagonella palmeri Palmer's grapplinghook	US: none CA: none CNPS: 4.2 MSHCP Covered	Mar-May (20- 955)	Occurs in chaparral, coastal scrub, and grassland habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Helianthus nuttallii ssp. parishii Los Angeles sunflower	US: none CA: none CNPS: 1A	Aug-Oct (10- 1525)	Occurs in freshwater and saltwater marsh lands and wetlands.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Hordeum intercedens Vernal barley	US: none CA: none CNPS: 3.2 MSHCP Covered	Mar-Jun (5- 1000)	Occurs in coastal dune and scrub, grassland, and vernal pool habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Horkelia cuneata var. puberula Mesa horkelia	US: none CA: none CNPS: 1B.1	Feb-Jul(Sep) (70- 810)	Occurs in chaparral, cismontane woodland, and coastal scrub habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Imperata brevifolia California satintail	US: none CA: none CNPS: 2B.1	Sept-May (0-1215)	Occurs in chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps, and riparian scrub. Often found in alkali or mesic areas.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Juglans californica Southern California Black Walnut	US: none CA: none CNPS: 4.2 MSHCP Covered	March-Aug (50-900)	Occurs in alluvial soils in chaparral, cismontane woodland, coastal scrub, and riparian woodlands.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.

Scientific Name Common Name	Status	Bloom Period (Elevation [meters])	General Habitat Description	Potential to Occur
Lasthenia glabrata ssp. coulteri Coulter's goldfields	US: none CA: none CNPS: 1B.1 MSHCP Covered	Feb-Jun (1- 1220)	Occurs in alkali playa, salt marsh, swamp, vernal pool, and wetland habitats.	Presumed Absent. Historic documented observation in 2014 (OCC# 10) within 5 miles of the project site. OCC# 10 was observed N and W of Duck Ponds, near David Rd. Due to a lack of suitable habitat, this species is presumed absent.
Lepechinia cardiophylla Heart-leaved pitcher sage	US: none CA: none CNPS: 1B.2 MSHCP Covered	Apr-Jul (520- 1370)	Occurs in closed-cone coniferous forest, chaparral, and cismontane woodland habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Lilium humboldtii ssp. ocellatum Ocellated Humboldt lily	US: none CA: none CNPS: 4.2 MSHCP Covered	Mar-Jul(Aug) (30- 1800)	Occurs in chaparral, coastal scrub, montane woodland and coniferous forest, and riparian woodlands.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Malacothamnus parishii Parish's bush-mallow	US: none CA: none CNPS: 1A	Jun-Jul (305- 455)	Occurs in chaparral and coastal scrub habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Monardella macrantha ssp. *hallii* Hall's monardella	US: none CA: none CNPS: 1B.3 MSHCP Covered	June-Oct (730-2195)	Occurs in broad-leafed upland forests, chaparral, cismontane woodlands, lower montane coniferous forests, and valley and foothill grasslands.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Monardella pringlei Pringle's monardella	US: none CA: none CNPS: 1A	May-Jun (300- 400)	Occurs in coastal scrub habitat.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Muilla coronata Crowned muilla	US: none CA: none CNPS: 4.2	Mar-Apr(May) (670- 1960)	Occurs in chenopod scrub, Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Myosurus minimus ssp. apus Little mousetail	US: none CA: none CNPS: 3.1 MSHCP Covered	Mar-Jun (20- 640)	Occurs in valley and foothill grassland, vernal pool, and wetland habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.

Scientific Name Common Name	Status	Bloom Period (Elevation [meters])	General Habitat Description	Potential to Occur
Nama stenocarpa Mud nama	US: none CA: none CNPS: 2B.2 MSHCP Covered	Jan-Jul (5- 500)	Occurs in marsh, swamp, and wetland habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Nasturtium gambelii Gambel's water cress	US: END CA: THR CNPS: 1B.1	Apr-Oct (5- 330)	Occurs in brackish freshwater marsh, swamps, and wetland habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Navarretia fossalis Spreading navarretia	US: THR CA: none CNPS: 1B.1	Apr-Jun (30- 655)	Occurs in alkali playa, chenopod scrub, marsh, swamp, vernal pool, and wetland habitats.	Presumed Absent. Historic documented observation in 2014 (OCC# 33) within 5 miles of the project site. OCC# 33 observed E of Davis Rd near old San Jacinto River Channel. Due to a lack of suitable habitat, this species is presumed absent.
Ribes divaricatum var. parishii Parish's gooseberry	US: none CA: none CNPS: 1A	Feb-Apr (65- 300)	Occurs in riparian woodlands.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Romneya coulteri Coulter's matilija poppy	US: none CA: none CNPS: 4.2 MSHCP Covered	Mar-Jul(Aug) (20- 1200)	Occurs in chaparral and coastal scrub habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Senecio aphanactis Chaparral ragwort	US: none CA: none CNPS: 2B.2	Jan-Apr(May) (15- 800)	Occurs in chaparral, cismontane woodland, and coastal scrub habitats.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Sidalcea hickmanii ssp. *parishii* Parish's checkerbloom	US: none CA: CR CNPS: 1B.2	(May)-June-Aug (1000-2499)	Occurs in chaparral, cismontane woodlands, and lower montane coniferous forest.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.
Sidalcea neomexicana Salt Spring checkerbloom	US: none CA: none CNPS: 2B.2	March-June (15-1530)	Occurs in chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, and playas. Often found in alkaline and mesic soils.	Presumed Absent. No historic documented observations occur within 5 miles of the project site.

Scientific Name Common Name	Status	Bloom Period (Elevation [meters])	General Habitat Description	Potential to Occur
Sphenopholis obtusata Prairie Wedge Grass	US: none CA: none CNPS: 2B.2	April-July (300-2000)	Occurs in cismontane woodland and meadows and seeps. Often found in mesic soils.	**Presumed Absent.** No historic documented observations occur within 5 miles of the project site.
Symphyotrichum defoliatum San Bernardino Aster	US: none CA: none CNPS: 1B.2	July-Nov (Dec) (2-2040)	Occurs in cismontane woodlands, coastal scrub, lower montane coniferous forests, meadows and seeps, marshes and swamps, and valley and foothill grasslands (vernally mesic). Often found near ditches, streams, and/or springs.	**Presumed Absent.** Historic documented observation in 1951 (OCC# 24) observed within 5 miles of the project site. OCC# 24 observed near El Casco and San Timoteo Canyon. Due to a lack of suitable habitat, this species is presumed absent.
Texosporium sancti-jacobi Woven-spored lichen	US: none CA: none CNPS: 3	(60- 660)	Occurs in chaparral habitat.	**Presumed Absent.** No historic documented observations occur within 5 miles of the project site.
Tortula californica California screw-moss	US: none CA: none CNPS: 1B.2	(10- 1460)	Occurs in chenopod scrub and grassland habitats.	**Presumed Absent.** No historic documented observations occur within 5 miles of the project site.
Trichorcoronis wrightii var. wrightii Wright's trichocoronis	US: none CA: none CNPS: 2B.1 MSHCP Covered	May-Sep (5- 435)	Occurs in marsh, swamp, riparian forest, vernal pool, and wetland habitats.	**Presumed Absent.** Historic documented observation in 1937 (OCC# 4) within 5 miles of the project site. OCC# 4 observed near Mystic Lake. Due to a lack of suitable habitat, this species is presumed absent.

Federal Designations:
(Federal Endangered Species Act, USFWS)

END: federally listed, endangered
THR: federally listed, threatened
CAN: Candidate

State designations:
(California Endangered Species Act, CDFG)

END: state-listed, endangered
THR: state-listed, threatened
CAN: Candidate
CR: CDFW Rare

APPENDIX B

Sensitive Wildlife Species Potential for Occurrence

Scientific Name Common Name	Status	General Habitat Description	Potential to Occur
Insects			
Bombus crotchii Crotch bumblebee	US: none CA: CAN FS: none	Occurs in open grassland and scrub habitats.	Presumed Absent. Two observations were recorded in 2020 (OCC# 199 and 279) within 5 miles of the project site. OCC# 199 was located along McGehee drive, NE of Gilman Springs Rd. OCC# 279 was located SW of the intersection of Alessandro Blvd and Gilman Springs Rd. Due to a lack of suitable habitat, including regularly-disturbed soils, this species is presumed absent.
Euphydryas editha quino Quino checkerspot butterfly	US: END CA: none FS: none MSHCP Covered	Occurs in chaparral and coastal sage scrublands, containing the proper host plant and abundant nectaring resources	Presumed Absent. No historic documented occurrences within 5 miles of the project site. No suitable chaparral or coastal sage scrub habitat is present.
Rhaphiomidas terminates abdominalis Delhi Sands flower-loving fly	US: END CA: none FS: none MSHCP Covered	Occurs in interior dunes	Presumed Absent. No historic documented occurrences within 5 miles of the project site. No suitable sand dune habitat is present.
Crustaceans			
Streptocephalus woottoni Riverside fairy shrimp	US: END CA: none FS: none MSHCP Covered	Occurs in coastal scrub, valley and foothill grassland, and vernal pools and wetlands.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. No suitable vernal pool habitat is present.
Fish			
Catostomus santaanae Santa Ana sucker	US: THR CA: none FS: none MSHCP Covered	Occurs in pools and runs of creeks and small to medium rivers with cool, shallow, clear, and unpolluted water.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. No suitable aquatic habitat is present.

Scientific Name Common Name	Status	General Habitat Description	Potential to Occur
Gila orcutti Arroyo chub	US: none CA: SSC FS: S MSHCP Covered	Occurs in creeks, streams, and rivers with areas of slow-moving water with sand or mud bottoms. Ranges from San Diego to San Luis Obispo county.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. No suitable aquatic habitat is present.
Oncorhynchus mykiss irideus pop. 10 Steelhead - southern California DPS	US: END CA: none FS: none	Typically occurs in slow water steams or rives.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. No suitable aquatic habitat is present.
Rhinicthys osculus ssp. 3 Santa Ana speckled dace	US: none CA: SSC FS: S	This species requires permanent flowing streams including perennial stream areas within the Santa Ana Watershed, among riffles and in small pools. Usually inhabits shallow cobble and gravel riffles.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. No suitable aquatic habitat is present.
Amphibians			
Rana muscosa Southern mountain yellow-legged frog	US: END CA: END FS: S MSHCP Covered	This species requires a permanent water source including perennial creeks, ponds, streams, lakes, isolated pools, rocky streams within narrow canyons, and within the chaparral belt in Southern California mountains.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. No suitable aquatic habitat is present.
Spea hammondii Western spadefoot	US: none CA: SSC FS: none MSHCP Covered	Typically occurs in scrub, chaparral, vernal pools, and rivers with sandy banks, willows, cottonwoods, and sycamores with loose, gravelly areas of streams in drier parts of range.	Presumed Absent. The most recent occurrences were three documented in 2015 (OCC# 455, 456, 457) within 5 miles of the project site. OCC# 455 was located along Live Oak Canyon Rd, about 0.8 miles E of Canyon Oaks Drive Junction. OCC# 456 was located along Live Oak Canyon Rd, about 0.4 miles E of Canyon Oaks Drive Junction. OCC# 457 was along San Timoteo Canyon Rd near Viper Rd intersection. Due to a lack of suitable habitat, this species is presumed absent.
Reptiles			

Scientific Name Common Name	Status	General Habitat Description	Potential to Occur
Anniella stebbinsi Southern California legless lizard	US: none CA: SSC FS: S	Typically occurs in moist warm loose soil with plant cover in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks.	Presumed Absent. The most recent occurrence in 2016 (OCC# 385) within 5 miles of the project site. OCC# 385 was located along Live Oak Canyon, 0.1 miles S of Live Oak Canyon Rd and 1.6 miles SW of I-10. Due to a lack of suitable habitat, this species is presumed absent.
Arizona elegans occidentalis California glossy snake	US: none CA: SSC FS: none	Typically occurs in rocky washes, chaparral, scrub and grassland habitat, often with loose or sandy soils.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. Minimal habitat is within the Project site and what exists, is disturbed, the species is presumed absent.
Aspidoscelis hyperythra Orange-throated whiptail	US: none CA: WL FS: S MSHCP Covered	Occurs in semi-arid open areas with coarse soils including coastal sage scrub, chaparral, and dry riparian areas and washes.	Presumed Absent. The most recent occurrence documented in 2015 (OCC# 408) within 5 miles of the project site. OCC# 408 was located on the N side of San Timoteo Canyon, about 1 mile NW of El Casco and 1.2 miles SE of San Timoteo Canyon Rd. Due to a lack of suitable habitat, this species is presumed absent.
Aspidoscelis tigris stejnegeri Coastal whiptail	US: none CA: SSC FS: none MSHCP Covered	Typically occurs in chaparral, woodland, and riparian areas with sparse foliage.	Presumed Absent. The most recent occurrence documented in 2015 (OCC# 120) within 5 miles of the project site. OCC# 120 was located 1 mile NW of Alessandro Blvd JCT with Gilman Springs Rd. Due to a lack of suitable habitat, this species is presumed absent.
Coleonyx variegatus abbotti San Diego banded gecko	US: none CA: SSC FS: none MSHCP Covered	Occurs in chapparal and coastal scrub.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. Due to a lack of suitable habitat, this species is presumed absent.
Crotalus ruber Red-diamond rattlesnake	US: none CA: SSC FS: S MSHCP Covered	Occurs in chaparral, Mojavean desert scrub, Sonoran desert scrub habitats.	Presumed Absent. The most recent occurrence documented in 2016 (OCC# 177) within 5 miles of the project site. OCC# 177 was observed along Live Oak Canyon Rd, about 0.75 miles E of Canyon Oaks Drive Junction. Due to a lack of suitable habitat, this species is presumed absent.

Scientific Name Common Name	Status	General Habitat Description	Potential to Occur
Emys marmorata Western pond turtle	US: none CA: SSC FS: S	Occurs in aquatic habitats.	Presumed Absent. The most recent occurrence documented in 2016 (OCC# 1286) within 5 miles of the project site. OCC# 1286 was observed along San Timoteo Creek, about 1.2 miles SE of San Timoteo Canyon Rd and 1.6 miles NW of El Casco Lake. Due to a lack of suitable habitat, this species is presumed absent.
Phrynosoma blainvillii Coast horned lizard	US: none CA: SSC FS: none MSHCP Covered	Occurs in a variety of habitats, including scrubland, grassland and lowlands along sandy washes with scattered low bushes. Typically, it is found in areas with sandy soil, scattered shrubs, and ant colonies.	Presumed Absent. The most recent occurrence documented in 1967 (OCC# 216) within 5 miles of the project site. OCC# 216 observed at Reche Canyon, 7.5 miles S of Barton Rd. Due to a lack of suitable habitat, this species is presumed absent.
Salvadora hexalepis virgultea Coast patch-nosed snake	US: none CA: SSC FS: none	Inhabits semi-arid brushy areas and chaparral in canyons, rocky hillsides, and plains.	Presumed Absent. The most recent occurrence documented in 2016 (OCC# 23) within 5 miles of the project site. OCC# 23 observed along San Timoteo Canyon Rd., SE of Redlands Blvd. Due to a lack of suitable habitat, this species is presumed absent.
Thamnophis hammondi Two-striped garter snake	US: none CA: SSC FS: S	Typically occurs near permanent or semi-permanent water sources in a variety of habitats.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. Due to a lack of suitable habitat, this species is presumed absent.
Birds			
Accipiter cooperii Cooper's hawk	US: none CA: WL FS: none MSHCP Covered	Occurs in cismontane woodland and riparian forests and woodlands.	Presumed Absent. The most recent occurrence documented in 1999 (OCC# 91) within 5 miles of the project site. OCC# 91 observed 2 miles NW of Locust Ave. JCT with Hendrick Rd. Due to a lack of suitable habitat, this species is presumed absent.
Agelaius tricolor Tricolored blackbird	US: BCC CA: THR FS: none MSHCP Covered	Occurs in freshwater marsh, swamps, and wetlands.	Presumed Absent. The most recent occurrences documented were in 2013 (OCC# 363 and 767) within 5 miles of the project site. OCC# 363 observed about 0.6 miles E-SE of San Timoteo Cayon Rd and Lakeshore Dr. intersection. OCC# 767 was observed around 1.2 miles E of Davis Rd. and Perris Beach Dr. intersection. Due to a lack of suitable habitat, this species is presumed absent.

Scientific Name Common Name	Status	General Habitat Description	Potential to Occur
Aimophila ruficeps canescens Southern California rufous-crowned sparrow	US: none CA: WL FS: none MSHCP Covered	Occurs in chaparral and coastal scrubs.	Presumed Absent. The most recent occurrences documented were in 2016 (OCC# 201, 218, and 219) within 5 miles of the project site. OCC# 201 was observed about 0.5 miles S-SE of San Timoteo Cayyon Rd ant 1.6 miles N-NE of Moonlight Rim. OCC# 218 was observed 0.4 miles SW of Live Oak Canyon Rd and 1.0 miles SE of San Timoteo Canyon Rd. OCC# 219 was observed 0.6 miles S of San Timoteo Cayon Rd, S of San Timoteo Canyon, and 6.25 miles SE of Redlands. Due to a lack of suitable habitat, this species is presumed absent.
Aquila chrysaetos Golden eagle	US: BCC CA: FP/WL FS: none MSHCP Covered	Nests on rock ledges, cliffs, and sometimes in large trees.	Presumed Absent. The most recent occurrence documented was in 1980 (OCC# 302) within 5 miles of the project site. OCC# 302 was observed between El Casco and Hinda. Due to a lack of suitable habitat, this species is presumed absent.
Artemisiospiza belli belli Bell's sage sparrow	US: BCC CA: WL FS: none MSHCP Covered	Occurs in chaparral and coastal scrub habitats.	Presumed Absent. The most recent occurrence documented was in 2002 (OCC# 35) within 5 miles of the project site. OCC# 35 was observed up to 1 mile E of Indian Street and up to 2 miles N of Ironwood Ave. Due to a lack of suitable habitat, this species is presumed absent.
Asio otus Long-eared owl	US: none CA: SSC FS: none	Occurs in cismontane woodlands and riparian woodlands.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. Due to a lack of suitable habitat, this species is presumed absent.
Athene cunicularia Burrowing owl	US: BCC CA: SSC FS: none MSHCP Covered	Occurs in coastal prairie and scrub habitats. Found also in desert scrub and grasslands.	Low. The most recent occurrence documented was in 2006 (OCC# 1079) within 5 miles of the project site. The Project site did not possess many small mammal burrows however, due to the mobility of the species, it can move in to the Project site.
Butoo regalis Ferruginous hawk	US: BCC CA: WL FS: none MSHCP Covered	Found in Great Basin grasslands and scrub, and in pinyon and juniper woodlands.	Presumed Absent. The most recent occurrence documented was in 2005 (OCC# 11) within 5 miles of the project site. OCC# 11 was observed near Redlands Blvd, SE to Lambs Canyon Rd, and W of Beaumont. Due to a lack of suitable habitat, this species is presumed absent.

Scientific Name Common Name	Status	General Habitat Description	Potential to Occur
Buteo swainsoni Swainson's hawk	US: BCC CA: THR FS: none MSHCP Covered	Typically breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural lands with groves of trees.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. Due to a lack of suitable habitat, this species is presumed absent.
Campylorhynchus brunneicapillus sandiegensis Coastal cactus wren	US: BCC CA: SSC FS: S MSHCP Covered	Found in coastal scrub habitats.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. Due to a lack of suitable habitat, this species is presumed absent.
Coccyzus americanus occidentalis Western yellow-billed cuckoo	US: THR CA: END FS: S MSHCP Covered	Occurs within riparian forest habitats.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. Due to a lack of suitable habitat, this species is presumed absent.
Elanus leucurus White-tailed kite	US: none CA: FP FS: none MSHCP Covered	Nests in trees, often near a marsh, usually 6-15 meters above the ground in branches near the top of a tree.	Presumed Absent. The most recent occurrence documented was in 2016 (OCC# 167) within 5 miles of the project site. OCC#167 was observed near San Timoteo Rd, about 1 mile E-SE of the Entranz Rd intersection. Due to a lack of suitable habitat, this species is presumed absent.
Empidonax traillii extimus Southwestern willow flycatcher	US: END CA: END FS: none MSHCP Covered	Occurs in riparian woodlands in southern California. Breeds in riparian forests. Nests are often placed in dense vegetation along streams or rivers including willow.	Presumed Absent. The most recent occurrence documented was in 1999 (OCC# 29) within 5 miles of the project site. OCC #29 was observed near San Timoteo Canyon, about 1 mile N of San Bernardino/Riverside County line. Due to a lack of suitable habitat, this species is presumed absent.
Eremophila alpestris actia California horned lark	US: none CA: WL FS: none MSHCP Covered	Occurs in marine intertidal and splash zone communities and meadows and seeps.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. Due to a lack of suitable habitat, this species is presumed absent.

Scientific Name Common Name	Status	General Habitat Description	Potential to Occur
Falco columbarius Merlin	US: none CA: WL FS: none MSHCP Covered	Occurs in grasslands.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. Due to a lack of suitable habitat, this species is presumed absent.
Haliaeetus leucocephalus Bald eagle	US: DL/BCC CA: END/FP FS: S MSHCP Covered	Breeding habitat most commonly includes areas close to coastal areas, bays, rivers, lakes, reservoirs, or other bodies of water that reflect the general availability of primary food sources including fish, waterfowl, or seabirds.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. Due to a lack of suitable habitat, this species is presumed absent.
Icteria virens Yellow-breasted chat	US: none CA: SSC FS: none MSHCP Covered	Occurs in second growth, shrubby old pastures, thickets, bushy areas, scrub, woodland undergrowth, and fence rows, including low wet places near streams, pond edges, or swamps; thickets with few tall trees; early successional stages of forest regeneration; commonly in sites close to human habitation.	Presumed Absent. The most recent occurrence documented was in 2016 (OCC# 116) within 5 miles of the project site. OCC# 116 was observed 0.6 miles SE and 1 mile E-SE of San Timoteo Canyon Rd and Woodhouse Rd and 1 mile NW of Boros Blvd at Armour Ave. Due to a lack of suitable habitat, this species is presumed absent.
Lanius ludovicianus Loggerhead shrike	US: none CA: SSC FS: BCC MSHCP Covered	Occurs in desert wash and scrub and riparian woodlands.	Presumed Absent. The most recent occurrence documented was in 1999 (OCC# 5) within 5 miles of the project site. OCC# 5 was observed in San Timoteo Canyon, N of the San Bernardino/Riverside County line. Due to a lack of suitable habitat, this species is presumed absent.
Laterallus jamaicensis coturniculus California black rail	US: BCC CA: FP/ THR FS: none	Occurs in marsh, swamps, and wetlands.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. Due to a lack of suitable habitat, this species is presumed absent.
Plegadis chihi White-faced ibis	US: none CA: WL FS: none	Occurs in marsh, swamps, and wetlands.	Presumed Absent. The most recent occurrence documented was in 1993 (OCC# 16) within 5 miles of the project site. OCC# 16 was observed near Mystic Lake. Due to a lack of suitable habitat, this species is presumed absent.

Scientific Name Common Name	Status	General Habitat Description	Potential to Occur
Polioptila californica californica Coastal California gnatcatcher	US: THR CA: SSC FS: none	Occurs in coastal bluff scrub and coastal scrub.	Presumed Absent. The most recent occurrences documented were in 2002 (OCC# 800 and 801) within 5 miles of the project site. OCC# 800 was observed 1 mile E of Indian St/Manzanita Ave intersection. OCC# 801 was observed 1 mile NE of Manzanita Ave/Nectar Ave intersection. Due to a lack of suitable habitat, this species is presumed absent.
Setophaga petechia Yellow warbler	US: none CA: SSC FS: BCC	Occurs in riparian forests, scrub, and woodlands.	Presumed Absent. The most recent occurrence documented was in 2016 (OCC# 112) within 5 miles of the project site. OCC# 112 was observed in San Timoteo Canyon, 1 mile NW of San Timoteo Canyon Rd. Due to a lack of suitable habitat, this species is presumed absent.
Vireo bellii pusillus Least Bell's vireo	US: END CA: END FS: none	Summer resident of southern California in low riparian habitat in the vicinity of water with willows and mule fat and an herbaceous understory. Typically occurs below 2000 ft. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, mulefat, or mesquite	Presumed Absent. The most recent occurrence documented was in 2013 (OCC# 11) within 5 miles of the project site. OCC# 11 observed in San Timoteo Canyon, from Redlands Blvd SE to Lambs Canyon Rd. Due to a lack of suitable habitat, this species is presumed absent.
Xanthocephalus xanthocephalus Yellow-headed blackbird	US: none CA: SSC FS: none	Occurs in marsh, swamps, and wetlands	Presumed Absent. No historic documented occurrences within 5 miles of the project site. Due to a lack of suitable habitat, this species is presumed absent.
Mammals			
Antrozous pallidus Pallid bat	US: none CA: SSC FS: S	Occurs in chaparral, coastal scrub, grasslands, and forests.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. Due to a lack of suitable habitat, this species is presumed absent.
Chaetodipus fallax fallax Northwestern San Diego pocket mouse	US: none CA: SSC FS: none	Found in coastal scrub, chaparral, grasslands, and sagebrush communities in sandy, herbaceous areas. Usually occurs in association with rocks or coarse gravel.	Presumed Absent. The most recent occurrence documented was in 2017 (OCC# 26) within 5 miles of the project site. OCC# 26 was observed near Martin St from up to 0.5 miles SW of Davis Rd Junction. Due to a lack of suitable habitat, this species is presumed absent.
Chaetodipus fallax pallidus Pallid San Diego pocket mouse	US: none CA: SSC FS: none	Occurs in desert scrub and coastal sage scrub habitats.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. Due to a lack of suitable habitat, this species is presumed absent.

Scientific Name Common Name	Status	General Habitat Description	Potential to Occur
Dipodomys merriami parvus San Bernardino kangaroo rat	US: END CA: CAN FS: none	Occurs in alluvial scrub vegetation on sandy loam substrates characteristic of alluvial fans and flood plains.	Presumed Absent. The most recent occurrence documented was in 1957 (OCC# 82) within 5 miles of the project site. OCC# 82 observed within the San Jacinto Wildlife Area, approximately 2-4 miles N of Lakeview. Due to a lack of suitable habitat, this species is presumed absent.
Dipodomys stephensi Stephens' kangaroo rat	US: END CA: THR FS: none	Occurs in coastal scrub and valley and foothill grasslands.	Presumed Absent. The most recent occurrence documented was in 2000 (OCC# 3) within 5 miles of the project site. OCC# 3 was observed near Lake Perris. Due to a lack of suitable habitat, this species is presumed absent.
Eumops perotis californicus Western mastiff bat	US: none CA: SSC FS: none	Occurs in chaparral, woodlands, and grasslands.	Presumed Absent. The most recent occurrence documented was in 1990 (OCC# 80) within 5 miles of the project site. OCC# 80 did not have an exact location within Moreno Valley. Due to a lack of suitable habitat, this species is presumed absent.
Lasiurus xanthinus Western yellow bat	US: none CA: SSC FS: none	Found in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Roosts in trees, particularly palms. Forages over water and among trees.	Presumed Absent. The most recent occurrence documented was in 1992 (OCC# 53) within 5 miles of the project site. OCC# 53 did not have an exact location within Moreno Valley. Due to a lack of suitable habitat, this species is presumed absent.
Leptonycteris yerbabuenae Lesser long-nosed bat	US: DL CA: SSC FS: none	Roost in caves and old mines at the base of mountains adjacent to alluvial fans with yucca, agave, organ pipe cactus, and saguaro.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. Due to a lack of suitable habitat, this species is presumed absent.
Lepus californicus bennettii San Diego black-tailed jackrabbit	US: none CA: SSC FS: none	Occurs in coastal scrub.	Presumed Absent. The most recent occurrence documented was in 2015 (OCC# 101) within 5 miles of the project site. OCC# 101 was found along the east side of Mystic Lake, 50 yards W of Gilman Hot Springs Rd. Due to a lack of suitable habitat, this species is presumed absent.
Neotoma lepida intermedia San Diego desert woodrat	US: none CA: SSC FS: none	Found in coastal scrub and chaparral especially near rock outcrops.	Presumed Absent. No historic documented occurrences within 5 miles of the project site. Due to a lack of suitable habitat, this species is presumed absent.

Scientific Name Common Name	Status	General Habitat Description	Potential to Occur
Nyctinomops femirisaccus Pocketed free-tailed bat	US: none CA: SSC FS: none	Occurs in Joshua tree woodlands, pinyon and juniper woodlands, riparian scrub, and Sonoran desert scrub	Presumed Absent. No historic documented occurrences within 5 miles of the project site. Due to a lack of suitable habitat, this species is presumed absent.
Onychomys torridus ramona Southern grasshopper mouse	US: none CA: SSC FS: none	Occurs in chenopod scrub	Presumed Absent. The most recent occurrence documented was in 1938 (OCC# 29) within 5 miles of the project site. OCC# 29 observed NW of Perris reservoir in Moreno Valley. Due to a lack of suitable habitat, this species is presumed absent.
Perognathus longimembris brevinasus Los Angeles pocket mouse	US: none CA: SSC FS: none	Occurs in coastal scrub	Presumed Absent. The most recent occurrence documented was in 2016 (OCC# 30) within 5 miles of the project site. OCC# 30 observed near Martin St, from David Rd Junction to about 1 mile S-SW of Perris Reservoir. Due to a lack of suitable habitat, this species is presumed absent.
Taxidea taxus American badger	US: none CA: SSC FS: none	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	Presumed Absent. The most recent occurrence documented was in 1990 (OCC# 337) within 5 miles of the project site. OCC# 337 was observed about 2 miles N of Lakeview and San Jacinto Wildlife Area. Due to a lack of suitable habitat, this species is presumed absent.

Federal Designations (Federal Endangered Species Act, USFWS)
END: federally listed, endangered
THR: federally listed, threatened
DL: federally delisted
BCC: Birds of Conservation Concern

State designations: (California Endangered Species Act, CDFW)
END: state-listed, endangered
THR: state-listed, threatened
FP: Fully Protected species
SSC: California Species of Special Concern
CAN: Candidate for Listing (Endangered)

U.S. Forest Service designations: (FS)
S: U.S. Forest Service Sensitive Species

Source: California Natural Diversity Data Base (CNDDB) California Native Plant Society Electronic Inventory (CNPSEI). Butler Peak, Fawnskin, Big Bear City, Big Bear Lake, Keller Peak, Moonridge, Yucaipa, Forest Falls, and San Gorgonio Mtn.7.5-minute topographic quadrangles.

APPENDIX C

Representative Site Photographs

Photo 1: Project site facing east

Photo 2: Project site facing north

Photo 3: Project site facing south

Photo 4: Project site facing west

Photo 5: Evidence of discing within project site; non-native vegetation

Photo 6: Vehicle tracks in eastern portion of the project site

Photo 7: Edge of eastern 500-foot buffer, facing east; recent discing

Photo 8: Gopher holes within the project site

Photo 9: Thick vegetation in eastern buffer, facing east

Appendix E
Cultural Resource Survey

CULTURAL RESOURCES SURVEY
FOR THE
MORENO VALLEY PILOT TRAVEL CENTER PROJECT,
MORENO VALLEY, SAN BERNARDINO COUNTY, CALIFORNIA

Prepared for
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USGS Quadrangle
Sunnymead, California
Anza Project No. 21-0008

July 2021

EXECUTIVE SUMMARY

Anza Resource Consultants (Anza) was retained by De Novo Planning Group to provide cultural resources services for the Moreno Valley Pilot Travel Center Project (project), in the City of Moreno Valley, Riverside County, California. The project proposes the development of a travel center including fueling facilities, travel amenities, a drive-thru restaurant, and parking facilities for passing motorists and commercial truck operators on an approximately 17.28-acre vacant and undeveloped site at the northwest corner Redlands Boulevard and Eucalyptus Avenue, just south of State Route (SR) 60. The project site is designated Commercial by the City of Moreno Valley General Plan and is zoned CC (Community Commercial District). The proposed project is subject to the California Environmental Quality Act (CEQA) with City of Moreno Valley serving as lead agency.

This study includes a cultural resources records search, paleontological resources records search and literature review, Sacred Lands File search and Native American scoping, a pedestrian survey of the project site, and preparation of this technical report in compliance with the cultural resources requirements of CEQA.

The cultural resource records search, Native American scoping, and pedestrian survey identified no cultural resources within the project site. Based on these results, the archaeological sensitivity of the project site is considered low. Anza recommends a finding of ***no impacts to historical or archaeological resources*** under CEQA. No further cultural resources study is recommended; however, standard measures are recommended to avoid potential impacts from the unanticipated discovery of cultural resources during project related ground disturbing activities (see below).

The paleontological resources records search and literature review revealed that three fossil localities were identified during ground disturbing construction of the Aldi Distribution Center Project, adjacent to the west of the current project site. It further revealed that the project site is underlain by young alluvial fan deposits dating from the Late Pleistocene and the paleontological sensitivity of the project site is high. Implementation of a paleontological resources monitoring program is recommended to reduce ***impacts to paleontological resources to less than significant with mitigation***.

UNANTICIPATED DISCOVERY OF CULTURAL RESOURCES

If cultural resources are encountered during ground-disturbing activities, work in the immediate area must halt and an archaeologist meeting the Secretary of the Interior's Historic Preservation Professional Qualification Standards for archaeology (National Park Service 1997) must be contacted immediately to evaluate the find. If the discovery proves to be significant under CEQA, additional work such as data recovery excavation may be warranted.

UNANTICIPATED DISCOVERY OF HUMAN REMAINS

The discovery of human remains is always a possibility during ground disturbing activities. If human remains are found, the State of California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the county coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the county coroner must be notified immediately. If the human remains are determined to be prehistoric, the coroner will notify the Native American Heritage Commission, which will determine and notify a Most Likely Descendant. The Most Likely Descendant shall complete the

inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

PALEONTOLOGICAL RESOURCES MONITORING PROGRAM

Impacts to paleontological resources resulting from ground disturbing construction activity could include the destruction of fossils and would be considered a significant impact without mitigation. The following measures are recommended to reduce potential impacts to paleontological resources to less than significant:

Retain a Qualified Paleontologist. Prior to initial ground disturbance, the applicant shall retain a project paleontologist, defined as a paleontologist who meets the Society for Vertebrate Paleontology (SVP) standards for Qualified Professional Paleontologist, to direct all mitigation measures related to paleontological resources (SVP 2010). A qualified paleontologist (Principal Paleontologist) is defined by the SVP standards as an individual with an M.S. or Ph.D. in paleontology or geology who is experienced with paleontological procedures and techniques, who is knowledgeable in the geology of California, and who has worked as a paleontological mitigation project supervisor for a least one year.

Paleontological Mitigation and Monitoring Program. Prior to construction activity the Principal Paleontologist should prepare a Paleontological Mitigation and Monitoring Program to be implemented during ground disturbance activity for the proposed project. This program should outline paleontological monitoring extent and duration, salvage and preparation of fossils, the final mitigation and monitoring report, and paleontological staff qualifications.

Paleontological Monitoring. Ground disturbing construction activities (including grading, trenching, foundation work and other excavations) should be monitored on a full-time basis by a qualified paleontological monitor during initial ground disturbance. The Paleontological Mitigation and Monitoring Program shall be supervised by the Principal Paleontologist. Monitoring should be conducted by a qualified paleontological monitor, who is defined as an individual who has experience with collection and salvage of paleontological resources. The duration and timing of the monitoring will be determined by the Principal Paleontologist. If the Principal Paleontologist determines that full-time monitoring is no longer warranted, they may recommend that monitoring be reduced to periodic spot-checking or cease entirely. Monitoring would be reinstated if any new or unforeseen deeper ground disturbances are required, and reduction or suspension would need to be reconsidered by the Principal Paleontologist.

Salvage of Fossils. If fossils are discovered, the project paleontologist or paleontological monitor should recover them. Typically, fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases, larger fossils (such as complete skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In this case the paleontologist should have the authority to temporarily direct, divert or halt construction activity to ensure that the fossil(s) can be removed in a safe and timely manner.

Preparation and Curation of Recovered Fossils. Once salvaged, significant fossils should be identified to the lowest possible taxonomic level, prepared to a curation-ready condition, and curated in a scientific institution with a permanent paleontological collection (such as the Western Science Center or John D. Cooper Center), along with all pertinent field notes, photos, data, and maps. Fossils of undetermined significance at the time of collection may also warrant curation at the discretion of the Principal Paleontologist.

Final Paleontological Mitigation Report. Upon completion of ground disturbing activity (and curation of fossils if necessary) the Principal Paleontologist should prepare a final mitigation and monitoring report outlining the results of the mitigation and monitoring program. The report should include discussion of the location, duration and methods of the monitoring, stratigraphic sections, any recovered fossils, and the scientific significance of those fossils, and where fossils were curated.

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APPENDICES

1. INTRODUCTION

Anza Resources Consultants (Anza) was retained by De Novo Planning Group to provide cultural resources services for the Moreno Valley Pilot Travel Center Project (project), in the City of Moreno Valley, Riverside County, California (Figure 1).

This study has been prepared in accordance with the California Environmental Quality Act (CEQA) statutes and guidelines (Section 1.2). This study includes a cultural resources records search, paleontological resources records search and literature review, Sacred Lands File search and Native American scoping, pedestrian survey, and the preparation of this report following the *Archaeological Resources Management Report (ARMR): Recommended Content and Format* guidelines (California Office of Historic Preservation 1990).

1.1 PROJECT DESCRIPTION

The project proposes the development of a travel center including fueling facilities, travel amenities, a drive-thru restaurant, and parking facilities for passing motorists and commercial truck operators on an approximately 17.28-acre vacant and undeveloped site. The site is located at the northwest corner Redlands Boulevard and Eucalyptus Avenue, just south of State Route (SR) 60, in Moreno Valley, California. The project site comprises Assessor Parcel Numbers 488-330-035, -036, -037, and 038, and is designated Commercial by the City of Moreno Valley General Plan and zoned CC (Community Commercial District).

The project site is located within Section 2 of Township 3 South, Range 3 West, San Bernardino Base and Meridian. The project site is depicted on a portion of the United States Geological Survey (USGS) *Sunnymead, CA* 7.5-minute topographical map in Figure 1 and on a Google Satellite aerial background in Figure 2. The project site plan is depicted in Figure 3.

1.2 REGULATORY SETTING

1.2.1 State

CEQA requires a lead agency determine whether a project may have a significant effect on historical resources (Public Resources Code [PRC], Section 21084.1). A historical resource is a resource listed in, or determined to be eligible for listing, in the California Register of Historical Resources (CRHR), a resource included in a local register of historical resources or any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant (State CEQA Guidelines, Section 15064.5[a][1-3]).

A resource shall be considered historically significant if it meets any of the following criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

In addition, if it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that resources cannot be left undisturbed, mitigation measures are required (PRC, Section 21083.2[a], [b]. PRC, Section 21083.2(g) defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, the probability is high that it meets any of the following criteria:

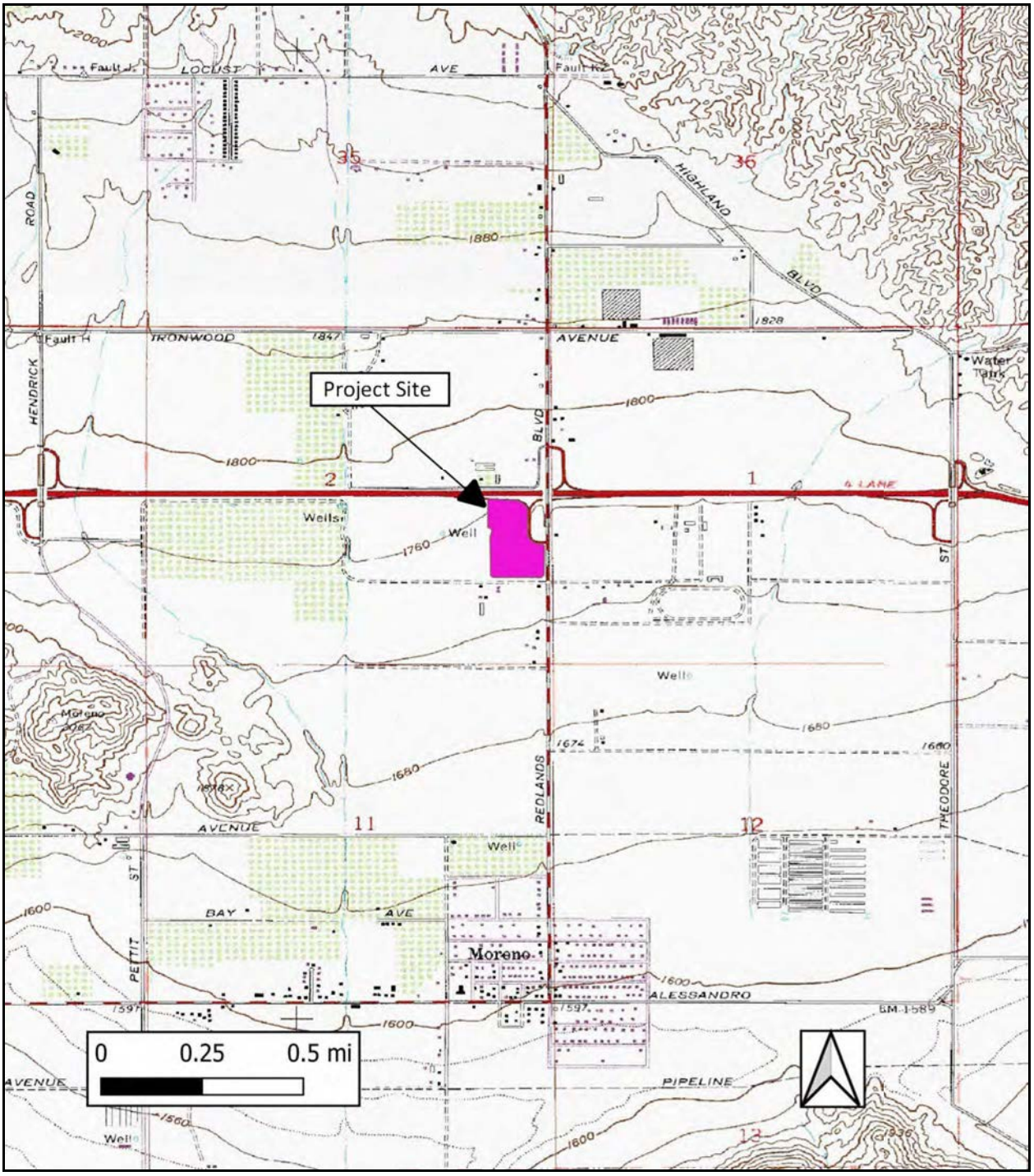
Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;

- Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

California Assembly Bill 52 of 2014 (AB 52) took effect July 1, 2015, and expanded CEQA by establishing a formal consultation process for California tribes within the CEQA process. The bill specifies that any project that may affect or cause a substantial adverse change in the significance of a tribal cultural resource would require a lead agency to "begin consultation with a California Native American tribe that is traditional and culturally affiliated with the geographic area of the proposed project." According to the legislative intent for AB 52, "tribes may have knowledge about land and cultural resources that should be included in the environmental analysis for projects that may have a significant impact on those resources." Section 21074 of AB 52 also defines a new category of resources under CEQA called "tribal cultural resources." Tribal cultural resources are defined as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe" and is either listed on, or eligible for, the California Register of Historical Resources or a local historic register, or if the lead agency chooses to treat the resource as a tribal cultural resource. See also PRC 21074 (a)(1)(A)-(B).

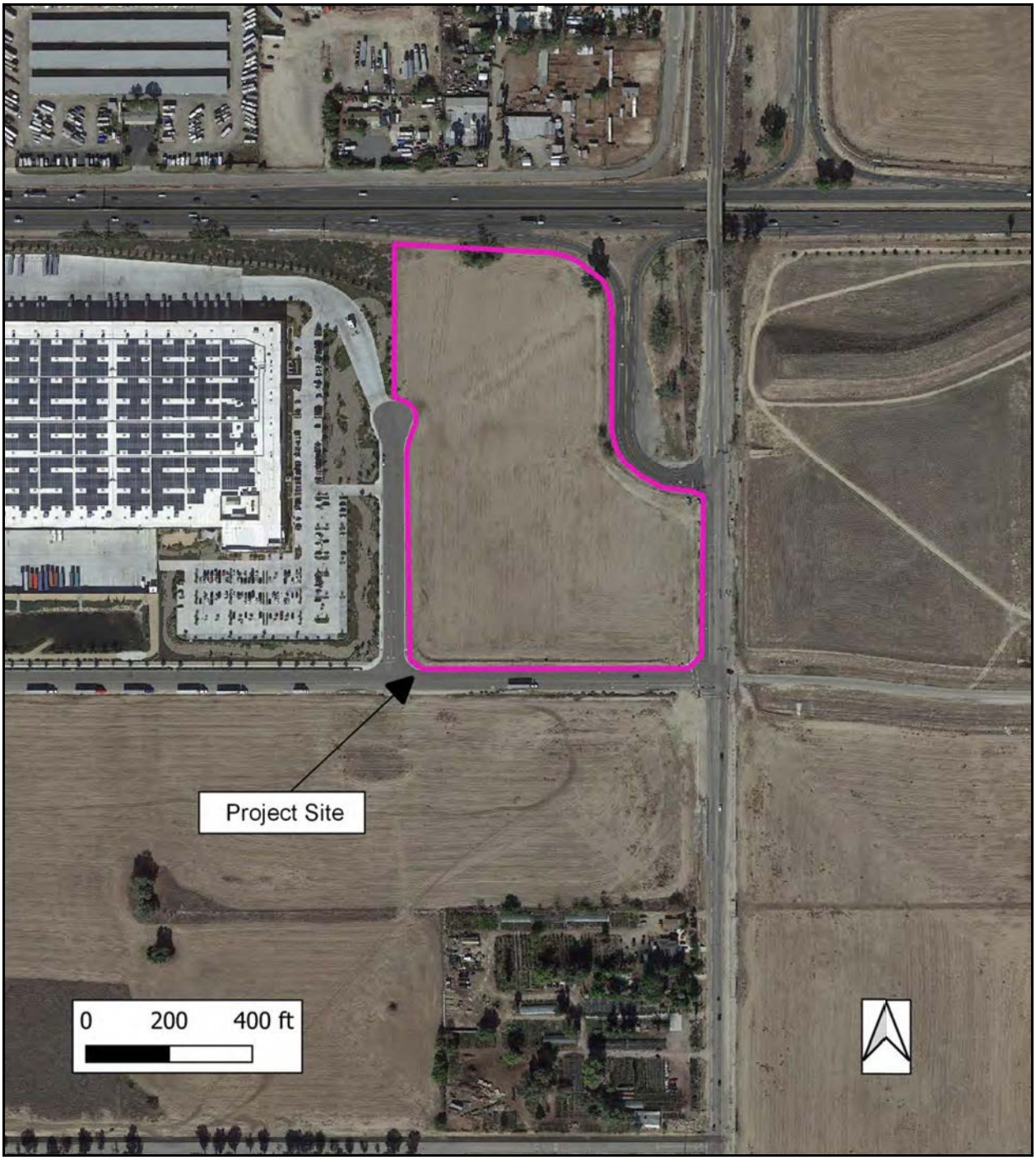
1.3 PERSONNEL

Anza Principal and Senior Cultural Resources Specialist Kevin Hunt requested the cultural and paleontological resources records searches, conducted the Native American scoping and pedestrian survey, prepared all GIS and figures, and was the primary author of this report. Principal Investigator Katherine Collins, M.A., Registered Professional Archaeologist (RPA), coauthored this report and served as principal investigator for the study. Ms. Collins meets the Secretary of the Interior's Historic Preservation Professional Qualification Standards for prehistoric and historic archaeology (National Park Service [NPS] 1997).



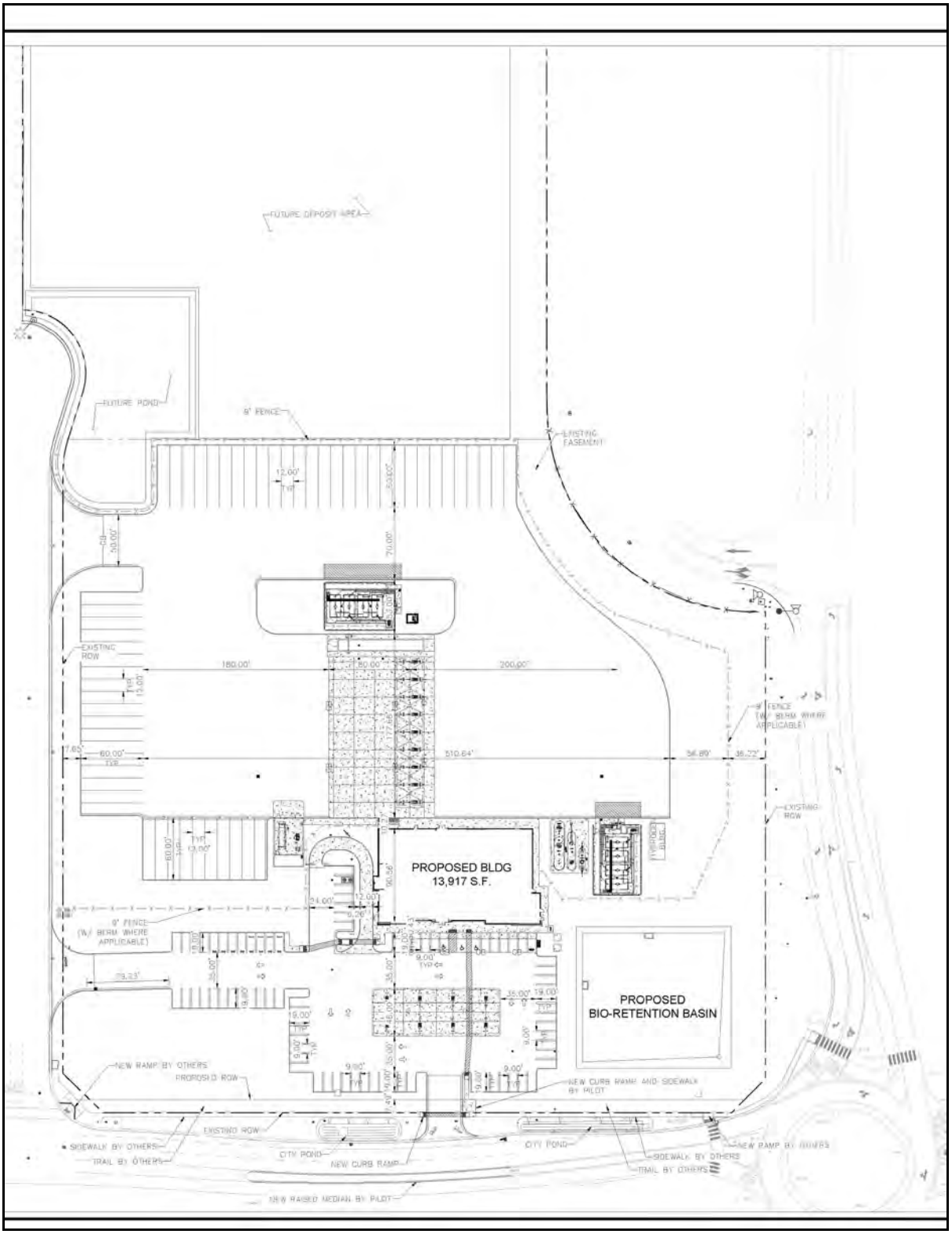
Sunnymead, CA U.S.G.S. quadrangle map

Figure 1. Project Location Map



Google Satellite Image

Figure 2. Aerial Image of Project Site



Source: Kimley-Horn and Associates

Figure 3. Site Plan

2. ENVIRONMENTAL SETTING

The Moreno Valley Pilot Travel Center Project is located in Moreno Valley, which is bounded by the Badlands and then San Bernardino Mountains to the north, and the Lakeview Mountains to the south. To the east is the San Jacinto Valley and to the west is the Perris Valley. The project site relatively flat with an elevation of approximately 1,750 feet (533 meters) above mean sea level. The project vicinity has historically been used for agriculture. Moreno Valley has a hot-summer Mediterranean climate and averages approximately 9.94 inches (252 millimeters) of rain annually. The seasonal Mystic Lake of the San Jacinto River watershed is the nearest major natural water source, approximately 5 miles (8 kilometers) southeast of the project site. Geologically, the project site is underlain by Quaternary alluvium. Further geologic description is provided in Section 4.3 (Paleontological Resources Records Search).

3. CULTURAL SETTING

3.1 PREHISTORIC SETTING

For nearly a century, archaeologists have developed chronological sequences to explain prehistoric cultural changes within all or portions of southern California (e.g., Jones and Klar 2007; Moratto 2004). Wallace (1955, 1978) devised a prehistoric chronology for the southern California coastal region based on early studies and focused on data synthesis that included four horizons: Early Man, Milling Stone, Intermediate, and Late Prehistoric. Though initially lacking the chronological precision of absolute dates (Moratto 2004:159), Wallace's (1955) synthesis has been modified and improved using thousands of radiocarbon dates obtained by southern California researchers over recent decades (Byrd and Raab 2007:217; Koerper and Drover 1983; Koerper et al. 2002; Mason and Peterson 1994). The prehistoric chronological sequence for southern California presented below is a composite based on Wallace (1955) and Warren (1968) as well as later studies, including Koerper and Drover (1983).

3.1.1 Early Man Horizon (CA. 10,000 – 6,000 B.C.)

Numerous pre-8000 B.C. sites have been identified along the mainland coast and Channel Islands of southern California (e.g., Erlandson 1991; Johnson et al. 2002; Jones and Klar 2007; Moratto 2004; Rick et al. 2001:609). The Arlington Springs site on Santa Rosa Island produced human femurs dated to approximately 13,000 years ago (Arnold et al. 2004; Johnson et al. 2002). On nearby San Miguel Island, human occupation at Daisy Cave (SMI-261) has been dated to nearly 13,000 years ago and included basketry greater than 12,000 years old, the earliest on the Pacific Coast (Arnold et al. 2004).

Although few Clovis or Folsom-style fluted points have been found in southern California (e.g., Dillon 2002; Erlandson et al. 1987), Early Man Horizon sites are generally associated with a greater emphasis on hunting than later horizons. Recent data indicate that the Early Man economy was a diverse mixture of hunting and gathering, including a significant focus on aquatic resources in coastal areas (e.g., Jones et al. 2002) and on inland Pleistocene lakeshores (Moratto 2004). A warm and dry 3,000-year period called the Altithermal began around 6000 B.C. The conditions of the Altithermal are likely responsible for the change in human subsistence patterns at this time, including a greater emphasis on plant foods and small game.

3.1.2 Milling Stone Horizon (6000–3000 B.C.)

Wallace (1955:219) defined the Milling Stone Horizon as "marked by extensive use of milling stones and mullers, a general lack of well-made projectile points, and burials with rock cairns." The dominance of such artifact types indicate a subsistence strategy oriented around collecting plant foods and small animals. A broad spectrum of food resources were consumed including small and large terrestrial mammals, sea mammals, birds, shellfish and other littoral and estuarine species, near-shore fishes, yucca, agave, and seeds and other plant products (Kowta 1969; Reinman 1964). Variability in artifact collections over time and from the coast to inland sites indicates that Milling Stone Horizon subsistence strategies adapted to environmental conditions (Byrd and Raab 2007:220). Lithic artifacts associated with Milling Stone Horizon sites are dominated by locally available tool stone. In addition, ground stone tools, such as manos and metates, chopping, scraping, and cutting tools, are very common. Kowta (1969) attributes the presence of numerous scraper-plane tools in Milling Stone Horizon collections to the processing of agave or yucca for food or fiber. The mortar and pestle, associated with acorns or

other foods processed through pounding, were first used during the Milling Stone Horizon and increased dramatically in later periods (Wallace 1955, 1978; Warren 1968).

Two types of artifacts that are considered diagnostic of the Milling Stone period are the cogged stone and discoidal, most of which have been found within sites dating between 4,000 and 1,000 B.C. (Moratto 2004:149), though possibly as far back as 5,500 B.C. (Couch et al. 2009). The cogged stone is a ground stone object that has gear-like teeth on the perimeter and is produced from a variety of materials. The function of cogged stones is unknown, but many scholars have postulated ritualistic or ceremonial uses (e.g., Dixon 1968:64-65; Eberhart 1961:367). Similar to cogged stones, discoidals are found in the archaeological record subsequent to the introduction of the cogged stone. Cogged stones and discoidals were often purposefully buried, or "cached." They are most common in sites along the coastal drainages from southern Ventura County southward and are particularly abundant at some Orange County sites, although a few specimens have been found inland at Cajon Pass (Dixon 1968:63; Moratto 2004:149). Discoidals and cogged stones have been found together at some Orange County sites, such as CA-ORA-83/86/144 (Van Bueren et al. 1989:772) and Los Cerritos Ranch (Dixon 1975).

3.1.3 Intermediate Horizon (3,000 B.C. – A.D. 500)

The Intermediate Horizon, as defined by Wallace, dates from approximately 3,000 B.C.-A.D. 500 and is characterized by a shift toward a hunting and maritime subsistence strategy, as well as greater use of plant foods. During the Intermediate Horizon, a noticeable trend occurred toward greater adaptation to local resources including a broad variety of fish, land mammal, and sea mammal remains along the coast. Tool kits for hunting, fishing, and processing food and materials reflect this increased diversity, with flake scrapers, drills, various projectile points, and shell fishhooks being manufactured.

Mortars and pestles became more common during this transitional period, gradually replacing manos and metates as the dominant milling equipment. Many archaeologists believe this change in milling stones signals a change from the processing and consuming of hard seed resources to the increasing reliance on acorn (e.g., Glassow et al. 1988; True 1993). Mortuary practices during the Intermediate typically included fully flexed burials oriented toward the north or west (Warren 1968:2-3).

3.1.4 Late Prehistoric Horizon (A.D. 500–Historic Contact)

During Wallace's (1955, 1978) Late Prehistoric Horizon the diversity of plant food resources and land and sea mammal hunting increased even further than during the Intermediate Horizon. More classes of artifacts were observed during this period and high quality exotic lithic materials were used for small finely worked projectile points associated with the bow and arrow. Steatite containers were made for cooking and storage and an increased use of asphalt for waterproofing is noted. The largest steatite quarry in California was located on Santa Catalina Island and it was traded throughout southern California (Chartkoff and Chartkoff 1984:135). More artistic artifacts were recovered from Late Prehistoric sites and cremation became a common mortuary custom. Larger, more permanent villages supported an increased population size and social structure (Wallace 1955:223).

Warren (1968) attributes this dramatic change in material culture, burial practices, and subsistence focus to the westward migration of desert people he called the Takic, or Numic, Tradition in Los Angeles, Orange, and western Riverside counties. This Takic Tradition was formerly referred to as the "Shoshonean wedge" (Warren 1968), but this nomenclature is no longer used to avoid confusion with ethnohistoric and modern Shoshonean groups (Heizer 1978:5; Shipley 1978:88, 90). Modern Cahuilla are generally considered by archaeologists to be descendants of these prehistoric Uto-Aztecan, Takic-

speaking populations that settled in the southern California mountains and desert during the Late Prehistoric Horizon.

3.2 ETHNOGRAPHIC OVERVIEW

The project site is situated within a region traditionally occupied by the Cahuilla, in the northwest portion of their traditional use area close to the boundary with the Luiseño and Gabrielino (Bean 1978). Other sources call the area Luiseño, and Plate 57 in Kroeber (1925) does not clearly show Moreno Valley within a specific group's territory. The Cahuilla, like their neighbors to west, the Gabrielino, Luiseño and Juaneño, and the Cupeño to the south, are speakers of a Cupan language. Cupan languages are part of the Takic linguistic subfamily of the Uto-Aztecan language family. It has been postulated that the Cahuilla migrated to southern California approximately 2,000 to 3,000 years ago, most likely from the southern Sierra Nevada mountain ranges of east-central California with other Takic speaking social groups (Moratto 2004:559).

Cahuilla social organization was hierarchical and contained three primary levels (Bean 1978:580). The highest level was the cultural nationality, encompassing everyone speaking a common language. The next level included the two patrimoieties of the Wildcats (*tuktum*) and the Coyotes (*'istam*). Every clan of the Cahuilla were in one of these moieties. The lowest level consisted of the numerous political-ritual-corporate units called sibs, or a patrilineal clan (Bean 1978:580).

Cahuilla villages were usually located in canyons or on alluvial fans near a source of accessible water. Each lineage group maintained their own houses (*kish*) and granaries, and constructed ramadas for work and cooking. Sweat houses and song houses (for non-religious music) were also often present. Each community also had a separate house for the lineage or clan leader (Bean 1978).

The Cahuilla hunted a variety of game, including mountain sheep, cottontail, jackrabbit, mice, and wood rats, as well as predators such as mountain lion, coyote, wolf, bobcat, and fox. Various birds were also consumed, including quail, duck, and dove, plus various types of reptiles, amphibians, and insects. A wide variety of tools and implements were employed by the Cahuilla to gather and collect food resources. For the hunt, these included the bow and arrow, traps, nets, slings and blinds for hunting land mammals and birds, and nets for fishing. Rabbits and hares were commonly brought down by the throwing stick; however, when communal hunts were organized for these animals, the Cahuilla often used clubs and large nets.

Foodstuffs were processed using a variety of tools, including portable stone mortars, bedrock mortars and pestles, basket hopper mortars, manos and metates, bedrock grinding slicks, hammerstones and anvils, and many others. Food was consumed from a number of woven and carved wood vessels and pottery vessels. The ground meal and unprocessed hard seeds were stored in large finely woven baskets, and the unprocessed mesquite beans were stored in large granaries woven of willow branches and raised off the ground on platforms to keep it from vermin. Pottery vessels were made by the Cahuilla, and also traded from the Yuman-speaking groups across the Colorado River and to the south.

The Cahuilla had adopted limited agricultural practices by the time Euro-Americans traveled into their territory. Bean (1978:578) has suggested that their "proto-agricultural techniques and a marginal agriculture" consisting of beans, squash and corn may have been adopted from the Colorado River groups to the east. Certainly, by the time of the first Romero Expedition in 1823-24, they were observed growing corn, pumpkins, and beans in small gardens localized around springs in the Thermal area of the Coachella Valley (Bean and Mason 1962:104). The introduction of European plants such as barley and other grain crops suggest an interaction with the missions or local Mexican rancheros. Despite the

increasing use and diversity of crops, no evidence indicates that this small-scale agriculture was anything more than a supplement to Cahuilla subsistence, and it apparently did not alter social organization.

By 1819, several Spanish mission outposts, known as *asistencias*, were established near Cahuilla territory at San Bernardino and San Jacinto. Cahuilla interaction with Europeans at this time was not as intense as it was for native groups living along the coast. This was likely due to the local topography and lack of water, which made the area less attractive to colonists. By the 1820s, however, European interaction increased as mission ranchos were established in the region and local Cahuilla were employed to work on them.

The continued influx of immigrants into the region introduced the Cahuilla to European diseases. The single worst recorded event was a smallpox epidemic in 1862-63. By 1891, only 1,160 Cahuilla remained within what was left of their territory, down from an aboriginal population of 6,000–10,000 (Bean 1978:583-584). By 1974, approximately 900 people claimed Cahuilla descent, most of who resided on reservations.

Between 1875 and 1891, the United States established ten reservations for the Cahuilla within their traditional territory. These reservations include Agua Caliente, Augustine, Cabazon, Cahuilla, Los Coyotes, Morongo, Ramona, Santa Rosa, Soboba, and Torres-Martinez (Bean 1978:585). Four of the reservations are shared with other groups, including the Chemehuevi, Cupeño, Luiseño, and Serrano. The Morongo Reservation, occupied by people of Cahuilla, Serrano, and Cupeño descent is the closest reservation, approximately 13 miles east of the project site.

3.3 HISTORIC OVERVIEW

The historic period for the state of California generally begins with the establishment of the first Spanish mission and presidio in San Diego in 1769. This marks the beginning of the Spanish period of California history, which lasted until 1822 when news of Mexico's independence from Spain in 1821 finally reached California. The Spanish period saw the establishment of a permanent European presence in California in the form of 21 missions located along the coast between San Diego and Sonoma, four military presidios located in San Diego, Monterey, San Francisco and Santa Barbara, and three pueblos (towns) that later became the cities of Los Angeles, San Jose and Santa Cruz (Robinson 1948).

The Mexican period of California history saw the seizure of lands once held by the missions through the Mexican Secularization Act of 1833 and the redistribution of those lands to individuals in the form of land grants known as "ranchos" (Robinson 1948). During this period the Mexican government in California issued about 700 land grants to Mexican citizens and foreign immigrants (Shumway 1988).

War between the United States and Mexico led to the signing of the Treaty of Guadalupe Hidalgo in 1848, which ended the Mexican period and signaled the beginning of the American period of California history. The early American period is marked by the discovery of gold at Sutter's Mill in 1848, resulting in a gold rush that saw a massive influx of settlers from other parts of the United States and around the world, greatly impacting California's native population. In 1869 the transcontinental railroad was completed linking California with the rest of the United States. The gold rush and the establishment of the railroad played major roles in the development of California into a national and worldwide leader in agricultural and industrial production. Today, California has the top gross domestic product of any state in the union, as well as a vibrant and diverse culture.

3.3.1 Riverside County

In 1772 Pedro Fages, Spanish Military Commander of California, led the first Europeans into the Riverside County region (Pourade 1971). Juan Bautista de Anza followed with settlers headed for the Presidio of San Francisco in 1774. During the Mexican period after the secularization of the missions, numerous ranchos were granted throughout California. The project site was not within a land grant; however, the Rancho San Jacinto Nuevo y Potrero (originally 7,628 acres) was approximately 1.6 miles (2.6 kilometers) south of the project site (Shumway 2007).

In the mid-1800s the Southern Emigrant Trail ran through western Riverside County in an alignment today's Interstate 15 generally follows. After the completion of the transcontinental railroad in 1869, thousands more settlers and immigrants began to migrate to southern California at the urgings of land speculators and developers. The City of Riverside was founded in 1870 and Riverside County was formed in 1893 from portions of San Bernardino and San Diego Counties (Lech 2004).

3.3.2 City of Moreno Valley

The Spanish expedition led by Juan Bautista de Anza passed through Moreno Valley on December 30, 1775 (Pourade 1971:170-172). Frank E. Brown established the Bear Valley Land and Water Company in 1883 to help establish a secure water supply for Redlands and other communities (Gonzales 2006). Brown completed construction of the Bear Valley Dam on the Bear Creek tributary to the Santa Ana River in 1884. In 1890 Brown purchased the 7,000-acre Alessandro Tract (now Moreno Valley), which had been plotted in 1887 but not developed because of water scarcity. Though some accounts state that the townsite of Moreno was a Hispanicized homage to its founder Frank E. Brown (Gudde 1924:224), both Alessandro and Moreno were named after characters in Helen Hunt Jackson's novel *Ramona*, which was hugely popular at the time (Gonzales 2006). Brown completed the Moreno Pipeline and Tunnel in 1891 but lower than projected rainfalls between 1891 and 1893 resulted in inadequate water for the Alessandro and Moreno and ultimately Brown's loss of his enterprise (Moreno Valley Historical Society 2021). This also led to the failure of many acres of land planted by the Alessandro Orange Grove and Fruit Company in 1891 and that company's property sold off at auction.

Citrus farming persisted in Moreno into the twentieth century, supplemented by dry farming of hay (Moreno Valley Historical Society 2021). In March of 1918, the Alessandro Flying Training Field became March Field, later becoming March Air Force Base and occupying more than 7,000 acres. The presence of this base encouraged the development and growth of the unincorporated communities of Edgemont, Moreno, and Sunnymead (Ghori 2014). The Riverside International Raceway opened in 1957 and hosted professional oval track car and motorcycle racing, as well as drag racing until its closure in 1989. Population growth in southern California led to increased residential and commercial development in the region. In 1984 Edgemont, Moreno, and Sunnymead incorporated together into the City of Moreno Valley (Ghori 2014). The transition of March Air Force Base to March Air Reserve Base in the 1990s coincided with an economic downturn that resulted in the loss of residents from Moreno Valley. The early twenty-first century has seen a reversal as industry returned to the region as well as considerable new residential development associated with the housing shortage and high housing prices in southern California.

4. BACKGROUND RESEARCH

4.1 CALIFORNIA HISTORICAL RESOURCE INFORMATION SYSTEM

Anza requested a records search of the California Historical Resources Information System (CHRIS) at the Eastern Information Center (EIC) located at University of California, Riverside. The search was requested to identify previous cultural resources studies and previously recorded cultural resources within a one-mile radius of the project site. The CHRIS search was conducted on April 30, 2021, and included a review of the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), the California Points of Historical Interest list, the California Historical Landmarks list, the Archaeological Determinations of Eligibility list, and the California State Historic Resources Inventory list. The records search also included a review of all available historic USGS 7.5-, 15-, and 30-minute quadrangle maps.

4.1.1 Previous Studies

The EIC records search identified 22 cultural resources studies that were conducted within a one-mile radius of the project site (Table 1). Four (4) of the 22 studies included portions of the project site and are discussed individually below.

Table 1. Previous Cultural Resource Studies within a One-Mile Radius of the Project Site

Report Number	Author	Year	Title	Proximity to Project Site
RI-00085	Hammond, Stephen	1973	The Crazy Horse Campground Development, Archaeological Impact Statement	Outside
RI-01822	Drover, Christopher E.	1984	EIR: An Archaeological Assessment of the Pettit Hill Specific Plan	Outside
RI-01851	Scientific Resource Surveys, Inc.	1984	Cultural Resource Survey Report for Tract 19861, near Moreno, Riverside County, California	Outside
RI-02172	Drover, Christopher E.	1990	Environmental Impact Evaluation: Highway 60 Corridor Study, Moreno Valley, Riverside County, California	**Within**
RI-04353	Duke, Curt	1999	Letter Report: Cultural Resource Assessment for the AT&T Wireless Services Facility Number C497.1, County of Riverside, California	Outside
RI-05299	McKenna et al.	2005	A Phase I Cultural Resources Survey of the Proposed Moreno Valley Unified School District High School #5, Located in the City of Moreno Valley, Riverside County, CA	Outside
RI-05473	Keller, Jean	2005	A Phase I Cultural Resources Assessment of APN 477-120-004, -005, +/- 31.0 Acres of Land in Moreno Valley, Riverside County, CA	**Within**
RI-05474	Keller, Jean	2005	A Phase I Cultural Resources Assessment of Tentative Tract Map 33901, +/-17.95 Acres of Land in Moreno Valley, Riverside County, CA	Outside

Report Number	Author	Year	Title	Proximity to Project Site
RI-06753	McKenna, Jeanette A.	2006	A Phase I Cultural Resources Survey of the Proposed Moreno Valley Unified School District High School #5, Located West of Redlands Blvd. in the City of Moreno Valley, Riverside County, California	Outside
RI-06950	Ahmet, Koral	2006	Cultural Resources Survey of a 9-Acre Area for a Proposed Traffic Signal at State Route 60 and Redlands Boulevard, Riverside County, California	**Within**
RI-07035	Keller, Jean A.	2005	A Phase II Historical Resources Investigation of Structures Located Within Tentative Tract Map 33901	Outside
RI-07644	Lange, Frederick W.	2007	Cultural Resources Assessment: Eucalyptus Industrial Park, City of Moreno Valley, Riverside County, California	Outside
RI-08153	Bonner, Wayne, and Marnie Aislin-Kay	2008	Letter Report: Cultural Resource Records Search and Site Visit Results for T-Mobile Candidate	Outside
RI-08241	McKenna, Jeanette A.	2008	A Phase I Cultural Resources Investigations of the Proposed Westridge Commerce Center at Redlands Blvd. and the Moreno Valley Freeway and in the City of Moreno Valley, Riverside County, California	**Within**
RI-08242	McKenna, Jeanette A.	2008	A Phase I Cultural Resources Survey of Two Alternative Moreno Valley Unified School District Sites, City of Moreno Valley, Riverside County, California	Outside
RI-08368	McKenna, Jeanette A.	2009	Addendum Study: A Phase I Cultural Resources Survey of Two Alternative Sewer Pipeline Alignments for the Moreno Valley Unified School District Sites, City of Moreno Valley, Riverside County, California.	Outside
RI-08624	Cotterman, Cary D., and Evelyn N. Chandler	2009	Cultural Resources Inventory of Eleven Proposed Pole Replacements in Western Riverside County, California (W.O. 6077-4800; AI 8-4877, 9-4851, 9-4858)	Outside
RI-08625	Hale, Sara K., and Evelyn N. Chandler	2009	Cultural Resources Inventory of Three Proposed Pole Replacements in Moreno Valley, Riverside County, California (W.O. 4950-0486)	Outside
RI-08689	Williams, Sarah A.	2010	Cultural Resources Records Search and Site Visit results for T-Mobile USA Candidate IE25690-C (Cottonwood Park), 28590 Cottonwood Avenue, Moreno Valley, Riverside County	Outside
RI-08802	Tang, Bai "Tom," Michael Hogan, Deirdre Encarnacion, and Daniel Ballester	2012	Phase I archaeological Assessment: Moreno Master Drainage Plan Revision	Outside

Report Number	Author	Year	Title	Proximity to Project Site
RI-09385	DeCarlo, Mathew M., and Diane L. Winslow	2015	Engineering Refinement Survey and Recommendation of Eligibility for Cultural Resources with Southern California Edison Company's West of Devers Upgrade Project, Riverside and San Bernardino Counties, California	Outside
RI-10257	Lange, Frederick W.	2011	Cultural Resources Assessment Eucalyptus Industrial Park City of Moreno Valley Riverside County, California	Outside

Source: EIC, April 2021

4.1.1.1 RI-02172

In 1990, Christopher E. Drover prepared the "Environmental Impact Evaluation: Highway 60 Corridor Study, Moreno Valley, Riverside County, California." This study included the entire project site but focused on historic, rather than Native American or prehistoric, resources. Drover notes that in 1987 the Archaeological Research Unit (ARU) of University of California, Riverside, conducted archaeological survey that included all of Drover's study area and was focused on prehistoric archaeological resources. The 1987 ARU study was not identified in the EIC records search. Neither the 1987 study nor this 1990 study identified cultural resources within the current project site.

4.1.1.2 RI-05473

In 2005, Jean Keller prepared "A Phase I Cultural Resources Assessment of APN 477-120-004, -005, +/- 31.0 Acres of Land in Moreno Valley, Riverside County, CA." This study included pedestrian survey of the entire project site to current professional standards. This study identified no cultural resources within the current project site.

4.1.1.3 RI-06950

In 2006, Koral Ahmet of ECORP Consulting, Inc., prepared the "Cultural Resources Survey of a 9-Acre Area for a Proposed Traffic Signal at State Route 60 and Redlands Boulevard, Riverside County, California. This study regarded the widening of offramp/onramps and the intersection adjacent to the east of the current project site. The study likely had some overlap but did not include survey of most of the current project site. This study identified no cultural resources within the current project site.

4.1.1.4 RI-08241

In 2008, Jeanette A. McKenna prepared "A Phase I Cultural Resources Investigations of the Proposed Westridge Commerce Center at Redlands Blvd. and the Moreno Valley Freeway and in the City of Moreno Valley, Riverside County, California." This study included intensive pedestrian survey to modern professional standards that covered the entirety of the current project area. This study identified no cultural resources within the current project site. The study assessed that the project site possessed a moderate paleontological sensitivity and recommended paleontological monitoring of ground disturbing construction activities.

4.1.2 Previously Recorded Resources

A total of 35 resources were identified within one mile of the project site (Table 2). None of these resources is within the project site; however, the historic period Kerr Ranch is across Redlands Boulevard to the east and a historic agricultural field is across Eucalyptus Avenue to the south. The Kerr and its components were found ineligible for NRHP, CRHR, or local register listing (Table 2). Of the 35 resources, 20 are historic, including 18 resources associated with the Kerr Ranch. Thirteen (13) resources are prehistoric or Native American, one is a multicomponent site with both a historic refuse scatter and an isolated prehistoric lithic artifact, and one is a natural rock shelter with no evidence of cultural affiliation.

Table 2. Previously Recorded Cultural Resources within One Mile of the Project Site

Primary Number	Trinomial	Description	NRHP/CRHR Eligibility Status	Recorded Year (By Whom)	Proximity to Project Site
P-33-002863	CA-RIV-002863	Prehistoric bedrock milling feature	Insufficient information	1984 (C.E. Drover, UCR ARU); 2017 (H. Murphy, K. Stankowski, R. Bolger, M. Jorgensen, D. Faith, Tierra Environmental Services, Inc.)	Approximately 0.75-mile southwest
P-33-002864	CA-RIV-002864	Prehistoric bedrock milling feature. Not relocated in 2017	Insufficient information	1984 (C.E. Drover, UCR); 2017 (H. Murphy, K. Stankowski, B. Bolger M. Jorgensen, D. Faith, Tierra Environmental Services)	Approximately 0.7-mile southwest
P-33-002865	CA-RIV-002865	Prehistoric bedrock milling feature	Insufficient information	1984 (C.E. Drover, n/a); 2017 (H. Murphy, K. Stankowski, M. Jorgensen, D. Faith, Tierra Environmental Services, Inc.)	Approximately 0.85-mile southwest
P-33-014952	CA-RIV-007951	Historic period irrigation remnants	Recommended not eligible for CRH or NRHP	2006 (Cary D. Cotterman, ECORP Consulting, Inc.)	Approximately 1-mile northwest
P-33-015147	CA-RIV-008056	Prehistoric bedrock milling site	Insufficient information	2006 (Moslak, Ken, ASM Affiliates, Inc.); 2017 (H. Murphy, K. Stankowski, M. Jorgensen, D. Faith, Tierra Environmental Services)	Approximately 0.8-mile southwest
P-33-015148		Prehistoric bedrock milling site	Insufficient information	2006 (Moslak, Ken, ASM Affiliates, Inc.); 2017 (H. Murphy, K. Stankowski, B. Bolger, M. Jorgensen and D. Faith, Tierra Environmental Services)	Approximately 0.85-mile southwest

Primary Number	Trinomial	Description	NRHP/CRHR Eligibility Status	Recorded Year (By Whom)	Proximity to Project Site
P-33-015149		Prehistoric bedrock milling feature	Insufficient information	2006 (Moslak, Ken, ASM Affiliates, Inc.); 2017 (H. Murphy, K. Stankowski, B. Bolger, Jm. Jorgensen and D. Faith, Tierra Environmental Services)	Approximately 0.75-mile southwest
P-33-015150		Prehistoric bedrock milling feature	Insufficient information	2006 (Moslak, Ken, ASM Affiliates, Inc.); 2017 (H. Murphy, K. Stankowski, B. Bolger, M. Jorgensen and D. Faith, Tierra Environmental Services)	Approximately 0.7-mile southwest
P-33-015436		Kerr Ranch District, includes 1948 house, since demolished (see also P-016655)	6Z: Found ineligible for NR, CR or local designation through survey evaluation	2005 (Ahmet, Koral, ECORP Consulting, Inc.); 2006 (Ahmet, Koral, ECORP Consulting, Inc.)	Approximately 0.05-mile east
P-33-015796		Pre-1929 agricultural field including since demolished former residence location	Insufficient information	2006 (Jeanette A. McKenna, McKenna et al.)	Adjacent to south
P-33-016655		Kerr Ranch District	6Z: Found ineligible for NR, CR or local designation through survey evaluation	2005 (Wills, C. and S. Williams, Michael Brandman Associates)	Approximately 0.05-mile east
P-33-016656		Component of Kerr Ranch District	6Z: Found ineligible for NR, CR or local designation through survey evaluation	2005 (Wills, C. and S. Williams, Michael Brandman Associates)	Approximately 0.05-mile east
P-33-016657		Component of Kerr Ranch District	6Z: Found ineligible for NR, CR or local designation through survey evaluation	2005 (Wills, C. and S. Williams, Michael Brandman Associates)	Approximately 0.05-mile east
P-33-016658		Component of Kerr Ranch District	6Z: Found ineligible for NR, CR or local designation through survey evaluation	2005 (Wills, C. and S. Williams, Michael Brandman Associates)	Approximately 0.05-mile east

Primary Number	Trinomial	Description	NRHP/CRHR Eligibility Status	Recorded Year (By Whom)	Proximity to Project Site
P-33-016659		Component of Kerr Ranch District	6Z: Found ineligible for NR, CR or local designation through survey evaluation	2005 (Wills, C. and S. Williams, Michael Brandman Associates)	Approximately 0.05-mile east
P-33-016660		Component of Kerr Ranch District	6Z: Found ineligible for NR, CR or local designation through survey evaluation	2005 (Wills, C. and S. Williams, Michael Brandman Associates)	Approximately 0.05-mile east
P-33-016661		Component of Kerr Ranch District	6Z: Found ineligible for NR, CR or local designation through survey evaluation	2005 (Wills, C. and S. Williams, Michael Brandman Associates)	Approximately 0.05-mile east
P-33-016662		Component of Kerr Ranch District	6Z: Found ineligible for NR, CR or local designation through survey evaluation	2005 (Wills, C. and S. Williams, Michael Brandman Associates)	Approximately 0.05-mile east
P-33-016663		Component of Kerr Ranch District	6Z: Found ineligible for NR, CR or local designation through survey evaluation	2005 (C. Wills and S. Williams, Michael Brandman Associates)	Approximately 0.05-mile east
P-33-016664		Component of Kerr Ranch District	6Z: Found ineligible for NR, CR or local designation through survey evaluation	2005 (Wills, C. and S. Williams, Michael Brandman Associates)	Approximately 0.05-mile east
P-33-016665		Component of Kerr Ranch District	6Z: Found ineligible for NR, CR or local designation through survey evaluation	2005 (Wills, C. and S. Williams, Michael Brandman Associates)	Approximately 0.05-mile east
P-33-016666		Component of Kerr Ranch District	6Z: Found ineligible for NR, CR or local designation through survey evaluation	2005 (C. Wills and S. Williams, Michael Brandman Associates)	Approximately 0.05-mile east

Primary Number	Trinomial	Description	NRHP/CRHR Eligibility Status	Recorded Year (By Whom)	Proximity to Project Site
P-33-016667		Component of Kerr Ranch District	6Z: Found ineligible for NR, CR or local designation through survey evaluation	2005 (C. Wills and S. Williams, Michael Brandman Associates)	Approximately 0.05-mile east
P-33-016668		Component of Kerr Ranch District	6Z: Found ineligible for NR, CR or local designation through survey evaluation	2005 (C. Wills and S. Williams, Michael Brandman Associates)	Approximately 0.05-mile east
P-33-016670		Component of Kerr Ranch District	6Z: Found ineligible for NR, CR or local designation through survey evaluation	2005 (C. Wills and S. Williams, Michael Brandman Associates)	Approximately 0.05-mile east
P-33-016671		Component of Kerr Ranch District	6Z: Found ineligible for NR, CR or local designation through survey evaluation	2005 (C. Wills and S. Williams, Michael Brandman Associates)	Approximately 0.05-mile east
P-33-019873		Prehistoric isolated slab metate. Now reburied	Presumed ineligible	2010 (M. Dice, Michael Brandman Associates)	Approximately 0.8-mile northeast
P-33-019874		Prehistoric isolated flake	Presumed ineligible	2010 (M. Dice, Michael Brandman Associates)	Approximately 0.3-mile northeast
P-33-028080	CA-RIV-012677	Prehistoric bedrock milling slick	Insufficient information	2017 (H. Murphy, K. Stankowski, M. Jorgensen & D. Faith, Tierra Environmental Services, Inc.)	Approximately 0.7-mile southwest
P-33-028081	CA-RIV-012678	Historic fence line	Insufficient information	2017 (H. Murphy, K. Stankowski, R. Bolger, M. Jorgensen & D. Faith, Tierra Environmental Services, Inc.)	Approximately 0.85-mile southwest
P-33-028082	CA-RIV-012679	Natural rock formation with shelter potential, with no cultural evidence	Presumed not eligible	2017 (H. Murphy, Tierra Environmental Services, Inc.)	Approximately 0.9-mile southwest
P-33-028083	CA-RIV-012680	Prehistoric bedrock milling slick	Insufficient information	2017 (H. Murphy, K. Stankowski, R. Bolger, M. Jorgensen & D. Faith, Environmental Services, Inc.)	Approximately 0.75-mile southwest

Primary Number	Trinomial	Description	NRHP/CRHR Eligibility Status	Recorded Year (By Whom)	Proximity to Project Site
P-33-028084	CA-RIV-012681	Possible prehistoric bedrock milling slick	Insufficient information	2017 (H. Murphy, K. Stankowski, M. Jorgensen & D. Faith, Tierra Environmental Services, Inc.)	Approximately 0.8-mile southwest
P-33-028085	CA-RIV-012682	Prehistoric bedrock milling slick	Insufficient information	2017 (H. Murphy, K. Stankowski, M. Jorgensen, and D. Faith, Tierra Environmental Services, Inc.)	Approximately 0.7-mile southwest
P-33-028163	CA-RIV-012706	Multicomponent site: historic refuse scatter and prehistoric isolated lithic artifact	Insufficient information	2018 (P. de Barros, H. Murphy of Tierra Environmental)	Approximately 0.7-mile southwest

Source: SCCIC, April 2021

4.2 Native American Scoping

Anza requested a review of the Sacred Lands File (SLF) by the Native American Heritage Commission (NAHC) on April 6, 2021. The NAHC sent a response on May 20, 2021, stating that a search of the SLF was completed with negative results (i.e., no sacred lands or resources important to Native Americans are recorded within the vicinity of the project site; Appendix B). The NAHC provided a list of Native American contacts that may have knowledge regarding Native American cultural resources within or near the project site.

Anza mailed letters on May 20, 2021, to 24 Native American contacts describing the project and asking if they had knowledge regarding cultural resources of Native American origin within or near the project sites (Appendix B).

The Quechan Indian Tribe responded via email on April 27, 2021, stating they have no comments regarding the proposed project and defer to local tribes.

The Rincon Band of Luiseño Indians responded in a letter delivered via email on May 11, 2021, stating that the project site is within the traditional Luiseño use area and of interest to the Rincon Band, but they have no knowledge of resources in the project vicinity. The Rincon Band asked that an archaeological records search be conducted, and a copy of the report provided to the Rincon Band.

The Agua Caliente Band of Cahuilla Indians (ACBCI) responded in a letter attached to an email on May 20, 2021, stating that the proposed project is within the tribe's traditional use area and requesting that a cultural resources study be conducted by a qualified archaeologist, that copies of the records search results and any reports produced be provided to ACBCI.

No additional responses have been received as of July 27, 2021. All Native American correspondence is presented in Appendix B.

4.3 Paleontological Resources Records Search

Darla Radford, Collections Manager for the Western Science Center, conducted a paleontological resources records search for the project site on April 16, 2021 (Appendix C). Ms. Radford stated that the geologic units underlying the project area are mapped entirely as young alluvial fan deposits dating from the Late Pleistocene to Holocene. Pleistocene alluvial units are considered to be of high paleontological

sensitivity. The Western Science Center does not have localities recorded within the project site; however, three fossil localities are recorded within a third of a mile associated with the Aldi Distribution Center Project adjacent to the west. The Aldi Distribution Center Project produced three specimens from three localities that were identified as a *Megalonyx jeffersonii* phalanges, a *Hemiauchenia* right astragalus, and a *Equus* axis. The Aldi Distribution Center Project is mapped in the same geologic units as the Moreno Valley Pilot Travel Center Project and the presence of Pleistocene megafauna indicates the area dates to the earlier estimated dates for the deposition. The project site is considered sensitive for buried paleontological resources and the Western Science Center recommends a paleontological resource mitigation plan be implemented to monitor, salvage, and curate any fossils that could be exposed by project excavation (Appendix C). Additional paleontological resource background research is provided below.

The Western Science Center's recommendations are consistent with those of McKenna's (2008) "A Phase I Cultural Resources Investigations of the Proposed Westridge Commerce Center at Redlands Blvd. and the Moreno Valley Freeway and in the City of Moreno Valley, Riverside County, California (see Section 4.1.1.4). McKenna's study included a paleontological resources locality search at the Natural History Museum of Los Angeles County and recommended paleontological monitoring because of moderate paleontological sensitivity.

Sarah Rieboldt, Ph.D., of LSA Associates, Inc. prepared the "Paleontological Mitigation Monitoring Report for the Aldi Distribution Center Project, City of Moreno Valley, Riverside County, California" in July 2014. The findings of this study are detailed above in the results of the Western Science Center's records search results. LSA assessed that based on the fossils recovered from the Aldi Distribution Center Project, the subsurface deposits are Rancholabrean in age (11,000–240,000 years old). Elevation data indicates that at least one of the fossil localities was identified at or near the original ground surface.

In 2020, the City of Moreno Valley released the Revised Final Environmental Impact Report (EIR) for the World Logistics Center Project, located adjacent to the southeast of the Moreno Valley Pilot Travel Center Project across the intersection of Redlands Boulevard and Eucalyptus Avenue (City of Moreno Valley 2020). This EIR recognizes the paleontological sensitivity of the project vicinity and includes recommendations for paleontological monitoring of ground disturbing construction activities.

5. FIELDWORK

5.1.1 Survey Methods

On April 28, 2021, Anza Principal and Senior Cultural Resources Specialist Kevin Hunt conducted a pedestrian survey of the approximately 10-acre southern portion of the project site. On July 22, 2021, Mr. Hunt returned to survey the remaining approximately 7.28-acre northern portion of the project site. The pedestrian survey consisted of walking north-south trending transects spaced no more than 10 meters apart.

Mr. Hunt examined all areas of exposed ground surface for prehistoric artifacts (e.g., chipped stone tools and production debris, stone milling tools, ceramics), historic debris (e.g., metal, glass, ceramics), or soil discoloration that might indicate the presence of a cultural midden. Mr. Hunt recorded the characteristics of the project site and survey conditions using a notepad and digital camera. Copies of the field notes and digital photographs are maintained by Anza in cloud storage online.

5.1.2 Results

Ground visibility during the survey was fair (approximately 50 to 60 percent) because the project site is a plowed field primarily covered by dry grass and weeds (Photographs 1-4). The project site is level and there is also disturbed imported gravel and sand present in the southeast corner, likely from adjacent road improvement work (Photograph 1). The survey was negative; no archaeological, historic built environment, paleontological, or tribal cultural resources were observed within or adjacent to the project site.

To the west of the project site is a new Aldi Distribution Center (commercial/warehouse) and parking across a newly paved Aldi access road. To the north is State Route 60. To the east is Redlands Boulevard, recently reconfigured with a roundabout adjacent to the project site and vacant land and commercial or warehouse buildings east of that. To the south is Eucalyptus Avenue and vacant or agricultural land. No historic period buildings or structures were observed in the vicinity of the project site.

Photograph 1. View of southern portion of project site, facing west.

Photograph 2. View of project site from southwest corner, facing east.

Photograph 3. View of project site, facing southwest.

Photograph 4. View of project site from west edge, facing east.

Photograph 5. View of northwest portion project site from west edge, facing north.

Photograph 6. View of project site from north edge, facing south.

6. MANAGEMENT RECOMMENDATIONS

The cultural resource records search, Native American scoping, and pedestrian survey identified no cultural resources within the project site. Based on these results, the archaeological sensitivity of the project site is considered low. Anza recommends a finding of ***no impacts to historical or archaeological resources*** under CEQA. No further cultural resources study is recommended; however, standard measures are recommended to avoid potential impacts from the unanticipated discovery of cultural resources during project related ground disturbing activities (Sections 6.1 and 6.2).

The paleontological resources records search and literature review revealed that three fossil localities were identified during ground disturbing construction of the Aldi Distribution Center Project, adjacent to the west of the current project site. It further revealed that the project site is underlain by young alluvial fan deposits dating from the Late Pleistocene and the paleontological sensitivity of the project site is high. Implementation of a paleontological resources monitoring program is recommended to reduce ***impacts to paleontological resources to less than significant with mitigation*** (Section 6.3).

6.1 UNANTICIPATED DISCOVERY OF CULTURAL RESOURCES

If cultural resources are encountered during ground-disturbing activities, work in the immediate area must halt and an archaeologist meeting the Secretary of the Interior's Historic Preservation Professional Qualification Standards for archaeology (National Park Service 1997) must be contacted immediately to evaluate the find. If the discovery proves to be significant under CEQA, additional work such as data recovery excavation may be warranted.

6.2 UNANTICIPATED DISCOVERY OF HUMAN REMAINS

The discovery of human remains is always a possibility during ground disturbing activities. If human remains are found, the State of California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the county coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the county coroner must be notified immediately. If the human remains are determined to be prehistoric, the coroner will notify the Native American Heritage Commission, which will determine and notify a Most Likely Descendant. The Most Likely Descendant shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

6.3 PALEONTOLOGICAL RESOURCES MONITORING PROGRAM

Impacts to paleontological resources resulting from ground disturbing construction activity could include the destruction of fossils and would be considered a significant impact without mitigation. The following measures are recommended to reduce potential impacts to paleontological resources to less than significant:

Retain a Qualified Paleontologist. Prior to initial ground disturbance, the applicant shall retain a project paleontologist, defined as a paleontologist who meets the Society for Vertebrate Paleontology (SVP) standards for Qualified Professional Paleontologist, to direct all mitigation measures related to paleontological resources (SVP 2010). A qualified paleontologist (Principal Paleontologist) is defined by the SVP standards as an individual with an M.S. or Ph.D. in paleontology or geology who is experienced

with paleontological procedures and techniques, who is knowledgeable in the geology of California, and who has worked as a paleontological mitigation project supervisor for a least one year.

Paleontological Mitigation and Monitoring Program. Prior to construction activity the Principal Paleontologist should prepare a Paleontological Mitigation and Monitoring Program to be implemented during ground disturbance activity for the proposed project. This program should outline paleontological monitoring extent and duration, salvage and preparation of fossils, the final mitigation and monitoring report, and paleontological staff qualifications.

Paleontological Monitoring. Ground disturbing construction activities (including grading, trenching, foundation work and other excavations) should be monitored on a full-time basis by a qualified paleontological monitor during initial ground disturbance. The Paleontological Mitigation and Monitoring Program shall be supervised by the Principal Paleontologist. Monitoring should be conducted by a qualified paleontological monitor, who is defined as an individual who has experience with collection and salvage of paleontological resources. The duration and timing of the monitoring will be determined by the Principal Paleontologist. If the Principal Paleontologist determines that full-time monitoring is no longer warranted, they may recommend that monitoring be reduced to periodic spot-checking or cease entirely. Monitoring would be reinstated if any new or unforeseen deeper ground disturbances are required, and reduction or suspension would need to be reconsidered by the Principal Paleontologist.

Salvage of Fossils. If fossils are discovered, the project paleontologist or paleontological monitor should recover them. Typically, fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases, larger fossils (such as complete skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In this case the paleontologist should have the authority to temporarily direct, divert or halt construction activity to ensure that the fossil(s) can be removed in a safe and timely manner.

Preparation and Curation of Recovered Fossils. Once salvaged, significant fossils should be identified to the lowest possible taxonomic level, prepared to a curation-ready condition, and curated in a scientific institution with a permanent paleontological collection (such as the Western Science Center or John D. Cooper Center), along with all pertinent field notes, photos, data, and maps. Fossils of undetermined significance at the time of collection may also warrant curation at the discretion of the Principal Paleontologist.

Final Paleontological Mitigation Report. Upon completion of ground disturbing activity (and curation of fossils if necessary) the Principal Paleontologist should prepare a final mitigation and monitoring report outlining the results of the mitigation and monitoring program. The report should include discussion of the location, duration and methods of the monitoring, stratigraphic sections, any recovered fossils, and the scientific significance of those fossils, and where fossils were curated.

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Society of Vertebrate Paleontology

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1978 Post-Pleistocene Archaeology, 9000 to 2000 B.C. In *California*, edited by R. F. Heizer, pp. 25–36. Handbook of North American Indians, Vol. 8, W. C. Sturtevant, general editor, Smithsonian Institution, Washington D.C.

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Appendix A:

Records Search Summary

Kevin Hunt

From: eickw (via Dropbox) <no-reply@dropbox.com>
Sent: Friday, April 30, 2021 1:11 PM
To: Kevin Hunt
Subject: eickw shared "Client ST-5974.7z" with you

Hi Kevin,

eickw (eickw@ucr.edu) invited you to view the file "**Client ST-5974.7z**" on Dropbox.

eickw said:
"Option A Results for the Pilot Travel Center Moreno Valley (21-0008) Project Please note the link will expire by tomorrow morning. Please advise once you have downloaded the files, so we may remove them from our Dropbox and have space to add more. Below is the link to the requested files. Please note they are encrypted and password protected. You will need either 7-Zip (free software recommended to us by OHP) or WinZip. I will be sending the password in a separate email. You will have to download the file first, then right-click on the file, then choose what to open it with. This Link will only work for those emails who received this email. Trying to share or open the files with a different email will NOT work."

View file

Enjoy!
The Dropbox team

Report to Dropbox

Appendix B:

Native American Scoping

Sacred Lands File & Native American Contacts List Request

Native American Heritage Commission

1550 Harbor Blvd, Suite 100 West Sacramento, CA 95691

916-373-3710 916-373-5471 – Fax nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: _ Pilot Travel Center Moreno Valley_____

County:_Riverside

USGS Quadrangle Name:__Sunnymead, CA

Township:__3S___ Range:__3W____ Section:_2

Company/Firm/Agency:_Anza Resource Consultants

Street Address:_603 Seagaze Dr. #1018_____

City:_Oceanside_____ Zip:_92054_____

Phone:__760-207-9736_____

Fax:__N/A_____

Email:_kevin@anzaresourceconsultants.com_____

Date: April 6, 2021

Project Description:

The Pilot Travel Center Moreno Valley Project is located on the northwest corner of Redlands Blvd and Eucalyptus Avenue in Moreno Valley, Riverside County, California. The project proposes to construct a Pilot Travel Center on a 12-acre project site. The project is subject to the California Environmental Quality Act (CEQA).

STATE OF CALIFORNIA Gavin Newsom, *Governor*

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

April 20, 2021

Kevin Hunt
Anza Resource Consultants

Via Email to: kevin@anzaresourceconsultants.com

Re: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, Pilot Travel Center Moreno Valley Project, Riverside County

Dear Mr. Hunt:

Pursuant to Public Resources Code section 21080.3.1 (c), attached is a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the above-listed project. Please note that the intent of the AB 52 amendments to CEQA is to avoid and/or mitigate impacts to tribal cultural resources, (Pub. Resources Code §21084.3 (a)) ("Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.")

Public Resources Code sections 21080.3.1 and 21084.3(c) require CEQA lead agencies to consult with California Native American tribes that have requested notice from such agencies of proposed projects in the geographic area that are traditionally and culturally affiliated with the tribes on projects for which a Notice of Preparation or Notice of Negative Declaration or Mitigated Negative Declaration has been filed on or after July 1, 2015. Specifically, Public Resources Code section 21080.3.1 (d) provides:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The AB 52 amendments to CEQA law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction prior to receiving requests for notification of projects in the tribe's areas of traditional and cultural affiliation. The Native American Heritage Commission (NAHC) recommends, but does not require, early consultation as a best practice to ensure that lead agencies receive sufficient information about cultural resources in a project area to avoid damaging effects to tribal cultural resources.

The NAHC also recommends, but does not require that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

- A listing of any and all known cultural resources that have already been recorded on or adjacent to the APE, such as known archaeological sites;
- Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
- Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and
- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

   - Any report that may contain site forms, site significance, and suggested mitigation measures.

     All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code section 6254.10.

3. The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was negative.

4. Any ethnographic studies conducted for any area including all or part of the APE; and

5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Tribal Consultation List
Riverside County
4/20/2021

Agua Caliente Band of Cahuilla Indians
Jeff Grubbe, Chairperson
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6800
Fax: (760) 699-6919

Agua Caliente Band of Cahuilla Indians
Patricia Garcia-Plotkin, Director
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6907
Fax: (760) 699-6924
ACBCI-THPO@aguacaliente.net

Augustine Band of Cahuilla Mission Indians
Amanda Vance, Chairperson
P.O. Box 846 — Cahuilla
Coachella, CA, 92236
Phone: (760) 398 - 4722
Fax: (760) 369-7161
hhaines@augustinetribe.com

Cabazon Band of Mission Indians
Doug Welmas, Chairperson
84-245 Indio Springs Parkway — Cahuilla
Indio, CA, 92203
Phone: (760) 342 - 2593
Fax: (760) 347-7880
jstapp@cabazonindians-nsn.gov

Cahuilla Band of Indians
Daniel Salgado, Chairperson
52701 U.S. Highway 371 — Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 5549
Fax: (951) 763-2808
Chairman@cahuilla.net

Campo Band of Diegueno Mission Indians
Ralph Goff, Chairperson
36190 Church Road, Suite 1 — Diegueno
Campo, CA, 91906
Phone: (619) 478 - 9046
Fax: (619) 478-5818
rgoff@campo-nsn.gov

Ewiiaapaayp Band of Kumeyaay Indians
Robert Pinto, Chairperson
4054 Willows Road — Diegueno
Alpine, CA, 91901
Phone: (619) 445 - 6315
Fax: (619) 445-9126
wmicklin@leaningrock.net

Ewiiaapaayp Band of Kumeyaay Indians
Michael Garcia, Vice Chairperson
4054 Willows Road — Diegueno
Alpine, CA, 91901
Phone: (619) 445 - 6315
Fax: (619) 445-9126
michaelg@leaningrock.net

La Posta Band of Diegueno Mission Indians
Javaughn Miller, Tribal Administrator
8 Crestwood Road — Diegueno
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
jmiller@LPtribe.net

La Posta Band of Diegueno Mission Indians
Gwendolyn Parada, Chairperson
8 Crestwood Road — Diegueno
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
LP13boots@aol.com

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Pilot Travel Center Moreno Valley Project, Riverside County.

Native American Heritage Commission
Tribal Consultation List
Riverside County
4/20/2021

Los Coyotes Band of Cahuilla and Cupeño Indians
Ray Chapparosa, Chairperson
P.O. Box 189
Warner Springs, CA, 92086-0189
Phone: (760) 782 - 0711
Fax: (760) 782-0712
Cahuilla

Manzanita Band of Kumeyaay Nation
Angela Elliott Santos, Chairperson
P.O. Box 1302
Boulevard, CA, 91905
Phone: (619) 766 - 4930
Fax: (619) 766-4957
Diegueno

Mesa Grande Band of Diegueno Mission Indians
Michael Linton, Chairperson
P.O Box 270
Santa Ysabel, CA, 92070
Phone: (760) 782 - 3818
Fax: (760) 782-9092
mesagrandeband@msn.com
Diegueno

Morongo Band of Mission Indians
Ann Brierty, THPO
12700 Pumarra Road
Banning, CA, 92220
Phone: (951) 755 - 5259
Fax: (951) 572-6004
abrierty@morongo-nsn.gov
Cahuilla
Serrano

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Road
Banning, CA, 92220
Phone: (951) 755 - 5110
Fax: (951) 755-5177
abrierty@morongo-nsn.gov
Cahuilla
Serrano

Pala Band of Mission Indians
Shasta Gaughen, Tribal Historic Preservation Officer
PMB 50, 35008 Pala Temecula Rd.
Pala, CA, 92059
Phone: (760) 891 - 3515
Fax: (760) 742-3189
sgaughen@palatribe.com
Cupeno
Luiseno

Pechanga Band of Luiseno Indians
Mark Macarro, Chairperson
P.O. Box 1477
Temecula, CA, 92593
Phone: (951) 770 - 6000
Fax: (951) 695-1778
epreston@pechanga-nsn.gov
Luiseno

Quechan Tribe of the Fort Yuma Reservation
Jill McCormick, Historic Preservation Officer
P.O. Box 1899
Yuma, AZ, 85366
Phone: (760) 572 - 2423
historicpreservation@quechantribe.com
Quechan

Ramona Band of Cahuilla
Joseph Hamilton, Chairperson
P.O. Box 391670
Anza, CA, 92539
Phone: (951) 763 - 4105
Fax: (951) 763-4325
admin@ramona-nsn.gov
Cahuilla

Rincon Band of Luiseno Indians
Cheryl Madrigal, Tribal Historic Preservation Officer
One Government Center Lane
Valley Center, CA, 92082
Phone: (760) 297 - 2635
crd@rincon-nsn.gov
Luiseno

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This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Pilot Travel Center Moreno Valley Project, Riverside County.

Native American Heritage Commission
Tribal Consultation List
Riverside County
4/20/2021

Rincon Band of Luiseno Indians
Bo Mazzetti, Chairperson
One Government Center Lane — Luiseno
Valley Center, CA, 92082
Phone: (760) 749 - 1051
Fax: (760) 749-5144
bomazzetti@aol.com

San Manuel Band of Mission Indians
Jessica Mauck, Director of Cultural Resources
26569 Community Center Drive — Serrano
Highland, CA, 92346
Phone: (909) 864 - 8933
jmauck@sanmanuel-nsn.gov

Santa Rosa Band of Cahuilla Indians
Lovina Redner, Tribal Chair
P.O. Box 391820 — Cahuilla
Anza, CA, 92539
Phone: (951) 659 - 2700
Fax: (951) 659-2228
lsaul@santarosa-nsn.gov

Soboba Band of Luiseno Indians
Isaiah Vivanco, Chairperson
P. O. Box 487 — Cahuilla
San Jacinto, CA, 92581 — Luiseno
Phone: (951) 654 - 5544
Fax: (951) 654-4198
ivivanco@soboba-nsn.gov

Sycuan Band of the Kumeyaay Nation
Cody Martinez, Chairperson
1 Kwaaypaay Court — Kumeyaay
El Cajon, CA, 92019
Phone: (619) 445 - 2613
Fax: (619) 445-1927
ssilva@sycuan-nsn.gov

Torres-Martinez Desert Cahuilla Indians
Thomas Tortez, Chairperson
P.O. Box 1160 — Cahuilla
Thermal, CA, 92274
Phone: (760) 397 - 0300
Fax: (760) 397-8146
tmchair@torresmartinez.org

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Pilot Travel Center Moreno Valley Project, Riverside County.

April 20, 2021

Agua Caliente Band of Cahuilla Indians
Jeff Grubbe, Chairperson
5401 Dinah Shore Drive
Palm Springs, CA, 92264

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Chairperson Grubbe:

Anza Resource Consultants (Anza) has been retained to prepare a Phase I Cultural Resources Study for the Pilot Trvel Center Moreno Valley Project located on the northwest corner of Redlands Blvd and Eucalyptus Avenue in Moreno Valley, Riverside County, California. The project proposes to construct a Pilot Travel Center, including fueling station, restaurant, and car and truck parking on a 12-acre project site. The project is subject to the California Environmental Quality Act (CEQA) and the City of Moreno Valley is the lead agency.

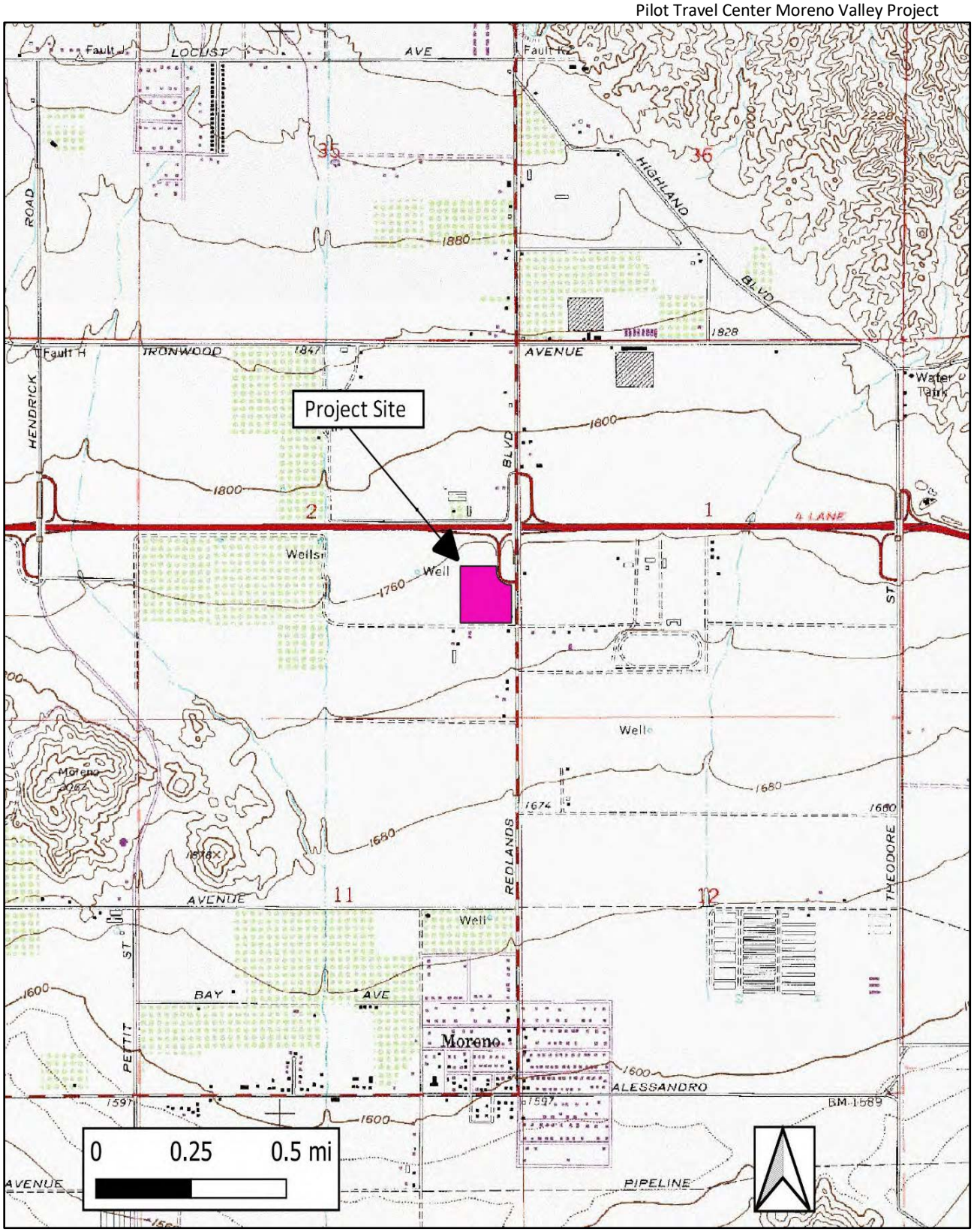
Anza contacted the Native American Heritage Commission (NAHC) and requested a Sacred Lands File (SLF) search and a list of Native American tribal organizations and individuals who may have knowledge of sensitive cultural resources in or near the project area. The NAHC has not yet provided results but Anza anticipates that the NAHC will recommend we contact you for comment.

If you have knowledge of cultural resources that may exist within or near the project area, please contact at kevin@anzaresourceconsultants.com or by telephone at (760) 207-9736. Thank you for your assistance.

Sincerely,

Kevin Hunt, Principal
Anza Resource Consultants
603 Seagaze Dr. #1018
Oceanside, CA 92054

Enclosure: Project Location Map



Project Location Map *Sunnymead, CA*

April 20, 2021

Agua Caliente Band of Cahuilla Indians
Patricia Garcia-Plotkin, Director
5401 Dinah Shore Drive
Palm Springs, CA, 92264

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Director Garcia-Plotkin:

Anza Resource Consultants (Anza) has been retained to prepare a Phase I Cultural Resources Study for the Pilot Trvel Center Moreno Valley Project located on the northwest corner of Redlands Blvd and Eucalyptus Avenue in Moreno Valley, Riverside County, California. The project proposes to construct a Pilot Travel Center, including fueling station, restaurant, and car and truck parking on a 12-acre project site. The project is subject to the California Environmental Quality Act (CEQA) and the City of Moreno Valley is the lead agency.

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603 Seagaze Dr. #1018
Oceanside, CA 92054

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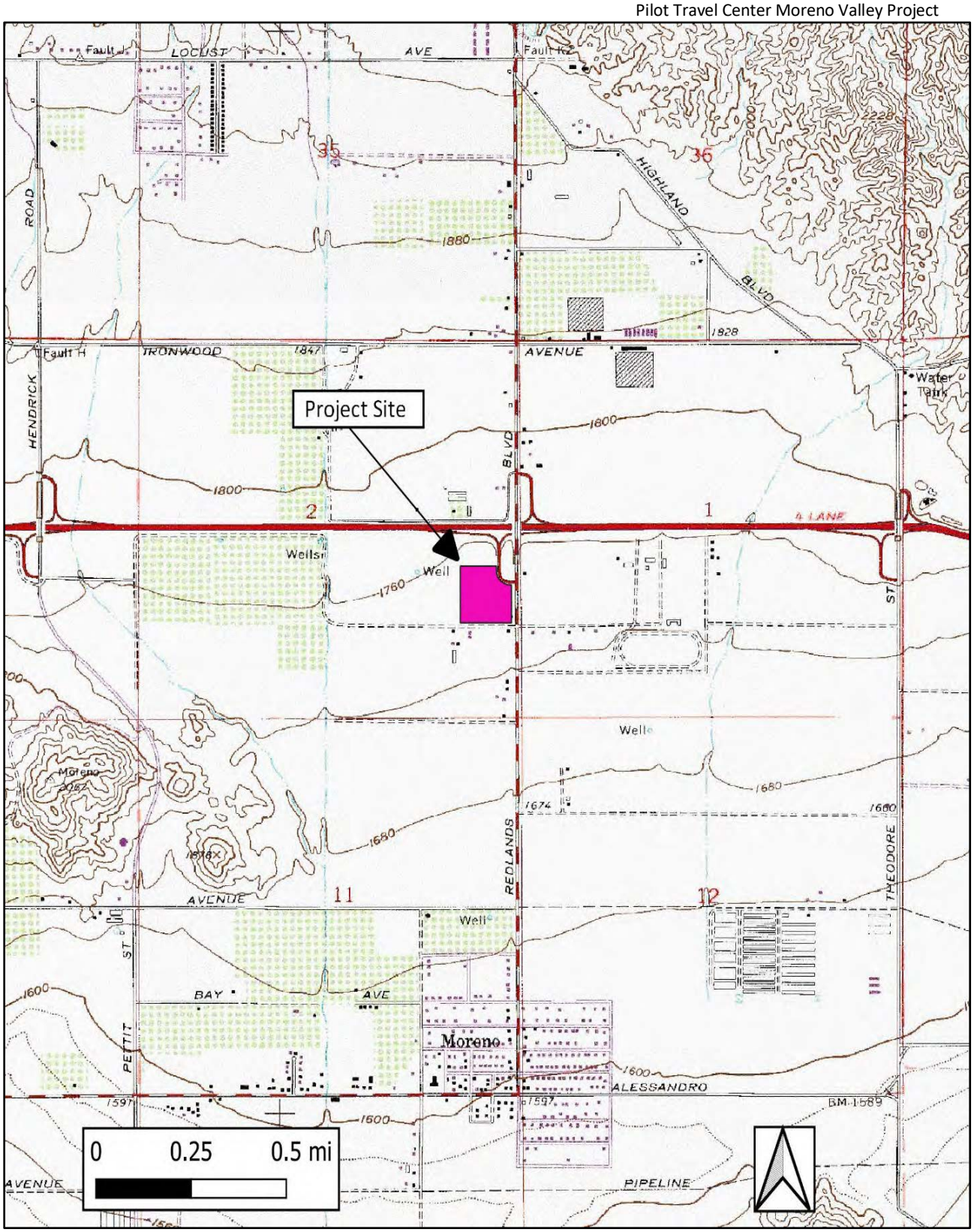

Project Location Map *Sunnymead, CA*

April 20, 2021

Augustine Band of Cahuilla Mission Indians
Amanda Vance, Chairperson
P.O. Box 846
Coachella, CA, 92236

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Chairperson Vance:

Anza Resource Consultants (Anza) has been retained to prepare a Phase I Cultural Resources Study for the Pilot Trvel Center Moreno Valley Project located on the northwest corner of Redlands Blvd and Eucalyptus Avenue in Moreno Valley, Riverside County, California. The project proposes to construct a Pilot Travel Center, including fueling station, restaurant, and car and truck parking on a 12-acre project site. The project is subject to the California Environmental Quality Act (CEQA) and the City of Moreno Valley is the lead agency.

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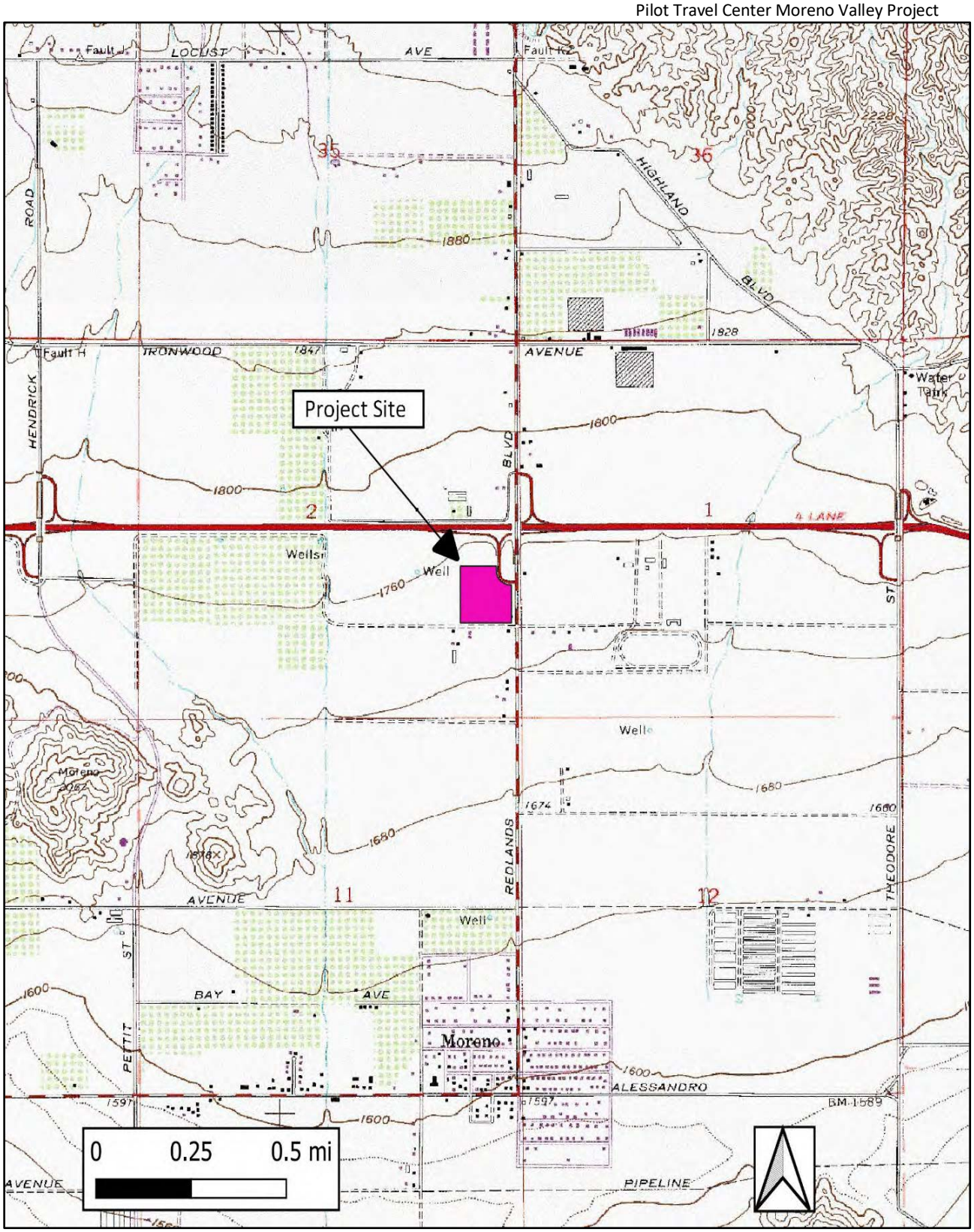
Sincerely,

Kevin Hunt, Principal
Anza Resource Consultants
603 Seagaze Dr. #1018
Oceanside, CA 92054

Enclosure: Project Location Map

Pilot Travel Center Moreno Valley Project



Project Location Map *Sunnymead, CA*

April 20, 2021

Cabazon Band of Mission Indians
Doug Welmas, Chairperson
84-245 Indio Springs Parkway
Indio, CA, 92203

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Chairperson Welmas:

Anza Resource Consultants (Anza) has been retained to prepare a Phase I Cultural Resources Study for the Pilot Trvel Center Moreno Valley Project located on the northwest corner of Redlands Blvd and Eucalyptus Avenue in Moreno Valley, Riverside County, California. The project proposes to construct a Pilot Travel Center, including fueling station, restaurant, and car and truck parking on a 12-acre project site. The project is subject to the California Environmental Quality Act (CEQA) and the City of Moreno Valley is the lead agency.

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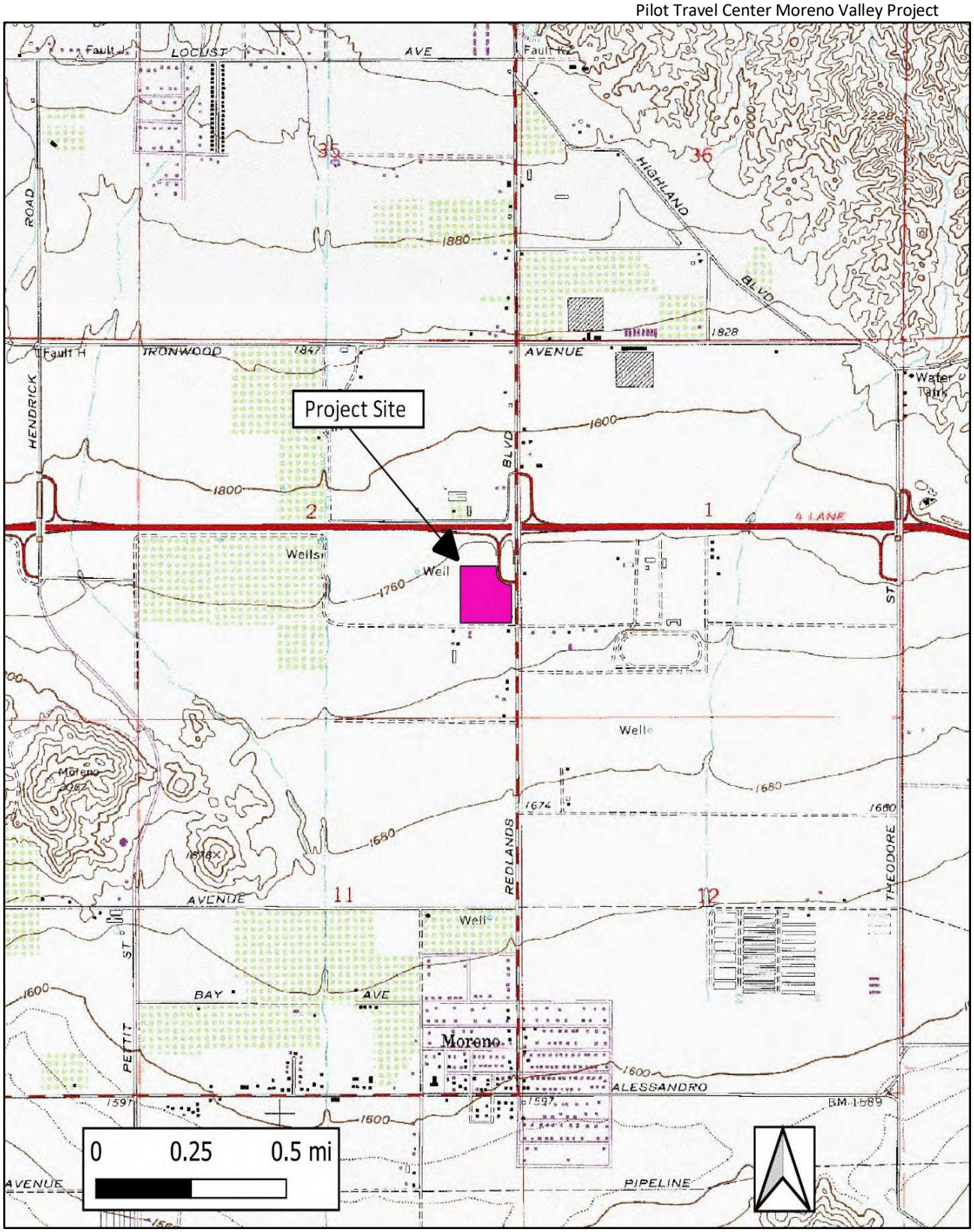
Anza Resource Consultants
603 Seagaze Dr. #1018
Oceanside, CA 92054

Enclosure: Project Location Map

Pilot Travel Center Moreno Valley Project



Project Location Map *Sunnymead, CA*

April 20, 2021

Cahuilla Band of Indians
Daniel Salgado, Chairperson
52701 U.S. Highway 371
Anza, CA, 92539

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Chairperson Salgado:

Anza Resource Consultants (Anza) has been retained to prepare a Phase I Cultural Resources Study for the Pilot Trvel Center Moreno Valley Project located on the northwest corner of Redlands Blvd and Eucalyptus Avenue in Moreno Valley, Riverside County, California. The project proposes to construct a Pilot Travel Center, including fueling station, restaurant, and car and truck parking on a 12-acre project site. The project is subject to the California Environmental Quality Act (CEQA) and the City of Moreno Valley is the lead agency.

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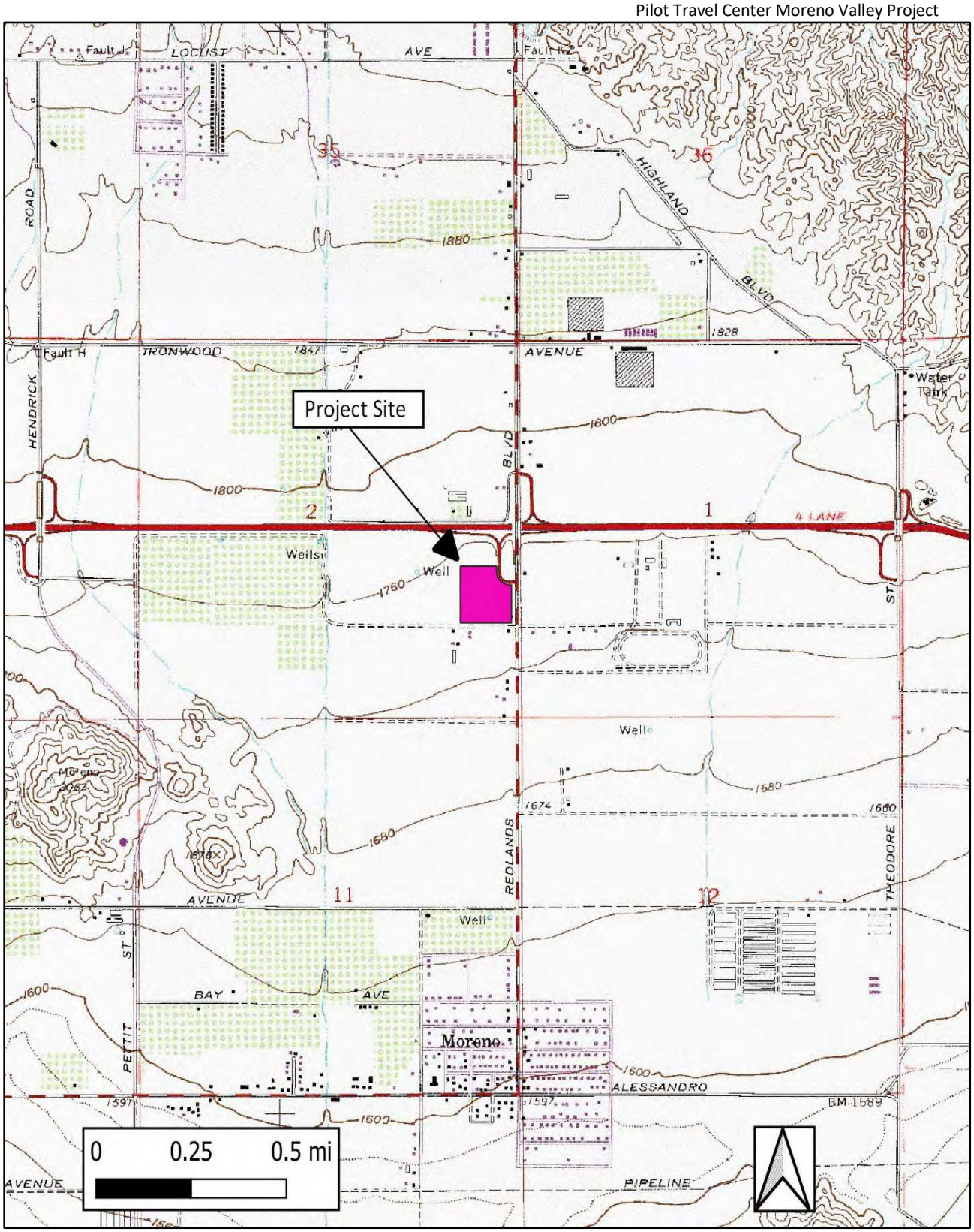
Sincerely,

Kevin Hunt, Principal
Anza Resource Consultants
603 Seagaze Dr. #1018
Oceanside, CA 92054

Enclosure: Project Location Map

Pilot Travel Center Moreno Valley Project



Project Location Map *Sunnymead, CA*

April 20, 2021

Los Coyotes Band of Cahuilla and Cupeño Indians
Shane Chapparosa, Chairperson
P.O. Box 189
Warner Springs, CA, 92086-0189

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Chairperson Chapparosa:

Anza Resource Consultants (Anza) has been retained to prepare a Phase I Cultural Resources Study for the Pilot Trvel Center Moreno Valley Project located on the northwest corner of Redlands Blvd and Eucalyptus Avenue in Moreno Valley, Riverside County, California. The project proposes to construct a Pilot Travel Center, including fueling station, restaurant, and car and truck parking on a 12-acre project site. The project is subject to the California Environmental Quality Act (CEQA) and the City of Moreno Valley is the lead agency.

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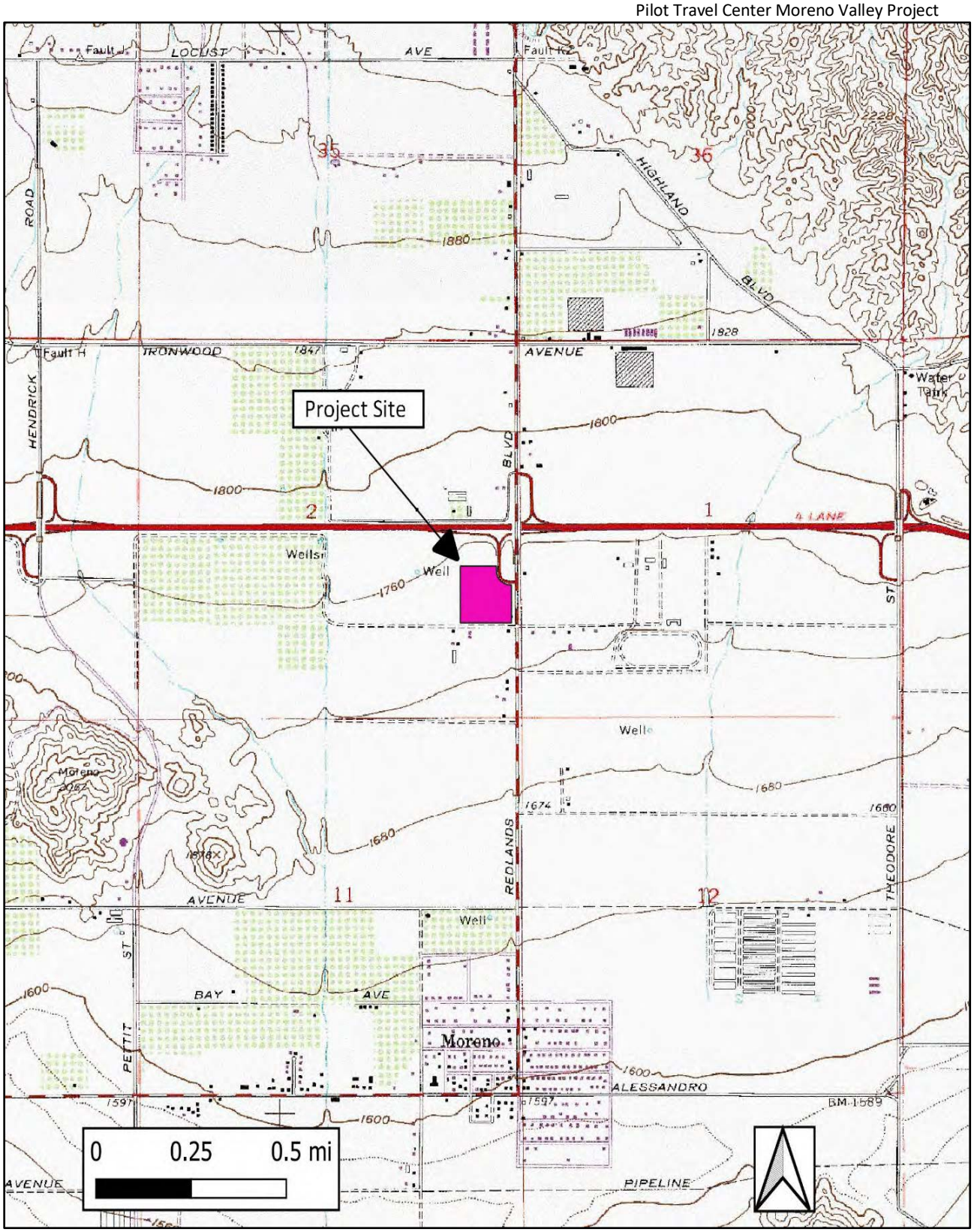
Sincerely,

Kevin Hunt, Principal
Anza Resource Consultants
603 Seagaze Dr. #1018
Oceanside, CA 92054

Enclosure: Project Location Map

Pilot Travel Center Moreno Valley Project



Project Location Map *Sunnymead, CA*

April 20, 2021

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Rroad
Banning, CA, 92220

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Chairperson Martin:

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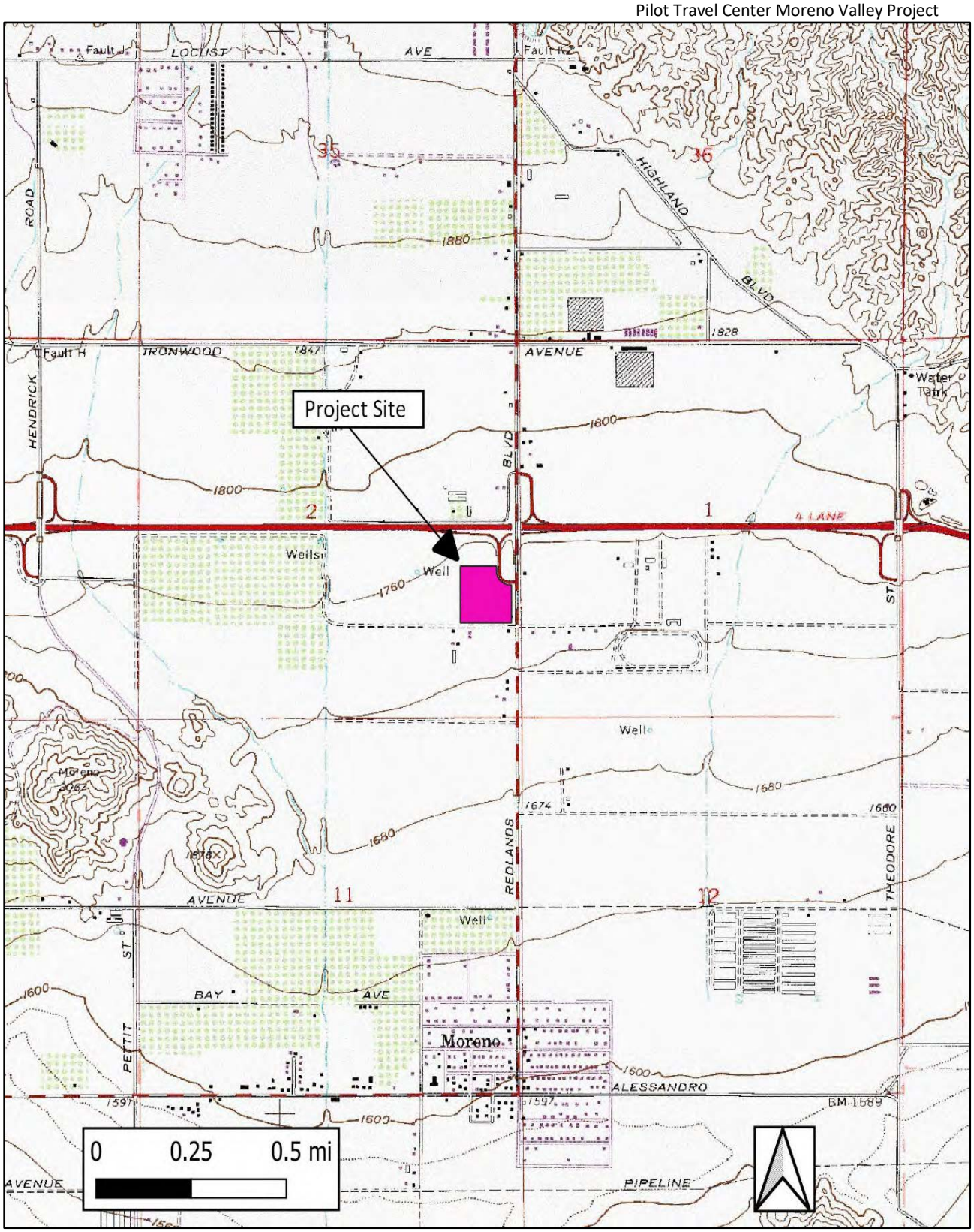
Sincerely,

Kevin Hunt, Principal
Anza Resource Consultants
603 Seagaze Dr. #1018
Oceanside, CA 92054

Enclosure: Project Location Map



Project Location Map *Sunnymead, CA*

April 20, 2021

Quechan Tribe of the Fort Yuma Reservation
Jill McCormick, Historic Preservation Officer
P.O. Box 1899
Yuma, AZ, 85366

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Officer McCormick:

Anza Resource Consultants (Anza) has been retained to prepare a Phase I Cultural Resources Study for the Pilot Trvel Center Moreno Valley Project located on the northwest corner of Redlands Blvd and Eucalyptus Avenue in Moreno Valley, Riverside County, California. The project proposes to construct a Pilot Travel Center, including fueling station, restaurant, and car and truck parking on a 12-acre project site. The project is subject to the California Environmental Quality Act (CEQA) and the City of Moreno Valley is the lead agency.

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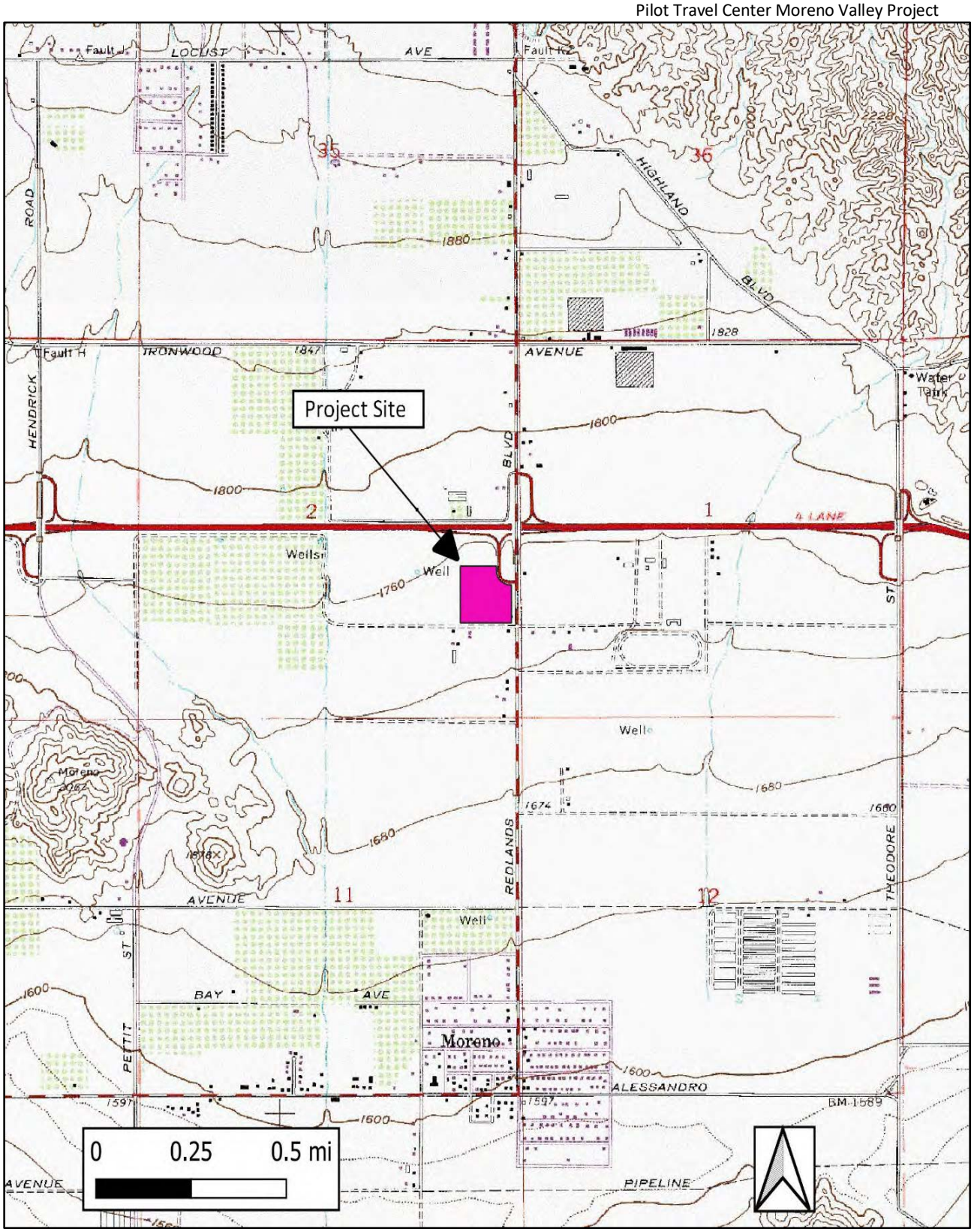
Oceanside, CA 92054

Enclosure: Project Location Map

Pilot Travel Center Moreno Valley Project



Project Location Map *Sunnymead, CA*

April 20, 2021

Rincon Band of Luiseno Indians
Bo Mazzetti, Chairperson
One Government Center Lane
Valley Center, CA, 92082

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Chairperson Mazzetti:

Anza Resource Consultants (Anza) has been retained to prepare a Phase I Cultural Resources Study for the Pilot Trvel Center Moreno Valley Project located on the northwest corner of Redlands Blvd and Eucalyptus Avenue in Moreno Valley, Riverside County, California. The project proposes to construct a Pilot Travel Center, including fueling station, restaurant, and car and truck parking on a 12-acre project site. The project is subject to the California Environmental Quality Act (CEQA) and the City of Moreno Valley is the lead agency.

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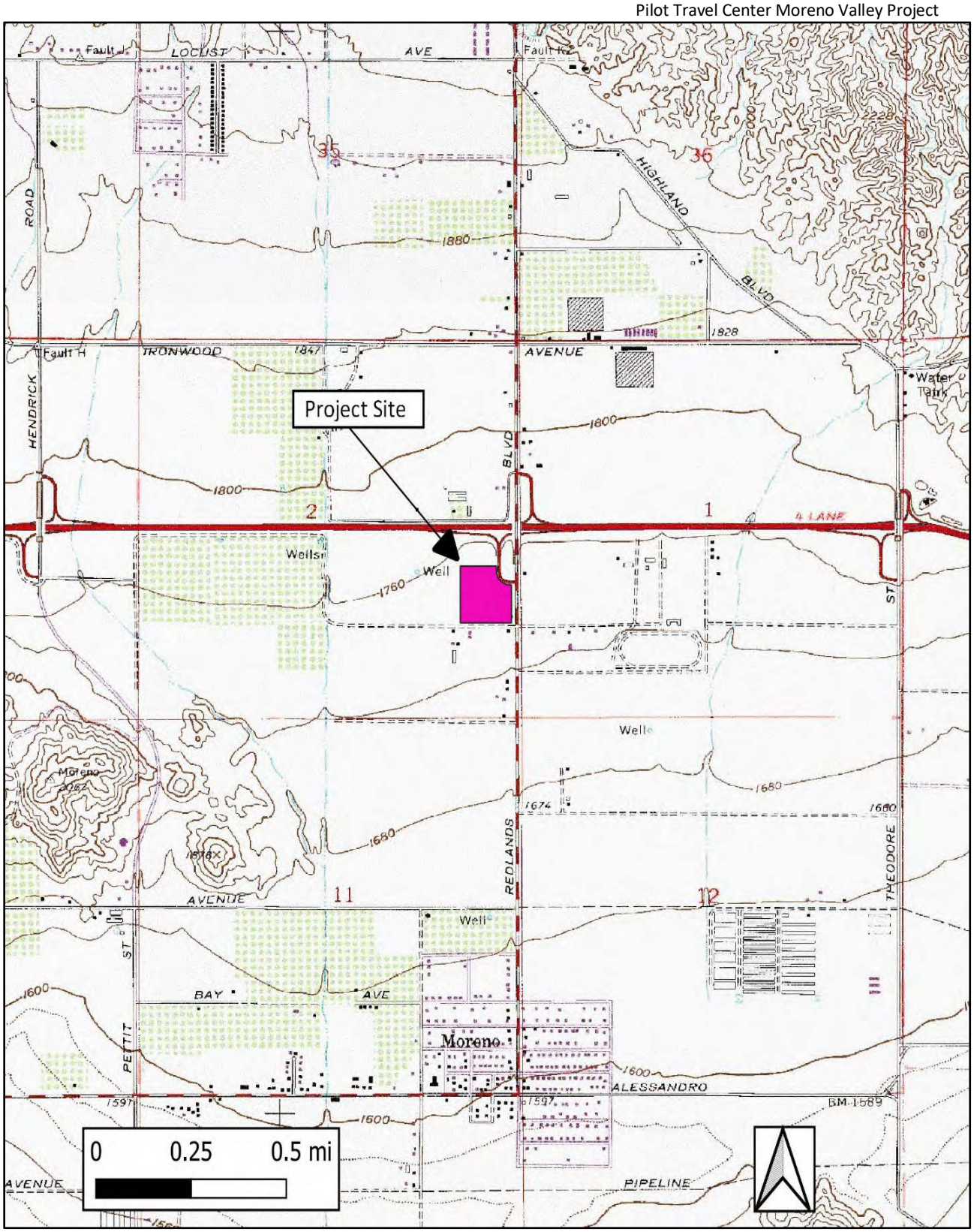

Project Location Map *Sunnymead, CA*

April 20, 2021

Pechanga Band of Luiseno Indians
Mark Macarro, Chairperson
P.O. Box 1477
Temecula, CA, 92593

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Chairperson Macarro:

Anza Resource Consultants (Anza) has been retained to prepare a Phase I Cultural Resources Study for the Pilot Trvel Center Moreno Valley Project located on the northwest corner of Redlands Blvd and Eucalyptus Avenue in Moreno Valley, Riverside County, California. The project proposes to construct a Pilot Travel Center, including fueling station, restaurant, and car and truck parking on a 12-acre project site. The project is subject to the California Environmental Quality Act (CEQA) and the City of Moreno Valley is the lead agency.

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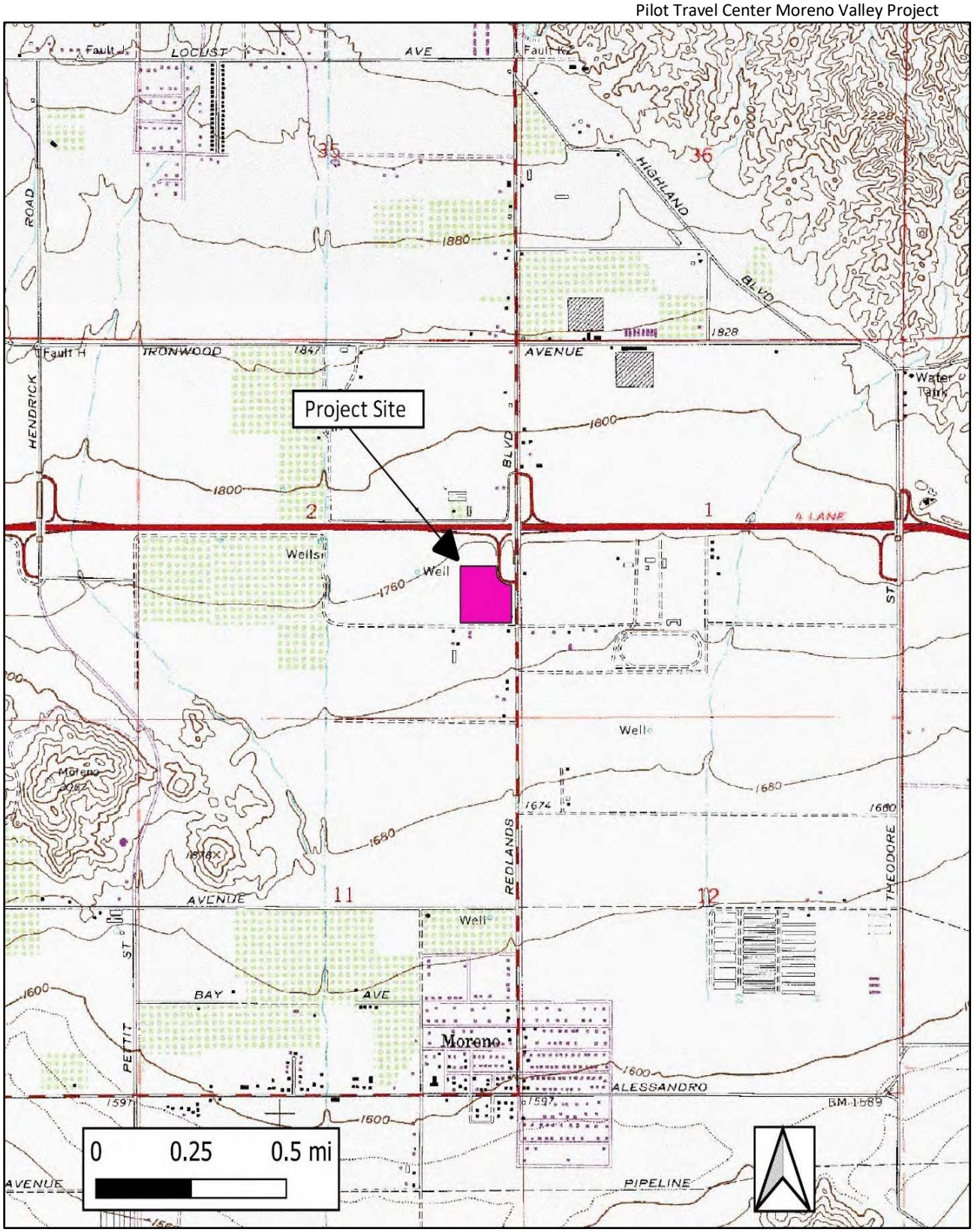

Project Location Map *Sunnymead, CA*

April 20, 2021

Pala Band of Mission Indians
Shasta Gaughen, Tribal Historic Preservation Officer
PMB 50, 35008 Pala Temecula Rd.
Pala, CA, 92059

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear THPO Gaughen:

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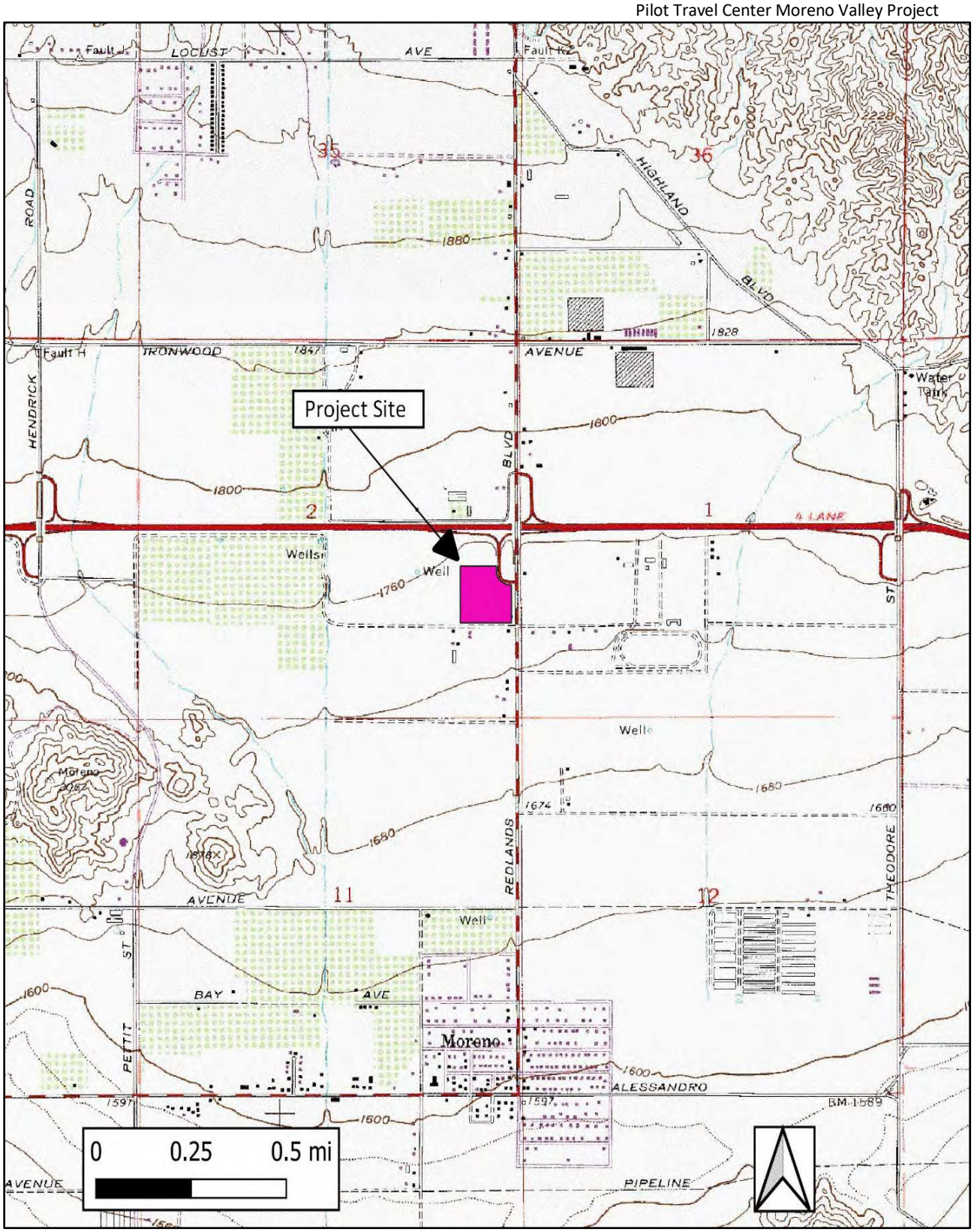
Pilot Travel Center Moreno Valley Project



Project Location Map *Sunnymead, CA*

April 20, 2021

Ramona Band of Cahuilla
Joseph Hamilton, Chairperson
P.O. Box 391670
Anza, CA, 92539

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Chairperson Hamilton:

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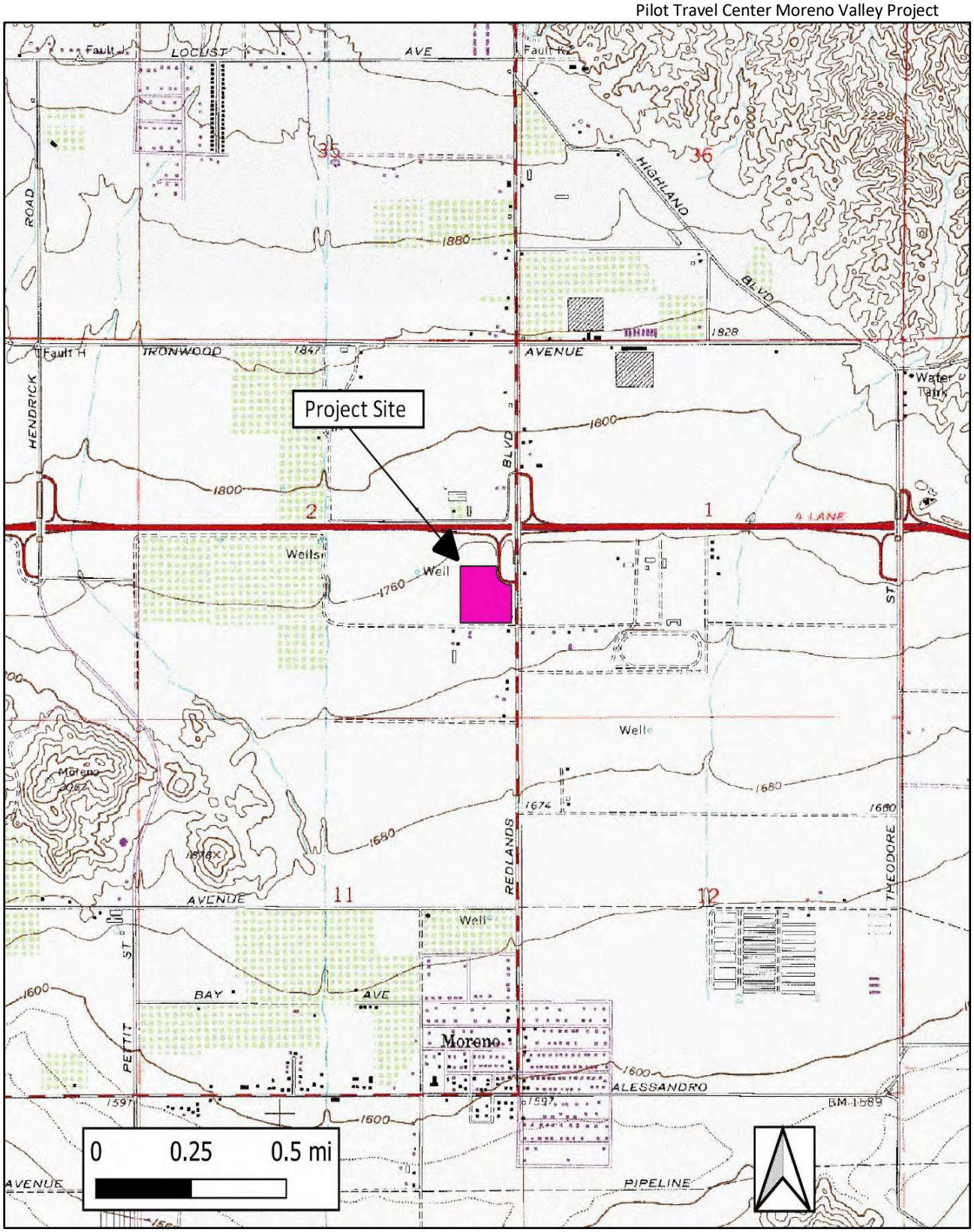

Project Location Map *Sunnymead, CA*

April 20, 2021

Manzanita Band of Kumeyaay Nation
Angela Elliott Santos, Chairperson
P.O. Box 1302
Boulevard, CA, 91905

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Chairperson Santos:

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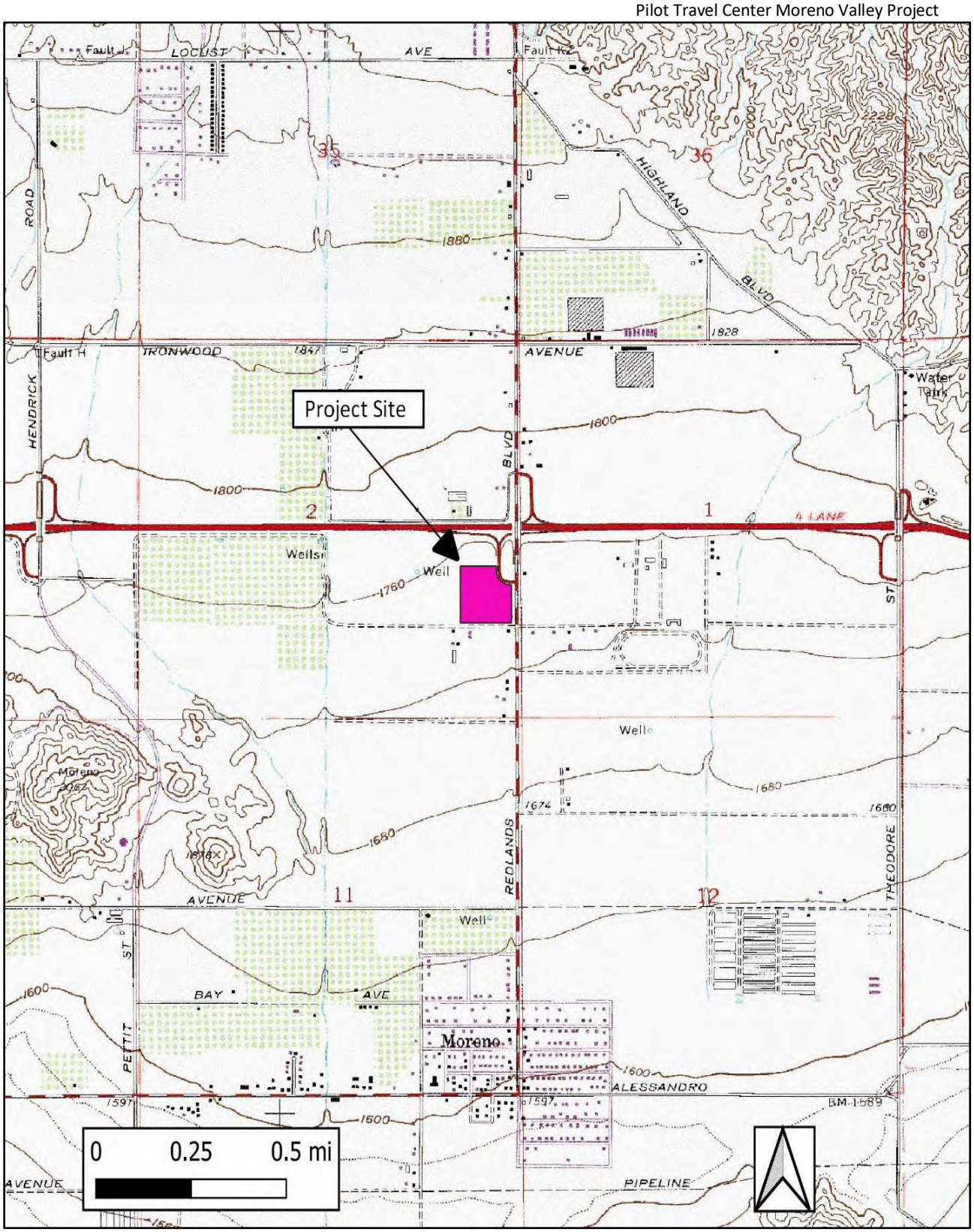
Pilot Travel Center Moreno Valley Project



Project Location Map *Sunnymead, CA*

April 20, 2021

Mesa Grande Band of Diegueno Mission Indians
Michael Linton, Chairperson
P.O Box 270
Santa Ysabel, CA, 92070

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Chairperson Linton:

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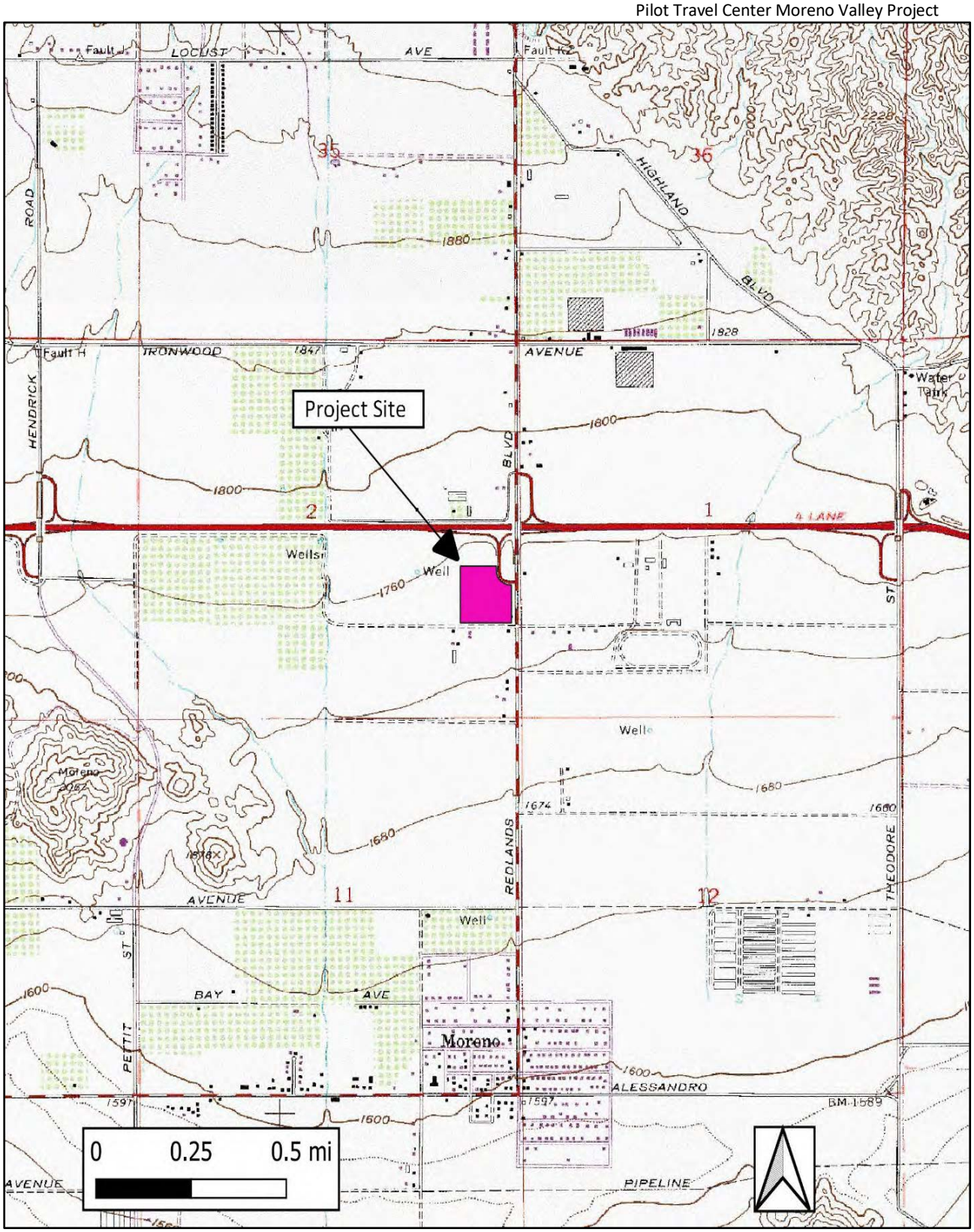

Project Location Map *Sunnymead, CA*

April 20, 2021

Soboba Band of Luiseno Indians
Scott Cozart, Chairperson
P. O. Box 487
San Jacinto, CA, 92583

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Chairperson Cozart:

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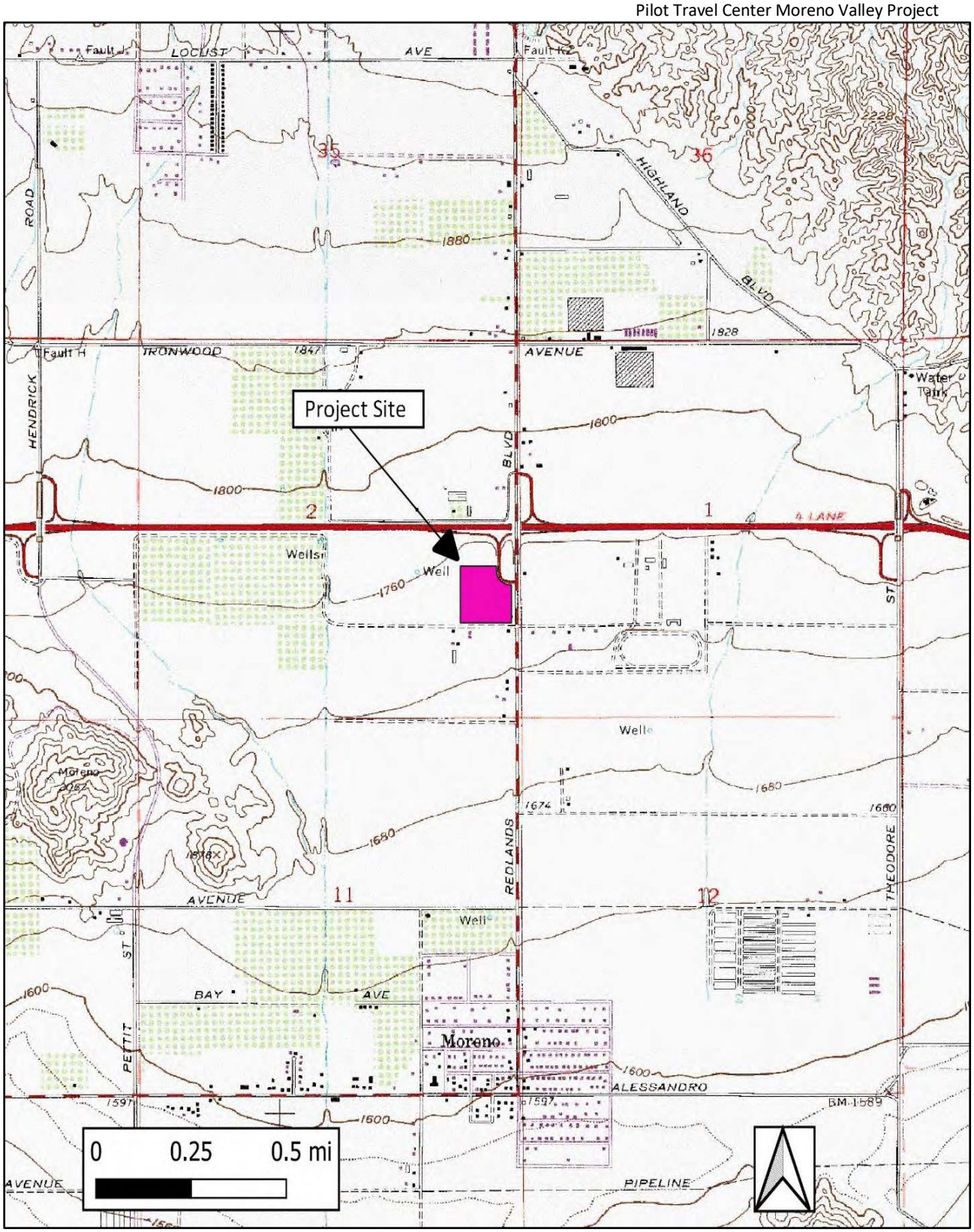
Pilot Travel Center Moreno Valley Project



Project Location Map *Sunnymead, CA*

April 20, 2021

Rincon Band of Luiseno Indians
Cheryl Madrigal, Tribal Historic Preservation Officer
One Government Center Lane
Valley Center, CA, 92082

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear THPO Madrigal:

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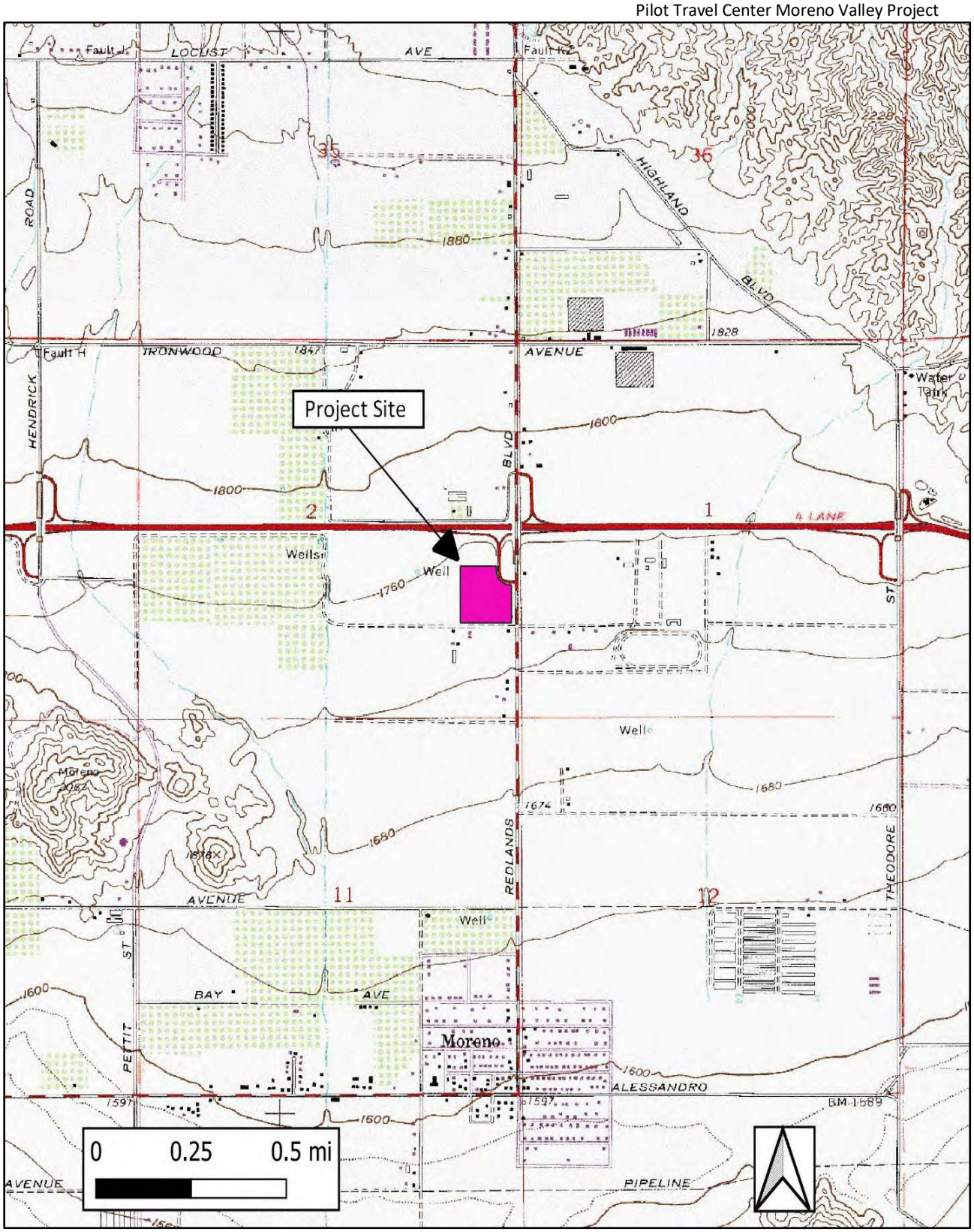
Pilot Travel Center Moreno Valley Project



Project Location Map *Sunnymead, CA*

April 20, 2021

Santa Rosa Band of Cahuilla Indians
Lovina Redner, Tribal Chair
P.O. Box 391820
Anza, CA, 92539

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Chair Redner:

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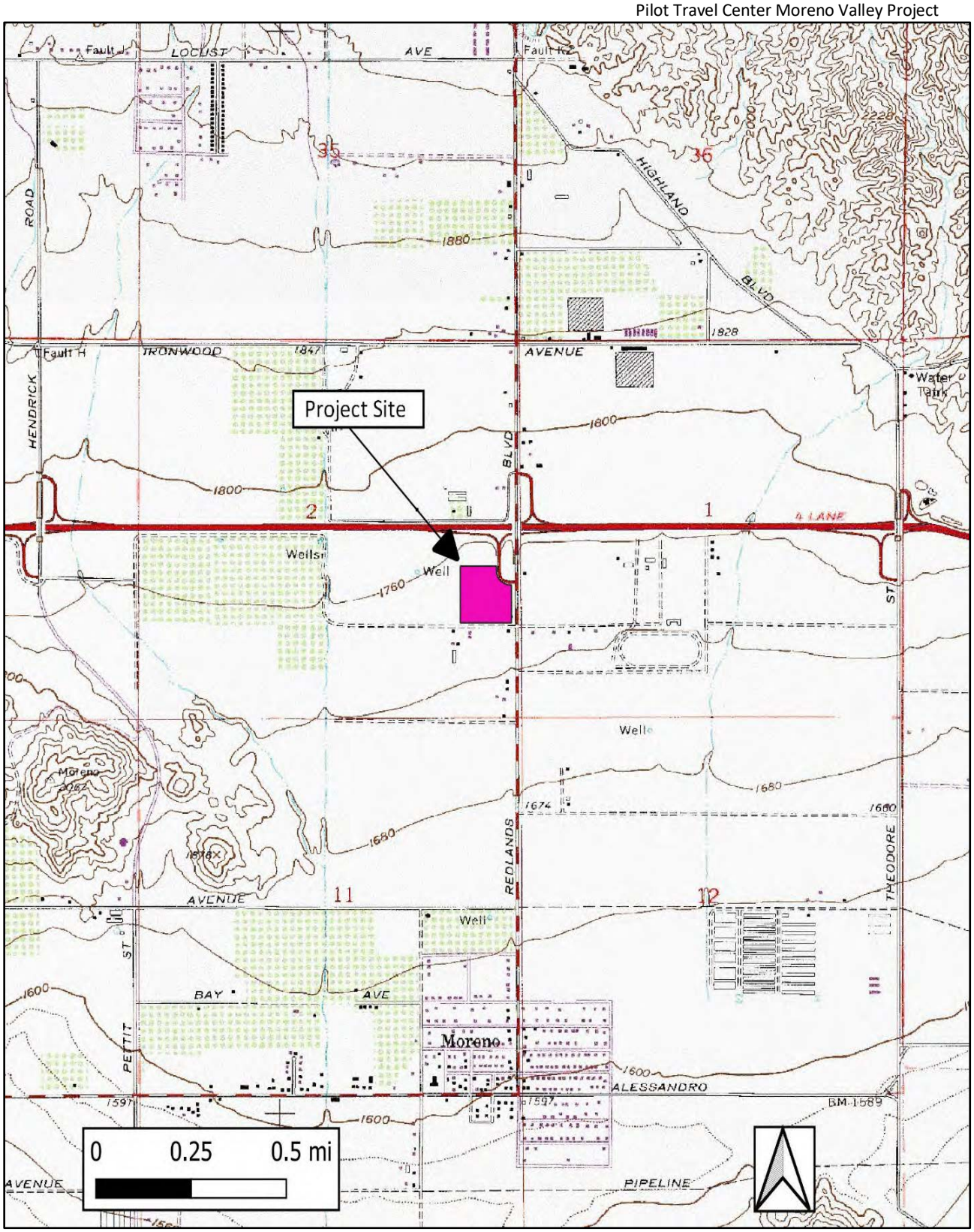

Project Location Map *Sunnymead, CA*

April 20, 2021

Campo Band of Diegueno Mission Indians
Ralph Goff, Chairperson
36190 Church Road, Suite 1
Campo, CA, 91906

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Chairperson Goff:

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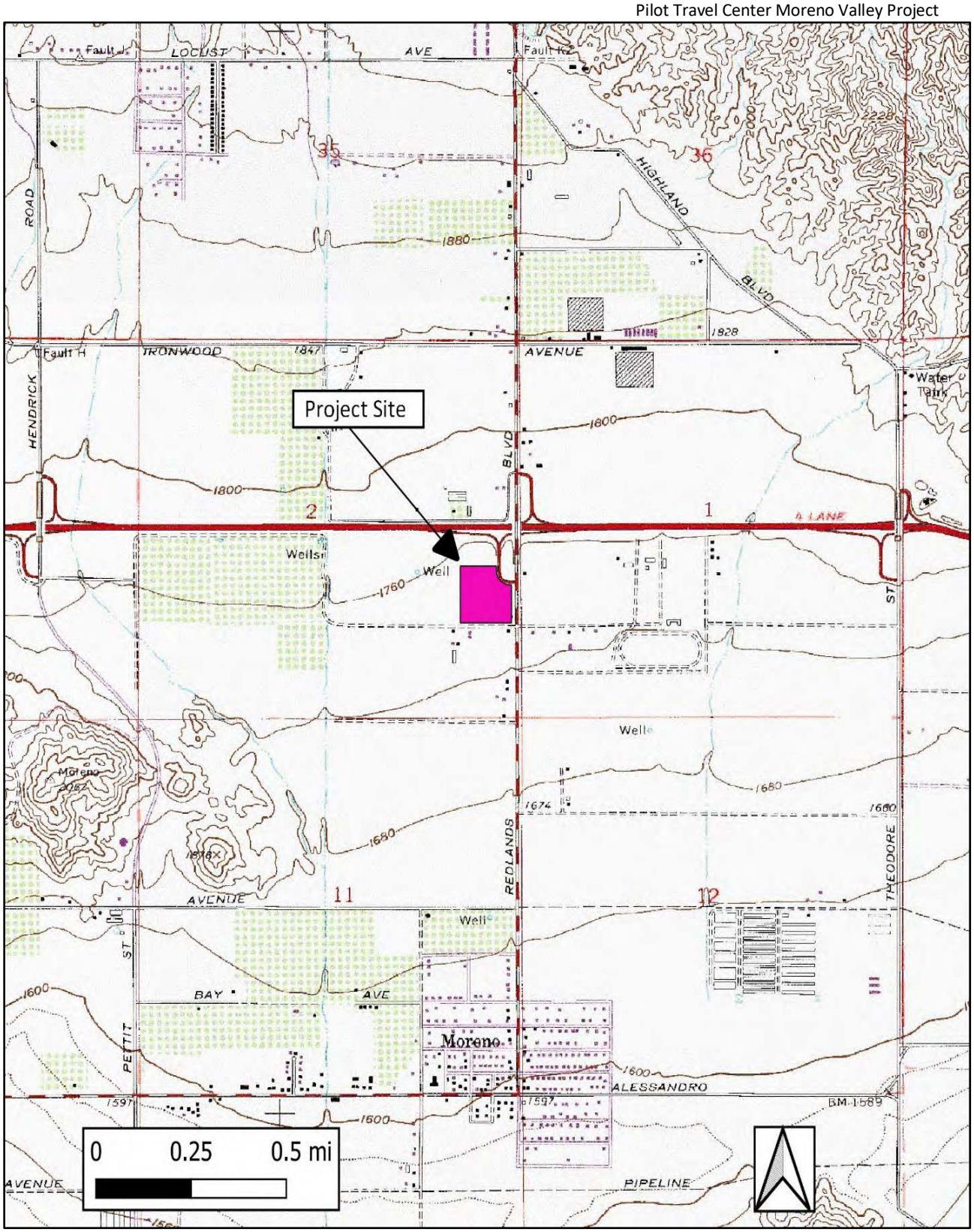

Project Location Map *Sunnymead, CA*

April 20, 2021

Ewiiaapaayp Band of Kumeyaay Indians
Robert Pinto, Chairperson
4054 Willows Road
Alpine, CA, 91901

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Chairperson Pinto:

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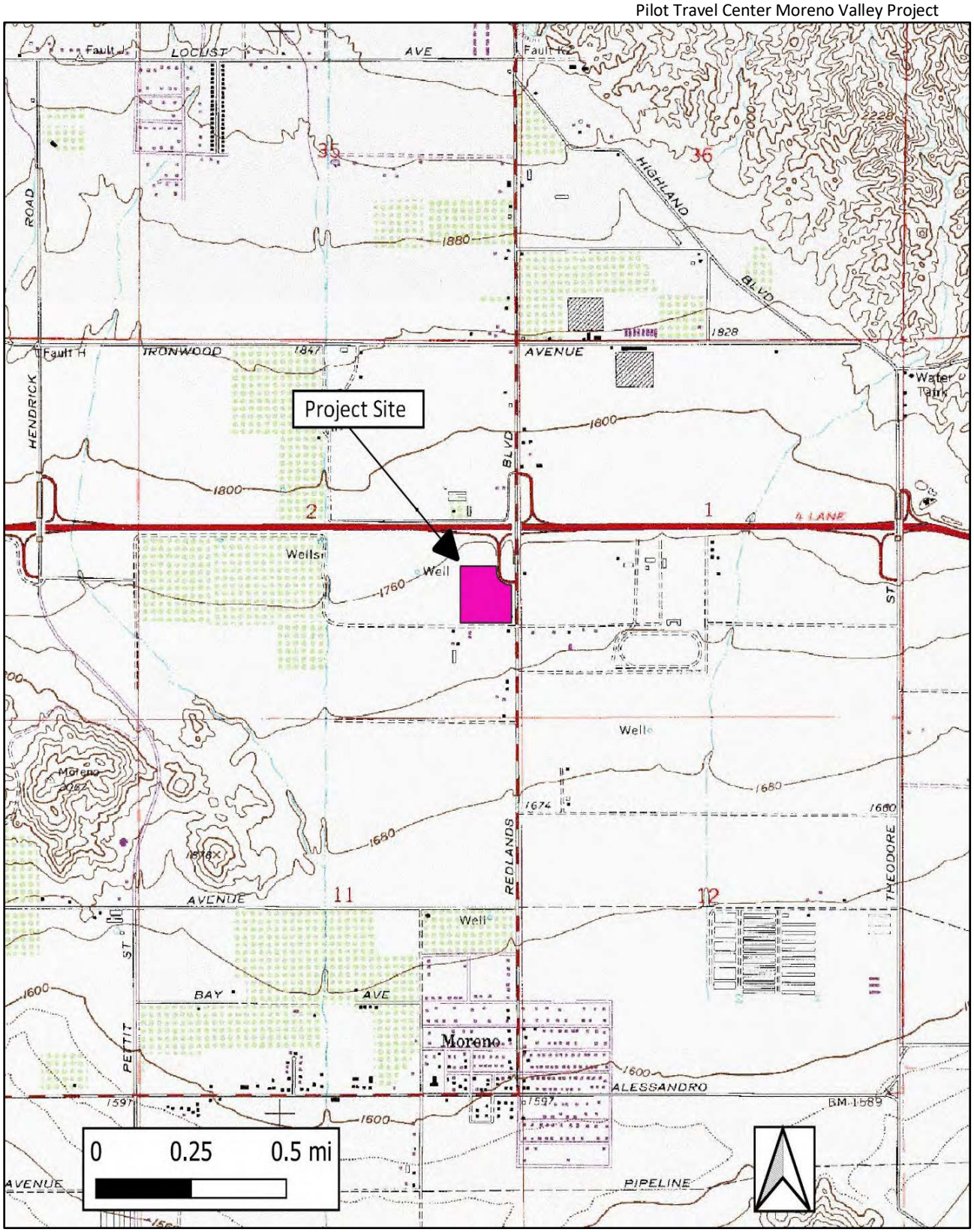

Project Location Map *Sunnymead, CA*

April 20, 2021

Ewiiaapaayp Band of Kumeyaay Indians
Michael Garcia, Vice Chairperson
4054 Willows Road
Alpine, CA, 91901

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Vice Chairperson Garcia:

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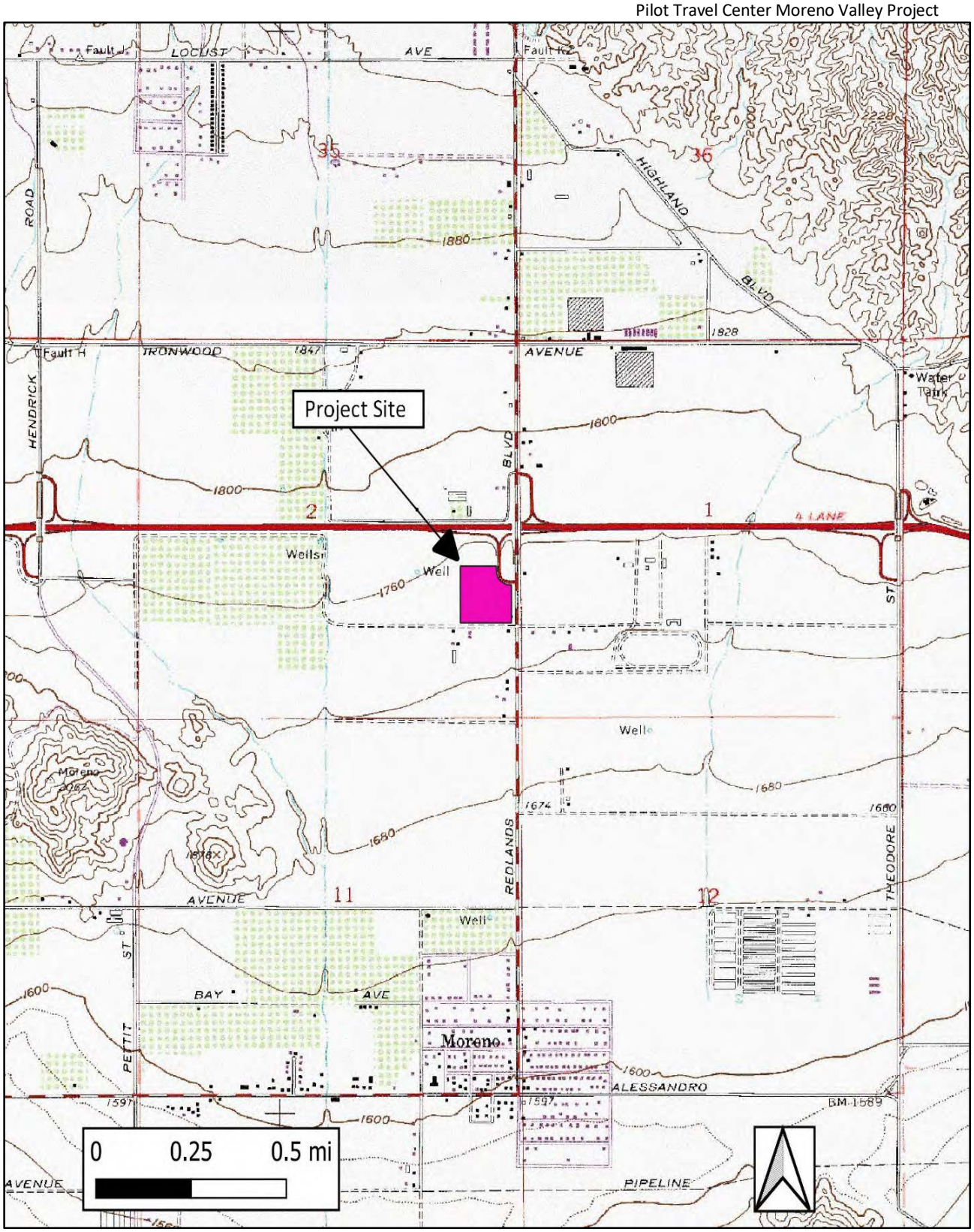

Project Location Map *Sunnymead, CA*

April 20, 2021

La Posta Band of Diegueno Mission Indians
Gwendolyn Parada, Chairperson
8 Crestwood Road
Boulevard, CA, 91905

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Chairperson Parada:

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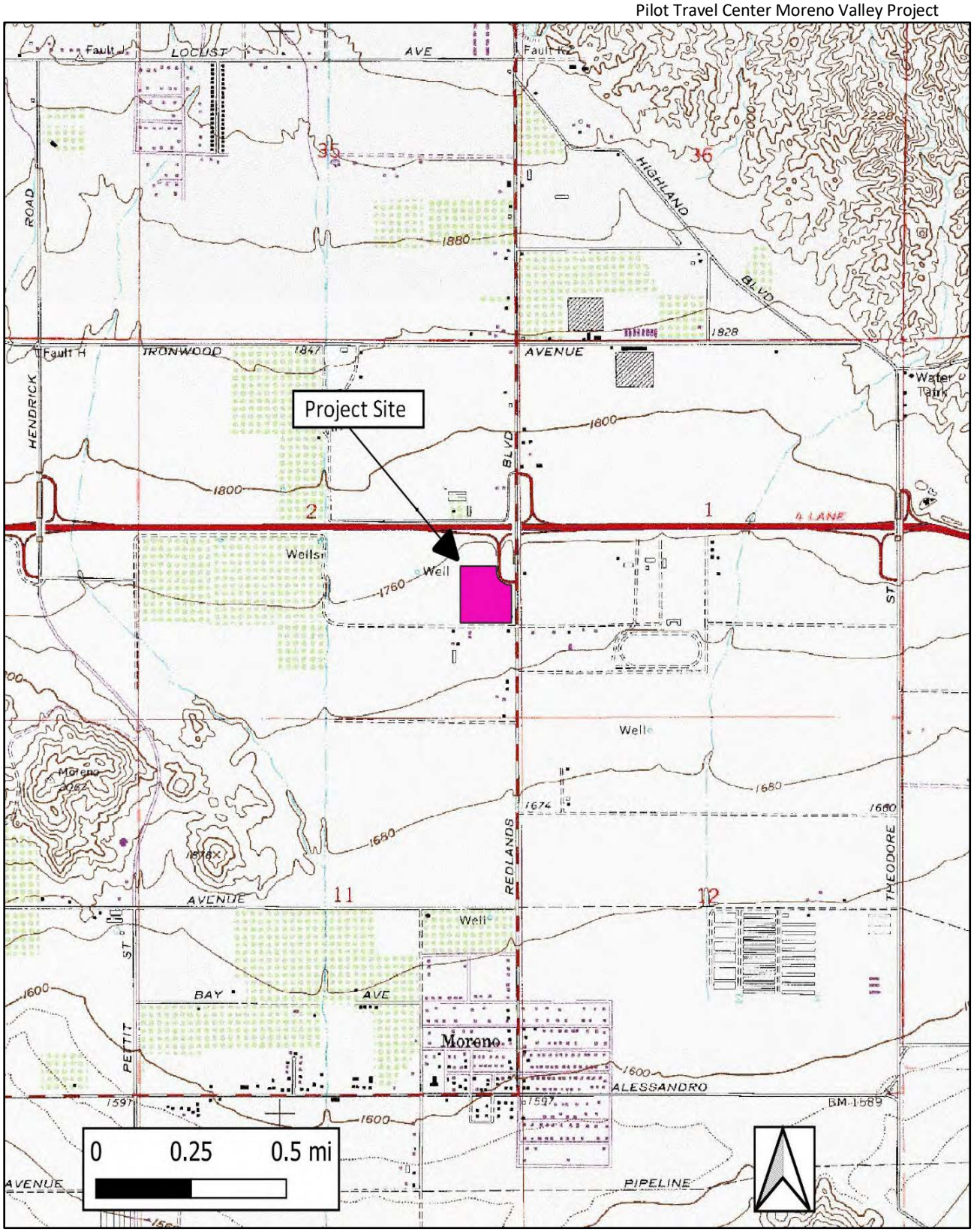

Project Location Map *Sunnymead, CA*

April 20, 2021

La Posta Band of Diegueno Mission Indians
Javaughn Miller, Tribal Administrator
8 Crestwood Road
Boulevard, CA, 91905

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Admistrator Miller:

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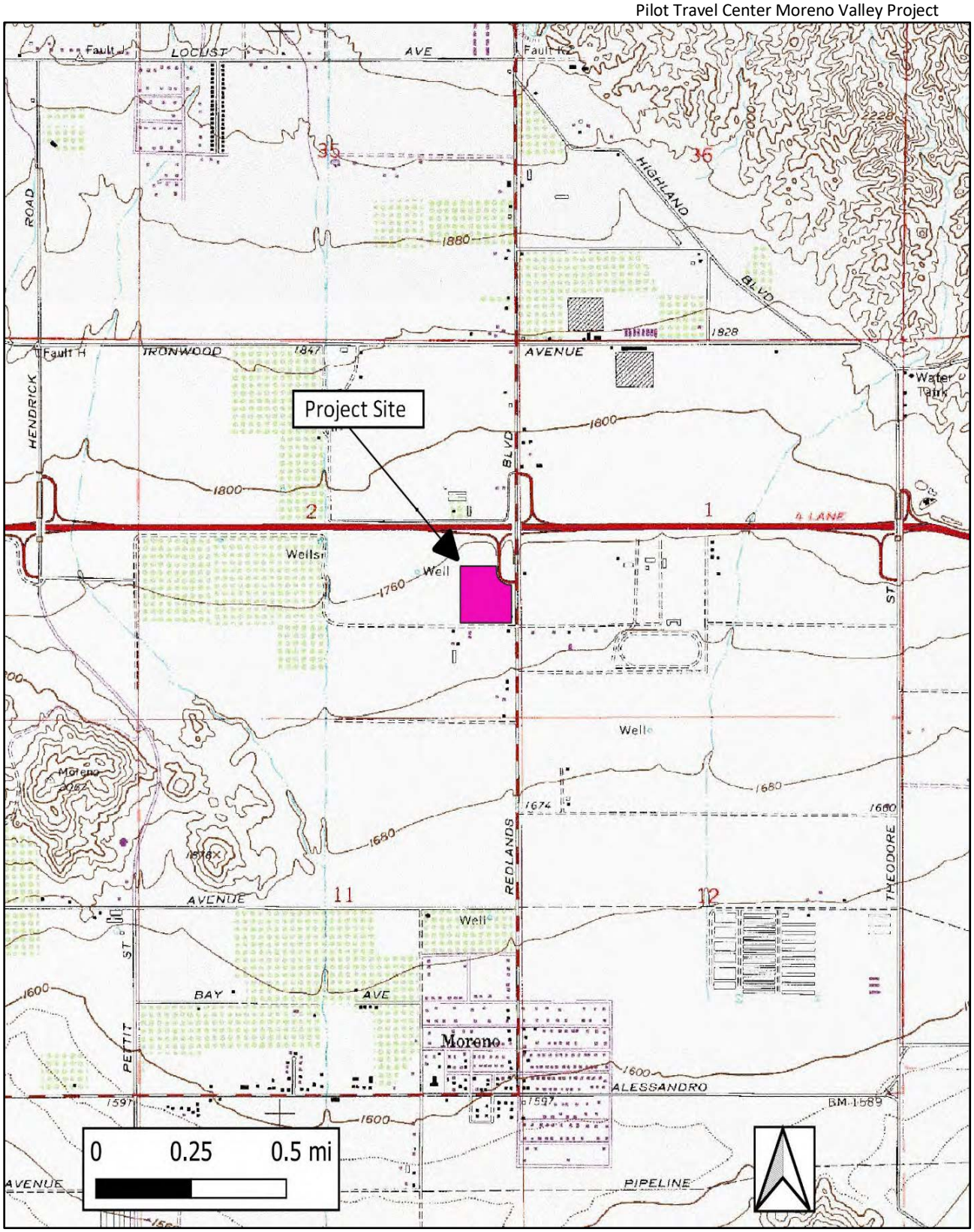


Project Location Map *Sunnymead, CA*

April 20, 2021

Sycuan Band of the Kumeyaay Nation
Cody Martinez, Chairperson
1 Kwaaypaay Court
El Cajon, CA, 92019

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Chairperson Martinez:

Anza Resource Consultants (Anza) has been retained to prepare a Phase I Cultural Resources Study for the Pilot Trvel Center Moreno Valley Project located on the northwest corner of Redlands Blvd and Eucalyptus Avenue in Moreno Valley, Riverside County, California. The project proposes to construct a Pilot Travel Center, including fueling station, restaurant, and car and truck parking on a 12-acre project site. The project is subject to the California Environmental Quality Act (CEQA) and the City of Moreno Valley is the lead agency.

Anza contacted the Native American Heritage Commission (NAHC) and requested a Sacred Lands File (SLF) search and a list of Native American tribal organizations and individuals who may have knowledge of sensitive cultural resources in or near the project area. The NAHC has not yet provided results but Anza anticipates that the NAHC will recommend we contact you for comment.

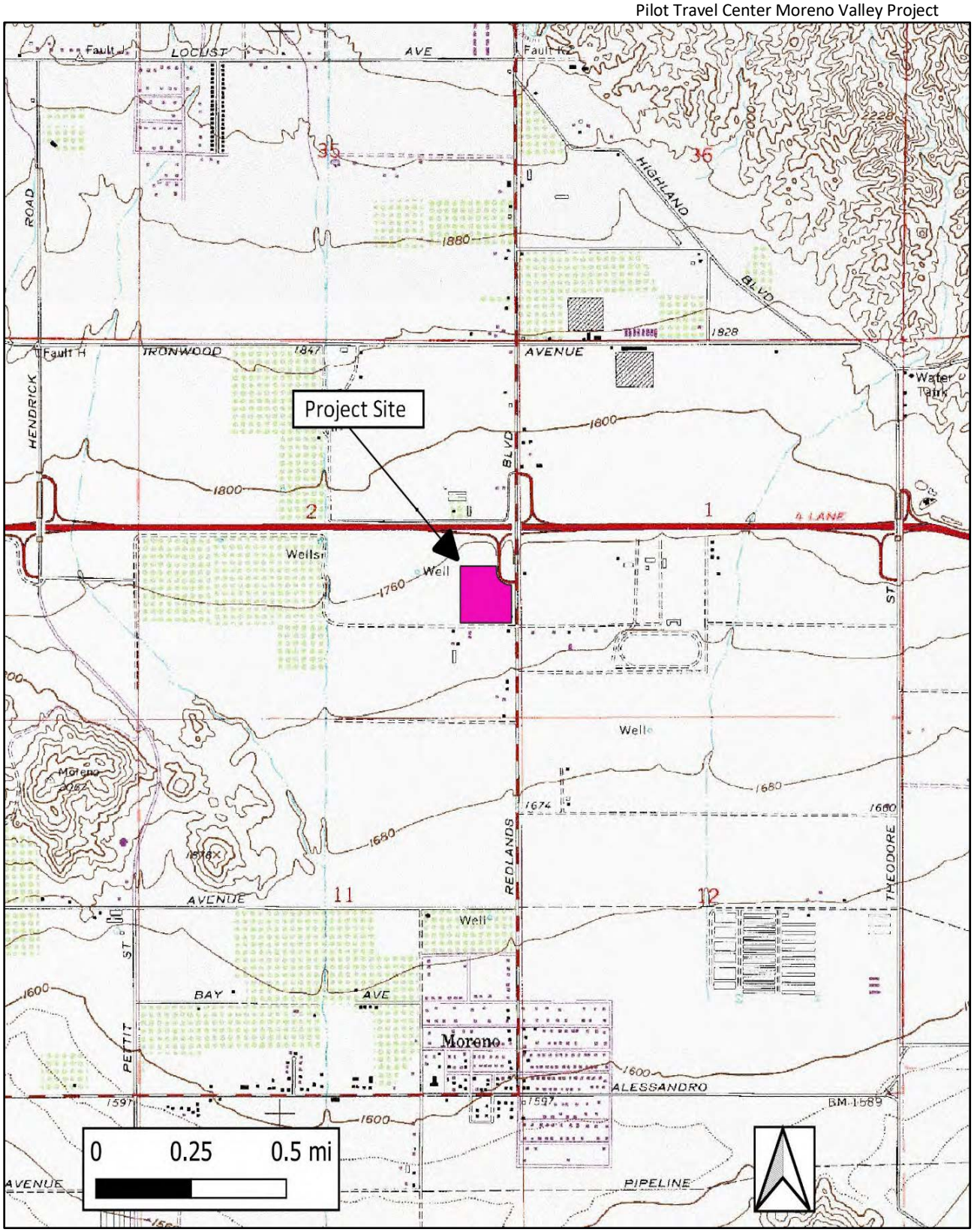
If you have knowledge of cultural resources that may exist within or near the project area, please contact at kevin@anzaresourceconsultants.com or by telephone at (760) 207-9736. Thank you for your assistance.

Sincerely,

Kevin Hunt, Principal
Anza Resource Consultants
603 Seagaze Dr. #1018
Oceanside, CA 92054

Enclosure: Project Location Map

Pilot Travel Center Moreno Valley Project



Project Location Map *Sunnymead, CA*

April 20, 2021

Torres-Martinez Desert Cahuilla Indians
Thomas Tortez, Chairperson
P.O. Box 1160
Thermal, CA, 92274

RE: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Chairperson Tortez:

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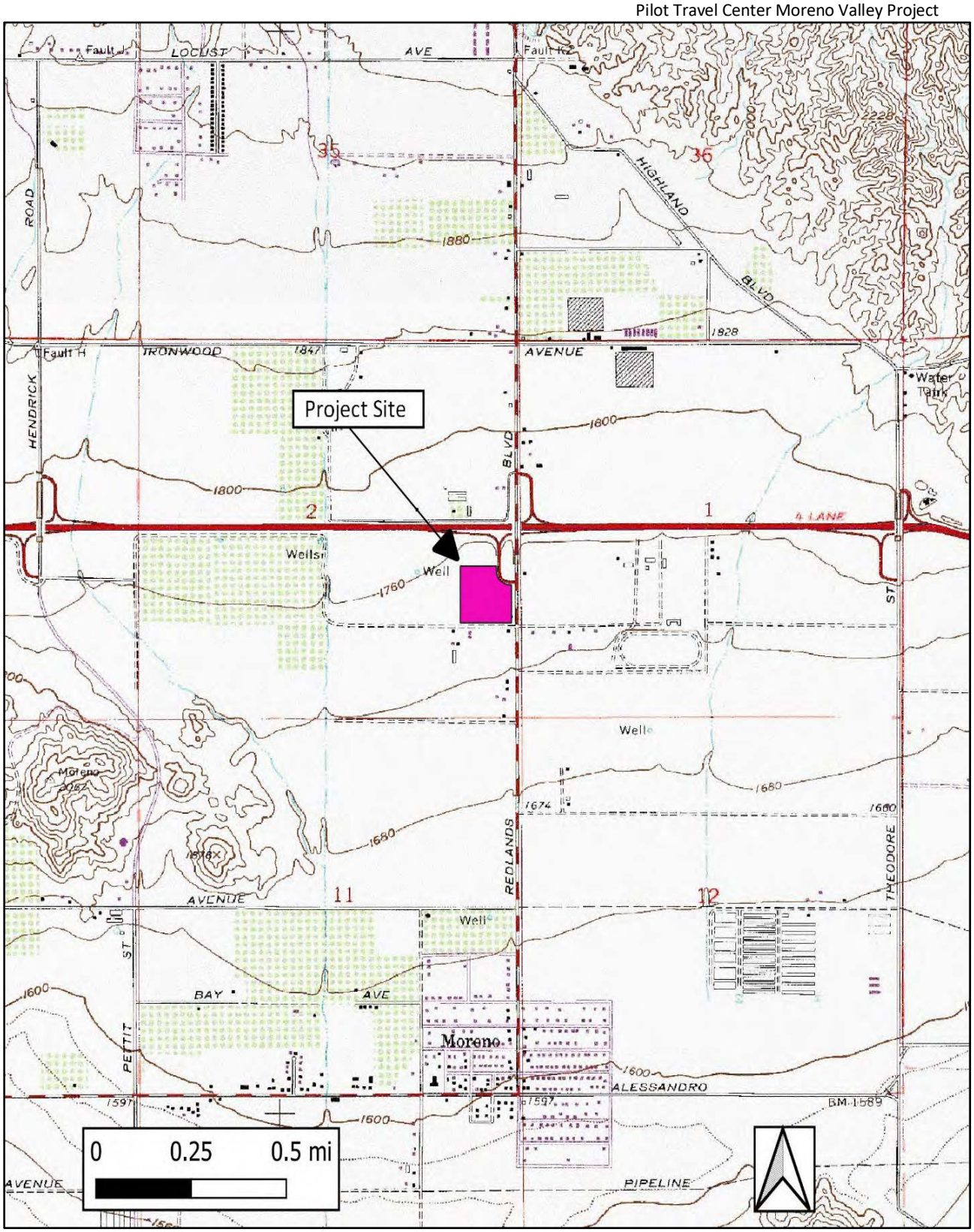


Project Location Map *Sunnymead, CA*

From: Quechan Historic Preservation Officer
To: Kevin Hunt
Subject: Pilot Travel Center Project, Moreno Valley, Riverside County, CA
Date: Tuesday, April 27, 2021 6:52:13 AM

This email is to inform you that we have no comments on this project. We defer to the more local Tribes and support their decisions on the project.

Thank you,
H. Jill McCormick, M.A.

Quechan Indian Tribe
Historic Preservation Officer
P.O. Box 1899
Yuma, AZ 85366-1899
Office: 760-572-2423
Cell: 928-261-0254
E-mail: historicpreservation@quechantribe.com

Rincon Band of Luiseño Indians
CULTURAL RESOURCES DEPARTMENT

One Government Center Lane | Valley Center | CA 92082
(760) 749-1051 | Fax: (760) 749-8901 | rincon-nsn.gov

May 11, 2021

Sent only via email to: Kevin@anzaresourceconsultants.com

Re: Pilot Travel Center Project, Moreno Valley, Riverside County, California

Dear Mr. Hunt,

This letter is written on behalf of the Rincon Band of Luiseño Indians ("Rincon Band" or "Band"), a federally recognized Indian Tribe and sovereign government. We have received your notification regarding the above referenced project and we thank you for the opportunity to provide information pertaining to cultural resources. The identified location is within the Traditional Use Area of the Luiseño people, and is also within Rincon's specific area of Historic interest.

We do not have knowledge of cultural resources within the proposed project area. However, this does not mean that none exist. We recommend that an archaeological record search be conducted and ask that a copy of the results be provided to the Rincon Band.

If you have additional questions or concerns, please do not hesitate to contact our office at your convenience at (760) 749 1092 or via electronic mail at cmadrigal@rincon-nsn.gov. We look forward to working together to protect and preserve our cultural assets.

Sincerely,

Cheryl Madrigal
Tribal Historic Preservation Officer
Cultural Resources Manager

AGUA CALIENTE BAND OF CAHUILLA INDIANS
TRIBAL HISTORIC PRESERVATION

03-024-2021-004

May 20, 2021

[VIA EMAIL TO:kevin@anzaresourceconsultants.com]

Mr. Kevin Hunt
603 Seagaze Dr. #1018
Oceanside, California 92054

Re: Pilot Travel Center

Dear Mr. Kevin Hunt,

The Agua Caliente Band of Cahuilla Indians (ACBCI) appreciates your efforts to include the Tribal Historic Preservation Office (THPO) in the Pilot Travel Center project. The project area is not located within the boundaries of the ACBCI Reservation. However, it is within the Tribe's Traditional Use Area. For this reason, the ACBCI THPO requests the following:

*A cultural resources inventory of the project area by a qualified archaeologist prior to any development activities in this area.

*A copy of the records search with associated survey reports and site records from the information center.

*Copies of any cultural resource documentation (report and site records) generated in connection with this project.

Again, the Agua Caliente appreciates your interest in our cultural heritage. If you have questions or require additional information, please call me at (760)699-6956. You may also email me at ACBCI-THPO@aguacaliente.net.

Cordially,

Lacy Padilla
Archaeologist
Tribal Historic Preservation Office
AGUA CALIENTE BAND
OF CAHUILLA INDIANS

5401 DINAH SHORE DRIVE, PALM SPRINGS, CA 92264
T 760/699/6800 F 760/699/6924 WWW.AGUACALIENTE-NSN.GOV

Appendix C:

Paleontological Locality Search Results

WESTERN SCIENCE CENTER

Anza Resource Consultants
Kevin Hunt
603 Seagaze Drive, #1018
Oceanside, CA 92054

April 16, 2021

Dear Mr. Hunt,

This letter presents the results of a record search conducted for the Pilot Travel Center Project (21-0088) in Moreno Valley, Riverside County, California. The project site is located south State Route 60, west of Redlands Boulevard and north of Eucalyptus Avenue in Section 2 of Township 3 South and Range 3 West on the *Sunnymead, CA* USGS 7.5 minute topographic quadrangle.

The geologic unit underlying the project area is mapped entirely as young alluvial fan deposits dating from the Late Pleistocene to Holocene (Morton et al., 2002). Pleistocene alluvial units are considered to be of high paleontological sensitivity. The Western Science Center does not have localities within the project area but does have three fossil localities within a third of a mile associated with the Aldi Distribution Project just to the west. The Aldi Distribution Project produced three specimens from three localities that were identified as a *Megalonyx jeffersonii* phalanges, a *Hemiauchenia* right astragalus, and a *Equus* axis. The Aldi Distribution Center Project is mapped in the same geologic units as the Pilot Travel Center Project and the presence of Pleistocene megafauna indicates the area dates to the earlier estimated dates for the deposition.

Any fossils recovered from the Pilot Travel Center Project area would be scientifically significant. Excavation activity associated with development of the area has the potential to impact the paleontologically sensitive Pleistocene alluvial units and it is the recommendation of the Western Science Center that a paleontological resource mitigation plan be put in place to monitor, salvage, and curate any recovered fossils associated with the current study area.

If you have any questions, or would like further information, please feel free to contact me at dradford@westerncentermuseum.org

Sincerely,

Darla Radford
Collections Manager

Appendix F
Geotechnical Evaluation Report and Geotechnical Addendum

GEOTECHNICAL EVALUATION REPORT

MORENO VALLEY
TRUCK STOP MODEL

AT

SOUTH OF FREEWAY 60 &
WEST OF REDLANDS BOULEVARD
MORENO VALLEY, CALIFORNIA 92553

PREPARED FOR:

BROADBENT, INC.
WEST PACIFIC AVENUE
HENDERSON, NEVADA, 89015

PROJECT NO: G-5852-01

FEBRUARY 26, 2021

PREPARED BY:

GEOTECHNICAL SOLUTIONS, INC.
GEOTECHNICAL & ENVIRONMENTAL
ENGINEERING

Geotechnical Solutions, Inc.
Geotechnical, Structural & Environmental Engineering

February 26, 2021

Project No: G-5852-01

Broadbent, Inc.
8 West Pacific Avenue
Henderson, Nevada, 89015

Attention: Mr. Mark E. Kazelskis, PG, CHG, CEM
Principal Geologist

Via Email: mkazelskis@broadbentinc.com

Re: Geotechnical Engineering Evaluation Report
Truck Stop – Moreno Valley Pilot # 1316
South of Freeway 60 &
West of Redlands Boulevard
Moreno Valley, California 92553

Gentlemen:

Submitted herewith is the report of the Geotechnical Engineering evaluation study conducted by this office for Moreno Valley Truck Stop Model Pilot # 1316 at the referenced site.

The project site is located just northwest of Redlands Boulevard and Eucalyptus Avenue Intersection and south of Moreno Highway 60 in Moreno Valley, California as shown on Vicinity Map (Plate A) and Google Map (Plate D).

Based on our study findings, it is our opinion that the site is suitable for the proposed development from a geotechnical-engineering standpoint, provided that the recommendations of this report are successfully implemented.

The investigation was made in accordance with generally accepted geotechnical engineering principles and procedures and included such field and laboratory tests considered necessary in the circumstances.

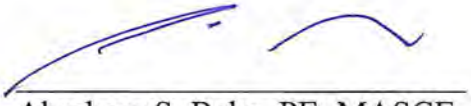
In the opinion of the undersigned, the accompanying report has been substantiated by data, observations, analysis, and opinions and presents fairly the design information requested by you.

This completes our scope of services for the initial design phase of the project. We have appreciated this opportunity to be of service to you on this project.

Respectfully Submitted,

Geotechnical Solutions, Inc.

Dharma Shakya, PhD, PE, GE
Principal Geotechnical Engineer



Abraham S. Baha, PE, MASCE
Sr. Principal

Distribution: (3 +pdf) Addressee

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Purpose and Scope

The primary objectives of this study were to explore subsurface conditions beneath the project site and evaluate the existing earth materials relative to foundation support and lateral pressure design factors, seismic conditions and earthquake-induced liquefaction potential.

In general, the study objectives were met by a visual reconnaissance of the site and vicinity, review of available tentative development plans, exploratory drilling and sampling of earth materials, laboratory testing, seismic evaluations, geologic hazards study, and engineering analysis. The general scope and objectives of the study were established in collaboration with the client/project team. Items considered in our study relevant to this site included the following:

- Near surface and subsurface soil types,
- Expansion potential,
- Settlement and hydro-collapse potential,
- Bearing capacity and Foundation Design Parameters,
- Slabs-on-grade,
- Lateral earth pressures,
- Drainage considerations,
- Temporary excavation support,
- Corrosion potential,
- Groundwater conditions,
- Likely excavation conditions,
- Seismic Conditions,
- Earthquake induced liquefaction potential,

- Pavements,
- Grading considerations, and
- Construction observation and testing considerations.

To address these, the following scope of work was executed:

1. Review of preliminary project plans, available documents, and coordination with the owner's representatives and project design professionals.
2. Site reconnaissance.
3. Evaluation of seismic conditions for the subject location.
4. Hollow Stem Auger drilling, sampling and logging of ten test holes to investigate subsurface conditions.
5. Laboratory testing of soil samples obtained from subsurface explorations, to determine their physical and engineering properties.
6. Geotechnical analysis of the data obtained.
7. Developing conclusions and recommendations for foundation design.
8. Preparation of this report.

1.2 Project Description

Based on the information provided, the proposed Truck Stop will have total site area of 10.21 acres and will consist of mainly constructing the Hydrogen tank and Equipment, above ground storage tanks (ASTs – east and west), building, truck diesel canopy, 0.62 acre pond, gas canopy, cat scale, and truck approach at the location shown on Plot Plan and Boring Location Map (Plate B in Appendix A).

Also, the project consists of heavy duty asphalt pavement for parking and driveways with some rigid concrete pavement sections to accommodate 59 auto parking and 55 truck parking.

1.3 Site Description and Topography

The project site is located just southwest of Redlands Boulevard and Eucalyptus Avenue Intersection and south of Moreno Highway as shown on Vicinity Map (Plate A) and Google Map (Plate D) in Appendix A. At the time of our field exploration, the site was vacant and covered with grass all around.

No hilly terrain or drainage problems exist at the subject property.

1.4 Site Geologic Setting

The City of Moreno Valley lies primarily on bedrock known as the Perris Block. This structural unit is located within the peninsular Range Geomorphic Province, one of the major geologic provinces of Southern California. The Perris Block is a large mass of granitic rock generally bounded by the San Jacinto Fault, the Santa Ana River and a non-defined southwest boundary. The Perris Block has had a history of vertical land movements of several thousand feet due to shifts in the Elsinore and San Jacinto Faults.

The most significant geologic hazard to the project is the potential for moderate to severe ground shaking resulting from earthquakes generated on the faults close to the site. The site is not located in an Alquist-Priolo Special Studies zone for earthquake rupture hazard. The potential for direct surface fault rupture in the project area is considered very low.

1.5 Other Geologic Hazards

Since the site is located in a relatively flat area, we do not consider landslides or other forms of natural slope instability to represent a hazard to the project. The site is not located near any impounded bodies of water therefore tsunamis and seiches are not

considered a potential hazard to the project. The proposed project is an area of stable soil conditions with low shrink-swell potential; hence, no impact is anticipated.

In addition to possible strong earthquake ground motion at the site, the secondary effects of earthquake-induced liquefaction, and earthquake-induced landsliding, were considered. Guidelines for evaluating and mitigation seismic hazards in California (CGS, 2008, SP-117A) summarize procedures for evaluating the earthquake-induced landslide and liquefaction potential.

1.5.1 Earthquake-Induced Liquefaction

The site has not been evaluated for earthquake-induced liquefaction potential as per California Geologic Survey (Plate F, Appendix A). Liquefaction is discussed in more detail in the proceeding sections.

1.5.2 Induced Flooding

The site lies far and/or high enough from the coast or large inland body of water to preclude the hazards of tsunami or seiche waves or inundation from the rupture of an up gradient reservoir.

1.5.3 Eathquake-Induced Landsliding

The site has not been evaluated by California Geologic Survey (CGS) for earthquake-induced landsliding potential. Since the site is far enough from steep slopes, landsliding will be unlikely.

2.0 FIELD EXPLORATION

2.1 Scope

Ten (10) hollow stem auger borings were drilled to depths varying from 11.5 feet to 51.5 feet below the existing site ground level in the proposed development areas. The borings,

B-1 through B-10 are shown on the Plot Plan and Boring Location Map (Plate B) in Appendix A. A continuous record of the materials encountered during the drilling was made by our field engineer and Log of all the test borings are presented on Appendix A

2.2 Drilling and Sampling Procedures

A truck-mounted CME-85 drill rig using 8-inch diameter hollow-stem augers was used to advance the borings.

The lines designating the interface between soil strata on the log of Test Holes represent approximate boundaries. The transition between strata may be gradual. Undisturbed samples were secured at frequent intervals from various locations for laboratory testing.

Core samples and bulk samples were secured at frequent depth intervals for laboratory examination and testing. Both California standard ring samples (CA) and split spoon samples with Penetration test (SPT) blow counts were obtained for further evaluation. Disturbed bulk samples, representative of the surficial subgrade materials were also obtained.

The relative sampler penetration resistance (SPT) exhibited by the deposits sample is tabulated in the Blow per Foot column of the pertinent test hole log. Recorded blow counts for 12 inches of sampler penetration were generally indicative of medium to high shear resistance (140 pounds hammer at a 30-inch drop).

2.3 Field Tests and Measurements

The test holes were examined and logged in the field. Representative samples were obtained to classify the soils. The Unified Soil Classification System (USCS) was used to classify the soils. The soil classification symbols appear on the boring logs and are briefly described in Appendix A. Local and regional geologic characteristics were used to estimate the seismic design criteria.

In addition, relatively undisturbed California ring samples were obtained for laboratory testing. The attached logs tabulate data based on laboratory classification tests and visual observation by the field geologist at the site.

2.4 Standard Penetration Resistance

A sediment is considered to be susceptible to transformation to a fluid mass during a strong seismic event only if the packing of the grains (relative density) is relatively low. Sediments with high relative densities cannot reduce their total volume through the compactive effort induced by the ground shaking. The number of blows necessary to drive a standard sampler (1½" I.D.)-12 inches into the individual stratum is a measurement of a specific property that has been correlated to relative density. The sampling (penetration) resistance offered by sediment from successive blows delivered by a 140-pound hammer falling 30 inches is counted. The number of blows to drive the standard sampler full 12 inches is recorded as the N-Value.

The on-site material yielded penetration resistance which indicates loose to medium dense to dense silty sand/sand to medium stiff to stiff sandy silt with some clay were encountered within the boring depth. The standard penetration resistances of the on-site materials at 5-feet intervals are presented on the boring logs (Appendix A).

3.0 LABORATORY TESTING AND SUMMARY METHODS

Laboratory testing was programmed following a review of field investigation data and after considering the various foundations, floor slabs, and grading elements to be evaluated. In general, this includes physical testing to establish foundation-bearing characteristics, and classification tests.

A. In-Place Moisture & Density (ASTM D2216 & D2937)

In situ moisture content and density were determined for all the undisturbed core samples

obtained during test boring drilling operations. Test results are tabulated on Plates I-1 through I-10, Log of Test Hole.

B. Mechanical Analysis (ASTM D422)

The texture composition of a selected typical sample determined by the hydrometer test method was as follows:

Boring No.	Depth (Feet)	Percent Sand	Percent Silt	Percent Clay
B-3	0-3	46	34	20
B-7	0-3	51	31	18
B-8	0-3	46	31	23

C. Direct Shear (ASTM D3080)

Direct shear tests were performed on undisturbed natural samples of soil encountered within the full depth explored and was considered most pertinent in the design of mat/ spread footings, and moderately deep pier. Tests were performed in the saturated condition at the field density. Individual test results are shown on Plate J.

D. Expansion (ASTM D4829)

Expansion characteristics were determined by the Expansion Index test on a typical bulk sample considered to be generally representative of the near subgrade soils. Test results were as follows:

Test Boring No.	Moisture Content (%)	Dry Density (pcf)	Expansion Index	Remarks
B-8	11.2	104.8	18	Very Low Expansive

According to the test results, the underlying soils generally exhibit very low expansive potential.

E. Consolidation (ASTM D2435)

Consolidation (load deformation) tests were performed on undisturbed samples at selected depths. Plotted test results are presented on Plates K through M.

F. Chemical Sulfate Analysis (CAL 417-A Method)

Chemical sulfate analysis was performed on a representative sample by the CAL 417-A method. A soluble sulfate of 420 parts per million was indicated, which is negligible exposure to concrete, however we recommend using Type II Portland cement for the foundation elements in contact with the underlying soil.

G. R-Value Test (ASTM D-2844)

Representative samples of the subgrade soils were obtained and tested to determine the R-value. The material is thought to be typical and presumed to be representative of the subgrade soils. Testing was performed in general accordance with the latest revisions to the Department of Transportation, State of California, Material & Research Test Method No. 301. Pavement design recommendations are based on the latest Traffic Indices (TI's) and recently tested R-value.

An R-Value test was conducted on a representative sample of the near surface soil consisting of clayey sand with trace of silt. The specimens were tested in a state as near to full saturation as possible to simulate the condition the soil might attain at typical field density and under adverse moisture conditions. The R-Value for a representative soil was determined to be 30. Test results are as follows:

The R-Value for a representative soil was determined to be 30. Test results are as follows:

Test Number	Moisture @ Compaction (%)	Density (pcf)	Exudation Pressure (psi)	Stabilometer "R"-Value
a	12.0	119.3	200	24
b	11.1	120.	350	33
c	10.7	121.8	470	40

* Interpolated 300 psi by Exudation , Rv = 30

4.0 SUBSURFACE DISCUSSION

4.1 General

The recommendations presented are based on entirely upon data derived from a limited number of samples obtained from widely spaced borings. The attached logs, B-1 through B-10 presented in Appendix A are indicators of subsurface conditions only at the specific locations and times noted. This report assumes the uniformity of the geology and soil structure between the borings, however variations can and often do exist. Whenever there is any deviation, difference or change is encountered or becomes known, we should be contacted.

4.2 Material and Soil Conditions Summary

No appreciable artificial fill was encountered at the boring locations during the exploratory drilling. The upper and underlying natural soils are alluvium, light gray, slightly moist to moist, generally fine to very fine grained, medium dense to dense, silty sand and sandy silt, medium stiff to stiff. A more detailed soil profiles are shown on Plates I-1 through I-10, Log of Test Hole (Appendix A).

4.3 Groundwater

Surface water on this site is the likely result of precipitation or surface run-off from surrounding sites. Overall site drainage is in a south and southwesterly direction.

Provisions for surface drainage will need to be accounted for by the project civil engineer.

We recommend that all surface runoff should not be allowed to pond above or flow freely over adjacent slope surfaces. Collected water should be conveyed via a non-erosive device to a suitable storm drain system.

Groundwater was not encountered within a drilled hole depth of 51.5-feet during the field study. No springs or perennial stream flow in local drainages exist based on older topographic maps. We believe the historic groundwater depth is way deeper than 50-feet below existing ground surface.

Groundwater is not anticipated to affect the site adversely. However, these observations reflect site conditions at the time of the investigation and do not preclude changes in local groundwater conditions, localized seepage due to variations in rainfall, heavy irrigation, damaged structure (pipes, etc.), or altered site drainage pattern(s).

Proper surface drainage is imperative to collect and convey any surface water off site to a suitable storm drain system.

4.4 Faulting and Seismicity

The project site is located in the highly seismic Southern California region within the influence of several fault systems that are considered to be active or potentially active. An active fault is defined by the State of California as a "sufficiently active and well defined fault" that has exhibited surface displacement within the Holocene time (about the last 11,000 years).

A potentially active fault is defined by the State as a fault with a history of movement within Pleistocene time (between 11,000 and 1.6 million years ago).

No faults have been mapped trending towards or through the site area. The site area does not lie within an Alquist-Priolo Earthquake Fault Zone as designated by the California

Geological Survey (CGS) (Hart, 1997). For this reason, the potential for direct surface rupture is considered unlikely.

4.4.1 Faults Close to the Site

USGS National Seismic Hazard Maps for Source parameters interactive query has been used to determine the closest fault to the site within 50 miles and has been tabulated on Table – 1 in Appendix B.

The closest known active fault capable of producing a major earthquake is the San Jacinto (SBV+SJV+A) Fault, which is located about 1.03 miles (1.6 km) away from the site. The San Jacinto (SBV+SJV+A) Fault has been assigned to 7.63 Mw magnitude and slip rate of N/A.

4.4.2 U.S.G.S. Earthquake Hazard Program

Latest Interactive U.S.G.S. Earthquake Hazard Program using Unified Hazard Tool has been utilized for Conterminous U.S. 2008 (v3.2.x) and peak ground acceleration.

Peak Horizontal Ground Acceleration for 10% probability of exceedance in 50 years i.e. return period of 475 years	0.6345g
Peak Horizontal Ground Acceleration for 5% probability of exceedance in 50 years i.e. return period of 975 years	0.8106g
Peak Horizontal Ground Acceleration for 2% probability of exceedance in 50 years i.e. return period of 2,475 years	1.0575g

Interactive **Hazard Curve** and **Uniform Hazard Response Spectrum** have been plotted and presented in Appendix B.

4.4.3 Seismic Factors

The following are the geotechnical parameters for earthquake design data in accordance with USGS Design Maps Summary and Detailed Report presented in Appendix B:

Latitude: **33.9364**^{0} and Longitude: **-117.1581**^{0}

NO.	PARAMETERS	VALUES	REFERENCE
1	0.2-Second Mapped Spectral Response Accelerations, **S_s (MCE_R Ground Motion)**	**2.225g**	ASCE 7-16
2	1-Second Mapped Spectral Response Accelerations, **S_1 (MCE_R Ground Motion)**	**0.900g**	ASCE 7-16
3	Site Class	**D**	ASCE 7-16
4	Site Amplification Factor at 0.2 sec, **F_a** According to Section 11.4.4, F_a should not be less than 1.2	**1.0** 1.2	ASCE 7-16 Use
5	Site Amplification Factor at 1.0 sec, **F_v,** however, according to Table 11.4.2, **F_v should be 1.7**	**Null** 1.7	ASCE 7-16 Use
6	Site Modified Spectral Acceleration Value, **S_{MS}** $S_{MS} = F_a S_s = 1.2 \times 2.225 = 2.670$	**2.670g** 2.670g	ASCE 7-16 Use
7	Site Modified Spectral Acceleration Value, **S_{M1}** **$SM_1 = F_v S_1 = 1.7 \times 0.900 = 1.530$**	**Null** 1.530g	ASCE 7-16 Use
8	Numeric Seismic Design value at 0.2 sec SA, **S_{DS} = 2/3 of S_{MS} = 2/3 x 2.670 = 1.780**	**1.780g** 1.780g	ASCE 7-16 Use

9	Numeric Seismic Design value at 1.0 sec SA, **S_{D1} = 2/3 of SM_1 = 2/3 x 1.530 = 1.020g**	**Null** **1.020g**	ASCE 7-16 Use

Other seismic parameters are as follows:

Closest Fault Distance	1.03 miles (1.65 km)
Fault Name	San Jacinto (SBV+SJV+A) Fault
Earthquake Magnitude	7.63 M_w
Slip Rate (mm/year)	N/A
PGA_M Site Modified Peak Ground Acceleration	**1.172g**
5% Damped Design Spectral Acceleration at short period, S_{DS}	**1.780g**
5% Damped Design Spectral Acceleration at 1-sec period, S_{D1}	**1.020g**
Seismic Design Category	E
Risk Category	II
Soil Site Class	D

4.5 Design Values

Representative values were selected from the test data and other sources for design and is tabulated below:

Field Density	120 pcf
Expansion Index	18
Angle of Internal Friction (Ult/Peak)	30/31 & 33/34 deg.
Cohesion (Ult/Peak)	350/400 & 200/250 psf
Subgrade K-Value	100 pci

5.0 SITE CONSIDERATIONS

5.1 Site Preparation

5.1.1 General

It is our professional opinion that the proposed construction will not be subject to geologic hazard from settlement, slippage, or landslide, provided the recommendations of this report are incorporated into the proposed construction. It is also our opinion that the proposed construction will not adversely affect the geologic stability of the site or adjacent properties provided the recommendations contained in this report are incorporated into the proposed construction.

The validity of the conclusions contained in this report is based on compliance with the recommendations presented in this section. Any excavating, trenching, or disturbances that occur after completion of the earthwork must be backfilled, compacted and tested in accordance with the recommendations contained herein. If any unobserved and untested earthwork, trenching, or backfilling occurs, then the conclusions and recommendations in this report may not be relied on.

5.1.2 Site Clearing

Prior to grading, all debris including construction materials should entirely be removed from the site and disposed of off-site. Existing any undesirable materials should also be removed and hauled off-site. Existing utilities (if Any) should be removed and relocated as required. Any construction debris or ant buried or other contaminated exposed during site clearance should be removed and hauled away from the site. The resulting excavation from any removal should be cleared of loose material then backfilled with compacted soil. Oversized rocks greater than 6 inches should be removed.

5.1.3 Excavation

Excavations into the on-site soils may encounter a variety of conditions. Caving on clean sands may be encountered. The contractor should be made responsible for designing and constructing stable, temporary excavations as required to maintain stability of the excavation sides. All excavations should be sloped or shored in the interest of safety following local and federal regulations including current OSHA excavation and trench safety standards.

Conventional equipment can be used for the excavations for shallow foundations, drilled shafts, and utility trenches for the proposed construction. The speed and ease of excavation are dependent on the nature of the deposit, the type of equipment used, and the skill and experience of the equipment operator.

5.1.4 ASTs Pad Preparation

At the locations where Above Ground Storage tanks (ASTs) are located, proof-roll the exposed subgrade to observe for any loose or disturbed soils that may remain. Remove and replace any loose or disturbed soils prior to placing any additional fill materials required to reach the finished subgrade elevation.

5.1.5 Compliance

Recommendations for foundations and slabs-on-grade supported on compacted fills or prepared subgrade depend upon compliance with the **Site Preparation recommendations** and Recommended Earthwork Specifications in Appendix D.

To assess compliance, observation and testing should be performed under the direction of a geotechnical engineer. Please contact us to provide observation and testing services.

5.2 Lateral Earth Pressures

5.2.1 Lateral Passive Resistance

Horizontal forces may be resisted by passive pressure acting on the side and sliding resistance. The passive pressure may be 300 psf per foot of embedment from the lowest adjacent grade up to a maximum of 4,500 psf.

Friction between base of footings and/or floor slabs, and the underlying soils may be assumed to be 40 percent of the dead loads.

The allowable bearing capacity and the allowable resistance of horizontal forces may be increased one-third for transient forces.

Friction and lateral pressure may be combined, but not to exceed two-thirds of the allowable lateral pressure.

5.2.2 Retaining Wall Recommendations (If Any)

The retaining wall structures may be supported by shallow footings bearing on compacted fill or competent subgrade soil. Following bearing values may be used for foundation design.

Shallow footings for the wall and/or secondary structure may be designed for an allowable bearing value of 1,500 pounds per square foot (psf) embedded at least 18 inches, a minimum width of 12 inches, placed over a minimum 12-inch thick engineered fill compacted to 90% relative density or over a competent subgrade soil. This basic bearing value may be increased by 200 psf for each one-foot increase in depth, and by 100 psf for each additional 12 inches in width to a maximum value of 2,500 psf.

Recommended bearing values are for dead plus live loads and may be increased by one-third for combined dead, live, and transient forces such as wind load and seismic forces.

It is recommended that all foundations be reinforced per structural design, but no less than a minimum reinforcement of 2#5 bars top and 2#5 bars at the bottom.

It is estimated that total settlement will be less than 0.50" and differential settlement will be less than 0.25" over a horizontal distance of 30 feet.

5.2.3 Active Pressure

Recommended active lateral soil pressure values for design of drained retaining wall are as follows:

Surface Slope of Retained Material (Horizontal:Vertical)	Equivalent Fluid Weight (pcf) (Native Backfill)
Level	35
2:1	45

A Pipe and gravel drain (4" perforated PVC embedded in at least three cubic feet of gravel per lineal foot of pipe wrapped with Mirafi geofabric 10N or equivalent) should be provided on the retained earth side and near the base of all the retaining walls. Backfill should consist of sand and/or gravel. While all backfills should be compacted to the required degree, care should be taken when working close to the walls to prevent excessive pressure.

5.2.4 At-Rest Earth Pressure (If Any)

Retaining walls (basement walls, underground vault, if applicable) should be designed for at-rest conditions. The recommended earth pressure for at-rest conditions is an equivalent fluid density of 60 pounds per cubic foot without surcharge loading.

Note:

The equivalent fluid pressures presented herein do not include the lateral pressures arising from the presence of the following:

- Hydrostatic conditions, submergence or partial submergence
- Sloping backfill, positively or negatively
- Surcharge loading, permanent or temporary
- Seismic or dynamic conditions

5.2.5 Seismic Force on Wall

Lateral forces on retaining walls (exceeding 6 feet in height) due to earthquake movements in accordance with Section 1803A.5.12 of the 2019 CBC for active and at-rest conditions may be calculated as follows:

Seismic active Force = 11 H^2 pounds/ft of wall (Inverted triangular distribution, acting at 0.6H from bottom).

Seismic at-rest Force = 22 H^2 pounds/ft of wall (Rectangular Distribution, acting at 0.6H from bottom).

Where, H = Height of the retaining wall in feet

5.3 On-Site Fill Soils

5.3.1 Materials

On-site clean, low-expansive potential soils, or imported materials may be used as fill material for the following:

- Foundation Areas
- Interior Slab Areas

- Pavement Areas
- Backfill

Any earth materials imported or excavated on the property may be utilized in the fill provided that each material has been determined to be suitable by the soil engineer. These materials should be free of roots, tree branches, other organic matter or other deleterious materials. Soils of poor gradation, undesirable expansion potential, or substandard strength characteristics may be designated by the consultant as unsuitable and may require blending with other soils to serve as a satisfactory fill material.

Gradation (as per ASTM C136) should be as follows:

Size	% by Weight
6"	100
4"	85-100
¾"	70-100
No 4 Sieve	50-100
No. 200 Sieve	40 (max)

Any import material should have an expansion Index, EI less than 20.

5.3.2 Placement and Compaction

a. Place and compact approved fill material in nearly horizontal layers that when compacted should not exceed 6 inches in thickness.

b. Use appropriate equipment and procedures that will produce recommended densities and water contents throughout the lift. Moisture condition, blending, and mixing of the fill layer should continue until the fill materials have a uniform moisture content at or above optimum moisture.

c. Uncompacted fill lifts should not exceed 8 inches.

d. Materials should be compacted to the following:

- On-site or imported soil, reworked and fill:

	Minimum % (ASTM D-1557 Laboratory Standard)
Subgrade Below Footings	90
Subgrade Below Slab-on Grade	90
Subgrade Below Pavement	90
Crush Rock Below Slab-on-Grade	95
Aggregate Base below pavement	95

5.4 Soil Corrosivity

5.4.1 Corrosion and Sulfate Attack Protection

A major factor in determining soil corrosivity is electrical Resistivity. The electrical Resistivity of a soil is a measure of its resistance to the flow of electrical current. Corrosion of buried metal is an electrochemical process in which the amount of metal loss due to corrosion is directly proportional to the flow of electrical current (DC) from the metal into the soil. Corrosion currents, following Ohm's Law, are inversely proportional to soil Resistivity. Lower electrical resistivities result from higher moisture and chemical contents and indicate corrosive soil. Other soil characteristics that can influence corrosivity toward metals are pH, chemical content, soil types and site drainage.

Based on test results and our past experience at this site, soils are classified as corrosive to ferrous metals and negligible sulfate exposure to concrete. The type of alluvial deposits encountered at this site and in this area in general is known to cause

corrosion problems. Reportedly, there has been such experience with metal pipes at this specific site. Ferrous metals and pipes should be properly coated and wrapped. Please be advised that this firm does not practice corrosion engineering; therefore, we recommend that upon completion of precise grading, onsite soils be analyzed by a qualified corrosion engineer to evaluate the impact of chemical activity of these soils on buried metallic pipes and other underground structures. If necessary, more elaborate corrosion protection systems may be considered as may be recommended by a corrosion expert.

5.4.2 Concrete

Concrete for foundation where in contact with the underlying soils should be designed in accordance with the 2019 CBC, ACI 318 Section 4.3, Table 4.3.1 (2005). As the potential for sulfate attack on concrete appears negligible, however, we recommend that the use of type II Portland cement, with a maximum water-cement ratio of 0.50, and a minimum compressive strength of 3,000 psi should be taken into consideration for the foundation elements in contact with the soil.

For all concrete in contact with soil, concrete cover over rebar should be maintained per California Building Code (CBC 2019).

5.5 Building Foundation Recommendations

Based upon results of the field explorations, laboratory testing and engineering analysis, it is concluded that the site is suitable for the proposed development at the subject site. The site is subject to ground shaking typical of the Southern California area, any construction should conform to the current seismic design provision of the California Building Code (2019), and/or other regulatory codes.

Following are more specific recommendations:

5.5.1 Conventional/Spread Foundations

The planned ASTs and the proposed building may be supported by conventional continuous and/or isolated shallow spread pad footings, bearing on certified compacted fill. The foundations should bear on engineered fills achieved by removal and re-compaction of the soils below foundation and slab elements.

Footings placed at least 18 inches below finish subgrade and 3 feet x 3 feet spread footings, 24 inches deep may be designed for an allowable bearing value of 1,500 pounds per square foot (psf). The footing width should be a minimum of 18 inches. An increase of 100 psf and 200 psf are allowed for each additional foot of increase in width and depth, respectively to a maximum value of 2,000 psf.

This allowable bearing value is for dead plus live load and may be increased by one-third for combined dead, live, and transient loads such are wind or seismic forces.

All footings at minimum shall be incorporated with 2#5 bars at top and 2#5 bars at the bottom.

Isolated column footings should be connected to other foundation elements with reinforced grade beams.

Total settlement is estimated to be less than ½ inch for loading of 2 kips per square foot. Differential settlement will be 1/3 of an inch maximum for a horizontal distance of 30 feet. Additional foundation movements could occur if water from any source infiltrates the foundation soils. Therefore, proper drainage should be provided in the final design and during construction.

All footings, stem walls, and masonry walls should be steel-reinforced to reduce the potential for distress caused by differential foundation movements. The use of joints at openings or other discontinuities in masonry walls is recommended.

We recommend that geotechnical engineer, or his representative thereof, observe the footing excavations before reinforcing steel and concrete are placed. This observation is to assess whether the soils exposed are similar to those anticipated based on our exploration. Any soft, loose, or otherwise unacceptable soils should be undercut to suitable materials and backfilled with approved fill materials, or controlled density fill (i.e., lean concrete). Soil backfill should be properly placed and compacted.

5.5.2 Mat Foundation (Alternate Foundation for ASTs)

Alternatively, above ground storage tanks (ASTs) and proposed building may be supported on the mat foundation. The semi-rigid mat foundation should be at least 4-feet or more below the finish grade and may be designed for an allowable bearing capacity of 2,000 pounds per square foot. This basic allowable bearing value is for dead load plus live load and may be increased by one-third for short duration loading, such as wind or seismic forces. Modulus of subgrade reaction, k value may be taken as 125 pci for subgrade soil at 4 feet depth.

For lateral support, an average passive capacity of 300 pounds per square foot per foot to a maximum of 4,500 psf may be used for mat footing.

Minimum thickness of mat footing should be 24 inches. The bottom of excavation at 4 feet below the finish grade should be compacted to 90 % of the maximum density as per ASTM D-1557 laboratory Standard, certified by the Geotechnical Engineer of record prior to pouring concrete. Other aspects of the design including reinforcement and the thickness of the mat should be determined by the project structural engineer. The mat may be buried and should be backfilled with on-site material compacted to 90 percent.

5.5.3 Drilled Shafts for Canopy Foundation

Proposed truck diesel and gas canopies may be supported by moderately deep cast-in-place concrete caisson bearing into natural subgrade materials.

The lateral forces will be the controlling element in this case depending on the height of the canopies, wind load, and/or seismic loads. Therefore, it is recommended that the minimum pier diameter should be 36 inches and should be extended to a minimum depth of 10 feet into native alluvial material.

The pier may be designed for an allowable end bearing of 3,000 pounds per square foot or for an average frictional resistance of 300 pounds per square foot. Either skin resistance or end bearing or combined will provide adequate foundation support for the proposed canopies. The uppermost length of the drilled shaft foundation equal to the diameter of the shaft should be ignored when evaluating allowable capacities.

For lateral support, a passive capacity of 350 pounds per square foot per foot to a maximum of 5,000 psf may be used.

It is recommended that concrete be placed immediately after drilling. The concrete for the pier should be placed through tremmie or other directional devices. Pier drilling operations should be subject to observation by this office to confirm the conditions encountered are consistent with the conclusions and recommendations of this report and/or to make any appropriate modifications, if necessary. Please note that caving is very likely to be encountered during caisson drilling. The contractor should be ready to provide either casing or other methods to prevent caving.

We anticipate that total settlement of the proposed structures, supported by drilled shaft foundations as recommended, should be less than ½-inch. Additional foundation could occur if water from any source infiltrates the foundation soils.

Therefore, proper drainage should be provided in the final design and during construction.

5.6 Slab Design Recommendation

Based on test results, the underlying surface soils are low expansive, therefore it is recommended to maintain subgrade soil at near optimum moisture content during precise grading and / or by periodic watering following grading and incorporated slab reinforcement of No. 3 bars 16 inches center to center cross pattern. The slab thickness should be 5 inches minimum. However, the thickness and reinforcement requirements of the slab should be evaluated by the project structural engineer.

It is further recommended that moisture retarder (Stego 15 mil or approved equivalent) be provided over a minimum of 6 inches of ¾" aggregate rock rolled and compacted to 95% relative compaction, with the gradation (90-100% passing on sieve ¾" size, 1-10% passing on No. 4 sieve, and 0-3% passing on No. 100 sieve) over the compacted fill subgrade compacted to 90% relative compaction.

The modulus of subgrade reaction (k) is estimated to be 100 pounds per cubic inch (pci).

All concrete placement and curing operations should follow the American Concrete Institute (ACI 318-19) manual recommendations. Improper curing techniques, high slump (high water-cement ratio), or both, could cause excessive shrinkage, cracking, or curling. Concrete slabs should be allowed to cure properly before placing vinyl or other moisture-sensitive floor coverings.

5.7 General Drainage and Moisture Protection

It is recommended to provide positive surface drainage systems consisting of a combination of sloped concrete flatwork, sheet flow gradients, swales, surface area drains (where needed) around the structures. Ground surface should have a minimum gradient of 2 percent away from any building foundations and similar structures. Surface waters should not be allowed to collect or pond against building foundations and within the level

areas of the site. Buildings should be provided with gutters and downspouts. Downspouts shall be connected to area drains by pipes.

Planters near the building should be avoided if possible and if used, they should be water proofed. Irrigation should be controlled and an area drain system should be provided to avoid water intrusion beneath the structure.

5.8 Volume Changes

Based on our experience, there is typically a reduction in soil volume when the native soils are excavated and then compacted. Typical shrinkage percentages are usually in the range of 10 to 20 percent when the soils are compacted depending on the native in-place density.

5.9 Underground Utilities

Utility backfill should be placed and compacted by mechanical means as recommended in this report. Testing of the backfill should be conducted to verify conformance to the required specifications. Ponding or water jetting of the backfill should not be conducted.

Exterior trenches adjacent to, and within areas extending below a 1:1 plane projected from the outside bottom edge of the footing, and all trenches beneath hardscape features should be compacted to at least 90% of the laboratory standard. Sand backfill, unless excavated from the trench, should not be used in these backfill areas. Compaction testing and observations, along with probing, should be accomplished to verify the desired results.

All trench excavations should conform to CAL_OSHA and local safety codes.

5.10 Pavement Design

5.10.1 Pavement Section

The pavement sections presented on the following page are based on the R-value data tested, the assumed TI values, and the guidelines presented in the latest revision to the California Department of Transportation "Highway Design Manual," latest edition.

Typical categories of paved areas with corresponding traffic indices are listed as follows:

T.I.	5.0	Parking Stalls
T.I.	6.0	Driveways
T.I.	8.0	Trucks Route, Fire Lane, Truck Parking

The recommended pavement sections provided below are intended as a minimum guideline. If thinner or highly variable pavement sections are constructed, increased maintenance and repair could be expected.

If the ADT (average daily traffic) or ADTT (average daily truck traffic) increases beyond that intended, as reflected by the TI used for design, increased maintenance and repair could be required for the pavement sections.

Consideration should be given to the increased potential for distress from overuse of paved areas by heavy equipment and/or construction related traffic (e.g., concrete trucks, loaded supply trucks, etc.), particularly when the final section is not in place (i.e., topcoat). Best management construction practices should be followed at all times, especially during inclement weather.

Based on an "R" Value of 30, the following thickness of aggregate base was determined for vehicular and non-vehicular areas.

Asphalt Concrete Pavement Section Design Table

Pavement Areas	Traffic Index, TI	Asphalt Concrete AC (inch)	Aggregate Base AB (inch)
Truck Route, Fire lane Truck Parking	8	4"	12"
Driveway/Under Canopy	6	4"	6"
Parking Stall	5	4"	4"

Rigid Concrete Pavement Section Design Table

Pavement Areas	Traffic Index, TI	Concrete (inch)	Aggregate Base AB (inch)
Heavy Truck Vehicular Areas	6	6"	10"
Walkways	-	4"	4"

For concrete section, #4 reinforcement 12-inch center to center each way cross pattern are recommended. However structural design by structural engineer will suffix.

5.10.2 Pavement Grading Recommendations

5.10.3 General

A representative of Geotechnical Solutions, Inc. (GSI) should be present for the preparation of subgrade, aggregate base, and asphalt concrete for flexible pavement and concrete for rigid pavement.

5.10.4 Subgrade Preparation

After removing the existing deleterious materials on the pavement areas and hauled offsite, all surficial deposits of loose soil material should be removed and excavate 12

inches below the base and recompacted as recommended. The bottom is further scarified to a depth of at least 6 inches; moisture conditioned as necessary and compacted to 90 percent of the maximum laboratory density as determined by ASTM Test Method D-1557.

Deleterious material, excessively wet or dry pockets, concentrated zones of oversized rock fragments, and any other unsuitable materials encountered during excavation or grading should be removed. The compacted fill material should then be brought to the elevation of the proposed subgrade for the pavement. The subgrade should be proof-rolled in order to ensure a uniform, firm and unyielding surface. All grading and fill placement should be observed by the project soils engineer and/or his representative.

5.10.5 Aggregate Base

Compaction and rolling are required for the recommended base section. Minimum relative compaction required will be 95 percent of the laboratory maximum density as determined by ASTM Test Designation D-1557. Aggregate base should be in accordance with Crush Rock Class II aggregate base (minimum R-value=78) and sample should be brought for testing and approval prior to delivery to the site. Please note that crush miscellaneous base is not allowed.

5.10.6 Asphalt Concrete Pavement

Asphalt concrete pavement should be Performance Grade PG 64-10 1/2" maximum aggregate size and should be placed and compacted in two layers. Asphalt concrete shall be compacted to 95 percent of the Hveem Laboratory Standard.

5.10.7 Concrete Pavement Areas:

Concrete flatwork including sidewalks, patio-type slabs and concrete sub-slabs to be covered with decorative pavers should be at least 4 inches thick and provided with construction joints or expansion joints every 6 feet or less.

Concrete driveway slabs should be at least 6 inches thick over 6 inches of aggregate base (for vehicular areas) and 4" of concrete over 4" of aggregate base (Non-vehicular areas) over approved subgrade, providing #4 reinforcement 12" center to center each way cross pattern and provided with construction joints or expansion joints every 10 feet or less.

At the driveway areas, the top 12 inches of subgrade should be excavated; moisture conditioned and recompacted with minimum 90% compaction immediately prior to placing the rock base and asphalt concrete. Rock-base material shall be class II aggregate base and to be compacted to 95 percent minimum.

Design section must be verified during site grading, based on R value test and appropriate modifications shall be made, if required.

5.11 Exterior Concrete Flatwork

In order to reduce the potential for unsightly cracking, concrete sidewalks, deck and patio slabs and concrete sub-slabs to be covered with decorative pavers should be at least 4 inches thick and provided with construction joints or expansion joints every 6 feet or less. Concrete driveway slabs should be at least 5 inches thick and provided with construction joints or expansion joints every 10 feet or less.

5.12 Temporary Excavations

Temporary excavations may not be required but in case it is needed then the Contractor should be made fully responsible for adequate support of the excavation at all times. Temporary support of excavation structures plans should be designed by a Professional Engineer licensed in the State of California and experienced in such work and these plans should be reviewed by us and approved by the City of Moreno Valley, if necessary.

Since the site has adequate room to lay back with temporary excavation slopes, shoring may not be needed, but this should be evaluated based on field conditions.

The stability of temporary excavations depends on many factors, including the slope angle, the shearing strength of the existing material, orientation and inclination of geologic structure, the height of the slope and the length of time the excavation remains unsupported and exposed to equipment vibrations and rainfall. All excavations should be observed by the engineering geologist during excavation.

The possibility of temporary excavations failing may be minimized by: 1) keeping the time between cutting and filling operations to a minimum; 2) limiting excavation length exposed at any one time; and, 3) cutting no steeper than a 1:1 (horizontal to vertical [h:v]) inclination and no steeper for false cuts along the toe for key excavations, cleanouts, etc.

Following is the temporary excavation recommendation, subject to field verification by the geotechnical consultant.

Excavation up to 4 feet	Vertical
Excavation over 4' but not to exceed 12'	1:1 (H: V)
Excavation from 12' to 20'	1½:1 (H: V)

6.0 GENERAL COMMENTS AND LIMITATIONS

6.1 Plan Review

Final project plans should be reviewed by this office prior to construction, so that construction is in accordance with the conclusions and recommendations of this report. Based on our review, supplemental recommendations and/or further geotechnical studies may be warranted.

6.2 Geotechnical Observation and Testing

All footing trenches for the proposed structure should be observed by a representative of this firm to verify that they were excavated into competent bearing soils per the recommendations of this report as well as to the minimum depths recommended above.

These observations should be performed prior to the placement of forms or reinforcement. The excavations should be trimmed neat, level and square. All loose, sloughed or moisture softened soil should be removed prior to placing concrete.

6.3 Construction Verification Procedure

Construction of foundations and placement of engineered fill should be done under the observation and documentation of a representative of the project Geotechnical Engineer. The following are noted as items requiring verification during construction.

Pre-Grading Meeting:

A pre-grading meeting should be held prior to the start of any grading activities. Attendees of this meeting should include the Owner, the Architect, the Geotechnical Engineer, and the Contractor, to review procedures and scheduling.

Footing Observations:

Construction of foundation and slab should be performed under inspection of the Geotechnical Engineer. Footings should be observed and certified by Geotechnical Engineer of Record after excavation and prior to placement of reinforcing bars.

Earthwork Observations:

Relative compaction of all fill materials placed on site should be tested in accordance with ASTM D6938. All new fill shall be brought to near optimum moisture, placed in layers not exceeding six inches in thickness, and compacted to at least 90 percent relative compaction for subgrade and 95 percent relative compaction for aggregate base. No jetting or water tamping of fill soils shall be permitted. All imported soil for engineered fill should be pre-approved by the Geotechnical Engineer and consist of clean, granular, non-expansive soil, free of vegetation and other debris with an Expansion Index of 20 or less.

At all times, the contractor should have a responsible field superintendent on the project in full charge of the work, with authority to make decisions. He should cooperate fully with the Geotechnical Engineer in carrying out the work.

All footing trenches for continuous and spread footings and subgrade for the slab areas should be observed by the project Geotechnical Engineer to verify that over-excavation and re-compaction operations of adequate depth, thickness, and compaction have been performed as specified. All footing excavations should be trimmed neat, level and square. All loose, sloughed or moisture softened soil should be removed and replaced with properly compacted soil.

6.4 Recommendations for Construction

Surveying: The contractor shall set necessary stakes to verify lines and grades as shown on the plan.

Changed Conditions: Any changed conditions not found during exploration should be brought to the attention of the soil engineer. As a result of the changed conditions, the soil engineer will provide further recommendations.

Site Drainage: The site should be sloped to direct water away from all structures and divert to a positive drainage device at the street. Roof gutters and down spouts shall be provided for roof drainage. Down spouts shall be connected to the positive area drains.

Footing and Utilities Trenches. All the Footing excavations as well as utility trenches should be observed by a representative of Geotechnical Solutions, prior to placement of steel.

6.5 Limitations

This report is issued with the understanding that it is the responsibility of the owner or his representative to see that the information and recommendations contained herein are

called to the attention of the other members of the design team for the project and that the applicable information is incorporated into the plans, and that the necessary steps are taken to see that the contractors and the subcontractors carry out such recommendations. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or in part, by changes outside of our control. The validity of the recommendations of this report assumes that Geotechnical Solutions, Inc. will be retained to provide construction monitoring services. The scope of our services did not include any investigation for the presence or absence of hazardous or toxic materials.

6.6 Closure

The Conclusions and recommendations contained herein are based on the findings and observations made at the test boring locations. It is not unusual to find conditions between and beyond such locations, which differ from the conditions encountered. If conditions are encountered during construction, which appear to differ from those previously disclosed, this office should be notified so as to consider the need for modifications. On-site construction observations and wherever appropriate, tests should be performed during the course of construction by a representative of this office to evaluate compliance with the design concepts, specifications, and recommendations contained herein.

This report has been compiled for the exclusive use of our client, it shall not be transferred to, or used by, other parties, or applied to any project on this site other than described herein without consent and /or thorough review by this office.

Geotechnical Solutions, Inc.

References

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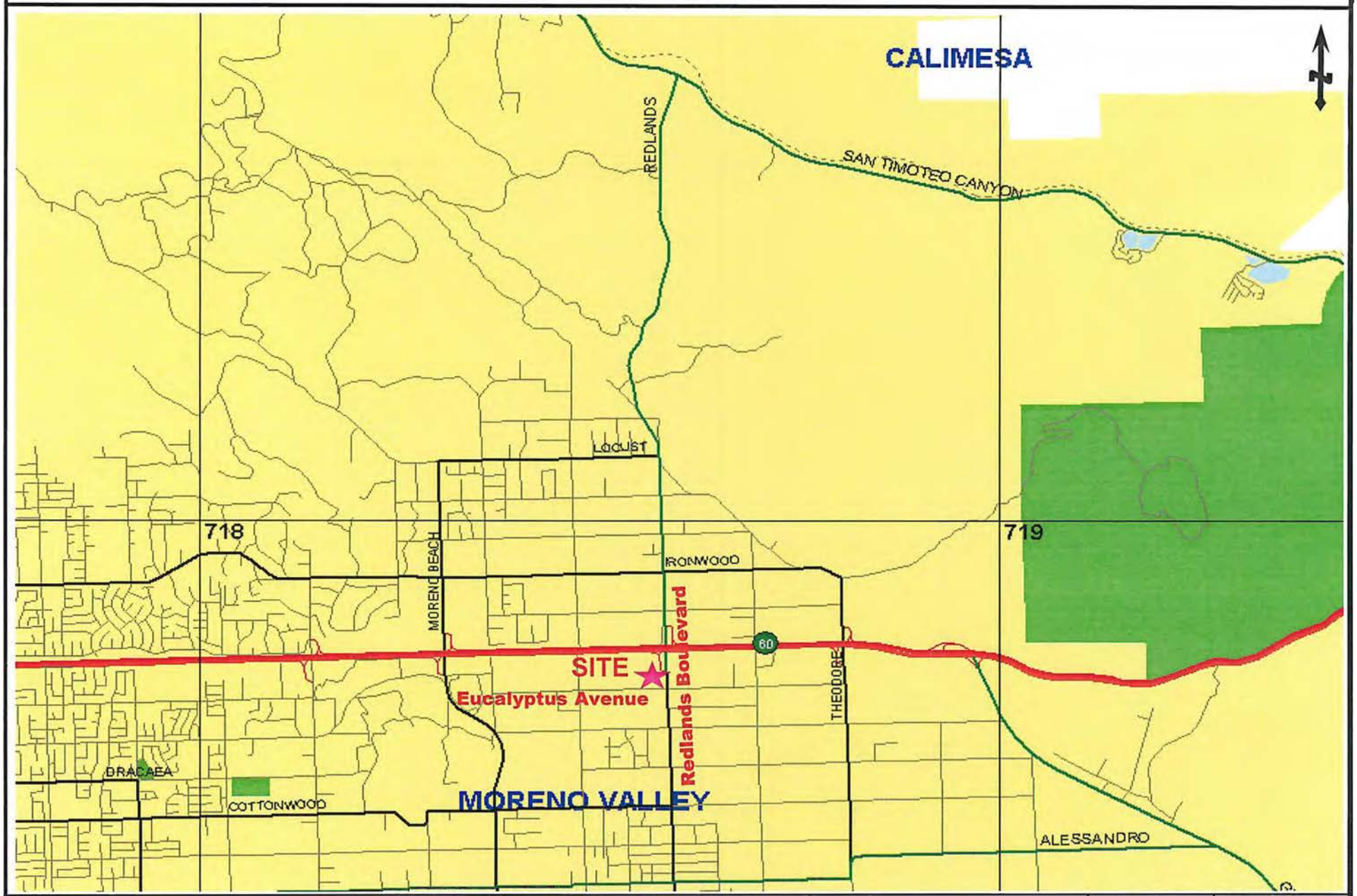
U.S.G.S., Earthquake Hazards Program, Unified Hazard Tool – Interactive Hazard Curve and Interactive Deaggregation web Site.
https://earthquake.usgs.gov/hazards/interactive/

Appendix A

Plates:

- Vicinity Map
- Plot Plan and Boring Location Map
- Topographic Map
- Google Map
- Geologic Map
- Seismic Hazard Map – CGS
- Fault, Liquefaction and Flood Zones
- Groundwater Closest Well
- Groundwater Map
- Log of Test Holes
- Direct Shear Tests
- Consolidation Tests

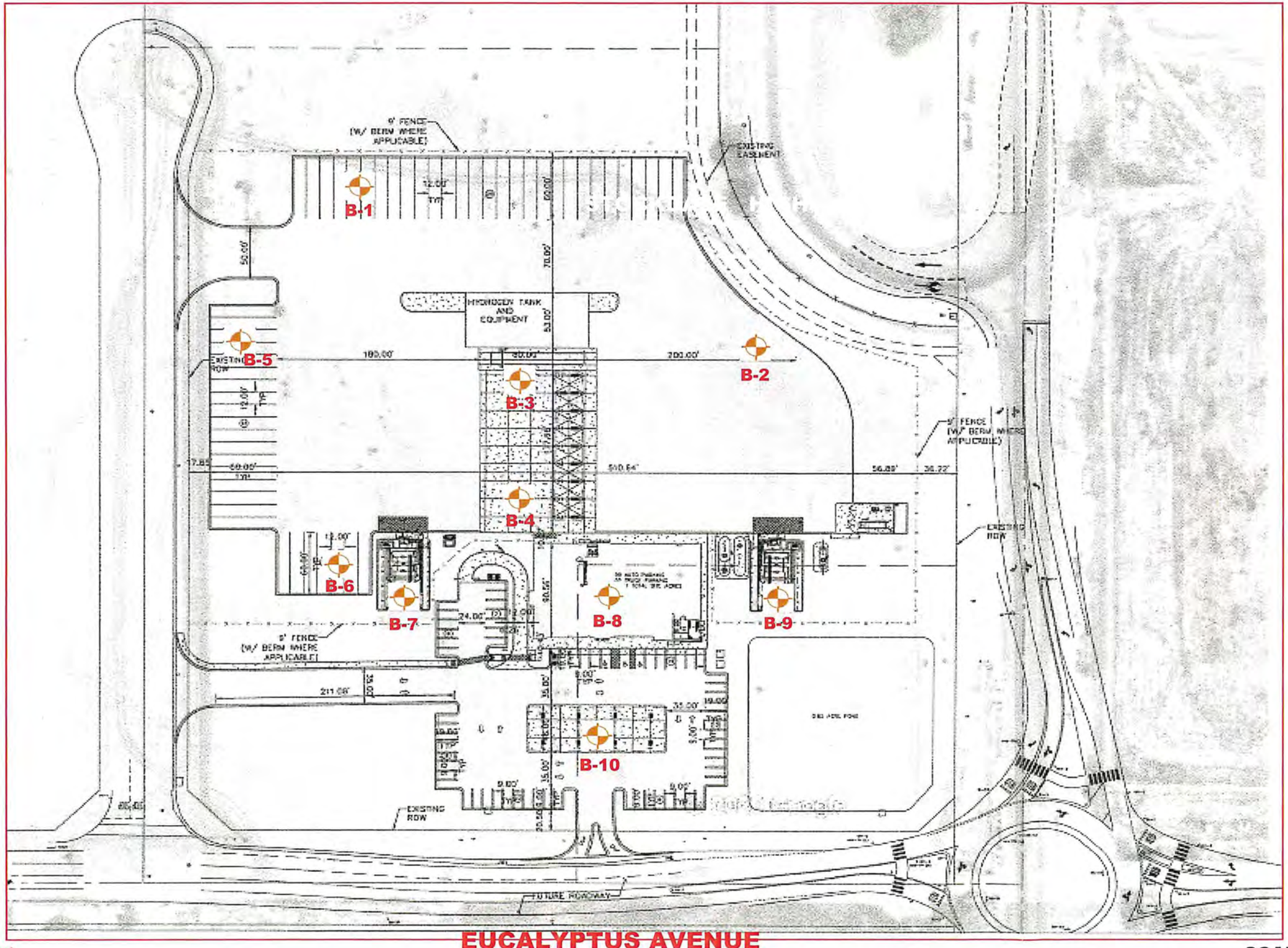
VICINITY MAP



Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	A

Geotechnical Solutions, Inc.

PLOT PLAN & BORING LOCATION MAP



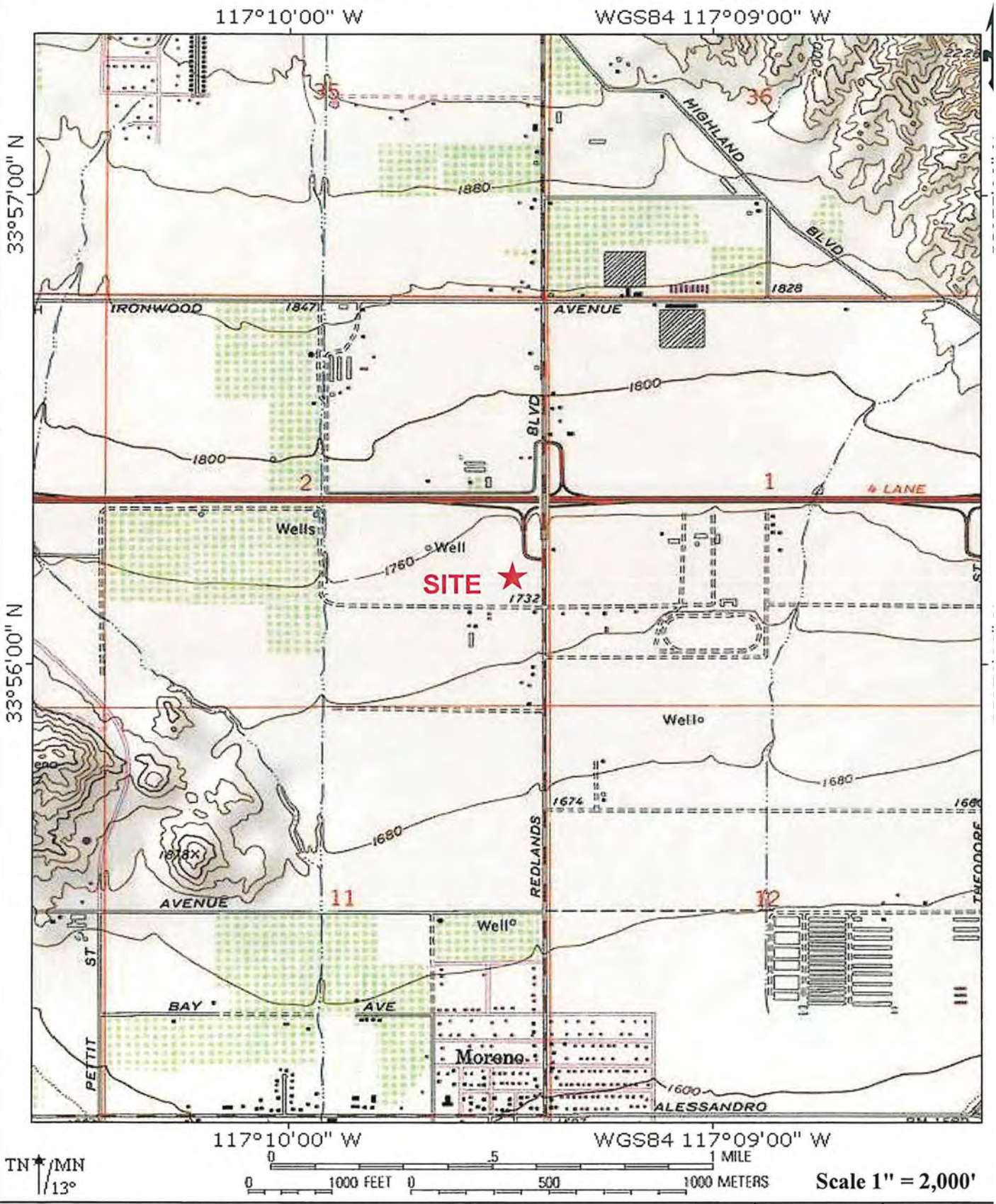
B-10 Hollow Stem Auger Borings (2021)

EUCALYPTUS AVENUE

SCALE: 1" = 100'

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	B
Geotechnical Solutions, Inc.		

TOPOGRAPHIC MAP



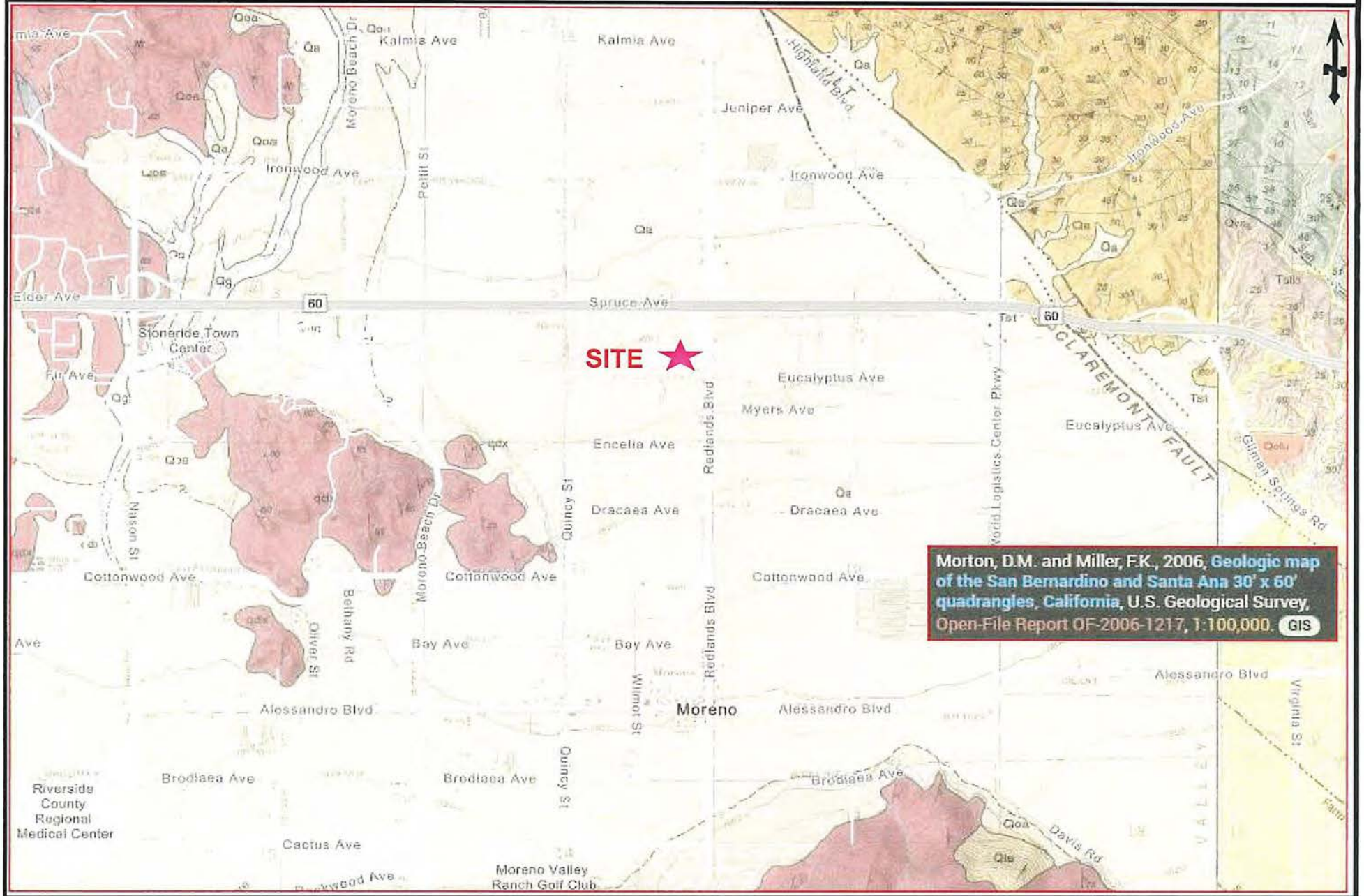
Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-0
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	C

Geotechnical Solutions, Inc.

GOOGLE MAP

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	D
Geotechnical Solutions, Inc.		

Site Regional Geologic Map



Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	E

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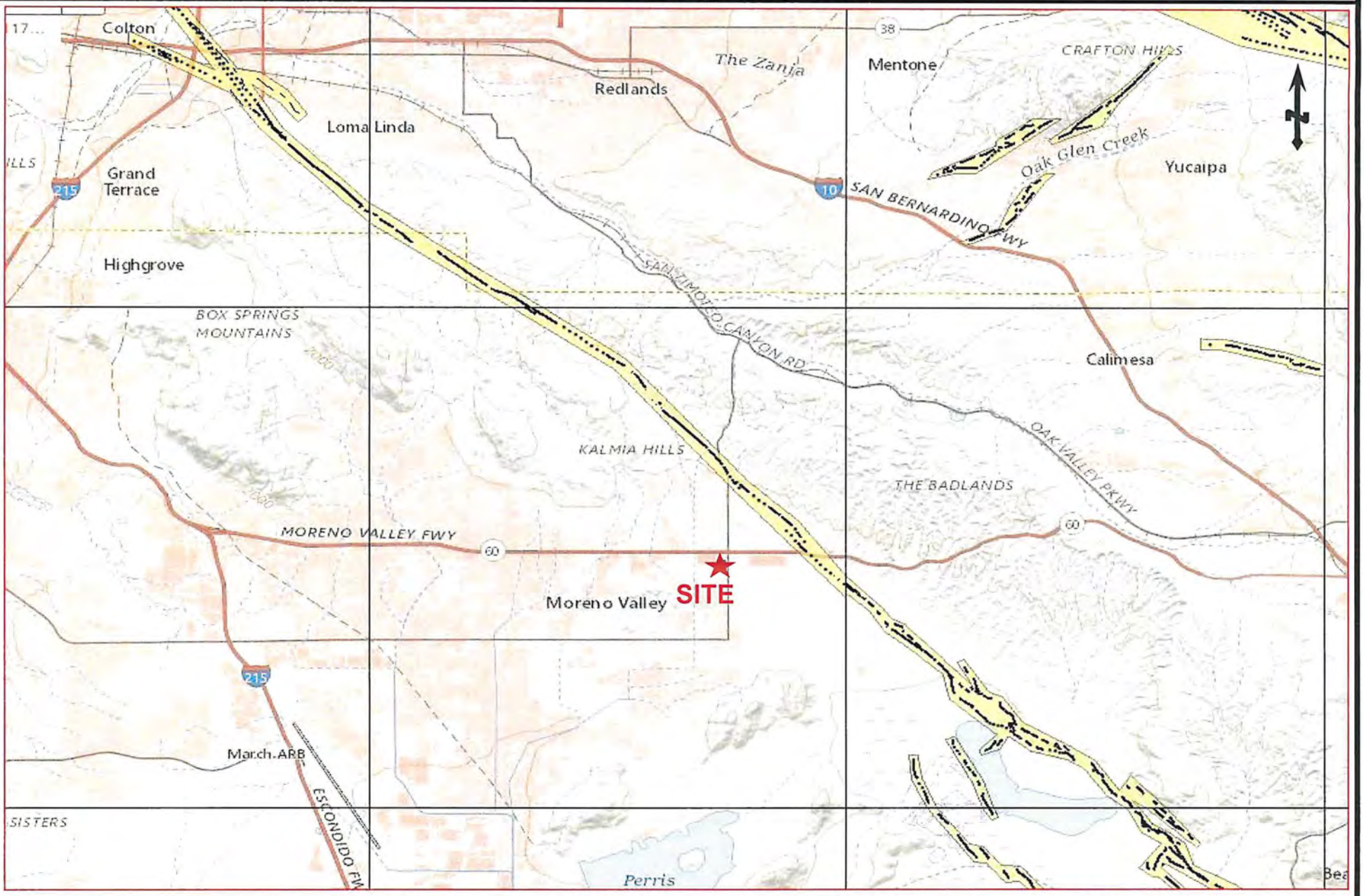
Seismic Hazard Fault Map



Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	F

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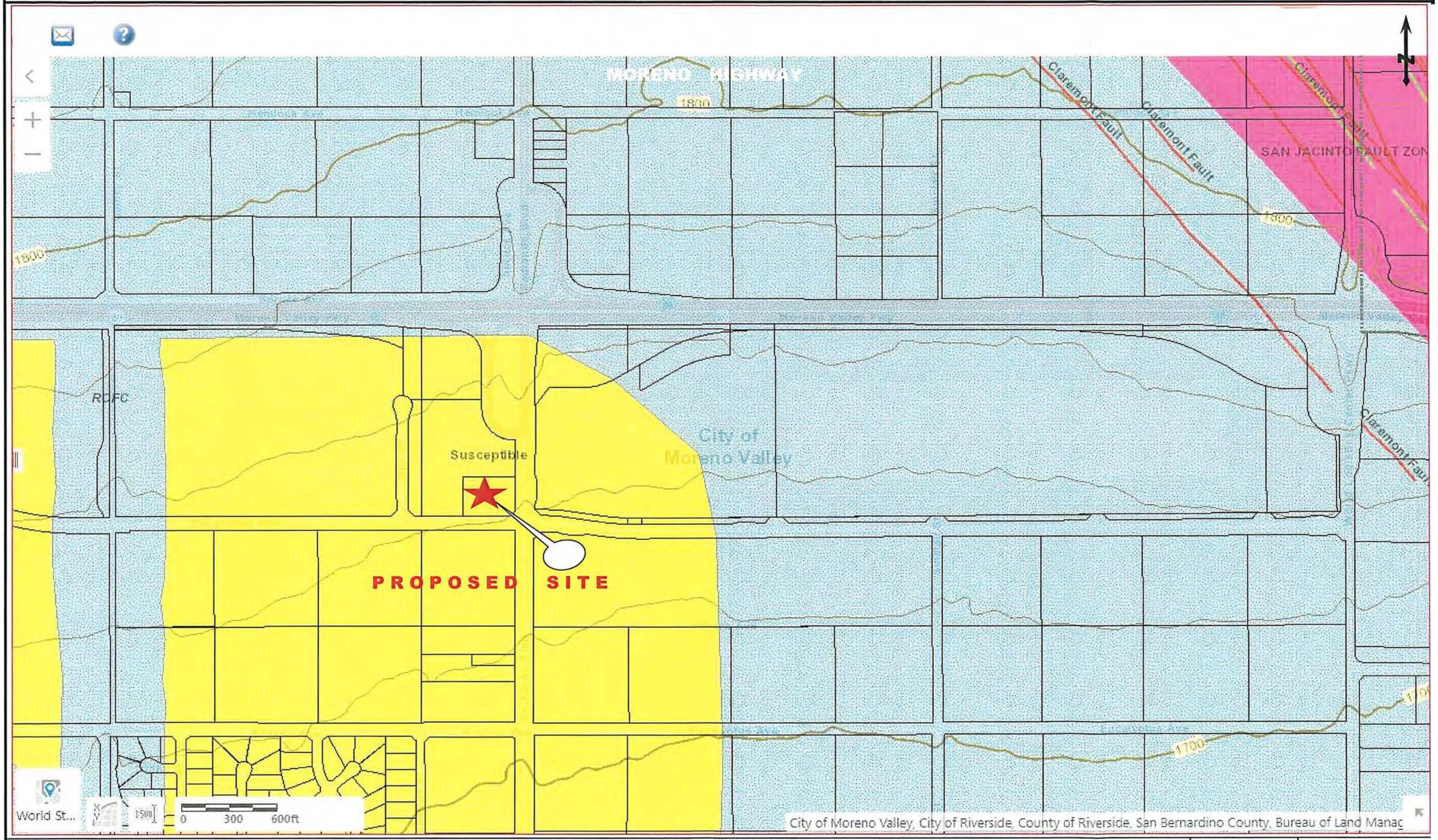
FAULT, LIQUEFACTION, FLOOD ZONES



Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	G

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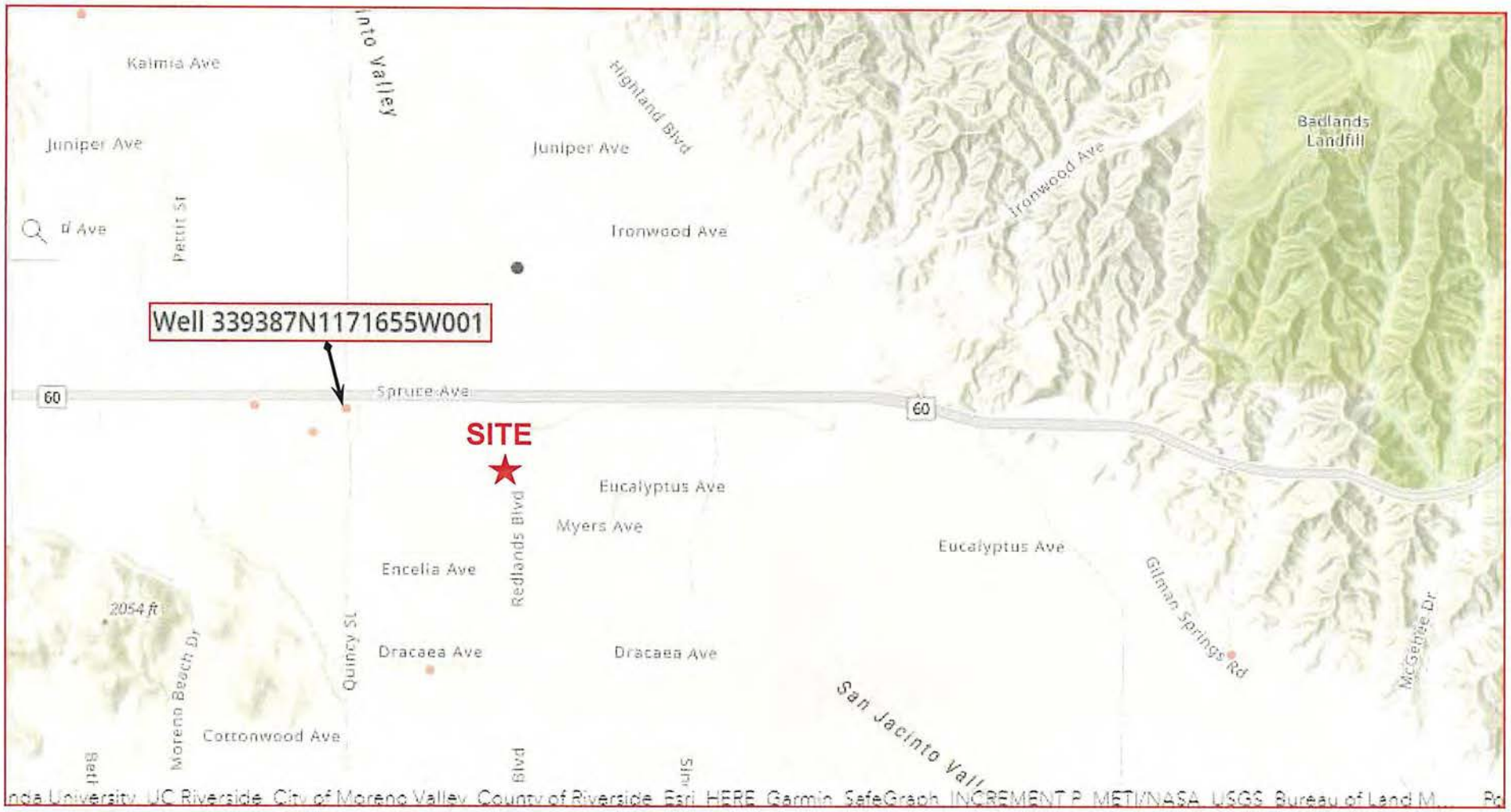
GROUNDWATER MAP - CLOSEST WELL DATA



Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	H-1

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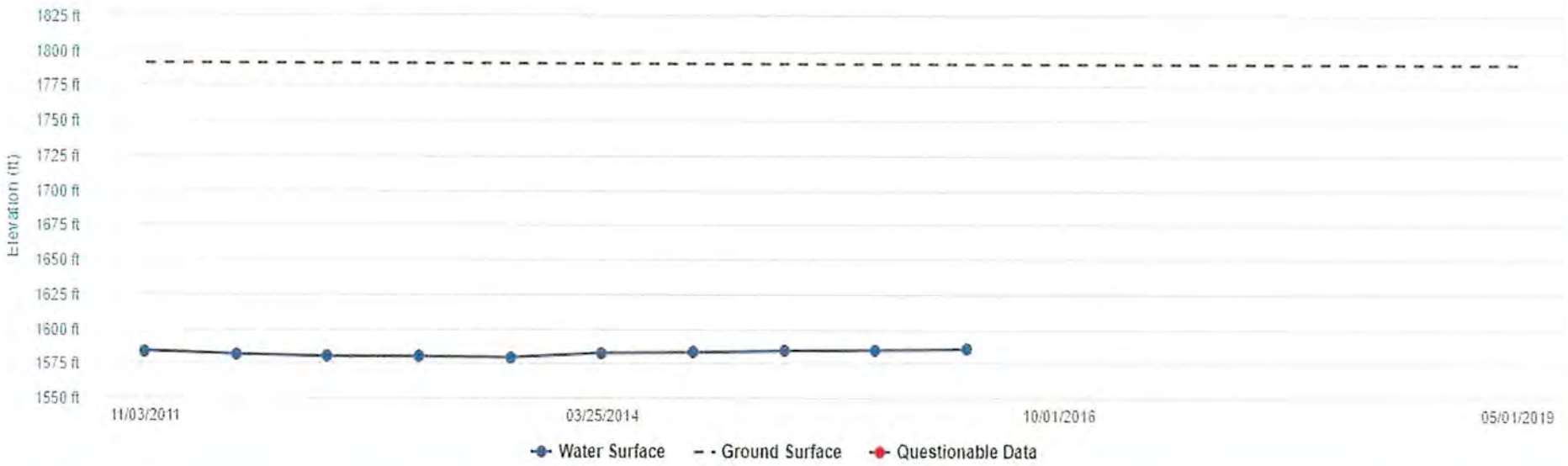
GROUNDWATER MAP - WELL DATA

Groundwater Levels for Well 339387N1171655W001



Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency
11/03/2011 00:00:00	1791.640	1790.840	208.2	1583.44	207.4		Eastern Municipal Water D...
02/15/2012 00:00:00	1791.640	1790.840	210.5	1581.14	209.7		Eastern Municipal Water D...
10/16/2012 00:00:00	1791.640	1790.840	212.3	1579.34	211.5		Eastern Municipal Water D...
05/08/2013 00:00:00	1791.640	1790.840	212.3	1579.34	211.5		Eastern Municipal Water D...
10/31/2013 00:00:00	1791.640	1790.840	212.7	1578.94	211.9		Eastern Municipal Water D...

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	H-2

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-1
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-1
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA/AB	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	11.5
Drill Rig Type :	B-61	Drilling Contractor :	Whitecomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
	2		Bag #1				Sandy Silt, light gray, soft			52	HD:48(SA):36(SI):16(CL)
			C-1	3-5-7		12	@2':Sandy Silt/Silty Sand, very fine, light gray, slightly moist, medium stiff/ loose	3	101		
1741	5		C-2	3-3-7		10	@5':Sandy Silt (ML) w/clay, very fine grained, gray, moist, medium stiff	7	103		
										35	HD:65(SA):30(SI):5(CL)
1736	10		C-3	4-7-11		18	@10':Silty Sand (SM), very fine, light gray, moist, medium dense	11	106		DS: P=Peak / Ult=Ultimate $\phi = 34^0$, c =250 psf (P) $\phi = 33^0$, c = 200 psf (Ult)
1731	15						End of Boring = 11.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1726	20										
1721	25										
1716	30										
1711	35										
1706	40										
1701	45										

Geotechnical Solutions, Inc.

Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-2
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-2
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	11.5
Drill Rig Type :	B-61	Drilling Contractor :	Whitecomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
			Bag #1				Sandy Silt, light gray, moist				
	2		C-1	7-10-8		18	@2':Silty Sand (SM) w/clay, very fin, light gray, moist, medium dense	7	104		
1741	5		C-2	3-4-7		11	@5':Sandy Silt (ML) w/clay, very fine grained, gray, moist, medium stiff	9	101		
1736	10		C-3	3-3-7		10	@10': Same as above	8	89		
1731	15						End of Boring = 11.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1726	20										
1721	25										
1716	30										
1711	35										
1706	40										
1701	45										

Geotechnical Solutions, Inc.

Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-3
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-3
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA/AB	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	51.5
Drill Rig Type :	B-61	Drilling Contractor :	Randy - Whitcomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
	2		Bag #1				@ 0-2'; Sandy Silt (ML), light gray, moist, very fine grained, slightly moist			54	HD:46(SA):34(SI):20(CL)
			C-1	12-7-7		14	@2': Silty Sand (SM), light gray, slightly moist, loose	2	106		
1741	5		C-2	4-5-7		12	@5':Sandy Silt (ML), very fine grained, light gray, moist, medium stiff	5	104		DS: P=Peak / Ult=Ultimate $\phi = 31^0$, c =400 psf (P) $\phi = 30^0$, c = 350 psf (Ult)
1736	10		C-3	4-5-8		13	@10':Same as above	4	113		
1731	15		S-1	3-3-5		8	@ 15': Silty Sand (SM), moist, light gray, medium dense	6	-		
1726	20		S-2	4-3-6		9	@20': Same as above	6	-		
1721	25		S-3	4-4-6		10	@25': Same as above	5	-		
1716	30		S-4	3-4-7		11	@30': Same as above	4	-		
1711	35						End of Boring = 31.5 feet No groundwaler encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1706	40										
1701	45										

Geotechnical Solutions, Inc.

Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-4
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-4
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	21.5
Drill Rig Type :	B-61	Drilling Contractor :	Randy - Whitcomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
	2		Bag #1				@ 0-2': Silty SAND (SM), light gray, moist, very fine grained loose				
			C-1	4-7-9		16	@2':Sandy Silt (ML), gray, slightly moist, stiff, fine to medium grained	2	99		
1741	5		C-2	4-4-6		10	@5':Sandy Silt (ML), fine to very fine, light gray, moist, medium stiff	7	94		
1736	10		C-3	6-6-8		14	@10': Same as above, stiff	5	115		
1731	15		S-1	4-4-6		10	@ 15': Same as above, sample disturbed	2	-		
1726	20		S-2	3-4-5		9	@20': Sandy Silt (ML), moist, gray, stiff	5	-		
1721	25						End of Boring = 21.5 feet No groundwater encountered No Caving but possible for bigger diameter holes Backfilled w/Cuttings				
1716	30										
1711	35										
1706	40										
1701	45										

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-5
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-5
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	11.5
Drill Rig Type :	B-61	Drilling Contractor :	Whitecomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
			Bag #1				Silty Sand, light gray, loose				
	2		C-1	8-9-10		20	@2':Silty Sand (SM) w/clay, very fin, light gray, moist, medium dense	6	106		
1741	5		C-2	3-3-9		12	@5':Sandy Silt (ML) w/clay, very fine grained, gray, moist, medium stiff	8	104		
1736	10		C-3	3-4-8		12	@10': Same as above	10	101		
1731	15						End of Boring = 11.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1726	20										
1721	25										
1716	30										
1711	35										
1706	40										
1701	45										

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-6
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-6
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	11.5
Drill Rig Type :	B-61	Drilling Contractor :	Whitecomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
			Bag #1				Sandy Silt (ML), light gray,soft				
	2		C-1	3-3-4		7	@2':Silty Sand (SM) w/clay, very fine, light gray, moist, medium dense	4	103		
1741	5		C-2	3-5-6		11	@5':Sandy Silt (ML) w/clay, very fine grained, gray, moist, medium stiff	7	95		
1736	10		C-3	2-5-9		14	@10': Same as above	9	106		
1731	15						End of Boring = 11.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1726	20										
1721	25										
1716	30										
1711	35										
1706	40										
1701	45										

Geotechnical Solutions, Inc.

Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-7
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-7
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	51.5
Drill Rig Type :	B-61	Drilling Contractor :	Randy - Whitcomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
	2		Bag #1				@ 0-2';Sandy Silt (ML), light gray, moist, very fine grained soft			49	HD:51(SA):31(SI):18(CL)
			C-1	5-5-8		13	@2':Same as above, medium stiff	3	101		
1741	5		C-2	4-8-10		17	@5'Sandy Silt (ML), fine to very fine, light gray, moist, stiff	5	97		
1736	10		C-3	6-8-13		21	@10':same as above	8	107		
1731	15		S-1	8-7-8		15	@ 15': Sand, silty, light brown, slightly moist, medium dense	3	-		
1726	20		S-2	7-13-18		31	@20': Sand (SP), silty, moist, gray, dense	5	-		
1721	25						End of Boring = 21.5 feet No groundwater encountered No Caving but possible for bigger diameter holes Backfilled w/Cuttings				
1716	30										
1711	35										
1706	40										
1701	45										

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-8
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-8a
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA/AB	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	51.5
Drill Rig Type :	B-61	Drilling Contractor :	Randy - Whitcomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
	2		Bag #1				@ 0-2'; Sandy Silt (ML), light gray, moist, very fine grained, slightly moist			54	HD:46(SA):31(SI):23(CL)
			C-1	3-3-5		8	@2': Silty Sand (SM), light gray, slightly moist, loose	4	101		
1741	5		C-2	3-7-7		14	@5':Sandy Silt (ML), very fine grained, light gray, moist, stiff	7	99		
1736	10		C-3	4-7-9		16	@10':Same as above	8	105		
1731	15		S-1	3-7-5		12	@ 15': Silty Sand (SM), moist, light gray, medium dense	7	-		
1726	20		S-2	4-6-6		12	@20': Same as above	7	-		
1721	25		S-3	6-9-10		19	@25': Same as above	8	-		
1716	30		S-4	12-13-14		27	@30': Same as above	6	-		
1711	35		S-5	6-8-9		17	@35': Same as above	8	-		
1706	40		S-6	40-23-24		47	@40': Sand (SP), dense, brownish gray, slightly moist, coarse grained	7	-		
1701	45		S-7	5-7-10		17	@45': Same as above	13	-		

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-8
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-8b
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	51.5
Drill Rig Type :	B-61	Drilling Contractor :	Randy - Whitcomb Drilling	Approx. Surface Elevation, feet :	303 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
258	45		S-7	5-7-10		17	@45'; SAND (SP), brownish gray, slightly moist, medium to coarse grained, dense	13	-		
253	50		S-8	7-9-10		19	@5':Same as above	10	-		
248							End of Boring = 51.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/cuttings				
248											
243											
238											
233											
228											
223											

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-9
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-9
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	11.5
Drill Rig Type :	B-61	Drilling Contractor :	Whitecomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
			Bag #1				Sandy Silt (ML), light gray,soft				
	2		C-1	3-5-7		12	@2':Sandy Silt (ML), very fine, light gray, moist, medium stiff	5	93		
1741	5		C-2	4-8-10		18	@5':Sandy Silt (ML) w/clay, very fine grained, gray, moist, medium stiff	6	105		
1736	10		C-3	10-11-14		25	@10': Same as above	4	106	32	HD:68(SA):25(SI):7(CL)
1731	15						End of Boring = 11.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1726	20										
1721	25										
1716	30										
1711	35										
1706	40										
1701	45										

Geotechnical Solutions, Inc.

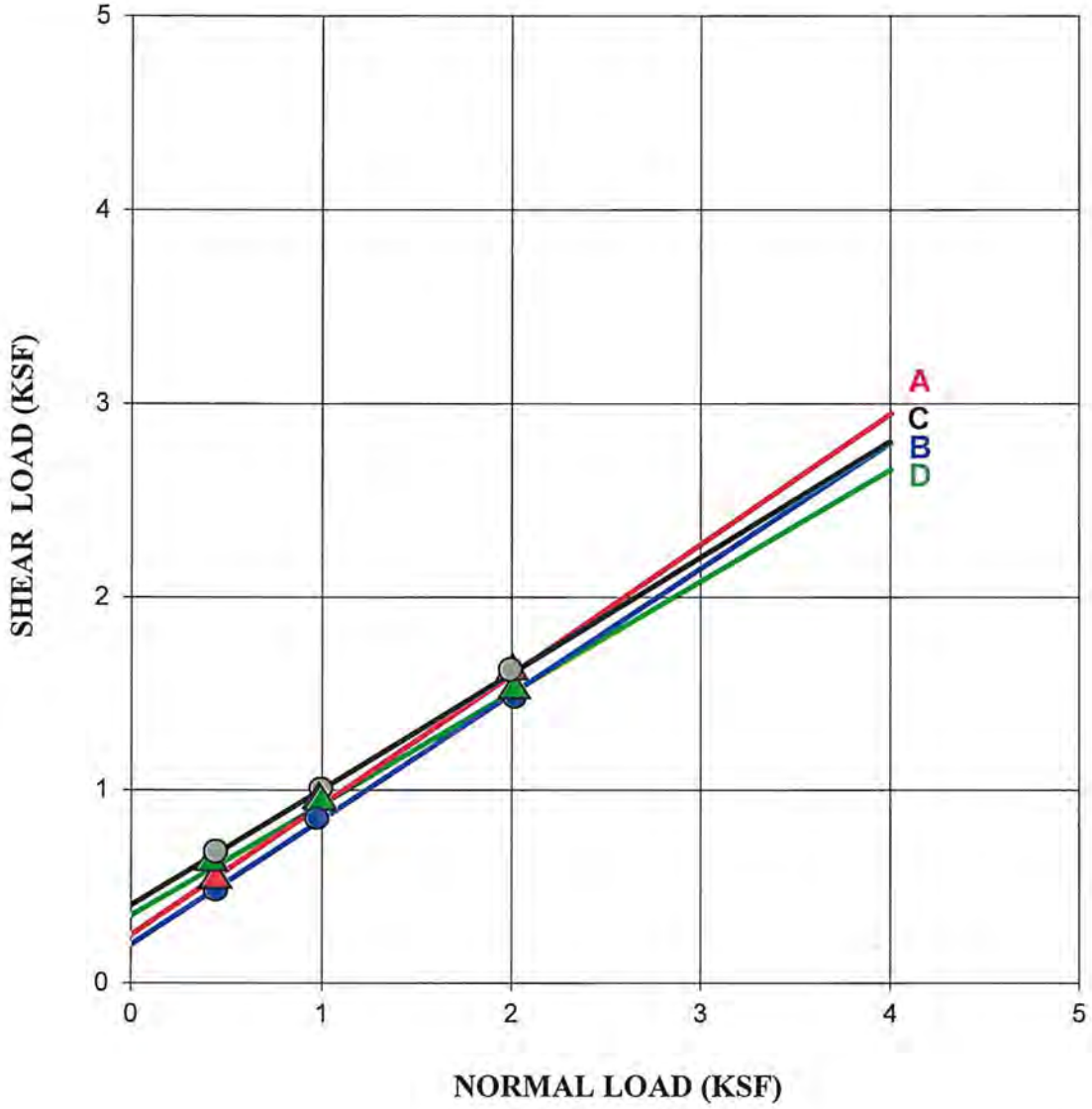
Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-10
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-10
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	21.5
Drill Rig Type :	B-61	Drilling Contractor :	Randy - Whitcomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location.		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass/Weeds				
			Bag #1				@ 0-2'; Silty SAND (SM), light gray, moist, very fine grained loose				
	2		C-1	5-8-10		18	@2':Silty Sand (SM), gray, slightly moist, loose to medium dense fine to medium grained	3	100		
1741	5		C-2	4-6-6		12	@5':Sandy Silt (ML), fine to very fine, light gray, moist, medium stiff	8	99		
1736	10		C-3	7-7-9		16	@10': Same as above.	7	114		
1731	15		S-1	3-4-7		11	@ 15': Same as above, sample disturbed	5	-		
1726	20		S-2	4-5-5		10	@20': Sandy Silt (ML), moist, gray, stiff	4	-		
1721	25						End of Boring = 21.5 feet No groundwater encountered No Caving but possible for bigger diameter holes Backfilled w/Cuttings				
1716	30										
1711	35										
1706	40										
1701	45										

Geotechnical Solutions, Inc.

DIRECT SHEAR

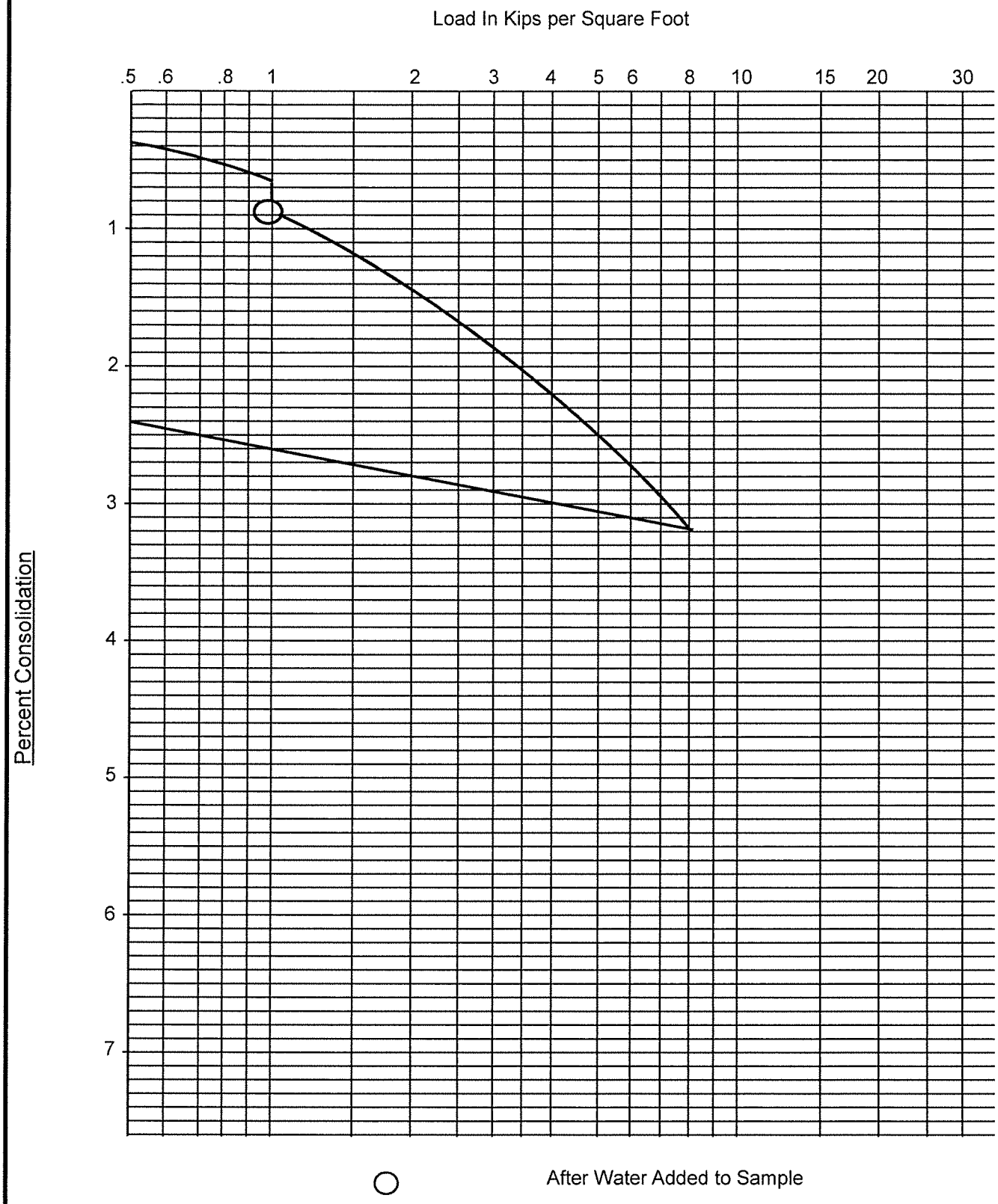


SYMBOL	LOCATION	DEPTH (FT)	TEST CONDITION		COHESION (PSF)	FRICTION (DEG)
A	B-1	10'	Saturated - Drained	Peak	250	34
B	B-1	10'	Saturated - Drained	Ultimate	200	33
C	B-3	5'	Saturated - Drained	Peak	400	31
D	B-3	5'	Saturated - Drained	Ultimate	350	30

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	J

Geotechnical Solutions, Inc.

CONSOLIDATION

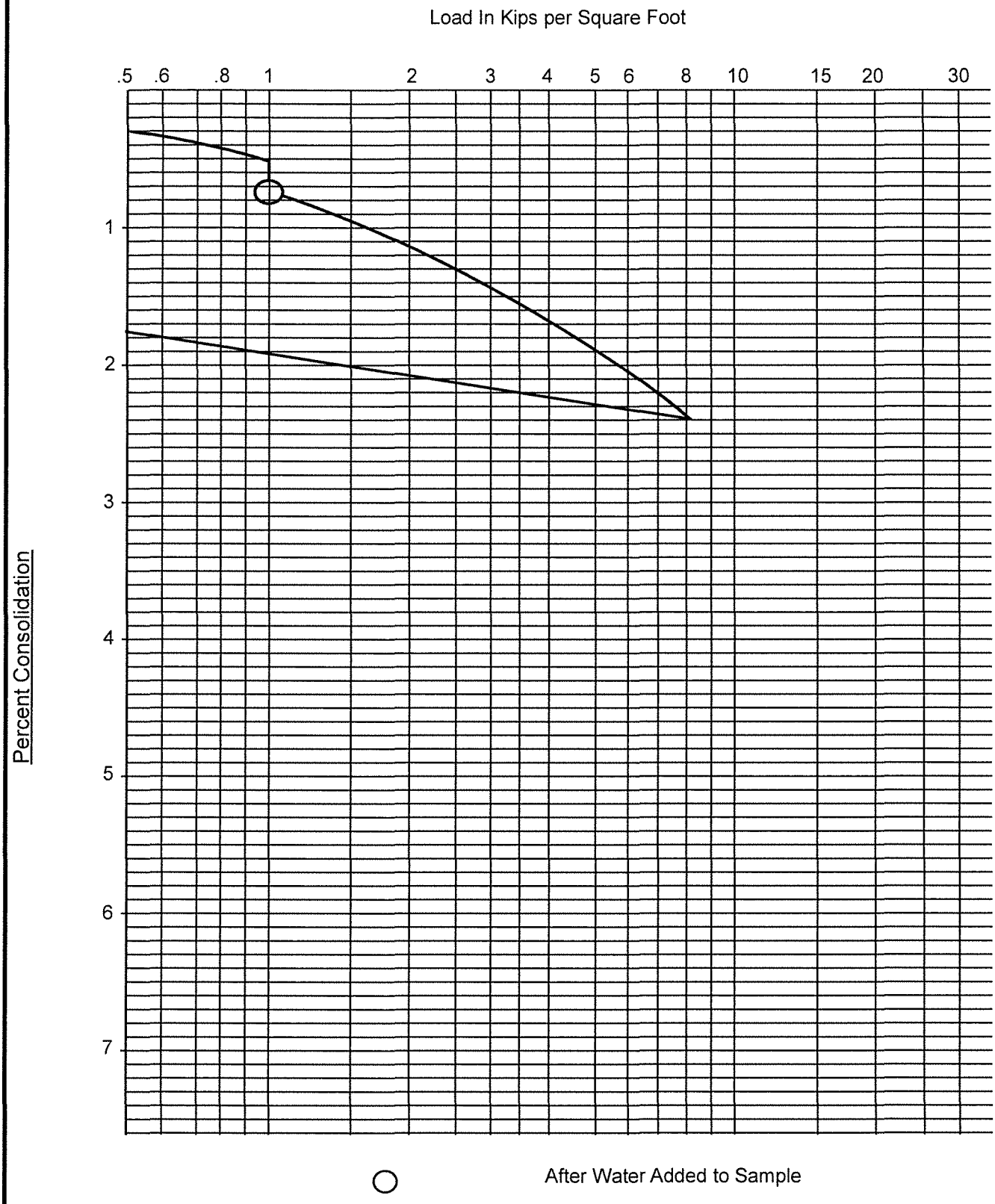


B-1 @ 2'

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	K

Geotechnical Solutions, Inc.

CONSOLIDATION

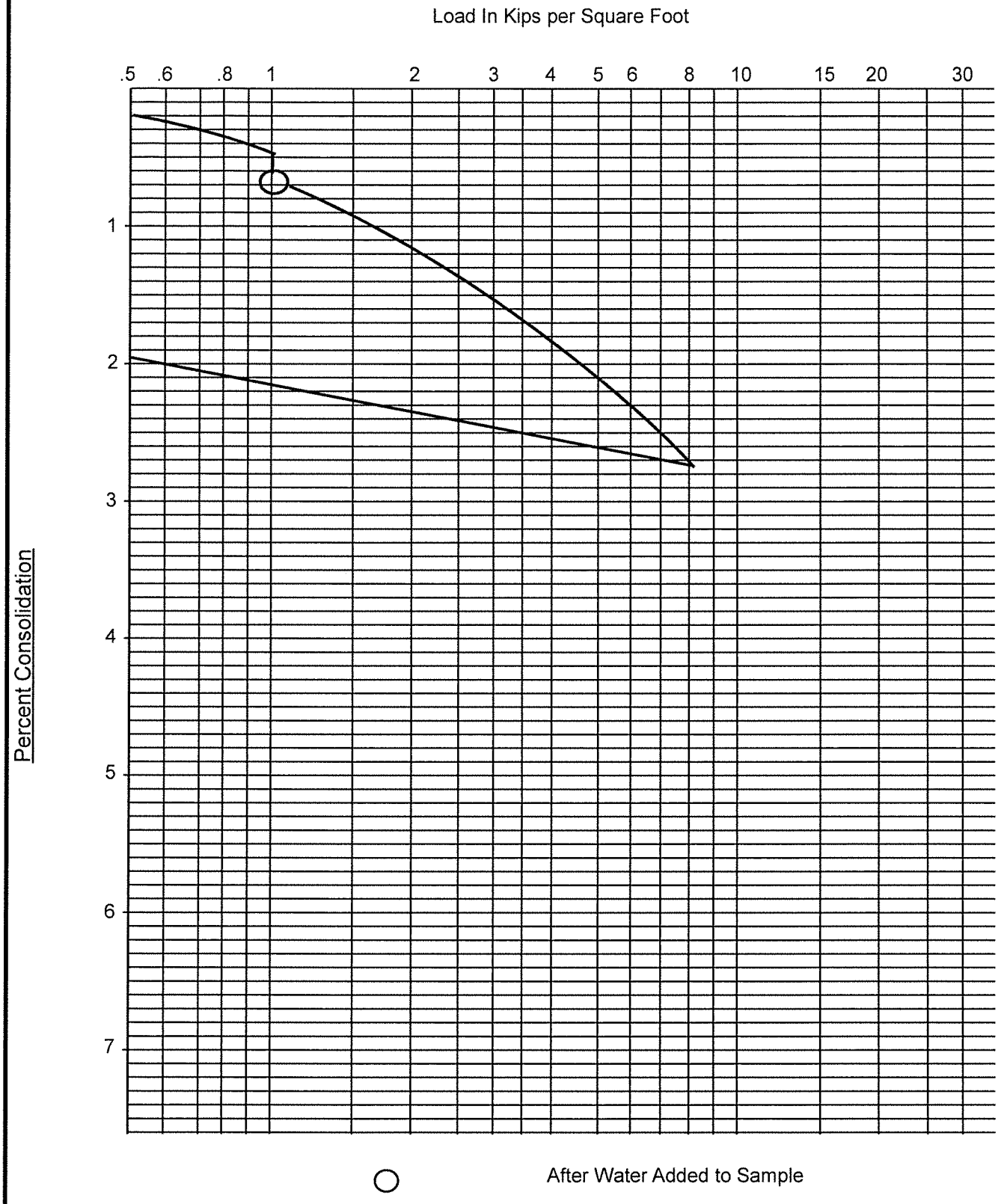


Boring 1 @ 10'

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	L

Geotechnical Solutions, Inc.

CONSOLIDATION



B-8 @ 5'

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	M

Geotechnical Solutions, Inc.

Appendix B

Seismic Data

- Table 1 - Faults Table
- Unified Hazard Tool – Hazard Curve
- U.S. Seismic Design Maps Summary & Detailed Report (SEAOC / OSHPD)

Table-1
2008 National Seismic Hazard Maps - Source Parameters
Moreno Valley Truck Stop

Distance in Miles	Name	State	Pref Slip Rate (mm/yr)	Dip (degrees)	Dip Dir	Slip Sense	Rupture Top (km)	Rupture Bottom (km)	Length (km)
1.03	San Jacinto;SBV+SJV+A	CA	n/a	90	V	strike slip	0	16	134
1.03	San Jacinto;SJV	CA	18	90	V	strike slip	0	16	43
1.03	San Jacinto;SBV+SJV+A+CC+B+SM	CA	n/a	90	V	strike slip	0.1	15	241
1.03	San Jacinto;SJV+A+C	CA	n/a	90	V	strike slip	0	17	136
1.03	San Jacinto;SBV+SJV+A+CC	CA	n/a	90	V	strike slip	0	16	181
1.03	San Jacinto;SJV+A	CA	n/a	90	V	strike slip	0	17	89
1.03	San Jacinto;SJV+A+CC+B	CA	n/a	90	V	strike slip	0.1	15	170
1.03	San Jacinto;SBV+SJV+A+C	CA	n/a	90	V	strike slip	0	17	181
1.03	San Jacinto;SBV+SJV	CA	n/a	90	V	strike slip	0	16	88
1.03	San Jacinto;SJV+A+CC	CA	n/a	90	V	strike slip	0	16	136
1.03	San Jacinto;SBV+SJV+A+CC+B	CA	n/a	90	V	strike slip	0.1	15	215
1.03	San Jacinto;SJV+A+CC+B+SM	CA	n/a	90	V	strike slip	0.1	15	196
4.22	San Jacinto;A	CA	9	90	V	strike slip	0	17	71
4.22	San Jacinto;A+CC+B	CA	n/a	90	V	strike slip	0.1	15	152
4.22	San Jacinto;A+CC	CA	n/a	90	V	strike slip	0	16	118
4.22	San Jacinto;A+C	CA	n/a	90	V	strike slip	0	17	118
4.22	San Jacinto;A+CC+B+SM	CA	n/a	90	V	strike slip	0.1	15	178
7.21	San Jacinto;SBV	CA	6	90	V	strike slip	0	16	45
11.95	S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	14	384

11.95	S. San Andreas;CC+BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	86		strike slip	0.1	13	449
11.95	S. San Andreas;CC+BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	14	322
11.95	S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	86		strike slip	0.1	13	512
11.95	S. San Andreas;SSB+BG	CA	n/a	71		strike slip	0	13	101
11.95	S. San Andreas;NSB+SSB+BG+CO	CA	n/a	79		strike slip	0.2	12	206
11.95	S. San Andreas;CC+BB+NM+SM+NSB+SSB+BG	CA	n/a	85		strike slip	0	14	380
11.95	S. San Andreas;BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	85		strike slip	0.1	13	390
11.95	S. San Andreas;BB+NM+SM+NSB+SSB+BG	CA	n/a	84		strike slip	0	14	321
11.95	S. San Andreas;BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	14	263
11.95	S. San Andreas;SSB+BG+CO	CA	n/a	77		strike slip	0.2	12	170
11.95	S. San Andreas;SSB	CA	16	90	V	strike slip	0	13	43
11.95	S. San Andreas;SM+NSB+SSB+BG+CO	CA	n/a	83		strike slip	0.1	13	303
11.95	S. San Andreas;SM+NSB+SSB+BG	CA	n/a	81		strike slip	0	13	234
11.95	S. San Andreas;SM+NSB+SSB	CA	n/a	90	V	strike slip	0	13	176
11.95	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	86		strike slip	0.1	13	548

11.95	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB+BG	CA	n/a	86		strike slip	0.1	13	479
11.95	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0.1	13	421
11.95	S. San Andreas;NSB+SSB+BG	CA	n/a	75		strike slip	0	14	136
11.95	S. San Andreas;NSB+SSB	CA	n/a	90	V	strike slip	0	13	79
11.95	S. San Andreas;NM+SM+NSB+SSB+BG+CO	CA	n/a	84		strike slip	0.1	13	340
11.95	S. San Andreas;NM+SM+NSB+SSB+BG	CA	n/a	83		strike slip	0	14	271
11.95	S. San Andreas;NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	13	213
11.95	S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB+BG	CA	n/a	86		strike slip	0	14	442
15.19	S. San Andreas;BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0	14	220
15.19	S. San Andreas;SM+NSB	CA	n/a	90	V	strike slip	0	13	133
15.19	S. San Andreas;CH+CC+BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0	14	341
15.19	S. San Andreas;NM+SM+NSB	CA	n/a	90	V	strike slip	0	13	170
15.19	S. San Andreas;CC+BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0	14	279
15.19	S. San Andreas;NSB	CA	22	90	V	strike slip	0	13	35
15.19	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0.1	13	377
20.47	S. San Andreas;BG	CA	n/a	58		strike slip	0	13	56
20.47	S. San Andreas;BG+CO	CA	n/a	72		strike slip	0.3	12	125
21.27	Elsinore;GI+T	CA	5	90	V	strike slip	0	14	78
21.27	Elsinore;GI	CA	5	90	V	strike slip	0	13	37
21.27	Elsinore;W+GI	CA	n/a	81	NE	strike slip	0	14	83

21.27	Elsinore;W+GI+T	CA	n/a	84	NE	strike slip	0	14	124
21.27	Elsinore;W+GI+T+J	CA	n/a	84	NE	strike slip	0	16	199
21.27	Elsinore;W+GI+T+J+CM	CA	n/a	84	NE	strike slip	0	16	241
21.27	Elsinore;GI+T+J	CA	n/a	86	NE	strike slip	0	17	153
21.27	Elsinore;GI+T+J+CM	CA	n/a	86	NE	strike slip	0	16	195
22.74	Elsinore;T	CA	5	90	V	strike slip	0	14	52
22.74	Elsinore;T+J+CM	CA	n/a	85	NE	strike slip	0	16	169
22.74	Elsinore;T+J	CA	n/a	86	NE	strike slip	0	17	127
23.43	Cucamonga	CA	5	45	N	thrust	0	8	28
23.97	Cleghorn	CA	3	90	V	strike slip	0	16	25
24.72	Chino, alt 2	CA	1	65	SW	strike slip	0	14	29
25.94	Chino, alt 1	CA	1	50	SW	strike slip	0	9	24
25.96	Elsinore;W	CA	2.5	75	NE	strike slip	0	14	46
26.37	Pinto Mtn	CA	2.5	90	V	strike slip	0	16	74
27.01	North Frontal (West)	CA	1	49	S	reverse	0	16	50
32.94	San Jose	CA	0.5	74	NW	strike slip	0	15	20
33.19	Helendale-So Lockhart	CA	0.6	90	V	strike slip	0	13	114
34.38	North Frontal (East)	CA	0.5	41	S	thrust	0	16	27
34.5	S. San Andreas;CC+BB+NM+SM	CA	n/a	90	V	strike slip	0	14	243
34.5	S. San Andreas;SM	CA	29	90	V	strike slip	0	13	98
34.5	S. San Andreas;CH+CC+BB+NM+SM	CA	n/a	90	V	strike slip	0	14	306
34.5	S. San Andreas;NM+SM	CA	n/a	90	V	strike slip	0	14	134
34.5	S. San Andreas;BB+NM+SM	CA	n/a	90	V	strike slip	0	14	184
34.5	S. San Andreas;PK+CH+CC+BB+NM+SM	CA	n/a	90	V	strike slip	0.1	13	342
35.83	Sierra Madre	CA	2	53	N	reverse	0	14	57
35.83	Sierra Madre Connected	CA	2	51		reverse	0	14	76
37.84	San Joaquin Hills	CA	0.5	23	SW	thrust	2	13	27
40.89	Puente Hills (Coyote Hills)	CA	0.7	26	N	thrust	2.8	15	17
41	Lenwood-Lockhart-Old Woman Springs	CA	0.9	90	V	strike slip	0	13	145
41.93	Elsinore;J	CA	3	84	NE	strike slip	0	19	75

41.93	Elsinore;J+CM	CA	3	84	NE	strike slip	0	17	118
43.59	Burnt Mtn	CA	0.6	67	W	strike slip	0	16	21
44.69	Clamshell-Sawpit	CA	0.5	50	NW	reverse	0	14	16
45.04	Landers	CA	0.6	90	V	strike slip	0	15	95
45.61	Eureka Peak	CA	0.6	90	V	strike slip	0	15	19
47.25	Newport Inglewood Connected alt 1	CA	1.3	89		strike slip	0	11	208
47.25	Newport-Inglewood (Offshore)	CA	1.5	90	V	strike slip	0	10	66
47.25	Newport Inglewood Connected alt 2	CA	1.3	90	V	strike slip	0	11	208
47.28	Johnson Valley (No)	CA	0.6	90	V	strike slip	0	16	35
47.85	San Jacinto;CC+B+SM	CA	n/a	90	V	strike slip	0.2	14	103
47.85	San Jacinto;CC+B	CA	n/a	90	V	strike slip	0.2	14	77
47.85	San Jacinto;CC	CA	4	90	V	strike slip	0	16	43
48.2	San Jacinto;C	CA	14	90	V	strike slip	0	17	47
49.44	Puente Hills (Santa Fe Springs)	CA	0.7	29	N	thrust	2.8	15	11
49.96	Newport-Inglewood, alt 1	CA	1	88		strike slip	0	15	65

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Conterminous U.S. 2008 (v3.2.x)

Spectral Period

Peak Ground Acceleration

Latitude

Decimal degrees

33.9364

Time Horizon

Return period in years

475 Moreno Valley Truck Stop

Longitude

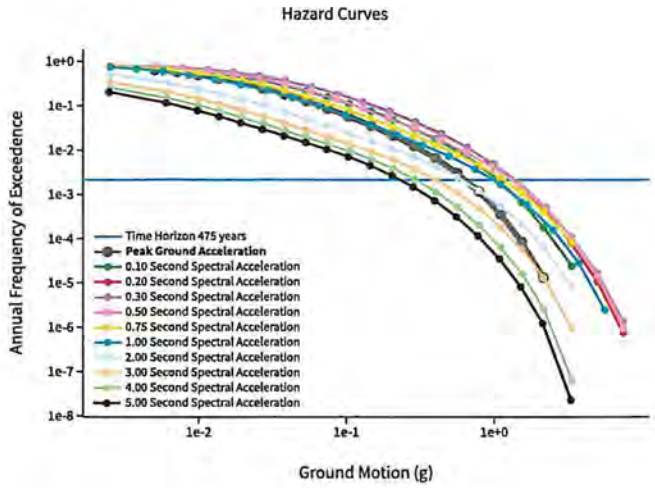
Decimal degrees, negative values for western longitudes

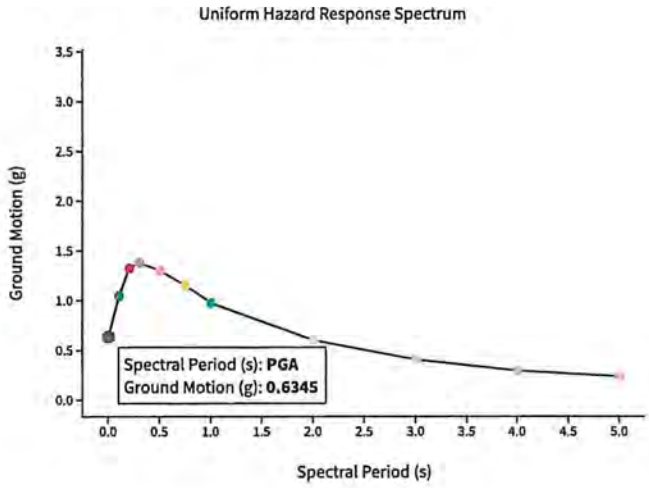
-117.1581

Site Class

259 m/s (Site class D)

Hazard Curve





View Raw Data

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition
Conterminous U.S. 2008 (v3.2.x)

Spectral Period
Peak Ground Acceleration

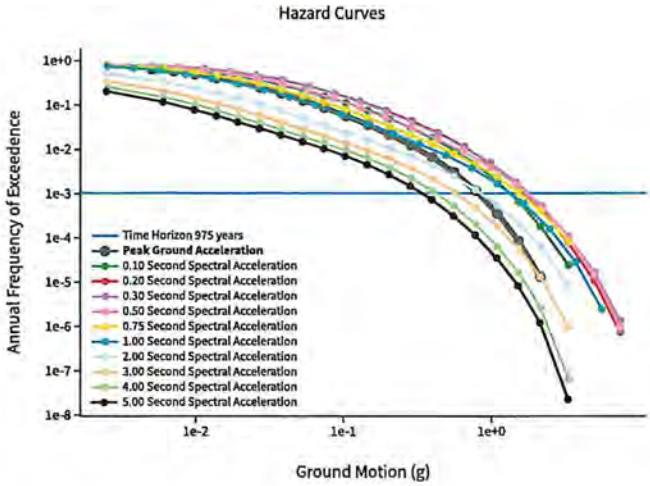
Latitude
Decimal degrees
33.9364

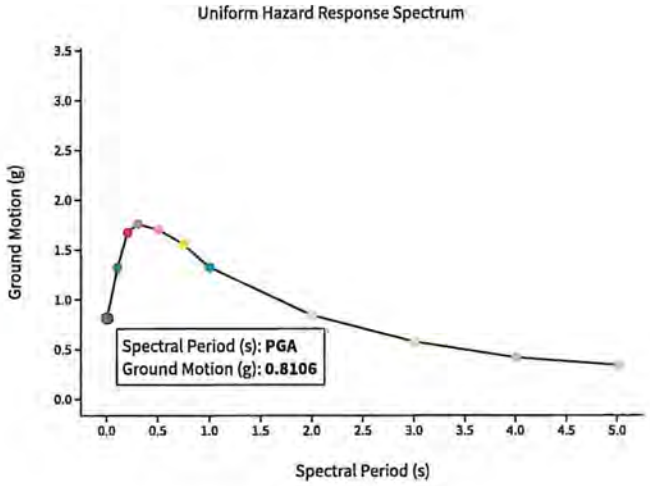
Time Horizon
Return period in years
975 Moreno Valley Truck Stop

Longitude
Decimal degrees, negative values for western longitudes
-117.1581

Site Class
259 m/s (Site class D)

Hazard Curve





View Raw Data

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Conterminous U.S. 2008 (v3.2.x)

Spectral Period

Peak Ground Acceleration

Latitude

Decimal degrees

33.9364

Time Horizon

Return period in years

2475 Moreno Valley Truck Stop

Longitude

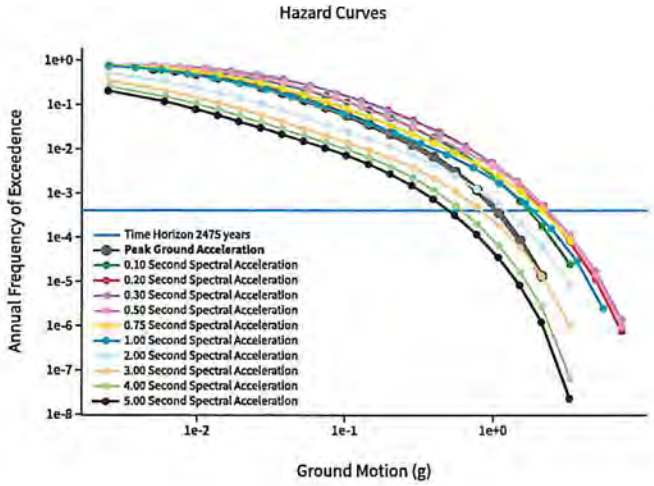
Decimal degrees, negative values for western longitudes

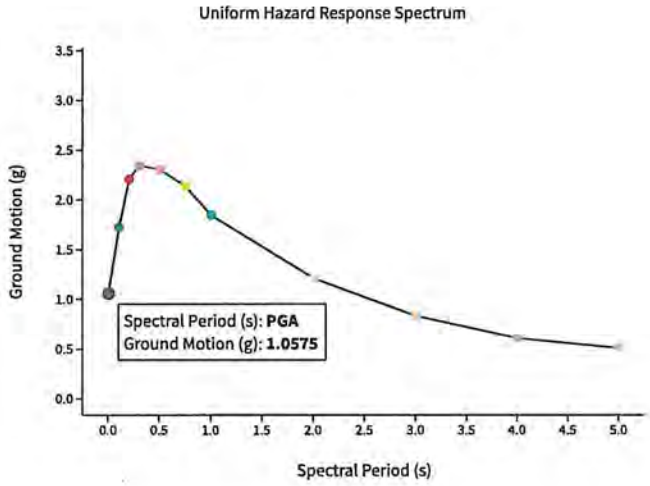
-117.1581

Site Class

259 m/s (Site class D)

Hazard Curve



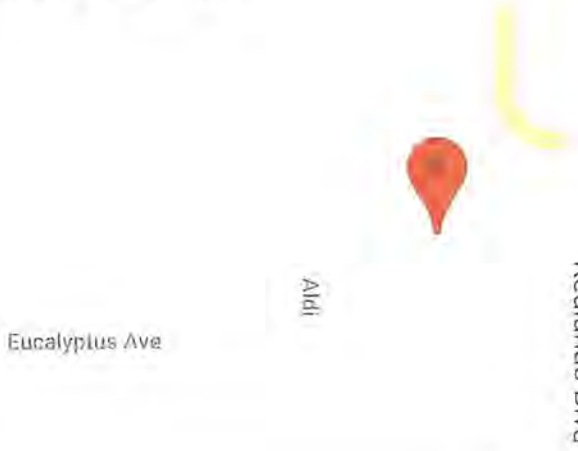


View Raw Data

OSHPD

Moreno Valley Truck Stop

Latitude, Longitude: 33.9364, -117.1581



Date	2/9/2021, 8:02:18 AM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	2.225	MCE_R ground motion. (for 0.2 second period)
S_1	0.9	MCE_R ground motion. (for 1.0s period)
S_{MS}	2.67	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.78	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1.2	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.977	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	1.172	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	2.225	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	2.468	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	2.319	Factored deterministic acceleration value. (0.2 second)
S1RT	0.9	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	1.02	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.927	Factored deterministic acceleration value. (1.0 second)
PGAd	0.977	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.901	Mapped value of the risk coefficient at short periods
C_{R1}	0.882	Mapped value of the risk coefficient at a period of 1 s

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Appendix C

Recommended Earthwork Specifications

RECOMMENDED EARTHWORK SPECIFICATIONS

1.0 General

1.1 Description

1.1.1 These specifications cover preparation of the subject site to receive fills, the type of soils suitable for use in fills, the compaction standards, and the methods of testing compacted fills.

1.1.2 The Contractor shall furnish all labor, supervision, equipment, operations, and materials to excavate to the required grade, support existing underground facilities, stockpile material, compact fill and backfill, and fine grade. The work of the Contractor shall include all clearing and grubbing, removing existing unsatisfactory material, preparing areas to be filled, spreading and compacting of fill in the areas to be filled and all other work necessary to complete the grading of the filled areas. It shall be the Contractor's responsibility to place, spread, moisten or dry, and compact the fill in strict accordance with these specifications to the lines and grades indicated on project plans or as directed in writing by the Civil Engineer.

1.1.3 Deviations from these specifications will be permitted only upon written authorization from the Owner or his representative.

1.2 Role of the Geotechnical Engineer

1.2.1 Construction - The Owner will employ a Geotechnical Consultant to observe and test this work as it is being performed. The Contractor shall cooperate with the Geotechnical Consultant and allow his unrestricted access to the site as required for the performance of his duties.

The Contractor shall provide a minimum notice of 48 hours to the Geotechnical Engineer before beginning or restarting earthwork operations that will require the presence of the Geotechnical Engineer or his representative on site.

1.2.2 Subsurface Investigations - A geotechnical engineering report for design purposes was prepared by Geotechnical Solutions, Inc., Irvine, California. Any recommendations made in the geotechnical report or subsequent reports are made part of these specifications. These reports are available for review upon request to the Owner.

1.2.3 Observation and Testing - The Geotechnical Engineer's representative shall observe the clearing and grubbing, excavation, filling and compacting operations and shall take density tests in the fill material so that he can state his opinion as to whether or not the fill was constructed in accordance with the specifications. All fill will be tested shortly after its placement to ascertain that the required compaction is achieved. A minimum of one density test will be made on each 500 cubic yards of fill placed, with a minimum of at least one test per every 2 feet of vertical height of fill. If the surface is disturbed, the density tests shall be made in the compacted materials below the disturbed zone. When these tests indicate that the density or water content of any layer of fill or portion thereof does not meet the specified density or water content, the particular layer or portions thereof shall be reworked until the specified density and water content have been obtained.

After the completion of grading, the Geotechnical Engineer will prepare a written opinion of grading. Neither the testing performed by the Geotechnical Consultant nor his opinion as to whether or not the fill was constructed in accordance with these Specifications shall relieve the Contractor of his responsibility to construct the fills in accordance with the Contract Documents.

1.3 Reference Standards

The following ASTM (American Society for Testing and Materials) codes and standards shall be used to the extent indicated by references herein. The most recent revision of the standards shall be used.

D 1556 - "Standard Test Method for Density of Soil in Place by the Sand-Cone Method"

D1557 - "Standard Test Methods for Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using 10-lb (4.54 kg) and 18-inch (457-mm) Drop"

D2216 - "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures"

D4318 - "Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils"

D4718 - "Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles"

D4829 - "Standard Test Method for Expansion Index of Soils"

D4944 - "Standard Test Method for Field Determination of Water (Moisture) Content of Soil by the Calcium Carbide Gas Pressure Tester Method."

D5195 - "Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)"

D6938 - "Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)"

D7928 - "Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis"

1.4 Degree of Fill Compaction

The degree to which fill is to be compacted is expressed in terms of "relative compaction." Relative compaction is defined as the ratio; expressed in percent, of the in-place dry density of the compacted fill to the reference maximum dry density. The reference maximum dry density shall be obtained following ASTM D1557. Optimum water content shall be obtained in the same test used to obtain the reference maximum dry density. Correction of the maximum dry density and optimum water content for

oversize particles of gravel and cobbles shall be made following ASTM D4718 when, in the opinion of the Geotechnical Engineer, such correction is appropriate. The in-place density shall be obtained following ASTM D1556 (sand cone method) or ASTM D6938 (nuclear method-shallow depth) test method. The in-place water content shall be obtained following ASTM D4944 (calcium carbide gas pressure meter), ASTM D5195 (nuclear method-shallow depth), or ASTM D2216 (oven drying). Correction of the in-place density and water content for oversize particles of gravel and cobbles shall be made following ASTM D4718 when, in the opinion of the Geotechnical Engineer, such correction is appropriate.

If any of the test methods specified in this section are judged by the Geotechnical Engineer to be impractical or unreliable because the material has a coarse particle size distribution, or for other reasons, the Geotechnical Engineer shall establish other procedures to obtain the required soil characteristics.

2.0 Products

2.1 Materials

2.1.1 General - During grading operations, soil types other than those identified in the geotechnical investigation report may be encountered by the Contractor. Consult the Geotechnical Consultant for his evaluation of the suitability of using these soils a fill material prior to placement or disposal.

2.1.2 General Fill - Materials for compacted fill shall consist of material imported from outside the site or excavated from the site that, in the opinion of the Geotechnical Engineer, is suitable for use in constructing engineered fills. The material shall not contain rocks or hard lumps greater than 6 inches in maximum dimension, and at least 70 percent (by weight) of its particles shall pass through a U.S. Standard 3/8 inch sieve. Material greater than 3 inches, but less than 6 inches in maximum dimension, shall be placed by the Contractor so that it is completely surrounded by compacted, finer material;

no nesting of rocks shall be permitted. Do not use any perishable, spongy, hazardous, or other undesirable materials as fill.

2.1.3 Select Fill - Select fill shall meet all criteria for general fill but shall also contain no rocks or hard lumps greater than 3 inches in maximum dimension, and at least 80 percent (by weight) shall pass through a U.S. Standard 3/8-inch sieve. The expansion index of select material shall be less than 50 (i.e., 5.0 percent swell) when tested in accordance with ASTM D4829.

3.0 Execution

3.1 Clearing and Grubbing

Within the project limits, tile Contractor shall demolish structures as specified on the Drawings.

Unless otherwise indicated on the Drawings or by the Owner in writing, the Contractor shall clear and grub all trees, stumps, roots, brush, grass, and other vegetation within construction, fill and stockpile areas to a minimum depth of 3 feet below the existing ground surface or below finished grade, whichever is deeper, unless otherwise recommended by the Geotechnical Engineer's Field Representative.

Remove cleared and grubbed materials from the site and dispose of them legally. No onsite burning or burying of cleared and grubbed materials is permitted. No placement of cleared and grubbed materials in topsoil stockpiles is permitted. No mulching of branches or roots is permitted. Incorporating vegetative matter into stockpiled materials, which are to be used in fill, is not permitted.

Stockpile organic-laden topsoil separate from other fill materials.

Remove any remaining vegetative matter from the deeper excavated soils, which may result from roots deeper than those encountered during clearing and grubbing operations.

All material thereby removed shall be piled at a location away from the immediate work area so as to avoid burying of piled material.

3.2 Compacted Fills

3.2.1 Preparing Areas to be Filled - Brush, grass, and other objectionable materials shall be collected, piled, and disposed of as indicated in Section 3.1 by the Contractor so as to leave the areas that have been cleared with a neat and finished appearance, free from unsightly debris.

Remove all loose soil, uncertified fill, landslide debris, and weathered bedrock to firm material or in-situ bedrock, as approved by the Geotechnical Consultant. The Contractor shall obtain approval from the Geotechnical Engineer or his representative of stripping and site preparation before the compaction of any fill subgrade begins. The surface shall then be scarified to a minimum depth of 6 inches until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment used, and shall be brought to the specified water content and relative compaction. Compact scarified materials to a minimum relative compaction of 90 percent, relative to ASTM D1557, prior to placement of any fill material.

3.2.2 Placing, Spreading, and Compacting, Fill Material - Onsite soil obtained from removals, borrow, or cut areas may be reused as compacted fill provided it is free from deleterious debris and meets the other requirements of the "Materials" portion of this Specification Section.

Use of soil containing deleterious debris from the clearing and grubbing operation or from other sources is not permitted. The fill materials shall be placed by the Contractor in horizontal layers not greater than 8 inches thick, measured before compaction. Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to obtain uniformity of material and moisture in each layer. The moisture content of material used for compacted fill should be adjusted to be at or above optimum water content as determined by ASTM D1557. When the water content of the fill material is too high, the

fill materials shall be aerated by the Contractor by blading, mixing, or other satisfactory methods until the water content is as specified.

After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted by the Contractor to a relative compaction of at least 90 percent of the maximum dry density as determined by ASTM D1557 for general fill, and 95 percent of the maximum dry density as determined by ASTM D1557 for select fill, compacted fill pads, and the upper 1 foot of pavement subgrade. Compaction shall be accomplished by: sheepsfoot rollers; vibratory rollers; multiple-wheel, pneumatic-tired rollers; or other types of acceptable compacting equipment. Equipment shall be of such design that it is able to compact the fill to the specified density. Compaction shall be continuous over the entire area, and the equipment shall make sufficient passes to obtain the desired density uniformly. All fill placed on site shall be treated in like manner until finished grades are attained. Jetting, puddling, and hydro consolidation techniques shall not be used, including backfill of utility trenches.

The placement of topsoil is subject to the approval of the Geotechnical Engineer. Topsoil shall not be placed beneath concrete flatwork, beneath or behind retaining walls, or within structural fill. All topsoil material is subject to the same moisture conditioning, placement, and compaction requirements as General Fill. Roots, branches and other organic debris are not permitted within the compacted topsoil layer.

When backfilling around footings and compacting behind retaining walls and flexible retaining structures, the Contractor shall use lightweight compaction equipment such as hand-operated equipment, shoring, or other means to avoid over-stressing structural walls. When using lightweight compaction equipment, the fill materials shall be spread in horizontal layers not greater than 6 inches thick, measured before compaction.

As an alternative, sand-cement slurry may be used to backfill trenches. The slurry shall have minimum cement content of 3 sacks per cubic yard within the zone of influence of foundations and other settlement sensitive structures. A minimum of 2 sacks per cubic

yard of slurry shall be used elsewhere within building limits, and a minimum of one sack per cubic yard of slurry shall be used elsewhere. Slurry shall not be used in those areas where such placement would result in the obstruction of water flow, and is subject to the approval of the Geotechnical Engineer.

3.3 Protection of Work and Adjacent Properties

3.3.1 During Construction - The Contractor shall grade all excavated surfaces to provide good drainage away from construction slopes and prevent ponding of water. He shall control surface water and the transport of silt and sediment to avoid damage to adjoining properties or to finished work on the site. The Contractor shall take remedial measures to prevent erosion of freshly graded areas until such time as permanent drainage and erosion control measures have been installed.

Dispose of all water resulting from dewatering operations legally and in ways that will not cause damage to public or private property, or constitute a nuisance or menace to the public, in accordance with municipal requirements.

The Contractor shall make every effort to minimize the amount of dust raised in excavating, on haul roads and access roads, and all other work areas in the course of construction activities.

Protect benchmarks, monuments, and other reference points against displacement or damage. Repair or replace benchmarks, monuments, and other permanent survey data that become displaced or damaged due to the performance of this work.

3.3.2 After Completion - After earthwork is completed and the, Geotechnical Engineer has finished his observations of the work, no further excavation, filling or backfilling shall be performed except under the observation of the Geotechnical Engineer.

GEOTECHNICAL ADDENDUM REPORT

MORENO VALLEY PILOT # 1316
TRUCK STOP MODEL

AT

SOUTH OF FREEWAY 60 &
WEST OF REDLANDS BOULEVARD
MORENO VALLEY, CALIFORNIA 92553

PREPARED FOR:

BROADBENT, INC.
WEST PACIFIC AVENUE
HENDERSON, NEVADA, 89015

PROJECT NO: G-5852-01

MARCH 1, 2021

PREPARED BY:

GEOTECHNICAL SOLUTIONS, INC.
GEOTECHNICAL & ENVIRONMENTAL
ENGINEERING

Geotechnical Solutions, Inc.
Geotechnical, Structural & Environmental Engineering

March 1, 2021

Project No: G-5852-01

Broadbent, Inc.
8 West Pacific Avenue
Henderson, Nevada, 89015

Attention: Mr. Mark E. Kazelskis, PG, CHG, CEM

Via Email: mkazelskis@broadbentinc.com

Re: Geotechnical Engineering Addendum Report
Truck Stop – Moreno Valley Pilot # 1316
South of Freeway 60 &
West of Redlands Boulevard
Moreno Valley, California 92553

Gentlemen:

Submitted herewith is the addendum report to our geotechnical engineering report dated February 26, 2021 conducted by this office for Moreno Valley Truck Stop Model Pilot # 1316 at the referenced site.

Recommendations regarding over excavation have been included in this addendum report for the Moreno Valley Truck Stop Model Pilot # 1316 located just northwest of Redlands Boulevard and Eucalyptus Avenue Intersection and south of Moreno Highway 60 in Moreno Valley, California as shown on Vicinity Map (Plate A) and Google Map (Plate D).

Site Clearing

Prior to grading, all debris including construction materials should entirely be removed from the site and disposed of off-site. Existing any undesirable materials should also be

removed and hauled off-site. Existing utilities (if Any) should be removed and relocated as required. Any construction debris or ant buried or other contaminated exposed during site clearance should be removed and hauled away from the site. The resulting excavation from any removal should be cleared of loose material then backfilled with compacted soil. Oversized rocks greater than 6 inches should be removed.

Excavation

Excavations into the on-site soils may encounter a variety of conditions. Caving on clean sands may be encountered. The contractor should be made responsible for designing and constructing stable, temporary excavations as required to maintain stability of the excavation sides. All excavations should be sloped or shored in the interest of safety following local and federal regulations including current OSHA excavation and trench safety standards.

Conventional equipment can be used for the excavations for shallow foundations, drilled shafts, and utility trenches for the proposed construction. The speed and ease of excavation are dependent on the nature of the deposit, the type of equipment used, and the skill and experience of the equipment operator.

Building Pad Over-excavation (Above Ground Storage Tanks, AST's)

After removal of existing debris, the above ground storage tank areas should be over-excavated at least 3 feet below the lowest grade or 24 inches below the bottom of the footings whichever is greater. Excavation should be extended 3-feet outside building perimeters. Remove and replace any loose or disturbed soils prior to placing any additional fill materials required to reach the finished subgrade elevations. The over-excavation should be backfilled to the foundation base elevation with the compacted engineering fill or lean concrete in accordance with the recommendations presented in this report.

The stability of the subgrade may be affected by precipitation, repetitive construction traffic or other factors. If unstable conditions develop, workability may be improved by scarifying and drying. Alternatively, over-excavation of wet zones and replacement with granular materials may be used, or crushed gravel and/or rock can be tracked or "crowded' into the unstable surface soil until a stable working surface is attained. Lightweight excavation equipment may also be used to reduce subgrade pumping.

Compliance

Recommendations for foundations and slabs-on-grade supported on compacted fills or prepared subgrade depend upon compliance with the General Grading and Recommended Earthwork Specifications in Appendix B.

To assess compliance, observation and testing should be performed under the direction of a geotechnical engineer. Please contact us to provide observation and testing services.

Backfill Materials

On-site clean, low-expansive potential soils, or imported materials may be used as fill material for the following:

- Foundation Areas
- Interior Slab Areas
- Pavement Areas
- Backfill

Any earth materials imported or excavated on the property may be utilized in the fill provided that each material has been determined to be suitable by the soil engineer. These materials should be free of roots, tree branches, other organic matter or other deleterious materials. Soils of poor gradation, undesirable expansion potential, or substandard

strength characteristics may be designated by the consultant as unsuitable and may require blending with other soils to serve as a satisfactory fill material.

Gradation (as per ASTM C136) should be as follows:

Size	% by Weight
6"	100
4"	85-100
¾"	70-100
No 4 Sieve	50-100
No. 200 Sieve	40 (max)

Any import material should have an expansion Index, EI less than 20. Import material should also meet the following criteria:

Soil Properties	**Values**
Liquid Limit	35 (Max)
Plastic Limit	6 (Max)

Placement and Compaction

Place and compact approved fill material in nearly horizontal layers that when compacted should not exceed 6 inches in thickness.

Use appropriate equipment and procedures that will produce recommended densities and water contents throughout the lift. Moisture condition, blending, and mixing of the fill layer should continue until the fill materials have a uniform moisture content at or above optimum moisture.

Uncompacted fill lifts should not exceed 8 inches.

Materials should be compacted to the following:

On-site or imported soil, reworked and fill: Minimum % (ASTM D-1557

	Laboratory Standard)
Subgrade Below Footings	90
Subgrade Below Slab-on Grade	90
Subgrade Below Pavement	90
Crush Rock Below Slab-on-Grade	95
Aggregate Base below pavement	95

Excavations at Pavement Areas

Subgrade Preparation

After removing the existing deleterious materials on the pavement areas and hauled offsite, all surficial deposits of loose soil material should be removed and excavate 12 inches below the base and recompacted as recommended. The bottom is further scarified to a depth of at least 6 inches; moisture conditioned as necessary and compacted to 90 percent of the maximum laboratory density as determined by ASTM Test Method D-1557.

Deleterious material, excessively wet or dry pockets, concentrated zones of oversized rock fragments, and any other unsuitable materials encountered during excavation or grading should be removed. The compacted fill material should then be brought to the elevation of the proposed subgrade for the pavement. The subgrade should be proof-rolled in order to ensure a uniform, firm and unyielding surface. All grading and fill placement should be observed by the project soils engineer and/or his representative.

Aggregate Base

Compaction and rolling are required for the recommended base section. Minimum relative compaction required will be 95 percent of the laboratory maximum density as determined by ASTM Test Designation D-1557. Aggregate base should be in accordance with 200-2.2 crushed Aggregate base Class II base (minimum R-value=78) and sample

should be brought for testing and approval prior to delivery to the site. No crushed miscellaneous base (CMB) should be accepted.

Asphalt Concrete Pavement

Asphalt concrete pavement should be Performance Grade PG 64-10 1/2" maximum aggregate size and should be placed and compacted in two layers. Asphalt concrete shall be compacted to 95 percent of the Hveem Laboratory Standard.

Earthwork Observations:

Relative compaction of all fill materials placed on site should be tested in accordance with ASTM D6938. All new fill shall be brought to near optimum moisture, placed in layers not exceeding six inches in thickness, and compacted to at least 90 percent relative compaction for subgrade and 95 percent relative compaction for aggregate base. No jetting or water tamping of fill soils shall be permitted. All imported soil for engineered fill should be pre-approved by the Geotechnical Engineer and consist of clean, granular, non-expansive soil, free of vegetation and other debris with an Expansion Index of 20 or less.

At all times, the contractor should have a responsible field superintendent on the project in full charge of the work, with authority to make decisions. He should cooperate fully with the Geotechnical Engineer in carrying out the work.

All footing trenches for continuous and spread footings and subgrade for the slab areas should be observed by the project Geotechnical Engineer to verify that over-excavation and re-compaction operations of adequate depth, thickness, and compaction have been performed as specified. All footing excavations should be trimmed neat, level and square. All loose, sloughed or moisture softened soil should be removed and replaced with properly compacted soil.

General Grading

All grading should conform to the guidelines presented in the California Building Code (CBC, 2019), the City of Moreno Valley, International Conference of Building Officials (ICBO, 2018), and Appendix B in this report, except where specifically superceded in the text of this report. When code references are not equivalent, the more stringent code should be followed. During earthwork construction, all site preparation and the general grading procedures of the contractor should be observed, and the fill selectively tested by a representative (s) of Geotechnical Solutions, Inc. (GSI). If unusual or unexpected conditions are exposed in the field, they should be reviewed by this office and if warranted, modified and /or additional recommendations will be offered. All applicable requirements of local and national construction and general industry safety orders, the Occupational Safety and Health Act and the construction Safety Act should be met.

Closure

The Conclusions and recommendations contained herein are based on the findings and observations made at the test boring locations. It is not unusual to find conditions between and beyond such locations, which differ from the conditions encountered. If conditions are encountered during construction, which appear to differ from those previously disclosed, this office should be notified so as to consider the need for modifications. On-site construction observations and wherever appropriate, tests should be performed during the course of construction by a representative of this office to evaluate compliance with the design concepts, specifications, and recommendations contained herein.

This report has been compiled for the exclusive use of our client, it shall not be transferred to, or used by, other parties, or applied to any project on this site other than described herein without consent and /or thorough review by this office.

The investigation was made in accordance with generally accepted geotechnical engineering principles and procedures and included such field and laboratory tests considered necessary under the circumstances.

In the opinion of the undersigned, the accompanying report has been substantiated by mathematical and other data and presents fairly the design information requested by your organization.

Respectfully Submitted,

Geotechnical Solutions, Inc.

Dharma Shakya, PhD, PE, GE
Principal Geotechnical Engineer

Abraham S. Baha, PE, M. ASCE
Sr. Principal

Distribution: (3+pdf) Addressee

References

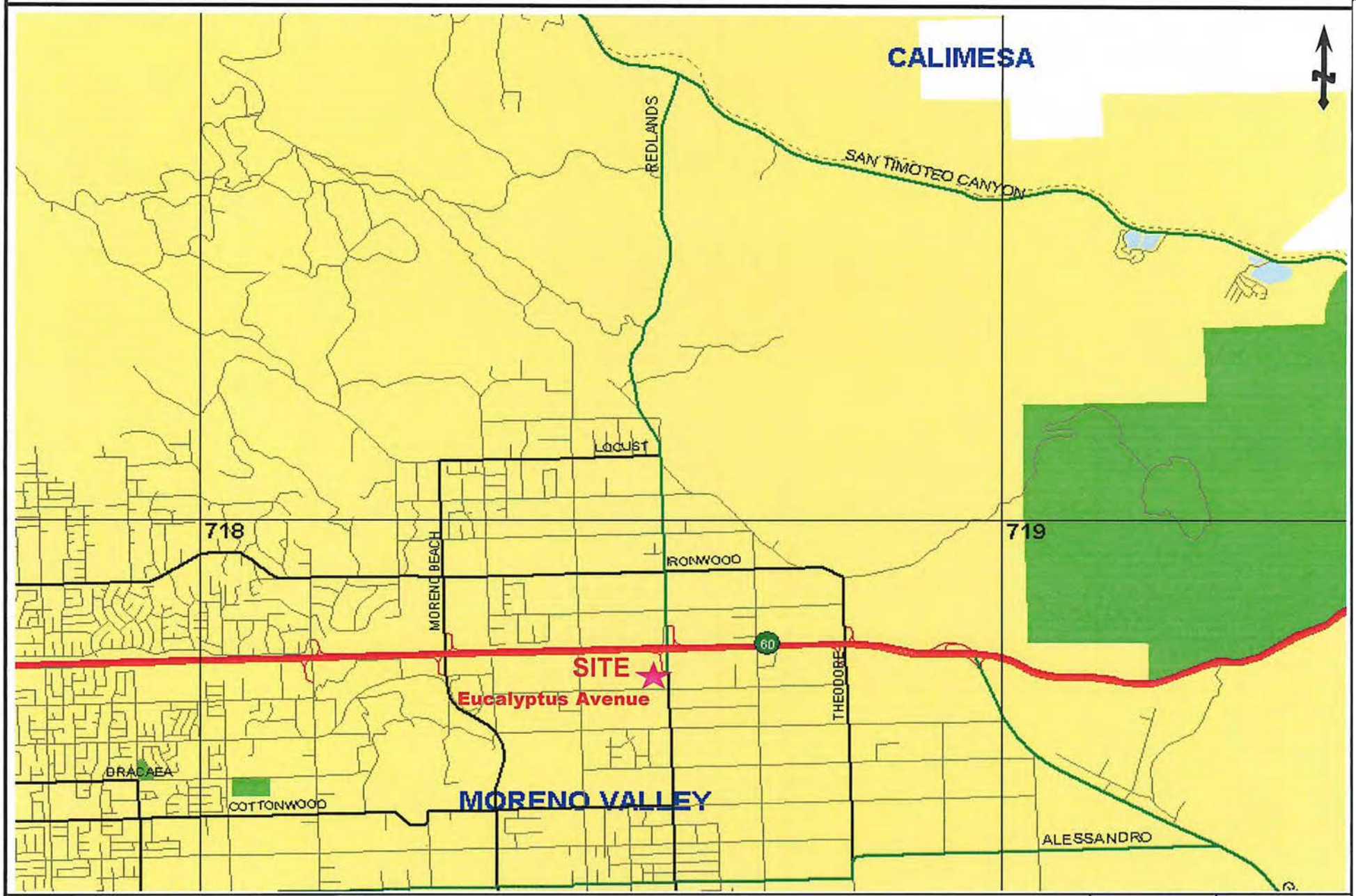
Geotechnical Solutions, Inc., 2021, "Geotechnical Evaluation Report for Moreno Valley pilot # 1316, Truck Stop Model, Located at South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, California", Project Number G-5852-01, dated February 26, 2021.

Appendix A

Plates

- Vicinity Map
- Plot Plan
- Google Map

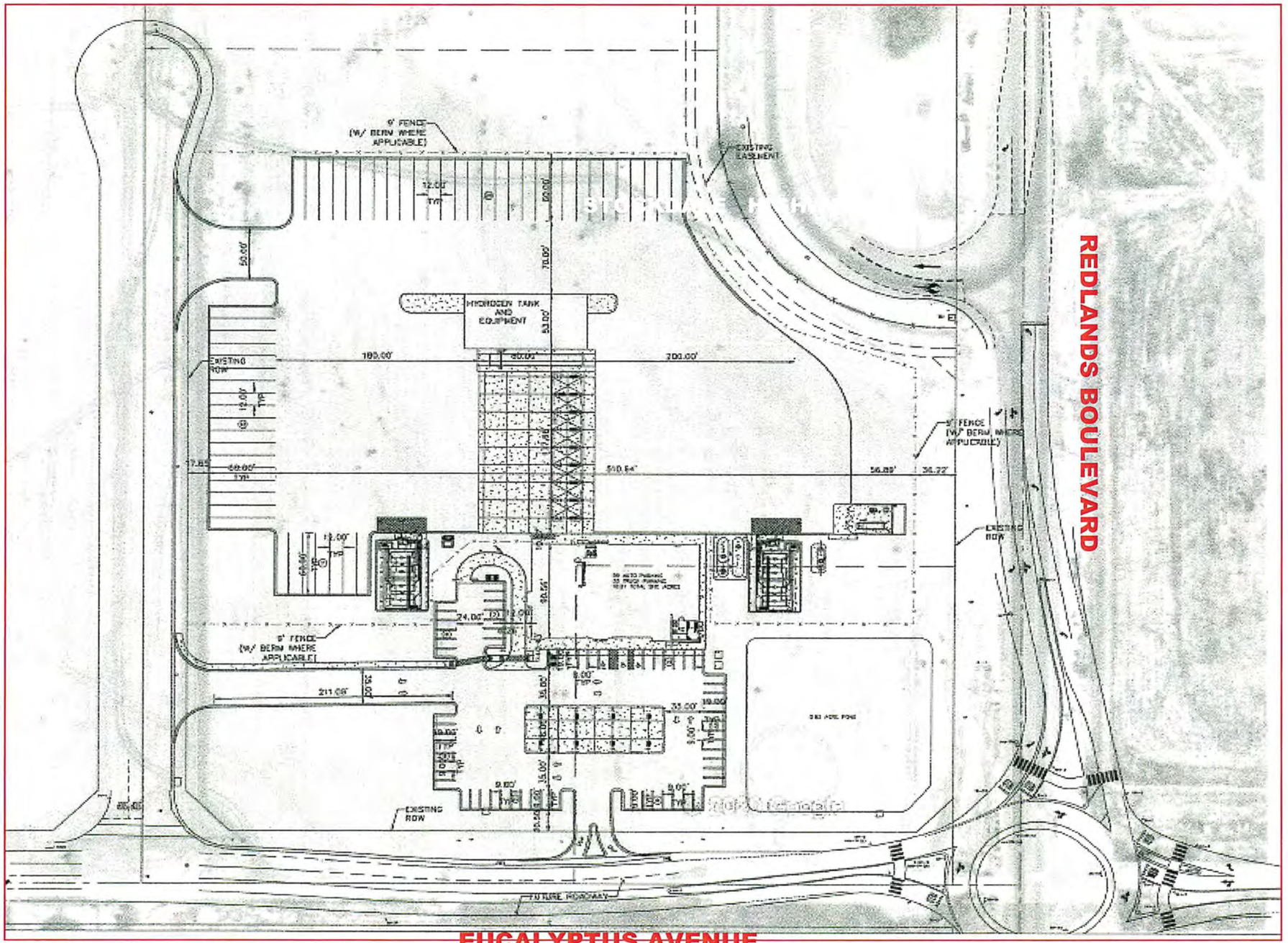
VICINITY MAP



Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	A

Geotechnical Solutions, Inc.

PLOT PLAN & BORING LOCATION MAP



SCALE: 1" = 100'

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	B
Geotechnical Solutions, Inc.		

GOOGLE MAP

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	C
Geotechnical Solutions, Inc.		

Appendix B

Recommended Earthwork Specifications

RECOMMENDED EARTHWORK SPECIFICATIONS

1.0 General

1.1 Description

1.1.1 These specifications cover preparation of the subject site to receive fills, the type of soils suitable for use in fills, the compaction standards, and the methods of testing compacted fills.

1.1.2 The Contractor shall furnish all labor, supervision, equipment, operations, and materials to excavate to the required grade, support existing underground facilities, stockpile material, compact fill and backfill, and fine grade. The work of the Contractor shall include all clearing and grubbing, removing existing unsatisfactory material, preparing areas to be filled, spreading and compacting of fill in the areas to be filled and all other work necessary to complete the grading of the filled areas. It shall be the Contractor's responsibility to place, spread, moisten or dry, and compact the fill in strict accordance with these specifications to the lines and grades indicated on project plans or as directed in writing by the Civil Engineer.

1.1.3 Deviations from these specifications will be permitted only upon written authorization from the Owner or his representative.

1.2 Role of the Geotechnical Engineer

1.2.1 Construction - The Owner will employ a Geotechnical Consultant to observe and test this work as it is being performed. The Contractor shall cooperate with the Geotechnical Consultant and allow his unrestricted access to the site as required for the performance of his duties.

The Contractor shall provide a minimum notice of 48 hours to the Geotechnical Engineer before beginning or restarting earthwork operations that will require the presence of the Geotechnical Engineer or his representative on site.

1.2.2 Subsurface Investigations - A geotechnical engineering report for design purposes was prepared by Geotechnical Solutions, Inc., Irvine, California. Any recommendations made in the geotechnical report or subsequent reports are made part of these specifications. These reports are available for review upon request to the Owner.

1.2.3 Observation and Testing - The Geotechnical Engineer's representative shall observe the clearing and grubbing, excavation, filling and compacting operations and shall take density tests in the fill material so that he can state his opinion as to whether or not the fill was constructed in accordance with the specifications. All fill will be tested shortly after its placement to ascertain that the required compaction is achieved. A minimum of one density test will be made on each 500 cubic yards of fill placed, with a minimum of at least one test per every 2 feet of vertical height of fill. If the surface is disturbed, the density tests shall be made in the compacted materials below the disturbed zone. When these tests indicate that the density or water content of any layer of fill or portion thereof does not meet the specified density or water content, the particular layer or portions thereof shall be reworked until the specified density and water content have been obtained.

After the completion of grading, the Geotechnical Engineer will prepare a written opinion of grading. Neither the testing performed by the Geotechnical Consultant nor his opinion as to whether or not the fill was constructed in accordance with these Specifications shall relieve the Contractor of his responsibility to construct the fills in accordance with the Contract Documents.

1.3 Reference Standards

The following ASTM (American Society for Testing and Materials) codes and standards shall be used to the extent indicated by references herein. The most recent revision of the standards shall be used.

D 1556 - "Standard Test Method for Density of Soil in Place by the Sand-Cone Method"

D1557 - "Standard Test Methods for Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using 10-lb (4.54 kg) and 18-inch (457-mm) Drop"

D2216 - "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures"

D4318 - "Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils"

D4718 - "Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles"

D4829 - "Standard Test Method for Expansion Index of Soils"

D4944 - "Standard Test Method for Field Determination of Water (Moisture) Content of Soil by the Calcium Carbide Gas Pressure Tester Method."

D5195 - "Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)"

D6938 - "Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)"

D7928 - "Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis"

1.4 Degree of Fill Compaction

The degree to which fill is to be compacted is expressed in terms of "relative compaction." Relative compaction is defined as the ratio; expressed in percent, of the in-place dry density of the compacted fill to the reference maximum dry density. The reference maximum dry density shall be obtained following ASTM D1557. Optimum water content shall be obtained in the same test used to obtain the reference maximum dry density. Correction of the maximum dry density and optimum water content for

oversize particles of gravel and cobbles shall be made following ASTM D4718 when, in the opinion of the Geotechnical Engineer, such correction is appropriate. The in-place density shall be obtained following ASTM D1556 (sand cone method) or ASTM D6938 (nuclear method-shallow depth) test method. The in-place water content shall be obtained following ASTM D4944 (calcium carbide gas pressure meter), ASTM D5195 (nuclear method-shallow depth), or ASTM D2216 (oven drying). Correction of the in-place density and water content for oversize particles of gravel and cobbles shall be made following ASTM D4718 when, in the opinion of the Geotechnical Engineer, such correction is appropriate.

If any of the test methods specified in this section are judged by the Geotechnical Engineer to be impractical or unreliable because the material has a coarse particle size distribution, or for other reasons, the Geotechnical Engineer shall establish other procedures to obtain the required soil characteristics.

2.0 Products

2.1 Materials

2.1.1 General - During grading operations, soil types other than those identified in the geotechnical investigation report may be encountered by the Contractor. Consult the Geotechnical Consultant for his evaluation of the suitability of using these soils a fill material prior to placement or disposal.

2.1.2 General Fill - Materials for compacted fill shall consist of material imported from outside the site or excavated from the site that, in the opinion of the Geotechnical Engineer, is suitable for use in constructing engineered fills. The material shall not contain rocks or hard lumps greater than 6 inches in maximum dimension, and at least 70 percent (by weight) of its particles shall pass through a U.S. Standard 3/8 inch sieve. Material greater than 3 inches, but less than 6 inches in maximum dimension, shall be placed by the Contractor so that it is completely surrounded by compacted, finer material;

no nesting of rocks shall be permitted. Do not use any perishable, spongy, hazardous, or other undesirable materials as fill.

2.1.3 Select Fill - Select fill shall meet all criteria for general fill but shall also contain no rocks or hard lumps greater than 3 inches in maximum dimension, and at least 80 percent (by weight) shall pass through a U.S. Standard 3/8-inch sieve. The expansion index of select material shall be less than 50 (i.e., 5.0 percent swell) when tested in accordance with ASTM D4829.

3.0 Execution

3.1 Clearing and Grubbing

Within the project limits, tile Contractor shall demolish structures as specified on the Drawings.

Unless otherwise indicated on the Drawings or by the Owner in writing, the Contractor shall clear and grub all trees, stumps, roots, brush, grass, and other vegetation within construction, fill and stockpile areas to a minimum depth of 3 feet below the existing ground surface or below finished grade, whichever is deeper, unless otherwise recommended by the Geotechnical Engineer's Field Representative.

Remove cleared and grubbed materials from the site and dispose of them legally. No onsite burning or burying of cleared and grubbed materials is permitted. No placement of cleared and grubbed materials in topsoil stockpiles is permitted. No mulching of branches or roots is permitted. Incorporating vegetative matter into stockpiled materials, which are to be used in fill, is not permitted.

Stockpile organic-laden topsoil separate from other fill materials.

Remove any remaining vegetative matter from the deeper excavated soils, which may result from roots deeper than those encountered during clearing and grubbing operations.

All material thereby removed shall be piled at a location away from the immediate work area so as to avoid burying of piled material.

3.2 Compacted Fills

3.2.1 Preparing Areas to be Filled - Brush, grass, and other objectionable materials shall be collected, piled, and disposed of as indicated in Section 3.1 by the Contractor so as to leave the areas that have been cleared with a neat and finished appearance, free from unsightly debris.

Remove all loose soil, uncertified fill, landslide debris, and weathered bedrock to firm material or in-situ bedrock, as approved by the Geotechnical Consultant. The Contractor shall obtain approval from the Geotechnical Engineer or his representative of stripping and site preparation before the compaction of any fill subgrade begins. The surface shall then be scarified to a minimum depth of 6 inches until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment used, and shall be brought to the specified water content and relative compaction. Compact scarified materials to a minimum relative compaction of 90 percent, relative to ASTM D1557, prior to placement of any fill material.

3.2.2 Placing, Spreading, and Compacting, Fill Material - Onsite soil obtained from removals, borrow, or cut areas may be reused as compacted fill provided it is free from deleterious debris and meets the other requirements of the "Materials" portion of this Specification Section.

Use of soil containing deleterious debris from the clearing and grubbing operation or from other sources is not permitted. The fill materials shall be placed by the Contractor in horizontal layers not greater than 8 inches thick, measured before compaction. Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to obtain uniformity of material and moisture in each layer. The moisture content of material used for compacted fill should be adjusted to be at or above optimum water content as determined by ASTM D1557. When the water content of the fill material is too high, the

fill materials shall be aerated by the Contractor by blading, mixing, or other satisfactory methods until the water content is as specified.

After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted by the Contractor to a relative compaction of at least 90 percent of the maximum dry density as determined by ASTM D1557 for general fill, and 95 percent of the maximum dry density as determined by ASTM D1557 for select fill, compacted fill pads, and the upper 1 foot of pavement subgrade. Compaction shall be accomplished by: sheepsfoot rollers; vibratory rollers; multiple-wheel, pneumatic-tired rollers; or other types of acceptable compacting equipment. Equipment shall be of such design that it is able to compact the fill to the specified density. Compaction shall be continuous over the entire area, and the equipment shall make sufficient passes to obtain the desired density uniformly. All fill placed on site shall be treated in like manner until finished grades are attained. Jetting, puddling, and hydro consolidation techniques shall not be used, including backfill of utility trenches.

The placement of topsoil is subject to the approval of the Geotechnical Engineer. Topsoil shall not be placed beneath concrete flatwork, beneath or behind retaining walls, or within structural fill. All topsoil material is subject to the same moisture conditioning, placement, and compaction requirements as General Fill. Roots, branches and other organic debris are not permitted within the compacted topsoil layer.

When backfilling around footings and compacting behind retaining walls and flexible retaining structures, the Contractor shall use lightweight compaction equipment such as hand-operated equipment, shoring, or other means to avoid over-stressing structural walls. When using lightweight compaction equipment, the fill materials shall be spread in horizontal layers not greater than 6 inches thick, measured before compaction.

As an alternative, sand-cement slurry may be used to backfill trenches. The slurry shall have minimum cement content of 3 sacks per cubic yard within the zone of influence of foundations and other settlement sensitive structures. A minimum of 2 sacks per cubic

yard of slurry shall be used elsewhere within building limits, and a minimum of one sack per cubic yard of slurry shall be used elsewhere. Slurry shall not be used in those areas where such placement would result in the obstruction of water flow, and is subject to the approval of the Geotechnical Engineer.

3.3 Protection of Work and Adjacent Properties

3.3.1 During Construction - The Contractor shall grade all excavated surfaces to provide good drainage away from construction slopes and prevent ponding of water. He shall control surface water and the transport of silt and sediment to avoid damage to adjoining properties or to finished work on the site. The Contractor shall take remedial measures to prevent erosion of freshly graded areas until such time as permanent drainage and erosion control measures have been installed.

Dispose of all water resulting from dewatering operations legally and in ways that will not cause damage to public or private property, or constitute a nuisance or menace to the public, in accordance with municipal requirements.

The Contractor shall make every effort to minimize the amount of dust raised in excavating, on haul roads and access roads, and all other work areas in the course of construction activities.

Protect benchmarks, monuments, and other reference points against displacement or damage. Repair or replace benchmarks, monuments, and other permanent survey data that become displaced or damaged due to the performance of this work.

3.3.2 After Completion - After earthwork is completed and the, Geotechnical Engineer has finished his observations of the work, no further excavation, filling or backfilling shall be performed except under the observation of the Geotechnical Engineer.

Appendix G
Preliminary Hydrology Report

PRELIMINARY HYDROLOGY REPORT

Pilot Moreno Valley

APN: 488-330-030, -035, -036, -037, & -038
PEN 21-0077, LWQ 21-0018, LST21-0030

August 2021

PREPARED FOR:

Pilot Travel Centers LLC
5508 Lonas Drive
Knoxville, TN 37909
(865) 588-7488

PREPARED BY:

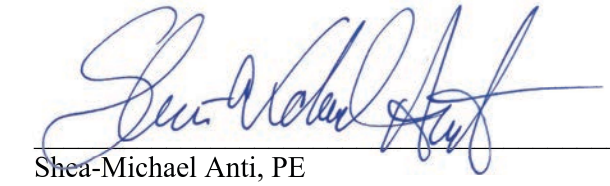
Kimley»Horn

3880 Lemon Street, Suite 420
Riverside, CA 92501
(951)543-9868

KHA Project # 095426008

Certification by Engineer or Authorized Qualified Designee

I certify under penalty of law that this document and all attachments were prepared under my jurisdiction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathered the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



8/3/21

Shea-Michael Anti, PE — Date

Contents

References

Hydrology Manual. Riverside County Flood Control and Water Conservation District, April 1978.

100.0 Introduction

Kimley-Horn and Associates has been retained to prepare a Preliminary Hydrology Report for the proposed Pilot Moreno Valley in Moreno Valley, California. The purpose of this report is to demonstrate preliminary analysis of the hydrologic and hydraulic conditions associated with the development of the project site. To do so, the following is the scope of this report:

- Discuss the pre-development discharge patterns and points
- Discuss the post-development discharge patterns and points
- Discuss the 100-year allowable flow rates for the existing drainage structures
- Determine the post-development un-mitigated flow rates for the 100-year event
- Determine required post-development onsite mitigation for the 100-year event

Even though this report discusses stormwater, this report is not a Stormwater Pollution Prevention Plan (SWPPP), a Groundwater Study, a Geotechnical Report, nor a Water Quality Management Plan (WQMP). Each of these separate reports discusses separate aspects of stormwater. Portions of the Geotechnical Report are utilized and referenced for the purpose of this report. Similarly, the requirements of the WQMP are considered for the stormwater mitigation and sizing of outlet structures for this project.

100.1 Project Description

The existing vacant lot will be developed into the proposed Pilot Travel Center. The proposed development will include a proposed 14,087 square foot building with a restaurant, drive thru, and proposed fueling areas. Site improvements will include landscaping, concrete hardscape, and asphalt paving. The associated improvements include, but are not limited to onsite grading, domestic water service, sanitary sewer service, storm drain infrastructure, concrete and asphalt pavement, landscaping, and irrigation. The project site is approximately 9.55-acres and is located in the City of Moreno Valley, within Riverside County. The APNs for the project site area: 488-330-030, -035, -036, -037, & -038. Appendix A contains an aerial photograph that depicts the project location.

100.2 Location

The site is located in the northwest corner of Eucalyptus Avenue and Redlands Avenue in the City of Moreno Valley, within Riverside County. The project site is bordered by undeveloped land to the north, Redlands Avenue to the east, Eucalyptus Avenue to the south, and Aldi Place to the west. For reference see Appendix A, Location Map and Vicinity Map.

100.3 Methodology

The hydrologic and hydraulic analyses were completed following the methods outlined in the RCFC & WCD Hydrology Manual. The rational method was used to estimate time of concentrations and peak flow rates generated from the proposed 100-year, 1hr storm event. The Advance Engineering Software (AES) Hydrosoft package was used to complete the rational method analysis. The results of the analysis are included in Appendix G. Complete onsite and offsite drainage system analyses will be provided in the Final Hydrology Report.

The rainfall data used for the analyses is important for the flow and runoff results. For the rational method analysis, the rainfall data from the Riverside County Flood Control and Water Conservation District Hydrology Manual (based on NOAA Atlas 2) was used. The rainfall data for the Sunnymead-Moreno area was utilized due to the location of the project site.

The type of soil and soil conditions are major factors affecting infiltration/detention and resultant storm water runoff. The Natural Resources Conservation Service (NRCS) has classified soil into one general hydrologic soil group for comparing infiltration and runoff rates. The group is based on properties that influence runoff, such as water infiltration rate, texture, natural discharge, and moisture condition. The runoff potential is based on the amount of runoff at the end of a long duration storm that occurs after wetting and swelling of the soil not protected by vegetation. Using the United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey online tool, it was determined the predominant hydrologic soil group classification onsite is A. Based on Plate C-1.17 of the Hydrology Manual, the site soils is type B. Therefore, type B soil was used for the analyses. Soil type B is defined as soils having moderate infiltration rates (moderate runoff potential). Based on the Geotechnical Investigation and Percolation Test Results Report prepared by Geotechnical Solutions, Inc the proposed site experiences a percolation rate of 12.06 in/hr. The reported infiltration rate based on the Porchet Method was determined to be 0.808 in/hr (without a factor of safety applied). See Appendix H for the soil information.

In addition, antecedent moisture condition (AMC) III was used to calculate the 100-year peak flows and runoff based on the hydrology manual. The land use for the proposed drainage subareas were selected based on the percent impervious proposed for the site. Since the proposed drainage area that drains to the bioretention basin BMP-1 will be approximately 67% impervious, Mobile Home Park land use was used for all drainage tributary drainage areas which conservatively assumes 75% impervious. Since the proposed drainage area that drains to the bioretention basin BMP-2 will be approximately 56% impervious, Condominiums land use was used for all drainage tributary drainage areas which conservatively assumes 65% impervious. See Appendix D Plate D-5.6 for the impervious percentages that correspond to each land use.

100.4 Drainage Characteristics

The site is mainly located in Zone X-shaded per the Federal Emergency Management Administration (FEMA) Flood Insurance Rate Map (FIRM) panel 06065C0770G, dated August 28, 2008. Flood Zone X-shaded is defined by FEMA to represent one of the two situations below:

- 0.2% annual chance of flood hazard
- 1% annual chance of flood with average depth less than 1 foot or having a drainage area less than 1 square mile

No portion of the site is located within the special flood hazard area inundated by the 100-year flood. For reference, see Appendix B, FIRM Map.

100.4.1 Pre-development Condition

Under existing condition, the project site accepts offsite flows from the north (DA-3). The existing north offsite area (DA-3) is currently vacant and the land cover consists of mostly light weeds and brush. Flows drain southeast and sheet flow onto the project site along the northern boundary. The adjacent streets do not convey any flows into the project site.

The existing condition of the project site is vacant and land cover consist mostly of light weeds and brush. The proposed project site, along with the northern offsite area (DA-3), is tributary to an existing public storm drain system within Eucalyptus Avenue. Under existing conditions, the project site includes two existing drainage areas (DA-1 and DA-2) that drain in the southeast direction into two (2) existing CMP inlets. Drainage collected from the site by these two existing CMP inlets is routed through two laterals into the existing 60” RCP along Eucalyptus Avenue. See existing drainage exhibit in Appendix F for reference.

Based on the existing as-builts and the excerpt of the Hydrology and Hydraulics Report from Huit-Zollars dated December 4, 2013 (Appendix E), it was determined that 26 cfs is allowed to be discharged into the existing 45" CMP inlet located closest to the intersection of Eucalyptus Avenue and Redlands Road, while 12 cfs is allowed to be discharged into the existing 36" CMP inlet located closest to the intersection of Eucalyptus Avenue and Aldi Place. From the previously referenced report, it was also determined that the two existing CMP inlets were sized accounting for the future commercial development of the tributary areas. See Appendix E for reference plans of the existing public storm drain system along Eucalyptus Avenue with allowable flows (Lateral F-16-B and Lateral F-16-D).

100.4.2 Post-development Condition

Under the proposed condition, the project site will intercept offsite flows from the north. The north flows are intended to be intercepted and routed south through a proposed storm drain system along the east boundary of the project site. For the post-development calculations, the northern offsite area was accounted for in the discharge tributary to the existing 45" CMP. The offsite area was considered 90% impervious and the travel length was reduced (compared to existing) to account for future development of the site.

The proposed development includes the construction of the proposed Pilot Moreno Valley Travel Center. The 9.55-acre site will not be phased. The proposed site will encompass one (1) new building approximately 14,087 square feet with a restaurant, drive thru, and fueling areas. The site will include landscaping, concrete hardscape, asphalt parking, and a bio-retention basin. See Appendix C for Construction Documents which includes the project Preliminary Site Plan and Preliminary Grading Plan. The proposed grading for the project site drains in a southeast direction to maintain the existing flow pattern to the maximum extent possible. The proposed site is tributary to the existing Moreno MDP Line F-16 located within Eucalyptus Avenue (specifically lateral F-16-B and F-16-D).

Under the proposed condition, the project site has been subdivided into eleven (11) drainage sub-areas for hydrologic analyses. Drainage from DA-1 and DA-2 predominantly drain in a southeast direction and are conveyed by a proposed storm drain system into a proposed bio-retention basin (BMP-1) southeast of the project site. The bio-retention area (DA-8) also contributes to the flows into BMP-1. The flows from BMP-1 are then conveyed south and confluence with the northern offsite flows (DA-12) to collectively discharge into the existing 45" CMP southeast of the site. Drainage from DA-3, DA-4, DA-5, and DA-6 predominantly drain in a southeast direction and are conveyed by a proposed storm drain system into a proposed bio-retention basin (BMP-2) southwest of the project site. The bio-retention area (DA-7) also contributes to the flows into BMP-2. The flows from BMP-2 are then conveyed south and discharge into the existing 36" CMP southwest of the site. Drainage areas DA-9, DA-10 and DA-11 include the proposed driveways which discharge minimal flows directly onto the adjacent streets.

Table 1 shows a summary of the proposed unmitigated flows for the 100-year storm event versus the allowable flows. See Appendix F for Proposed Drainage Exhibit and Appendix G for calculations.

Table 1: Proposed Flows (unmitigated) vs. Allowable

Sub-basin ID	Drainage Area (AC)	Proposed Q_{100} (cfs)	Allowable Q_{100} (cfs)
Tributary to 45" CMP	10.88	26.98	26.0
Tributary to 36" CMP	4.71	11.80	12.0

100.5 Stormwater Mitigation

As discussed in the pre-development and post-development sections above, there are two existing inlets/storm drain laterals south of the project site that were planned to convey the flows from the developed project site and the developed northern offsite area into the existing 60" RCP along Eucalyptus Avenue. Therefore, the proposed project intends to discharge flows similar to the planned or allowable flows for the two existing laterals. As shown on Table 1, the proposed 100-year flows tributary to the existing 45" CMP only surpass the allowable by 3.8%, while the proposed 100-year flows tributary to the 36" CMP are below the allowable by 1.7%. Therefore, the proposed development is considered consistent with the allowable flows for the existing drainage devices and additional stormwater mitigation is not considered necessary for the 100-year storm.

100.6 Hydraulic Analysis

The calculated peak flows from the analyses discusses above will be used to size the onsite flow drainage devices. All drainage devices will be sized in the Final Hydrology Report.

100.7 Conclusion

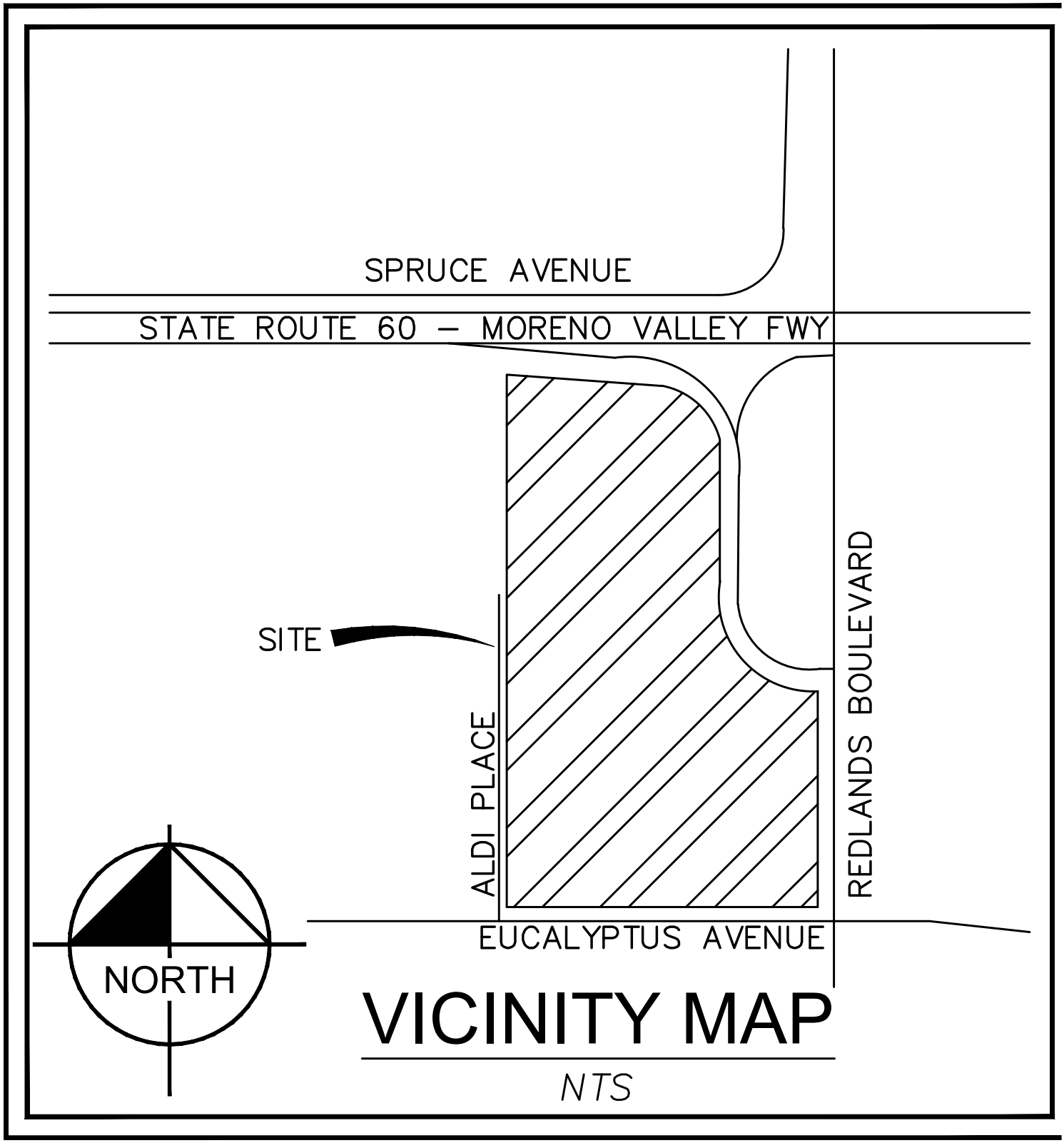
In conclusion, the following was covered in this report:

- Pre-development discharge patterns and points were discussed
- Post-development discharge patterns and points were discussed
- The 100-year allowable flow rates for the existing drainage structures were determined
- Post-development un-mitigated flow rates for the 100-year event were determined
- The required post-development onsite mitigation for the 100-year event was determined

As discussed in the contents of this report, the development of the existing vacant site into the proposed development is not expected to cause a significant impact to downstream systems for storms up to the 100-year condition.

Appendix A

Location Map



VICINITY MAP

NTS

Location Map

Appendix B

FIRM Map

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1994 or later.

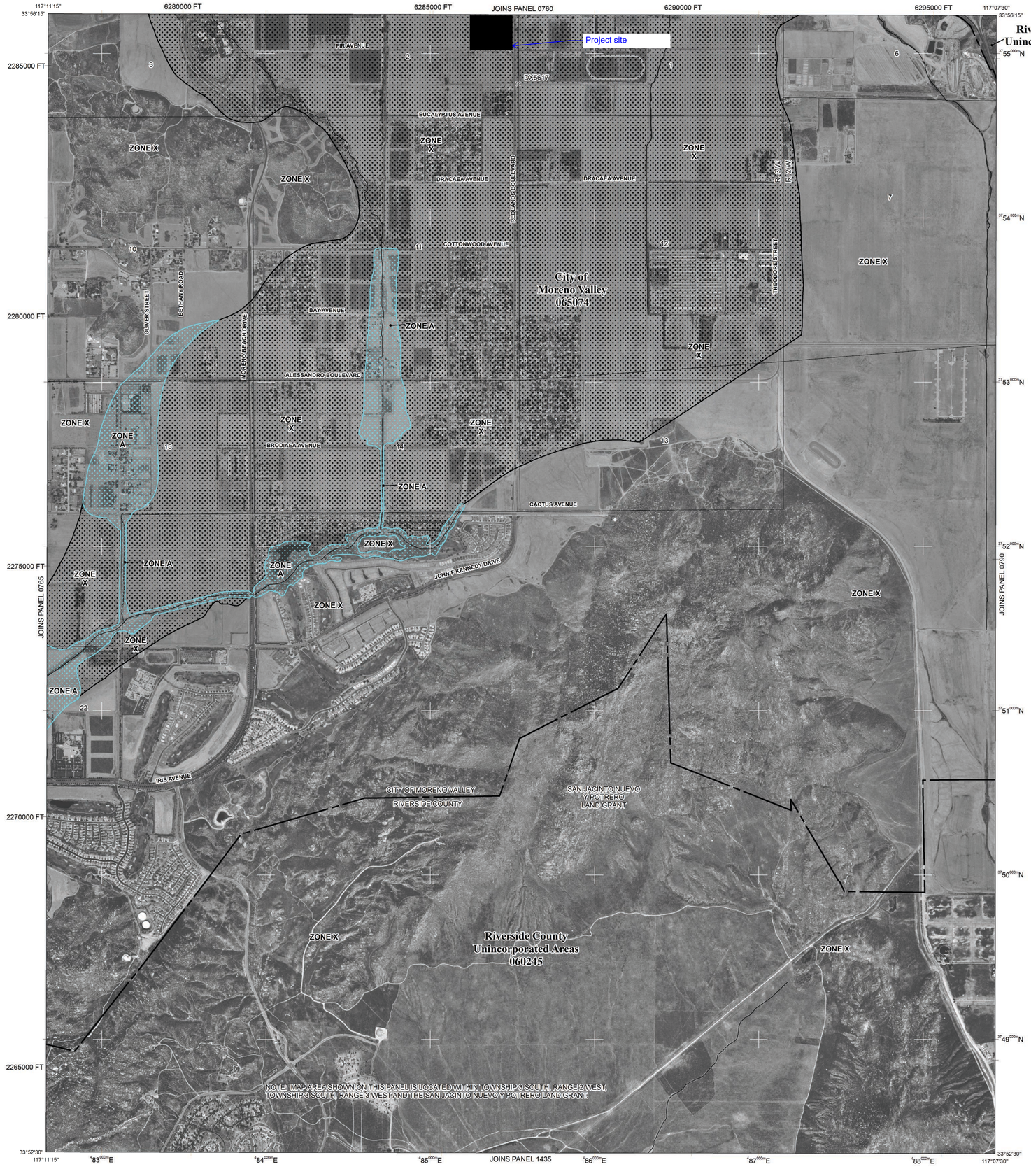
This map may reflect more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protectec from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 116°76'000"N — 1000-meter Universal Transverse Mercator grid values, zone 11N
- 600000 FT — 5000-foot grid ticks: California State Plane coordinate system, zone VI (FIPSZONE 0406), Lambert Conformal Conic projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 28, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0770G

FIRM
FLOOD INSURANCE RATE MAP

RIVERSIDE COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 770 OF 3805
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MORENO VALLEY, CITY OF	065074	0770	G
RIVERSIDE COUNTY	060245	0770	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06065C0770G

EFFECTIVE DATE
AUGUST 28, 2008

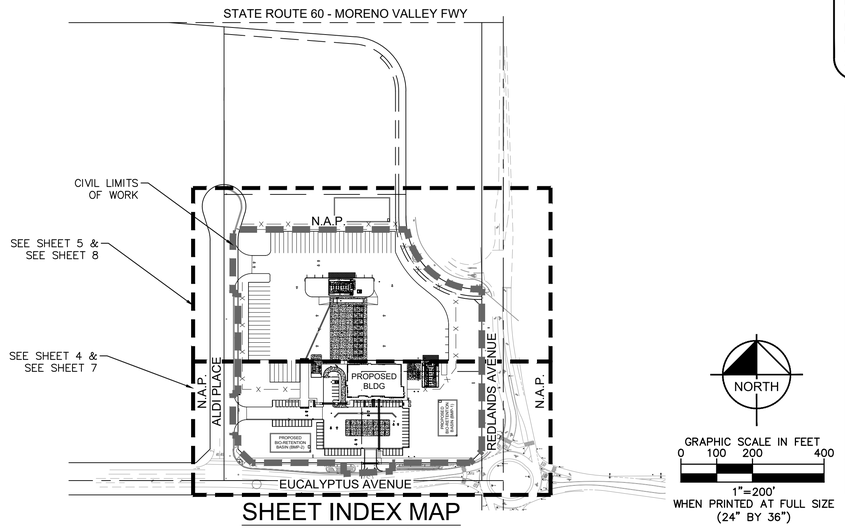
Federal Emergency Management Agency

Appendix C

Construction Plans

CITY OF MORENO VALLEY
PRECISE GRADING PLAN

PILOT MORENO VALLEY



SHEET INDEX MAP

SCALE 1" = 200'

NORTH

GRAPHIC SCALE IN FEET
0 100 200 400
1"=200'
WHEN PRINTED AT FULL SIZE (24" BY 36")

STANDARD GENERAL IMPROVEMENT NOTES:

1. ALL WORK CALLED FOR ON THE PLANS SHALL BE IN COMPLIANCE WITH CURRENT CITY STANDARD PLANS ADOPTED BY THE CITY COUNCIL.
2. A CONSTRUCTION PERMIT MUST BE OBTAINED FROM THE LAND DEVELOPMENT DIVISION COUNTER BY THE CONTRACTOR PRIOR TO GRADING AND/OR CONSTRUCTION WORK OF ANY TYPE WITHIN THE PUBLIC RIGHT-OF-WAY.
3. AN ENCROACHMENT PERMIT IS REQUIRED IN ALL CASES WHERE WORK WILL INTERFERE WITH EITHER VEHICULAR OR PEDESTRIAN TRAFFIC.
4. CITY INSPECTION OF THE WORK CALLED FOR ON THE PLANS SHALL NOT IN ANY WAY RELIEVE THE CONTRACTOR AND / OR THE DEVELOPER OF THEIR OBLIGATION TO PERFORM THE WORK IN COMPLIANCE WITH THE PLANS.
5. ANY ALTERATIONS OR VARIANCES FROM THE PLANS, EXCEPT MINOR ADJUSTMENTS IN THE FIELD TO MEET EXISTING CONDITIONS, SHALL BE REQUESTED IN WRITING AND MAY NOT BE INSTITUTED UNTIL APPROVED BY THE CITY ENGINEER OR DESIGNATED REPRESENTATIVE ACTING SPECIFICALLY ON HIS/HER INSTRUCTIONS.
6. THE GRADING AND/OR IMPROVEMENT PLANS ARE APPROVED FOR A PERIOD OF TWO (2) YEARS FROM THE DATE SIGNED BY THE CITY ENGINEER. AFTER THE TWO (2) YEAR PERIOD HAS LAPSED, THE ENGINEER OF RECORD MAY BE REQUIRED TO SUBMIT AND PROCESS FOR THE CITY ENGINEER APPROVAL, UPDATED PLANS THAT COMPLY WITH THE MOST CURRENT CITY STANDARDS, PRACTICES AND POLICIES.
7. ALL ELEVATIONS SHOWN ON THE PLAN ARE ESTABLISHED BY LOCAL BENCH MARK. SURVEY MONUMENTS SHALL BE PROTECTED IN PLACE.
8. QUANTITIES AS SHOWN ON THE PLAN ARE ESTIMATED AND THE CONTRACTOR IS ADVISED THAT ALL FINAL QUANTITIES OF MATERIAL AND WORK IN PLACE MAY BE SOMEWHAT GREATER OR LESS THAN THOSE INDICATED ON THE PLANS.
9. CONCRETE GUTTERS, ALLEY APPROACHES, DRIVEWAYS AND OTHER CONCRETE ITEMS SUBJECT TO VEHICULAR TRAFFIC SHALL BE BARRICADED WITH NO VEHICULAR TRAFFIC PERMITTED FOR A PERIOD NO LESS THAN SEVEN DAYS FOLLOWING THE PLACEMENT OF SAID CONCRETE ITEM(S). WHEN THE GENERAL PROVISIONS CALL FOR THE USE OF SAID CONCRETE ITEM(S) FOR VEHICULAR TRAFFIC EARLIER THAN THE SEVENTH DAY FOR CONVENIENCE OF OPERATION OR WHEN THE CONTRACTOR SO DESIRES, CONCRETE CONTAINING EIGHT SACKS OF CEMENT PER CUBIC YARD SHALL BE USED UNDER THE DIRECTION OF THE CITY ENGINEER TO ALLOW TRAFFIC AFTER 72 HOURS OF PLACEMENT OF CONCRETE.
10. IRRIGATION LINE WITHIN ANY CITY STREET SHALL HAVE A THIRTY INCH MINIMUM COVER FROM FINISH SURFACE UNLESS SAID IRRIGATION LINE IS ENCASED IN CONCRETE OR BEDDED IN A SPECIAL CONCRETE CRADLE.
11. THE CONTRACTOR SHALL OPERATE IN A MANNER COMPLIANT WITH ALL APPLICABLE SECTIONS OF THE MUNICIPAL CODE AND COMPLIANT WITH ALL APPLICABLE CITY COUNCIL RESOLUTIONS.
12. THE LOCATION OF UNDERGROUND UTILITY OR IRRIGATION LINES AS SHOWN ON THE PLANS, IS APPROXIMATE, AND SINCE THE ACTUAL LOCATION MAYBE SOMEWHAT DIFFERENT FROM THAT SHOWN, THE CONTRACTOR IS REQUIRED TO CONTACT THE INTERESTED UTILITY OR WATER COMPANY BEFORE EXCAVATING IN THE VICINITY OF ANY SUCH LINES.
13. PARKWAY TREES INSTALLED BY THE DEVELOPER SHALL BE PLANTED AND MAINTAINED IN COMPLIANCE WITH THE APPROPRIATE CITY STANDARD.
14. ALL STREET NAME AND TRAFFIC REGULATORY SIGNS INDICATED ON THE PLANS WILL BE INSTALLED BY THE DEVELOPER IN ACCORDANCE WITH THE APPROPRIATE CITY STANDARDS.
15. IF THE STREETS LIGHTS INDICATED ON THE PLANS ARE SERVICED BY SOUTHERN CALIFORNIA EDISON (SCE), THE STREET LIGHTS SHALL BE INSTALLED BY SCE. IF THE STREET LIGHTS INDICATED ON THE PLANS ARE SERVICED BY MORENO VALLEY UTILITY (MVU), THE STREET LIGHTS SHALL BE INSTALLED BY THE DEVELOPER. THE DEVELOPER SHALL WORK DIRECTLY WITH THE CORRESPONDING UTILITY PURVEYOR WHEN THE LIGHTS ARE TO BE SERVED FROM AN UNDERGROUND SYSTEM.
16. AN APPROVED WEED KILLER SHALL BE APPLIED TO THE PREPARED BASE PRIOR TO ASPHALT PAVING IN ALL AREAS WHERE THERE IS ANY EVIDENCE OF HUMUS OR ORGANIC MATERIAL PRESENT IN THE BASE (EITHER NATIVE OR IMPORTED) MATERIAL. ALL WEED KILLERS SHALL BE APPLIED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS.
17. PROVISIONS SHALL BE MADE BY THE CONTRACTOR FOR CONTRIBUTORY DRAINAGE AT ALL TIMES.
18. WHEN APPLICABLE, ALL ANTI-GRAFFITI COATING SHALL BE VITROCEM HI-BUILD GRAFFITI GLAZED COATING FOR CONCRETE BLOCK OR AN EQUAL APPROVED BY THE CITY ENGINEER.
19. HOURS OF OPERATION ARE 7:00 AM – 7:00 PM MONDAY – FRIDAY; 8:00 AM – 4:00 PM (RESIDENTIAL). SATURDAY BY PRIOR APPOINTMENT ONLY. NO WORK ON SUNDAY OR PUBLIC HOLIDAY WITHOUT PRIOR CITY APPROVAL.

LEGAL DESCRIPTION:

PARCEL C AND D OF LOT LINE ADJUSTMENT NO. 983 / CERTIFICATE OF COMPLIANCE IN THE CITY OF MORENO VALLEY, COUNTY RIVERSIDE, STATE OF CALIFORNIA RECORDED 03/16/2007 AS DOC #2007-0180759 IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY OF OFFICIAL RECORDS. REFER TO SHEET 2 FOR MORE INFORMATION.

FLOOD NOTE:

THE SUBJECT PROPERTY LIES WITHIN ZONE "X" – AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN SHOWN ON FLOOD INSURANCE RATE MAP PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY; MAP NUMBER 06065C0760G AND 06065C0770G, WHICH BEARS AN EFFECTIVE DATE AUGUST 28, 2008.

THE ABOVE STATEMENT IS FOR INFORMATION ONLY AND THE SURVEYOR ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THE CITED MAP. IN ADDITION, THE ABOVE STATEMENT DOES NOT REPRESENT THE SURVEYOR'S OPINION OF THE PROBABILITY OF FLOODING.

DECLARATION OF ENGINEER OF RECORD:

I HEREBY DECLARE THAT THE DESIGN OF THE IMPROVEMENTS AS SHOWN ON THESE PLANS COMPLIES WITH PROFESSIONAL ENGINEERING STANDARDS AND PRACTICES. AS THE ENGINEER IN RESPONSIBLE CHARGE OF DESIGN OF THESE IMPROVEMENTS, I ASSUME FULL RESPONSIBLE CHARGE FOR SUCH DESIGN. I UNDERSTAND AND ACKNOWLEDGE THAT THE PLAN CHECK OF THESE PLANS BY THE CITY OF MORENO VALLEY IS A REVIEW FOR THE LIMITED PURPOSE OF ENSURING THAT THE PLANS COMPLY WITH CITY PROCEDURES, APPLICABLE POLICIES, AND ORDINANCES. THE PLAN CHECK IS NOT A DETERMINATION OF THE TECHNICAL ADEQUACY OF THE DESIGN OF THE IMPROVEMENTS. SUCH PLAN CHECK DOES NOT, THEREFORE, RELIEVE ME OF MY RESPONSIBILITY FOR THE DESIGN OF THESE IMPROVEMENTS. AS ENGINEER OF RECORD (EOR), I AGREE TO INDEMNIFY AND HOLD THE CITY OF MORENO VALLEY, THE MORENO VALLEY HOUSING AUTHORITY, AND THE MORENO VALLEY COMMUNITY SERVICES DISTRICT (CSD), ITS OFFICERS, AGENTS, AND EMPLOYEES HARMLESS FROM ANY AND ALL LIABILITY OF CLAIMS, DAMAGES, OR INJURIES TO ANY PERSON OR PROPERTY WHICH MIGHT ARISE FROM THE NEGLIGENT ACTS, ERRORS, OR OMISSIONS OF THE ENGINEER OF RECORD. I HAVE READ AND INFORMED THE PROJECT APPLICANT/DEVELOPER THAT APPROVAL OF THESE PLANS DOES NOT RELIEVE THEM FROM THE REQUIREMENTS OF THE CONDITIONS OF APPROVAL (ATTACHED HEREIN OR IN OTHER APPROVED IMPROVEMENT PLANS).

I ALSO HEREBY DECLARE THAT I HAVE COMPARED THESE PLANS WITH ALL APPLICABLE ADA TITLE II AND TITLE 24 REQUIREMENTS FOR DISABILITY ACCESS FOR THIS PROJECT, AND THESE PLANS ARE IN FULL COMPLIANCE WITH THOSE REQUIREMENTS.

SHEA-MICHAEL ANTI, R.C.E. # C78274 DATE

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.

DIGALERT

CALL 811 or 1-800-422-4133
2 Working Days Before You Dig
WWW.CALL811.COM

ENGINEER'S NOTICE TO CONTRACTOR:

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. THESE LOCATIONS ARE APPROXIMATE AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR, SO THAT ANY NECESSARY ADJUSTMENT CAN BE MADE IN ALIGNMENT AND/OR GRADE OF THE PROPOSED IMPROVEMENTS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT ANY UTILITY FACILITIES SHOWN AND ANY OTHER FACILITIES NOT OF RECORD OR NOT SHOWN ON THESE PLANS.

BLDG SQ. FOOTAGE

TOTAL GROSS FLOOR AREA	14,087 SF

SITE INFORMATION

GROSS PARCEL	±9.55 ACRES
TOTAL PERVIOUS	±3.61 ACRES
TOTAL IMPERVIOUS (INCLUDING BUILDING)	±5.94 ACRES

ROUGH/PRECISE GRADING PLANS

	QUANTITIES CUT	FILL
RAW EARTHWORK		
ROUGH GRADING	21,772 CY	2,683 CY
OVER-EXCAVATION WORK	-- CY	-- CY
REMEDIAL WORK	-- CY	-- CY
SHRINKAGE (0%)	-- CY	-- CY
SUBTOTAL PROJECT EARTHWORK QUANTITIES	-- CY	-- CY
IMPORT MATERIAL	-- CY	-- CY
EXPORT MATERIAL	-- CY	-- CY
TOTAL PROJECT EARTHWORK QUANTITIES	19,089 CY	0 CY

THE OPINION OF EARHTWORK QUANTITIES SHOWN ABOVE ARE UNADJUSTED GROSS VOLUMES AND DO NOT INCLUDE THE EFFECTS OF SCARIFYING, OVEREXCAVATION, RECOMPACTION, SHRINKAGE SUBSIDENCE, OR OTHER FACTORS AND ARE SUBJECT TO FIELD CONDITIONS THAT MAY BE SPECIFIED IN THE SOILS REPORT AND ARE FOR REFERENCE AND FEE. THE CIVIL ENGINEER ASSUMES NO RESPONSIBILITY FOR FINAL EARTHWORK QUANTITIES.

LEGEND

	PROPERTY LINE / RIGHT-OF-WAY LINE
	LIMITS OF WORK
	CENTER LINE
	SETBACK LINE
	EASEMENT LINE
x x x x x	FENCE
GB	GRADE BREAK LINE
(1745.00 TC) (1745.00 TP)	PROPOSED SPOT ELEVATION
1745.00 TC 1745.00 TP	EXISTING SPOT ELEVATION
0.71%	PROPOSED FLOW (DIRECTION AND SLOPE)
	DIRECTION OF FLOW
	CURB DRAIN INLET
	PARKING COUNT

ABBREVIATIONS

AB	AGGREGATE BASE
APN	ASSESSOR'S PARCEL NUMBER
ARCH	ARCHITECT
BLDG	BUILDING
BR	BOTTOM OF RAMP
BW	BACK OF WALK
CY	CUBIC YARD
EX	EXISTING
F	FIRE
FAR	FLOOR TO AREA RATIO
FL	FLOW LINE
FS	FINISHED SURFACE
GB	GRADE BREAK
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
NO	NUMBER
POC	POINT OF CONNECTION
POT	PATH OF TRAVEL
R	RIDGE
S	SEWER
STD	STANDARD
TC	TOP OF CURB
TP	TOP OF PAVEMENT
TR	TOP OF RAMP
TYP	TYPICAL
W	WATER

PAVEMENT LEGEND

	STANDARD DUTY CONCRETE PAVEMENT
	HEAVY DUTY CONCRETE PAVEMENT
	HEAVY DUTY ASPHALT PAVEMENT
	STANDARD DUTY ASPHALT
	PAVEMENT LANDSCAPE/ PLANTER AREA
	DETECTABLE WARNINGS

ZONING DESIGNATION

EXISTING: COMMUNITY COMMERCIAL (CC)

PROPOSED: COMMUNITY COMMERCIAL (CC)

PROJECT DESCRIPTION

PROPOSED DEVELOPMENT OF VACANT COMMUNITY COMMERCIAL LOT LOCATED AT THE NORTHWEST CORNER OF REDLANDS AVENUE AND EUCALYPTUS AVENUE, MORENO VALLEY, CA 92555.

PROPOSED PILOT TRAVEL CENTER WITH 13,917 SQ FT. BUILDING WITH RESTAURANT, DRIVE-THRU, AND CAR/TRUCK FUELING AREAS.

BENCHMARK AND BASIS OF ELEVATION

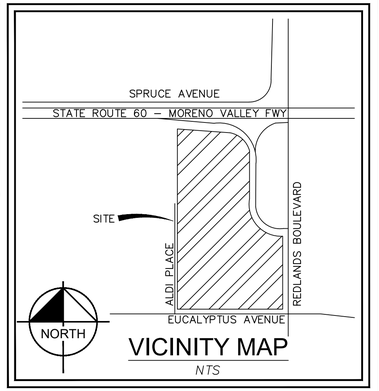
THE BASIS OF ELEVATIONS IS THE METRO WATER DISTR OF SO. CALIFORNIA BENCHMARK STAMPED "IVF 55 1993" -DIRECTIONS: FROM THE INTERSECTION OF THE FREEWAY AND REDLANDS BLVD, NORTH ON REDLANDS BLVD, APPROX. 500 FEET (152.4 M) TO THE NORTHWEST CORNER OF REDLANDS BLVD AND SPRUCE ST. BENCHMARK IS LOCATED 43 FEET (13.1 M) WEST OF THE CENTERLINE OF REDLANDS BLVD. AND 29 FEET (8.8 M) NORTH OF THE CENTERLINE OF SPRUCE ST., IN TOP OF A 10 INCH WIDE BY 7.5 FEET (2.3 M) LONG CONCRETE HEADWALL AT WEST END. EL=1785.67, NAVD 88.

ASSESORS PARCEL NUMBER (APN)

488-330-030, -035, -036, -037, -038

UTILITY COMPANIES	PHONE NUMBERS
BOX SPRINGS MUTUAL WATER COMPANY	(951) 653-6419
CHARTER SPECTRUM	(877) 906-9121
CROWN CASTLE	(855) 913-4237
EASTERN MUNICIPAL WATER DIST	(951) 928-3777
EDGEMONT COMMUNITY SERVICES DIST.	(951) 784-2632
FRONTIER COMMUNICATION	(800) 921-8101
SC EDISON COMPANY	(800) 655-4555
SC GAS COMPANY	(800) 427-2200
SUNESYS	(951) 278-0400
RIVERSIDE TRANSIT AGENCY	(951) 565-5164
UNDERGROUND SERVICE ALERT	(800) 422-4133
MORENO VALLEY UTILITY	(951) 413-3500
MORENO VALLEY SPECIAL DISTRICTS	(951) 413-3480
TRAFFIC SIGNAL MAINTENANCE (CITY)	(951) 413-3140
VERIZON WIRELESS	(800) 922-0204

SHEET INDEX



VICINITY MAP

NTS

THE GRADING AND/OR IMPROVEMENT PLANS ARE APPROVED FOR A PERIOD OF TWO (2) YEARS FROM THE DATE SIGNED BY THE CITY ENGINEER. AFTER THE TWO (2) YEAR PERIOD HAS LAPSED, THE ENGINEER OF RECORD MAY BE REQUIRED TO SUBMIT AND PROCESS FOR CITY ENGINEER APPROVAL, UPDATED PLANS THAT COMPLY WITH THE MOST CURRENT CITY STANDARDS, PRACTICES, AND POLICIES.

UTILITY NOTE:
APPROVAL OF THESE PLANS BY CITY OF MORENO VALLEY LAND DEVELOPMENT DIVISION DOES NOT CONSTITUTE FINAL APPROVAL FOR THE CONSTRUCTION OF WATER AND SEWER UTILITIES UNTIL REVIEWED, APPROVED, AND PERMIT ISSUED BY THE BUILDING AND SAFETY DIVISION.

A SEPARATE ON-SITE UNDERGROUND FIRE SERVICE PLAN FOR CONSTRUCTION SHALL BE SUBMITTED TO THE FIRE PREVENTION BUREAU FOR REVIEW AND APPROVAL.

GEOTECH AND GEOLOGIST CERTIFICATION

THIS GRADING PLAN HAS BEEN REVIEWED BY THE UNDERSIGNED AND FOUND TO BE IN CONFORMANCE WITH THE RECOMMENDATIONS AS OUTLINED IN THE FOLLOWING SOILS AND GEOLOGICAL REPORT FOR THIS PROJECT.

REPORT TITLE: GEOTECHNICAL EVALUATION REPORT MORENO VALLEY TRUCK STOP MODEL, GEOTECHNICAL ENGINEERING PERCOLATION/INFILTRATION TEST REPORT FOR MORENO VALLEY TRUCK STOP PILOT # 1316, AND GEOTECHNICAL ADDENDUM REPORT MORENO VALLEY PILOT #1316 TRUCK MODEL STOP.

REPORT DATE: FEBRUARY 26, 2021
REVISED: MARCH 1, 2021

FIRM NAME: GEOTECHNICAL SOLUTIONS, INC

BY: .....
DHARMA SHAKYA, GE 2773 DATE

OWNER/APPLICANT

PILOT TRAVEL CENTERS LLC
5508 LONAS DRIVE
KNOXVILLE, TN 37909
(865) 588-7488

DEVELOPER

PILOT TRAVEL CENTERS LLC
5508 LONAS DRIVE
KNOXVILLE, TN 37909
(865) 588-7488
ATTN: RYAN ROBINSON
RYAN.ROBINSON@PILOTTRAVELCENTERS.COM

CIVIL ENGINEER

KIMLEY HORN & ASSOCIATES, INC.
3880 LEMON STREET # 420
RIVERSIDE, CA 92501
ATTN: SHEA-MICHAEL ANTI
(760) 565-5146
SHEA.ANTI@KIMLEY-HORN.COM

SURVEYOR

LG LAND SURVEYING, INC
30355 CALLE FELIZ TER
VALLEY CENTER, CA 92082
ATTN: JOHN GERVAIS, PLS 8674
(619) 535-1172
JOHN@LGLSINC.COM
DATE OF FIELD SURVEY: JANUARY 28, 2021

SOILS ENGINEER

GEOTECHNICAL SOLUTIONS, INC
27 MAUCHLY, SUITE 210
IRVINE, CA 92618
ATTN: DHARMA SHAKYA, PhD, PE, GE
(949) 453-0406'
PROJECT: G-5852-08, G-5852-01

ADA NOTE:
ALL ADA/TITLE 24 REQUIREMENTS AND PATH OF TRAVEL INCLUDING BUT NOT LIMITED TO ACCESS SHALL BE REVIEWED AND APPROVED BY CITY OF MORENO VALLEY BUILDING AND SAFETY DIVISION. APPROVAL OF THESE PLANS DOES NOT CONSTITUTE FINAL APPROVAL OF THE ACCESS REQUIREMENTS.

WDID No.

PENXX-XXXX WQMP No.

BENCHMARK	BASIS OF BEARING
SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97-100 I.E. N00°27'05"E.

REVIEW BY CITY STAFF

OFFICE	INITIAL	DATE
ENGINEERING DIVISION MANAGER		
LAND DEVELOPMENT		
PLANNING		
TRANSPORTATION		
PARKS AND COMMUNITY SERVICES		
SPECIAL DISTRICTS		
STORM WATER MANAGEMENT PRGM		

MARK	DATE	INITIAL	DESCRIPTION	REC	APPR	DATE
		EOR	REVISION			

CITY OF MORENO VALLEY APPROVALS

RECOMMENDED:

MICHAEL D. LLOYD, PE DATE
ENGINEERING DIVISION MANAGER/
ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:

MICHAEL L. WOLFE, PE DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL

REGISTERED PROFESSIONAL ENGINEER
SHEA-MICHAEL ANTI
RCE NO. 78274
CIVIL
STATE OF CALIFORNIA

8/3/2021

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951-543-9868

UNDER THE SUPERVISION OF:

SHEA-MICHAEL ANTI 8/3/2021
RCE C78274 DATE

CITY OF MORENO VALLEY

PRECISE GRADING PLAN
PILOT MORENO VALLEY
TITLE SHEET

SHEET 1 OF 8

CITY ID No.
LGRXX-XXXX

Plotted By:Alvarez, Leticia Sheet Set:Pilot Moreno Valley Layout:TITLE SHEET August 04, 2021 12:44:18pm K:\RIV_LDEV\Pilot\09542608_Pilot Moreno Valley\CADD\PlanSheets\Precise Grading Plan\CV-09542608.dwg

Attachment: Appendix G - Preliminary Hydrology Study (5613 : Pilot Travel Center Project)

STANDARD GRADING NOTES

1. ALL WORK SHALL CONFORM TO THE CITY OF MORENO VALLEY GRADING REGULATIONS, THE ADOPTED CALIFORNIA BUILDING CODE, AND THE LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF ALL UTILITIES OR STRUCTURES ABOVE OR BELOW GROUND, SHOWN OR NOT SHOWN ON THESE PLANS. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ALL DAMAGE TO ANY UTILITIES OR STRUCTURES CAUSED BY HIS/HER OPERATION.
3. ADJACENT STREETS ARE TO BE CLEANED DAILY OF ALL DIRT AND DEBRIS THAT ARE THE RESULT OF OPERATION.
4. DUST SHALL BE CONTROLLED BY WATERING OR OTHER APPROVED METHODS.
5. HOURS OF OPERATION ARE 7:00 AM – 7:00 PM MONDAY– FRIDAY; 8:00 AM – 4:00 PM (RESIDENTIAL). SATURDAY BY PRIOR APPOINTMENT ONLY. NO WORK ON SUNDAY OR PUBLIC HOLIDAY WITHOUT PRIOR CITY APPROVAL.
6. THE CITY PUBLIC WORKS DEPT SHALL BE CONTACTED AT (951) 413–3120 TO SCHEDULE A PRE–GRADING MEETING 48 HOURS PRIOR TO BEGINNING OF GRADING.

ALL GRADING SHALL BE COMPLETED UNDER THE SUPERVISION OF A REGISTERED SOILS ENGINEER OF RECORD IN CONFORMANCE WITH RECOMMENDATIONS OF THE GEOTECHNICAL EVALUATION REPORT AND GEOTECHNICAL ENGINEERING PERCOLATION/INFILTRATION TEST REPORT AT SOUTH OF FREEWAY 60 & REDLANDS BOULEVARD MORENO VALLEY, CALIFORNIA DATED FEBRUARY 26, 2021; AND GEOTECHNICAL ADDENDUM REPORT AT SOUTH OF FREEWAY 60 & REDLANDS BOULEVARD MORENO VALLEY, CALIFORNIA DATED MARCH 1, 2021 PREPARED BY GEOTECHNICAL SOLUTIONS, INC..

7. TWO SETS OF THE FINAL SOILS REPORT SHALL BE SUBMITTED TO THE ENGINEERING DEPT FOR REVIEW AND APPROVAL PRIOR TO THE ISSUANCE OF A BUILDING PERMIT. THE SOILS REPORT SHALL REFLECT THE FACT THAT THE COMPACTION HAS BEEN OBTAINED NOT ONLY IN THE BUILDING PAD LOCATIONS, BUT IN THE REMAINDER OF THE SITE, INCLUDING THE SLOPES. FINAL SOILS GRADING CERTIFICATION SHALL BE SUBMITTED BY THE SOILS ENGINEER OF RECORD THAT THE FINAL GRADING CONFORMS TO APPENDIX J OF THE CALIFORNIA BUILDING CODE (CBC) AND THE APPROVED GRADING PLAN.
8. ALL SLOPES SHALL BE A MAXIMUM OF 2:1, CUT OR FILL, UNLESS OTHERWISE RECOMMENDED BY REGISTERED SOILS ENGINEER AND APPROVED BY THE CITY ENGINEER.
9. ALL PADS AND SWALES SHALL DRAIN A MINIMUM OF 2% ADJACENT TO AND WITHIN 10' OF A BUILDING, THEN A MINIMUM OF 1% TO THE STREET OR DRIVES.
10. ALL TRENCH BACKFILLS SHALL BE TESTED AND CERTIFIED BY THE SOILS ENGINEER OF RECORD TO NOT LESS THAN 90% MAXIMUM DENSITY AS DETERMINED BY ASTM SOIL COMPACTION TEST D1557. THE TOP 1.5 FT. OF SUBGRADE BELOW THE STREET PAVEMENT STRUCTURAL SECTION SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.
11. SEPARATE PERMITS SHALL BE REQUIRED FOR ANY IMPROVEMENT WORK WITHIN THE PUBLIC RIGHT OF WAY.
12. CUT SLOPES GREATER THAN 5 FEET IN VERTICAL HEIGHT, AND FILL SLOPES GREATER THAN 3 FEET IN VERTICAL HEIGHT SHALL BE PLANTED WITH APPROVED GROUND COVER OR OTHER APPROVED SLOPE EROSION CONTROL METHOD TO PROTECT SLOPE FROM EROSION AND INSTABILITY IN ACCORDANCE WITH THE GRADING REGULATIONS.
13. SEPARATE PERMITS FROM THE BUILDING DEPT SHALL BE REQUIRED FOR ALL WALLS AND FENCES.
14. SEPARATE PERMITS FROM THE BUILDING DEPT SHALL BE REQUIRED FOR ALL ONSITE WATER AND SEWER INSTALLATIONS.
15. ALL SLOPES ADJACENT TO THE PUBLIC RIGHT OF WAY SHALL BE SET BACK 2 FEET IF HEIGHT IS LESS THAN 10 FEET, AND 3 FEET IF HEIGHT IS GREATER THAN 10 FEET.
16. DAMAGED OR ALTERED PUBLIC IMPROVEMENTS SHALL BE REPAIRED OR REPLACED AS REQUIRED BY THE CITY ENGINEER.
17. AN "AS – BUILT" GRADING PLAN SHALL BE SUBMITTED AT THE COMPLETION OF WORK, AND PRIOR TO THE ISSUANCE OF THE OCCUPANCY PERMIT.
18. CERTIFICATION BY THE RCE OF RECORD THAT THE ROUGH GRADING SOIL COMPACTION HAS BEEN COMPLETED PER ITEMS 7, 8, AND 11 AND THE SITE CONFORMS TO THIS PLAN AS TO LINE AND GRADE SHALL BE REQUIRED PRIOR TO ISSUANCE OF BUILDING PERMIT.
19. THE RCE OF RECORD SIGNING THESE PLANS IS RESPONSIBLE FOR ASSURING THE ACCURACY AND ACCEPTABILITY OF THE DESIGN HEREON. IN THE EVENT OF DISCREPANCIES ARISING DURING CONSTRUCTION, THE RCE OF RECORD SHALL BE RESPONSIBLE FOR DETERMINING AND ACCEPTABLE SOLUTION AND REVISING THE PLANS FOR APPROVAL BY THE CITY ENGINEER.
20. ALL IMPORTED SOIL SHALL HAVE A CERTIFICATE GIVEN TO THE CITY ENGINEER STATING THAT THE SOIL IS FREE FROM CONTAMINANTS BEFORE SOIL IS UNLOADED.

I HEREBY STATE THAT THIS PLAN WAS PREPARED UNDER MY SUPERVISION AND THAT IT CONFORMS TO THE LATEST EDITION OF THE CALIFORNIA BUILDING CODE (CBC) AS MODIFIED BY CITY OF MORENO VALLEY ORDINANCES, THE INTERIM GUIDELINES, AND THE PRELIMINARY SOILS REPORT PREPARED FOR THIS PROJECT.

NAME _____

RCE # _____

DATE _____

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.

DIGALERT

CALL 811 or 1–800–422–4133
2 Working Days Before You Dig
WWW.CALL811.COM

RECORD DRAWINGS

1. WHERE LOCAL JURISDICTIONS REQUIRE RECORD DRAWINGS, THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER AND OWNER COPIES OF A PAVING, GRADING AND DRAINAGE RECORD DRAWING AND A SEPARATE UTILITY RECORD DRAWING, BOTH PREPARED BY A CALIFORNIA REGISTERED SURVEYOR. THE RECORD DRAWINGS SHALL VERIFY ALL DESIGN INFORMATION INCLUDED ON THE DESIGN PLANS OF THE SAME NAME.

PROJECT CLOSEOUT

CONTRACTOR SHALL PROVIDE THE NECESSARY ITEMS INCLUDING ANY TESTING, REPORTS, OR CERTIFICATION DOCUMENTS REQUIRED BY THE GOVERNING JURISDICTIONS TO PROPERLY CLOSEOUT THE PROJECT BEFORE IT CAN BE DEEMED COMPLETE.

EASEMENTS

3 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
GRANTED TO: EASTERN MUNICIPAL WATER DISTRICT
PURPOSE: PIPELINES
RECORDING DATE: SEPTEMBER 19, 1962
RECORDING NO: 87666 OF OFFICIAL RECORDS
AFFECTS: A PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED IN SAID DOCUMENT

4 THE OWNERSHIP OF SAID LAND DOES NOT INCLUDE RIGHTS OF ACCESS TO OR FROM THE STREET, HIGHWAY, OR FREEWAY ABUTTING SAID LAND, SUCH RIGHTS HAVING BEEN RELINQUISHED BY THE DOCUMENT,
RECORDING DATE: DECEMBER 27, 1962
RECORDING NO: 119151 OF OFFICIAL RECORDS
AFFECTS: STATE HIGHWAY 60
WAIVER OF ANY CLAIMS FOR DAMAGES TO SAID PROPERTY BY REASON OF THE LOCATION, CONSTRUCTION, LANDSCAPING OR MAINTENANCE OF THE FREEWAY ADJOINING SAID PROPERTY, AS CONTAINED IN THE DEED TO THE STATE OF CALIFORNIA RECORDED DECEMBER 27, 1962, INSTRUMENT NO. 119151 OF OFFICIAL RECORDS.

7 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
GRANTED TO: EASTERN MUNICIPAL WATER DISTRICT
PURPOSE: PIPELINES
RECORDING DATE: APRIL 13, 2011
RECORDING NO: 2011–0163138 OF OFFICIAL RECORDS
AFFECTS: A PORTION OF SAID LAND OVER PARCELS B AND C OF LOT LINE ADJUSTMENT NO. 983

9 AN IRREVOCABLE OFFER TO DEDICATE AN EASEMENT OVER A PORTION OF SAID LAND FOR PURPOSE(S): PUBLIC HIGHWAY RECORDING DATE: DECEMBER 20, 2013
RECORDING NO: 2013–0590126 OF OFFICIAL RECORDS AFFECTS: A PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED IN SAID DOCUMENT SAID OFFER OF DEDICATION WAS ACCEPTED BY THE CITY ENGINEER PURSUANT TO THE AUTHORITY CONFERRED BY RESOLUTION NO. 94–5 OF THE CITY COUNCIL OF MORENO VALLEY. (PLOTTED HEREON)

LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS: PARCELS B, C & D AS SHOWN ON LOT LINE ADJUSTMENT NO. 983 AS EVIDENCED BY DOCUMENT RECORDED MARCH 16, 2007 AS INSTRUMENT NO. 07–180759 OF OFFICIAL RECORDS, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

PARCEL "B":
IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, BEING A PORTION OF LOTS 1 AND 2, BLOCK 35 OF MAP NO. 1 BEAR VALLEY AND ALESSANDRO, AS SHOWN BY MAP ON FILE IN BOOK 11, PAGE 10 OF MAPS, RECORDS OF SAN BERNARDINO COUNTY, STATE OF CALIFORNIA, LYING IN SECTION 2, TOWNSHIP 3 SOUTH, RANGE 3 WEST, SAN BERNARDINO MERIDIAN, MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE CENTERLINE INTERSECTION OF REDLANDS BOULEVARD, 120 FEET IN WIDTH, AND GREVILLEA AVENUE, 80 FEET IN WIDTH, AS SHOWN ON SAID MAP NO. 1; THENCE ALONG THE CENTERLINE OF SAID REDLANDS BOULEVARD SOUTH 00°26'55" WEST A DISTANCE OF 40.00 FEET TO A POINT ON THE EASTERLY PROLONGATION OF THE SOUTHERLY RIGHT–OF– WAY OF SAID GREVILLEA AVENUE; THENCE ALONG SAID EASTERLY PROLONGATION NORTH 89°33'42" WEST A DISTANCE OF 60.00 FEET TO A POINT DESCRIBED AS THE BEGINNING OF COURSE "A" OF PARCEL "L" PER BOOK 3289, PAGE 186 OF THE DEEDS TO THE STATE OF CALIFORNIA AS RECORDED ON DECEMBER 27, 1962 AS INSTRUMENT NO. 119152 OF OFFICIAL RECORDS, IN THE OFFICE OF THE RIVERSIDE COUNTY RECORDER, SAID POINT BEING ON THE WEST LINE OF SAID REDLANDS BOULEVARD; THENCE ALONG SAID COURSE "A" NORTH 89°33'42" WEST 874.11 FEET TO THE WESTERLY TERMINUS OF SAID COURSE "A"; THENCE CONTINUING ALONG SAID COURSE "A" SOUTH 85°11'19" EAST A DISTANCE OF 154.38 FEET TO THE TRUE POINT OF BEGINNING; THENCE ALONG SAID COURSE "A" THE FOLLOWING COURSES: SOUTH 85°11'19" EAST A DISTANCE OF 368.73 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHWESTERLY HAVING A RADIUS OF 152.00 FEET WITH A RADIAL BEARING OF NORTH 04°48'41" EAST; THENCE SOUTHEASTERLY AND SOUTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 85°37'09" AN ARC LENGTH OF 227.14 FEET; THENCE SOUTH 00°25'50" WEST A DISTANCE OF 288.91 FEET TO A POINT THEREIN; THENCE LEAVING SAID COURSE "A", ON A LINE

PARALLEL WITH AND 480.34 FEET DISTANT FROM THE SOUTHERLY RIGHT–OF–WAY OF SAID GREVILLEA AVENUE NORTH 89°33'42" WEST A DISTANCE OF 508.20 FEET; THENCE ON A LINE PARALLEL WITH AND 540.00 FEET DISTANT FROM THE WESTERLY LINE OF SAID LOT 2 NORTH 00°26'58" EAST A DISTANCE OF 468.56 FEET TO THE TRUE POINT OF BEGINNING.
APN 488–330–30; APN 488–330–36

PARCEL "C":
IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, BEING A PORTION OF LOTS 1, 2, 7 AND 8, BLOCK 35 OF MAP NO. 1 BEAR VALLEY AND ALESSANDRO, AS SHOWN BY MAP ON FILE IN BOOK 11, PAGE 10 OF MAPS, RECORDS OF SAN BERNARDINO COUNTY, STATE OF CALIFORNIA, TOGETHER WITH THAT PORTION OF FIR AVENUE WITHIN SAID BLOCK 35 LYING EAST OF THE WEST LINE OF SAID LOT 7 PROLONGED SOUTHERLY LYING IN SECTION 2, TOWNSHIP 3 SOUTH, RANGE 3 WEST, SAN BERNARDINO MERIDIAN, MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE CENTERLINE INTERSECTION OF REDLANDS BOULEVARD, 120 FEET IN WIDTH, AND GREVILLEA AVENUE, 80 FEET IN WIDTH, AS SHOWN ON SAID MAP NO. 1; THENCE ALONG THE CENTERLINE OF SAID REDLANDS BOULEVARD SOUTH 00°26'55" WEST A DISTANCE OF 40.00 FEET TO A POINT ON THE EASTERLY PROLONGATION OF THE SOUTHERLY RIGHTOF– WAY OF SAID GREVILLEA AVENUE; THENCE ALONG SAID EASTERLY PROLONGATION NORTH 89°33'42" WEST A DISTANCE OF 60.00 FEET TO A POINT DESCRIBED AS THE BEGINNING OF COURSE "A" OF PARCEL "L" PER BOOK 3289, PAGE 186 OF DEEDS, TO THE STATE OF CALIFORNIA AS RECORDED ON DECEMBER 27, 1962 AS INSTRUMENT NO. 119152 OF OFFICIAL RECORDS, IN THE OFFICE OF THE RIVERSIDE COUNTY RECORDER, SAID POINT BEING ON THE WESTERLY LINE OF SAID REDLANDS BOULEVARD, 120 FEET WIDE AS SHOWN ON SAID MAP NO. 1; THENCE ON A LINE PARALLEL WITH AND 60 DISTANT FROM SAID CENTERLINE SOUTH 00°26'55" WEST A DISTANCE OF 744.99 FEET TO THE SOUTHEAST CORNER OR COURSE "B" OF SAID PARCEL "L" SAID POINT BEING THE TRUE POINT OF BEGINNING; THENCE CONTINUING ALONG THE WESTERLY LINE OF SAID REDLANDS BOULEVARD SOUTH 00°26'55" WEST A DISTANCE OF 230.34 FEET; THENCE LEAVING SAID WESTERLY LINE, ON A LINE PARALLEL WITH AND 305.00 FEET DISTANT FROM THE CENTERLINE OF SAID FIR AVENUE NORTH 89°33'43" WEST A DISTANCE OF 336.00 FEET TO A POINT 396.00 FEET DISTANT FROM THE CENTERLINE OF SAID REDLANDS BOULEVARD; THENCE LEAVING SAID PARALLEL LINE, ON A LINE PARALLEL AND 396.00 FEET DISTANT FROM THE CENTERLINE OF SAID REDLANDS BOULEVARD, SOUTH 00°26'55" WEST A DISTANCE OF 305.00 FEET TO A POINT ON THE CENTERLINE OF SAID FIR AVENUE; THENCE ALONG SAID CENTERLINE NORTH 89°33'43" WEST A DISTANCE OF 384.19 FEET TO A POINT 540.00 FEET EAST OF THE WESTERLY LINE OF SAID LOT 7; THENCE ON A LINE PARALLEL WITH AND 540.00 FEET DISTANT FROM SAID WESTERLY LINE NORTH 00°26'58" EAST A DISTANCE OF 800.00 FEET TO A POINT 480.34 FEET DISTANT FROM THE SOUTHERLY RIGHT–OF–WAY OF SAID GREVILLEA AVENUE; THENCE ON A LINE PARALLEL WITH AND 480.34 FEET DISTANT FROM SAID SOUTHERLY LINE SOUTH 89°33'42" EAST A DISTANCE OF 508.20 FEET TO A POINT ON

THE LINE OF SAID COURSE "A"; THENCE ALONG SAID COURSE "A" THE FOLLOWING COURSES: SOUTH 00°25'50" WEST A DISTANCE OF 64.68 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE NORTHEASTERLY HAVING A RADIUS OF 200.00 FEET WITH A RADIAL BEARING OF NORTH 89°34'10" WEST; THENCE SOUTHERLY AND SOUTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 89°58'55" AN ARC LENGTH OF 314.10 FEET TO A POINT DESCRIBED AS THE BEGINNING OF COURSE "B" OF SAID PARCEL "L"; THENCE LEAVING SAID COURSE "A", ALONG SAID COURSE "B" SOUTH 89°33'05" EAST A DISTANCE OF 11.96 FEET TO A POINT ON THE WEST LINE OF SAID REDLANDS BOULEVARD, SAID POINT BEING THE TRUE POINT OF BEGINNING.

APN 488–330–035; APN 488–330–037

PARCEL "D":
IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, BEING A PORTION OF LOT 8, BLOCK 35 OF MAP NO. 1 BEAR VALLEY AND ALESSANDRO, AS SHOWN BY MAP ON FILE IN BOOK 11, PAGE 10 OF MAPS, RECORDS OF SAN BERNARDINO COUNTY, STATE OF CALIFORNIA, TOGETHER WITH THAT PORTION OF FIR AVENUE WITHIN SAID BLOCK 35 LYING EAST OF THE WEST LINE OF SAID LOT 7 PROLONGED SOUTHERLY LYING IN SECTION 2, TOWNSHIP 3 SOUTH, RANGE 3 WEST, SAN BERNARDINO MERIDIAN, MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE CENTERLINE INTERSECTION OF REDLANDS BOULEVARD, 120 FEET IN WIDTH, AND GREVILLEA AVENUE, 80 FEET IN WIDTH, AS SHOWN ON SAID MAP NO. 1; THENCE ALONG THE CENTERLINE OF SAID REDLANDS BOULEVARD SOUTH 00°26'55" WEST A DISTANCE OF 40.00 FEET TO A POINT ON THE EASTERLY PROLONGATION OF THE SOUTHERLY RIGHTOF– WAY OF SAID GREVILLEA AVENUE; THENCE ALONG SAID EASTERLY PROLONGATION NORTH 89°33'42" WEST A DISTANCE OF 60.00 FEET TO A POINT DESCRIBED AS THE BEGINNING OF COURSE "A" OF PARCEL "L" PER BOOK 3289, PAGE 186 OF DEEDS, TO THE STATE OF CALIFORNIA AS RECORDED ON DECEMBER 27, 1962 AS INSTRUMENT NO. 119152 OF OFFICIAL RECORDS, IN THE OFFICE OF THE RIVERSIDE COUNTY RECORDER, SAID POINT BEING ON THE WESTERLY LINE OF SAID REDLANDS BOULEVARD, 120 FEET WIDE AS SHOWN ON SAID MAP NO. 1; THENCE ON A LINE PARALLEL WITH AND 60 DISTANT FROM SAID CENTERLINE SOUTH 00°26'55" WEST A DISTANCE OF 744.99 FEET TO THE SOUTHEAST CORNER OF COURSE "B" OF SAID PARCEL "L"; THENCE CONTINUING ALONG THE WESTERLY LINE OF SAID REDLANDS BOULEVARD SOUTH 00°26'55" WEST A DISTANCE OF 230.34 FEET TO THE TRUE POINT OF BEGINNING; THENCE LEAVING SAID WESTERLY LINE ON A LINE PARALLEL WITH AND 305.00 FEET DISTANT FROM THE CENTERLINE OF SAID FIR AVENUE NORTH 89°33'43" WEST A DISTANCE OF 336.00 FEET TO A POINT 396.00 FEET DISTANT FROM THE CENTERLINE OF SAID REDLANDS BOULEVARD; THENCE LEAVING SAID PARALLEL LINE, ON A LINE PARALLEL WITH AND 396.00 FEET DISTANT FROM THE CENTERLINE OF SAID REDLANDS BOULEVARD SOUTH 00°26'55" WEST A DISTANCE OF 305.00 FEET TO THE CENTERLINE OF SAID FIR AVENUE; THENCE LEAVING SAID PARALLEL LINE, ALONG THE CENTERLINE OF SAID FIR AVENUE SOUTH 89°33'43" EAST A DISTANCE OF 336.00 FEET TO A POINT ON THE WESTERLY LINE OF SAID REDLANDS BOULEVARD, SAID POINT BEING THE SOUTHEAST CORNER OF LOT 8, BLOCK 35 OF SAID MAP NO. 1; THENCE ALONG SAID WESTERLY LINE NORTH 00°26'55" EAST A DISTANCE OF 305.00 FEET TO THE TRUE POINT OF BEGINNING.

APN 488–330–038

PENXX-XXXX

BENCHMARK	BASIS OF BEARING
SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97–100 I.E. N00°27'05"E.

REVIEW BY CITY STAFF		
OFFICE	INITIAL	DATE
ENGINEERING DIVISION MANAGER		
LAND DEVELOPMENT		
PLANNING		
TRANSPORTATION		
PARKS AND COMMUNITY SERVICES		
SPECIAL DISTRICTS		
STORM WATER MANAGEMENT PRGM		

MARK	DATE	INITIAL	DESCRIPTION	REC	APPR	DATE
		EOR	REVISION			

CITY OF MORENO VALLEY APPROVALS

RECOMMENDED:
MICHAEL D. LLOYD, PE — DATE
ENGINEERING DIVISION MANAGER/ ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:
MICHAEL L. WOLFE, PE — DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL
REGISTERED PROFESSIONAL ENGINEER — SHEA–MICHAEL ANTI — RCE NO. 78274 — STATE OF CALIFORNIA — CIVIL
8/3/2021

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951–543–9868

UNDER THE SUPERVISION OF:
SHEA–MICHAEL ANTI, RCE C78274 — 8/3/2021 DATE

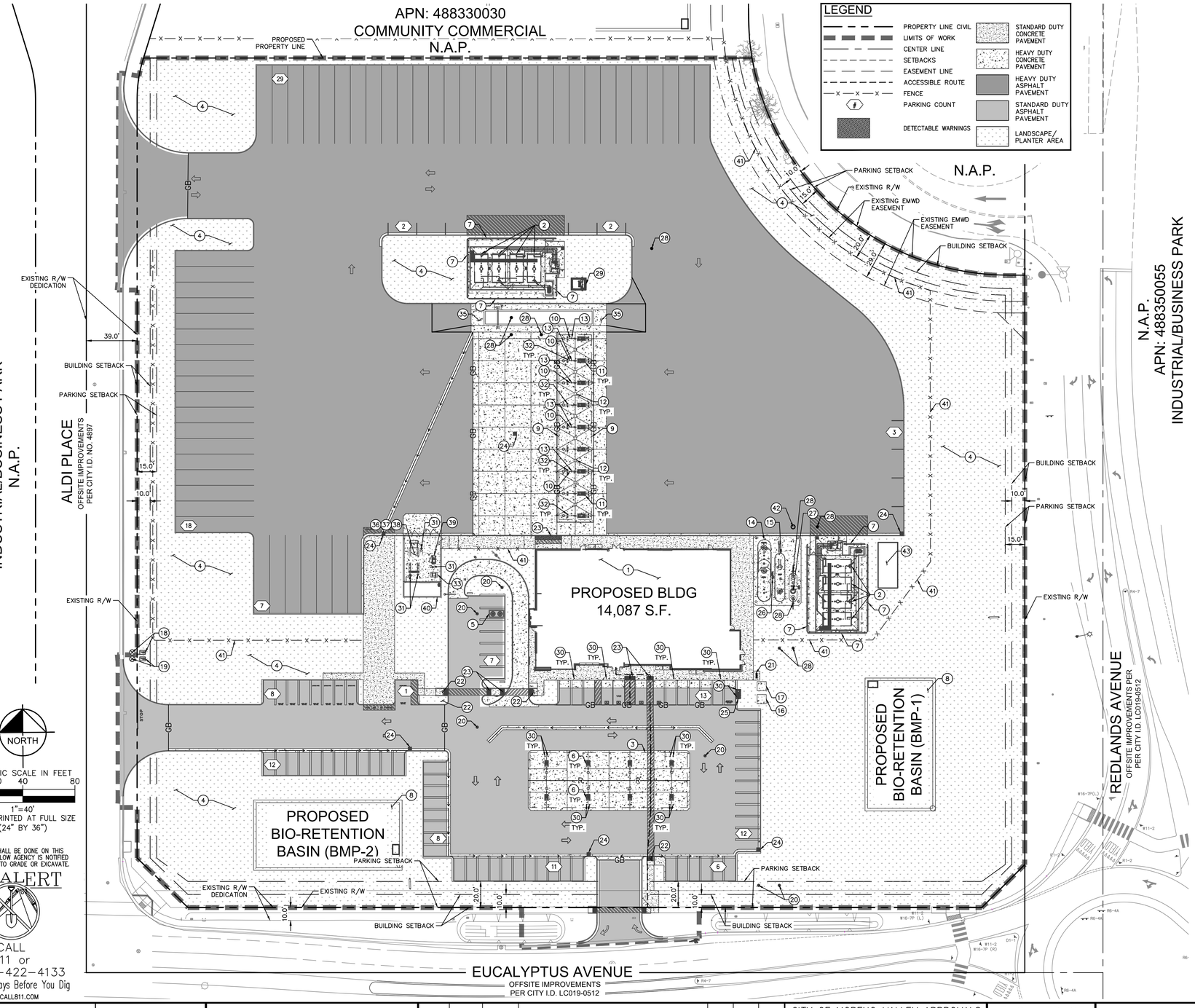
CITY OF MORENO VALLEY

PRECISE GRADING PLAN
PILOT MORENO VALLEY
GENERAL NOTES

SHEET 2 OF 8
CITY ID No. LGRXX–XXXX

Plotted By:Alvarez, Leticia Sheet Set:Pilot Moreno Valley Layout:GENERAL NOTES August 04, 2021 12:44:40am K:\RIV_LDEV\Pilot\09542608_Pilot Moreno Valley\CADD\PlanSheets\Precise Grading Plan\GN–09542608.dwg

Attachment: Appendix G - Preliminary Hydrology Study (5613 : Pilot Travel Center Project)



LEGEND

- PROPERTY LINE CIVIL
- LIMITS OF WORK
- CENTER LINE
- SETBACKS
- EASEMENT LINE
- ACCESSIBLE ROUTE
- FENCE
- PARKING COUNT
- DETECTABLE WARNINGS
- STANDARD DUTY CONCRETE PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- HEAVY DUTY ASPHALT PAVEMENT
- STANDARD DUTY ASPHALT PAVEMENT
- LANDSCAPE/ PLANTER AREA

SITE INFORMATION

APPLICANT/DEVELOPER: PILOT TRAVEL CENTERS, LLC

APN'S: 488-330-030, -035, -036, -037, -038

SITE AREA	±9.55 ACRES
TOTAL PERVIOUS	±3.61 ACRES
TOTAL IMPERVIOUS (INCLUDING BUILDING)	±5.94 ACRES
TOTAL GROSS FLOOR AREA	14,087 SF

EXISTING: COMMUNITY COMMERCIAL (CC)

PROPOSED: COMMUNITY COMMERCIAL (CC)

FEMA FLOOD ZONE DESIGNATION: ZONE X-SHADED

FRONT BUILDING SETBACK: 10'

SIDE BUILDING SETBACK: 10'

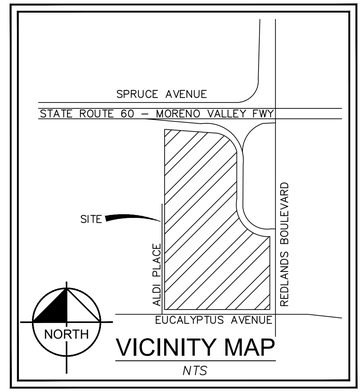
FRONT PARKING SETBACK: 20'

SIDE PARKING SETBACK: 15'

TOTAL REQUIRED PARKING: 83 SPACES

TOTAL PROVIDED AUTO PARKING: 85 SPACES

TOTAL PROVIDED TRUCK PARKING: 54 SPACES



CONSTRUCTION NOTES

1. PILOT TRAVEL CENTER BUILDING (SEE ARCHITECTURAL DRAWINGS), INSTALLED BY CONTRACTOR.
2. ABOVE GROUND STORAGE TANK FARM WITH CONTAINMENT. EACH AST FARM CONTAINS (4) 12,000 GALLON TACKS FOR DIESEL AND BIO. SEE PRODUCT PIPING DRAWINGS FOR MORE INFORMATION.
3. 42'-3" x 120'-10" AUTO CANOPY, FURNISHED AND INSTALLED BY CANOPY SUPPLIER. CANOPY FOUNDATIONS INSTALLED BY CONTRACTOR.
4. LANDSCAPE AREA INSTALLED BY CONTRACTOR. REFER TO LANDSCAPE AND IRRIGATION PLANS FOR MORE INFORMATION.
5. GREASE TRAP. FURNISHED AND INSTALLED BY CONTRACTOR.
6. CONCRETE ISLAND WITH A GAS/AUTO DIESEL (3+1) DISPENSER AND CONTAINMENT BOX TYPICAL AT (8) PLACES, INSTALLED BY CONTRACTOR.
7. 2'-0" HIGH GUARDRAIL AROUND CONTAINMENT AREA, 1'-0" OUTSIDE OF FENCE.
8. PROPOSED BIORETENTION BASIN. SEE UTILITY PLAN FOR MORE INFORMATION.
9. 25'-0" x 141'-9" TRUCK CANOPY, FURNISHED AND INSTALLED BY CANOPY SUPPLIER, CANOPY FOUNDATIONS INSTALLED BY CONTRACTOR.
10. TRUCK AIR STAND, TYPICAL AT EVERY OTHER TRUCK FUELING ISLAND, SUPPLIED BY OWNER AND INSTALLED BY CONTRACTOR.
11. CONCRETE ISLAND WITH A DIESEL DISPENSER AND CONTAINMENT BOX TYPICAL AT (9) PLACES, INSTALLED BY CONTRACTOR.
12. PREFABRICATED TRUCK ISLAND CATCH BASIN (TYP (8) PLACES). SUPPLIED BY OWNER INSTALLED BY CONTRACTOR
13. TRUCK FREEZE PROOF WATER STAND TYPICAL AT EVERY OTHER TRUCK FUELING ISLAND FURNISHED AND INSTALLED BY CONTRACTOR.
14. TANK #1, PRODUCT #1. 20,000 GALLON, 10'-0"ø X 37'-8 3/4" LONG, DOUBLE-WALL FIBERGLASS UNDERGROUND REGULAR UNLEADED GASOLINE TANK. FURNISHED BY OWNER, INSTALLED BY CONTRACTOR (TYP (1) PLACE). SEE PP DRAWINGS FOR MORE INFORMATION.
15. TANK #2 AND TANK #3. 20,000 GALLON, 10'-0"ø X 37'-10" LONG (2) CHAMBER UNDERGROUND DOUBLE WALL FIBERGLASS TANK, TANK #2, PRODUCT #2 – 12,000 GALLON SUPER UNLEADED GASOLINE, TANK #3, PRODUCT #3 – 8,000 AUTO DIESEL. FURNISHED BY OWNER, INSTALLED BY CONTRACTOR. (SEE PP DRAWINGS FOR MORE INFORMATION).
16. LOCAL UTILITY ELECTRICAL TRANSFORMER INSTALLED BY CONTRACTOR.
17. TRAVEL CENTER DISTRIBUTION ELECTRICAL TRANSFORMER INSTALLED BY CONTRACTOR.
18. PROPOSED WATER METER AND BACKFLOW. SEE UTILITY PLAN FOR MORE INFORMATION.
19. PROPOSED IRRIGATION METER AND BACKFLOW PREVENTOR. SEE UTILITY PLAN FOR MORE INFORMATION.
20. PROPOSED SEWER CLEANOUT. SEE UTILITY PLAN FOR MORE INFORMATION.
21. PROPOSED U-SHAPED BIKE RACKS PER CITY STANDARDS AND SPECIFICATIONS.
22. INSTALL ACCESSIBLE RAMP. INSTALL CAST-IN-PLACE DETECTABLE WARNING SYSTEM (TRUNCATED DOMES) PER ARMOR TILE – 36" X 48" PANEL. PRODUCT NO. ADA-C-3648W.
23. INSTALL DETECTABLE WARNINGS.
24. PROPOSED CATCH BASIN. SEE UTILITY PLAN FOR MORE INFORMATION.
25. AUTO AIR/VACUUM (PROVIDED BY OWNER, ELECTRICAL BY CONTRACTOR), YARD HYDRANT BY CONTRACTOR.
26. NEW TANK VENT RISER CLUSTER, INSTALLED BY CONTRACTOR.
27. 4,000 GALLON, 6'-0"ø x 21'-11" LONG, SINGLE-WALL FIBERGLASS UNDERGROUND OIL/ WATER SEPARATOR, FURNISHED BY OWNER, INSTALLED BY CONTRACTOR.
28. CLEAN OUT FOR OIL/WATER SEPARATOR FURNISHED AND INSTALLED BY CONTRACTOR.
29. B99 INJECTION SHED WITH SUMP. SUPPLIED BY OWNER. (SEE PRODUCT PIPING DRAWINGS FOR MORE INFORMATION).
30. 4" STEEL PIPE BOLLARD FURNISHED, INSTALLED BY CONTRACTOR (SEE CIVIL DWGS FOR SPECS.).
31. 6" STEEL PIPE BOLLARD FURNISHED, INSTALLED BY CONTRACTOR (SEE CIVIL DWGS FOR SPECS.).
32. 1'-0" CONCRETE BOLLARD FURNISHED, INSTALLED AND PAINTED BY CONTRACTOR (SEE CIVIL DWGS FOR SPECS.).
33. GREASE CONTAINER, PROVIDED BY OWNER.
34. SITE LIGHT, FURNISHED BY OWNER, INSTALLED BY CONTRACTOR.
35. TRUCK SCALE, CONCRETE TRUCK SCALE PIT AND TRUCK SCALE FURNISHED AND INSTALLED BY TRUCK SCALE SUPPLIER. ELECTRICAL, COMMUNICATIONS AND DRAINAGE PROVIDED TO THE SCALE PIT BY CONTRACTOR, COORDINATION BY CONTRACTOR.
36. PARKING AREA DESIGNATED FOR GOLF CART.
37. TRASH ENCLOSURE 8' CHAIN LINK FENCE WITH VINYL INSERTS MOUNTED ON REINFORCED CONCRETE PAD WITH PROTECTIVE STEEL BOLLARDS, INSTALLED BY CONTRACTOR (SEE ARCH DWGS FOR DETAILS).
38. TRASH COMPACTOR, FURNISHED AND INSTALLED BY TRASH COMPACTOR SUPPLIER.
39. CARDBOARD BAILER OR RECYCLE DUMPSTER, FURNISHED AND INSTALLED BY DUMPSTER SUPPLIER.
40. STORAGE UNIT, FURNISHED BY OWNER. ELECTRICAL & A/C INSTALL BY CONTRACTOR.
41. PROPOSED "CERTAIN TEED BRAND; BUFFTECH VINYL FENCING; PRIVACY SERIES; STYLE "GALVESTON", 8' TALL; COLOR ALMOND." OR APPROVED EQUAL. FURNISHED AND INSTALLED BY CONTRACTOR.
42. 36" MANHOLE BY JENSEN REFER TO UTILITY PLAN FOR MORE INFORMATION.
43. FUTURE HYDROGEN TANK LOCATION.

PENXX-XXXX

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WWW.CALL811.COM

BENCHMARK	BASIS OF BEARING
SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97-100 I.E. N00°27'05"E.

REVIEW BY CITY STAFF

OFFICE	INITIAL	DATE
ENGINEERING DIVISION MANAGER		
LAND DEVELOPMENT		
PLANNING		
TRANSPORTATION		
PARKS AND COMMUNITY SERVICES		
SPECIAL DISTRICTS		
STORM WATER MANAGEMENT PRGM		

MARK	DATE	INITIAL	DESCRIPTION	REC	APPR	DATE
		EOR	REVISION			

CITY OF MORENO VALLEY APPROVALS

RECOMMENDED:

MICHAEL D. LLOYD, PE — DATE
ENGINEERING DIVISION MANAGER/ ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:

MICHAEL L. WOLFE, PE — DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL

REGISTERED PROFESSIONAL ENGINEER — SHEA MICHAEL ANTI — RCE NO. 78274 — STATE OF CALIFORNIA — CIVIL

8/3/2021

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951-543-9868

UNDER THE SUPERVISION OF:

SHEA MICHAEL ANTI, RCE C78274 — 8/3/2021 DATE

CITY OF MORENO VALLEY

PRECISE GRADING PLAN
PILOT MORENO VALLEY
SITE PLAN

SHEET 3 OF 8

CITY ID No. LGRXX-XXXX

APN: 488330040
INDUSTRIAL/BUSINESS PARK
N.A.P.

ALDI PLACE
OFFSITE IMPROVEMENTS
PER CITY I.D. NO. 4897

SEE SHEET 5

PROPOSED BLDG
14,087 S.F.

PROPOSED
BIO-RETENTION
BASIN (BMP-1)

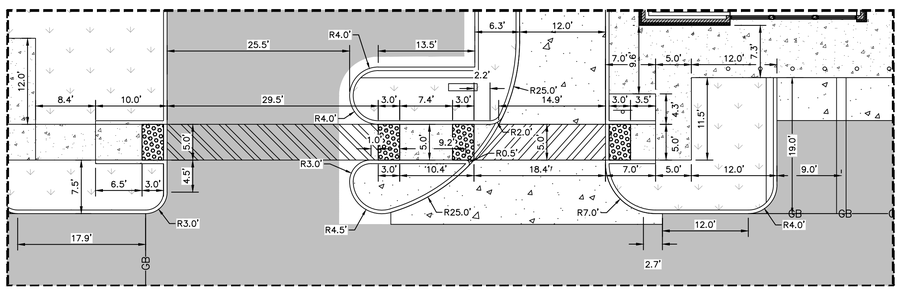
PROPOSED
BIO-RETENTION
BASIN (BMP-2)

REDLANDS AVENUE
OFFSITE IMPROVEMENTS
PER CITY I.D. LC019-0512

N.A.P.
APN: 488350055
INDUSTRIAL/BUSINESS PARK

EUCALYPTUS AVENUE
OFFSITE IMPROVEMENTS
PER CITY I.D. LC019-0512

EXISTING R/W
PARKING SETBACK
BUILDING SETBACK
EXISTING R/W DEDICATION
DETAIL 1 HEREON
STOP
N89°33'03"W 609.39'
N00°27'05"E 432.44'



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LEGEND

- PROPERTY LINE CIVIL
- LIMITS OF WORK
- CENTER LINE
- SETBACKS
- EASEMENT LINE
- GB — GRADE BREAK
- DETECTABLE WARNINGS
- STANDARD DUTY CONCRETE PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- HEAVY DUTY ASPHALT PAVEMENT
- STANDARD DUTY ASPHALT PAVEMENT
- LANDSCAPE/ PLANTER AREA

NORTH
GRAPHIC SCALE IN FEET
0 15 30 60
1"=30'
WHEN PRINTED AT FULL SIZE
(24" BY 36")

PENXX-XXXX

BENCHMARK	BASIS OF BEARING
SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97-100 I.E. N00°27'05"E.

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OFFICE	INITIAL	DATE
ENGINEERING DIVISION MANAGER		
LAND DEVELOPMENT		
PLANNING		
TRANSPORTATION		
PARKS AND COMMUNITY SERVICES		
SPECIAL DISTRICTS		
STORM WATER MANAGEMENT PRGM		

MARK	DATE	INITIAL	DESCRIPTION	REC	APPR	DATE
		EOR	REVISION			

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ENGINEERING DIVISION MANAGER/
ASSISTANT CITY ENGINEER
RCE 69563

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RCE 65623

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STATE OF CALIFORNIA
8/3/2021

Kimley»Horn

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PHONE: 951-543-9868
UNDER THE SUPERVISION OF:
SHEA MICHAEL ANTI
RCE C78274
8/3/2021
DATE

CITY OF MORENO VALLEY

PRECISE GRADING PLAN
PILOT MORENO VALLEY
HORIZONTAL CONTROL PLAN

SHEET 4 OF 8
CITY ID No.
LGRXX-XXXX

APN: 488330040
INDUSTRIAL/BUSINESS PARK
N.A.P.

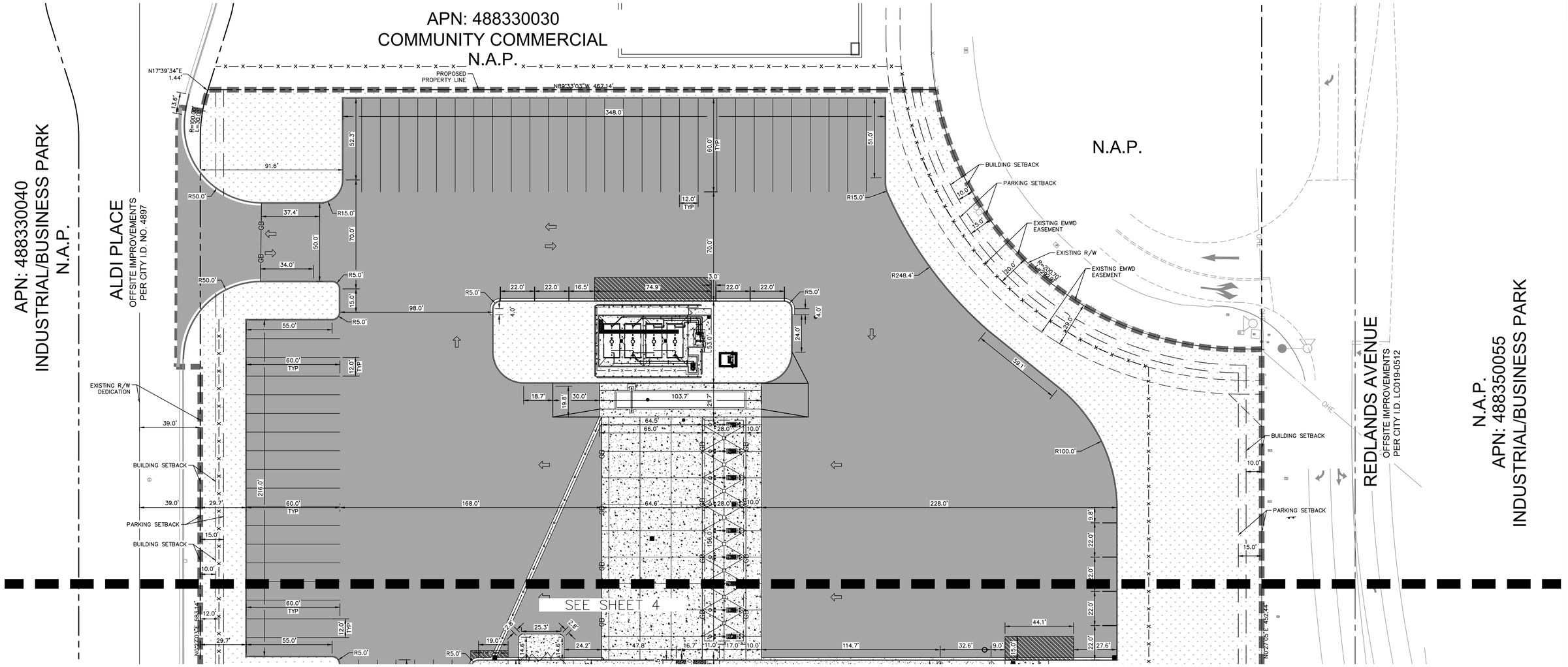
ALDI PLACE
OFFSITE IMPROVEMENTS
PER CITY I.D. NO. 4897

APN: 488330030
COMMUNITY COMMERCIAL
N.A.P.

N.A.P.

REDLANDS AVENUE
OFFSITE IMPROVEMENTS
PER CITY I.D. LC019-0512

N.A.P.
APN: 488350055
INDUSTRIAL/BUSINESS PARK



LEGEND

- PROPERTY LINE CIVIL
- LIMITS OF WORK
- CENTER LINE
- SETBACKS
- EASEMENT LINE
- GRADE BREAK (GB)
- DETECTABLE WARNINGS
- STANDARD DUTY CONCRETE PAVEMENT
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NORTH

GRAPHIC SCALE IN FEET
0 15 30 60
1"=30'
WHEN PRINTED AT FULL SIZE (24" BY 36")

PENXX-XXXX

BENCHMARK	BASIS OF BEARING
SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97-100 I.E. N00°27'05"E.

REVIEW BY CITY STAFF

OFFICE	INITIAL	DATE
ENGINEERING DIVISION MANAGER		
LAND DEVELOPMENT		
PLANNING		
TRANSPORTATION		
PARKS AND COMMUNITY SERVICES		
SPECIAL DISTRICTS		
STORM WATER MANAGEMENT PRGM		

MARK	DATE	INITIAL	DESCRIPTION	REC	APPR	DATE
		EOR	REVISION			

CITY OF MORENO VALLEY APPROVALS

RECOMMENDED:

MICHAEL D. LLOYD, PE — DATE
ENGINEERING DIVISION MANAGER/
ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:

MICHAEL L. WOLFE, PE — DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL

REGISTERED PROFESSIONAL ENGINEER — SHEA, MICHAEL ANN — RCE NO. 78274 — STATE OF CALIFORNIA — CIVIL

8/3/2021

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951-543-9868

UNDER THE SUPERVISION OF:

SHEA, MICHAEL ANN
RCE C78274

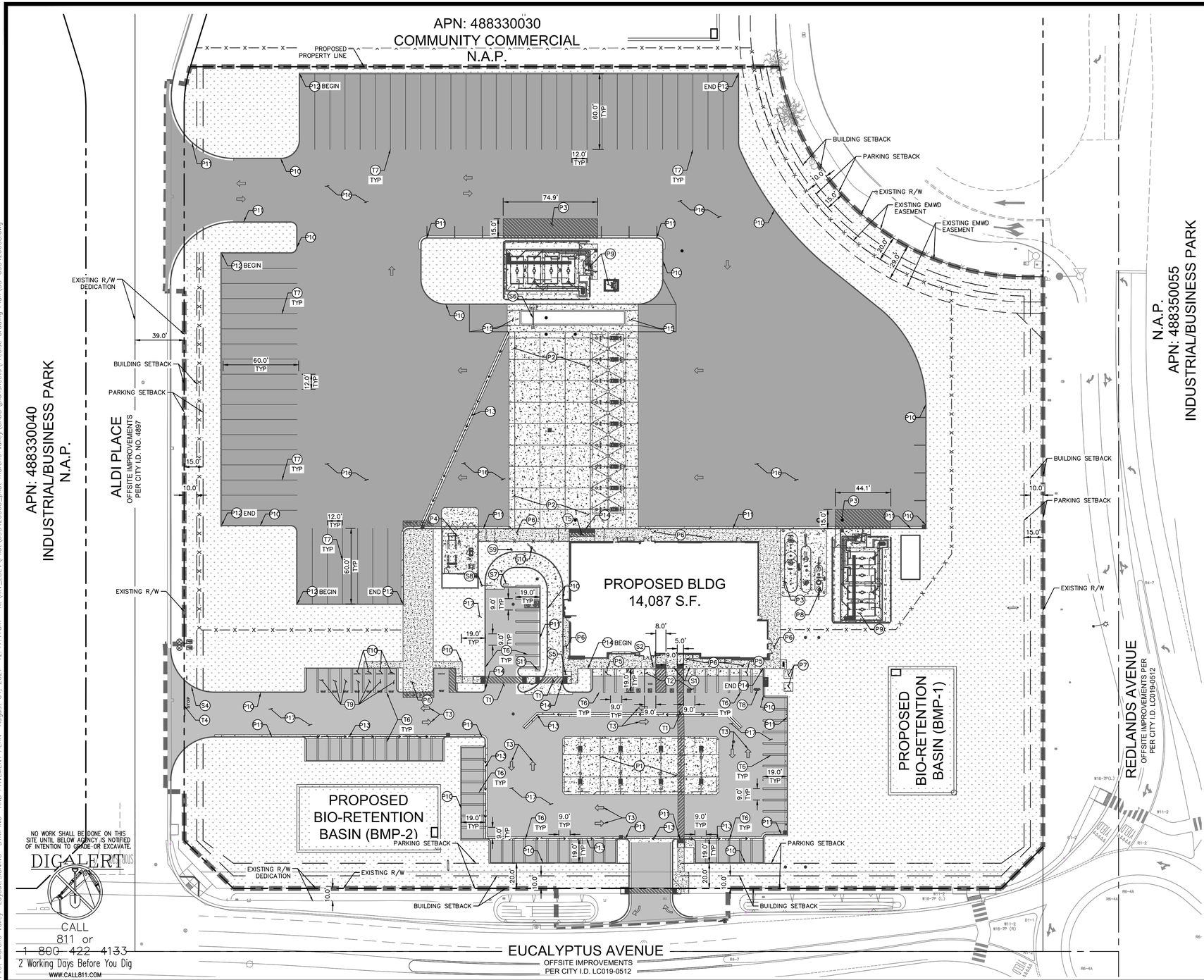
8/3/2021
DATE

CITY OF MORENO VALLEY

PRECISE GRADING PLAN
PILOT MORENO VALLEY
HORIZONTAL CONTROL PLAN

SHEET 5 OF 8

CITY ID No.
LGRXX-XXXX



LEGEND

- PROPERTY LINE
- CIVIL LIMITS OF WORK
- CENTER LINE
- SETBACKS
- EASEMENT LINE
- FENCE
- DETECTABLE WARNINGS
- STANDARD DUTY CONCRETE PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- HEAVY DUTY ASPHALT PAVEMENT
- STANDARD DUTY ASPHALT PAVEMENT
- LANDSCAPE/ PLANTER AREA

PAVEMENT NOTES

P1 6" REINFORCED CONCRETE PAD FOR AUTO CANOPY. WATER FROM SITE SHOULD NOT DRAIN ACROSS THE CONCRETE PAD FOR THE AUTO CANOPY. ASPHALT PAVING ON ALL (4) SIDES OF THE CONCRETE PAD SHOULD DRAIN AWAY FROM CONCRETE PAD. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS, INSTALLED BY CONTRACTOR.

P2 8" REINFORCED CONCRETE PAD FOR TRUCK CANOPY. WATER FROM SITE SHOULD NOT DRAIN ACROSS THE CONCRETE PAD FOR THE TRUCK CANOPY. ASPHALT PAVING ON BOTH SIDES OF THE CONCRETE PAD SHOULD DRAIN AWAY FROM CONCRETE PAD. CONCRETE PAD FOR THE TRUCK CANOPY MUST DRAIN TO CATCH BASIN. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

P3 8" REINFORCED CONCRETE PAD AT TANK FARM. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

P4 8" REINFORCED CONCRETE PAD TRASH ENCLOSURE. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

P5 6" REINFORCED CONCRETE PARKING APRON AT PARKING SPACES IN FRONT OF BUILDING. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

P6 4" REINFORCED CONCRETE SIDEWALK. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

P7 7'-0" X 7'-0" X 6" REINFORCED CONCRETE PAD FOR ELECTRICAL TRANSFORMER. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY FOR SIZE AND REINFORCING REQUIREMENTS. INSTALLED BY CONTRACTOR.

P8 4" REINFORCED CONCRETE PAD AT OIL/WATER SEPARATOR. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

P9 SEE PP DRAWINGS FOR AST AND BIO SHED FOUNDATION DESIGN.

P10 STANDARD DUTY CURB. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

P11 STANDARD DUTY CURB AND GUTTER. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

P12 HEAVY DUTY CURB. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

P13 INSTALL RIBBON GUTTER.

P14 ZERO ELEVATION CURB. SEE GRADING PLANS FOR DETAILS AND SPECIFICATIONS.

P15 8" REINFORCED CONCRETE RAMP FOR CAT SCALE.

P16 CONSTRUCT HEAVY DUTY ASPHALT PAVEMENT.

P17 CONSTRUCT STANDARD DUTY ASPHALT PAVEMENT.

STRIPING NOTES

T1 INSTALL ACCESSIBLE PATH OF TRAVEL STRIPING.

T2 INSTALL ACCESSIBLE STRIPING PARKING STALL AND ACCESSIBLE PARKING SYMBOL.

T3 ALL DIRECTIONAL AND PARKING STRIPING TO BE SAFETY YELLOW-UNLESS NOTED OTHERWISE (TYP).

T4 STOP LINE INSTALLED BY CONTRACTOR.

T5 5'-0" X 20'-0" PASSENGER DROP-OFF/LOADING ZONE. TRAFFIC STRIPING 4" WIDE PAINTED (SAFETY YELLOW) PARALLEL STRIPES AT 16" O.C. FURNISHED AND INSTALLED BY CONTRACTOR.

T6 4" YELLOW DOUBLE HAIRPIN STRIPING, TYP. (COLOR PER CITY CODE).

T7 4" YELLOW PAINTED SOLID LINE, TYP. (COLOR PER CITY CODE).

T8 PROPOSED "PARKING FOR SERVICE ISLAND USE ONLY." PAVEMENT MARKING.

T9 PROPOSED "CLEAN AIR/ VAN POOL." PAVEMENT MARKING.

T10 PROPOSED FUTURE EVCS PARKING STALLS.

SIGNING NOTES

S1 INSTALL ACCESSIBLE PARKING STALL SIGN AND SINGLE BASE SIGN POST.

S2 INSTALL VAN ACCESSIBLE PARKING STALL SIGN AND SINGLE BASE SIGN POST.

S3 "PASSENGER LOADING ZONE ONLY" SIGN FURNISHED AND INSTALLED BY CONTRACTOR.

S4 "STOP SIGN" SIGN INSTALLED BY CONTRACTOR.

S5 "PED-XING" SIGN FURNISHED AND INSTALLED BY CONTRACTOR.

S6 SEE SS DRAWINGS FOR ALL OTHER SIGNAGE.

S7 RESTAURANT "DRIVE-THRU" (INTERNALLY ILLUMINATED) DIRECTIONAL SIGN FURNISHED BY OWNER, INSTALLED BY SIGN SUPPLIER. CONCRETE FOUNDATION AND ELECTRICAL INSTALLED BY CONTRACTOR.

S8 "DRIVE-THRU CLEARANCE 9 FT. 6 IN." SIGN FURNISHED BY OWNER, INSTALLED BY SIGN SUPPLIER. CONCRETE FOUNDATION INSTALLED BY CONTRACTOR.

S9 RESTAURANT PREVIEW BOARD (INTERNALLY ILLUMINATED) FURNISHED BY OWNER, INSTALLED BY SIGN SUPPLIER. CONCRETE FOUNDATION AND ELECTRICAL INSTALLED BY CONTRACTOR.

S10 "RESTAURANT" MENU BOARD (INTERNALLY ILLUMINATED) AND INTERCOM SYSTEM FURNISHED BY OWNER, INSTALLED BY SIGN SUPPLIER. CONCRETE FOUNDATION AND ELECTRICAL INSTALLED BY CONTRACTOR.

S11 "THANK YOU / DO NOT ENTER" DIRECTIONAL SIGN (INTERNALLY ILLUMINATED) FURNISHED BY OWNER, INSTALLED BY SIGN SUPPLIER. CONCRETE FOUNDATION AND ELECTRICAL INSTALLED BY CONTRACTOR.

GENERAL PAVING NOTES

1. ALL MANHOLES MUST BE SET 2" HIGHER THAN PAVING TO PROVIDE A CROWN IN A 24"Ø AREA AROUND EACH MANHOLE.
2. SUB-BASE MUST BE COMPACTED TO 95% STANDARD PROCTOR WITH A WATER CONTENT WITHIN 1.5% OF OPTIMUM.
3. STONE BASE MUST BE COMPACTED TO 95% STANDARD PROCTOR WITH A WATER CONTENT WITHIN 1.5% OF OPTIMUM.
4. PRIOR TO INSTALLING BITUMINOUS PAVING CONTRACTOR IS TO PROOF-ROLL SUB-BASE USING HEAVY, PNEUMATIC-TIRED ROLLERS TO LOCATE AREAS THAT ARE UNSTABLE OR THAT REQUIRE FURTHER COMPACTION. NOTIFY CONSTRUCTION MANAGER IN WRITING OF ANY UNSATISFACTORY CONDITIONS. DO NOT BEGIN PAVING INSTALLATION UNTIL THESE CONDITIONS HAVE BEEN SATISFACTORILY CORRECTED.
5. ASPHALT PAVING @ EDGE OF CONCRETE PAD FOR THE TRUCK CANOPY SHOULD BE LAID @1/4" HIGHER THAN CONCRETE PAD ON EXIT SIDE CANOPY.
6. CONCRETE COLLAR IS REQUIRED FOR ALL STRUCTURES IN PAVEMENT.

NORTH

GRAPHIC SCALE IN FEET
0 20 40 80
1"=40'
WHEN PRINTED AT FULL SIZE (24" BY 36")

PENXX-XXXX

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RECOMMENDED:

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ENGINEERING DIVISION MANAGER/ ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:

MICHAEL L. WOLFE, PE — DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL

REGISTERED PROFESSIONAL ENGINEER — SHEA MICHAEL ANTI — RCE NO. 78274 — STATE OF CALIFORNIA — CIVIL

8/3/2021

Kimley»Horn

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PHONE: 951-543-9868

UNDER THE SUPERVISION OF:

SHEA-MICHAEL ANTI
RCE C78274 — 8/3/2021 DATE

CITY OF MORENO VALLEY

PRECISE GRADING PLAN
PILOT MORENO VALLEY
SIGNING, STRIPING, AND PAVEMENT PLAN

SHEET 6 OF 8

CITY ID No.
LGRXX-XXXX

Plotted By: Alvarez, Leticia Sheet Set: Pilot Moreno Valley Layout: SIGNING, STRIPING AND PAVEMENT PLAN August 04, 2021 12:47:17am K:\RIV_LDEV\Pilot\095426008_pilot moreno valley\CAD\plotsheets\Precise Grading Plan\SS-095426008.dwg

APN: 488330040
INDUSTRIAL/BUSINESS PARK
N.A.P.

ALDI PLACE
OFFSITE IMPROVEMENTS
PER CITY I.D. NO. 4897

PROPOSED BLDG
14,087 S.F.

PROPOSED
BIO-RETENTION
BASIN (BMP-1)
TOP OF BASIN= 1737.00
BOTTOM OF BASIN = 1736.50

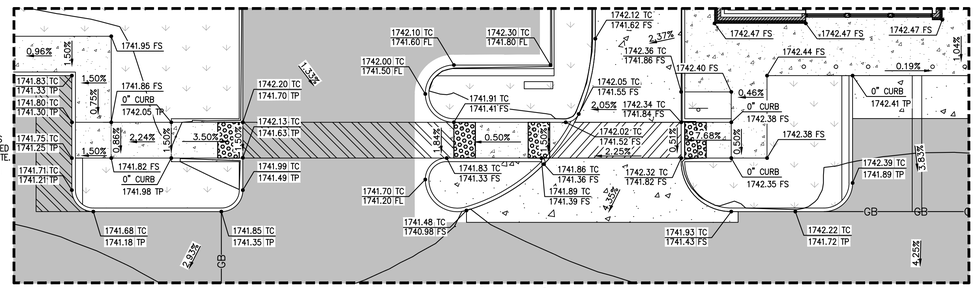
PROPOSED
BIO-RETENTION
BASIN (BMP-2)
TOP OF BASIN= 1735.50
BOTTOM OF BASIN =1735.00

REDLANDS AVENUE
OFFSITE IMPROVEMENTS
PER CITY I.D. LC019-0512

N.A.P.
APN: 488350055
INDUSTRIAL/BUSINESS PARK

EUCALYPTUS AVENUE
OFFSITE IMPROVEMENTS
PER CITY I.D. LC019-0512

EXISTING R/W
BUILDING SETBACK
PARKING SETBACK
EXISTING R/W DEDICATION
DETAIL 1, HEREON



DETAIL 1
1"=10'

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.

DIGALERT
CALL
811 or
1-800-422-4133
2 Working Days Before You Dig
WWW.CALL811.COM

GRADING NOTES

1. CONTRACTOR TO VERIFY ALL EXISTING TOPOGRAPHY AND STRUCTURES ON THE SITE AND IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.
2. ALL PAVEMENT SPOT GRADE ELEVATIONS AND RIM ELEVATIONS WITHIN OR ALONG CURB AND GUTTER REFER TO FLOW LINE ELEVATIONS UNLESS OTHERWISE NOTED.
3. ALL ELEVATIONS SHOWN DEPICT FINISHED GRADE OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED. GENERAL CONTRACTOR TO COORDINATE WITH EXCAVATION, LANDSCAPE AND PAVING SUBCONTRACTORS REGARDING TOPSOIL THICKNESS FOR LANDSCAPE AREAS AND PAVEMENT SECTION THICKNESS FOR PAVED AREAS TO PROPERLY ENSURE ADEQUATE CUT TO ESTABLISH SUBGRADE ELEVATIONS.
4. NO EARTHEN SLOPE SHALL BE GREATER THAN 2:1, UNLESS OTHERWISE NOTED.
5. MAXIMUM SLOPE IN ACCESSIBLE PARKING SPACES AND LOADING ZONES SHALL NOT EXCEED 2.0% IN ALL DIRECTIONS.
6. MAXIMUM RUNNING SLOPE SHALL NOT EXCEED 5% AND CROSS SLOPE SHALL NOT EXCEED 2% ON ALL SIDEWALKS AND ACCESSIBLE ROUTES.
7. MATCH EXISTING ELEVATIONS AT THE PROPERTY LIMITS.
8. REFER TO STORM DRAIN PLANS FOR INLET SIZE AND LOCATION.
9. EARTHWORK AND PAVING SPECIFICATION PER GEOTECHNICAL REPORT.
10. A GRADING PERMIT FROM THE CITY OF MORENO VALLEY WILL BE REQUIRED PRIOR TO COMMENCEMENT OF WORK.
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LEGEND

- PROPERTY LINE CIVIL
- LIMITS OF WORK
- CENTER LINE
- SETBACKS
- EASEMENT LINE
- GB — GRADE BREAK
- (1745.00 TC) / (1745.00 TP) / 1745.00 TC / 1745.00 TP — PROPOSED ELEVATION / EXISTING ELEVATION
- 0.71% — SLOPE
- DETECTABLE WARNINGS
- STANDARD DUTY CONCRETE PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- HEAVY DUTY ASPHALT PAVEMENT
- STANDARD DUTY ASPHALT PAVEMENT
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ABBREVIATIONS:

EG	EXISTING GROUND
FF	FINISHED FLOOR ELEVATION
FS	FINISH SURFACE
FG	FINISH GROUND
FL	FLOW LINE
GB	GRADE BREAK
HP	HIGH POINT
N.A.P	NOT A PART
TC	TOP OF CURB
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ASSISTANT CITY ENGINEER
RCE 69563

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PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL

REGISTERED PROFESSIONAL ENGINEER
SHEA MICHAEL ANTI
RCE NO. 78274
STATE OF CALIFORNIA
CIVIL

8/3/2021

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951-543-9868

UNDER THE SUPERVISION OF:

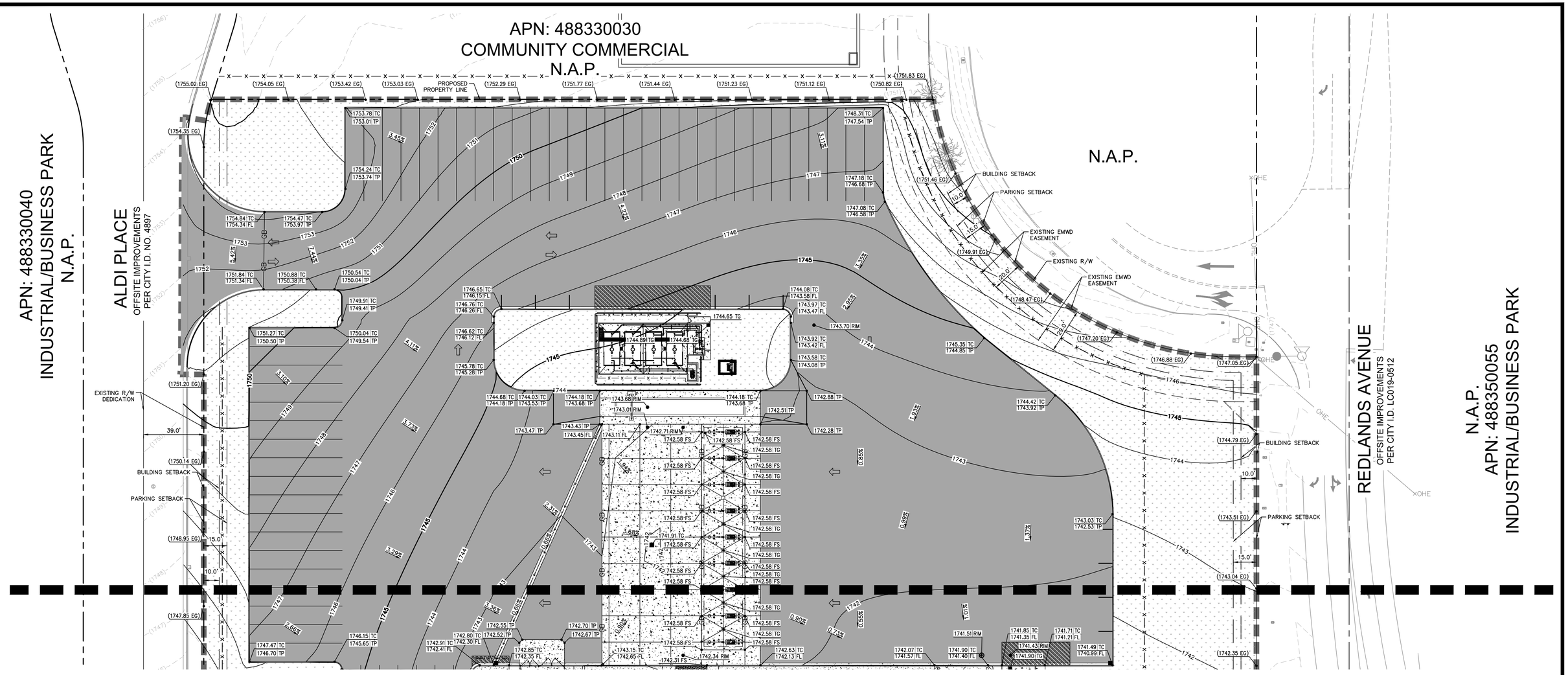
SHEA-MICHAEL ANTI — 8/3/2021 DATE
RCE C78274

CITY OF MORENO VALLEY

PRECISE GRADING PLAN
PILOT MORENO VALLEY
PRECISE GRADING PLAN

SHEET 7 OF 8

CITY ID No.
LGRXX-XXXX



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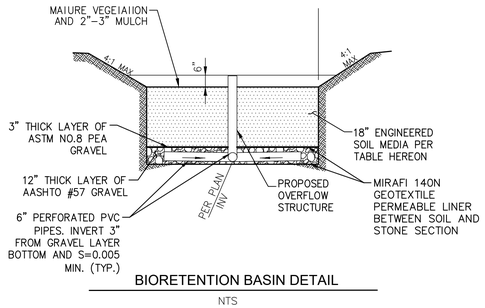

BIORETENTION BASIN DETAIL

NTS

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8/3/2021

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RCE C78274

8/3/2021
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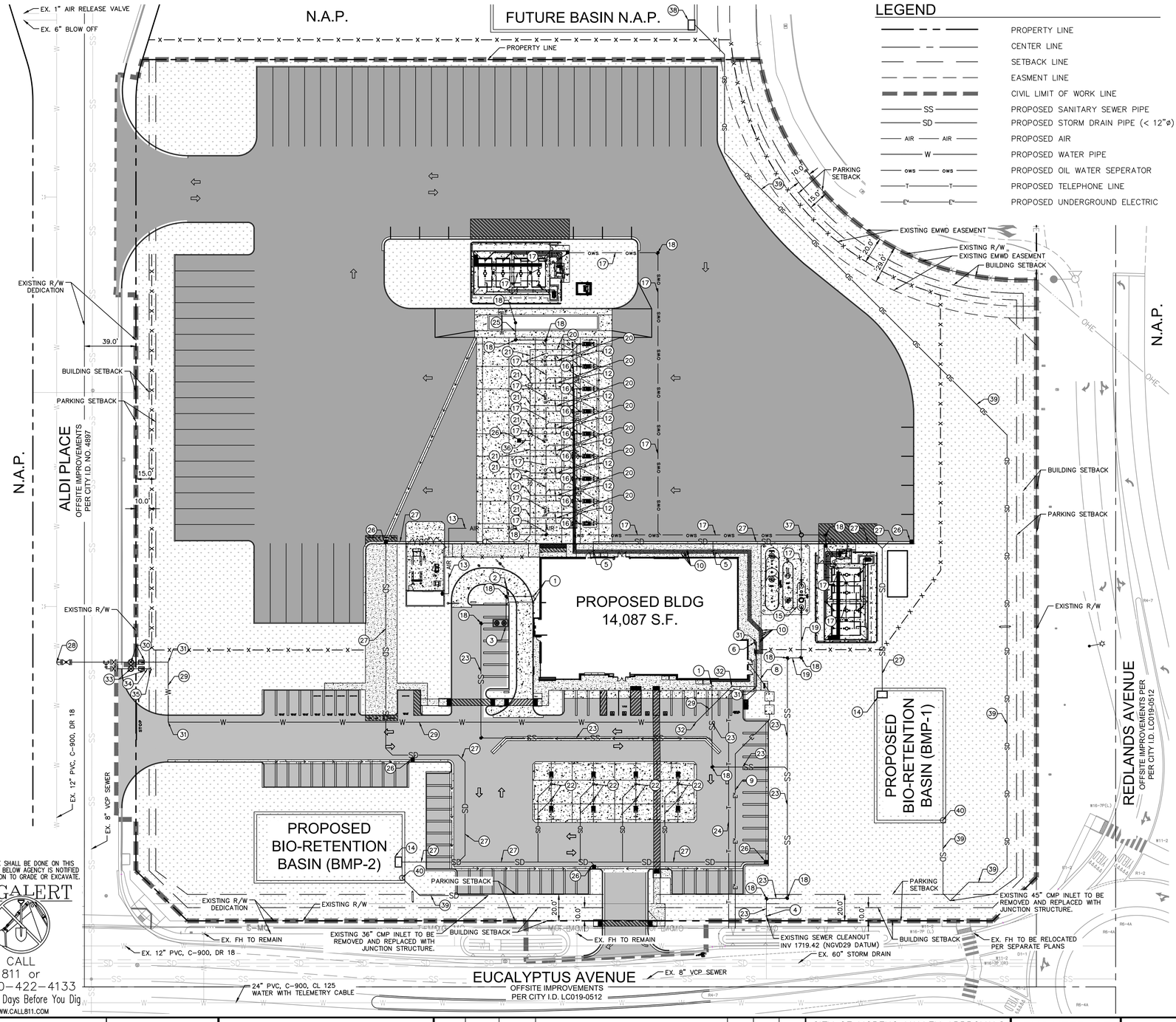
CITY OF MORENO VALLEY

PRECISE GRADING PLAN
PILOT MORENO VALLEY
PRECISE GRADING PLAN

SHEET 8 OF 8

CITY ID No.
LGRXX-XXXX



LEGEND

- PROPERTY LINE
- CENTER LINE
- SETBACK LINE
- EASMENT LINE
- CIVIL LIMIT OF WORK LINE
- SS — PROPOSED SANITARY SEWER PIPE
- SD — PROPOSED STORM DRAIN PIPE (< 12"ø)
- AIR — PROPOSED AIR
- W — PROPOSED WATER PIPE
- OWS — PROPOSED OIL WATER SEPERATOR
- T — PROPOSED TELEPHONE LINE
- E — PROPOSED UNDERGROUND ELECTRIC

UTILITY PLAN CONSTRUCTION NOTES

1. CONTRACTOR TO CONNECT TO 6" BUILDING SANITARY SEWER LINE. (4.00' MIN. BELOW FF)
2. CONTRACTOR TO CONNECT 6" BUILDING SANITARY SEWER LINE FROM BUILDING TO THE GREASE TRAP. INVERT ELEVATION AT THE GREASE TRAP OUTLET PER PLAN.
3. INSTALL GREASE TRAP. REFER TO MEP PLANS FOR MORE INFORMATION.
4. CONNECT INTO EXISTING 6" SEWER STUB PER EMWD STANDARDS AND SPECIFICATION. GENERAL CONTRACTOR SHALL VERIFY INVERT ELEVATION AT CONNECTION PRIOR TO COMMENCEMENT OF WORK. GENERAL CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES.
5. CONTRACTOR TO CONNECT TO 6" BUILDING ROOF DRAIN. (1.50' MIN. BELOW FF).
6. CONTRACTOR TO CONNECT TO 2" WATER SERVICE LINE AT THE BUILDING. WATER SERVICE LINE SHALL BE COPPER.
7. CONTRACTOR TO CONNECT TO 3" GAS LINE AT THE BUILDING.
8. CONTRACTOR TO INSTALL ELECTRICAL SERVICE LINE FROM ELECTRICAL TRANSFORMER PAD TO BUILDING ELECTRICAL PANELS.
9. CONTRACTOR TO INSTALL AND/OR COORDINATE ELECTRICAL SERVICE LINE FROM ELECTRICAL TRANSFORMER TO THE LOCATION WHERE THE LOCAL UTILITY BRINGS SERVICE.
10. CONTRACTOR TO INSTALL 3/4" PEX WATER LINES INSIDE OF 2" PVC SLEEVES FROM BUILDING TO TRUCK FREEZE PROOF WATER STAND (FURNISHED AND INSTALLED BY CONTRACTOR) LOCATED AT EVERY OTHER TRUCK FUELING ISLAND. PEX AND PVC SLEEVE TO BE PROVIDED AND INSTALLED BY CONTRACTOR. SEE CIVIL SHEETS FOR DETAILS.
11. CONTRACTOR TO INSTALL 1/2" PEX WATER LINE INSIDE OF 2" PVC SLEEVE FROM BUILDING TO AUTO AIR/WATER STAND (TYP. (1) PLACE). PEX AND SLEEVE TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
12. INSTALL PREFABRICATED TRUCK ISLAND CATCH BASIN 2' BY 2' FOR OIL/WATER SEPARATION.
13. CONTRACTOR TO INSTALL 1/2" COPPER AIR LINE FROM AIR COMPRESSOR IN THE YARD MAINTENANCE BUILDING TO THE TRUCK AIR STAND LOCATED AT EVERY OTHER TRUCK FUELING ISLAND. SEE TC SHEETS FOR DETAILS.
14. CONSTRUCT SAND FOREBAY.
15. PROPOSED OIL/WATER SEPARATOR.
16. CONTRACTOR TO INSTALL 4" SCHEDULE 40 PVC PIPE AND GLUED FITTINGS FROM THE TRUCK CANOPY PAD CATCH BASIN – TYPICAL AT EACH DRAIN. NO "FERNCO" TYPE FITTINGS ALLOWED AT ANY PART OF THE OWS PIPING SYSTEM.
17. CONTRACTOR TO INSTALL 6" SCHEDULE 40 PVC PIPE AND GLUED FITTINGS FROM 4" PVC CATCH BASIN LINES TO INLET OF OIL/ WATER INTERCEPTOR. INVERT ELEVATION AT INTERCEPTOR INLET PER PLAN. NO "FERNCO" TYPE FITTINGS ALLOWED AT ANY PART OF THE OWS PIPING SYSTEM.
18. INSTALL CLEANOUT.
19. CONTRACTOR TO FURNISH AND INSTALL 6" SCHEDULE 40 PVC PIPE AND GLUED FITTINGS FROM OIL/WATER SEPARATOR TO THE SEWER PIPE. INVERT ELEVATION AT OIL/WATER SEPARATOR OUTLET PER PLAN. INVERT ELEVATION AT THE STORM POND INLET PER PLAN. NO "FERNCO" TYPE FITTINGS ALLOWED AT ANY PART OF THE OWS PIPING SYSTEM.
20. CONTRACTOR TO INSTALL 3" PVC FROM TRUCK CANOPY DRAINS. INVERT ELEVATION AT EACH ISLAND=1.25' BELOW CANOPY PAD FINISH GRADE.
21. CONTRACTOR TO INSTALL 6" PVC TRUNK LINE FROM 3" PVC CANOPY DRAIN LINES TO STORM WATER DRAINAGE.
22. CONTRACTOR TO INSTALL 3" PVC FROM AUTO CANOPY DRAINS. INVERT ELEVATION AT EACH ISLAND =1.25' BELOW CANOPY PAD FINISH GRADE.
23. INSTALL 6" SDR-35 PVC AT MINIMUM 1% SLOPE.
24. CONTRACTOR TO INSTALL (2) 4" PVC SCH 40 CONDUIT BURIED TO MIN. DEPTH OF 24" W/200 LB. PULL STRING AND CAPPED ON BOTH ENDS FOR TELEPHONE SERVICE, TO LOCATION WHERE LOCAL UTILITY BRINGS SERVICE. MINIMUM 3 FT. SWEEPING RADIUS (NO RIGHT ANGLES), NO MORE THAN THREE 90 DEGREE TURNS WITHOUT A PULL BOX (12"x12"x18" MINIMUM), AND PATHS LONGER THAN 300 FT. WILL REQUIRE A PULL BOX.
25. CONTRACTOR TO INSTALL 3" PVC FROM TRUCK SCALE SUMP TO 6" TRUNK LINE TO GRIT CHAMBER.
26. INSTALL 24" BY 24" JENSEN CATCH BASIN WITH FLOGARD INSERT FILTER.
27. INSTALL 12" HDPE STORM DRAIN PIPE.
28. HOT TAP INTO EXISTING 21" PVC WATER MAIN. CONTRACTOR TO COORDINATE WITH UTILITY SERVICE PROVIDER.
29. INSTALL 2-1/2" COPPER WATER SERVICE LINE. MAINTAIN 3' MINIMUM COVER.
30. INSTALL WATER METER AND BACKFLOW PREVENTOR. CONTRACTOR TO COORDINATE WITH UTILITY SERVICE PROVIDER.
31. INSTALL 90° DOMESTIC WATER PIPE BEND.
32. INSTAL 45° DOMESTIC WATER PIPE BEND.
33. INSTALL 1" IRRIGATION METER AND 1.5" BACKFLOW PREVENTOR. CONTRACTOR TO COORDINATE WITH UTILITY SERVICE PURVEYOR.
34. INSTALL 1" IRRIGATION WATER SERVICE LINE. CONTRACTOR TO COORDINATE WITH UTILITY SERVICE PURVEYOR.
35. REFER TO LANDSCAPE AND IRRIGATION PLANS FOR CONTINUATION.
36. INSTALL 6" HDPE STORM DRAIN PIPE.
37. INSTALL 36" MANHOLE BY JENSEN.
38. PROPOSED DRAINAGE STRUCTURE TO INTERCEPT OFFSITE FLOWS.
39. PROPOSED OVERFLOW STORM DRAIN PIPE.
40. PROPOSED OVERFLOW STRUCTURE.

WATER AND SEWER UTILITY NOTES

SEE SHEET 2, FOR WATER AND SEWER UTILITY NOTES.

FIRE SCOPE OF WORK

UNDERGROUND FIRE WATER SYSTEM IMPROVEMENTS INCLUDE XX LF OF PRIVATE FIRE WATER MAIN, X FIRE HYDRANTS, AND MISC APPURTENANCES.

FIRE SPRINKLER NOTE

FIRE AND SPRINKLER CONTRACTOR TO VERIFY SPRINKLER DEMAND AND CORRESPONDING FIRE SERVICE LATERAL SIZE PRIOR TO CONSTRUCTION.

EXISTING UTILITY NOTE

- THE EXISTING UTILITIES SHOWN ON THE PLAN ARE BASED ON AVAILABLE RECORDS. THE CONTRACTOR MUST FIELD DETERMINE THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO ANY CONSTRUCTION. REPORT DISCREPANCIES AND POTENTIAL CONFLICTS WITH PROPOSED UTILITIES TO ENGINEER PRIOR TO INSTALLATION OF ANY PIPING.
- ALL SHUT DOWN OF EXISTING WATER MAIN TO BE DONE BY AND COORDINATED WITH THE CITY UTILITY DIVISION. CONTRACTOR SHALL NOTIFY ALL AFFECTED WATER USERS 72 HOURS IN ADVANCE OF SHUT DOWN.

GENERAL NOTES

1. PRIOR TO ANY WORK PERFORMED IN THE RIGHT-OF-WAY A PERMIT FROM THE CITY OF MORENO VALLEY ENGINEERING DEPARTMENT IS REQUIRED.
2. ALL CATCH BASIN COVERS/GRATES AND CLEANOUT/MANHOLE COVERS EXPOSED TO VEHICULAR LOADS SHALL BE TRAFFIC RATED.
3. FOR TRENCHING, PIPE BEDDING & ROADWAY PAVEMENT REPAIRS DETAILS & SPECIFICATIONS, TRENCH AND BACKFILL PER EMWD STANDARDS AND SPECIFICATIONS.
4. STUB POINT OF CONNECTION 5' FROM BUILDING. REFER TO MEP PLAN FOR CONTINUATION OF BUIDING.
5. CONTRACTOR TO MAINTAIN A VERTICAL SEPARATION OF A MINIMUM OF 1-FOOT FOR ALL UTILITY CROSSINGS SHOWN ON THIS PLAN PER DETAIL X, SHEET XX.

BENCHMARK AND BASIS OF ELEVATION

THE BASIS OF ELEVATIONS IS THE METRO WATER DISTR OF SO. CALIFORNIA BENCHMARK STAMPED "IVF 55 1993" -DIRECTIONS: FROM THE INTERSECTION OF THE FREEWAY AND REDLANDS BLVD, NORTH ON REDLANDS BLVD, APPROX. 500 FEET (152.4 M) TO THE NORTHWEST CORNER OF REDLANDS BLVD AND SPRUCE ST. BENCHMARK IS LOCATED 43 FEET (13.1 M) WEST OF THE CENTERLINE OF REDLANDS BLVD. AND 29 FEET (8.8 M) NORTH OF THE CENTERLINE OF SPRUCE ST., IN TOP OF A 10 INCH WIDE BY 7.5 FEET (2.3 M) LONG CONCRETE HEADWALL AT WEST END. EL=1785.67, NAVD 88.

NORTH

GRAPHIC SCALE IN FEET
0 20 40 80
SCALE 1"=40' WHEN PRINTED AT FULL SIZE (24" BY 36")

PENXX-XXXX

PERMIT # FWTXX-XXXX

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.

DIGALERT

CALL 811 or 1-800-422-4133
2 Working Days Before You Dig
WWW.CALL811.COM

BENCHMARK	BASIS OF BEARING
SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97-100 I.E. N00°27'05"E.

REVIEW BY CITY STAFF		
OFFICE	INITIAL	DATE
ENGINEERING DIVISION MANAGER		
LAND DEVELOPMENT		
PLANNING		
TRANSPORTATION		
PARKS AND COMMUNITY SERVICES		
SPECIAL DISTRICTS		
STORM WATER MANAGEMENT PRGM		

MARK	DATE	INITIAL	DESCRIPTION	REC	APPR	DATE
		EOR	REVISION			

CITY OF MORENO VALLEY APPROVALS

RECOMMENDED:

MICHAEL D. LLOYD, PE — DATE
ENGINEERING DIVISION MANAGER/ ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:

MICHAEL L. WOLFE, PE — DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
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ENGINEER OF RECORD'S SEAL
SHEA-MICHAEL ANTI
RCE NO. 78274
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA
CIVIL
8/3/2021

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951-543-9868

UNDER THE SUPERVISION OF:
SHEA-MICHAEL ANTI
RCE C78274
8/3/2021
DATE

CITY OF MORENO VALLEY

BUILDING PERMIT PLANS
PILOT MORENO VALLEY
ONSITE UTILITY PLANS

SHEET 1 OF 2

CITY ID No.
LGRXX-XXXX

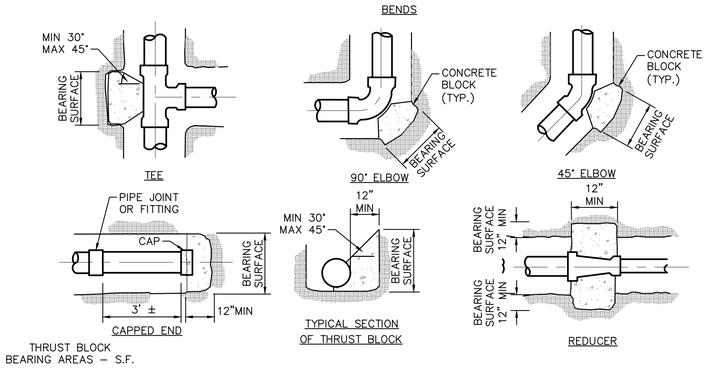
Plotted By:Alvarez, Leticia Sheet Set:Pilot Moreno Valley Layout:UTILITY PLAN August 03, 2021 11:45:53pm K:\RIV_LDEV\Pilot\095426008_pilot moreno valley\CADD\plansheets\Utility Plan\UT-095426008.dwg

FIRE NOTES

1. IDENTIFICATION SIGNS – A SIGN SHALL BE PROVIDED AT EACH VALVE TO INDICATE ITS FUNCTION AND WHAT IT CONTROLS (OS&Y, SECTIONAL AND PIV VALVES). FDC S SHALL BE LABELED "AUTO SPRINKLER, OPEN SPRINKLER, OR STANDPIPE AND SHOW THE APPROPRIATE ADDRESS AND PORTION OF THE BUILDING SERVED PER SECTION 6.6.1 & 5.9.5.6.
2. VALVE MONITORING – SHALL BE INSTALLED ON ABOVEGROUND DETECTOR CHECKS AND PIVS"
3. DEPTH OF COVER – SHALL BE AS FOLLOWS; IN LOCATIONS WHERE FROST IS NOT A FACTOR THE DEPTH OF COVER SHALL NOT BE LESS THAN 2–1/2 FT TO PREVENT MECHANICAL DAMAGE, IF PIPING IS INSTALLED UNDER DRIVEWAYS THE DEPTH SHALL BE NO LESS THAN 3 FT.
4. PRIVATE FIRE SERVICE MAINS – PRIVATE FIRE SERVICE MAINS AND APPURTENANCES SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 24, AND THE APPLICABLE PROVISIONS OF NFPA 13 PER 787 SECTION 508.21.
5. TIMING OF INSTALLATION – AN APPROVED PERMANENT WATER SUPPLY CAPABLE OF SUPPLYING THE REQUIRED FIRE FLOW FOR FIRE PROTECTION SHALL BE PROVIDED BY THE DEVELOPER PRIOR TO THE COMMENCEMENT OF CONSTRUCTION TO ALL PREMISES UPON WHICH BUILDINGS OF PORTIONS OF BUILDINGS ARE HEREAFTER CONSTRUCTED OR MOVED INTO OR WITHIN THE JURISDICTION OF RIVERSIDE COUNTY.
6. RISER CLEARANCE – "A NOMINAL GAP OF 4" AROUND ALL RISERS PASSING THROUGH FLOORS SHALL BE PROVIDED" UNLESS OTHERWISE SPECIFIED IN NFPA 13 SECTION 9.3.4.
7. NON–INDICATING VALVES – "A NON–INDICATING VALVE SUCH AS AN UNDERGROUND GATE VALVE WITH APPROVED ROADWAY BOX, COMPLETE WITH T–WRENCH, AND ACCEPTED BY THE AUTHORITY HAVING JURISDICTION, SHALL BE PERMITTED"
8. LICENSED CONTRACTOR – THESE PLANS ARE NOT VALID FOR INSTALLATION UNTIL A CALIFORNIA LICENSED CONTRACTOR IS APPROVED, A JOB CARD IS ISSUED, AND ALL LISTED PIPING MATERIALS ARE APPROVED BY THE RIVERSIDE COUNTY FIRE DEPARTMENT.
9. CONTRACTOR'S MATERIALS AND TEST CERTIFICATE – "BEFORE ASKING FINAL APPROVAL OF AN INSTALLATION BY THE AUTHORITY HAVING JURISDICTION, THE INSTALLING CONTRACTOR SHALL FURNISH A CONTRACTORS MATERIAL AND TEST CERTIFICATE, COUNTER SIGNED BY THE OWNER OR REPRESENTATIVE." A TYPICAL CERTIFICATE IS SHOWN IN FIGURE 10.10.1.
10. ENGINEER'S CERTIFICATION BLOCK – PLANS MUST BE SIGNED BY A REGISTERED LICENSED CIVIL ENGINEER OR CALIFORNIA CERTIFIED CONTRACTOR'S LICENSE WITH THE FOLLOWING CERTIFICATION: "I CERTIFY THAT THE DESIGN OF THE WATER SYSTEM IS IN ACCORDANCE WITH RIVERSIDE COUNTY FIRE DEPARTMENT PRESCRIBED REQUIREMENTS".
11. INSTALLER'S KNOWLEDGE – JOINTS SHALL BE ASSEMBLED BY PERSONS FAMILIAR WITH THE PARTICULAR MATERIALS BEING USED AND IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND SPECIFICATIONS PER SECTION 10.3.6.1.
12. BOLTED JOINTS – "ALL BOLTED JOINT ACCESSORIES SHALL BE CLEANED AND THOROUGHLY COATED WITH ASPHALT OR OTHER CORROSION–RETARDING MATERIAL AFTER INSTALLATION" PER SECTION 10.3.6.2.
13. FERROUS METAL – PIPING SHALL BE LINED AND, ADDITIONALLY, STEEL PIPE SHALL BE COATED AND WRAPPED. FOR BURIED PIPE, GALVANIZING, INTERNALLY OR EXTERNALLY, DOES NOT MEET THE REQUIREMENTS OF THIS SECTION 10.1.6.1.
14. ACCEPTANCE TESTING CRITERIA:
    - 14.1. VISUAL INSPECTION – ALL PRIVATE UNDERGROUND SYSTEMS SHALL BE INSPECTED PRIOR TO HYDROSTATIC TESTING.
    - 14.2. HYDROSTATIC TEST – ALL PRIVATE UNDERGROUND SYSTEMS SHALL HYDROSTATICALLY TESTED FOR A PERIOD OF NOT LESS THAN 2 HOURS AT 200PSI OR 50 OVER WORKING PRESSURE. PIPING MAY BE CENTER LOADED BUT, ALL BELLS AND THRUST BLOCKS SHALL BE EXPOSED FOR INSPECTION.
    - 14.3. FLUSH TEST – PRIOR TO CONNECTION OF THE ABOVE GROUND SPRINKLER PIPING A FLUSH SHALL BE WITNESSED BY RIVERSIDE COUNTY FIRE DEPARTMENT AND THE VELOCITY SHALL NOT BE LESS THAN 10 FEET PER SECOND IN ACCORDANCE WITH NFPA 24 2016 EDITION. UPON FIELD APPROVAL FOR THE UNDERGROUND THE CONTRACTORS MATERIAL AND TEST CERTIFICATE MUST BE PRESENTED COUNTER SIGNED BY THE OWNER.

WATER AND SEWER UTILITY NOTES

1. THE CONTRACTOR SHALL CONSTRUCT GRAVITY SEWER LATERALS, CLEANOUTS, GRAVITY SEWER LINES, AND DOMESTIC WATER AND FIRE PROTECTION SYSTEM AS SHOWN ON THESE PLANS. THE CONTRACTOR SHALL FURNISH ALL NECESSARY MATERIALS, EQUIPMENT, MACHINERY, TOOLS, MEANS OF TRANSPORTATION AND LABOR NECESSARY TO COMPLETE THE WORK IN FULL AND COMPLETE ACCORDANCE WITH THE SHOWN, DESCRIBED AND REASONABLY INTENDED REQUIREMENTS OF THE CONTRACT DOCUMENTS AND JURISDICTIONAL AGENCY REQUIREMENTS. IN THE EVENT THAT THE CONTRACT DOCUMENTS AND THE JURISDICTIONAL AGENCY REQUIREMENTS ARE NOT IN AGREEMENT, THE MOST STRINGENT SHALL GOVERN.
2. ALL EXISTING UNDERGROUND UTILITY LOCATIONS SHOWN ARE APPROXIMATE THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS FOR UTILITY LOCATION AND COORDINATION IN ACCORDANCE WITH THE NOTES CONTAINED IN THE GENERAL CONSTRUCTION SECTION OF THIS SHEET. THE CONTRACTOR SHALL ALSO SCOPE THE SEWER LINES ON SITE AND RECORD A DVD.
3. THE CONTRACTOR SHALL RESTORE ALL DISTURBED VEGETATION IN KIND, UNLESS SHOWN OTHERWISE.
4. DEFLECTION OF PIPE JOINTS AND CURVATURE OF PIPE SHALL NOT EXCEED THE MANUFACTURER'S SPECIFICATIONS. SECURELY CLOSE ALL OPEN ENDS OF PIPE AND FITTINGS WITH A WATERTIGHT PLUG WHEN WORK IS NOT IN PROGRESS. THE INTERIOR OF ALL PIPES SHALL BE CLEAN AND JOINT SURFACES WIPED CLEAN AND DRY AFTER THE PIPE HAS BEEN LOWERED INTO THE TRENCH. VALVES SHALL BE PLUMB AND LOCATED ACCORDING TO THE PLANS.
5. ALL PHASES OF INSTALLATION, INCLUDING UNLOADING, TRENCHING, LAYING AND BACK FILLING, SHALL BE DONE IN A FIRST CLASS WORKMANLIKE MANNER. ALL PIPE AND FITTINGS SHALL BE CAREFULLY STORED FOLLOWING MANUFACTURER'S RECOMMENDATIONS. CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE COATING OR LINING IN ANY D.I. PIPE FITTINGS. ANY PIPE OR FITTING WHICH IS DAMAGED OR WHICH HAS FLAWS OR IMPERFECTIONS WHICH, IN THE OPINION OF THE ENGINEER OR OWNER, RENDERS IT UNFIT FOR USE, SHALL NOT BE USED. ANY PIPE NOT SATISFACTORY FOR USE SHALL BE CLEARLY MARKED AND IMMEDIATELY REMOVED FROM THE JOB SITE, AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
6. WATER FOR FIRE FIGHTING SHALL BE AVAILABLE FOR USE PRIOR TO COMBUSTIBLES BEING BROUGHT ON SITE.
7. ALL UTILITY AND STORM DRAIN TRENCHES LOCATED UNDER AREAS TO RECEIVE PAVING SHALL BE COMPLETELY BACK FILLED IN ACCORDANCE WITH THE GOVERNING JURISDICTIONAL AGENCY'S SPECIFICATIONS. IN THE EVENT THAT THE CONTRACT DOCUMENTS AND THE JURISDICTIONAL AGENCY REQUIREMENTS ARE NOT IN AGREEMENT, THE MOST STRINGENT SHALL GOVERN.
8. CONTRACTOR SHALL PERFORM, AT HIS OWN EXPENSE, ANY AND ALL TESTS REQUIRED BY THE SPECIFICATIONS AND/OR ANY AGENCY HAVING JURISDICTION. THESE TESTS MAY INCLUDE, BUT MAY NOT BE LIMITED TO, INFILTRATION AND EXFILTRATION, TELEVISION INSPECTION AND A MANDREL TEST ON GRAVITY SEWER. A COPY OF THE TEST RESULTS SHALL BE PROVIDED TO THE UTILITY PROVIDER, OWNER AND JURISDICTIONAL AGENCY AS REQUIRED.
9. THE EXISTING UTILITIES SHOWN ON THE PLAN ARE BASED ON AVAILABLE RECORDS. THE CONTRACTOR MUST FIELD DETERMINE THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO ANY CONSTRUCTION. REPORT DISCREPANCIES AND POTENTIAL CONFLICTS WITH PROPOSED UTILITIES TO ENGINEER PRIOR TO INSTALLATION OF ANY PIPING.
10. DIMENSIONS PROVIDED ARE TO OUTSIDE PIPE DIAMETERS.
11. ALL WATER LINES ARE TO BE BURIED A MINIMUM OF 40" DEEP, MEASURED TO TOP OF PIPE.
12. WATER PIPE TRENCHING PER CITY OF MORENO VALLEY TYPICAL TRENCH/ PIPE ZONE BACKFILL SCHEMATIC STANDARD W–36.
13. SEWER PIPE TRENCHING PER CITY OF MORENO VALLEY TYPICAL TRENCH/ PIPE ZONE BACKFILL SCHEMATIC STANDARD W–36.
14. CONFIRM UTILITY TIE–IN POINTS IN FIELD AND WITH MEP PLANS PRIOR TO CONSTRUCTION.



THRUST BLOCK BEARING AREAS – S.F.

NOTES:
1. ALL THRUST/ANCHOR BLOCKS SHALL BEAR AGAINST UNDISTURBED SOIL.
2. CONCRETE SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI.
3. ALL ANCHOR RODS AND ANCHOR BOLTS SHALL BE MINIMUM 1/2" DIA. & ANCHOR STRAPS SHALL BE 1/2" X 2" BAR.
4. THRUST BLOCK DESIGN IS BASED ON A WATER PRESSURE OF 200 P.S.I., AND A MAXIMUM ALLOWABLE SOIL BEARING VALUE OF 1500 P.S.F.
5. THE RATIO OF WIDTH TO HEIGHT OF THRUST BLOCKS SHALL NOT EXCEED 1.5 TO 1.

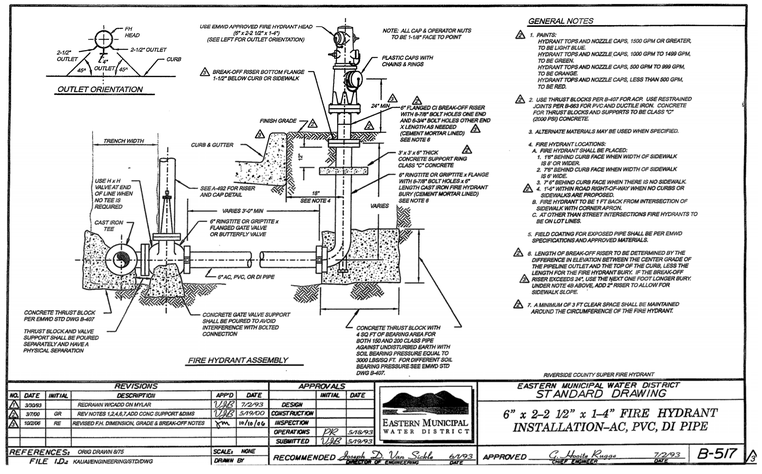
THRUST BLOCK DETAILS

NOT TO SCALE

NFPA 24 Thrust Block Tables

(A.10.8.2 & Figure A.10.8.2)
Based on 200psi internal water pressure
1,500psf soil bearing pressure
Square Feet = {[(Thrust force * (1.5 Safety Factor)]/Soil Bearing Strength}

	Pipe Size	Dead End "T"	90	45	22 1/2
Thrust Forces	4"	3,620	5118	2770	1412
Square Feet		3.62	5.118	2.8	1.4
H x W		2 x 2	2 x 3	1.5 x 2	1 x 1.6
Thrust Forces	6"	7,478	10,576	5,724	2,918
Square Feet		7.5	10.6	5.7	2.9
H x W		2'6 " x 3	3 x 4	2 x 3	1'6" x 2
Thrust Forces	8"	12,866	18,194	9,846	5,020
Square Feet		12.9	18	9.8	5
H x W		3 x 4'6"	3'6" x 5'6"	3 x 3'6"	2 x 2'6"
Thrust Forces	10"	19,354	27,370	14,812	7,552
Square Feet		19.5	27.5	15	8
H x W		4 x 5	5 x 6	3 x 5	2'6" x 3'6"
Thrust Forces	12"	27,370	38,706	20,948	10,680
Square Feet		27.5	39	21	11
H x W		5 x 6	5 x 8	4 x 5'6"	3 x 4



FIRE HYDRANT DETAIL

NOT TO SCALE

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DIGALERT

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2 Working Days Before You Dig
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PENXX–XXXX PERMIT # FWTXX-XXXX

BENCHMARK	BASIS OF BEARING
SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97–100 I.E. N00°27'05"E.

REVIEW BY CITY STAFF

OFFICE	INITIAL	DATE
ENGINEERING DIVISION MANAGER		
LAND DEVELOPMENT		
PLANNING		
TRANSPORTATION		
PARKS AND COMMUNITY SERVICES		
SPECIAL DISTRICTS		
STORM WATER MANAGEMENT PRGM		

MARK	DATE	INITIAL	DESCRIPTION	REC	APPR	DATE
		EOR	REVISION			

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ENGINEERING DIVISION MANAGER/ ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:
MICHAEL L. WOLFE, PE — DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL
REGISTERED PROFESSIONAL ENGINEER — SHEA–MICHAEL ANTI — RCE NO. 78274 — CIVIL — STATE OF CALIFORNIA
8/3/2021

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951–543–9868
UNDER THE SUPERVISION OF:
SHEA–MICHAEL ANTI RCE C78274 — 8/3/2021 DATE

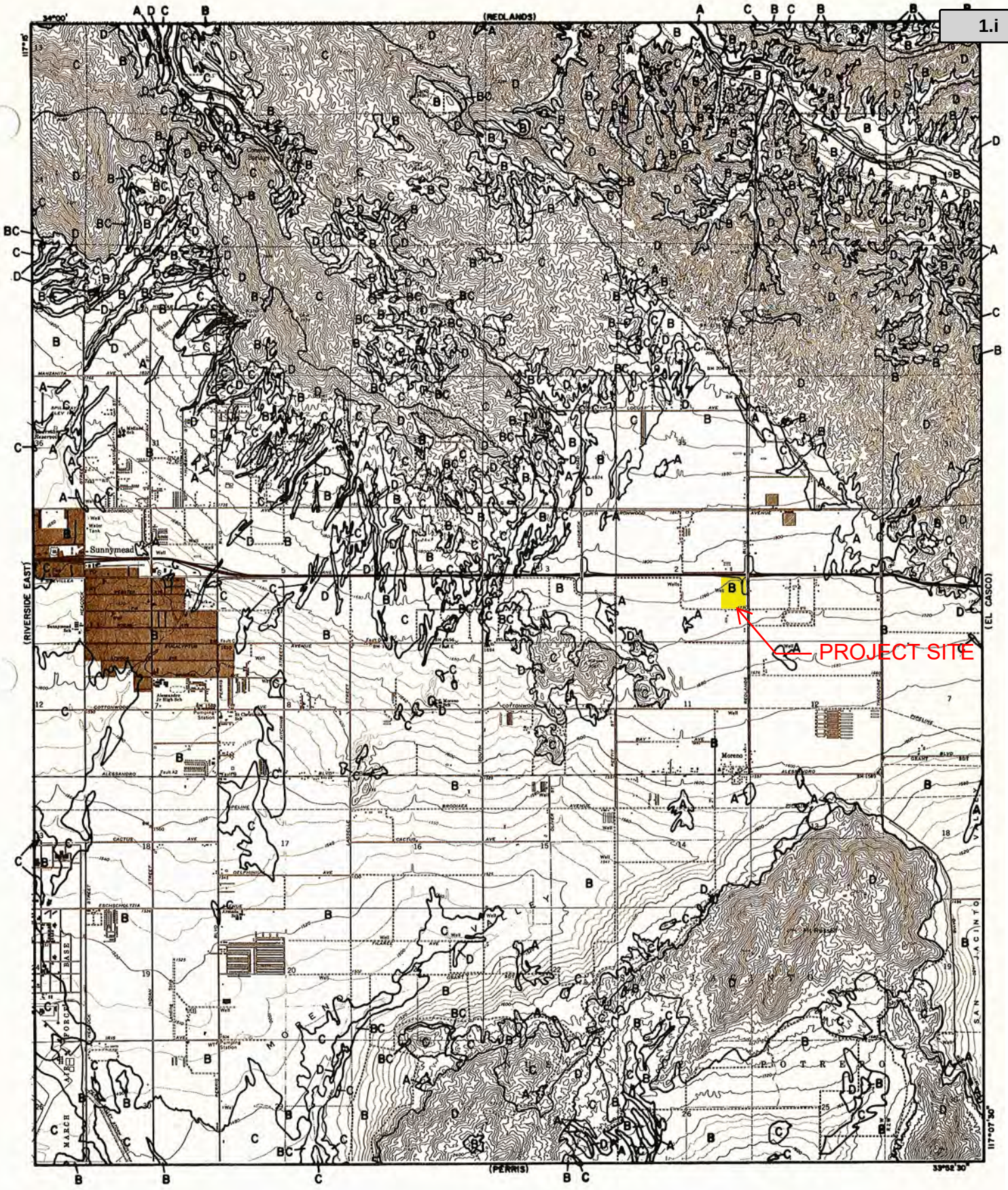
CITY OF MORENO VALLEY

BUILDING PERMIT PLANS
PILOT MORENO VALLEY
ONSITE UTILITY PLANS DETAILS

SHEET 2 OF 2
CITY ID No. LGRXX–XXXX

Appendix D

Hydrology Manual Reference Material



LEGEND

—— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC & WCD

HYDROLOGY MANUAL

N

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR SUNNYMEAD

PLATE C

RAINFALL INTENSITY—INCHES PER HOUR

SUNNYMEAD - MORENO			WOODCREST		
DURATION MINUTES	FREQUENCY 10 YEAR	100 YEAR	DURATION MINUTES	FREQUENCY 10 YEAR	100 YEAR
5	2.84	4.16	5	3.37	5.30
6	2.59	3.79	6	3.05	4.79
7	2.40	3.51	7	2.80	4.40
8	2.25	3.29	8	2.60	4.09
9	2.12	3.10	9	2.44	3.83
10	2.01	2.94	10	2.30	3.62
11	1.92	2.80	11	2.19	3.43
12	1.83	2.68	12	2.08	3.27
13	1.76	2.58	13	1.99	3.13
14	1.70	2.48	14	1.91	3.01
15	1.64	2.40	15	1.84	2.89
16	1.59	2.32	16	1.78	2.79
17	1.54	2.25	17	1.72	2.70
18	1.50	2.19	18	1.67	2.62
19	1.46	2.13	19	1.62	2.54
20	1.42	2.08	20	1.57	2.47
22	1.35	1.98	22	1.49	2.34
24	1.30	1.90	24	1.42	2.23
26	1.25	1.82	26	1.36	2.14
28	1.20	1.76	28	1.31	2.05
30	1.16	1.70	30	1.26	1.98
32	1.12	1.64	32	1.22	1.91
34	1.09	1.59	34	1.18	1.85
36	1.06	1.55	36	1.14	1.79
38	1.03	1.51	38	1.11	1.74
40	1.00	1.47	40	1.07	1.69
45	.95	1.39	45	1.01	1.58
50	.90	1.31	50	.95	1.49
55	.86	1.25	55	.90	1.42
60	.82	1.20	60	.86	1.35
65	.79	1.15	65	.82	1.29
70	.76	1.11	70	.79	1.24
75	.73	1.07	75	.76	1.19
80	.71	1.04	80	.73	1.15
85	.69	1.01	85	.71	1.11
SLOPE = .500			SLOPE = .550		

RCFC & WCD

HYDROLOGY MANUAL

STANDARD INTENSITY–DURATION CURVES DATA

PLATE D-4.1 (6 of 6)

ACTUAL IMPERVIOUS COVER

Land Use (1)	Range-Percent	Recommended Value For Average Conditions-Percent(2)
Natural or Agriculture	0 - 10	0
Single Family Residential: (3)		
40,000 S. F. (1 Acre) Lots	10 - 25	20
20,000 S. F. (½ Acre) Lots	30 - 45	40
7,200 - 10,000 S. F. Lots	45 - 55	50
Multiple Family Residential:		
Condominiums	45 - 70	65
Apartments	65 - 90	80
Mobile Home Park	60 - 85	75
Commercial, Downtown Business or Industrial	80 -100	90

Notes:

1. Land use should be based on ultimate development of the watershed. Long range master plans for the County and incorporated cities should be reviewed to insure reasonable land use assumptions.

2. Recommended values are based on average conditions which may not apply to a particular study area. The percentage impervious may vary greatly even on comparable sized lots due to differences in dwelling size, improvements, etc. Landscape practices should also be considered as it is common in some areas to use ornamental gravels underlain by impervious plastic materials in place of lawns and shrubs. A field investigation of a study area should always be made, and a review of aerial photos, where available may assist in estimating the percentage of impervious cover in developed areas.

3. For typical horse ranch subdivisions increase impervious area 5 percent over the values recommended in the table above.

RCFC & WCD
HYDROLOGY MANUAL

IMPERVIOUS COVER FOR DEVELOPED AREAS

PLATE D-5.6

RUNOFF COEFFICIENT CURVE DATA

The data in the following tables may be used to develop runoff coefficient (C) curves for any combination of runoff index (RI) number and antecedent mositure condition (AMC). For an RI number with an AMC of II (from Plate D-5.5) enter the tables on the following pages and plot the "C" curve data directly on Plate D-5.8. "C" curve data is given for even RI numbers only, but values may easily be interpolated for odd RI numbers.

For an AMC of I or III enter the tabulation on this page with the RI for AMC II, and read the appropriate RI for AMC I or III. Use this revised RI to enter the tables on the following pages to determine "C". For example if RI = 40 for AMC II, then RI = 22 for AMC I and RI = 60 for AMC III.

AMC ADJUSTMENT RELATIONSHIPS

RI FOR AMC II	RI FOR OTHER AMC CONDITIONS: AMC I	AMC III	RI FOR AMC II	RI FOR OTHER AMC CONDITIONS: AMC I	AMC III
10	--	22	55	35	74
11	--	24	56	36	75
12	--	25	57	37	75
13	--	27	58	38	76
14	--	28	59	39	77
15	--	30	60	40	78
16	--	31	61	41	78
17	--	33	62	42	79
18	--	34	63	43	80
19	--	36	64	44	81
20	--	37	65	45	82
21	10	38	66	46	82
22	10	39	67	47	83
23	11	41	68	48	84
24	11	42	69	50	84
25	12	43	70	51	85
26	12	44	71	52	86
27	13	46	72	53	86
28	14	47	73	54	87
29	14	49	74	55	88
30	15	50	75	57	88
31	16	51	76	58	89
32	16	52	77	59	89
33	17	53	78	60	90
34	18	54	79	62	91
35	18	55	80	63	91
36	19	56	81	64	92
37	20	57	82	66	92
38	21	58	83	67	93
39	21	59	84	68	93
40	22	60	85	70	94
41	23	61	86	72	94
42	24	62	87	73	95
43	25	63	88	75	95
44	25	64	89	76	96
45	26	65	90	78	96
46	27	66	91	80	97
47	28	67	92	81	97
48	29	68	93	83	98
49	30	69	94	85	98
50	31	70	95	87	98
51	31	70	96	89	99
52	32	71	97	91	99
53	33	72	98	94	99
54	34	73	99	97	--

RCFC & WCD
HYDROLOGY MANUAL

RUNOFF COEFFICIENT CURVE DATA

PLATE D-5.7 (1 of 12)

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparrel, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	72	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	28	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
URBAN COVERS -					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
AGRICULTURAL COVERS -					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

RCFC & WCD
HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS FOR PERVIOUS AREAS

PLATE E-6.1 (1 of 2)

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
AGRICULTURAL COVERS (cont.) -					
Legumes, Close Seeded (Alfalfa, sweetclover, timothy, etc.)	Poor	66	77	85	89
	Good	58	72	81	85
Orchards, Deciduous (Apples, apricots, pears, walnuts, etc.)		See Note 4			
Orchards, Evergreen (Citrus, avocados, etc.)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
Pasture, Dryland (Annual grasses)	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Pasture, Irrigated (Legumes and perennial grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
Row Crops (Field crops - tomatoes, sugar beets, etc.)	Poor	72	81	88	91
	Good	67	78	85	89
Small Grain (Wheat, oats, barley, etc.)	Poor	65	76	84	88
	Good	63	75	83	87
Vineyard		See Note 4			

Notes:

1. All runoff index (RI) numbers are for Antecedent Moisture Condition (AMC) II.

2. Quality of cover definitions:
   Poor-Heavily grazed or regularly burned areas. Less than 50 percent of the ground surface is protected by plant cover or brush and tree canopy.
   Fair-Moderate cover with 50 percent to 75 percent of the ground surface protected.
   Good-Heavy or dense cover with more than 75 percent of the ground surface protected.

3. See Plate C-2 for a detailed description of cover types.

4. Use runoff index numbers based on ground cover type. See discussion under "Cover Type Descriptions" on Plate C-2.

5. Reference Bibliography item 17.

RCFC & WCD
HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS FOR PERVIOUS AREAS

PLATE E-6.1(2of 2)

Appendix E

Reference Report Excerpt and Plans

Hydrology and Hydraulics Report

for

ALDI Industrial Warehouse

PA08-0097 (Plot Plan)
PA 09-0022 (Tentative Parcel Map)
PA13-0111 (Amended Plot Plan)

Northwest Corner of Eucalyptus Avenue and Redlands Boulevard City of Moreno Valley, CA

October 31, 2013
Revised December 4, 2013

Prepared for:

Aldi Inc.
6000 North Noah Drive
Saxonburg, PA 16056

Prepared by:

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Ontario, CA 91764
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Prepared under the supervision of:

Maurice Murad 12/4/2013

Maurice Murad, P.E. LEED AP, BD+C — Date
Senior Vice President
C33366, Exp. 6/30/2014
HZ Job No. 11-0318-04

CITY ID#4860

Table of Contents

Introduction

The project site consists of a 800,430 square foot industrial warehouse building on approximately 54 acres in the City of Moreno Valley, California. The project site is bound by the 60 Freeway to the north, proposed A Street to the east, Fir Avenue (future Eucalyptus Avenue) to the south, and "paper" Quincy Street to the west. A vicinity map and location map of the project location are provided in Appendix A of this report.

Existing Fir Avenue will be constructed and renamed Eucalyptus Avenue. As it pertains to the proposed condition, this report will use the name Eucalyptus Avenue in lieu of Fir Avenue.

Objectives

The objective of this report is to determine storm water flow rates for this project based on the 100-year storm event for the developed condition, detain the difference between the existing and proposed runoff in an interim condition, analyze the capacity of the existing drainage systems, and design the proposed storm drain systems based on ultimate development.

The drainage concept/study will be consistent with the County of Riverside Master Plan of Drainage for Moreno Valley Storm Drain Line F-2 in Redlands Boulevard and Line F-16 in Eucalyptus Avenue.

Methodology

This hydrology study was prepared using the design criteria and methodology developed by the Riverside County Flood Control and Water Conservation District (RCFC&WCD) and is in accordance with the 1978 Hydrology Manual. Rational Method calculations were performed using the 2011 Advanced Engineering Software (AES) to determine time of concentration (TC) and peak flow rates (Q). The 100-year, 1-hour rainfall depth for the site is 1.15 inches, and the 2-year, 1-hour rainfall depth for the site is 0.48 inches. The site consists of soil type "B", and the runoff coefficient is modeled as "commercial" land cover for the proposed condition.

The WSPG, unit hydrograph, and basin routing calculations were performed using CIVILD software.

Project Drainage Understanding

The project site is currently vacant and is a mix of natural vegetation and bare ground. The property is bound by the 60 Freeway to the north and the center barricade acts as a drainage barrier between the north and the south side of the freeway. There is an existing earthen swale that collects runoff from the freeway and routes it east around the site to the existing drainage ditch adjacent to Redlands Boulevard.

The natural drainage pattern of the subject property is a sheet flow condition generally from northwest to southeast at a rate ranging from 2-percent to 3-percent throughout the site. The sheet flow condition continues south of the project site as the runoff crosses Fir Avenue (future

sheet flow condition continues south of the project site as the runoff crosses Fir Avenue (future Eucalyptus Avenue), which currently exists as a dirt road, and ultimately makes its way to the existing earthen drainage ditch along the west side of Redlands Boulevard.

At the northeast end of the project site there is an existing 51" to 60" inch RCP culvert that picks up flow from the north side of the 60 Freeway and outlets into the existing drainage ditch on the west side of Redlands Boulevard south of the eastbound off-ramp. At the request of the County Flood Control District and the City of Moreno Valley, we have evaluated the amount of runoff that can be passed through the existing storm drain system with the assumption that the existing 51" storm drain main is actually a 60" storm drain main in Redlands Boulevard and we found that a 60-inch main in Redlands can convey 334 cfs. See Appendix F for flow capacity calculations. The elevation at which runoff will overtop the drainage course at the Line F-2 headwall, north of the 60 Freeway, and continue downstream is approximately 1766.00. The runoff would then spill to a drainage ditch along the north side of the 60 Freeway and continue easterly under the existing Redlands Boulevard bridge.

At the northwest corner of the project site, at the projection of Quincy Street and the intersection with the 60 Freeway, there is an existing culvert (3-60" CMP's) that conveys runoff from the northwest of the freeway through the culvert and then to the south. The existing culvert appears to be partially blocked by some sediment and weed growth. The MDP shows that 55 cfs of runoff drains across the freeway at this location and is tributary to Line G-7 in Quincy Street. However, the city of Moreno Valley requested that we use 550 cfs along our property and evaluate the depth of flow. See Appendix G for the capacity calculations. At the request of the City of Moreno Valley, a scour wall will be constructed along the entire westerly side of the project site to protect the developed site.

The development intends to stay consistent with the natural drainage pattern and to put in place the necessary facilities to accommodate the development of the project site and to be in compliance with the current Moreno Master Drainage Plan (MDP).

Per the recent updated MDP, 265 cfs will be released from the Quincy Basin, north of the 60 Freeway, and will be conveyed southerly along our project frontage, however, the City of Moreno Valley has requested that we use 550 cfs for the evaluation of the existing Quincy Channel capacity. The proposed concrete scour wall will not affect the hydraulic capacity of the existing channel. Scour wall depth was determined utilizing the L.A.C.F.C.D. hydrology design manual criteria. See Appendix G for the Quincy Channel Capacity Analysis and scour depth analysis.

Along the south side of the project, within the Eucalyptus Avenue right-of-way, the developer will install the drainage facilities consistent with the Current MDP, Line F-16, as shown on the Hydrology Map in Appendix E. The County requested that F-16 be designed to convey the 100-year peak storm event runoff.

Along the east side of the property, the existing 51-inch culvert (Line F-2) will remain in place to convey the runoff from north of the 60 freeway to the existing drainage ditch on the west side of Redlands Boulevard. In addition, this project proposes to extend a 60-inch main southerly to the intersection of Eucalyptus Avenue and Redlands Boulevard where it will confluence with Line F-16 and continue southerly in a 72-inch RCP to an outlet point south of Eucalyptus Avenue. According to the hypothetical evaluation of the existing Line F-2 system and using a

60-inch main per the current MDP, a flow of 334 cfs is anticipated. The 334 cfs will be added to the 134.49 cfs from Line F-16 and have a total of 468.49 cfs downstream of Eucalyptus Avenue in the proposed 72-inch RCP main.

The Line F-2 outlet structure rip-rap size and length was determined using the total Q of 468.49 cfs. The rock size for the rip-rap section was evaluated using the LA County Flood Control District design criteria. The rock gradation was determined using the CalTrans design criteria and the rip-rap length was determined by using the Orange County Public Works Department and LA County Flood Control District design recommendations. See Appendix G for these supplemental calculations.

The proposed on-site system will consist of a series of underground pipes that collects the runoff from around the proposed facility and will drain to the proposed public storm drain facility (MDP Line F-16), and ultimately will flow to MDP Line F-2 and then to the existing drainage ditch along the west side of Redlands Boulevard.

The proposed site has been divided into five tributary drainage areas: B, C, D, F and G. Each of the tributary areas has been named after the proposed storm drain it is collected by. Areas C, D, F, and G drain to the southerly on-site infiltration basin and then to public storm drain line F-16. Tributary area B is largely made up of offsite area, with a small portion of on-site vegetated slope areas located along Eucalyptus Ave. and A Street. This drainage area is collected by proposed public storm drain Line F-16.

Hydraulics

Hydraulic calculations were performed using WSPGW and AES Pipeflow software and are contained in Appendix C of this report. The most downstream storm drain conveyance for this project is proposed public storm drain, MDP Line F-2. This line will connect to the existing 51-inch RCP along the west side of Redlands Boulevard and convey upstream, offsite runoff south, where it confluences with proposed MDP Line F-16, continues south, and will eventually discharge to an existing open channel south of Eucalyptus Avenue. Per the Moreno MDP, this line will ultimately continue south as an underground storm drain, therefore, a conservative approach was taken when setting the downstream control elevation as the soffit elevation of 1727.85 for the water surface in proposed storm drain Line F-2. For the water surface elevation for proposed Line F-16, we used water surface elevation 1733.773 which is the conservative higher elevation at the junction of F-16 with F-2. See Appendix F for the alternate Line F-2 hydraulic calculations.

The proposed on-site storm drains collect runoff from the site as described in this report and discharge to the proposed on-site infiltration basin/interim detention basin. The proposed infiltration basin will capture 81,875 cubic feet of storm water with a maximum ponding elevation of 1746.00. In the interim the infiltration basin will also act as a detention basin and will be allowed to detain the difference of runoff from the proposed developed site to values equivalent to the existing undeveloped condition. The maximum ponding elevation for the detention basin will be 1747.93. In the event that the outlet riser is unable to discharge the required runoff into the downstream storm drain system the basin will overflow at an emergency spillway located at the south east corner of the infiltration/detention basin. Supplemental spillway calculations are provided in Appendix G. See Appendix H for the catch basin sizing calculations.

Infiltration Basin and Interim Detention Basin

The infiltration basin will also be used as a temporary detention basin for flood mitigation purposes. Until such time as ultimate downstream drainage improvements are constructed along Redlands Boulevard, the proposed development cannot discharge more runoff than is currently being discharged in its existing undeveloped state. In order to determine the amount of runoff to be detained, unit hydrographs for the proposed 2, 10, and 100 year storms using 1, 3, 6, and 24 hour hydrographs have been run for the 53.6 acres tributary to node 106 at the intersection of Eucalyptus and A Street. For comparison purposes the existing hydrographs have been run using the same tributary drainage boundary.

Next, unit hydrographs were run for the proposed areas tributary to the detention basin (45.1 acres) and the detention basin's size, depth, and outlet structure were designed to limit outflow based on the allowable discharge calculated at node 106. We have assumed that the remaining 8.5 acres that is not tributary to the detention basin generates a Q equal to the overall 53.6 acre Q minus the Q from the 45.1 acre sub-areas that are tributary to the on-site basin. Whatever the difference is between that remainder Q and the existing condition 53.6 acre Q is what we will be allowed to discharge from the detention/infiltration basin.

Appendix I contains depth vs. outflow vs. storage relationships, lag time calculations, outlet structure details, summary tables of the routing results for each storm scenario, and the Unit Hydrograph and Basin Routing Calculations for the 2, 10, and 100 year, 24 hour events for the infiltration/interim detention basin. Lag time calculations were performed in accordance with Riverside County Hydrology manual. Due to the irregularity of the proposed tributary areas, Lca was assumed to be one-half of watershed length (L). The supporting calculations for the 1, 3, and 6 hour durations for the basin are not included in the report as they were prepared in the same manner as the 24 hour calculations and resulting discharges were well below the allowable discharges.

The summary tables show the combined discharge after routing from the basin. In all cases, the proposed discharge is than the allowable discharge. The basin is large enough to completely store the volume for many of the 12 storm events.

List of Appendices

B-2
Proposed 100 Year Hydrology

```
 ************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
          (c) Copyright 1982-2011 Advanced Engineering Software (aes)
                    (Rational Tabling Version 18.0)
                Release Date: 07/01/2011  License ID 1202

                        Analysis prepared by:

                          Huitt-Zollars, Inc.
                        3990 Concours, Suite 330
                          Ontario CA. 92764
                             909-941-7799

 ************************** DESCRIPTION OF STUDY **************************
* ALDI INDUSTRIAL WAREHOUSE                                               *
*                                                                         *
*  Q100 ANALYSIS                                                          *
 ************************************************************************

  FILE NAME: 3ALDI100.DAT
  TIME/DATE OF STUDY: 11:11 09/16/2013
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.480
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.150
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.150
  SLOPE OF INTENSITY DURATION CURVE = 0.4800
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-   CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  =====  ======  =====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00  0.0313  0.167  0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *PIPE MAY BE SIZED TO HAVE A FLOW CAPACITY LESS THAN
   UPSTREAM TRIBUTARY PIPE.*

************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
```

```
 ** CONFLUENCE DATA **
 STREAM      RUNOFF        Tc       INTENSITY       AREA
 NUMBER       (CFS)      (MIN.)    (INCH/HOUR)     (ACRE)
    1         96.99      19.43         1.976         50.55
    2          8.31       8.60         2.922          3.05

 ***********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 *****************************************************************************

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF        Tc       INTENSITY
  NUMBER       (CFS)      (MIN.)    (INCH/HOUR)
     1         51.24       8.60         2.922
     2        102.61      19.43         1.976

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     102.61   Tc(MIN.) =   19.43
  TOTAL AREA(ACRES) =       53.6
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE    106.00 =    2979.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    111.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1727.96  DOWNSTREAM(FEET) =  1727.14
  FLOW LENGTH(FEET) =   275.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  43.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.50
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     102.61
  PIPE TRAVEL TIME(MIN.) =   0.61    Tc(MIN.) =   20.04
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE    111.00 =    3254.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   20.04
  RAINFALL INTENSITY(INCH/HR) =   1.95
  TOTAL STREAM AREA(ACRES) =    53.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    102.61

****************************************************************************
  FLOW PROCESS FROM NODE    107.00 TO NODE    108.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
==========================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS COMMERCIAL
   TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   320.00
   UPSTREAM ELEVATION(FEET) =   1761.00
   DOWNSTREAM ELEVATION(FEET) =   1754.10
   ELEVATION DIFFERENCE(FEET) =      6.90
   TC = 0.303*[(  320.00**3)/(     6.90)]**.2 =    6.560
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.327
   COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8784
   SOIL CLASSIFICATION IS "B"
   SUBAREA RUNOFF(CFS) =      0.96
   TOTAL AREA(ACRES) =      0.33   TOTAL RUNOFF(CFS) =      0.96

**************************************************************************
   FLOW PROCESS FROM NODE    108.00 TO NODE    109.00 IS CODE =  51
--------------------------------------------------------------------------
   >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
   ELEVATION DATA: UPSTREAM(FEET) =   1754.10  DOWNSTREAM(FEET) =   1738.60
   CHANNEL LENGTH THRU SUBAREA(FEET) =   600.00   CHANNEL SLOPE =  0.0258
   CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  99.000
   MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.50
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.676
   COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8747
   SOIL CLASSIFICATION IS "B"
   TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      5.60
   TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.65
   AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   3.77
   Tc(MIN.) =   10.33
   SUBAREA AREA(ACRES) =     3.91       SUBAREA RUNOFF(CFS) =     9.15
   TOTAL AREA(ACRES) =      4.2         PEAK FLOW RATE(CFS) =     10.12

   END OF SUBAREA CHANNEL FLOW HYDRAULICS:
   DEPTH(FEET) =  0.13   FLOW VELOCITY(FEET/SEC.) =   3.23
   LONGEST FLOWPATH FROM NODE    107.00 TO NODE    109.00 =     920.00 FEET.

**************************************************************************
   FLOW PROCESS FROM NODE    109.00 TO NODE    110.00 IS CODE =  31
--------------------------------------------------------------------------
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
   ELEVATION DATA: UPSTREAM(FEET) =  1728.13  DOWNSTREAM(FEET) =  1727.44
   FLOW LENGTH(FEET) =    41.00   MANNING'S N =  0.013
   DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.8 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =   8.28
   ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
   PIPE-FLOW(CFS) =      10.12
   PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   10.41
   LONGEST FLOWPATH FROM NODE    107.00 TO NODE    110.00 =     961.00 FEET.

**************************************************************************
   FLOW PROCESS FROM NODE    110.00 TO NODE    110.00 IS CODE =  81
--------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.666
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8746
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =     0.73   SUBAREA RUNOFF(CFS) =     1.70
  TOTAL AREA(ACRES) =        5.0   TOTAL RUNOFF(CFS) =      11.82
  TC(MIN.) =   10.41

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1727.44  DOWNSTREAM(FEET) =  1727.14
  FLOW LENGTH(FEET) =    23.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.86
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.82
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   10.46
  LONGEST FLOWPATH FROM NODE    107.00 TO NODE    111.00 =     984.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.46
  RAINFALL INTENSITY(INCH/HR) =   2.66
  TOTAL STREAM AREA(ACRES) =     4.97
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.82

  ** CONFLUENCE DATA **
  STREAM      RUNOFF        Tc       INTENSITY       AREA
  NUMBER       (CFS)      (MIN.)    (INCH/HOUR)     (ACRE)
      1       102.61     20.04         1.947          53.60
      2        11.82     10.46         2.660           4.97

 ***********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF        Tc       INTENSITY
  NUMBER       (CFS)      (MIN.)    (INCH/HOUR)
      1        65.37     10.46         2.660
      2       111.26     20.04         1.947
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     111.26   Tc(MIN.) =    20.04
  TOTAL AREA(ACRES) =       58.6
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE    111.00 =    3254.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.947
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8685
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =     0.63   SUBAREA RUNOFF(CFS) =     1.07
  TOTAL AREA(ACRES) =       59.2   TOTAL RUNOFF(CFS) =     112.32
  TC(MIN.) =   20.04

****************************************************************************
  FLOW PROCESS FROM NODE    111.00 TO NODE    116.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1727.14  DOWNSTREAM(FEET) =  1726.09
  FLOW LENGTH(FEET) =   350.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  43.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.77
  ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     112.32
  PIPE TRAVEL TIME(MIN.) =   0.75    Tc(MIN.) =   20.79
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE    116.00 =    3604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    116.00 TO NODE    116.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   20.79
  RAINFALL INTENSITY(INCH/HR) =   1.91
  TOTAL STREAM AREA(ACRES) =    59.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    112.32

****************************************************************************
  FLOW PROCESS FROM NODE    112.00 TO NODE    113.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   280.00
  UPSTREAM ELEVATION(FEET) =   1769.00
  DOWNSTREAM ELEVATION(FEET) =   1762.50
  ELEVATION DIFFERENCE(FEET) =      6.50
```

```
  TC = 0.303*[(  280.00**3)/(     6.50)]**.2 =    6.128
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.438
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8790
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      1.84
  TOTAL AREA(ACRES) =      0.61   TOTAL RUNOFF(CFS) =      1.84

****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    114.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1762.50  DOWNSTREAM(FEET) =   1738.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1430.00   CHANNEL SLOPE =  0.0171
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  99.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.50
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.275
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8716
  SOIL CLASSIFICATION IS "B"
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.11
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.85
  AVERAGE FLOW DEPTH(FEET) =   0.17   TRAVEL TIME(MIN.) =   8.35
  Tc(MIN.) =   14.48
  SUBAREA AREA(ACRES) =    10.99       SUBAREA RUNOFF(CFS) =   21.80
  TOTAL AREA(ACRES) =      11.6        PEAK FLOW RATE(CFS) =      23.64

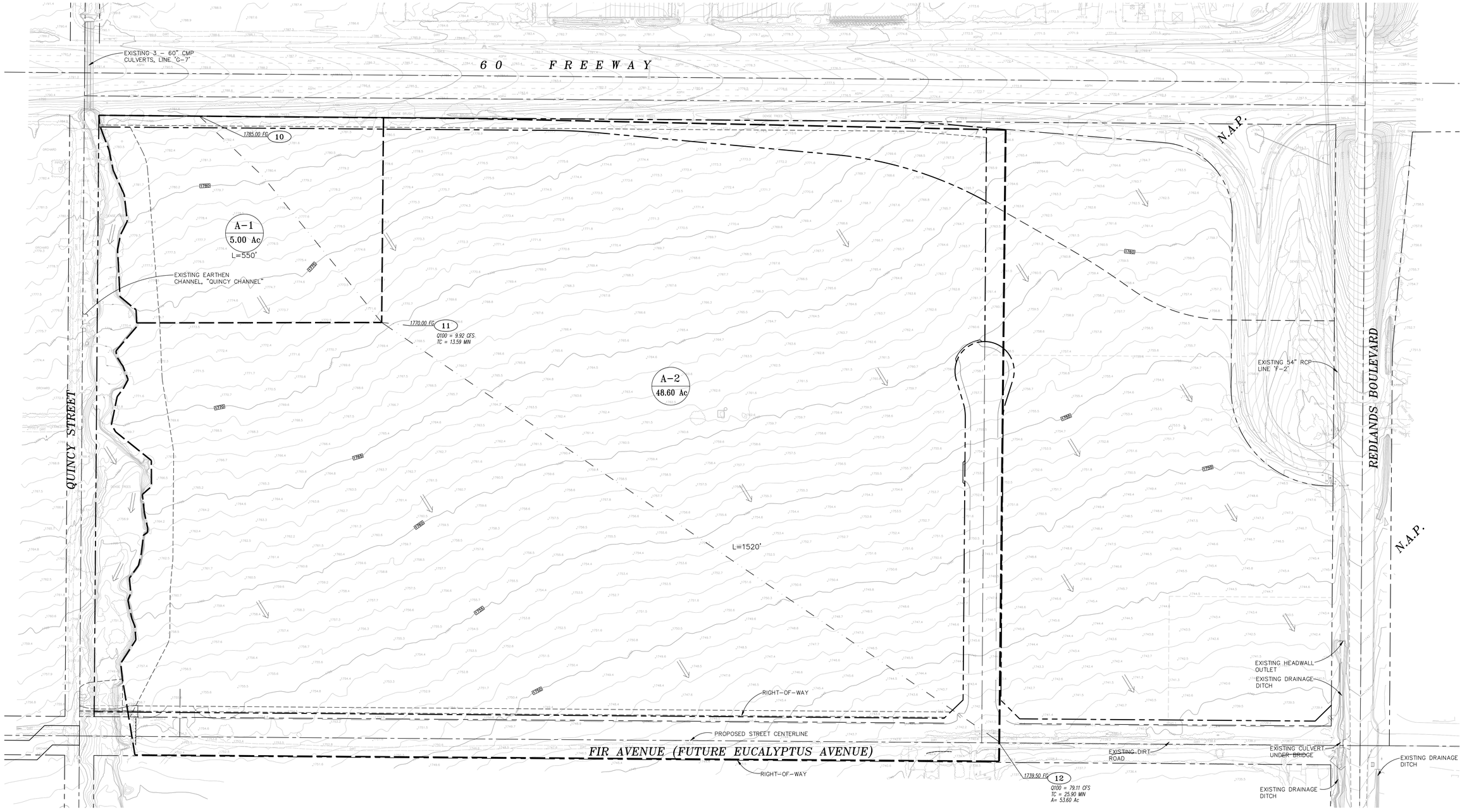
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.22   FLOW VELOCITY(FEET/SEC.) =   3.28
  LONGEST FLOWPATH FROM NODE    112.00 TO NODE    114.00 =    1710.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    114.00 TO NODE    115.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1727.31  DOWNSTREAM(FEET) =  1727.24
  FLOW LENGTH(FEET) =    33.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  26.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.56
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      23.64
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   14.60
  LONGEST FLOWPATH FROM NODE    112.00 TO NODE    115.00 =    1743.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    115.00 TO NODE    115.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.266
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8715
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    1.03   SUBAREA RUNOFF(CFS) =    2.03
  TOTAL AREA(ACRES) =      12.6   TOTAL RUNOFF(CFS) =      25.67
  TC(MIN.) =   14.60
```

Appendix D

Existing Condition Hydrology Map



LEGEND

- 10 / 85.50 FG — HYDROLOGY MODEL NODE NUMBER / ELEVATION AT NODE
- A-1 / #### Ac — HYDROLOGIC DRAINAGE AREA # / TRIBUTARY AREA IN ACRES
- L=926' — LENGTH OF FLOW PATH
- DRAINAGE BOUNDARY
- FLOW PATH
- DIRECTION OF FLOW

SCALE: 1"= 80'

GRAPHIC SCALE

80 40 0 40 80 160 320

(IN FEET)
1"=80'

REGISTERED PROFESSIONAL ENGINEER
MAURICE H. MURAD
No. 33366
Expiration 6-30-10
CIVIL
STATE OF CALIFORNIA

REV	DESCRIPTION	DATE

EXISTING CONDITION HYDROLOGY MAP

FOR
ALDI INDUSTRIAL WAREHOUSE (PA08-0097)
60 FREEWAY & REDLANDS BOULEVARD
CITY OF MORENO VALLEY

HUITT-ZOLLARS

MAURICE H. MURAD — 33366 — 6-30-10

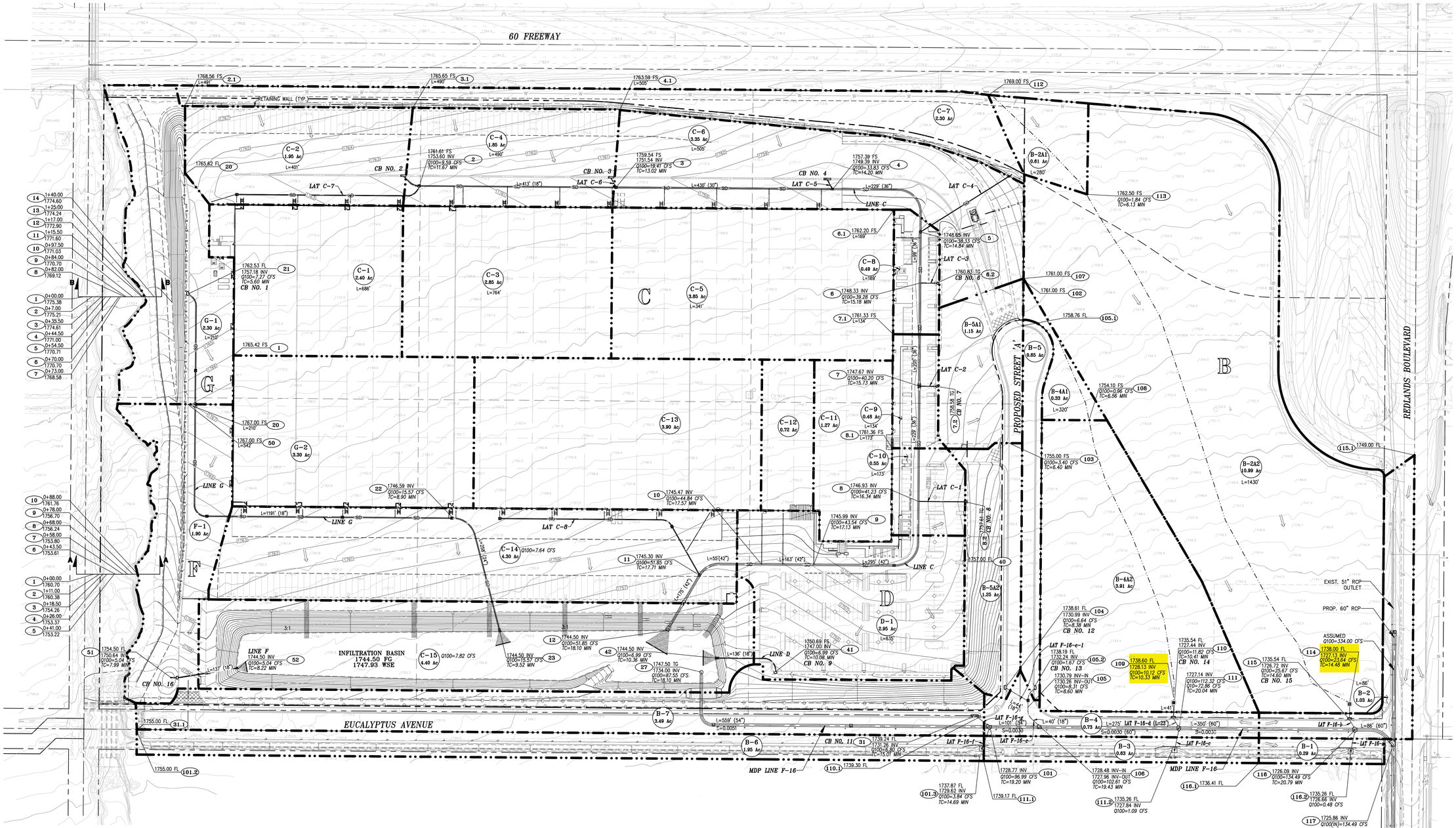
M.H.M.	
H-Z STAFF	
M.H.M.	

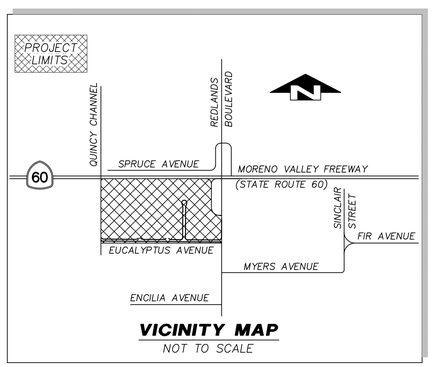
SHEET 1 OF 1 SHEETS

HZ PROJ: 11-0318-04

Appendix E

Proposed Condition Hydrology Map





VICINITY MAP
NOT TO SCALE

LEGEND

- 10 — 85.50 FG — HYDROLOGY MODEL NODE NUMBER / ELEVATION AT NODE
- A-1 — 1.00 Ac — L=926' — HYDROLOGIC DRAINAGE AREA # / TRIBUTARY AREA IN ACRES / LENGTH OF FLOW PATH
- DRAINAGE BOUNDARY
- FLOW PATH
- DIRECTION OF FLOW

GRAPHIC SCALE
80 40 0 40 80 160 320
(IN FEET)
1" = 80'

REGISTERED PROFESSIONAL ENGINEER MAURICE H. MURAD NO. 33366 EXPIRATION 6-30-2014 CIVIL STATE OF CALIFORNIA

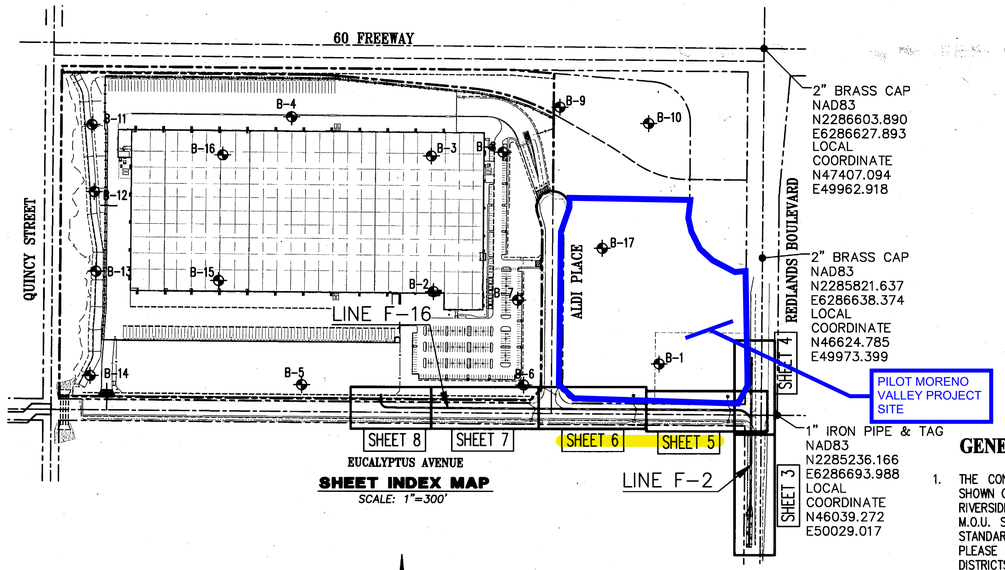
HYDROLOGY MAP
FOR
ALDI INDUSTRIAL WAREHOUSE
REDLANDS BOULEVARD & EUCALYPTUS AVENUE
CITY OF MORENO VALLEY

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
3990 CONCOURS • SUITE 330 • ONTARIO, CALIFORNIA 91764
PHONE (909) 941-7799 • FAX (909) 941-7789

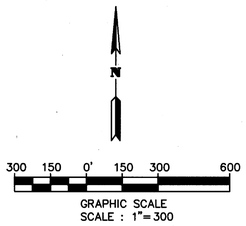
APPROVED BY		R.C.E.	EXPIRES	DATE
MAURICE H. MURAD		33366	6-30-14	

DESIGNED BY	SHEET
M.H.M.	1 OF 1 SHEETS
DRAWN BY	
H-Z STAFF	
CHECKED BY	
M.H.M.	
FIELD BOOK	JOB NO.

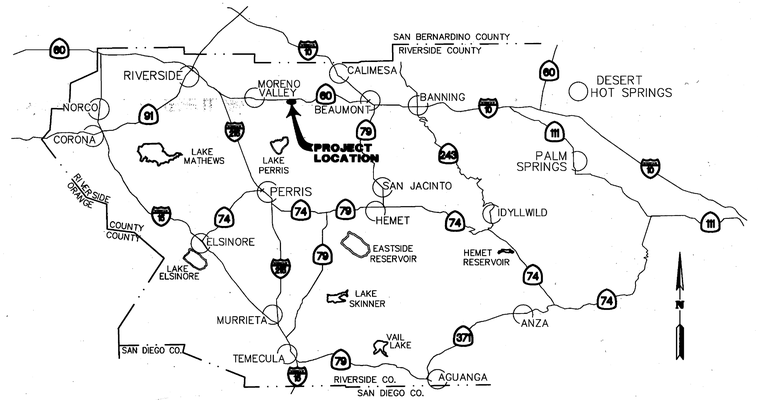
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT



SHEET INDEX MAP
SCALE: 1"=300'



GRAPHIC SCALE
SCALE : 1"= 300



VICINITY MAP
NOT TO SCALE

R.C.F.C. & W.C.D. STANDARD DRAWINGS

CB 100	CATCH BASIN No. 1
CB 103	MANHOLE FRAME AND COVER
CB 105	DETAIL OF CATCH BASIN OPENING & INSTALLATION DETAILS/REMOVABLE PROTECTION BAR FOR C.B.
CB 106	CATCH BASIN REINFORCEMENT
CB 109	SPECIAL CONNECTIONS TO CATCH BASIN
CB 110	CONCRETE DROP INLET
LD 201	LOCAL DEPRESSION No. 2
JS 226	JUNCTION STRUCTURE No. 1
JS 227	JUNCTION STRUCTURE No. 2
JS 228	JUNCTION STRUCTURE No. 3
JS 229	JUNCTION STRUCTURE No. 4
JS 231	JUNCTION STRUCTURE No. 6
MH 252	MANHOLE NO. 2
MH 253	MANHOLE NO. 3
MH 254	MANHOLE NO. 4
MH 255	MANHOLE FRAME & COVER NON-ROCKING
MH 257	MANHOLE SHAFT FOR CAST PIPE
MH 259	STANDARD DROP STEP
TS 301	TRANSITION STRUCTURE No. 1
CH 326	TRAPEZOIDAL CHANNEL DETAILS
CH 329	TRANSITION STRUCTURAL DETAILS
BX 401	SINGLE CELL R.C.B. STRUCTURAL DETAILS
M 801	CHAIN LINK FENCE DETAILS
M 803	CONCRETE COLLAR FOR PIPE
M 806	PIPE SUPPORTS ACROSS TRENCHES
M 808	REMODELING DETAILS – HOUSE CONNECTION SEWERS
M 814	ABBREVIATIONS AND SYMBOLS
M 815	BEDDING AND PAY LINES
M 816	CONCRETE BULKHEAD
M 819	MAXIMUM CHORD LENGTHS FOR CURVED SECTIONS

LEGEND

SOIL BORING LOCATION

SHEET INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	CONSTRUCTION NOTES AND DETAILS
3–8	STORM DRAIN PLAN & PROFILE SHEETS
9–11	STORM DRAIN LATERAL PROFILES

GENERAL NOTES

1. THE CONTRACTOR SHALL CONSTRUCT THE FLOOD CONTROL IMPROVEMENTS SHOWN ON THE DRAWINGS IN CONFORMANCE WITH THE REQUIREMENTS OF THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICTS M.O.U. STANDARD SPECIFICATIONS DATED JUNE 24, 2008, AND RCFC&WCD STANDARD MANUAL. FOR THE LATEST DRAWINGS OF THE STANDARD MANUAL, PLEASE REFER TO THE "PUBLICATIONS AND RECORDS" PAGE FOUND ON THE DISTRICTS WEBSITE.
2. CONTACT THE ENCROACHMENT PERMIT ENGINEER AT 951.955.1266 IF AN ENCROACHMENT PERMIT IS REQUIRED FROM RIVERSIDE COUNTY FLOOD CONTROL. AFTER THE PERMIT IS ISSUED THE DISTRICT MUST BE NOTIFIED ONE WEEK PRIOR CONSTRUCTION.
3. CONTACT CONTRACT ADMINISTRATION AT 951.955.1288 IF CONSTRUCTION INSPECTION WILL BE PERFORMED BY RIVERSIDE COUNTY FLOOD CONTROL. THE DISTRICT MUST BE NOTIFIED TWENTY DAYS (20) PRIOR TO CONSTRUCTION.
4. ALL STATIONING REFERS TO CENTERLINE OF CONSTRUCTION UNLESS OTHERWISE NOTED.
5. STATIONING FOR LATERALS AND CONNECTOR PIPE REFER TO THE CENTERLINE INTERSECTION STATIONS.
6. FORTY-EIGHT HOURS BEFORE EXCAVATION, CALL UNDERGROUND SERVICE ALERT 1.800.227.2600.
7. ALL ELEVATIONS SHOWN ARE IN FEET AND DECIMALS THEREOF BASED ON THE NATIONAL GEODETIC VERTICAL DATUM (NGVD 29).
8. ALL COORDINATES ARE SHOWN IN FEET AND DECIMALS THEREOF BASED ON THE AN ASSUMED GROUND COORDINATE SYSTEM.
9. ALL CROSS SECTIONS ARE TAKEN LOOKING DOWNSTREAM.
10. ELEVATIONS OF UTILITIES ARE APPROXIMATE UNLESS OTHERWISE NOTED.
11. UNLESS OTHERWISE SPECIFIED, MINIMUM STREET RECONSTRUCTION SHALL BE 4" TYPE "B" HOT MIX ASPHALT OVER 6" CLASS 2 AGGREGATE BASE OR AS SPECIFIED BY THE ENGINEER.
12. OPENINGS RESULTING FROM THE CUTTING OR PARTIAL REMOVAL OF EXISTING CULVERTS, PIPES OR SIMILAR STRUCTURES TO BE ABANDONED SHALL BE SEALED WITH 6" OF CLASS "B" CONCRETE.
13. PIPE CONNECTED TO THE MAINLINE PIPE SHALL CONFORM TO JUNCTION STRUCTURE NO. 4 (JS 229) UNLESS OTHERWISE NOTED.
14. PIPE BEDDING SHALL CONFORM TO RCFC&WCD STD. DWG. NO. M815 EXCEPT FOR COVER <2 FEET. FOR COVER <2 FEET, CONCRETE SLURRY (2000 PSI – 2 SACK) SHALL BE USED. THE ENTIRE TRENCH SHALL BE SLURRY EXTENDING 4 INCHES MINIMUM AND 12 INCHES MAXIMUM ABOVE THE TOP OF THE PIPE.
15. B-1 INDICATES SOIL BORING LOCATIONS BASED ON THE SOILS REPORT DATED JANUARY 23, 2012. LOCATIONS SHOWN ARE APPROXIMATE.
16. "V" IS THE DEPTH OF CATCH BASINS MEASURED FROM THE TOP OF CURB TO INVERT OF CONNECTOR PIPE.
17. CATCH BASINS SHALL BE LOCATED SO THAT LOCAL DEPRESSION SHALL BEGIN AT EXISTING CURB RETURN JOINT, UNLESS OTHERWISE SPECIFIED.
18. ALL CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS AND OTHER EXISTING IMPROVEMENTS TO BE RECONSTRUCTED IN KIND AND AT THE SAME ELEVATION AND LOCATION AS THE EXISTING IMPROVEMENTS UNLESS OTHERWISE NOTED.
19. STANDARD DRAWINGS CALLED FOR ON THE PLAN AND PROFILE SHALL CONFORM TO DISTRICT STANDARD DRAWINGS UNLESS NOTED OTHERWISE.
20. THE CONTRACTOR IS REQUIRED TO CALL ALL UTILITY AGENCIES REGARDING TEMPORARY SHORING AND SUPPORT REQUIREMENTS FOR THE VARIOUS UTILITY LINES SHOWN ON THESE PLANS.
21. DURING ROUGH GRADING OPERATIONS AND PRIOR TO CONSTRUCTION OF PERMANENT DRAINAGE STRUCTURES, TEMPORARY DRAINAGE CONTROL SHOULD BE PROVIDED TO PREVENT PONDING WATER AND DAMAGE TO ADJACENT PROPERTIES.
22. APPROVAL OF THESE PLANS BY THE RIVERSIDE COUNT FLOOD CONTROL AND WATER CONSERVATION DISTRICT DOES NOT RELIEVE THE DEVELOPER'S ENGINEER OF RESPONSIBILITY FOR THE ENGINEERING DESIGN. IF FIELD CHANGES ARE REQUIRED, IT WILL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER TO MAKE THE NECESSARY CORRECTIONS.
23. THE CONTRACTOR OR DEVELOPERS SHALL SECURE ALL REQUIRED ENCROACHMENT AND/OR STATE AND FEDERAL REGULATORY PERMITS PRIOR TO THE COMMENCEMENT OF ANY WORK.
24. THE CONCRETE COATING ON THE INSIDE OF ALL REINFORCED CONCRETE PIPES MUST BE INCREASED TO PROVIDE A MINIMUM OF 1-1/2 INCHES OVER THE REINFORCING AND INCREASED TO A MINIMUM OF 3-1/2 INCHES OVER REINFORCING FOR BOX CULVERT, WHEN DESIGN VELOCITIES EXCEED 20 FEET PER SECOND. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE F'C=5,000 PSI FOR VELOCITIES EXCEEDING 20 FEET PER SECOND AND F'C=6,000 PSI FOR VELOCITIES EXCEEDING 30 FEET PER SECOND.
25. CONSTRUCTION JOINTS FOR CALTRANS STANDARD REINFORCED CONCRETE BOX SHALL BE PLACED ACCORDING TO RCFC&WCD STANDARD DRAWING NO. BOX 401.

PA08-0097 (PLOT PLAN)
P13-111 (AMENDED PLOT PLAN)
PA09-0022 (TENTATIVE PARCEL MAP)

CITY OF MORENO VALLEY APPROVALS
PA09-0022 CITY ID# 4898

RECOMMENDED BY: for PREM KUMAR, DEPT. PUBLIC WORKS DIR./ASST. CITY ENGINEER, R.C.E. NO. C52463 — DATE 3/3/14
APPROVED BY: AHMAD R. ANSARI, PUBLIC WORKS DIRECTOR/CITY ENGINEER, R.C.E. NO. C51318 — DATE 3/4/14

THESE PLANS HAVE BEEN REVIEWED FOR CONFORMANCE WITH CITY STANDARDS AND PRACTICES AND WE ARE RECOMMENDING THE PLANS FOR CITY APPROVAL
RCE # 34283 — DATE 2/19/14 — MDC

DUPLICATE OF ORIGINAL – DO NOT REVISE

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

BASIS OF BEARINGS:
BEARINGS SHOWN HEREON ARE BASED ON THE BEARING BETWEEN THE CALIFORNIA SPATIAL REFERENCE CENTER (CSRC) CONTINUOUS OPERATING REFERENCE STATIONS (CORS) PPSF AND MLFP BEING NORTH 53°20'17.68" WEST PER RECORDS ON FILE WITH THE CSRC.
BENCH MARK: IVF55 ELEVATION 1785.67
LOCATION
BRASS DISK IN TOP OF HEADWALL, NORTHWEST CORNER REDLANDS BOULEVARD AND SPRUCE AVENUE. (NGVD29 DATUM)

REF.	REVISIONS	ENGINEER APPR.	ENGINEER DATE	RCFC APPR.	RCFC DATE

DESIGNED BY: M.H.M.
DRAWN BY: H-Z STAFF
DATE DRAWN: 03-2013
CHECKED BY: M.H.M.

REGISTERED PROFESSIONAL ENGINEER MAURICE H. MURAD NO. 33366 EXPIRATION 6-30-2014 CIVIL STATE OF CALIFORNIA

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
3990 CONCOURS, SUITE 330 * ONTARIO, CALIFORNIA 91764 * (909) 941-7799
PREPARED UNDER THE SUPERVISION OF: MAURICE H. MURAD
R.C.E. 33366 — EXPIRES 6-30-14 — DATE 2/14/14

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: Mark A. Wills — PLANNING ENGINEER — DATE: 5/8/2014
APPROVED BY: — CHIEF ENGINEER — DATE:

P.M. 36207
MORENO MDP LINE F-2 AND F-16
TITLE SHEET

PROJECT NO. 4-0-00400 4-0-00401
DRAWING NO. 4-1068
SHEET NO. 1 OF 11

NOTE:
CONTRACTOR SHALL PROTECT IN PLACE ALL UTILITIES CROSSING OR PARALLELING THE STORM DRAIN UNLESS OTHERWISE NOTED

PROFILE SCALE
VERTICAL: 1"=5'
HORIZONTAL: 1"=20'

20+00 21+00 22+00 23+00 24+00

1740 1730 1720

CL EUCALYPTUS AVE
20+15.37 SD STATION
=99+52.13 EUCALYPTUS AVE

59 CL MH SHAFT 20+88.76

EXISTING GROUND OVER CL PIPE

FINISHED SURFACE OVER CL PIPE

HGL

6" FH

1726.46
24" RCP (LAT F-16-A)
1726.08

1726.62
30" RCP (LAT F-16-B)
1726.10

EL R=1725.86 S=0.0030

S=0.0030

1727.03

MATCH LINE - SEE SHEET 6

STA. 24+00.00

EL S=1725.84
20+09.57 BEGIN PIPE

20+22.17 BC

20+57.53 EC

8" SEWER

V_{MAX}= 7 FPS
Q_{100}= 134 CFS

INSTALL 73.86 LF 60" RCP
(1800-D)

20+83.43 END PIPE

20+91.09 BEGIN PIPE

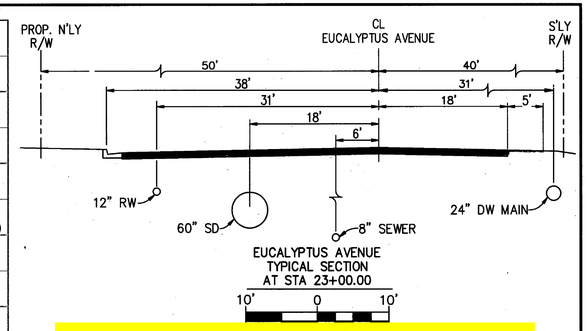
8" SEWER

V_{MAX}= 6 FPS
Q_{100}= 112 CFS

INSTALL 308.91 LF 60" RCP
(1800-D)

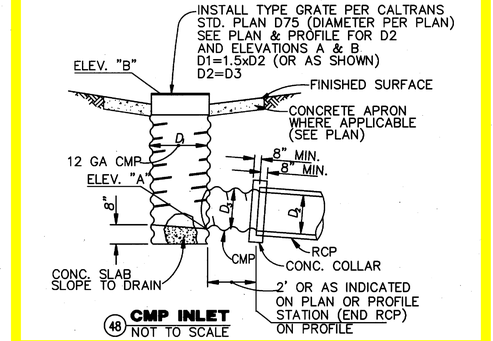
(TO BE MAINTAINED BY R.C.F.C. & W.C.D.)

PROFILE



EUCALYPTUS AVENUE
TYPICAL SECTION
AT STA 23+00.00

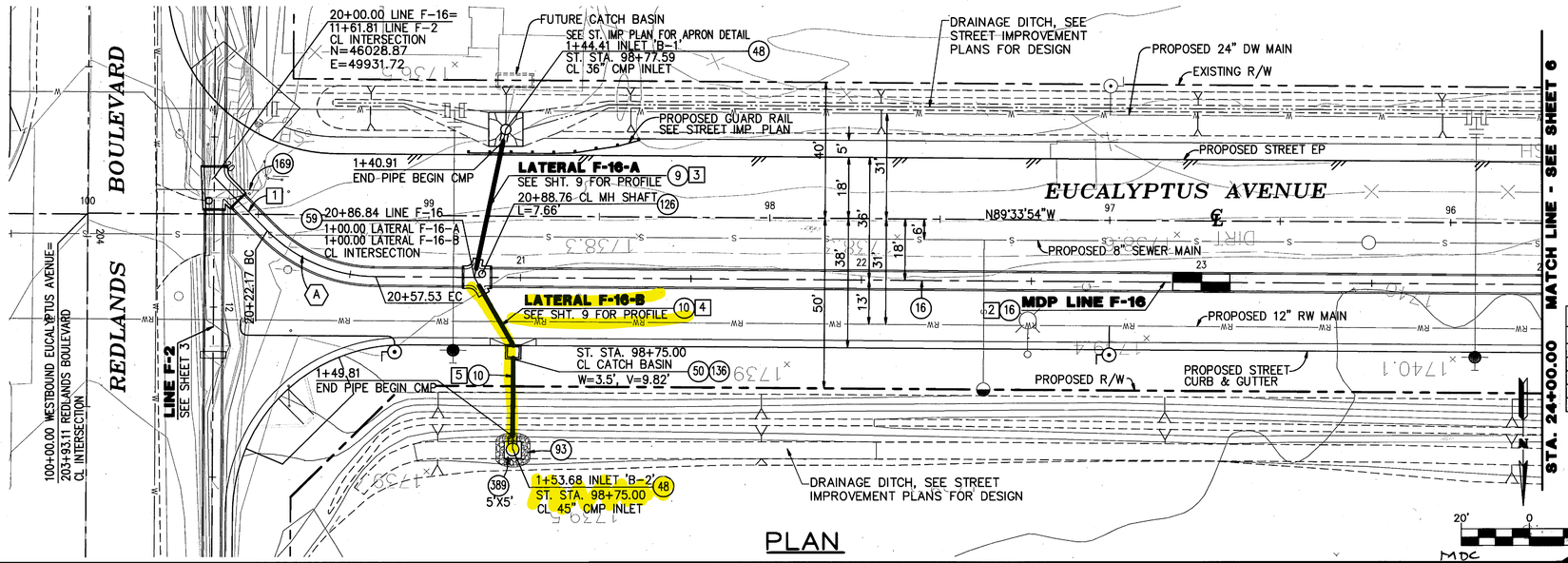
10' 0 10'



48 CMP INLET
NOT TO SCALE

CONSTRUCTION NOTES

9 INSTALL 24" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
10 INSTALL 30" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
16 INSTALL 60" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
48 CONSTRUCT CMP INLET PER DETAIL ON THIS SHEET (12 GAUGE – RISER ø PER PLAN)
50 CONSTRUCT CATCH BASIN PER R.C.F.C. & WCD STD. PLAN CB100 (WIDTH & V-DEPTH PER PLAN)
59 CONSTRUCT MANHOLE No.4 PER R.C.F.C. & WCD STD. PLAN MH254
93 INSTALL GROUTED RIP RAP PER DETAIL ON SHEET 6 TO BE MAINTAINED BY CITY OF MORENO VALLEY
126 ADJUST MANHOLE RIM TO GRADE AFTER FINAL SURFACE HAS BEEN INSTALLED
136 FOR CONSTRUCTION OF LOCAL DEPRESSION SEE PUBLIC STREET IMPROVEMENT PLANS
169 LOWER OR RAISE EXISTING WATER LINE TO EMWD STANDARD SPECIFICATION TO CLEAR PROPOSED STORM DRAIN PIPING
389 CONSTRUCT 4" THICK PCC APRON (HORIZONTAL DIMENSIONS AS SHOWN ON PLAN) APRON FS TO MATCH DITCH FG ELEVATION



20' 0 20'

PLAN

MANHOLE DATA TABLE

S.D. MAINLINE STA.	STRUCTURE TYPE	LATERAL	ANGLE "A"	B	C	D1	D2	EL. S	EL. R
20+86.84	MH NO. 4	F-16-A	78°21'55"	24"	2.5'	60"	60"	1726.46	1726.47
20+86.84	MH NO. 4	F-16-B	60°00'00"	30"	2.5'	60"	60"	1726.62	1726.63

COURSE DATA

	BEARING	DISTANCE
1	N44°33'08"E	22.17'
2	N89°33'54"W	342.48'
3	N12°04'11"E	33.72'
4	N29°33'54"W	23.09'
5	N00°27'05"E	34.03'

CURVE DATA

	Δ	R	L	T
A	45°00'46"	45.00'	35.35'	18.65'

PI

N	E
46057.96	49903.08

PA08-0097 (PLOT PLAN)
P13-111 (AMENDED PLOT PLAN)
PA09-0022 (TENTATIVE PARCEL MAP)

* NOTE:
HORIZONTAL AND VERTICAL LOCATIONS TO BE VERIFIED IN THE FIELD AND ENGINEER NOTIFIED OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

CITY OF MORENO VALLEY APPROVALS
PA09-0022 CITY ID# 4898

RECOMMENDED BY:
for PREM KUMAR
DEPT. PUBLIC WORKS DIR./ASST. CITY ENGINEER
R.C.E. NO. C52463
3/3/14 DATE

APPROVED BY:
AHMAD R. ANSARI
PUBLIC WORKS DIRECTOR/CITY ENGINEER
R.C.E. NO. C51318
3/4/14 DATE

Don't Dig...Until You Call U.S.A. Toll Free
1-800-227-2600
for the location of buried utility lines.
Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

BASIS OF BEARINGS:
BEARINGS SHOWN HEREON ARE BASED ON THE BEARING BETWEEN THE CALIFORNIA SPATIAL REFERENCE CENTER (CSRC) CONTINUOUS OPERATING REFERENCE STATIONS (CORS) PPSF AND MLFP BEING NORTH 5720117.66" WEST PER RECORDS ON FILE WITH THE CSRC.

BENCH MARK: IVF55 ELEVATION 1785.67
LOCATION
BRASS DISK IN TOP OF HEADWALL, NORTHWEST CORNER REDLANDS BOULEVARD AND SPRUCE AVENUE. (NGVD29 DATUM)

REF.	DESCRIPTION	ENGINEER APPR.	ENGINEER DATE	RCFC/ APPR.	RCFC/ DATE
	REVISIONS				

DESIGNED BY: M.H.M.
DRAWN BY: H-Z STAFF
DATE DRAWN: 03-2013
CHECKED BY: M.H.M.

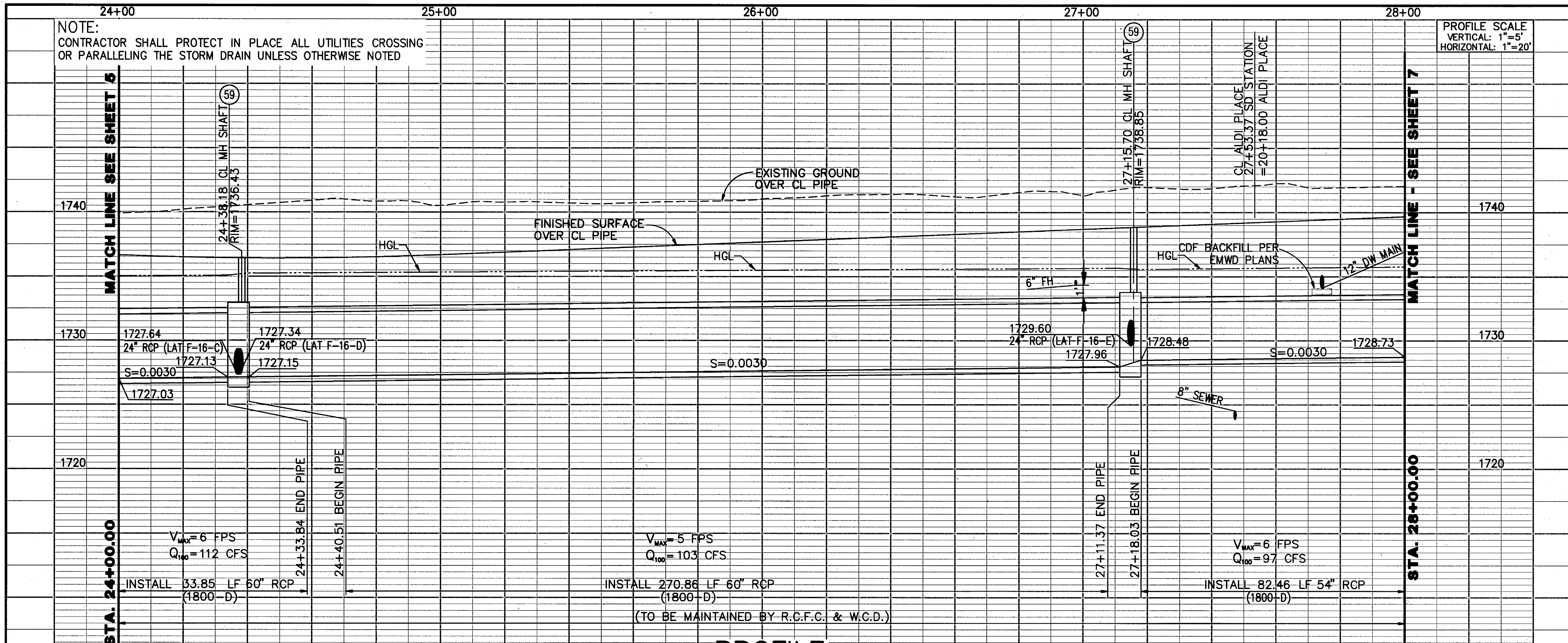
REGISTERED PROFESSIONAL ENGINEER MAURICE H. MURAD NO. 33366 EXPIRATION 6-30-2014 CIVIL STATE OF CALIFORNIA

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
3990 CONCOURS, SUITE 330 * ONTARIO, CALIFORNIA 91764 * (909) 941-7799
PREPARED UNDER THE SUPERVISION OF: MAURICE H. MURAD
R.C.E. 33366 EXPIRES 6-30-14 DATE 12/19/13

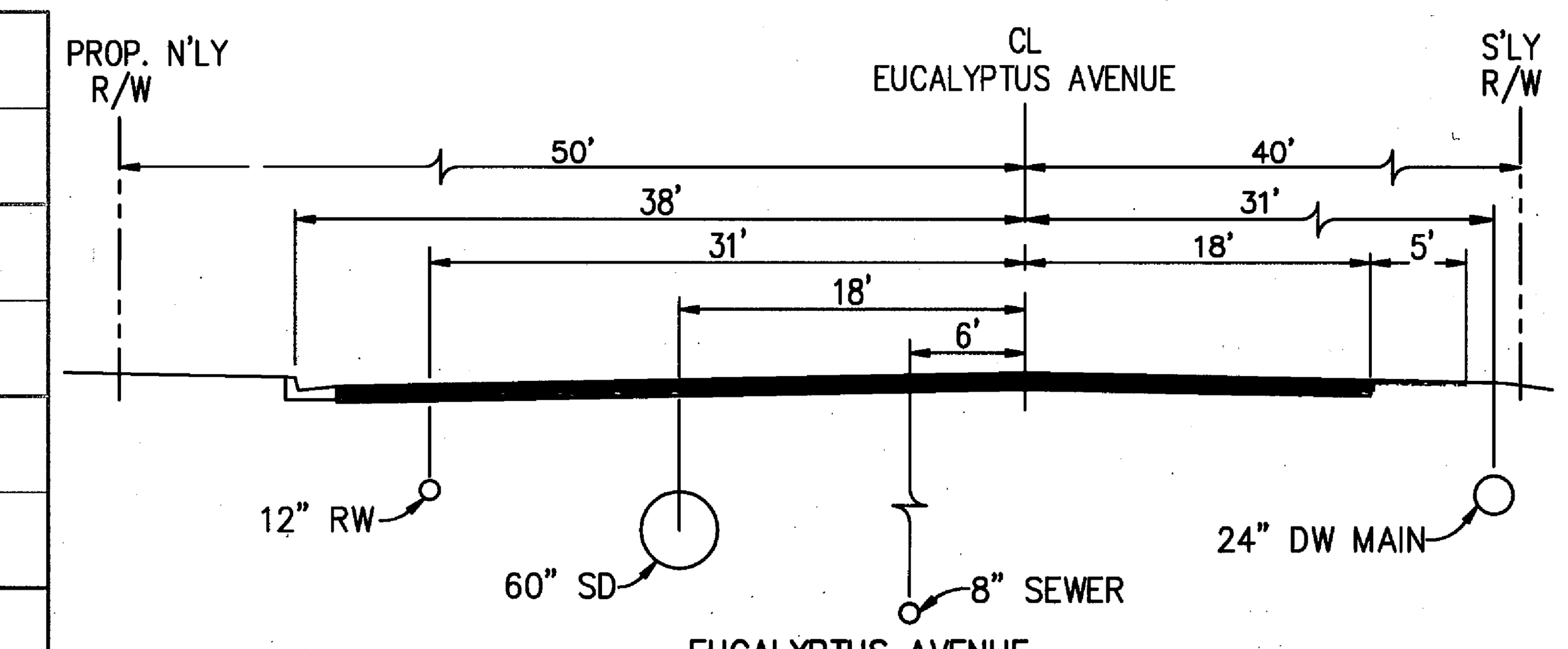
RIVERSIDE COUNTY FLOOD CONTROL
WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY:
DATE: 1/7/14
APPROVED BY:
DATE: 5/8/2014

MORENO MDP LINE F-16
20+00.00 TO 24+00.00
AND
LATERALS F-16-A, AND F-16-B

PROJECT NO. 4-0-00401
DRAWING NO. 4-1068
SHEET NO. 5 OF 11

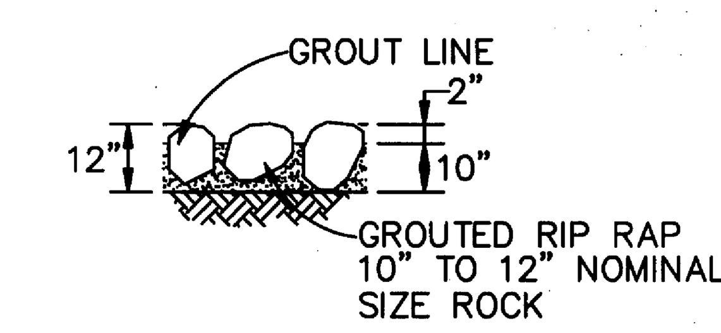


PROFILE



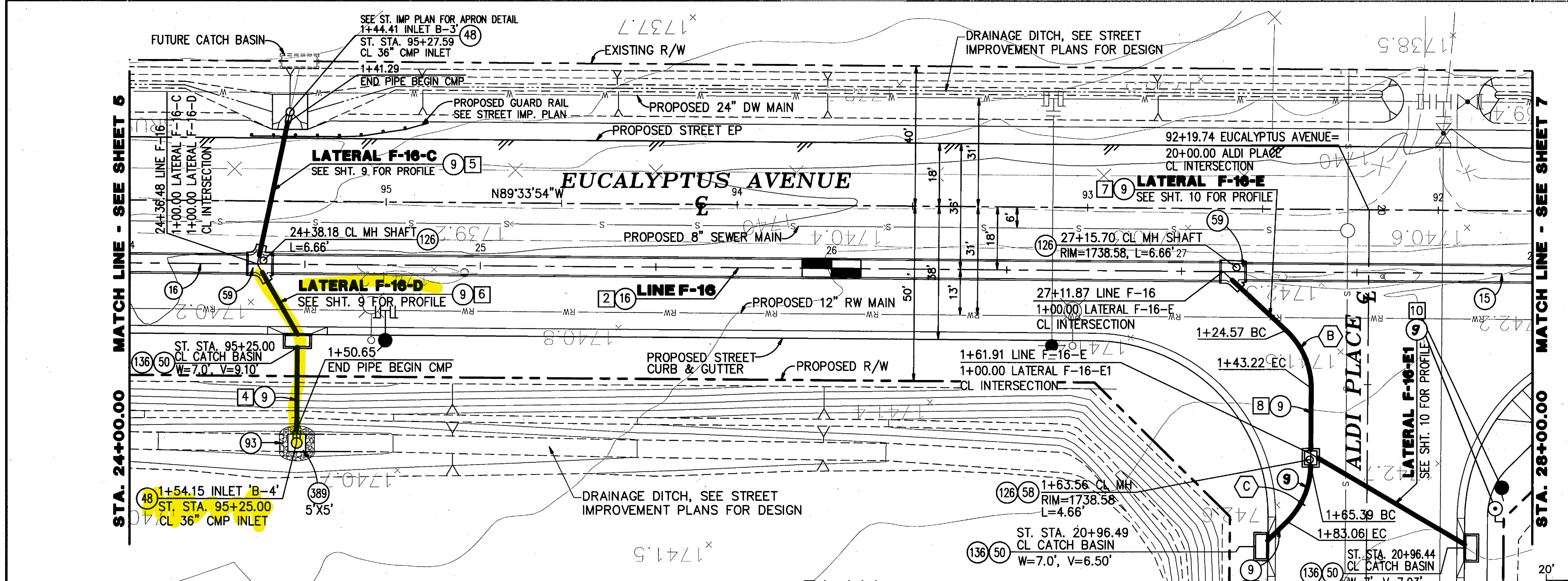
EUCALYPTUS AVENUE
TYPICAL SECTION
AT STA 26+00.00
10' 0 10'

COURSE DATA		
☐	BEARING	DISTANCE
2	N89°33'54"W	400.00'
4	N00°27'05"E	34.03
5	N12°04'11"E	41.86'
6	N29°33'54"W	23.09'
7	N47°02'40"W	24.57'
8	N00°27'05"E	22.17
9	N45°27'05"E	7.76'
10	N59°25'03"W	50.97'



(93) **GROUTED RIP RAP DETAIL**
NOT TO SCALE

CURVE DATA					PI	
⬡	Δ	R	L	T	N	E
B	47°29'45"	22.50'	18.65'	9.90'	46086.56	49204.89
C	45°00'01"	22.50'	17.67'	9.32'	46127.95	49205.22



PLAN

CONSTRUCTION NOTES

- (9) INSTALL 24" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
- (15) INSTALL 54" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
- (16) INSTALL 60" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
- (48) CONSTRUCT CMP INLET PER DETAIL ON SHEET 5 (12 GAUGE - RISER ø PER PLAN)
- (50) CONSTRUCT CATCH BASIN PER R.C.F.C. & WCD STD. PLAN CB100 (WIDTH & V-DEPTH PER PLAN)
- (58) CONSTRUCT MANHOLE No.1 PER R.C.F.C. & WCD STD. PLAN MH251
- (59) CONSTRUCT MANHOLE No.4 PER R.C.F.C. & WCD STD. PLAN MH254
- (93) INSTALL GROUTED RIP RAP PER DETAIL ON SHEET 6 TO BE MAINTAINED BY CITY OF MORENO VALLEY
- (126) ADJUST MANHOLE RIM TO GRADE AFTER FINAL SURFACE HAS BEEN INSTALLED
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MANHOLE DATA TABLE									
S.D. MAINLINE STA.	STRUCTURE TYPE	LATERAL	ANGLE "A"	B	C	D1	D2	EL. S	EL. R
24+36.48	MH NO. 4	F-16-C	78°21'55"	18"	2.5'	60"	60"	1727.64	1727.65
24+36.48	MH NO. 4	F-16-D	60°00'00"	18"	2.5'	60"	60"	1727.34	1727.35
27+11.87	MH NO. 4	F-16-E	42°71'54"	24"	3'	54"	60"	1729.60	1729.64

PA08-0097 (PLOT PLAN)
P13-111 (AMENDED PLOT PLAN)
PA09-0022 (TENTATIVE PARCEL MAP)

* NOTE:
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CITY OF MORENO VALLEY APPROVALS
PA09-0022 CITY ID# 4898

RECOMMENDED BY: c 58590 — 3/3/14 DATE
for PREM KUMAR
DEPT. PUBLIC WORKS DIR./ASST. CITY ENGINEER
R.C.E. NO. C52463

APPROVED BY: — 3/4/14 DATE
AHMAD R. ANSARI
PUBLIC WORKS DIRECTOR/CITY ENGINEER
R.C.E. NO. C51318

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

BASIS OF BEARINGS:
BEARINGS SHOWN HEREON ARE BASED ON THE BEARING BETWEEN THE CALIFORNIA SPATIAL REFERENCE CENTER (CSRC) CONTINUOUS OPERATING REFERENCE STATIONS (CORS) PPBF AND MLFP BEING NORTH 53°20'17.66" WEST PER RECORDS ON FILE WITH THE CSRC.
BENCH MARK: IVF55 ELEVATION 1785.67
LOCATION
BRASS DISK IN TOP OF HEADWALL, NORTHWEST CORNER REDLANDS BOULEVARD AND SPRUCE AVENUE. (NGVD29 DATUM)

REF.	REVISIONS DESCRIPTION	ENGINEER APPR.	ENGINEER DATE	RCFC/ APPR.	RCFC/ DATE

DESIGNED BY: M.H.M.
DRAWN BY: H-Z STAFF
DATE DRAWN: 03-2013
CHECKED BY: M.H.M.

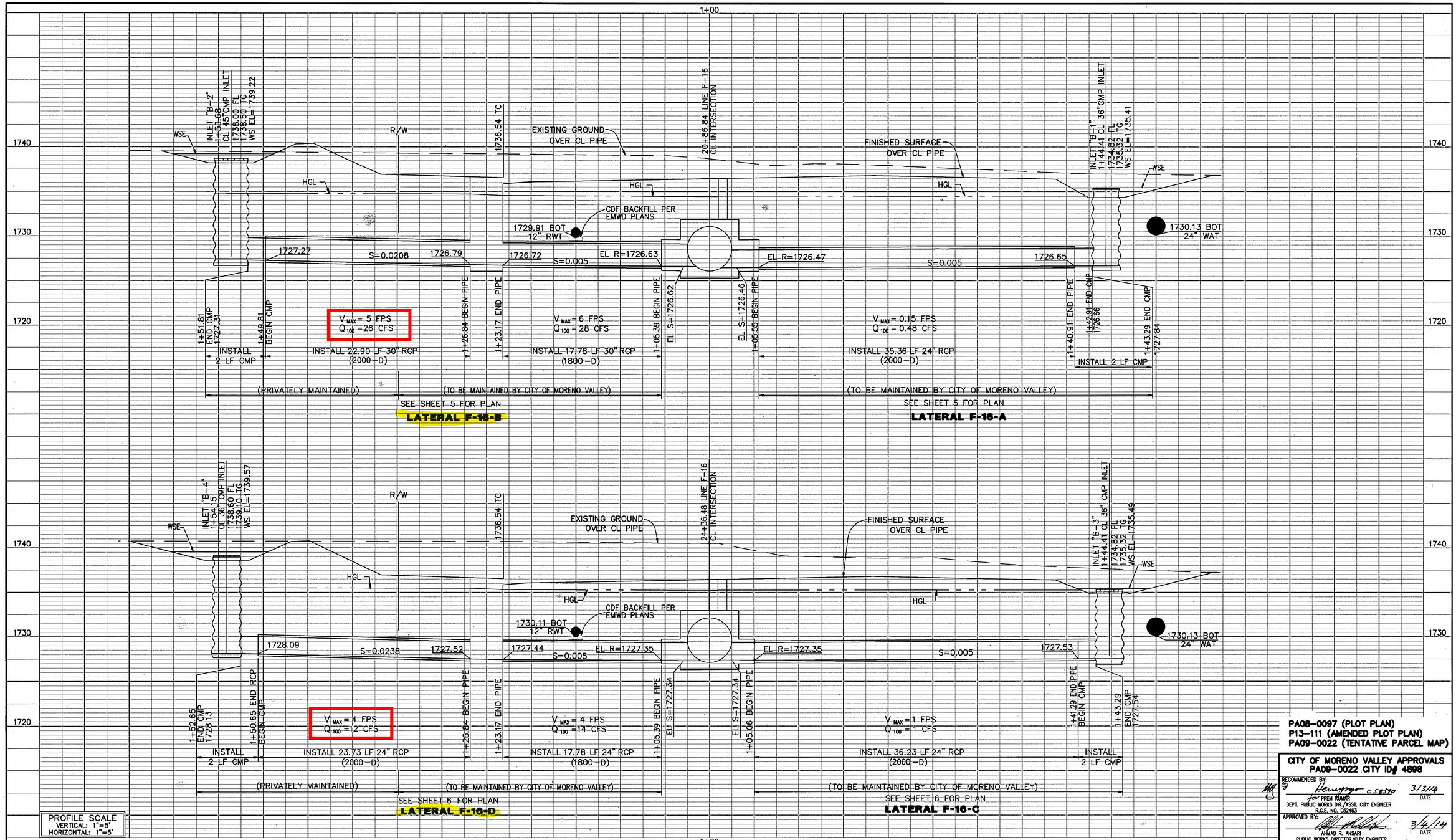
REGISTERED PROFESSIONAL ENGINEER MAURICE H. MURAD NO. 33366 EXPIRATION 6-30-2014 CIVIL STATE OF CALIFORNIA

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
3990 CONCOURS, SUITE 330 * ONTARIO, CALIFORNIA 91764 * (909) 941-7799
PREPARED UNDER THE SUPERVISION OF: MAURICE H. MURAD
R.C.E. 33366 EXPIRES 6-30-14 DATE 2/14/14

RIVERSIDE COU[redacted]OOD CONTROL
WATER CONS[redacted] DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 5/7/14
APPROVED BY: Mark H. Wills DATE: 5/8/2014

MORENO MDP LINE F-16
24+00.00 TO 28+00.00
AND
LATERALS F-16-C, F-16-D, F-16-E AND F-16-E1

PROJECT NO. 4-0-00401
DRAWING NO. 4-1068
SHEET NO. 6 OF 11



PA08-0097 (PLOT PLAN)
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PA09-0022 (TENTATIVE PARCEL MAP)

CITY OF MORENO VALLEY APPROVALS
PA09-0022 CITY ID# 4898

RECOMMENDED BY:
for PREM KUMAR
DEPT. PUBLIC WORKS DIR./ASST. CITY ENGINEER
R.C.E. NO. C52463
DATE 3/3/14

APPROVED BY:
AHMAD R. ANSARI
PUBLIC WORKS DIRECTOR/CITY ENGINEER
R.C.E. NO. C51318
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LOCATION
BRASS DISK IN TOP OF HEADWALL, NORTHWEST CORNER REDLANDS BOULEVARD AND SPRUCE AVENUE. (NGVD29 DATUM)

REF.	REVISIONS	ENGINEER APPR.	ENGINEER DATE	RCFC/ APPR.	RCFC/ DATE

DESIGNED BY: M.H.M.
DRAWN BY: H-Z STAFF
DATE DRAWN: 03-2013
CHECKED BY: M.H.M.

REGISTERED PROFESSIONAL ENGINEER MAURICE H. MURAD NO. 33366 EXPIRATION 6-30-2014 CIVIL STATE OF CALIFORNIA

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
3990 CONCOURS, SUITE 330 • ONTARIO, CALIFORNIA 91764 • (909) 941-7799
PREPARED UNDER THE SUPERVISION OF: MAURICE H. MURAD
R.C.E. 33366 EXPIRES 6-30-14 DATE 2/14/14

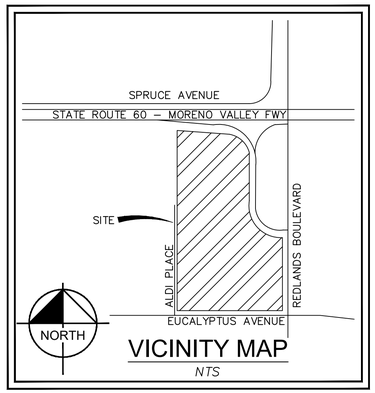
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE:
APPROVED BY: DATE:

MORENO MDP LINE F-16 CONNECTOR PIPE PROFILES FOR F-16-A, F-16-B, F-16-C, AND F-16-D

PROJECT NO. 4-0-00401
DRAWING NO. 4-1068
SHEET NO. 9 OF 11

Appendix F

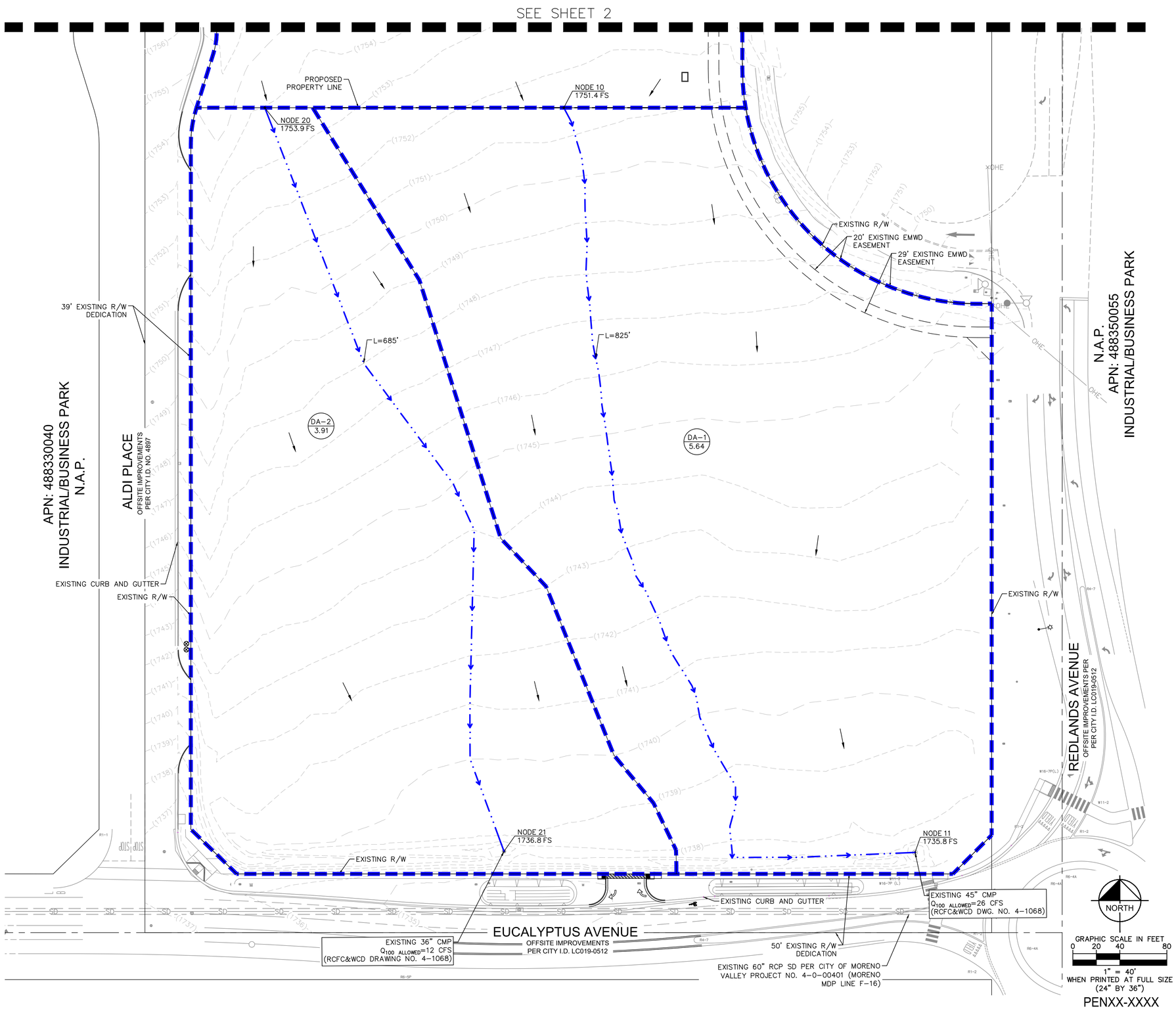
Drainage Maps



VICINITY MAP
NTS

LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- DRAINAGE SUBAREA BOUNDARY
- FLOW PATH
- (XXXX) EXISTING CONTOUR
- (XXXX) EXISTING MINOR CONTOUR
- DA–# / X.XX HYDROLOGY SUBAREA ACREAGE
- FLOW ARROWS



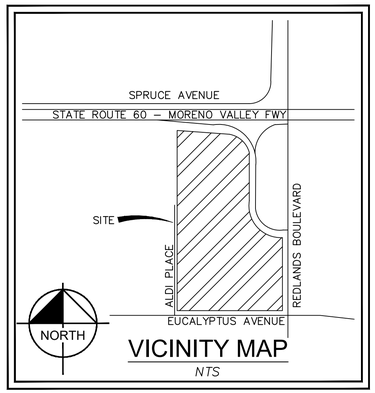
PENXX-XXXX

Kimley»Horn

EXISTING DRAINAGE EXHIBIT SHEET 1 OF 2

PILOT MORENO VALLEY

8/3/2021



VICINITY MAP
NTS

LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- DRAINAGE SUBAREA BOUNDARY
- FLOW PATH
- (XXXX) EXISTING CONTOUR
- (XXXX) EXISTING MINOR CONTOUR
- DA–# / X.XX HYDROLOGY SUBAREA ACREAGE
- FLOW ARROWS

60 FREEWAY

(1762) (1761) (1760) (1759) (1758) (1757) (1756) (1755)

DA–3
6.14

SEE SHEET 1

REDLANDS AVENUE
OFFSITE IMPROVEMENTS PER
PER CITY I.D. LC019-0512

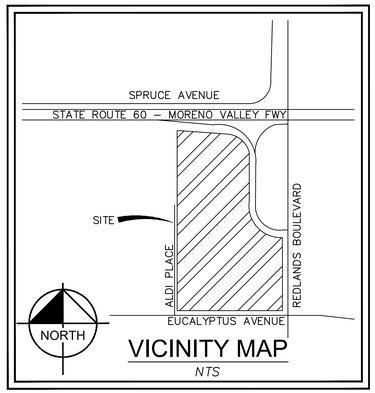
NORTH

GRAPHIC SCALE IN FEET
0 20 40 80
1" = 40'
WHEN PRINTED AT FULL SIZE
(24" BY 36")

PENXX-XXXX

Kimley»Horn

EXISTING DRAINAGE EXHIBIT SHEET 2 OF 2
PILOT MORENO VALLEY
8/3/2021



VICINITY MAP
NTS

KEY NOTES:

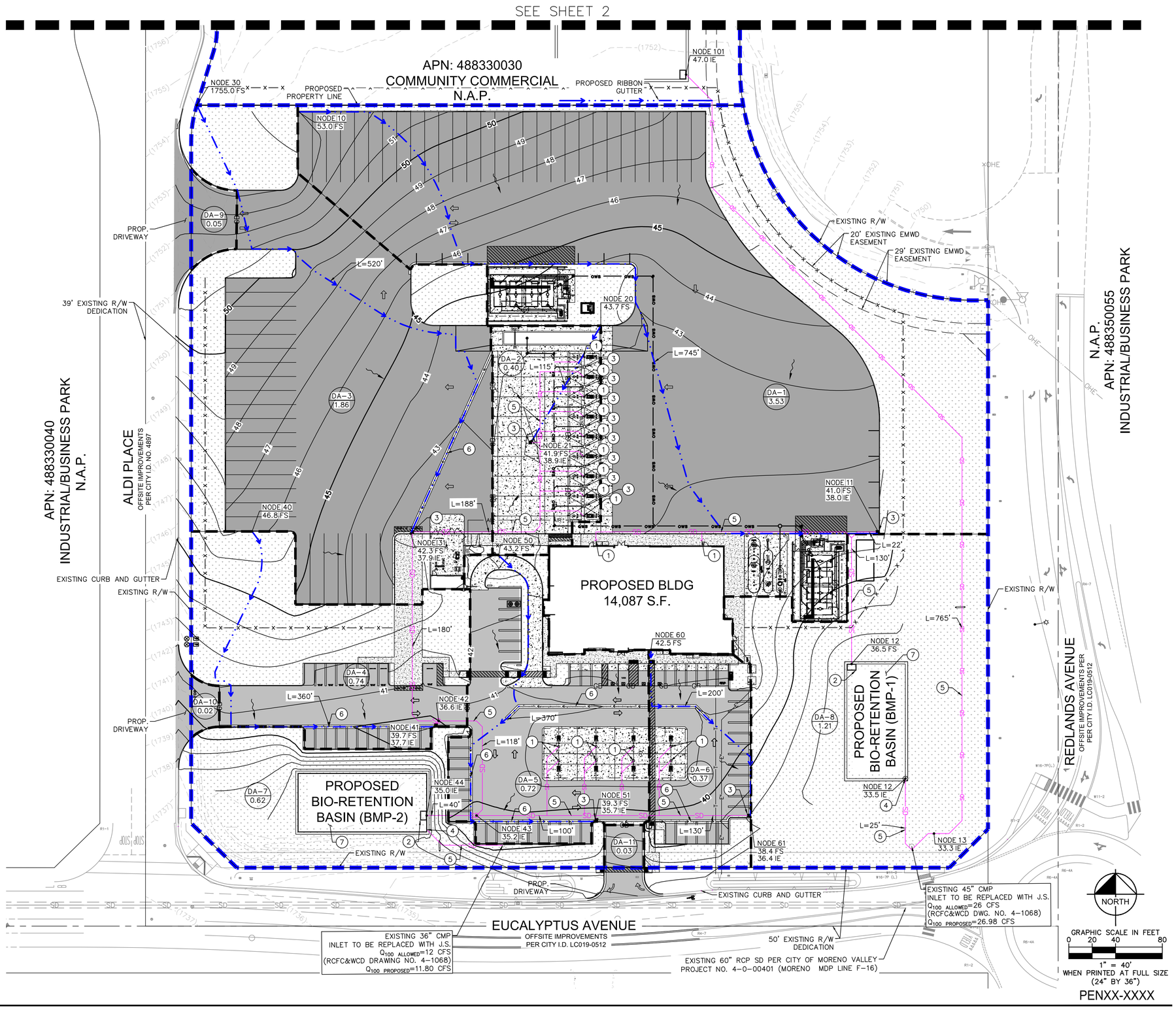
1. PROPOSED ROOF DRAINS.
2. PROPOSED SAND FOREBAY PER DETAIL, HEREON.
3. PROPOSED GRATED INLET WITH FILTER INSERT PER DRAINAGE PLAN.
4. PROPOSED GRATED OVERFLOW OUTLET WITH FILTER INSERT PER DRAINAGE PLAN.
5. PROPOSED STORM DRAIN PIPE.
6. PROPOSED 3' RIBBON GUTTER.

LANDSCAPE NOTE:

FINISH GRADE OF LANDSCAPE AREAS IS TO BE DEPRESSED 1–2 INCHES (MIN.) BELOW TOP OF CURB, SIDEWALK OR PAVEMENT.

LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- DRAINAGE SUBAREA BOUNDARY
- FLOW PATH
- (XXXX) EXISTING CONTOUR
- (XXXX) EXISTING MINOR CONTOUR
- XXXX PROPOSED CONTOUR
- XXXX PROPOSED MINOR CONTOUR
- DA–# / X.XX HYDROLOGY SUBAREA ACREAGE
- FLOW ARROWS

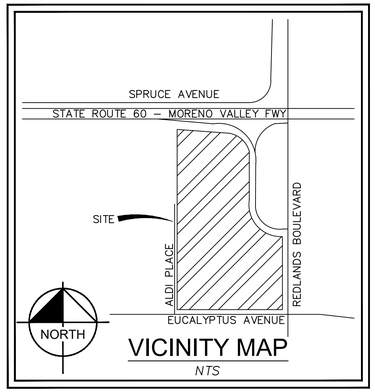


Kimley»Horn

PROPOSED DRAINAGE EXHIBIT SHEET 1 OF 2

PILOT MORENO VALLEY

8/3/2021



VICINITY MAP
NTS

KEY NOTES:

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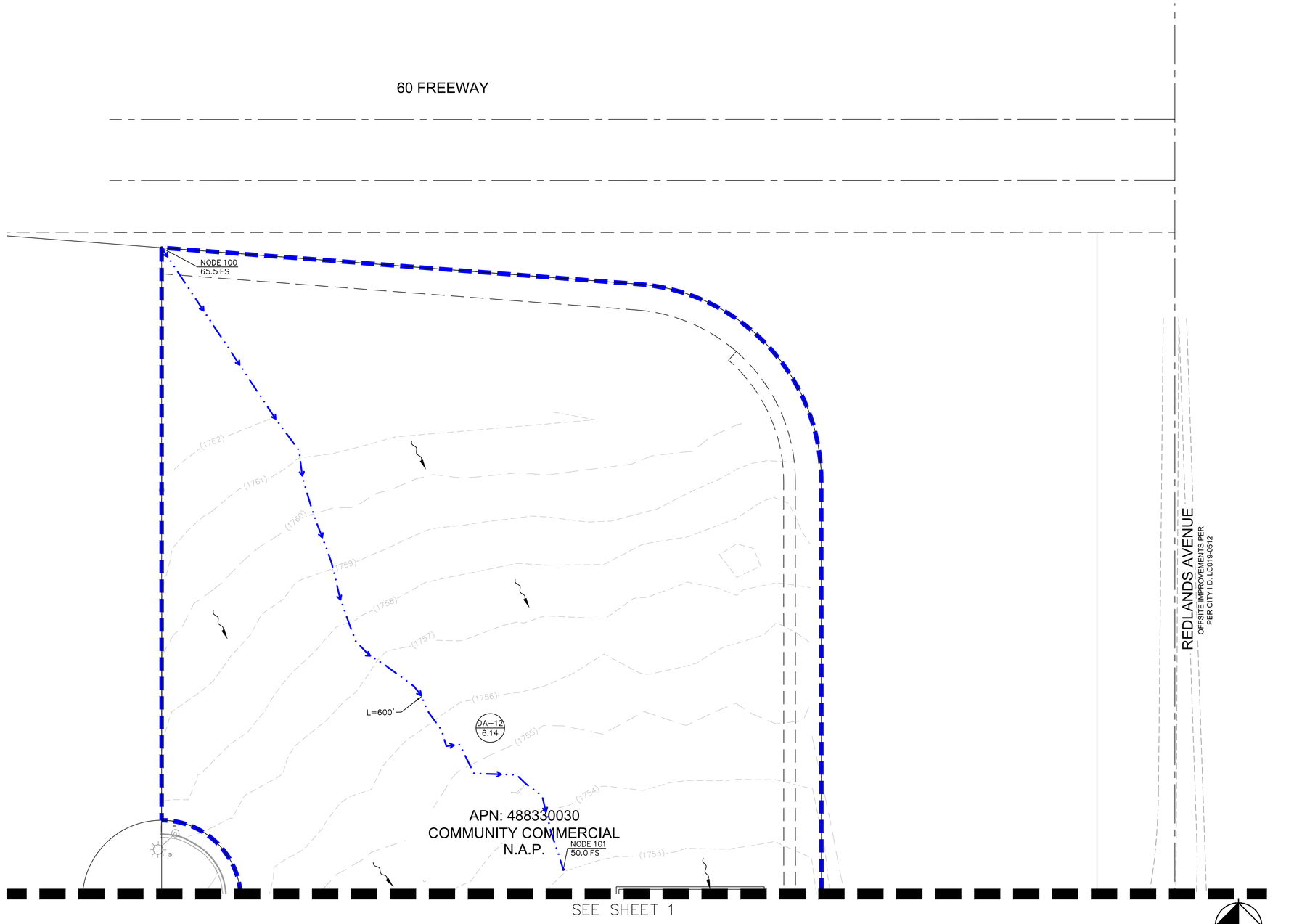
- DRAINAGE SUBAREA BOUNDARY
- FLOW PATH
- (XXXX) EXISTING CONTOUR
- (XXXX) EXISTING MINOR CONTOUR
- XXXX PROPOSED CONTOUR
- XXXX PROPOSED MINOR CONTOUR
- DA–# / X.XX HYDROLOGY SUBAREA ACREAGE
- FLOW ARROWS



NORTH

GRAPHIC SCALE IN FEET
0 20 40 80
1" = 40'
WHEN PRINTED AT FULL SIZE
(24" BY 36")

PENXX-XXXX

Kimley»Horn

PROPOSED DRAINAGE EXHIBIT SHEET 2 OF 2
PILOT MORENO VALLEY
8/3/2021

Appendix G

Rational Method Calculations

```
****************************************************************************
           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                     (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2011 Advanced Engineering Software (aes)
                     (Rational Tabling Version 18.0)
                Release Date: 07/01/2011  License ID 1499

                          Analysis prepared by:

                      Kimley-Horn and Associates, Inc.
                             765 The City Drive
                                 Suite 200
                              Orange, CA 92868

 ************************* DESCRIPTION OF STUDY *************************
* PILOT MORENO VALLEY                                                    *
* PROPOSED 100-YR                                                        *
* XO 7/29/21                                                             *
 ************************************************************************

  FILE NAME: MVP100P.DAT
  TIME/DATE OF STUDY: 11:41 07/29/2021
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.010
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.820
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.940
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.200
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5003939
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5001161
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.200
  SLOPE OF INTENSITY DURATION CURVE = 0.5001
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     11.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS MOBILE HOME PARK
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   745.00
  UPSTREAM ELEVATION(FEET) =     53.00
  DOWNSTREAM ELEVATION(FEET) =     41.00
  ELEVATION DIFFERENCE(FEET) =     12.00
  TC = 0.336*[(  745.00**3)/(    12.00)]**.2 =   10.806
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.828
  MOBILE HOME PARK DEVELOPMENT RUNOFF COEFFICIENT = .8392
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      8.38
```

```
  TOTAL AREA(ACRES) =      3.53   TOTAL RUNOFF(CFS) =      8.38

****************************************************************************
  FLOW PROCESS FROM NODE     11.00 TO NODE     12.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    38.00  DOWNSTREAM(FEET) =    36.50
  FLOW LENGTH(FEET) =   130.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.30
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.38
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =   11.10
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =     875.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     12.00 TO NODE     12.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.790
  MOBILE HOME PARK DEVELOPMENT RUNOFF COEFFICIENT = .8386
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    1.21   SUBAREA RUNOFF(CFS) =    2.83
  TOTAL AREA(ACRES) =        4.7   TOTAL RUNOFF(CFS) =      11.21
  TC(MIN.) =   11.10

****************************************************************************
  FLOW PROCESS FROM NODE     12.00 TO NODE     13.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    33.50  DOWNSTREAM(FEET) =    33.30
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.83
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.21
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   11.16
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE     13.00 =     900.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     13.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.16
  RAINFALL INTENSITY(INCH/HR) =   2.78
  TOTAL STREAM AREA(ACRES) =     4.74
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.21

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   600.00
  UPSTREAM ELEVATION(FEET) =     65.50
  DOWNSTREAM ELEVATION(FEET) =     50.00
  ELEVATION DIFFERENCE(FEET) =     15.50
  TC = 0.303*[(  600.00**3)/(    15.50)]**.2 =    8.136
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.260
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8781
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =     17.57
```

```
  TOTAL AREA(ACRES) =      6.14   TOTAL RUNOFF(CFS) =     17.57

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE     13.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    47.00  DOWNSTREAM(FEET) =    33.30
  FLOW LENGTH(FEET) =   765.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.31
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.57
  PIPE TRAVEL TIME(MIN.) =   1.24    Tc(MIN.) =    9.37
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE     13.00 =    1365.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     13.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.37
  RAINFALL INTENSITY(INCH/HR) =   3.04
  TOTAL STREAM AREA(ACRES) =     6.14
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.57

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       11.21    11.16        2.782          4.74
      2       17.57     9.37        3.037          6.14

 *********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 *************************************************************************

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       26.98     9.37       3.037
      2       27.31    11.16       2.782

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      26.98   Tc(MIN.) =    9.37
  TOTAL AREA(ACRES) =       10.9
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE     13.00 =    1365.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     20.00 TO NODE     21.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS CONDOMINIUM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   115.00
  UPSTREAM ELEVATION(FEET) =     43.70
  DOWNSTREAM ELEVATION(FEET) =     41.90
  ELEVATION DIFFERENCE(FEET) =      1.80
  TC = 0.359*[(  115.00**3)/(     1.80)]**.2 =    5.504
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.963
  CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .8341
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      1.32
```

```
  TOTAL AREA(ACRES) =      0.40   TOTAL RUNOFF(CFS) =      1.32

****************************************************************************
  FLOW PROCESS FROM NODE     21.00 TO NODE     31.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    38.90  DOWNSTREAM(FEET) =    37.90
  FLOW LENGTH(FEET) =   188.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   5.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.47
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.32
  PIPE TRAVEL TIME(MIN.) =   0.90    Tc(MIN.) =    6.41
  LONGEST FLOWPATH FROM NODE     20.00 TO NODE     31.00 =     303.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     31.00 TO NODE     31.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.41
  RAINFALL INTENSITY(INCH/HR) =   3.67
  TOTAL STREAM AREA(ACRES) =     0.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.32

****************************************************************************
  FLOW PROCESS FROM NODE     30.00 TO NODE     31.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS CONDOMINIUM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   520.00
  UPSTREAM ELEVATION(FEET) =     55.00
  DOWNSTREAM ELEVATION(FEET) =     42.30
  ELEVATION DIFFERENCE(FEET) =     12.70
  TC = 0.359*[(  520.00**3)/(    12.70)]**.2 =    9.208
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.064
  CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .8197
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      4.67
  TOTAL AREA(ACRES) =      1.86   TOTAL RUNOFF(CFS) =      4.67

****************************************************************************
  FLOW PROCESS FROM NODE     31.00 TO NODE     31.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.21
  RAINFALL INTENSITY(INCH/HR) =   3.06
  TOTAL STREAM AREA(ACRES) =     1.86
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.67

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        1.32     6.41        3.673          0.40
      2        4.67     9.21        3.064          1.86

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************
```

```
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        4.57     6.41       3.673
      2        5.77     9.21       3.064

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.77   Tc(MIN.) =    9.21
  TOTAL AREA(ACRES) =        2.3
  LONGEST FLOWPATH FROM NODE     30.00 TO NODE     31.00 =     520.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     31.00 TO NODE     42.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    37.90  DOWNSTREAM(FEET) =    36.60
  FLOW LENGTH(FEET) =   180.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  12.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.38
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.77
  PIPE TRAVEL TIME(MIN.) =   0.56    Tc(MIN.) =    9.77
  LONGEST FLOWPATH FROM NODE     30.00 TO NODE     42.00 =     700.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     42.00 TO NODE     42.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.77
  RAINFALL INTENSITY(INCH/HR) =   2.98
  TOTAL STREAM AREA(ACRES) =     2.26
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.77

****************************************************************************
  FLOW PROCESS FROM NODE     40.00 TO NODE     41.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS CONDOMINIUM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   360.00
  UPSTREAM ELEVATION(FEET) =     46.80
  DOWNSTREAM ELEVATION(FEET) =     39.70
  ELEVATION DIFFERENCE(FEET) =      7.10
  TC = 0.359*[(  360.00**3)/(     7.10)]**.2 =    8.296
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.228
  CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .8228
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      1.97
  TOTAL AREA(ACRES) =      0.74   TOTAL RUNOFF(CFS) =      1.97

****************************************************************************
  FLOW PROCESS FROM NODE     41.00 TO NODE     42.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    36.70  DOWNSTREAM(FEET) =    36.60
  FLOW LENGTH(FEET) =     5.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   6.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.20
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.97
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    8.31
```

```
 LONGEST FLOWPATH FROM NODE     40.00 TO NODE     42.00 =     365.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     42.00 TO NODE     42.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =    8.31
 RAINFALL INTENSITY(INCH/HR) =   3.23
 TOTAL STREAM AREA(ACRES) =     0.74
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.97

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        5.77     9.77        2.975          2.26
     2        1.97     8.31        3.225          0.74

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        6.88     8.31       3.225
     2        7.59     9.77       2.975

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       7.59   Tc(MIN.) =    9.77
 TOTAL AREA(ACRES) =        3.0
 LONGEST FLOWPATH FROM NODE     30.00 TO NODE     42.00 =     700.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     42.00 TO NODE     43.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    36.60  DOWNSTREAM(FEET) =    35.20
 FLOW LENGTH(FEET) =   118.00   MANNING'S N =  0.012
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.22
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       7.59
 PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   10.04
 LONGEST FLOWPATH FROM NODE     30.00 TO NODE     43.00 =     818.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     43.00 TO NODE     43.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE     60.00 TO NODE     61.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS CONDOMINIUM
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   200.00
 UPSTREAM ELEVATION(FEET) =     42.50
 DOWNSTREAM ELEVATION(FEET) =     38.40
```

```
  ELEVATION DIFFERENCE(FEET) =      4.10
  TC = 0.359*[(  200.00**3)/(     4.10)]**.2 =    6.507
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.645
  CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .8297
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      1.12
  TOTAL AREA(ACRES) =      0.37   TOTAL RUNOFF(CFS) =      1.12

****************************************************************************
  FLOW PROCESS FROM NODE     61.00 TO NODE     51.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    36.40  DOWNSTREAM(FEET) =    35.70
  FLOW LENGTH(FEET) =   130.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   6.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.27
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.12
  PIPE TRAVEL TIME(MIN.) =   0.66    Tc(MIN.) =    7.17
  LONGEST FLOWPATH FROM NODE     60.00 TO NODE     51.00 =     330.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     51.00 TO NODE     51.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.17
  RAINFALL INTENSITY(INCH/HR) =   3.47
  TOTAL STREAM AREA(ACRES) =     0.37
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.12

****************************************************************************
  FLOW PROCESS FROM NODE     50.00 TO NODE     51.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS CONDOMINIUM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   370.00
  UPSTREAM ELEVATION(FEET) =     43.20
  DOWNSTREAM ELEVATION(FEET) =     39.30
  ELEVATION DIFFERENCE(FEET) =      3.90
  TC = 0.359*[(  370.00**3)/(     3.90)]**.2 =    9.507
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.015
  CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .8188
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      1.78
  TOTAL AREA(ACRES) =      0.72   TOTAL RUNOFF(CFS) =      1.78

****************************************************************************
  FLOW PROCESS FROM NODE     51.00 TO NODE     51.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.51
  RAINFALL INTENSITY(INCH/HR) =   3.02
  TOTAL STREAM AREA(ACRES) =     0.72
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.78

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        1.12     7.17        3.472          0.37
      2        1.78     9.51        3.015          0.72
```

```
 ********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 **************************************************************************

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        2.46     7.17       3.472
      2        2.75     9.51       3.015

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       2.75   Tc(MIN.) =    9.51
  TOTAL AREA(ACRES) =        1.1
  LONGEST FLOWPATH FROM NODE     50.00 TO NODE     51.00 =     370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     51.00 TO NODE     43.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    35.70  DOWNSTREAM(FEET) =    35.20
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.06
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.75
  PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =    9.92
  LONGEST FLOWPATH FROM NODE     50.00 TO NODE     43.00 =     470.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     43.00 TO NODE     43.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        2.75     9.92       2.952        1.09
  LONGEST FLOWPATH FROM NODE     50.00 TO NODE     43.00 =     470.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        7.59    10.04       2.934        3.00
  LONGEST FLOWPATH FROM NODE     30.00 TO NODE     43.00 =     818.00 FEET.

 ********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 **************************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      10.25       9.92       2.952
      2      10.32      10.04       2.934

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      10.32   Tc(MIN.) =   10.04
  TOTAL AREA(ACRES) =        4.1

****************************************************************************
  FLOW PROCESS FROM NODE     43.00 TO NODE     44.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    35.20  DOWNSTREAM(FEET) =    35.00
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.54
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.32
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   10.16
  LONGEST FLOWPATH FROM NODE     30.00 TO NODE     44.00 =     858.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     44.00 TO NODE     44.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.917
  CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .8168
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    0.62   SUBAREA RUNOFF(CFS) =    1.48
  TOTAL AREA(ACRES) =        4.7   TOTAL RUNOFF(CFS) =      11.80
  TC(MIN.) =   10.16
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        4.7  TC(MIN.) =     10.16
  PEAK FLOW RATE(CFS)   =      11.80
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Appendix H

Soils Information

WQMP Project Report

County of Riverside Stormwater Program

Santa Ana River Watershed Geodatabase

Tuesday, March 23, 2021

Note: The information provided in this report and on the Stormwater Geodatabase for the County of Riverside Stormwater Program is intended to provide basic guidance in the preparation of the applicantï¿½s Water Quality Management Plan (WQMP) and should not be relied upon without independent verification.

Project Site Parcel Number(s):	488330037, 488330036, 488330038, 488330030, 488330035
Latitude/Longitude:	33.9371, -117.1582
Thomas Brothers Page:	
Project Site Acreage:	12.60
Watershed(s):	SANTA ANA
This Project Site Resides in the following Hydrologic Unit(s) (HUC):	**HUC Name** - HUC Number **Moreno Valley** - 180702020304
The HUCs Contribute stormwater to the following 303d listed water bodies and TMDLs which may include drainage from your proposed Project Site:	**WBID Name** - WBID Number **Canyon Lake (Railroad Canyon Reservoir)** - CAL8021100019990208151525 **Elsinore, Lake** - CAL8023100019990208151100
These 303d listed Water bodies and TMDLs have the following Pollutants of Concern (POC):	**Bacterial Indicators** - Pathogens **Nutrients** - Nutrients, Organic Enrichment/Low Dissolved Oxygen **Other Organics** - PCBs (Polychlorinated biphenyls) **Toxicity** - Sediment Toxicity, Unknown Toxicity
Is the Site subject to Hydromodification:	Yes
Limitations on Infiltration:	**Project Site Onsite Soils Group(s)** - A **Known Groundwater Contamination Plumes within 1000'** - No **Adjacent Water Supply Wells(s)** - No information available please contact your local water agency for more information. Your local contact agency is EASTERN MUNICIPAL W.D.. Your local wholesaler contact agency is METROPOLITAN WATER DISTRICT.
Environmentally Sensitive Areas within 200'(Fish and Wildlife Habitat/Species):	None

Environmentally Sensitive Areas within 200'(CVMSHCP):	None
Environmentally Sensitive Areas within 200'(WRMSHCP):	Burrowing Owl Survey Required Area
Groundwater elevation from Mean Sea Level:	1566
85th Percentile Design Storm Depth (in):	0.667
Groundwater Basin:	San Jacinto-Lower Pressure
MSHCP/CVMSHCP Criteria Cell (s):	No Data
Retention Ordinance Information:	No Data
Studies and Reports Related to Project Site:	Comprehensive Nutrient Reduction Plan IBI Scores - Southern Cal bulletin118_4-sc water_fact_3_7.11 8039-SAR-Hydromodification Moreno MDP West San Jacinto GW Basin Management Plan Moreno ADP Report Moreno ADP Map

United States Department of Agriculture

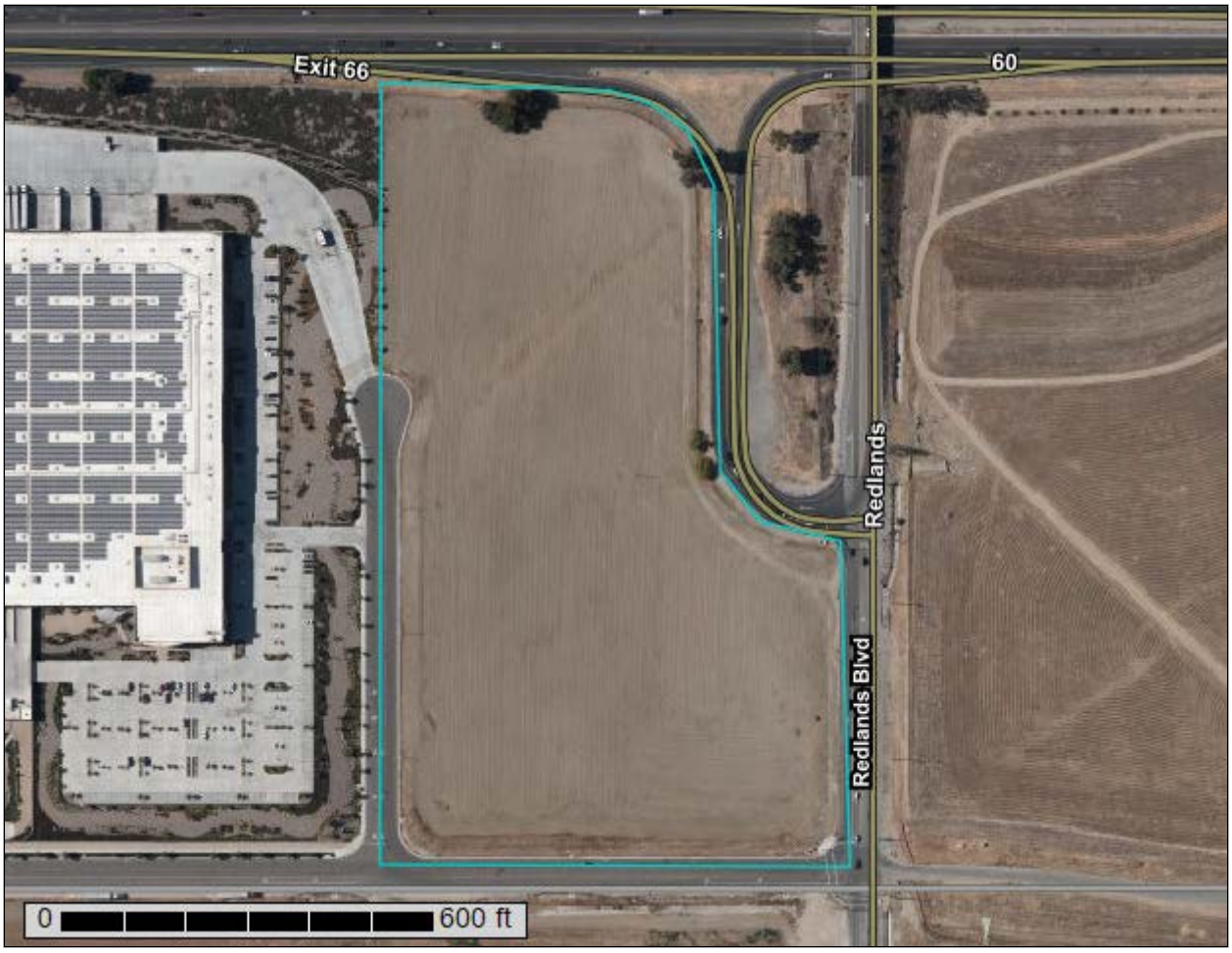
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Western Riverside Area, California

Pilot Moreno Valley



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:2,250 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 13, May 27, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 25, 2019—Jun 25, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
SeC2	San Emigdio fine sandy loam, 2 to 8 percent slopes, eroded	9.6	53.2%
SgC	San Emigdio loam, 2 to 8 percent slopes	8.5	46.8%
Totals for Area of Interest		**18.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Western Riverside Area, California

SeC2—San Emigdio fine sandy loam, 2 to 8 percent slopes, eroded

Map Unit Setting

National map unit symbol: hcys
Elevation: 600 to 1,800 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 220 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

San emigdio and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Emigdio

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 40 inches: fine sandy loam
H3 - 40 to 60 inches: stratified sandy loam to silt loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: R019XD029CA
Hydric soil rating: No

Minor Components

Metz

Percent of map unit: 10 percent

Hydric soil rating: No

San timoteo

Percent of map unit: 5 percent
Hydric soil rating: No

SgC—San Emigdio loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: hcyx
Elevation: 600 to 1,800 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 220 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

San emigdio and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Emigdio

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 40 inches: fine sandy loam
H3 - 40 to 60 inches: stratified sandy loam to silt loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): 2e

Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: R019XD029CA
Hydric soil rating: No

Minor Components

Metz

Percent of map unit: 10 percent
Hydric soil rating: No

San timoteo

Percent of map unit: 5 percent
Hydric soil rating: No

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GEOTECHNICAL EVALUATION REPORT

MORENO VALLEY
TRUCK STOP MODEL

AT

SOUTH OF FREEWAY 60 &
WEST OF REDLANDS BOULEVARD
MORENO VALLEY, CALIFORNIA 92553

PREPARED FOR:

BROADBENT, INC.
WEST PACIFIC AVENUE
HENDERSON, NEVADA, 89015

PROJECT NO: G-5852-01

FEBRUARY 26, 2021

PREPARED BY:

GEOTECHNICAL SOLUTIONS, INC.
GEOTECHNICAL & ENVIRONMENTAL
ENGINEERING

Geotechnical Solutions, Inc.
Geotechnical, Structural & Environmental Engineering

AASHTO ACCREDITED

February 26, 2021

Project No: G-5852-01

Broadbent, Inc.
8 West Pacific Avenue
Henderson, Nevada, 89015

Attention: Mr. Mark E. Kazelskis, PG, CHG, CEM
Principal Geologist

Via Email: mkazelskis@broadbentinc.com

Re: Geotechnical Engineering Evaluation Report
Truck Stop – Moreno Valley Pilot # 1316
South of Freeway 60 &
West of Redlands Boulevard
Moreno Valley, California 92553

Gentlemen:

Submitted herewith is the report of the Geotechnical Engineering evaluation study conducted by this office for Moreno Valley Truck Stop Model Pilot # 1316 at the referenced site.

The project site is located just northwest of Redlands Boulevard and Eucalyptus Avenue Intersection and south of Moreno Highway 60 in Moreno Valley, California as shown on Vicinity Map (Plate A) and Google Map (Plate D).

Based on our study findings, it is our opinion that the site is suitable for the proposed development from a geotechnical-engineering standpoint, provided that the recommendations of this report are successfully implemented.

The investigation was made in accordance with generally accepted geotechnical engineering principles and procedures and included such field and laboratory tests considered necessary in the circumstances.

In the opinion of the undersigned, the accompanying report has been substantiated by data, observations, analysis, and opinions and presents fairly the design information requested by you.

This completes our scope of services for the initial design phase of the project. We have appreciated this opportunity to be of service to you on this project.

Respectfully Submitted,

Geotechnical Solutions, Inc.

Dharma Shakya, PhD, PE, GE
Principal Geotechnical Engineer

Abraham S. Baha, PE, MASCE
Sr. Principal

Distribution: (3 +pdf) Addressee

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1.0 INTRODUCTION

1.1 Purpose and Scope

The primary objectives of this study were to explore subsurface conditions beneath the project site and evaluate the existing earth materials relative to foundation support and lateral pressure design factors, seismic conditions and earthquake-induced liquefaction potential.

In general, the study objectives were met by a visual reconnaissance of the site and vicinity, review of available tentative development plans, exploratory drilling and sampling of earth materials, laboratory testing, seismic evaluations, geologic hazards study, and engineering analysis. The general scope and objectives of the study were established in collaboration with the client/project team. Items considered in our study relevant to this site included the following:

- Near surface and subsurface soil types,
- Expansion potential,
- Settlement and hydro-collapse potential,
- Bearing capacity and Foundation Design Parameters,
- Slabs-on-grade,
- Lateral earth pressures,
- Drainage considerations,
- Temporary excavation support,
- Corrosion potential,
- Groundwater conditions,
- Likely excavation conditions,
- Seismic Conditions,
- Earthquake induced liquefaction potential,

- Pavements,
- Grading considerations, and
- Construction observation and testing considerations.

To address these, the following scope of work was executed:

1. Review of preliminary project plans, available documents, and coordination with the owner's representatives and project design professionals.
2. Site reconnaissance.
3. Evaluation of seismic conditions for the subject location.
4. Hollow Stem Auger drilling, sampling and logging of ten test holes to investigate subsurface conditions.
5. Laboratory testing of soil samples obtained from subsurface explorations, to determine their physical and engineering properties.
6. Geotechnical analysis of the data obtained.
7. Developing conclusions and recommendations for foundation design.
8. Preparation of this report.

1.2 Project Description

Based on the information provided, the proposed Truck Stop will have total site area of 10.21 acres and will consist of mainly constructing the Hydrogen tank and Equipment, above ground storage tanks (ASTs – east and west), building, truck diesel canopy, 0.62 acre pond, gas canopy, cat scale, and truck approach at the location shown on Plot Plan and Boring Location Map (Plate B in Appendix A).

Also, the project consists of heavy duty asphalt pavement for parking and driveways with some rigid concrete pavement sections to accommodate 59 auto parking and 55 truck parking.

1.3 Site Description and Topography

The project site is located just southwest of Redlands Boulevard and Eucalyptus Avenue Intersection and south of Moreno Highway as shown on Vicinity Map (Plate A) and Google Map (Plate D) in Appendix A. At the time of our field exploration, the site was vacant and covered with grass all around.

No hilly terrain or drainage problems exist at the subject property.

1.4 Site Geologic Setting

The City of Moreno Valley lies primarily on bedrock known as the Perris Block. This structural unit is located within the peninsular Range Geomorphic Province, one of the major geologic provinces of Southern California. The Perris Block is a large mass of granitic rock generally bounded by the San Jacinto Fault, the Santa Ana River and a non-defined southwest boundary. The Perris Block has had a history of vertical land movements of several thousand feet due to shifts in the Elsinore and San Jacinto Faults.

The most significant geologic hazard to the project is the potential for moderate to severe ground shaking resulting from earthquakes generated on the faults close to the site. The site is not located in an Alquist-Priolo Special Studies zone for earthquake rupture hazard. The potential for direct surface fault rupture in the project area is considered very low.

1.5 Other Geologic Hazards

Since the site is located in a relatively flat area, we do not consider landslides or other forms of natural slope instability to represent a hazard to the project. The site is not located near any impounded bodies of water therefore tsunamis and seiches are not

considered a potential hazard to the project. The proposed project is an area of stable soil conditions with low shrink-swell potential; hence, no impact is anticipated.

In addition to possible strong earthquake ground motion at the site, the secondary effects of earthquake-induced liquefaction, and earthquake-induced landsliding, were considered. Guidelines for evaluating and mitigation seismic hazards in California (CGS, 2008, SP-117A) summarize procedures for evaluating the earthquake-induced landslide and liquefaction potential.

1.5.1 Earthquake-Induced Liquefaction

The site has not been evaluated for earthquake-induced liquefaction potential as per California Geologic Survey (Plate F, Appendix A). Liquefaction is discussed in more detail in the proceeding sections.

1.5.2 Induced Flooding

The site lies far and/or high enough from the coast or large inland body of water to preclude the hazards of tsunami or seiche waves or inundation from the rupture of an up gradient reservoir.

1.5.3 Eathquake-Induced Landsliding

The site has not been evaluated by California Geologic Survey (CGS) for earthquake-induced landsliding potential. Since the site is far enough from steep slopes, landsliding will be unlikely.

2.0 FIELD EXPLORATION

2.1 Scope

Ten (10) hollow stem auger borings were drilled to depths varying from 11.5 feet to 51.5 feet below the existing site ground level in the proposed development areas. The borings,

B-1 through B-10 are shown on the Plot Plan and Boring Location Map (Plate B) in Appendix A. A continuous record of the materials encountered during the drilling was made by our field engineer and Log of all the test borings are presented on Appendix A

2.2 Drilling and Sampling Procedures

A truck-mounted CME-85 drill rig using 8-inch diameter hollow-stem augers was used to advance the borings.

The lines designating the interface between soil strata on the log of Test Holes represent approximate boundaries. The transition between strata may be gradual. Undisturbed samples were secured at frequent intervals from various locations for laboratory testing.

Core samples and bulk samples were secured at frequent depth intervals for laboratory examination and testing. Both California standard ring samples (CA) and split spoon samples with Penetration test (SPT) blow counts were obtained for further evaluation. Disturbed bulk samples, representative of the surficial subgrade materials were also obtained.

The relative sampler penetration resistance (SPT) exhibited by the deposits sample is tabulated in the Blow per Foot column of the pertinent test hole log. Recorded blow counts for 12 inches of sampler penetration were generally indicative of medium to high shear resistance (140 pounds hammer at a 30-inch drop).

2.3 Field Tests and Measurements

The test holes were examined and logged in the field. Representative samples were obtained to classify the soils. The Unified Soil Classification System (USCS) was used to classify the soils. The soil classification symbols appear on the boring logs and are briefly described in Appendix A. Local and regional geologic characteristics were used to estimate the seismic design criteria.

In addition, relatively undisturbed California ring samples were obtained for laboratory testing. The attached logs tabulate data based on laboratory classification tests and visual observation by the field geologist at the site.

2.4 Standard Penetration Resistance

A sediment is considered to be susceptible to transformation to a fluid mass during a strong seismic event only if the packing of the grains (relative density) is relatively low. Sediments with high relative densities cannot reduce their total volume through the compactive effort induced by the ground shaking. The number of blows necessary to drive a standard sampler (1½" I.D.)-12 inches into the individual stratum is a measurement of a specific property that has been correlated to relative density. The sampling (penetration) resistance offered by sediment from successive blows delivered by a 140-pound hammer falling 30 inches is counted. The number of blows to drive the standard sampler full 12 inches is recorded as the N-Value.

The on-site material yielded penetration resistance which indicates loose to medium dense to dense silty sand/sand to medium stiff to stiff sandy silt with some clay were encountered within the boring depth. The standard penetration resistances of the on-site materials at 5-feet intervals are presented on the boring logs (Appendix A).

3.0 LABORATORY TESTING AND SUMMARY METHODS

Laboratory testing was programmed following a review of field investigation data and after considering the various foundations, floor slabs, and grading elements to be evaluated. In general, this includes physical testing to establish foundation-bearing characteristics, and classification tests.

A. In-Place Moisture & Density (ASTM D2216 & D2937)

In situ moisture content and density were determined for all the undisturbed core samples

obtained during test boring drilling operations. Test results are tabulated on Plates I-1 through I-10, Log of Test Hole.

B. Mechanical Analysis (ASTM D422)

The texture composition of a selected typical sample determined by the hydrometer test method was as follows:

Boring No.	Depth (Feet)	Percent Sand	Percent Silt	Percent Clay
B-3	0-3	46	34	20
B-7	0-3	51	31	18
B-8	0-3	46	31	23

C. Direct Shear (ASTM D3080)

Direct shear tests were performed on undisturbed natural samples of soil encountered within the full depth explored and was considered most pertinent in the design of mat/ spread footings, and moderately deep pier. Tests were performed in the saturated condition at the field density. Individual test results are shown on Plate J.

D. Expansion (ASTM D4829)

Expansion characteristics were determined by the Expansion Index test on a typical bulk sample considered to be generally representative of the near subgrade soils. Test results were as follows:

Test Boring No.	Moisture Content (%)	Dry Density (pcf)	Expansion Index	Remarks
B-8	11.2	104.8	18	Very Low Expansive

According to the test results, the underlying soils generally exhibit very low expansive potential.

E. Consolidation (ASTM D2435)

Consolidation (load deformation) tests were performed on undisturbed samples at selected depths. Plotted test results are presented on Plates K through M.

F. Chemical Sulfate Analysis (CAL 417-A Method)

Chemical sulfate analysis was performed on a representative sample by the CAL 417-A method. A soluble sulfate of 420 parts per million was indicated, which is negligible exposure to concrete, however we recommend using Type II Portland cement for the foundation elements in contact with the underlying soil.

G. R-Value Test (ASTM D-2844)

Representative samples of the subgrade soils were obtained and tested to determine the R-value. The material is thought to be typical and presumed to be representative of the subgrade soils. Testing was performed in general accordance with the latest revisions to the Department of Transportation, State of California, Material & Research Test Method No. 301. Pavement design recommendations are based on the latest Traffic Indices (TI's) and recently tested R-value.

An R-Value test was conducted on a representative sample of the near surface soil consisting of clayey sand with trace of silt. The specimens were tested in a state as near to full saturation as possible to simulate the condition the soil might attain at typical field density and under adverse moisture conditions. The R-Value for a representative soil was determined to be 30. Test results are as follows:

The R-Value for a representative soil was determined to be 30. Test results are as follows:

Test Number	Moisture @ Compaction (%)	Density (pcf)	Exudation Pressure (psi)	Stabilometer "R"-Value
a	12.0	119.3	200	24
b	11.1	120.	350	33
c	10.7	121.8	470	40

* Interpolated 300 psi by Exudation , Rv = 30

4.0 SUBSURFACE DISCUSSION

4.1 General

The recommendations presented are based on entirely upon data derived from a limited number of samples obtained from widely spaced borings. The attached logs, B-1 through B-10 presented in Appendix A are indicators of subsurface conditions only at the specific locations and times noted. This report assumes the uniformity of the geology and soil structure between the borings, however variations can and often do exist. Whenever there is any deviation, difference or change is encountered or becomes known, we should be contacted.

4.2 Material and Soil Conditions Summary

No appreciable artificial fill was encountered at the boring locations during the exploratory drilling. The upper and underlying natural soils are alluvium, light gray, slightly moist to moist, generally fine to very fine grained, medium dense to dense, silty sand and sandy silt, medium stiff to stiff. A more detailed soil profiles are shown on Plates I-1 through I-10, Log of Test Hole (Appendix A).

4.3 Groundwater

Surface water on this site is the likely result of precipitation or surface run-off from surrounding sites. Overall site drainage is in a south and southwesterly direction.

Provisions for surface drainage will need to be accounted for by the project civil engineer.

We recommend that all surface runoff should not be allowed to pond above or flow freely over adjacent slope surfaces. Collected water should be conveyed via a non-erosive device to a suitable storm drain system.

Groundwater was not encountered within a drilled hole depth of 51.5-feet during the field study. No springs or perennial stream flow in local drainages exist based on older topographic maps. We believe the historic groundwater depth is way deeper than 50-feet below existing ground surface.

Groundwater is not anticipated to affect the site adversely. However, these observations reflect site conditions at the time of the investigation and do not preclude changes in local groundwater conditions, localized seepage due to variations in rainfall, heavy irrigation, damaged structure (pipes, etc.), or altered site drainage pattern(s).

Proper surface drainage is imperative to collect and convey any surface water off site to a suitable storm drain system.

4.4 Faulting and Seismicity

The project site is located in the highly seismic Southern California region within the influence of several fault systems that are considered to be active or potentially active. An active fault is defined by the State of California as a "sufficiently active and well defined fault" that has exhibited surface displacement within the Holocene time (about the last 11,000 years).

A potentially active fault is defined by the State as a fault with a history of movement within Pleistocene time (between 11,000 and 1.6 million years ago).

No faults have been mapped trending towards or through the site area. The site area does not lie within an Alquist-Priolo Earthquake Fault Zone as designated by the California

Geological Survey (CGS) (Hart, 1997). For this reason, the potential for direct surface rupture is considered unlikely.

4.4.1 Faults Close to the Site

USGS National Seismic Hazard Maps for Source parameters interactive query has been used to determine the closest fault to the site within 50 miles and has been tabulated on Table – 1 in Appendix B.

The closest known active fault capable of producing a major earthquake is the San Jacinto (SBV+SJV+A) Fault, which is located about 1.03 miles (1.6 km) away from the site. The San Jacinto (SBV+SJV+A) Fault has been assigned to 7.63 Mw magnitude and slip rate of N/A.

4.4.2 U.S.G.S. Earthquake Hazard Program

Latest Interactive U.S.G.S. Earthquake Hazard Program using Unified Hazard Tool has been utilized for Conterminous U.S. 2008 (v3.2.x) and peak ground acceleration.

Peak Horizontal Ground Acceleration for 10% probability of exceedance in 50 years i.e. return period of 475 years	0.6345g
Peak Horizontal Ground Acceleration for 5% probability of exceedance in 50 years i.e. return period of 975 years	0.8106g
Peak Horizontal Ground Acceleration for 2% probability of exceedance in 50 years i.e. return period of 2,475 years	1.0575g

Interactive **Hazard Curve** and **Uniform Hazard Response Spectrum** have been plotted and presented in Appendix B.

4.4.3 Seismic Factors

The following are the geotechnical parameters for earthquake design data in accordance with USGS Design Maps Summary and Detailed Report presented in Appendix B:

Latitude: **33.9364**^{0} and Longitude: **-117.1581**^{0}

NO.	PARAMETERS	VALUES	REFERENCE
1	0.2-Second Mapped Spectral Response Accelerations, **S_s (MCE_R Ground Motion)**	**2.225g**	ASCE 7-16
2	1-Second Mapped Spectral Response Accelerations, **S_1 (MCE_R Ground Motion)**	**0.900g**	ASCE 7-16
3	Site Class	**D**	ASCE 7-16
4	Site Amplification Factor at 0.2 sec, **F_a** According to Section 11.4.4, F_a should not be less than 1.2	**1.0** **1.2**	ASCE 7-16 Use
5	Site Amplification Factor at 1.0 sec, **F_v,** however, according to Table 11.4.2, **F_v should be 1.7**	**Null** **1.7**	ASCE 7-16 Use
6	Site Modified Spectral Acceleration Value, **S_{MS}** $S_{MS} = F_a S_s = 1.2 \times 2.225 = 2.670$	**2.670g** **2.670g**	ASCE 7-16 Use
7	Site Modified Spectral Acceleration Value, **S_{M1}** **$SM_1 = F_v S_1 = 1.7 \times 0.900 = 1.530$**	**Null** **1.530g**	ASCE 7-16 Use
8	Numeric Seismic Design value at 0.2 sec SA, **S_{DS} = 2/3 of S_{MS} = 2/3 x 2.670 = 1.780**	**1.780g** **1.780g**	ASCE 7-16 Use

9	Numeric Seismic Design value at 1.0 sec SA, **S_{D1} = 2/3 of SM_1 = 2/3 x 1.530 = 1.020g**	**Null** **1.020g**	ASCE 7-16 Use

Other seismic parameters are as follows:

Closest Fault Distance	1.03 miles (1.65 km)
Fault Name	San Jacinto (SBV+SJV+A) Fault
Earthquake Magnitude	7.63 M_w
Slip Rate (mm/year)	N/A
PGA_M Site Modified Peak Ground Acceleration	**1.172g**
5% Damped Design Spectral Acceleration at short period, S_{DS}	**1.780g**
5% Damped Design Spectral Acceleration at 1-sec period, S_{D1}	**1.020g**
Seismic Design Category	E
Risk Category	II
Soil Site Class	D

4.5 Design Values

Representative values were selected from the test data and other sources for design and is tabulated below:

Field Density	120 pcf
Expansion Index	18
Angle of Internal Friction (Ult/Peak)	30/31 & 33/34 deg.
Cohesion (Ult/Peak)	350/400 & 200/250 psf
Subgrade K-Value	100 pci

5.0 SITE CONSIDERATIONS

5.1 Site Preparation

5.1.1 General

It is our professional opinion that the proposed construction will not be subject to geologic hazard from settlement, slippage, or landslide, provided the recommendations of this report are incorporated into the proposed construction. It is also our opinion that the proposed construction will not adversely affect the geologic stability of the site or adjacent properties provided the recommendations contained in this report are incorporated into the proposed construction.

The validity of the conclusions contained in this report is based on compliance with the recommendations presented in this section. Any excavating, trenching, or disturbances that occur after completion of the earthwork must be backfilled, compacted and tested in accordance with the recommendations contained herein. If any unobserved and untested earthwork, trenching, or backfilling occurs, then the conclusions and recommendations in this report may not be relied on.

5.1.2 Site Clearing

Prior to grading, all debris including construction materials should entirely be removed from the site and disposed of off-site. Existing any undesirable materials should also be removed and hauled off-site. Existing utilities (if Any) should be removed and relocated as required. Any construction debris or ant buried or other contaminated exposed during site clearance should be removed and hauled away from the site. The resulting excavation from any removal should be cleared of loose material then backfilled with compacted soil. Oversized rocks greater than 6 inches should be removed.

5.1.3 Excavation

Excavations into the on-site soils may encounter a variety of conditions. Caving on clean sands may be encountered. The contractor should be made responsible for designing and constructing stable, temporary excavations as required to maintain stability of the excavation sides. All excavations should be sloped or shored in the interest of safety following local and federal regulations including current OSHA excavation and trench safety standards.

Conventional equipment can be used for the excavations for shallow foundations, drilled shafts, and utility trenches for the proposed construction. The speed and ease of excavation are dependent on the nature of the deposit, the type of equipment used, and the skill and experience of the equipment operator.

5.1.4 ASTs Pad Preparation

At the locations where Above Ground Storage tanks (ASTs) are located, proof-roll the exposed subgrade to observe for any loose or disturbed soils that may remain. Remove and replace any loose or disturbed soils prior to placing any additional fill materials required to reach the finished subgrade elevation.

5.1.5 Compliance

Recommendations for foundations and slabs-on-grade supported on compacted fills or prepared subgrade depend upon compliance with the **Site Preparation recommendations** and Recommended Earthwork Specifications in Appendix D.

To assess compliance, observation and testing should be performed under the direction of a geotechnical engineer. Please contact us to provide observation and testing services.

5.2 Lateral Earth Pressures

5.2.1 Lateral Passive Resistance

Horizontal forces may be resisted by passive pressure acting on the side and sliding resistance. The passive pressure may be 300 psf per foot of embedment from the lowest adjacent grade up to a maximum of 4,500 psf.

Friction between base of footings and/or floor slabs, and the underlying soils may be assumed to be 40 percent of the dead loads.

The allowable bearing capacity and the allowable resistance of horizontal forces may be increased one-third for transient forces.

Friction and lateral pressure may be combined, but not to exceed two-thirds of the allowable lateral pressure.

5.2.2 Retaining Wall Recommendations (If Any)

The retaining wall structures may be supported by shallow footings bearing on compacted fill or competent subgrade soil. Following bearing values may be used for foundation design.

Shallow footings for the wall and/or secondary structure may be designed for an allowable bearing value of 1,500 pounds per square foot (psf) embedded at least 18 inches, a minimum width of 12 inches, placed over a minimum 12-inch thick engineered fill compacted to 90% relative density or over a competent subgrade soil. This basic bearing value may be increased by 200 psf for each one-foot increase in depth, and by 100 psf for each additional 12 inches in width to a maximum value of 2,500 psf.

Recommended bearing values are for dead plus live loads and may be increased by one-third for combined dead, live, and transient forces such as wind load and seismic forces.

It is recommended that all foundations be reinforced per structural design, but no less than a minimum reinforcement of 2#5 bars top and 2#5 bars at the bottom.

It is estimated that total settlement will be less than 0.50" and differential settlement will be less than 0.25" over a horizontal distance of 30 feet.

5.2.3 Active Pressure

Recommended active lateral soil pressure values for design of drained retaining wall are as follows:

Surface Slope of Retained Material (Horizontal:Vertical)	Equivalent Fluid Weight (pcf) (Native Backfill)
Level	35
2:1	45

A Pipe and gravel drain (4" perforated PVC embedded in at least three cubic feet of gravel per lineal foot of pipe wrapped with Mirafi geofabric 10N or equivalent) should be provided on the retained earth side and near the base of all the retaining walls. Backfill should consist of sand and/or gravel. While all backfills should be compacted to the required degree, care should be taken when working close to the walls to prevent excessive pressure.

5.2.4 At-Rest Earth Pressure (If Any)

Retaining walls (basement walls, underground vault, if applicable) should be designed for at-rest conditions. The recommended earth pressure for at-rest conditions is an equivalent fluid density of 60 pounds per cubic foot without surcharge loading.

Note:

The equivalent fluid pressures presented herein do not include the lateral pressures arising from the presence of the following:

- Hydrostatic conditions, submergence or partial submergence
- Sloping backfill, positively or negatively
- Surcharge loading, permanent or temporary
- Seismic or dynamic conditions

5.2.5 Seismic Force on Wall

Lateral forces on retaining walls (exceeding 6 feet in height) due to earthquake movements in accordance with Section 1803A.5.12 of the 2019 CBC for active and at-rest conditions may be calculated as follows:

Seismic active Force = 11 H^2 pounds/ft of wall (Inverted triangular distribution, acting at 0.6H from bottom).

Seismic at-rest Force = 22 H^2 pounds/ft of wall (Rectangular Distribution, acting at 0.6H from bottom).

Where, H = Height of the retaining wall in feet

5.3 On-Site Fill Soils

5.3.1 Materials

On-site clean, low-expansive potential soils, or imported materials may be used as fill material for the following:

- Foundation Areas
- Interior Slab Areas

- Pavement Areas
- Backfill

Any earth materials imported or excavated on the property may be utilized in the fill provided that each material has been determined to be suitable by the soil engineer. These materials should be free of roots, tree branches, other organic matter or other deleterious materials. Soils of poor gradation, undesirable expansion potential, or substandard strength characteristics may be designated by the consultant as unsuitable and may require blending with other soils to serve as a satisfactory fill material.

Gradation (as per ASTM C136) should be as follows:

Size	% by Weight
6"	100
4"	85-100
¾"	70-100
No 4 Sieve	50-100
No. 200 Sieve	40 (max)

Any import material should have an expansion Index, EI less than 20.

5.3.2 Placement and Compaction

a. Place and compact approved fill material in nearly horizontal layers that when compacted should not exceed 6 inches in thickness.

b. Use appropriate equipment and procedures that will produce recommended densities and water contents throughout the lift. Moisture condition, blending, and mixing of the fill layer should continue until the fill materials have a uniform moisture content at or above optimum moisture.

c. Uncompacted fill lifts should not exceed 8 inches.

d. Materials should be compacted to the following:

- On-site or imported soil, reworked and fill:

	Minimum % (ASTM D-1557 Laboratory Standard)
Subgrade Below Footings	90
Subgrade Below Slab-on Grade	90
Subgrade Below Pavement	90
Crush Rock Below Slab-on-Grade	95
Aggregate Base below pavement	95

5.4 Soil Corrosivity

5.4.1 Corrosion and Sulfate Attack Protection

A major factor in determining soil corrosivity is electrical Resistivity. The electrical Resistivity of a soil is a measure of its resistance to the flow of electrical current. Corrosion of buried metal is an electrochemical process in which the amount of metal loss due to corrosion is directly proportional to the flow of electrical current (DC) from the metal into the soil. Corrosion currents, following Ohm's Law, are inversely proportional to soil Resistivity. Lower electrical resistivities result from higher moisture and chemical contents and indicate corrosive soil. Other soil characteristics that can influence corrosivity toward metals are pH, chemical content, soil types and site drainage.

Based on test results and our past experience at this site, soils are classified as corrosive to ferrous metals and negligible sulfate exposure to concrete. The type of alluvial deposits encountered at this site and in this area in general is known to cause

corrosion problems. Reportedly, there has been such experience with metal pipes at this specific site. Ferrous metals and pipes should be properly coated and wrapped. Please be advised that this firm does not practice corrosion engineering; therefore, we recommend that upon completion of precise grading, onsite soils be analyzed by a qualified corrosion engineer to evaluate the impact of chemical activity of these soils on buried metallic pipes and other underground structures. If necessary, more elaborate corrosion protection systems may be considered as may be recommended by a corrosion expert.

5.4.2 Concrete

Concrete for foundation where in contact with the underlying soils should be designed in accordance with the 2019 CBC, ACI 318 Section 4.3, Table 4.3.1 (2005). As the potential for sulfate attack on concrete appears negligible, however, we recommend that the use of type II Portland cement, with a maximum water-cement ratio of 0.50, and a minimum compressive strength of 3,000 psi should be taken into consideration for the foundation elements in contact with the soil.

For all concrete in contact with soil, concrete cover over rebar should be maintained per California Building Code (CBC 2019).

5.5 Building Foundation Recommendations

Based upon results of the field explorations, laboratory testing and engineering analysis, it is concluded that the site is suitable for the proposed development at the subject site. The site is subject to ground shaking typical of the Southern California area, any construction should conform to the current seismic design provision of the California Building Code (2019), and/or other regulatory codes.

Following are more specific recommendations:

5.5.1 Conventional/Spread Foundations

The planned ASTs and the proposed building may be supported by conventional continuous and/or isolated shallow spread pad footings, bearing on certified compacted fill. The foundations should bear on engineered fills achieved by removal and re-compaction of the soils below foundation and slab elements.

Footings placed at least 18 inches below finish subgrade and 3 feet x 3 feet spread footings, 24 inches deep may be designed for an allowable bearing value of 1,500 pounds per square foot (psf). The footing width should be a minimum of 18 inches. An increase of 100 psf and 200 psf are allowed for each additional foot of increase in width and depth, respectively to a maximum value of 2,000 psf.

This allowable bearing value is for dead plus live load and may be increased by one-third for combined dead, live, and transient loads such are wind or seismic forces.

All footings at minimum shall be incorporated with 2#5 bars at top and 2#5 bars at the bottom.

Isolated column footings should be connected to other foundation elements with reinforced grade beams.

Total settlement is estimated to be less than ½ inch for loading of 2 kips per square foot. Differential settlement will be 1/3 of an inch maximum for a horizontal distance of 30 feet. Additional foundation movements could occur if water from any source infiltrates the foundation soils. Therefore, proper drainage should be provided in the final design and during construction.

All footings, stem walls, and masonry walls should be steel-reinforced to reduce the potential for distress caused by differential foundation movements. The use of joints at openings or other discontinuities in masonry walls is recommended.

We recommend that geotechnical engineer, or his representative thereof, observe the footing excavations before reinforcing steel and concrete are placed. This observation is to assess whether the soils exposed are similar to those anticipated based on our exploration. Any soft, loose, or otherwise unacceptable soils should be undercut to suitable materials and backfilled with approved fill materials, or controlled density fill (i.e., lean concrete). Soil backfill should be properly placed and compacted.

5.5.2 Mat Foundation (Alternate Foundation for ASTs)

Alternatively, above ground storage tanks (ASTs) and proposed building may be supported on the mat foundation. The semi-rigid mat foundation should be at least 4-feet or more below the finish grade and may be designed for an allowable bearing capacity of 2,000 pounds per square foot. This basic allowable bearing value is for dead load plus live load and may be increased by one-third for short duration loading, such as wind or seismic forces. Modulus of subgrade reaction, k value may be taken as 125 pci for subgrade soil at 4 feet depth.

For lateral support, an average passive capacity of 300 pounds per square foot per foot to a maximum of 4,500 psf may be used for mat footing.

Minimum thickness of mat footing should be 24 inches. The bottom of excavation at 4 feet below the finish grade should be compacted to 90 % of the maximum density as per ASTM D-1557 laboratory Standard, certified by the Geotechnical Engineer of record prior to pouring concrete. Other aspects of the design including reinforcement and the thickness of the mat should be determined by the project structural engineer. The mat may be buried and should be backfilled with on-site material compacted to 90 percent.

5.5.3 Drilled Shafts for Canopy Foundation

Proposed truck diesel and gas canopies may be supported by moderately deep cast-in-place concrete caisson bearing into natural subgrade materials.

The lateral forces will be the controlling element in this case depending on the height of the canopies, wind load, and/or seismic loads. Therefore, it is recommended that the minimum pier diameter should be 36 inches and should be extended to a minimum depth of 10 feet into native alluvial material.

The pier may be designed for an allowable end bearing of 3,000 pounds per square foot or for an average frictional resistance of 300 pounds per square foot. Either skin resistance or end bearing or combined will provide adequate foundation support for the proposed canopies. The uppermost length of the drilled shaft foundation equal to the diameter of the shaft should be ignored when evaluating allowable capacities.

For lateral support, a passive capacity of 350 pounds per square foot per foot to a maximum of 5,000 psf may be used.

It is recommended that concrete be placed immediately after drilling. The concrete for the pier should be placed through tremmie or other directional devices. Pier drilling operations should be subject to observation by this office to confirm the conditions encountered are consistent with the conclusions and recommendations of this report and/or to make any appropriate modifications, if necessary. Please note that caving is very likely to be encountered during caisson drilling. The contractor should be ready to provide either casing or other methods to prevent caving.

We anticipate that total settlement of the proposed structures, supported by drilled shaft foundations as recommended, should be less than ½-inch. Additional foundation could occur if water from any source infiltrates the foundation soils.

Therefore, proper drainage should be provided in the final design and during construction.

5.6 Slab Design Recommendation

Based on test results, the underlying surface soils are low expansive, therefore it is recommended to maintain subgrade soil at near optimum moisture content during precise grading and / or by periodic watering following grading and incorporated slab reinforcement of No. 3 bars 16 inches center to center cross pattern. The slab thickness should be 5 inches minimum. However, the thickness and reinforcement requirements of the slab should be evaluated by the project structural engineer.

It is further recommended that moisture retarder (Stego 15 mil or approved equivalent) be provided over a minimum of 6 inches of ¾" aggregate rock rolled and compacted to 95% relative compaction, with the gradation (90-100% passing on sieve ¾" size, 1-10% passing on No. 4 sieve, and 0-3% passing on No. 100 sieve) over the compacted fill subgrade compacted to 90% relative compaction.

The modulus of subgrade reaction (k) is estimated to be 100 pounds per cubic inch (pci).

All concrete placement and curing operations should follow the American Concrete Institute (ACI 318-19) manual recommendations. Improper curing techniques, high slump (high water-cement ratio), or both, could cause excessive shrinkage, cracking, or curling. Concrete slabs should be allowed to cure properly before placing vinyl or other moisture-sensitive floor coverings.

5.7 General Drainage and Moisture Protection

It is recommended to provide positive surface drainage systems consisting of a combination of sloped concrete flatwork, sheet flow gradients, swales, surface area drains (where needed) around the structures. Ground surface should have a minimum gradient of 2 percent away from any building foundations and similar structures. Surface waters should not be allowed to collect or pond against building foundations and within the level

areas of the site. Buildings should be provided with gutters and downspouts. Downspouts shall be connected to area drains by pipes.

Planters near the building should be avoided if possible and if used, they should be water proofed. Irrigation should be controlled and an area drain system should be provided to avoid water intrusion beneath the structure.

5.8 Volume Changes

Based on our experience, there is typically a reduction in soil volume when the native soils are excavated and then compacted. Typical shrinkage percentages are usually in the range of 10 to 20 percent when the soils are compacted depending on the native in-place density.

5.9 Underground Utilities

Utility backfill should be placed and compacted by mechanical means as recommended in this report. Testing of the backfill should be conducted to verify conformance to the required specifications. Ponding or water jetting of the backfill should not be conducted.

Exterior trenches adjacent to, and within areas extending below a 1:1 plane projected from the outside bottom edge of the footing, and all trenches beneath hardscape features should be compacted to at least 90% of the laboratory standard. Sand backfill, unless excavated from the trench, should not be used in these backfill areas. Compaction testing and observations, along with probing, should be accomplished to verify the desired results.

All trench excavations should conform to CAL_OSHA and local safety codes.

5.10 Pavement Design

5.10.1 Pavement Section

The pavement sections presented on the following page are based on the R-value data tested, the assumed TI values, and the guidelines presented in the latest revision to the California Department of Transportation "Highway Design Manual," latest edition.

Typical categories of paved areas with corresponding traffic indices are listed as follows:

T.I.	5.0	Parking Stalls
T.I.	6.0	Driveways
T.I.	8.0	Trucks Route, Fire Lane, Truck Parking

The recommended pavement sections provided below are intended as a minimum guideline. If thinner or highly variable pavement sections are constructed, increased maintenance and repair could be expected.

If the ADT (average daily traffic) or ADTT (average daily truck traffic) increases beyond that intended, as reflected by the TI used for design, increased maintenance and repair could be required for the pavement sections.

Consideration should be given to the increased potential for distress from overuse of paved areas by heavy equipment and/or construction related traffic (e.g., concrete trucks, loaded supply trucks, etc.), particularly when the final section is not in place (i.e., topcoat). Best management construction practices should be followed at all times, especially during inclement weather.

Based on an "R" Value of 30, the following thickness of aggregate base was determined for vehicular and non-vehicular areas.

Asphalt Concrete Pavement Section Design Table

Pavement Areas	Traffic Index, TI	Asphalt Concrete AC (inch)	Aggregate Base AB (inch)
Truck Route, Fire lane Truck Parking	8	4"	12"
Driveway/Under Canopy	6	4"	6"
Parking Stall	5	4"	4"

Rigid Concrete Pavement Section Design Table

Pavement Areas	Traffic Index, TI	Concrete (inch)	Aggregate Base AB (inch)
Heavy Truck Vehicular Areas	6	6"	10"
Walkways	-	4"	4"

For concrete section, #4 reinforcement 12-inch center to center each way cross pattern are recommended. However structural design by structural engineer will suffix.

5.10.2 Pavement Grading Recommendations

5.10.3 General

A representative of Geotechnical Solutions, Inc. (GSI) should be present for the preparation of subgrade, aggregate base, and asphalt concrete for flexible pavement and concrete for rigid pavement.

5.10.4 Subgrade Preparation

After removing the existing deleterious materials on the pavement areas and hauled offsite, all surficial deposits of loose soil material should be removed and excavate 12

inches below the base and recompacted as recommended. The bottom is further scarified to a depth of at least 6 inches; moisture conditioned as necessary and compacted to 90 percent of the maximum laboratory density as determined by ASTM Test Method D-1557.

Deleterious material, excessively wet or dry pockets, concentrated zones of oversized rock fragments, and any other unsuitable materials encountered during excavation or grading should be removed. The compacted fill material should then be brought to the elevation of the proposed subgrade for the pavement. The subgrade should be proof-rolled in order to ensure a uniform, firm and unyielding surface. All grading and fill placement should be observed by the project soils engineer and/or his representative.

5.10.5 Aggregate Base

Compaction and rolling are required for the recommended base section. Minimum relative compaction required will be 95 percent of the laboratory maximum density as determined by ASTM Test Designation D-1557. Aggregate base should be in accordance with Crush Rock Class II aggregate base (minimum R-value=78) and sample should be brought for testing and approval prior to delivery to the site. Please note that crush miscellaneous base is not allowed.

5.10.6 Asphalt Concrete Pavement

Asphalt concrete pavement should be Performance Grade PG 64-10 1/2" maximum aggregate size and should be placed and compacted in two layers. Asphalt concrete shall be compacted to 95 percent of the Hveem Laboratory Standard.

5.10.7 Concrete Pavement Areas:

Concrete flatwork including sidewalks, patio-type slabs and concrete sub-slabs to be covered with decorative pavers should be at least 4 inches thick and provided with construction joints or expansion joints every 6 feet or less.

Concrete driveway slabs should be at least 6 inches thick over 6 inches of aggregate base (for vehicular areas) and 4" of concrete over 4" of aggregate base (Non-vehicular areas) over approved subgrade, providing #4 reinforcement 12" center to center each way cross pattern and provided with construction joints or expansion joints every 10 feet or less.

At the driveway areas, the top 12 inches of subgrade should be excavated; moisture conditioned and recompacted with minimum 90% compaction immediately prior to placing the rock base and asphalt concrete. Rock-base material shall be class II aggregate base and to be compacted to 95 percent minimum.

Design section must be verified during site grading, based on R value test and appropriate modifications shall be made, if required.

5.11 Exterior Concrete Flatwork

In order to reduce the potential for unsightly cracking, concrete sidewalks, deck and patio slabs and concrete sub-slabs to be covered with decorative pavers should be at least 4 inches thick and provided with construction joints or expansion joints every 6 feet or less. Concrete driveway slabs should be at least 5 inches thick and provided with construction joints or expansion joints every 10 feet or less.

5.12 Temporary Excavations

Temporary excavations may not be required but in case it is needed then the Contractor should be made fully responsible for adequate support of the excavation at all times. Temporary support of excavation structures plans should be designed by a Professional Engineer licensed in the State of California and experienced in such work and these plans should be reviewed by us and approved by the City of Moreno Valley, if necessary.

Since the site has adequate room to lay back with temporary excavation slopes, shoring may not be needed, but this should be evaluated based on field conditions.

The stability of temporary excavations depends on many factors, including the slope angle, the shearing strength of the existing material, orientation and inclination of geologic structure, the height of the slope and the length of time the excavation remains unsupported and exposed to equipment vibrations and rainfall. All excavations should be observed by the engineering geologist during excavation.

The possibility of temporary excavations failing may be minimized by: 1) keeping the time between cutting and filling operations to a minimum; 2) limiting excavation length exposed at any one time; and, 3) cutting no steeper than a 1:1 (horizontal to vertical [h:v]) inclination and no steeper for false cuts along the toe for key excavations, cleanouts, etc.

Following is the temporary excavation recommendation, subject to field verification by the geotechnical consultant.

Excavation up to 4 feet	Vertical
Excavation over 4' but not to exceed 12'	1:1 (H: V)
Excavation from 12' to 20'	1½:1 (H: V)

6.0 GENERAL COMMENTS AND LIMITATIONS

6.1 Plan Review

Final project plans should be reviewed by this office prior to construction, so that construction is in accordance with the conclusions and recommendations of this report. Based on our review, supplemental recommendations and/or further geotechnical studies may be warranted.

6.2 Geotechnical Observation and Testing

All footing trenches for the proposed structure should be observed by a representative of this firm to verify that they were excavated into competent bearing soils per the recommendations of this report as well as to the minimum depths recommended above.

These observations should be performed prior to the placement of forms or reinforcement. The excavations should be trimmed neat, level and square. All loose, sloughed or moisture softened soil should be removed prior to placing concrete.

6.3 Construction Verification Procedure

Construction of foundations and placement of engineered fill should be done under the observation and documentation of a representative of the project Geotechnical Engineer. The following are noted as items requiring verification during construction.

Pre-Grading Meeting:

A pre-grading meeting should be held prior to the start of any grading activities. Attendees of this meeting should include the Owner, the Architect, the Geotechnical Engineer, and the Contractor, to review procedures and scheduling.

Footing Observations:

Construction of foundation and slab should be performed under inspection of the Geotechnical Engineer. Footings should be observed and certified by Geotechnical Engineer of Record after excavation and prior to placement of reinforcing bars.

Earthwork Observations:

Relative compaction of all fill materials placed on site should be tested in accordance with ASTM D6938. All new fill shall be brought to near optimum moisture, placed in layers not exceeding six inches in thickness, and compacted to at least 90 percent relative compaction for subgrade and 95 percent relative compaction for aggregate base. No jetting or water tamping of fill soils shall be permitted. All imported soil for engineered fill should be pre-approved by the Geotechnical Engineer and consist of clean, granular, non-expansive soil, free of vegetation and other debris with an Expansion Index of 20 or less.

At all times, the contractor should have a responsible field superintendent on the project in full charge of the work, with authority to make decisions. He should cooperate fully with the Geotechnical Engineer in carrying out the work.

All footing trenches for continuous and spread footings and subgrade for the slab areas should be observed by the project Geotechnical Engineer to verify that over-excavation and re-compaction operations of adequate depth, thickness, and compaction have been performed as specified. All footing excavations should be trimmed neat, level and square. All loose, sloughed or moisture softened soil should be removed and replaced with properly compacted soil.

6.4 Recommendations for Construction

Surveying: The contractor shall set necessary stakes to verify lines and grades as shown on the plan.

Changed Conditions: Any changed conditions not found during exploration should be brought to the attention of the soil engineer. As a result of the changed conditions, the soil engineer will provide further recommendations.

Site Drainage: The site should be sloped to direct water away from all structures and divert to a positive drainage device at the street. Roof gutters and down spouts shall be provided for roof drainage. Down spouts shall be connected to the positive area drains.

Footing and Utilities Trenches. All the Footing excavations as well as utility trenches should be observed by a representative of Geotechnical Solutions, prior to placement of steel.

6.5 Limitations

This report is issued with the understanding that it is the responsibility of the owner or his representative to see that the information and recommendations contained herein are

called to the attention of the other members of the design team for the project and that the applicable information is incorporated into the plans, and that the necessary steps are taken to see that the contractors and the subcontractors carry out such recommendations. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or in part, by changes outside of our control. The validity of the recommendations of this report assumes that Geotechnical Solutions, Inc. will be retained to provide construction monitoring services. The scope of our services did not include any investigation for the presence or absence of hazardous or toxic materials.

6.6 Closure

The Conclusions and recommendations contained herein are based on the findings and observations made at the test boring locations. It is not unusual to find conditions between and beyond such locations, which differ from the conditions encountered. If conditions are encountered during construction, which appear to differ from those previously disclosed, this office should be notified so as to consider the need for modifications. On-site construction observations and wherever appropriate, tests should be performed during the course of construction by a representative of this office to evaluate compliance with the design concepts, specifications, and recommendations contained herein.

This report has been compiled for the exclusive use of our client, it shall not be transferred to, or used by, other parties, or applied to any project on this site other than described herein without consent and /or thorough review by this office.

Geotechnical Solutions, Inc.

References

California Department of Water Resources groundwater well data http://wdl.water.ca.gov.

California Division of Mines and Geology, 1997, Fault-Rupture Hazard Zones in California, Special Publication 42.

California, Division of Mines and Geology, 2008, Special Publication 117A, Guidelines for Evaluating and Mitigating Seismic Hazards.

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Jennings, C.W., 1994, Preliminary Fault Activity Map of California, Scale 1:750,000, DMG Open File Report 92-03.

Morton, D.M. and F.K. Miller, 2006, "Geologic Map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California: U.S. Geological Survey, Open-File Report OF-2006-1217, Scale 1:100,000.

U.S. Seismic Design Maps Summary & Detailed Report (SEAOC/OSHPOD)

2008 National Seismic Hazard Maps – Source Parameters. **https://earthquake.usgs.gov/cfusion/hazfaults_2008_search/query_results.cfm**

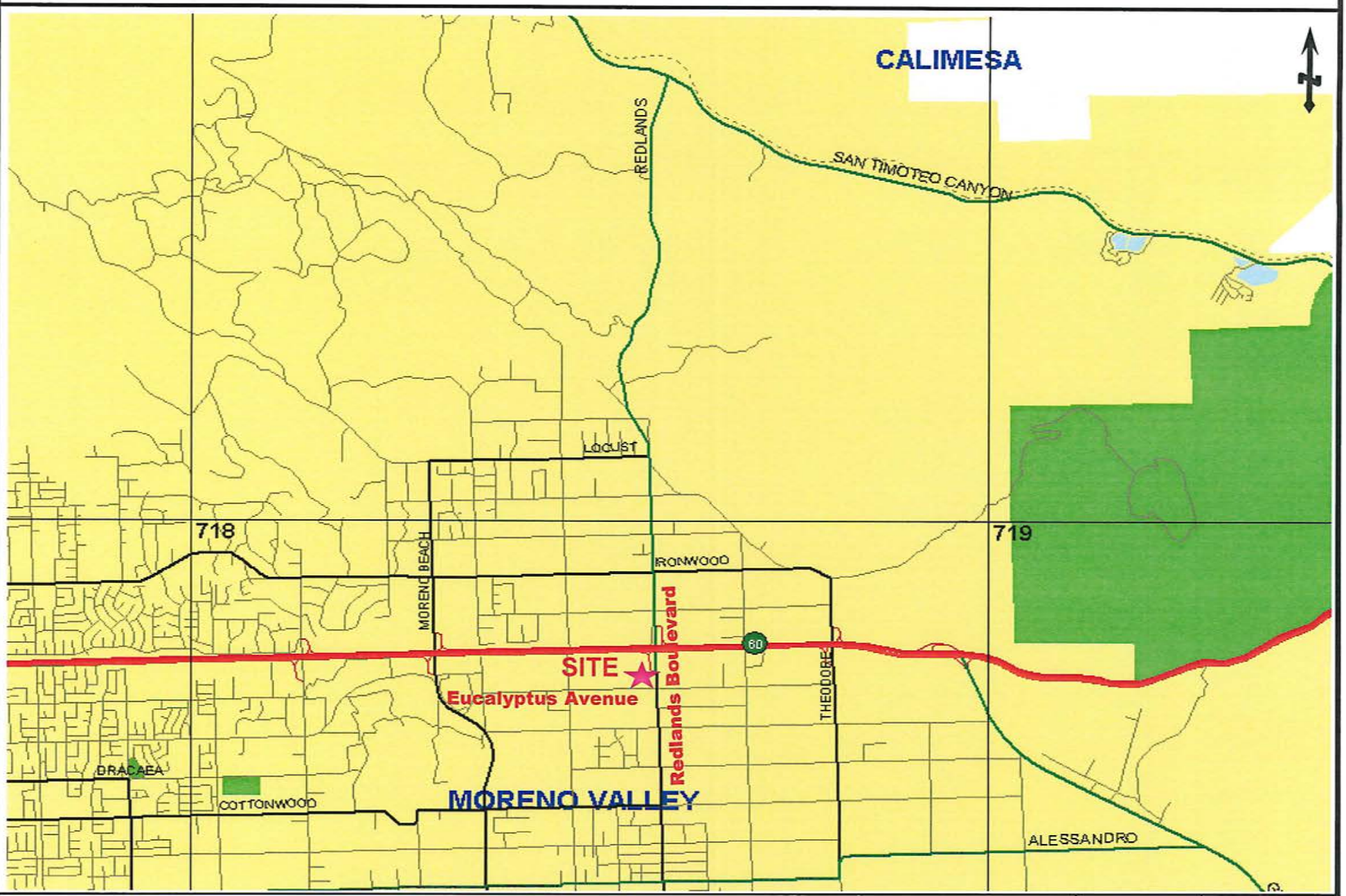
U.S.G.S., Earthquake Hazards Program, Unified Hazard Tool – Interactive Hazard Curve and Interactive Deaggregation web Site. **https://earthquake.usgs.gov/hazards/interactive/**

Appendix A

Plates:

- Vicinity Map
- Plot Plan and Boring Location Map
- Topographic Map
- Google Map
- Geologic Map
- Seismic Hazard Map – CGS
- Fault, Liquefaction and Flood Zones
- Groundwater Closest Well
- Groundwater Map
- Log of Test Holes
- Direct Shear Tests
- Consolidation Tests

VICINITY MAP



Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	A

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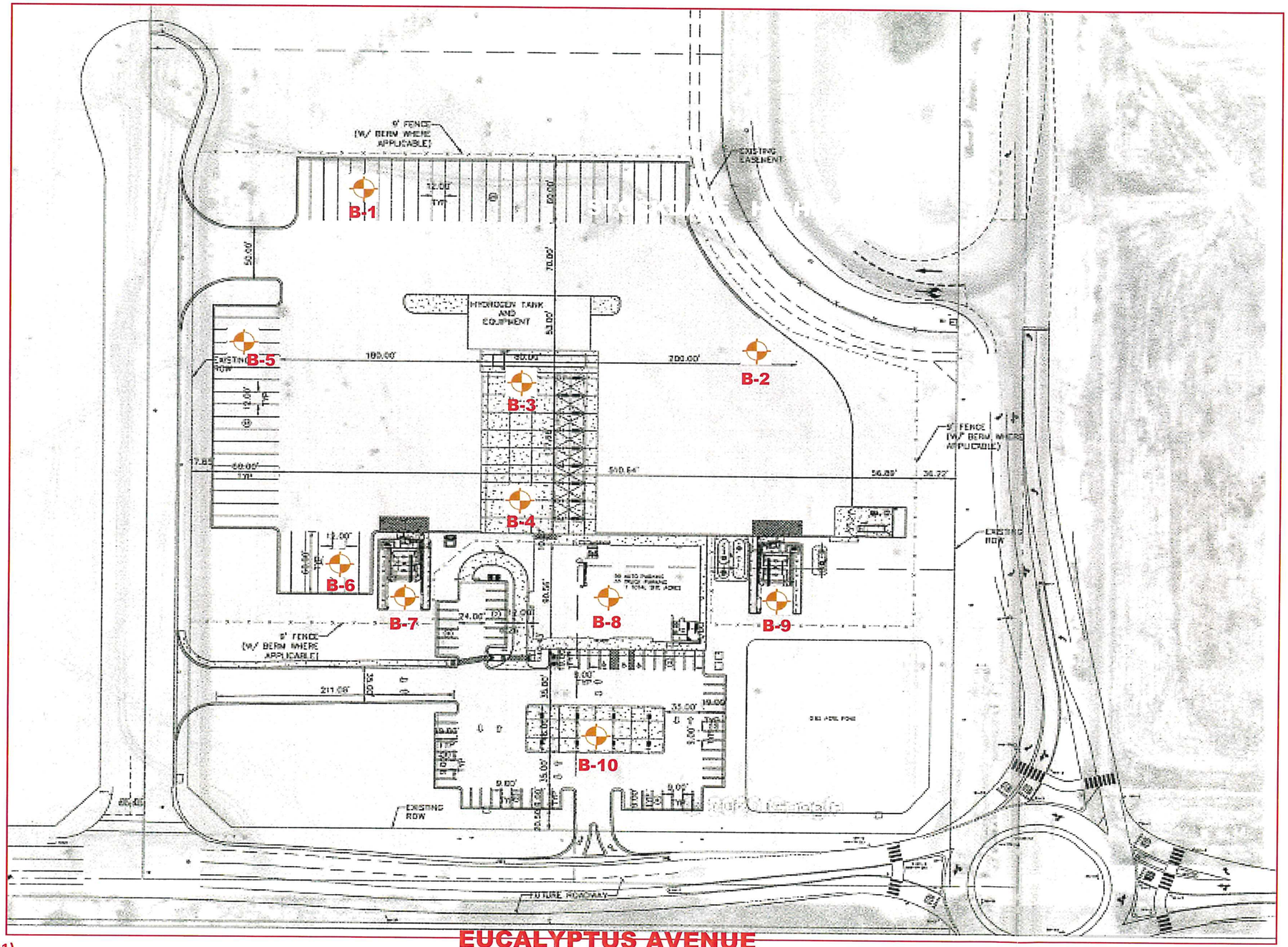
PLOT PLAN & BORING LOCATION MAP



B-10 Hollow Stem Auger Borings (2021)

EUCALYPTUS AVENUE

SCALE: 1" = 100'

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South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	B
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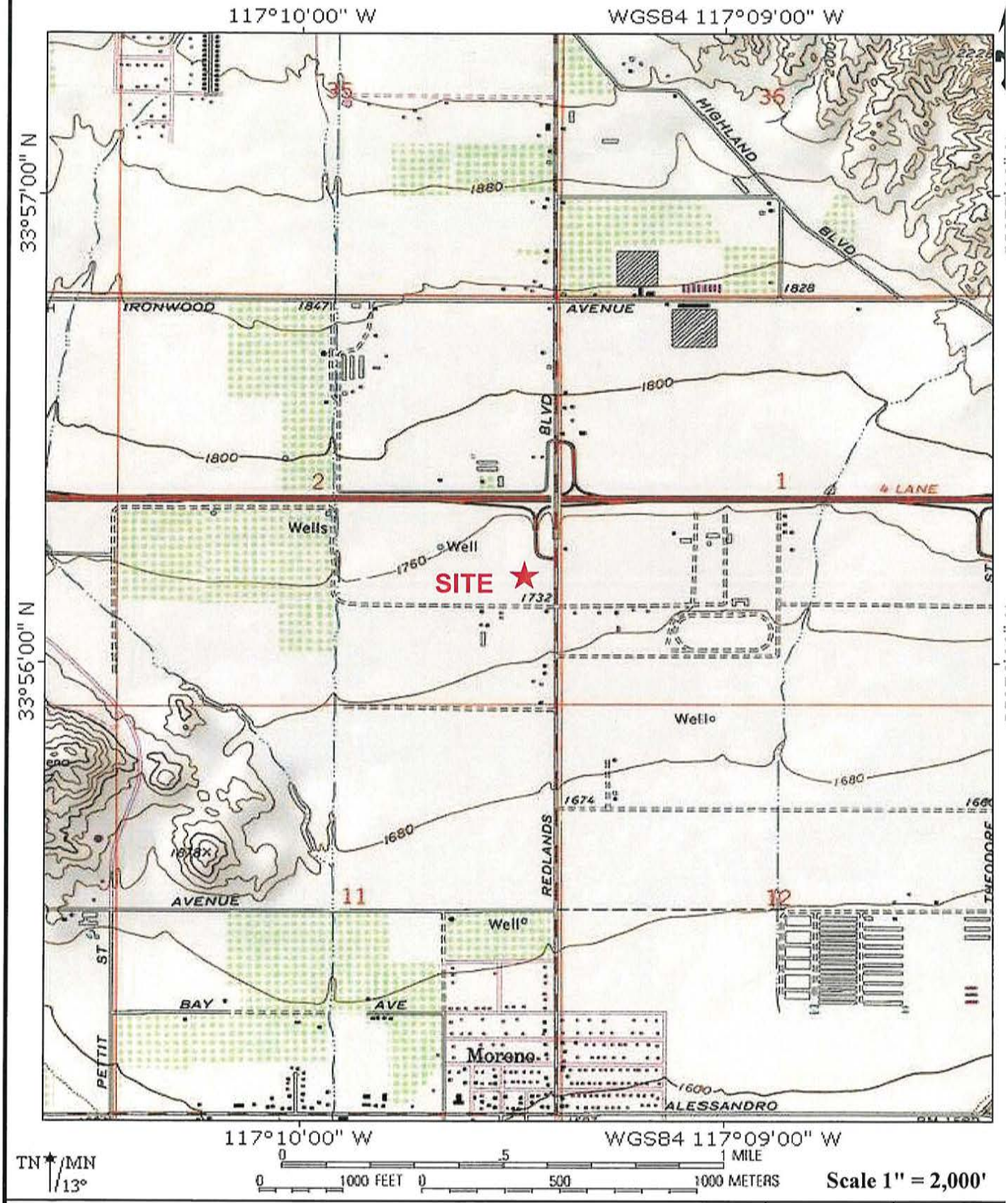
TOPOGRAPHIC MAP



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South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	C

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GOOGLE MAP

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	D
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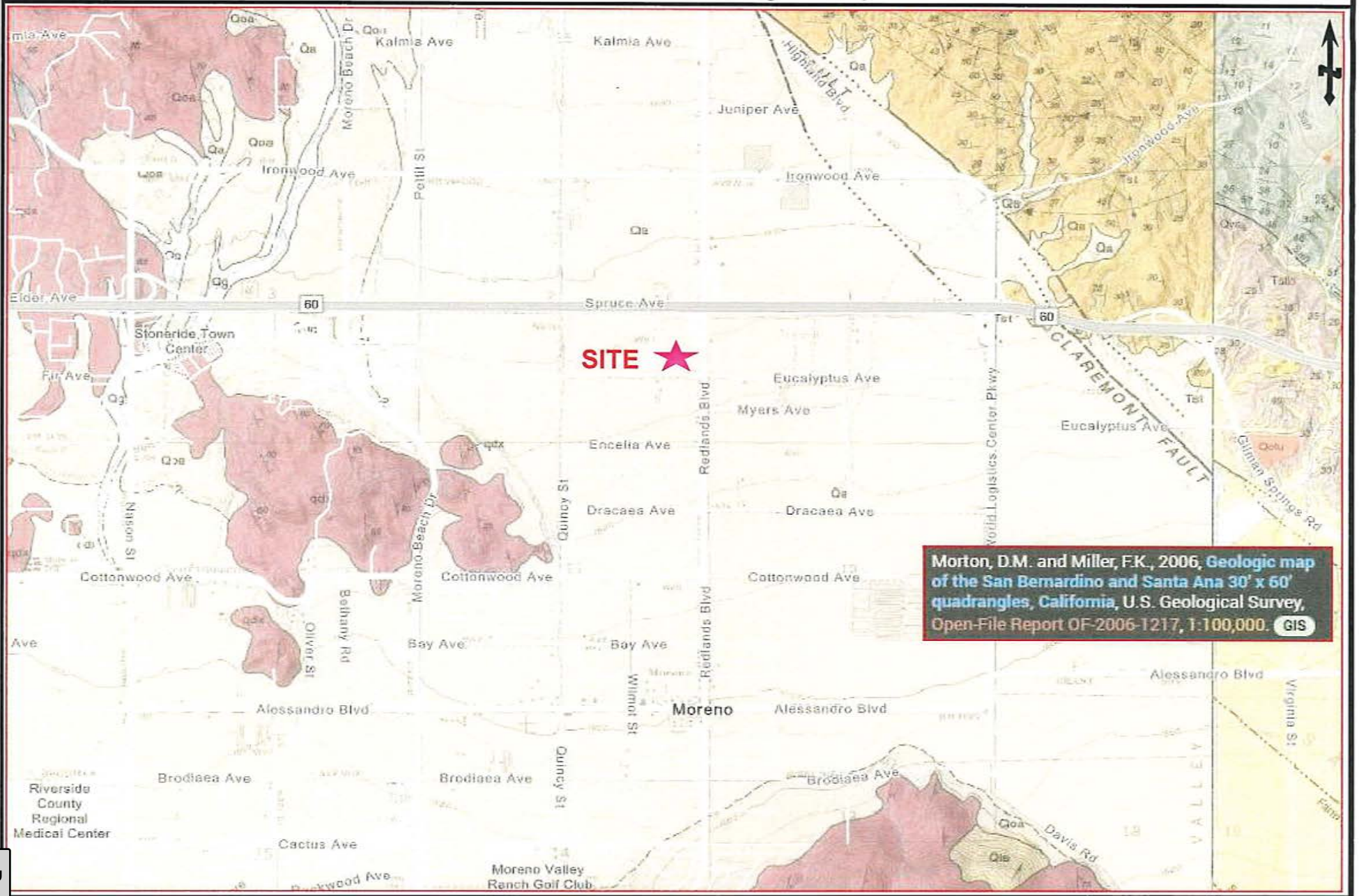
Site Regional Geologic Map



Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	E

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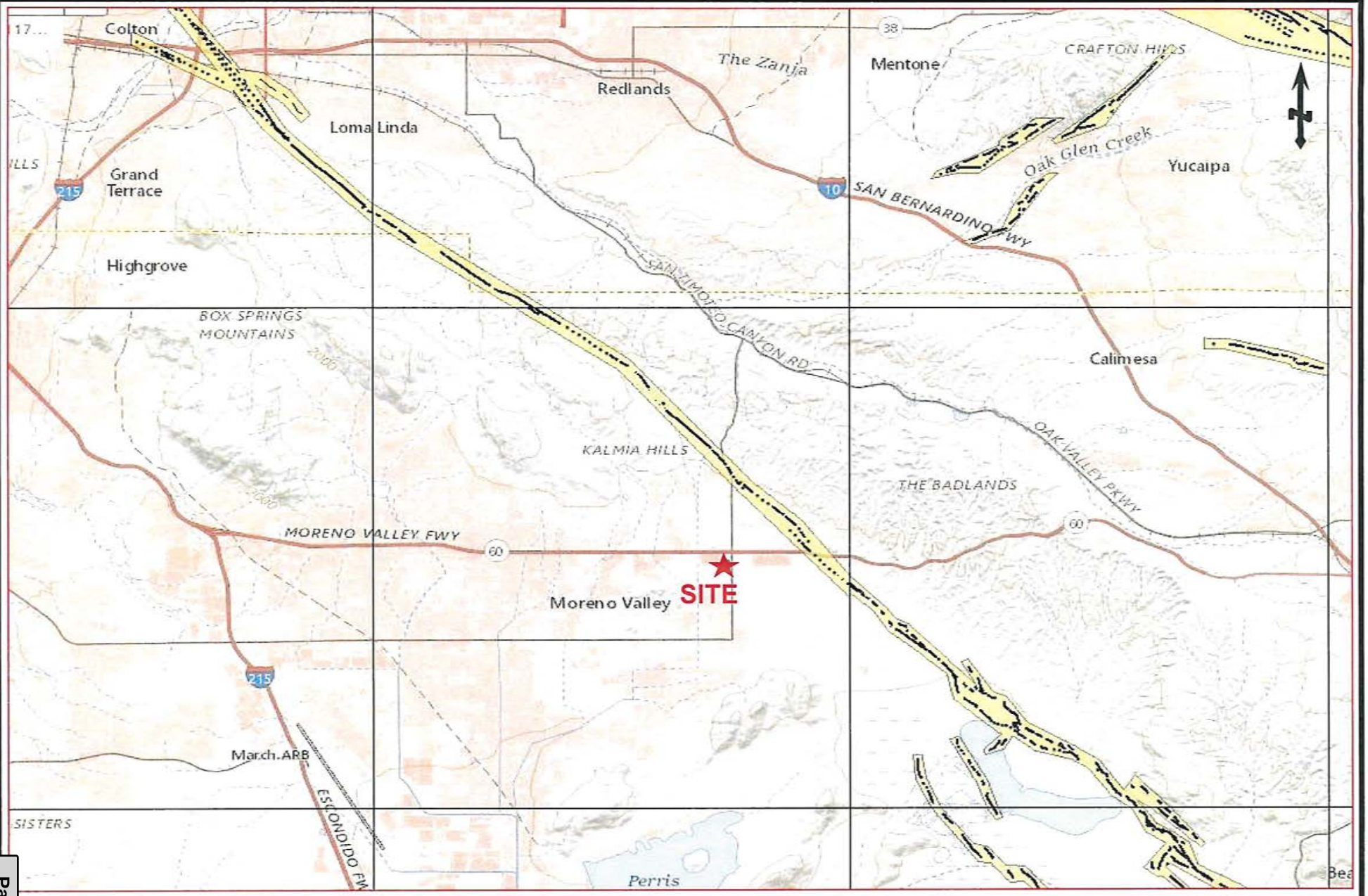
Seismic Hazard Fault Map



Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	F

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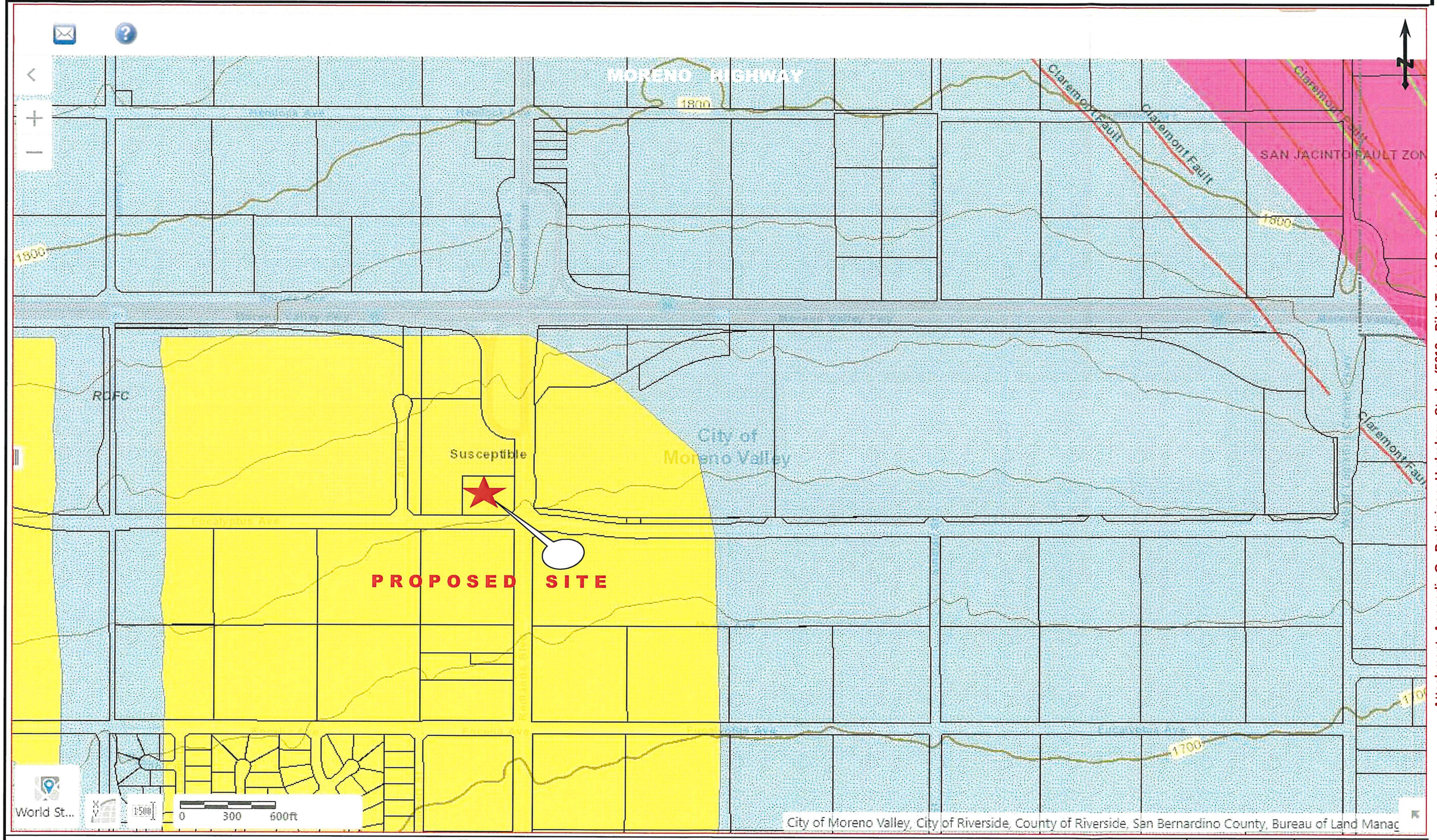
FAULT, LIQUEFACTION, FLOOD ZONES



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South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA

Project No.	G-5852-01
Plate:	G

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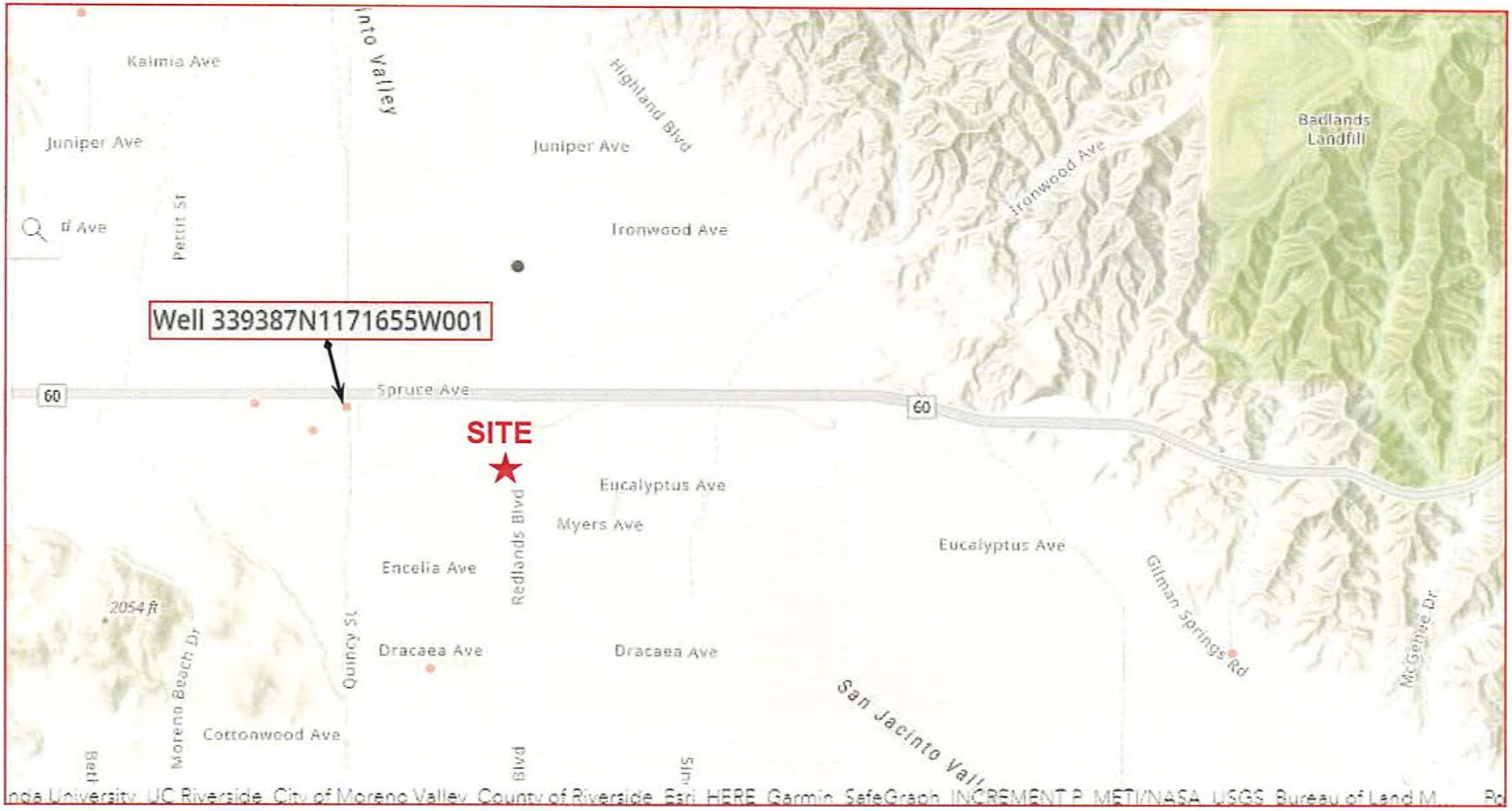
GROUNDWATER MAP - CLOSEST WELL DATA



Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	H-1

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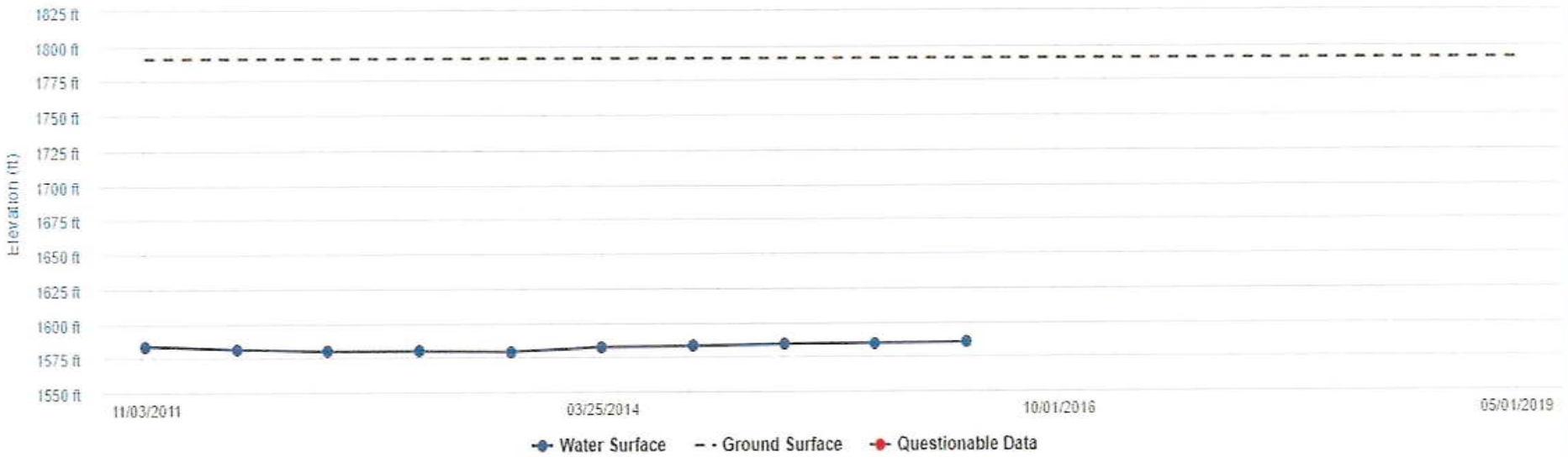
GROUNDWATER MAP - WELL DATA

Groundwater Levels for Well 339387N1171655W001



Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency
11/03/2011 00:00:00	1791.640	1790.840	208.2	1583.44	207.4		Eastern Municipal Water D...
02/15/2012 00:00:00	1791.640	1790.840	210.5	1581.14	209.7		Eastern Municipal Water D...
10/16/2012 00:00:00	1791.640	1790.840	212.3	1579.34	211.5		Eastern Municipal Water D...
05/08/2013 00:00:00	1791.640	1790.840	212.3	1579.34	211.5		Eastern Municipal Water D...
10/31/2013 00:00:00	1791.640	1790.840	212.7	1578.94	211.9		Eastern Municipal Water D...

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	H-2

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-1
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-1
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA/AB	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	11.5
Drill Rig Type :	B-61	Drilling Contractor :	Whitecomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
			Bag #1				Sandy Silt, light gray, soft			52	HD:48(SA):36(SI):16(CL)
	2		C-1	3-5-7		12	@2':Sandy Silt/Silty Sand, very fine, light gray, slightly moist, medium stiff/ loose	3	101		
1741	5		C-2	3-3-7		10	@5':Sandy Silt (ML) w/clay, very fine grained, gray, moist, medium stiff	7	103		
										35	HD:65(SA):30(SI):5(CL)
1736	10		C-3	4-7-11		18	@10':Silty Sand (SM), very fine, light gray, moist, medium dense	11	106		DS: P=Peak / Ult=Ultimate $\phi = 34^0$, c =250 psf (P) $\phi = 33^0$, c = 200 psf (Ult)
1731	15						End of Boring = 11.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1726	20										
1721	25										
1716	30										
1711	35										
1706	40										
1701	45										

Geotechnical Solutions, Inc.

Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-2
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-2
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	11.5
Drill Rig Type :	B-61	Drilling Contractor :	Whitecomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
	2		Bag #1				Sandy Silt, light gray, moist				
			C-1	7-10-8		18	@2':Silty Sand (SM) w/clay, very fin, light gray, moist, medium dense	7	104		
1741	5		C-2	3-4-7		11	@5':Sandy Silt (ML) w/clay, very fine grained, gray, moist, medium stiff	9	101		
1736	10		C-3	3-3-7		10	@10': Same as above	8	89		
1731	15						End of Boring = 11.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1726	20										
1721	25										
1716	30										
1711	35										
1706	40										
1701	45										

Geotechnical Solutions, Inc.

Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-3
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-3
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA/AB	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	51.5
Drill Rig Type :	B-61	Drilling Contractor :	Randy - Whitcomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
	2		Bag #1				@ 0-2'; Sandy Silt (ML), light gray, moist, very fine grained, slightly moist			54	HD:46(SA):34(SI):20(CL)
			C-1	12-7-7		14	@2': Silty Sand (SM), light gray, slightly moist, loose	2	106		
1741	5		C-2	4-5-7		12	@5':Sandy Silt (ML), very fine grained, light gray, moist, medium stiff	5	104		DS: P=Peak / Ult=Ultimate $\phi = 31^0$, c =400 psf (P) $\phi = 30^0$, c = 350 psf (Ult)
1736	10		C-3	4-5-8		13	@10':Same as above	4	113		
1731	15		S-1	3-3-5		8	@ 15': Silty Sand (SM), moist, light gray, medium dense	6	-		
1726	20		S-2	4-3-6		9	@20': Same as above	6	-		
1721	25		S-3	4-4-6		10	@25': Same as above	5	-		
1716	30		S-4	3-4-7		11	@30': Same as above	4	-		
1711	35						End of Boring = 31.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1706	40										
1701	45										

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-4
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-4
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	21.5
Drill Rig Type :	B-61	Drilling Contractor :	Randy - Whitcomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
	2		Bag #1				@ 0-2'; Silty SAND (SM), light gray, moist, very fine grained loose				
			C-1	4-7-9		16	@2':Sandy Silt (ML), gray, slightly moist, stiff, fine to medium grained	2	99		
1741	5		C-2	4-4-6		10	@5':Sandy Silt (ML), fine to very fine, light gray, moist, medium stiff	7	94		
1736	10		C-3	6-6-8		14	@10': Same as above, stiff	5	115		
1731	15		S-1	4-4-6		10	@ 15': Same as above, sample disturbed	2	-		
1726	20		S-2	3-4-5		9	@20': Sandy Silt (ML), moist, gray, stiff	5	-		
1721	25						End of Boring = 21.5 feet No groundwater encountered No Caving but possible for bigger diameter holes Backfilled w/Cuttings				
1716	30										
1711	35										
1706	40										
1701	45										

Geotechnical Solutions, Inc.

Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-5
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-5
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	11.5
Drill Rig Type :	B-61	Drilling Contractor :	Whitecomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
			Bag #1				Silty Sand, light gray, loose				
	2										
			C-1	8-9-10		20	@2':Silty Sand (SM) w/clay, very fin, light gray, moist, medium dense	6	106		
1741	5										
			C-2	3-3-9		12	@5':Sandy Silt (ML) w/clay, very fine grained, gray, moist, medium stiff	8	104		
1736	10										
			C-3	3-4-8		12	@10': Same as above	10	101		
1731	15						End of Boring = 11.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1726	20										
1721	25										
1716	30										
1711	35										
1706	40										
1701	45										

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-6
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-6
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	11.5
Drill Rig Type :	B-61	Drilling Contractor :	Whitecomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
			Bag #1				Sandy Silt (ML), light gray,soft				
	2		C-1	3-3-4		7	@2':Silty Sand (SM) w/clay, very fine, light gray, moist, medium dense	4	103		
1741	5		C-2	3-5-6		11	@5':Sandy Silt (ML) w/clay, very fine grained, gray, moist, medium stiff	7	95		
1736	10		C-3	2-5-9		14	@10': Same as above	9	106		
1731	15						End of Boring = 11.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1726	20										
1721	25										
1716	30										
1711	35										
1706	40										
1701	45										

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-7
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-7
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	51.5
Drill Rig Type :	B-61	Drilling Contractor :	Randy - Whitcomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
	2		Bag #1				@ 0-2';Sandy Silt (ML), light gray, moist, very fine grained soft			49	HD:51(SA):31(SI):18(CL)
			C-1	5-5-8		13	@2':Same as above, medium stiff	3	101		
1741	5		C-2	4-8-10		17	@5'Sandy Silt (ML), fine to very fine, light gray, moist, stiff	5	97		
1736	10		C-3	6-8-13		21	@10':same as above	8	107		
1731	15		S-1	8-7-8		15	@ 15': Sand, silty, light brown, slightly moist, medium dense	3	-		
1726	20		S-2	7-13-18		31	@20': Sand (SP), silty, moist, gray, dense	5	-		
1721	25						End of Boring = 21.5 feet No groundwater encountered No Caving but possible for bigger diameter holes Backfilled w/Cuttings				
1716	30										
1711	35										
1706	40										
1701	45										

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-8
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-8a
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA/AB	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	51.5
Drill Rig Type :	B-61	Drilling Contractor :	Randy - Whitcomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
			Bag #1				@ 0-2'; Sandy Silt (ML), light gray, moist, very fine grained, slightly moist			54	HD:46(SA):31(SI):23(CL)
	2		C-1	3-3-5		8	@2': Silty Sand (SM), light gray, slightly moist, loose	4	101		
1741	5		C-2	3-7-7		14	@5':Sandy Silt (ML), very fine grained, light gray, moist, stiff	7	99		
1736	10		C-3	4-7-9		16	@10':Same as above	8	105		
1731	15		S-1	3-7-5		12	@ 15': Silty Sand (SM), moist, light gray, medium dense	7	-		
1726	20		S-2	4-6-6		12	@20': Same as above	7	-		
1721	25		S-3	6-9-10		19	@25': Same as above	8	-		
1716	30		S-4	12-13-14		27	@30': Same as above	6	-		
1711	35		S-5	6-8-9		17	@35': Same as above	8	-		
1706	40		S-6	40-23-24		47	@40': Sand (SP), dense, brownish gray, slightly moist, coarse grained	7	-		
1701	45		S-7	5-7-10		17	@45': Same as above	13	-		

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-8
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-8b
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	51.5
Drill Rig Type :	B-61	Drilling Contractor :	Randy - Whitcomb Drilling	Approx. Surface Elevation, feet :	303 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
258	45		S-7	5-7-10		17	@45'; SAND (SP), brownish gray, slightly moist, medium to coarse grained, dense	13	-		
253	50		S-8	7-9-10		19	@5':Same as above	10	-		
248							End of Boring = 51.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/cuttings				
248											
243											
238											
233											
228											
223											

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-9
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-9
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	11.5
Drill Rig Type :	B-61	Drilling Contractor :	Whitecomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
			Bag #1				Sandy Silt (ML), light gray,soft				
	2		C-1	3-5-7		12	@2':Sandy Silt (ML), very fine, light gray, moist, medium stiff	5	93		
1741	5		C-2	4-8-10		18	@5':Sandy Silt (ML) w/clay, very fine grained, gray, moist, medium stiff	6	105		
1736	10		C-3	10-11-14		25	@10': Same as above	4	106	32	HD:68(SA):25(SI):7(CL)
1731	15						End of Boring = 11.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1726	20										
1721	25										
1716	30										
1711	35										
1706	40										
1701	45										

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-10
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-10
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	21.5
Drill Rig Type :	B-61	Drilling Contractor :	Randy - Whitcomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass/Weeds				
	2		Bag #1				@ 0-2'; Silty SAND (SM), light gray, moist, very fine grained loose				
			C-1	5-8-10		18	@2':Silty Sand (SM), gray, slightly moist, loose to medium dense fine to medium grained	3	100		
1741	5		C-2	4-6-6		12	@5':Sandy Silt (ML), fine to very fine, light gray, moist, medium stiff	8	99		
1736	10		C-3	7-7-9		16	@10': Same as above.	7	114		
1731	15		S-1	3-4-7		11	@ 15': Same as above, sample disturbed	5	-		
1726	20		S-2	4-5-5		10	@20': Sandy Silt (ML), moist, gray, stiff	4	-		
1721	25						End of Boring = 21.5 feet No groundwater encountered No Caving but possible for bigger diameter holes Backfilled w/Cuttings				
1716	30										
1711	35										
1706	40										
1701	45										

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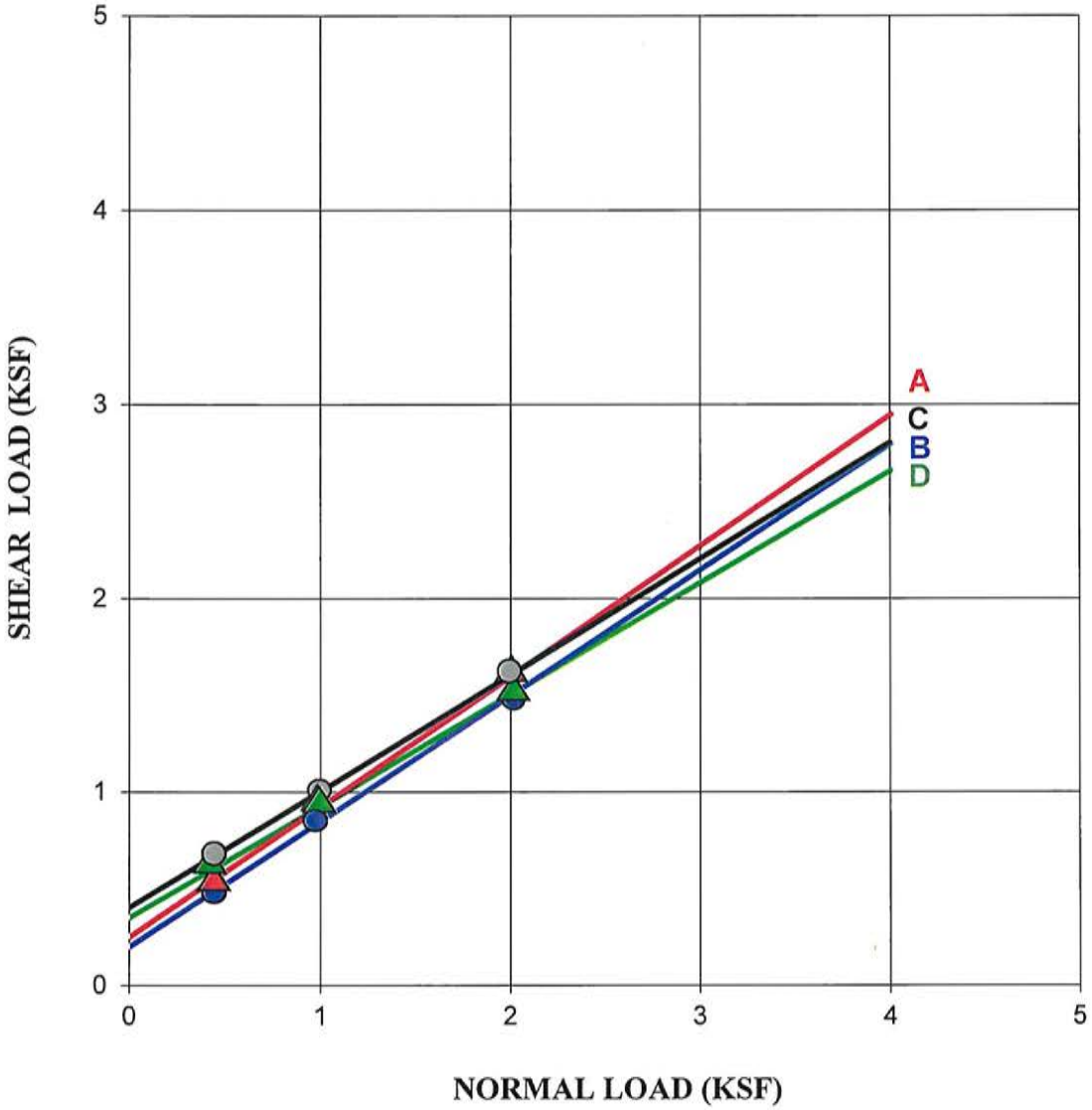
DIRECT SHEAR



SYMBOL	LOCATION	DEPTH (FT)	TEST CONDITION		COHESION (PSF)	FRICTION (DEG)
A	B-1	10'	Saturated - Drained	Peak	250	34
B	B-1	10'	Saturated - Drained	Ultimate	200	33
C	B-3	5'	Saturated - Drained	Peak	400	31
D	B-3	5'	Saturated - Drained	Ultimate	350	30

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	J

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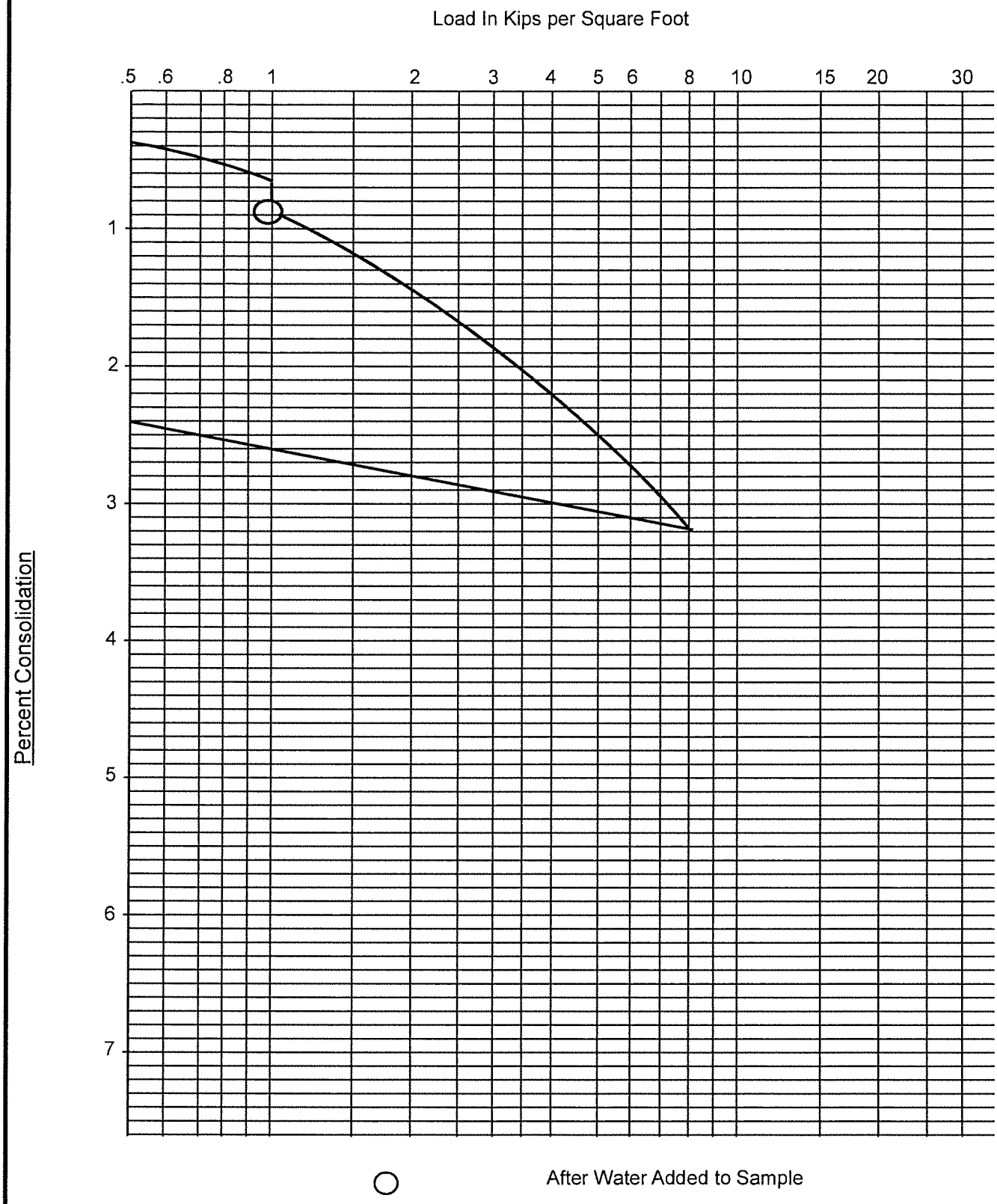
CONSOLIDATION



B-1 @ 2'

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	K

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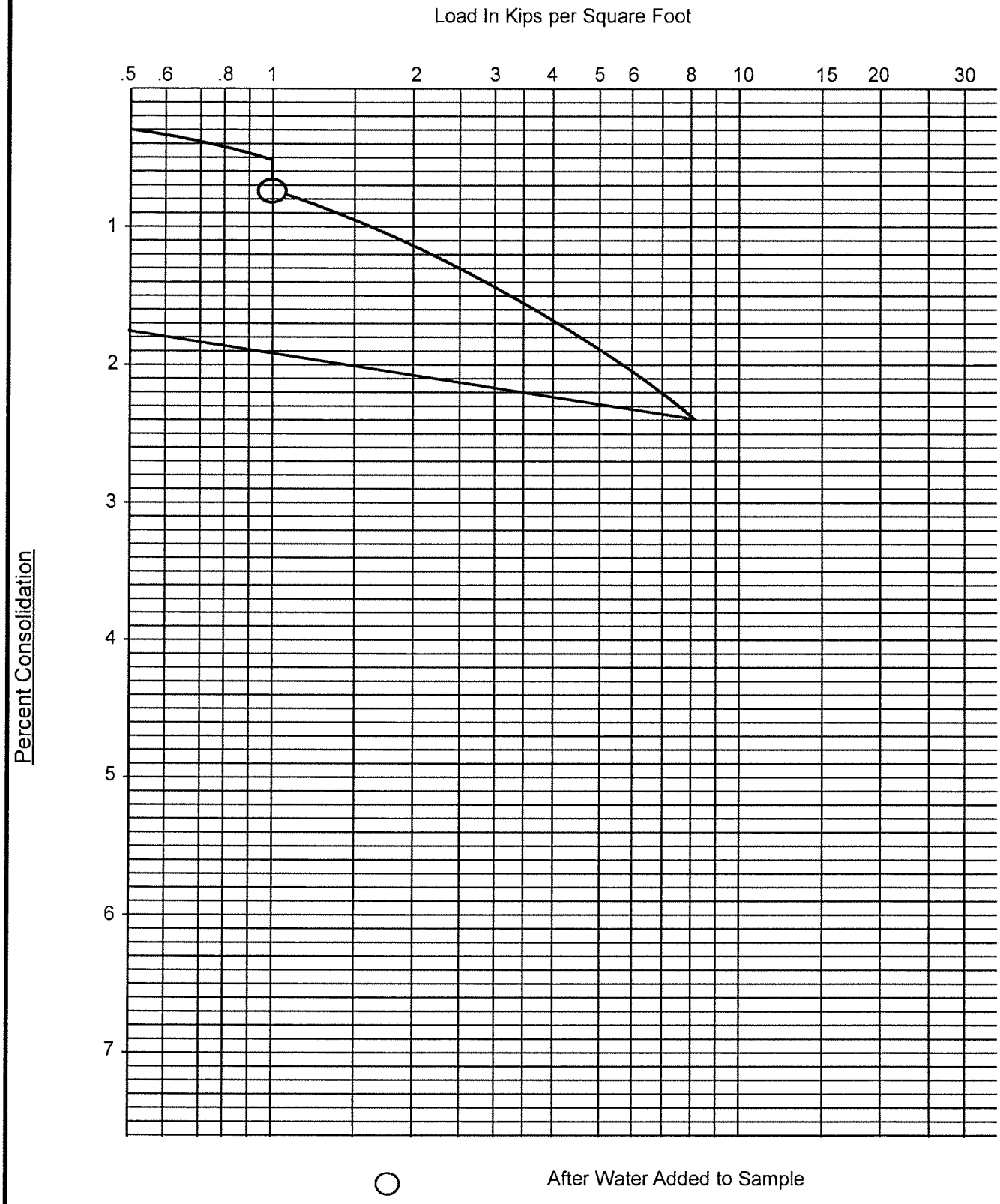
CONSOLIDATION



Boring 1 @ 10'

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	L

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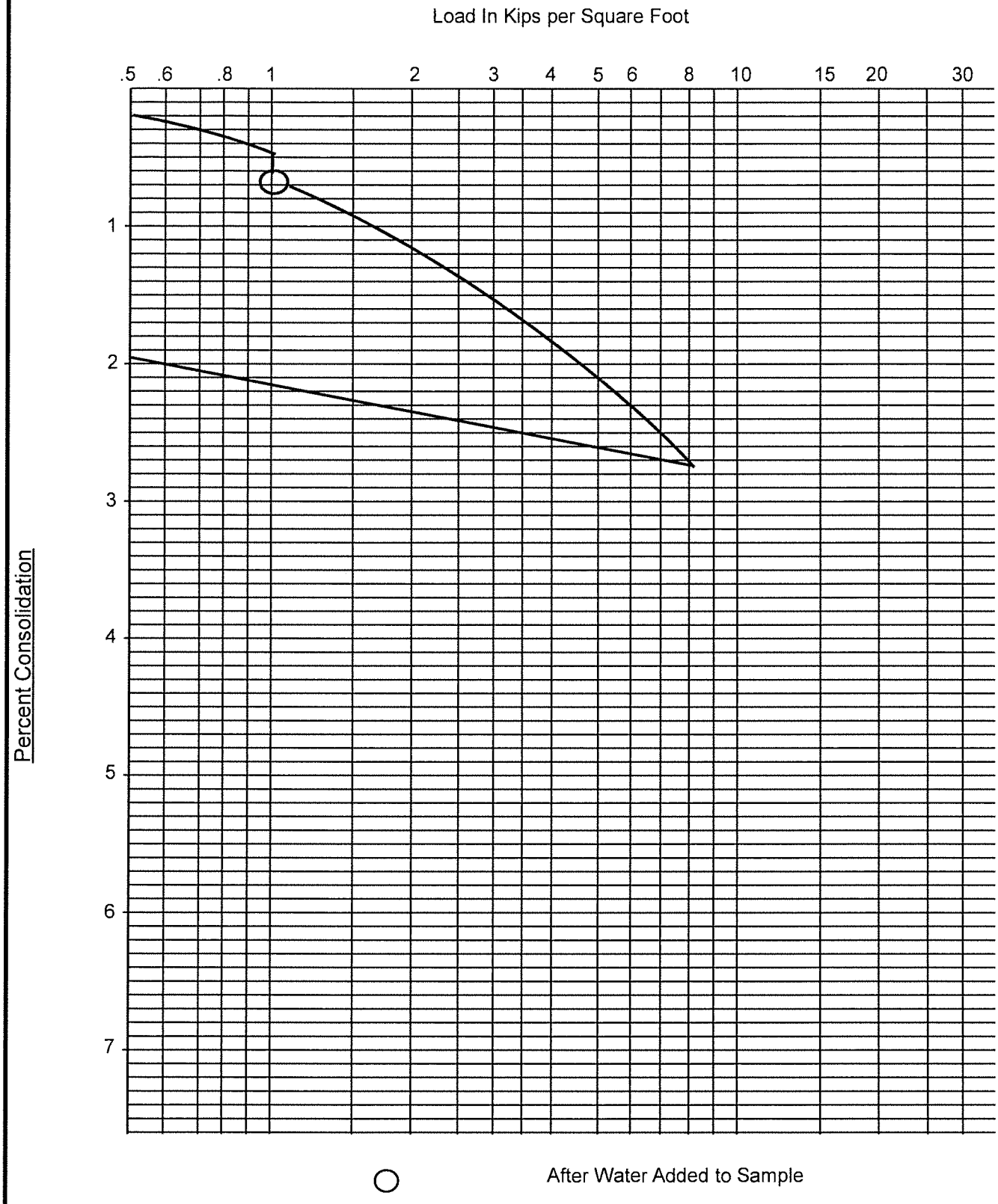
CONSOLIDATION



B-8 @ 5'

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	M

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Appendix B

Seismic Data

- Table 1 - Faults Table
- Unified Hazard Tool – Hazard Curve
- U.S. Seismic Design Maps Summary & Detailed Report (SEAOC / OSHPD)

Table-1
2008 National Seismic Hazard Maps - Source Parameters
Moreno Valley Truck Stop

Distance in Miles	Name	State	Pref Slip Rate (mm/yr)	Dip (degrees)	Dip Dir	Slip Sense	Rupture Top (km)	Rupture Bottom (km)	Length (km)
1.03	San Jacinto;SBV+SJV+A	CA	n/a	90	V	strike slip	0	16	134
1.03	San Jacinto;SJV	CA	18	90	V	strike slip	0	16	43
1.03	San Jacinto;SBV+SJV+A+CC+B+SM	CA	n/a	90	V	strike slip	0.1	15	241
1.03	San Jacinto;SJV+A+C	CA	n/a	90	V	strike slip	0	17	136
1.03	San Jacinto;SBV+SJV+A+CC	CA	n/a	90	V	strike slip	0	16	181
1.03	San Jacinto;SJV+A	CA	n/a	90	V	strike slip	0	17	89
1.03	San Jacinto;SJV+A+CC+B	CA	n/a	90	V	strike slip	0.1	15	170
1.03	San Jacinto;SBV+SJV+A+C	CA	n/a	90	V	strike slip	0	17	181
1.03	San Jacinto;SBV+SJV	CA	n/a	90	V	strike slip	0	16	88
1.03	San Jacinto;SJV+A+CC	CA	n/a	90	V	strike slip	0	16	136
1.03	San Jacinto;SBV+SJV+A+CC+B	CA	n/a	90	V	strike slip	0.1	15	215
1.03	San Jacinto;SJV+A+CC+B+SM	CA	n/a	90	V	strike slip	0.1	15	196
4.22	San Jacinto;A	CA	9	90	V	strike slip	0	17	71
4.22	San Jacinto;A+CC+B	CA	n/a	90	V	strike slip	0.1	15	152
4.22	San Jacinto;A+CC	CA	n/a	90	V	strike slip	0	16	118
4.22	San Jacinto;A+C	CA	n/a	90	V	strike slip	0	17	118
4.22	San Jacinto;A+CC+B+SM	CA	n/a	90	V	strike slip	0.1	15	178
7.21	San Jacinto;SBV	CA	6	90	V	strike slip	0	16	45
11.95	S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	14	384

11.95	S. San Andreas;CC+BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	86		strike slip	0.1	13	449
11.95	S. San Andreas;CC+BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	14	322
11.95	S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	86		strike slip	0.1	13	512
11.95	S. San Andreas;SSB+BG	CA	n/a	71		strike slip	0	13	101
11.95	S. San Andreas;NSB+SSB+BG+CO	CA	n/a	79		strike slip	0.2	12	206
11.95	S. San Andreas;CC+BB+NM+SM+NSB+SSB+BG	CA	n/a	85		strike slip	0	14	380
11.95	S. San Andreas;BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	85		strike slip	0.1	13	390
11.95	S. San Andreas;BB+NM+SM+NSB+SSB+BG	CA	n/a	84		strike slip	0	14	321
11.95	S. San Andreas;BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	14	263
11.95	S. San Andreas;SSB+BG+CO	CA	n/a	77		strike slip	0.2	12	170
11.95	S. San Andreas;SSB	CA	16	90	V	strike slip	0	13	43
11.95	S. San Andreas;SM+NSB+SSB+BG+CO	CA	n/a	83		strike slip	0.1	13	303
11.95	S. San Andreas;SM+NSB+SSB+BG	CA	n/a	81		strike slip	0	13	234
11.95	S. San Andreas;SM+NSB+SSB	CA	n/a	90	V	strike slip	0	13	176
11.95	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	86		strike slip	0.1	13	548

11.95	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB+BG	CA	n/a	86		strike slip	0.1	13	479
11.95	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0.1	13	421
11.95	S. San Andreas;NSB+SSB+BG	CA	n/a	75		strike slip	0	14	136
11.95	S. San Andreas;NSB+SSB	CA	n/a	90	V	strike slip	0	13	79
11.95	S. San Andreas;NM+SM+NSB+SSB+BG+CO	CA	n/a	84		strike slip	0.1	13	340
11.95	S. San Andreas;NM+SM+NSB+SSB+BG	CA	n/a	83		strike slip	0	14	271
11.95	S. San Andreas;NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	13	213
11.95	S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB+BG	CA	n/a	86		strike slip	0	14	442
15.19	S. San Andreas;BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0	14	220
15.19	S. San Andreas;SM+NSB	CA	n/a	90	V	strike slip	0	13	133
15.19	S. San Andreas;CH+CC+BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0	14	341
15.19	S. San Andreas;NM+SM+NSB	CA	n/a	90	V	strike slip	0	13	170
15.19	S. San Andreas;CC+BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0	14	279
15.19	S. San Andreas;NSB	CA	22	90	V	strike slip	0	13	35
15.19	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0.1	13	377
20.47	S. San Andreas;BG	CA	n/a	58		strike slip	0	13	56
20.47	S. San Andreas;BG+CO	CA	n/a	72		strike slip	0.3	12	125
21.27	Elsinore;GI+T	CA	5	90	V	strike slip	0	14	78
21.27	Elsinore;GI	CA	5	90	V	strike slip	0	13	37
21.27	Elsinore;W+GI	CA	n/a	81	NE	strike slip	0	14	83

21.27	Elsinore;W+GI+T	CA	n/a	84	NE	strike slip	0	14	124
21.27	Elsinore;W+GI+T+J	CA	n/a	84	NE	strike slip	0	16	199
21.27	Elsinore;W+GI+T+J+CM	CA	n/a	84	NE	strike slip	0	16	241
21.27	Elsinore;GI+T+J	CA	n/a	86	NE	strike slip	0	17	153
21.27	Elsinore;GI+T+J+CM	CA	n/a	86	NE	strike slip	0	16	195
22.74	Elsinore;T	CA	5	90	V	strike slip	0	14	52
22.74	Elsinore;T+J+CM	CA	n/a	85	NE	strike slip	0	16	169
22.74	Elsinore;T+J	CA	n/a	86	NE	strike slip	0	17	127
23.43	Cucamonga	CA	5	45	N	thrust	0	8	28
23.97	Cleghorn	CA	3	90	V	strike slip	0	16	25
24.72	Chino, alt 2	CA	1	65	SW	strike slip	0	14	29
25.94	Chino, alt 1	CA	1	50	SW	strike slip	0	9	24
25.96	Elsinore;W	CA	2.5	75	NE	strike slip	0	14	46
26.37	Pinto Mtn	CA	2.5	90	V	strike slip	0	16	74
27.01	North Frontal (West)	CA	1	49	S	reverse	0	16	50
32.94	San Jose	CA	0.5	74	NW	strike slip	0	15	20
33.19	Helendale-So Lockhart	CA	0.6	90	V	strike slip	0	13	114
34.38	North Frontal (East)	CA	0.5	41	S	thrust	0	16	27
34.5	S. San Andreas;CC+BB+NM+SM	CA	n/a	90	V	strike slip	0	14	243
34.5	S. San Andreas;SM	CA	29	90	V	strike slip	0	13	98
34.5	S. San Andreas;CH+CC+BB+NM+SM	CA	n/a	90	V	strike slip	0	14	306
34.5	S. San Andreas;NM+SM	CA	n/a	90	V	strike slip	0	14	134
34.5	S. San Andreas;BB+NM+SM	CA	n/a	90	V	strike slip	0	14	184
34.5	S. San Andreas;PK+CH+CC+BB+NM+SM	CA	n/a	90	V	strike slip	0.1	13	342
35.83	Sierra Madre	CA	2	53	N	reverse	0	14	57
35.83	Sierra Madre Connected	CA	2	51		reverse	0	14	76
37.84	San Joaquin Hills	CA	0.5	23	SW	thrust	2	13	27
40.89	Puente Hills (Coyote Hills)	CA	0.7	26	N	thrust	2.8	15	17
41	Lenwood-Lockhart-Old Woman Springs	CA	0.9	90	V	strike slip	0	13	145
41.93	Elsinore;J	CA	3	84	NE	strike slip	0	19	75

41.93	Elsinore;J+CM	CA	3	84	NE	strike slip	0	17	118
43.59	Burnt Mtn	CA	0.6	67	W	strike slip	0	16	21
44.69	Clamshell-Sawpit	CA	0.5	50	NW	reverse	0	14	16
45.04	Landers	CA	0.6	90	V	strike slip	0	15	95
45.61	Eureka Peak	CA	0.6	90	V	strike slip	0	15	19
47.25	Newport Inglewood Connected alt 1	CA	1.3	89		strike slip	0	11	208
47.25	Newport-Inglewood (Offshore)	CA	1.5	90	V	strike slip	0	10	66
47.25	Newport Inglewood Connected alt 2	CA	1.3	90	V	strike slip	0	11	208
47.28	Johnson Valley (No)	CA	0.6	90	V	strike slip	0	16	35
47.85	San Jacinto;CC+B+SM	CA	n/a	90	V	strike slip	0.2	14	103
47.85	San Jacinto;CC+B	CA	n/a	90	V	strike slip	0.2	14	77
47.85	San Jacinto;CC	CA	4	90	V	strike slip	0	16	43
48.2	San Jacinto;C	CA	14	90	V	strike slip	0	17	47
49.44	Puente Hills (Santa Fe Springs)	CA	0.7	29	N	thrust	2.8	15	11
49.96	Newport-Inglewood, alt 1	CA	1	88		strike slip	0	15	65

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Conterminous U.S. 2008 (v3.2.x)

Spectral Period

Peak Ground Acceleration

Latitude

Decimal degrees

33.9364

Time Horizon

Return period in years

475 Moreno Valley Truck Stop

Longitude

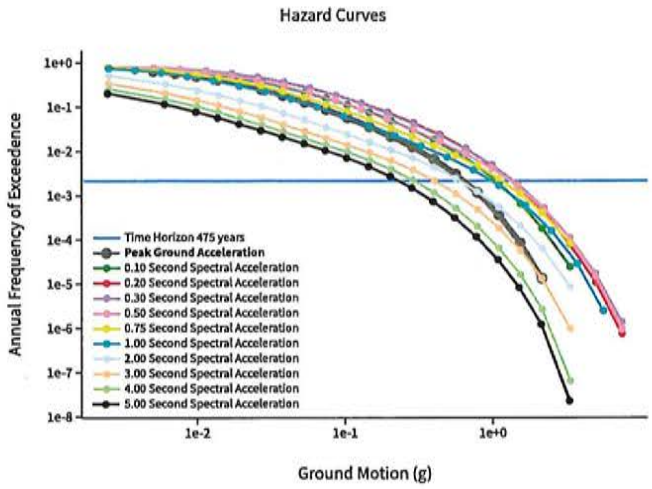
Decimal degrees, negative values for western longitudes

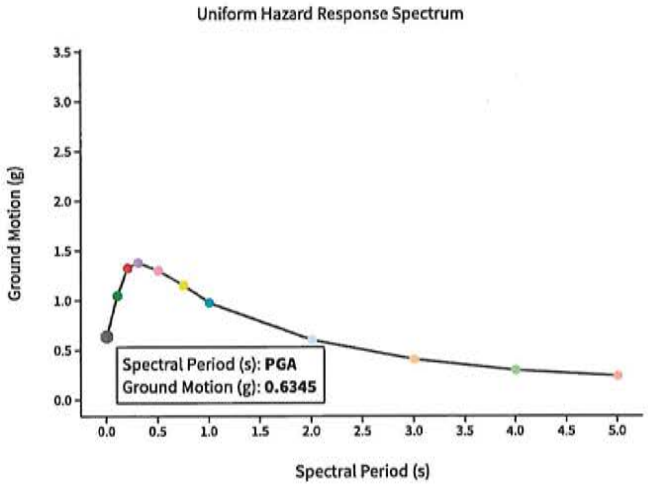
-117.1581

Site Class

259 m/s (Site class D)

Hazard Curve





View Raw Data

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Conterminous U.S. 2008 (v3.2.x)

Spectral Period

Peak Ground Acceleration

Latitude

Decimal degrees

33.9364

Time Horizon

Return period in years

975 Moreno Valley Truck Stop

Longitude

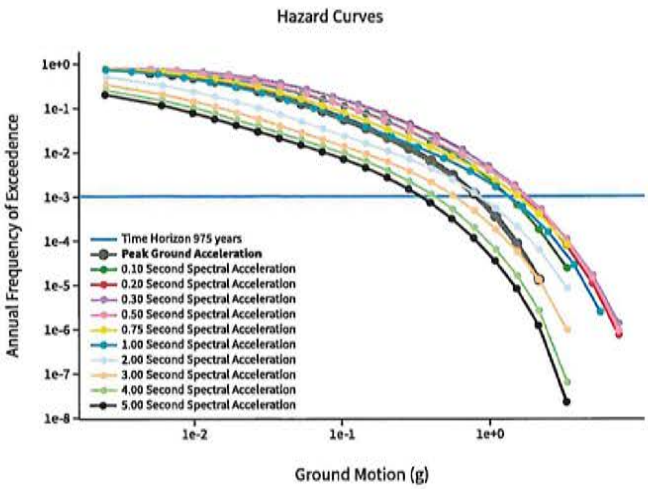
Decimal degrees, negative values for western longitudes

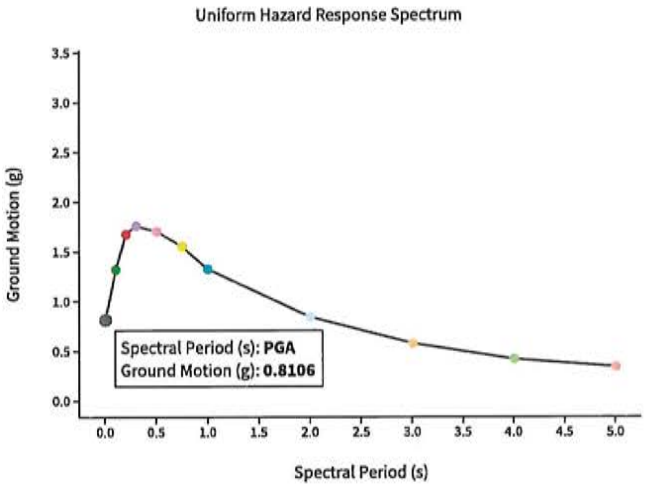
-117.1581

Site Class

259 m/s (Site class D)

Hazard Curve





View Raw Data

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Conterminous U.S. 2008 (v3.2.x)

Spectral Period

Peak Ground Acceleration

Latitude

Decimal degrees

33.9364

Time Horizon

Return period in years

2475 Moreno Valley Truck Stop

Longitude

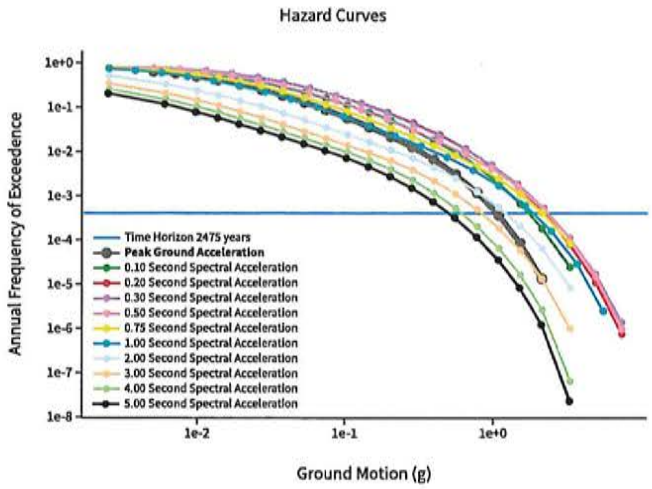
Decimal degrees, negative values for western longitudes

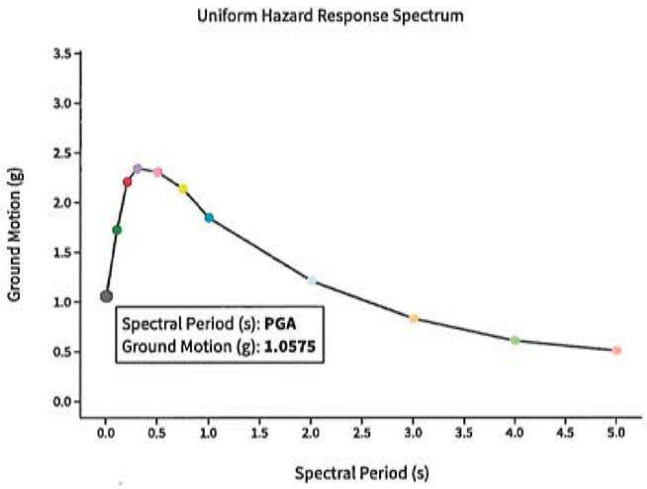
-117.1581

Site Class

259 m/s (Site class D)

Hazard Curve



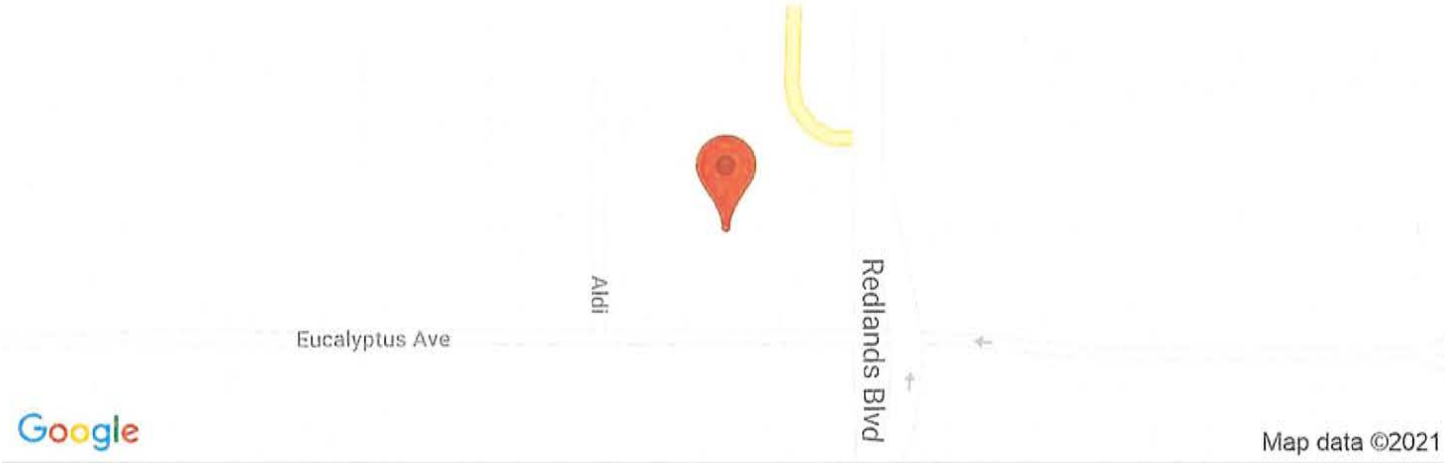


View Raw Data

OSHPD

Moreno Valley Truck Stop

Latitude, Longitude: 33.9364, -117.1581



Date	2/9/2021, 8:02:18 AM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	2.225	MCE_R ground motion. (for 0.2 second period)
S_1	0.9	MCE_R ground motion. (for 1.0s period)
S_{MS}	2.67	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.78	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1.2	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.977	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	1.172	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	2.225	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	2.468	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	2.319	Factored deterministic acceleration value. (0.2 second)
S1RT	0.9	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	1.02	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.927	Factored deterministic acceleration value. (1.0 second)
PGAd	0.977	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.901	Mapped value of the risk coefficient at short periods
C_{R1}	0.882	Mapped value of the risk coefficient at a period of 1 s

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Appendix C

Recommended Earthwork Specifications

RECOMMENDED EARTHWORK SPECIFICATIONS

1.0 General

1.1 Description

1.1.1 These specifications cover preparation of the subject site to receive fills, the type of soils suitable for use in fills, the compaction standards, and the methods of testing compacted fills.

1.1.2 The Contractor shall furnish all labor, supervision, equipment, operations, and materials to excavate to the required grade, support existing underground facilities, stockpile material, compact fill and backfill, and fine grade. The work of the Contractor shall include all clearing and grubbing, removing existing unsatisfactory material, preparing areas to be filled, spreading and compacting of fill in the areas to be filled and all other work necessary to complete the grading of the filled areas. It shall be the Contractor's responsibility to place, spread, moisten or dry, and compact the fill in strict accordance with these specifications to the lines and grades indicated on project plans or as directed in writing by the Civil Engineer.

1.1.3 Deviations from these specifications will be permitted only upon written authorization from the Owner or his representative.

1.2 Role of the Geotechnical Engineer

1.2.1 Construction - The Owner will employ a Geotechnical Consultant to observe and test this work as it is being performed. The Contractor shall cooperate with the Geotechnical Consultant and allow his unrestricted access to the site as required for the performance of his duties.

The Contractor shall provide a minimum notice of 48 hours to the Geotechnical Engineer before beginning or restarting earthwork operations that will require the presence of the Geotechnical Engineer or his representative on site.

1.2.2 Subsurface Investigations - A geotechnical engineering report for design purposes was prepared by Geotechnical Solutions, Inc., Irvine, California. Any recommendations made in the geotechnical report or subsequent reports are made part of these specifications. These reports are available for review upon request to the Owner.

1.2.3 Observation and Testing - The Geotechnical Engineer's representative shall observe the clearing and grubbing, excavation, filling and compacting operations and shall take density tests in the fill material so that he can state his opinion as to whether or not the fill was constructed in accordance with the specifications. All fill will be tested shortly after its placement to ascertain that the required compaction is achieved. A minimum of one density test will be made on each 500 cubic yards of fill placed, with a minimum of at least one test per every 2 feet of vertical height of fill. If the surface is disturbed, the density tests shall be made in the compacted materials below the disturbed zone. When these tests indicate that the density or water content of any layer of fill or portion thereof does not meet the specified density or water content, the particular layer or portions thereof shall be reworked until the specified density and water content have been obtained.

After the completion of grading, the Geotechnical Engineer will prepare a written opinion of grading. Neither the testing performed by the Geotechnical Consultant nor his opinion as to whether or not the fill was constructed in accordance with these Specifications shall relieve the Contractor of his responsibility to construct the fills in accordance with the Contract Documents.

1.3 Reference Standards

The following ASTM (American Society for Testing and Materials) codes and standards shall be used to the extent indicated by references herein. The most recent revision of the standards shall be used.

D 1556 - "Standard Test Method for Density of Soil in Place by the Sand-Cone Method"

D1557 - "Standard Test Methods for Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using 10-lb (4.54 kg) and 18-inch (457-mm) Drop"

D2216 - "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures"

D4318 - "Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils"

D4718 - "Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles"

D4829 - "Standard Test Method for Expansion Index of Soils"

D4944 - "Standard Test Method for Field Determination of Water (Moisture) Content of Soil by the Calcium Carbide Gas Pressure Tester Method."

D5195 - "Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)"

D6938 - "Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)"

D7928 - "Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis"

1.4 Degree of Fill Compaction

The degree to which fill is to be compacted is expressed in terms of "relative compaction." Relative compaction is defined as the ratio; expressed in percent, of the in-place dry density of the compacted fill to the reference maximum dry density. The reference maximum dry density shall be obtained following ASTM D1557. Optimum water content shall be obtained in the same test used to obtain the reference maximum dry density. Correction of the maximum dry density and optimum water content for

oversize particles of gravel and cobbles shall be made following ASTM D4718 when, in the opinion of the Geotechnical Engineer, such correction is appropriate. The in-place density shall be obtained following ASTM D1556 (sand cone method) or ASTM D6938 (nuclear method-shallow depth) test method. The in-place water content shall be obtained following ASTM D4944 (calcium carbide gas pressure meter), ASTM D5195 (nuclear method-shallow depth), or ASTM D2216 (oven drying). Correction of the in-place density and water content for oversize particles of gravel and cobbles shall be made following ASTM D4718 when, in the opinion of the Geotechnical Engineer, such correction is appropriate.

If any of the test methods specified in this section are judged by the Geotechnical Engineer to be impractical or unreliable because the material has a coarse particle size distribution, or for other reasons, the Geotechnical Engineer shall establish other procedures to obtain the required soil characteristics.

2.0 Products

2.1 Materials

2.1.1 General - During grading operations, soil types other than those identified in the geotechnical investigation report may be encountered by the Contractor. Consult the Geotechnical Consultant for his evaluation of the suitability of using these soils a fill material prior to placement or disposal.

2.1.2 General Fill - Materials for compacted fill shall consist of material imported from outside the site or excavated from the site that, in the opinion of the Geotechnical Engineer, is suitable for use in constructing engineered fills. The material shall not contain rocks or hard lumps greater than 6 inches in maximum dimension, and at least 70 percent (by weight) of its particles shall pass through a U.S. Standard 3/8 inch sieve. Material greater than 3 inches, but less than 6 inches in maximum dimension, shall be placed by the Contractor so that it is completely surrounded by compacted, finer material;

no nesting of rocks shall be permitted. Do not use any perishable, spongy, hazardous, or other undesirable materials as fill.

2.1.3 Select Fill - Select fill shall meet all criteria for general fill but shall also contain no rocks or hard lumps greater than 3 inches in maximum dimension, and at least 80 percent (by weight) shall pass through a U.S. Standard 3/8-inch sieve. The expansion index of select material shall be less than 50 (i.e., 5.0 percent swell) when tested in accordance with ASTM D4829.

3.0 Execution

3.1 Clearing and Grubbing

Within the project limits, tile Contractor shall demolish structures as specified on the Drawings.

Unless otherwise indicated on the Drawings or by the Owner in writing, the Contractor shall clear and grub all trees, stumps, roots, brush, grass, and other vegetation within construction, fill and stockpile areas to a minimum depth of 3 feet below the existing ground surface or below finished grade, whichever is deeper, unless otherwise recommended by the Geotechnical Engineer's Field Representative.

Remove cleared and grubbed materials from the site and dispose of them legally. No onsite burning or burying of cleared and grubbed materials is permitted. No placement of cleared and grubbed materials in topsoil stockpiles is permitted. No mulching of branches or roots is permitted. Incorporating vegetative matter into stockpiled materials, which are to be used in fill, is not permitted.

Stockpile organic-laden topsoil separate from other fill materials.

Remove any remaining vegetative matter from the deeper excavated soils, which may result from roots deeper than those encountered during clearing and grubbing operations.

All material thereby removed shall be piled at a location away from the immediate work area so as to avoid burying of piled material.

3.2 Compacted Fills

3.2.1 Preparing Areas to be Filled - Brush, grass, and other objectionable materials shall be collected, piled, and disposed of as indicated in Section 3.1 by the Contractor so as to leave the areas that have been cleared with a neat and finished appearance, free from unsightly debris.

Remove all loose soil, uncertified fill, landslide debris, and weathered bedrock to firm material or in-situ bedrock, as approved by the Geotechnical Consultant. The Contractor shall obtain approval from the Geotechnical Engineer or his representative of stripping and site preparation before the compaction of any fill subgrade begins. The surface shall then be scarified to a minimum depth of 6 inches until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment used, and shall be brought to the specified water content and relative compaction. Compact scarified materials to a minimum relative compaction of 90 percent, relative to ASTM D1557, prior to placement of any fill material.

3.2.2 Placing, Spreading, and Compacting, Fill Material - Onsite soil obtained from removals, borrow, or cut areas may be reused as compacted fill provided it is free from deleterious debris and meets the other requirements of the "Materials" portion of this Specification Section.

Use of soil containing deleterious debris from the clearing and grubbing operation or from other sources is not permitted. The fill materials shall be placed by the Contractor in horizontal layers not greater than 8 inches thick, measured before compaction. Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to obtain uniformity of material and moisture in each layer. The moisture content of material used for compacted fill should be adjusted to be at or above optimum water content as determined by ASTM D1557. When the water content of the fill material is too high, the

fill materials shall be aerated by the Contractor by blading, mixing, or other satisfactory methods until the water content is as specified.

After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted by the Contractor to a relative compaction of at least 90 percent of the maximum dry density as determined by ASTM D1557 for general fill, and 95 percent of the maximum dry density as determined by ASTM D1557 for select fill, compacted fill pads, and the upper 1 foot of pavement subgrade. Compaction shall be accomplished by: sheepsfoot rollers; vibratory rollers; multiple-wheel, pneumatic-tired rollers; or other types of acceptable compacting equipment. Equipment shall be of such design that it is able to compact the fill to the specified density. Compaction shall be continuous over the entire area, and the equipment shall make sufficient passes to obtain the desired density uniformly. All fill placed on site shall be treated in like manner until finished grades are attained. Jetting, puddling, and hydro consolidation techniques shall not be used, including backfill of utility trenches.

The placement of topsoil is subject to the approval of the Geotechnical Engineer. Topsoil shall not be placed beneath concrete flatwork, beneath or behind retaining walls, or within structural fill. All topsoil material is subject to the same moisture conditioning, placement, and compaction requirements as General Fill. Roots, branches and other organic debris are not permitted within the compacted topsoil layer.

When backfilling around footings and compacting behind retaining walls and flexible retaining structures, the Contractor shall use lightweight compaction equipment such as hand-operated equipment, shoring, or other means to avoid over-stressing structural walls. When using lightweight compaction equipment, the fill materials shall be spread in horizontal layers not greater than 6 inches thick, measured before compaction.

As an alternative, sand-cement slurry may be used to backfill trenches. The slurry shall have minimum cement content of 3 sacks per cubic yard within the zone of influence of foundations and other settlement sensitive structures. A minimum of 2 sacks per cubic

yard of slurry shall be used elsewhere within building limits, and a minimum of one sack per cubic yard of slurry shall be used elsewhere. Slurry shall not be used in those areas where such placement would result in the obstruction of water flow, and is subject to the approval of the Geotechnical Engineer.

3.3 Protection of Work and Adjacent Properties

3.3.1 During Construction - The Contractor shall grade all excavated surfaces to provide good drainage away from construction slopes and prevent ponding of water. He shall control surface water and the transport of silt and sediment to avoid damage to adjoining properties or to finished work on the site. The Contractor shall take remedial measures to prevent erosion of freshly graded areas until such time as permanent drainage and erosion control measures have been installed.

Dispose of all water resulting from dewatering operations legally and in ways that will not cause damage to public or private property, or constitute a nuisance or menace to the public, in accordance with municipal requirements.

The Contractor shall make every effort to minimize the amount of dust raised in excavating, on haul roads and access roads, and all other work areas in the course of construction activities.

Protect benchmarks, monuments, and other reference points against displacement or damage. Repair or replace benchmarks, monuments, and other permanent survey data that become displaced or damaged due to the performance of this work.

3.3.2 After Completion - After earthwork is completed and the, Geotechnical Engineer has finished his observations of the work, no further excavation, filling or backfilling shall be performed except under the observation of the Geotechnical Engineer.

GEOTECHNICAL ENGINEERING
PERCOLATION / INFILTRATION
TEST REPORT

MORENO VALLEY TRUCK STOP
PILOT # 1316

AT

SOUTH OF FREEWAY 60 &
REDLANDS BOULEVARD
MORENO VALLEY, CALIFORNIA

PREPARED FOR:

BROADBENT, INC.
8 WEST PACIFIC AVENUE
HENDERSON, NEVADA 89015

PROJECT NO: G-5852-08

FEBRUARY 26, 2021

GEOTECHNICAL SOLUTIONS, INC.
GEOTECHNICAL & ENVIRONMENTAL
ENGINEERING

Geotechnical Solutions, Inc.
Geotechnical, Structural & Environmental Engineering

AASHTO ACCREDITED

February 26, 2021

Project: G-5852-08

BROADBENT, INC.
8 West Pacific Avenue
Henderson, Nevada 89015

Attention: **Mr. Mark E. Kazelskis, PG, CHG, CEM**
Principal Geologist

Via Email: mkazelski@broadbentinc.com

Re: **Geotechnical Engineering Percolation / Infiltration Report**
Moreno Valley Truck Stop – Pilot # 1316
NW of Redlands Boulevard & Eucalyptus Avenue
Moreno Valley, California 92553

Gentlemen:

Per your authorization, we have performed our geotechnical engineering field percolation tests to evaluate the subgrade percolation and infiltration rate at the referenced Moreno Valley Pilot # 1316 site in the City of Moreno Valley, California. Proposed development consists of improving or incorporating Storm Water Permanent Best Management Practice (BMP).

The accompanying geotechnical engineering report presents the results of our field borings, sampling of subgrade material, field percolation tests, reviewing site plan, performing laboratory tests, analyzing field and laboratory data and our conclusions and recommendations for the project.

Our services were performed using the standard of care ordinarily exercised in this locality, at the time when the report was prepared.

The closest known active fault capable of producing a major earthquake is the San Jacinto (SBV+SJV+A) Fault, which is located approximately 1.03 miles (1.65 km) away from the project site.

The site does not lie within Alquist-Priolo Earthquake Fault Zone as designated by the California Geological Survey (CGS). The potential for direct surface fault rupture at the site is considered unlikely.

The investigation was made in accordance with generally accepted geotechnical engineering principles and procedures and included such field and laboratory tests considered necessary under the circumstances.

In the opinion of the undersigned, the accompanying report has been substantiated by mathematical and other data and presents fairly the design information requested by your organization.

Respectfully Submitted,

Geotechnical Solutions, Inc.

Dharma Shakya, PhD, PE, GE
Principal Geotechnical Engineer

REGISTERED PROFESSIONAL ENGINEER
DHARMA R. SHAKYA
No. GE 2773
GEOTECHNICAL
STATE OF CALIFORNIA

Abraham S. Baha, PE, M. ASCE
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Introduction

Geotechnical Solutions, Inc. (GSI) has performed field investigation including borings and sampling of earth material and field percolation tests at the proposed locations as shown on Plot Plan & Percolation Tests Location Map (Plate B in Appendix A) at Moreno Valley Truck Stop, Pilot # 1316 in the City of Moreno Valley, California.

The main purpose of this study is to provide infiltration rates of subgrade material based on field percolation tests so that an appropriate system incorporating Storm Water permanent best management practice (BMP) to manage surface water into the ground and the appropriate infiltration basin or any other approved system may be designed and existing drainage be improved.

Field Exploration

Field exploration consisted of drilling two borings, PC-1 and PC-2, 8-inches in diameter and extended 10-feet below existing ground as shown on Plot Plan and Percolation Tests Location Map (Plate B). Also shown hollow stem auger borings, B-1 and B-9 close to PC-1 and PC-2 percolation test areas and are presented on Plates E-1 and E-2 respectively. The percolation test logs are presented on Plates D-1 and D-2 in Appendix A.

The attached logs tabulate data based on laboratory classification tests and visual observation by the field engineer at the site. During drilling bulk samples of earth material obtained for further laboratory test.

Groundwater

Groundwater was not encountered at a depth of 51.5-feet below grade in our borings (Borings drilled for this project). Also, in accordance with the available groundwater well maps data, http://wdl.water.ca.gov/water_data_library, historical high groundwater

level as shown on Plates C-1 and C-2 presented in Appendix A are much deeper than 50 feet.

The potential for ground water to rise to the ground surface in the site area is considered to be very unlikely.

Laboratory Testing

Laboratory testing was programmed following a review of the field investigation data to be evaluated. Tests included physical testing to determine soil characteristics and selective tests. Test results are presented in Appendix A.

Mechanical Analysis (ASTM D-422)

Mechanical analyses by the hydrometer test method were performed to confirm field classifications. Test results are as follows:

Test Hole No.	Sample Depth (ft)	Sand Percent	Silt Percent	Clay Percent
PC-1	10.0	70	20	10
PC-2	10.0	62	26	12
B-1	10	65	30	5
B-9	10	68	25	7

Field Percolation Tests

We performed field percolation tests at PC-1 and PC-2 locations as shown on Plot Plan and Percolation Tests Location Map (Plate B). The percolation test procedure performed in accordance with the current acceptable method for shallow percolation test (less than 10 feet) by qualified personnel under the supervision of registered geotechnical engineer as per Technical Guidance Document, Orange County Public Works.

- Borehole diameter was 8 inches.
- Bottom elevation of test holes correspond to bottom elevation of proposed retention basins which are proposed at 10-feet in depth below the ground surface in accordance with the following locations:

  PC-1 10 feet below the ground surface

  PC-2 10 feet below the ground surface

- The bottom of the test hole was covered with 2 inches of gravel prior to testing.
- Sides of the hole were not smeared after drilling and there was no caving.
- Holes were filled with clear water to appropriate depths from the ground surface (Minimum required is 5 x radius of the hole (5 x 4" = 20 inches) from the bottom.
- On all these two locations, two consecutive measurements showed that more than 6 inches of water seeped away in 25 minutes test (Pre-Percolation Data Sheets, Plates 1 and 3). Thus, pre-soaking overnight for about 24 hours was not required.
- The tests were then run for an additional one-hour duration, measurements being taken every 10 minutes (Percolation Test Results). The drop that occurs during the final reading is used to calculate the percolation and then infiltration rate. Both Pre-Percolation data Sheets and Field Percolation
- Test Results are presented on Plates 2 and 4 respectively for PC-1 and PC-2 in Appendix B, Infiltration calculations are presented on Plates 5 and 6 and presented in Appendix C. Infiltration results using another method, Reduction Factor Method, Rf are presented on Plates 7 and 8 in Appendix D.
- Measurements were taken with a precision of 0.25 inches or better.
- All the field percolation tests are tabulated and are presented in Appendix B.

- The holes were backfilled with soil cuttings.

Percolation Rate Evaluation

To evaluate the percolation rates, testing was performed by filling the borehole with water and observing the rate of water drop from the fixed reference point on the ground surface. The depths of water drop for every 10 minutes intervals were noted and tabulated and plotted as shown on Plates 2 and 4, respectively for PC-1 and PC-2 in Appendix B.

Percolation rate, k can be correlated with the data in the form of the straight line equation as shown below:

$$t/R = b + kt$$

Where, t = average time in minutes

$$R = \Delta t / d$$

Δt = Time Interval, minutes

d = drop in inch = R1 – R2

R1 = Initial Readings, inch

R2 = Final Readings, inch

k = Percolation Rate inch/minute

R = 1/k at equilibrium rate

t/R is plotted against t as shown on the plots (Plates 2 and 6 for PC-1 and PC-2, respectively) and the regression analyses were performed to interpolate the data obtained in the field. Straight line interpolation gives the slope as a percolation rate, k.

Results of the Tests

The results obtained from the analyses are as follows:

1. Near surface material consisted of sandy silt with some silty sand, medium dense and gray in color generally.

2. Around and below 10 feet, the subgrade materials consisted of Silty Sand with little clay, medium dense to dense and medium gray in color.

3. Field Percolation tests at 10 feet depth show the following results:

Location	Coefficient of Permeability, k			
	Inch/minute	Cm/sec	**Inch/hour Average**	**Inch/hr** based on last 10 Minutes Reading
PC-1	**0.2014**	**8.50 x E-03**	**12.084**	**18.0**
PC-2	**0.2007**	**8.50 x E-03**	**12.042**	**15.0**
Average	**0.2011**	**8.5 x E-03**	**12.063**	**16.5**
			Average:	**14.281 inch/hour**

4. Based on the data presented in this report and the testing information accumulated, it is our judgment that the percolation rate is an average of **14.281** inch per hour. It takes about **4.2 minutes to percolate 1 inch**. This conclusion regarding percolation rate is based on the results of our field exploration and testing.

5. General range of permeability for some of the subgrade soils are as follows:

Type of Soil	Permeability (Cm/Sec)
Medium to coarse gravel	$> 10^{-1}$
Coarse sand to fine sand	between $1x10^{-1}$ to $1x10^{-3}$
fine sand and silty sand	between $1x10^{-3}$ to $1x10^{-5}$
silt, clayey silt or silty clay	between $1x10^{-4}$ to $1x10^{-6}$

Clays	$1x10^{-7}$ or less

Since the percolation rate average is **8.5 x E-03 Cm/Sec**, it falls into coarse Sand to fine Sand **category** as tabulated above.

As per Technical Guidance Document, Infiltration rate, I_t is calculated based on Percolation Rate Conversion using Porchet Method, aka Inverse Borehole Method.

The bottom of the proposed infiltration basin would be at 10-feet below the existing ground surface. Percolation tests were performed with the depth of the test hole set at the infiltration surface level (bottom of basin).

After the minimum required number of testing intervals, the test was complete. The data collected at the final interval was used to calculate infiltration rates.

The calculations and the results are tabulated and presented on Plates 5 and 6 in Appendix C.

Location	**Percolation Rate** inch/hour Based on Average Reading	**Infiltration Rate** Inch/hour Based on Porchet Method aka Inverse Borehole Method
PC-1	12.08	1.014
PC-2	12.04	0.603
Average	**12.06**	**0.808**

Using factor of safety of 2.0 for uncertainty and bias, **percolation test result is 6.03 inch per hour** and **Infiltration Rate = 0.404 "/ hour**, which is greater than **0.3"/hour** in accordance with **TGD VII.2.**

Thus, it **does meet** the standard criteria, hence **PASSED**.

Reduction Factor (R_f) Method

We have used Reduction Factor (R_f) Method which is another acceptable and approved method for calculating Infiltration Rate, I_f.

Infiltration Rates as calculated by this method have been tabulated on Plates 4 and 8 in Appendix D. The results are as follows:

Location	I_f Using (Reduction Factor Method) (inch/hour)
PC-1	0.9143
PC-2	0.8136
AVERAGE:	**0.8640**
With FOS = 2	**0.4320**
	> 0.3 inch/hour - "PASSED"

Conclusions

The subgrade soils consist of generally sandy silt (ML) to silty Sand (SM), medium dense to dense, light gray to brown in color, fine to coarse grained and slightly moist to moist. Percolation tests performed for two locations at 10 feet depth met the prescribed criteria.

Also, since the groundwater is very deep more than 50 feet, there is a room for the basin (Groundwater to be minimum of 10 feet below the bottom of the proposed basin at 10 feet which is required in accordance with the technical guidance document), hence the project is feasible.

Additional Services

This office will be available for further consultation.

Closure

Based on the data presented in this report and the testing information accumulated, it is the judgment of the writers of this report that BMP infiltration system seems to be **feasible** at these locations. The conclusions presented in this report are based on the results of our field exploration, percolation tests, and other laboratory tests.

This report has been compiled for the exclusive use on the above referenced site, for the purpose stated above. It should not be transferred to or used by another party, or applied to any other project on this site, other than as described herein, without consent and/or thorough review by this office.

Geotechnical Solutions, Inc.

References

California Building Code, 2019, California Code of Regulations, Title 24, Volume 2 of Part 2.

California Department of Water Resources groundwater well data **http://wdl.water.ca.gov**.

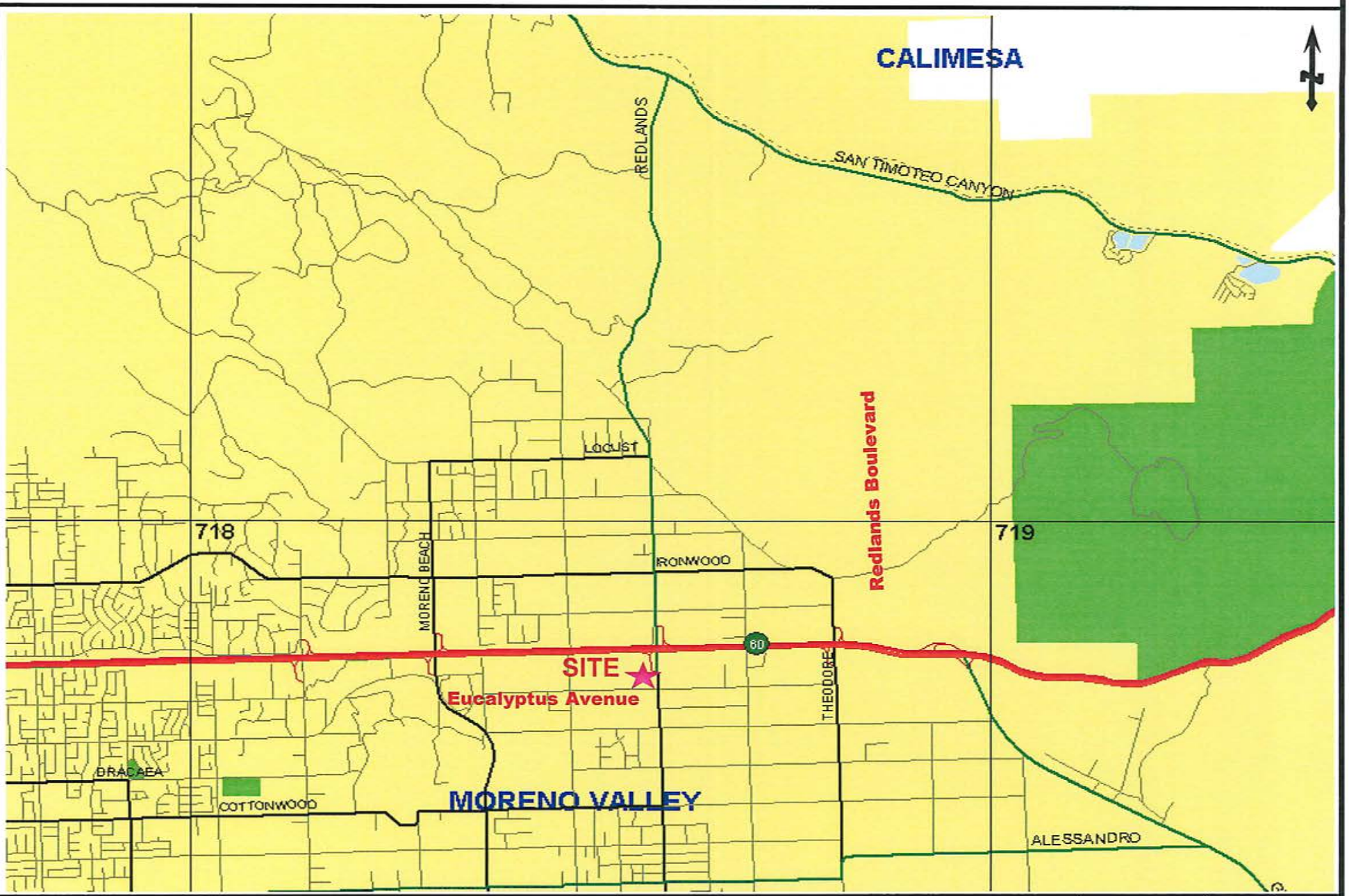
Orange County, Technical Guidance Document (TGD) for the Preparation of Conceptual / Preliminary and/or Project Water Quality Management Plans (WQMPs) dated December, 2013.

Appendix A

Plates:

- Vicinity Map
- Plot Plan & Percolation Tests Location Map
- Groundwater Map (Closest Well Data)
- Groundwater Map – Well Data
- Hollow Stem Auger Boring Logs (Percolation Tests) PC-1 & PC-2
- Boring B-1 Close to PC-1
- Boring B-9 Close to PC-2

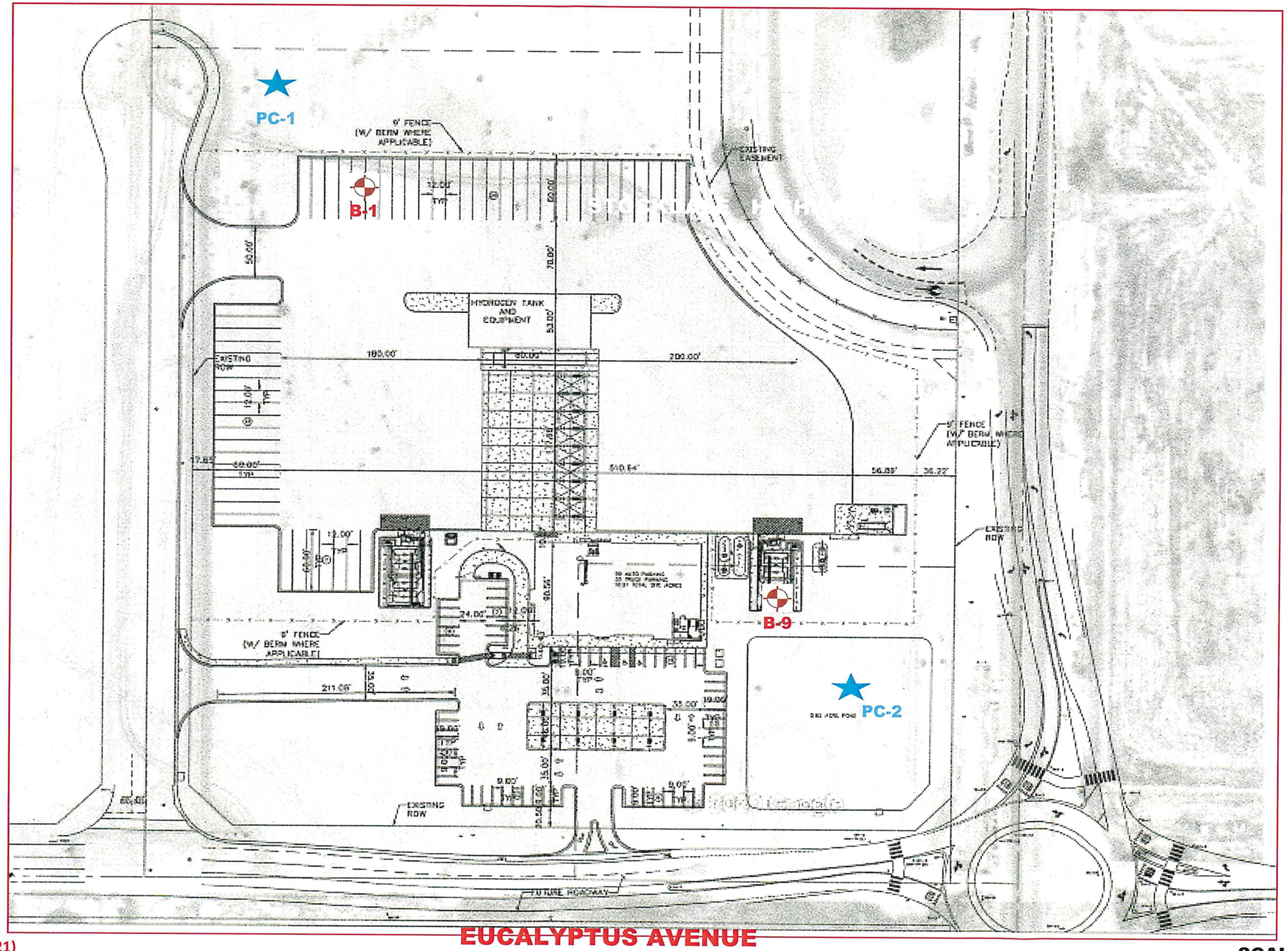
VICINITY MAP



Truck Stop - Moreno Valley Pilot # 1316 - Percolation Tests	Project No.	G-5852-08
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	A

Geotechnical Solutions, Inc.

PLOT PLAN & PERCOLATION TEST LOCATION MAP



Percolation Tests

PC-2

B-9 Hollow Stem Auger Borings (2021)

SCALE: 1" = 100'

Truck Stop - Moreno Valley Pilot # 1316 - Percolation Tests	Project No.	G-5852-08
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	B
Geotechnical Solutions, Inc.		

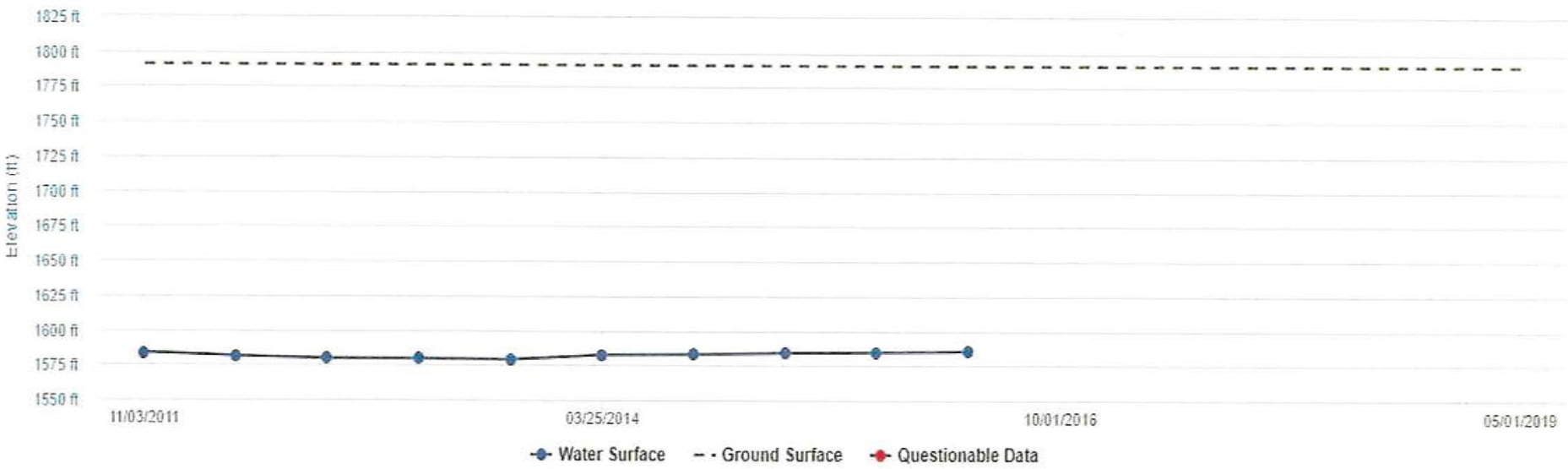
GROUNDWATER MAP - CLOSEST WELL DATA

Truck Stop - Moreno Valley Pilot # 1316 - Percolation Tests	Project No.	G-5852-08
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	C-1

Geotechnical Solutions. Inc.

GROUNDWATER MAP - WELL DATA

Groundwater Levels for Well 339387N1171655W001



Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency
11/03/2011 00:00:00	1791.640	1790.840	208.2	1583.44	207.4		Eastern Municipal Water D...
02/15/2012 00:00:00	1791.640	1790.840	210.5	1581.14	209.7		Eastern Municipal Water D...
10/16/2012 00:00:00	1791.640	1790.840	212.3	1579.34	211.5		Eastern Municipal Water D...
05/08/2013 00:00:00	1791.640	1790.840	212.3	1579.34	211.5		Eastern Municipal Water D...
10/31/2013 00:00:00	1791.640	1790.840	212.7	1578.94	211.9		Eastern Municipal Water D...

Truck Stop - Moreno Valley Pilot # 1316 - Percolation Tests	Project No.	G-5852-08
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	C-2

Geotechnical Solutions. Inc.

Project:	Truck Stop - Moreno Valley Pilot # 1316 - Percolation Tests
Project Location:	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA
Project Number:	G-5852-08

Key to Log of Test Hole
Plate No. D

Elevation, feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Penetration Resistance, Blows / 6 in.	Graphic Symbol	Blows / Last 12 in	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve	OTHER TESTS AND REMARKS
1	2	3	4	5	6	7	8	9	10	11	12

COLUMN DESCRIPTIONS

1 **Elevation:** Elevation in feet referenced to mean sea level (MSL) or site datum.

2 **Depth:** Depth in feet below the ground surface.

3 **Sample Type:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.

4 **Sample Number:** Sample identification number; "[NR]" after number indicates no sample recovery.

5 **Blows / 6 in.:** Number of blows to advance driven sampler each 6-inch drive interval, or distance notes, using a 140-lb hammer with a 30-inch drop (unless otherwise noted)

6 **Graphic Symbol** Soil Type Symbol

7 **Blows / 12 in.:** Blows per 12" based on Col. 5 equal to uncorrected N-Value where SPT used

8 **Material Description:** Description of material encountered; may include color, moisture, grain size, and density / consistency. Approx. "and" = 35%-50%; "some" = 20%-35%; "little" = 10%-20%; "trace" = 0%-10%.

9 **Moisture Content:** Moisture content of sample, as percentage of dry weight of soil, meausred in lab according to ASTM D2937.

10 **Dry Unit Weight:** Dry unit weight of soil sample, in pounds per cubic foot, measured in lab according to ASTM D422.

11 **Percent Passing No. 200 Sieve:** Percent of soil by weight finer than the No. 200 sieve according to ASTM D422.

12 **Other Tests and Remarks:** Comments and observations regarding drilling or sampling made by driller or field personnel. Other lab tests are indicated using abbreviations explained below.

TYPICAL SAMPLER GRAPHIC SYMBOLS

- California (ring-lined)
- Modified California (brass tube-lined)
- Standard Penetration Test (SPT) split spoon
- Shelby Tube
- Bulk Sample
- Grab Sample

OTHER LABORATORY TEST ABBREVIATIONS

AL	Atterberg Limits Test (ASTM D4318)
COMP	Compaction test by modified effort (ASTM D1557)
CONS	One-dimensional consolidation test (ASTM D2435)
DS	Direct shear test (ASTM D3080)
EI	Expansion index test (ASTM 4829), index at 50% saturation
HD	Hydrometer analysis (ASTM D422), %<5 micros
LL	Liquid Limit from Atterberg Limites test
PI	Plasticity Index from Atterberg Limits test
SA	Sieve analysis (ASTM D422), %<#200 sieve
SE	Sand equivalent test for fines contamination (ASTM D2419)
UC	Unconfined compressive strength test (ASTM D2166)
WA	Wash analysis (ASTM D422), %<#200 sieve

OTHER GRAPHIC SYMBOLS

- First water encountered at time of drilling and sampling (ATD)
- Static water level measured at specified time after drilling
- Change in material properties within a lithologic stratum
- Inferred contact between soil strata or gradational lithologic change

Soil Classification are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive; field descriptions may have been modified to reflect lab test results. Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced; they are not warranted to be representative of subsurface conditions between samples, at other locations, or times.

Project :	Truck Stop - Moreno Valley Pilot # 1316 - Percolation Tests	LOG OF TEST HOLE	Borehole No. PC-1
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. D-1
Project Number :	G-5852-08		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA/ASB	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch-Auger	Total Depth of Borehole, feet :	10'
Drill Rig Type :	Mbile B-57	Drilling Contractor :	Whitecomb Drilling, Inc.	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Ground Water Encountered	Sampling Method :	California (ring), bulk	Hammer Data :	Downhole wire 140 lbs / 30-inch drop
Borehole Backfill :	Drill cuttings	Comments :	Refer to site plan for location		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES Penetration Resistance, Blows / 6"	SAMPLES No Recovery (NR)	SAMPLES Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
							Sandy Silt (ML), light gray, soft				
	2						@2': Sandy Silt/Silty Sand, Light brown, moist, soft/loose				
1741	5						@5': Sandy Silt (ML), very fine grained, gray, moist, medium stiff				
							@10':Silty Sand (SM) med dense, light gray, moist 2" Gravel at the bottom			30	HD:70(SA):20(SI):10(CL)
1736	10										
							Drilled for Percolation test to 10' Add 2" of gravel at the bottom Backfilled w/cuttings after percolation test. No Ground Water Encountered				
1731	15										
1726	20										
1721	25										
	30										
	35										
	40										
	45										

GEOTECHNICAL SOLUTIONS, INC.

Project :	Truck Stop - Moreno Valley Pilot # 1316 - Percolation Tests	LOG OF TEST HOLE	Borehole No. PC-2
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. D-2
Project Number :	G-5852-08		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA/ASB	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch-Auger	Total Depth of Borehole, feet :	10'
Drill Rig Type :	Mbile B-57	Drilling Contractor :	Whitecomb Drilling, Inc.	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Ground Water Encountered	Sampling Method :	California (ring), bulk	Hammer Data :	Downhole wire 140 lbs / 30-inch drop
Borehole Backfill :	Drill cuttings	Comments :	Refer to site plan for location		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES Penetration Resistance, Blows / 6"	SAMPLES No Recovery (NR)	SAMPLES Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
	2						Sandy Silt (ML), light gray, soft				
1741	5						@5': Sandy Silt (ML), very fine grained, gray, moist, medium stiff				
1736	10						@10':Silty Sand (SM) med dense, light gray, moist 2" Gravel at the bottom			38	HD:62(SA):26(SI):12(CL)
1731	15						Drilled for Percolation test to 10' Add 2" of gravel at the bottom Backfilled w/cuttings after percolation test. No Ground Water Encountered				
1726	20										
1721	25										
	30										
	35										
	40										
	45										

GEOTECHNICAL SOLUTIONS, INC.

Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-1
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. E-1
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA/AB	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	11.5
Drill Rig Type :	B-61	Drilling Contractor :	Whitecomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
	2		Bag #1				Sandy Silt, light gray, soft			52	HD:48(SA):36(SI):16(CL)
			C-1	3-5-7		12	@2':Sandy Silt/Silty Sand, very fine, light gray, slightly moist, medium stiff/ loose	3	101		
1741	5		C-2	3-3-7		10	@5':Sandy Silt (ML) w/clay, very fine grained, gray, moist, medium stiff	7	103		
										35	HD:65(SA):30(SI):5(CL)
1736	10		C-3	4-7-11		18	@10':Silty Sand (SM), very fine, light gray, moist, medium dense	11	106		DS: P=Peak / Ult=Ultimate $\phi = 34^0$, c =250 psf (P) $\phi = 33^0$, c = 200 psf (Ult)
1731	15						End of Boring = 11.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1726	20										
1721	25										
1716	30										
1711	35										
1706	40										
1701	45										

Geotechnical Solutions, Inc.

Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-9
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. E-2
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	11.5
Drill Rig Type :	B-61	Drilling Contractor :	Whitecomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES Penetration Resistance, Blows / 6"	SAMPLES Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
			Bag #1				Sandy Silt (ML), light gray,soft				
	2		C-1	3-5-7		12	@2':Sandy Silt (ML), very fine, light gray, moist, medium stiff	5	93		
1741	5		C-2	4-8-10		18	@5':Sandy Silt (ML) w/clay, very fine grained, gray, moist, medium stiff	6	105		
1736	10		C-3	10-11-14		25	@10':Silty Sand/ Sand (SM/SP), gray, moist, medium dense	4	106	32	HD:68(SA):25(SI):7(CL)
							2" Gravel				
1731	15						End of Boring = 11.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1726	20										
1721	25										
1716	30										
1711	35										
1706	40										
1701	45										

Geotechnical Solutions, Inc.

Appendix B

Pre-Test & Percolation Test Results

- Pre-Test Percolation Data Sheet (PC-1)
- Percolation Test Result at Location PC-1
- Pre-Test Percolation Data Sheet (PC-2)
- Percolation Test Result at Location PC-2

PRE- PERCOLATION TEST DATA SHEET

Project:	Moreno Valley #1316	Project No.:	G-5852-08	Date:	2/19/2021
Test Hole Number:	**PC-1**	Tested By:	BA/ASB		
Depth of Test Hole, DT	10'	USCS Soil Classification:	Sand (SP)		
Test Hole Dimensions (inches)			Length	Width	
Diameter (if Round) =	8"	Sides (if Rectangular) =			

Sandy Soil Criteria Test *

Trial No.	Start Time	Stop Time	Time Interval (Min)	Initial Depth to Water (in)	Final Depth to Water (in)	Change in Water Level (in)	Greater than or Equal to 6"? y/n
1	7:47 AM	8:12 AM	25	60	88	28	> 6"
2	8:12 AM	8:37 AM	25	88	110	22	> 6"

* If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight. Obtain at least twelve measurements per hole over at least six hours (approximately 30 minute Intervals) with a precision of at least 0.25".

PERCOLATION TEST

Borehole No. **PC-1** Depth **120** inch

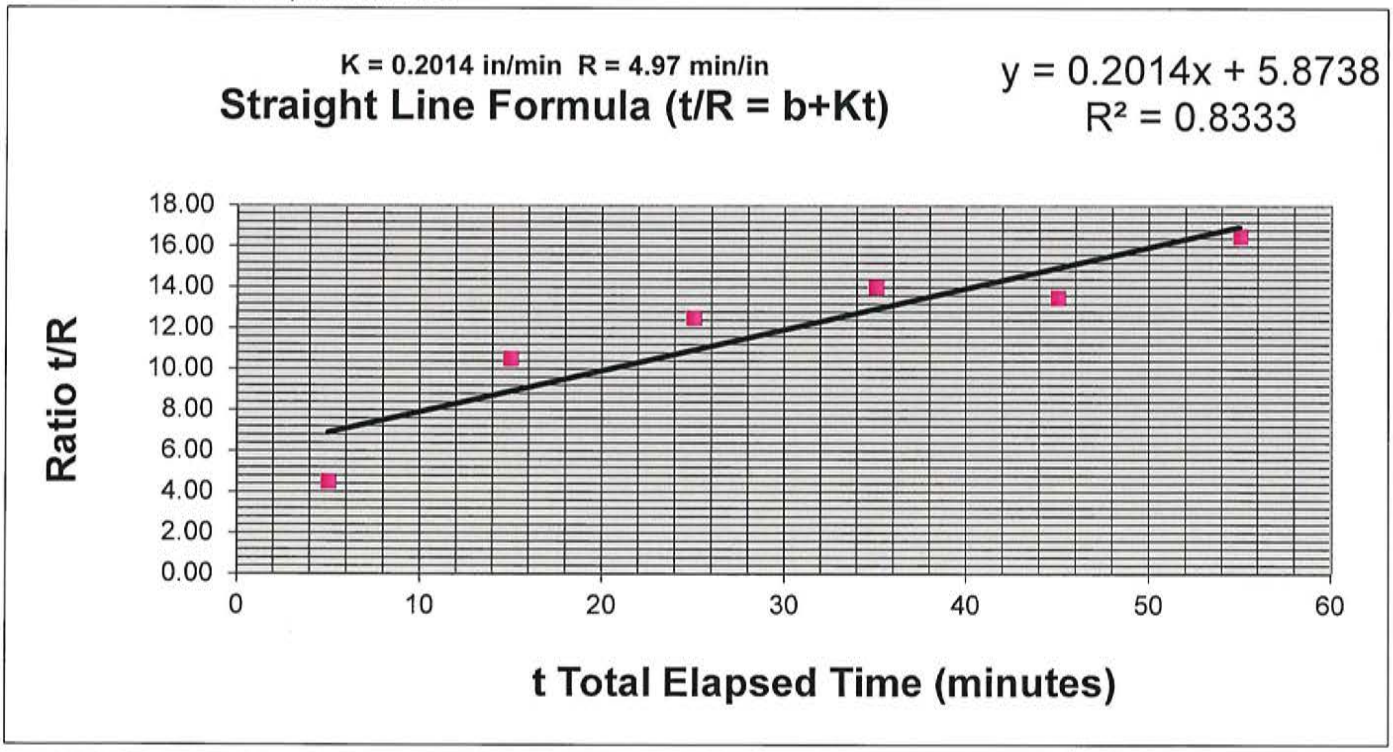
Date	Time of Reading	Δt (min.)	Total Elapsed Time (t)	Average t (minutes)	Reading R_1 (inches)	Reading R_2 (inches)	Drop d (inches)	R=Δt/d (min./in.)	t/R (in.)	k * 1000 (cm/s)
2/19/2021	8:42 AM	0	0							
	8:52 AM	10	10	5	57.00	66.00	9.00	1.11	4.50	38.1
	9:02 AM	10	20	15	66.00	73.00	7.00	1.43	10.50	29.6
	9:12 AM	10	30	25	73.00	78.00	5.00	2.00	12.50	21.2
	9:22 AM	10	40	35	78.00	82.00	4.00	2.50	14.00	16.9
	9:32 AM	10	50	45	82.00	85.00	3.00	3.33	13.50	12.7
	9:42 AM	10	60	55	85.00	88.00	3.00	3.33	16.50	12.7

Plot: t/R as ordinate vs. 't' as abscissa; tanOC = K.

R_1 = Vertical distance from reference point to water level after refilling at beginning of increment period.

R_2 = Vertical distance from reference point to water level at the end of increment period.

R = 1/K at equilibrium rate.



Truck Stop - Moreno Valley Pilot # 1316 - Percolation Tests
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA

Project: G-5852-08
Plate: 2

GEOTECHNICAL SOLUTIONS, INC.

PRE- PERCOLATION TEST DATA SHEET

Project:	Moreno Valley # 1316	Project No.:	G-5852-08	Date:	2/19/2021
Moreneo	**PC-2**	Tested By:	BA/ASB		
Depth of Test Hole, DT	10'	USCS Soil Classification:	Sand (SP)		
Test Hole Dimensions (inches)			Length	Width	
Diameter (if Round) =	8"	Sides (if Rectangular) =			

Sandy Soil Criteria Test *

Trial No.	Start Time	Stop Time	Time Interval (Min)	Initial Depth to Water (in)	Final Depth to Water (in)	Change in Water Level (in)	Greater than or Equal to 6"? y/n
1	8:05 AM	8:30 AM	25	48	64	16	> 6"
2	8:30 AM	8:55 AM	25	64	72	8	> 6"

* If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight. Obtain at least twelve measurements per hole over at least six hours (approximately 30 minute Intervals) with a precision of at least 0.25".

PERCOLATION TEST

Borehole No. **PC-2** Depth **120** inch

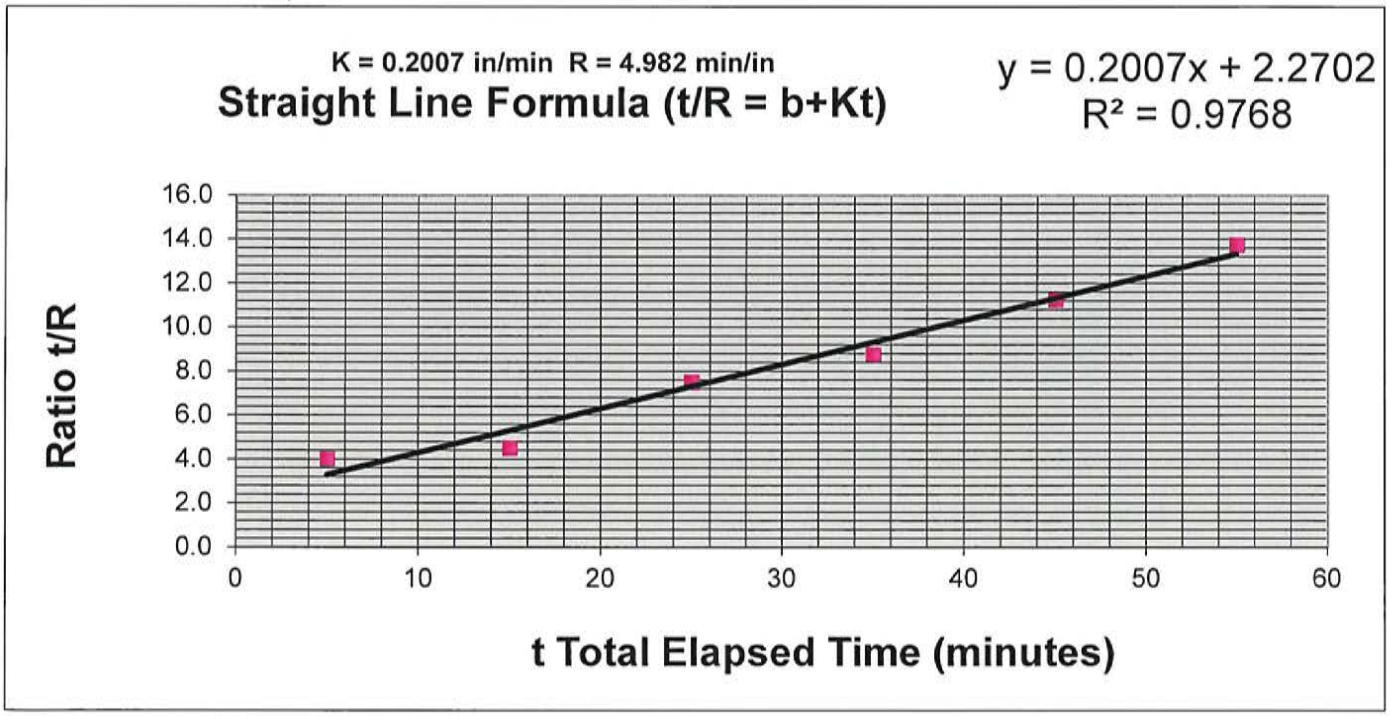
Date	Time of Reading	Δt (min.)	Total Elapsed Time (t)	Average t (minutes)	Reading R_1 (inches)	Reading R_2 (inches)	Drop d (inches)	R=Δt/d (min./in.)	t/R (in.)	k * 1000 (cm/s)
2/19/2021	9:05 AM	0	0							
	9:15 AM	10	10	5	52.00	60.00	8.00	1.25	4.00	33.9
	9:25 AM	10	20	15	60.00	63.00	3.00	3.33	4.50	12.7
	9:35 AM	10	30	25	63.00	66.00	3.00	3.33	7.50	12.7
	9:45 AM	10	40	35	66.00	68.50	2.50	4.00	8.75	10.6
	9:55 AM	10	50	45	68.50	71.00	2.50	4.00	11.25	10.6
	10:05 AM	10	60	55	71.00	73.50	2.50	4.00	13.75	10.6

Plot: t/R as ordinate vs. 't' as abscissa; tanOC = K.

R_1 = Vertical distance from reference point to water level after refilling at beginning of increment period.

R_2 = Vertical distance from reference point to water level at the end of increment period.

R = 1/K at equilibrium rate.



Truck Stop - Moreno Valley Pilot # 1316 - Percolation Tests
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA

Project:	G-5852-08
Plate:	4

GEOTECHNICAL SOLUTIONS, INC.

Appendix C – Infiltration Rates

Infiltration Rate I_f Calculations

- PC-1
- PC-2

Percolation Rate Conversion
Infiltration Rate, I_t
Porchet Method, aka Inverse Borehole Method

Infiltration test
Project No: G-5729-08

Data collected at the Final Interval analysed:

Percolation Test PC-1

As per Test Result, Percolation Rate = 0.2014 inch/Min = 12.08 inch/hour

Time Interval, Δt	= 10	Minutes	Initial Depth to Water, D_0	= 85	Inches
Total Depth of Test Hole, D_t	= 120	Inches	Final Depth to Water, D_f	= 88	Inches
Test Hole Radius, r	= 4	Inches			

Initial Height of Water at the selected time interval, H_0	= 35	Inches	$(D_t - D_0)$
Final Height of Water at the Selected time interval, H_f	= 32	Inches	$(D_t - D_f)$
Change in Height over the time interval, ΔH	= 3	Inches	$(H_0 - H_f)$
Average Head Height over the time interval, H_{avg}	= 33.5	Inches	$(H_0 + H_f)/2$

Tested Infiltration Rate, $I_t = \Delta H\,(60\,r) / ((\Delta t)(r + 2\,H_{avg}))$ **in/hr**

Therefore, I_t = **1.014085 inch/hour**

I_t = **0.507042 inch/hour** **FS: 2**

> 0.3 inch/hour requirement
PASSED

Percolation Rate Conversion
Infiltration Rate, I_t
Porchet Method, aka Inverse Borehole Method

Infiltration Test
Project No: G-5852-08

Data collected at the Final Interval analysed:

Percolation Test PC-2

As per Test Result, Percolation Rate = 0.2007 inch/Min = 12.04 inch/hour

Time Interval, Δ t	=	10	Minutes	Initial Depth to Water, D_0	=	71	Inches
Total Depth of Test Hole, D_t	=	120	Inches	Final Depth to Water, D_f	=	73.5	Inches
Test Hole Radius, r	=	4	Inches				

Initial Height of Water at the selected time interval, H_0	=	49	Inches	$(D_t - D_0)$
Final Height of Water at the Selected time interval, H_f	=	46.5	Inches	$(D_t - D_f)$
Change in Height over the time interval, Δ H	=	2.5	Inches	$(H_0 - H_f)$
Average Head Height over the time interval, H_{avg}	=	47.75	Inches	$(H_0 + H_f)/2$

Tested Infiltration Rate, $I_t = \Delta H\ (60\ r)\ /((\Delta t)(r + 2\ H_{avg}))$ **in/hr**

Therefore, I_t = **0.6030 inch/hour**

I_t = **0.301508 inch/hour** **FS: 2**

> 0.3 inch/hour- PASSED

PLATE - 6

INFILTRATION RATE

Appendix D

Infiltration Rates Using Reduction Factor Method R_f

- PC-1
- PC-2

REDUCTION FACTOR, R_f

Project:	Moreno Valley # 1316	Project No.:	G-5852-08	Date:	2/19/2021
Test Hole Number:	**PC-1**	Tested By:	BA/ASB		
Depth of Test Hole, DT	10'	Initial Water Depth (Inches)	85		
Test Hole Dimensions (inches)				Length	Width
Diameter (if Round), Dia =	8	Sides (if Rectangular)	=		

Percolation Test	Pre-Adjusted Percolation Rate, in/hr	Initial Depth to Water, **d1** (in)	Water level Drop, Δ**d** (in)	R_f	I_f
PC-1	20	85	3	21.88	0.9143

The average drop of the stabilized rate over the last three consecutive readings is the pre-adjusted percolation rate at the test location in inches per hour.

The pre-adjusted percolation rate must be reduced to account for the discharge of water from both the sides and bottom of the boring (non-vertical flow).

Use the Formula: Reduction Factor, $R_f = [(2d1 - \Delta d) / Dia] + 1$ where d_1 = Initial water Depth, in

Δ d = Water level drop of Final Period or Stabilized Rate (in)

REDUCTION FACTOR, R_f

Project:	Moreno Valley # 1316	Project No.:	G-5852-08	Date:	2/19/2021
Test Hole Number:	**PC-2**	Tested By:	BA/ASB		
Depth of Test Hole, DT	10'	Initial Water Depth (Inches)	71		
Test Hole Dimensions (inches)				Length	Width
Diameter (if Round), Dia =	8	Sides (if Rectangular)	=		

Percolation Test	Pre-Adjusted Percolation Rate, in/hr	Initial Depth to Water, **d1** (in)	Water level Drop, Δ**d** (in)	R_f	I_f
PC-2	15	71	2.5	18.44	0.8136

The pre-adjusted percolation rate must be reduced to account for the discharge of water from both the sides and bottom of the boring (non-vertical flow).

Use the Formula: Reduction Factor, $R_f = [(2d1 - \Delta d) / Dia] + 1$ where d_1 = Initial water Depth, in

Δ d = Water level drop of Final Period or Stabilized Rate (in)

GEOTECHNICAL ADDENDUM REPORT

MORENO VALLEY PILOT # 1316
TRUCK STOP MODEL

AT

SOUTH OF FREEWAY 60 &
WEST OF REDLANDS BOULEVARD
MORENO VALLEY, CALIFORNIA 92553

PREPARED FOR:

BROADBENT, INC.
WEST PACIFIC AVENUE
HENDERSON, NEVADA, 89015

PROJECT NO: G-5852-01

MARCH 1, 2021

PREPARED BY:

GEOTECHNICAL SOLUTIONS, INC.
GEOTECHNICAL & ENVIRONMENTAL
ENGINEERING

Geotechnical Solutions, Inc.
Geotechnical, Structural & Environmental Engineering

March 1, 2021

Project No: G-5852-01

Broadbent, Inc.
8 West Pacific Avenue
Henderson, Nevada, 89015

Attention: Mr. Mark E. Kazelskis, PG, CHG, CEM

Via Email: mkazelskis@broadbentinc.com

Re: Geotechnical Engineering Addendum Report
Truck Stop – Moreno Valley Pilot # 1316
South of Freeway 60 &
West of Redlands Boulevard
Moreno Valley, California 92553

Gentlemen:

Submitted herewith is the addendum report to our geotechnical engineering report dated February 26, 2021 conducted by this office for Moreno Valley Truck Stop Model Pilot # 1316 at the referenced site.

Recommendations regarding over excavation have been included in this addendum report for the Moreno Valley Truck Stop Model Pilot # 1316 located just northwest of Redlands Boulevard and Eucalyptus Avenue Intersection and south of Moreno Highway 60 in Moreno Valley, California as shown on Vicinity Map (Plate A) and Google Map (Plate D).

Site Clearing

Prior to grading, all debris including construction materials should entirely be removed from the site and disposed of off-site. Existing any undesirable materials should also be

removed and hauled off-site. Existing utilities (if Any) should be removed and relocated as required. Any construction debris or ant buried or other contaminated exposed during site clearance should be removed and hauled away from the site. The resulting excavation from any removal should be cleared of loose material then backfilled with compacted soil. Oversized rocks greater than 6 inches should be removed.

Excavation

Excavations into the on-site soils may encounter a variety of conditions. Caving on clean sands may be encountered. The contractor should be made responsible for designing and constructing stable, temporary excavations as required to maintain stability of the excavation sides. All excavations should be sloped or shored in the interest of safety following local and federal regulations including current OSHA excavation and trench safety standards.

Conventional equipment can be used for the excavations for shallow foundations, drilled shafts, and utility trenches for the proposed construction. The speed and ease of excavation are dependent on the nature of the deposit, the type of equipment used, and the skill and experience of the equipment operator.

Building Pad Over-excavation (Above Ground Storage Tanks, AST's)

After removal of existing debris, the above ground storage tank areas should be over-excavated at least 3 feet below the lowest grade or 24 inches below the bottom of the footings whichever is greater. Excavation should be extended 3-feet outside building perimeters. Remove and replace any loose or disturbed soils prior to placing any additional fill materials required to reach the finished subgrade elevations. The over-excavation should be backfilled to the foundation base elevation with the compacted engineering fill or lean concrete in accordance with the recommendations presented in this report.

The stability of the subgrade may be affected by precipitation, repetitive construction traffic or other factors. If unstable conditions develop, workability may be improved by scarifying and drying. Alternatively, over-excavation of wet zones and replacement with granular materials may be used, or crushed gravel and/or rock can be tracked or "crowded' into the unstable surface soil until a stable working surface is attained. Lightweight excavation equipment may also be used to reduce subgrade pumping.

Compliance

Recommendations for foundations and slabs-on-grade supported on compacted fills or prepared subgrade depend upon compliance with the General Grading and Recommended Earthwork Specifications in Appendix B.

To assess compliance, observation and testing should be performed under the direction of a geotechnical engineer. Please contact us to provide observation and testing services.

Backfill Materials

On-site clean, low-expansive potential soils, or imported materials may be used as fill material for the following:

- Foundation Areas
- Interior Slab Areas
- Pavement Areas
- Backfill

Any earth materials imported or excavated on the property may be utilized in the fill provided that each material has been determined to be suitable by the soil engineer. These materials should be free of roots, tree branches, other organic matter or other deleterious materials. Soils of poor gradation, undesirable expansion potential, or substandard

strength characteristics may be designated by the consultant as unsuitable and may require blending with other soils to serve as a satisfactory fill material.

Gradation (as per ASTM C136) should be as follows:

Size	% by Weight
6"	100
4"	85-100
¾"	70-100
No 4 Sieve	50-100
No. 200 Sieve	40 (max)

Any import material should have an expansion Index, EI less than 20. Import material should also meet the following criteria:

Soil Properties	**Values**
Liquid Limit	35 (Max)
Plastic Limit	6 (Max)

Placement and Compaction

Place and compact approved fill material in nearly horizontal layers that when compacted should not exceed 6 inches in thickness.

Use appropriate equipment and procedures that will produce recommended densities and water contents throughout the lift. Moisture condition, blending, and mixing of the fill layer should continue until the fill materials have a uniform moisture content at or above optimum moisture.

Uncompacted fill lifts should not exceed 8 inches.

Materials should be compacted to the following:

On-site or imported soil, reworked and fill: Minimum % (ASTM D-1557

	Laboratory Standard)
Subgrade Below Footings	90
Subgrade Below Slab-on Grade	90
Subgrade Below Pavement	90
Crush Rock Below Slab-on-Grade	95
Aggregate Base below pavement	95

Excavations at Pavement Areas

Subgrade Preparation

After removing the existing deleterious materials on the pavement areas and hauled offsite, all surficial deposits of loose soil material should be removed and excavate 12 inches below the base and recompacted as recommended. The bottom is further scarified to a depth of at least 6 inches; moisture conditioned as necessary and compacted to 90 percent of the maximum laboratory density as determined by ASTM Test Method D-1557.

Deleterious material, excessively wet or dry pockets, concentrated zones of oversized rock fragments, and any other unsuitable materials encountered during excavation or grading should be removed. The compacted fill material should then be brought to the elevation of the proposed subgrade for the pavement. The subgrade should be proof-rolled in order to ensure a uniform, firm and unyielding surface. All grading and fill placement should be observed by the project soils engineer and/or his representative.

Aggregate Base

Compaction and rolling are required for the recommended base section. Minimum relative compaction required will be 95 percent of the laboratory maximum density as determined by ASTM Test Designation D-1557. Aggregate base should be in accordance with 200-2.2 crushed Aggregate base Class II base (minimum R-value=78) and sample

should be brought for testing and approval prior to delivery to the site. No crushed miscellaneous base (CMB) should be accepted.

Asphalt Concrete Pavement

Asphalt concrete pavement should be Performance Grade PG 64-10 1/2" maximum aggregate size and should be placed and compacted in two layers. Asphalt concrete shall be compacted to 95 percent of the Hveem Laboratory Standard.

Earthwork Observations:

Relative compaction of all fill materials placed on site should be tested in accordance with ASTM D6938. All new fill shall be brought to near optimum moisture, placed in layers not exceeding six inches in thickness, and compacted to at least 90 percent relative compaction for subgrade and 95 percent relative compaction for aggregate base. No jetting or water tamping of fill soils shall be permitted. All imported soil for engineered fill should be pre-approved by the Geotechnical Engineer and consist of clean, granular, non-expansive soil, free of vegetation and other debris with an Expansion Index of 20 or less.

At all times, the contractor should have a responsible field superintendent on the project in full charge of the work, with authority to make decisions. He should cooperate fully with the Geotechnical Engineer in carrying out the work.

All footing trenches for continuous and spread footings and subgrade for the slab areas should be observed by the project Geotechnical Engineer to verify that over-excavation and re-compaction operations of adequate depth, thickness, and compaction have been performed as specified. All footing excavations should be trimmed neat, level and square. All loose, sloughed or moisture softened soil should be removed and replaced with properly compacted soil.

General Grading

All grading should conform to the guidelines presented in the California Building Code (CBC, 2019), the City of Moreno Valley, International Conference of Building Officials (ICBO, 2018), and Appendix B in this report, except where specifically superceded in the text of this report. When code references are not equivalent, the more stringent code should be followed. During earthwork construction, all site preparation and the general grading procedures of the contractor should be observed, and the fill selectively tested by a representative (s) of Geotechnical Solutions, Inc. (GSI). If unusual or unexpected conditions are exposed in the field, they should be reviewed by this office and if warranted, modified and /or additional recommendations will be offered. All applicable requirements of local and national construction and general industry safety orders, the Occupational Safety and Health Act and the construction Safety Act should be met.

Closure

The Conclusions and recommendations contained herein are based on the findings and observations made at the test boring locations. It is not unusual to find conditions between and beyond such locations, which differ from the conditions encountered. If conditions are encountered during construction, which appear to differ from those previously disclosed, this office should be notified so as to consider the need for modifications. On-site construction observations and wherever appropriate, tests should be performed during the course of construction by a representative of this office to evaluate compliance with the design concepts, specifications, and recommendations contained herein.

This report has been compiled for the exclusive use of our client, it shall not be transferred to, or used by, other parties, or applied to any project on this site other than described herein without consent and /or thorough review by this office.

The investigation was made in accordance with generally accepted geotechnical engineering principles and procedures and included such field and laboratory tests considered necessary under the circumstances.

In the opinion of the undersigned, the accompanying report has been substantiated by mathematical and other data and presents fairly the design information requested by your organization.

Respectfully Submitted,

Geotechnical Solutions, Inc.

Dharma Shakya, PhD, PE, GE
Principal Geotechnical Engineer

Abraham S. Baha, PE, M. ASCE
Sr. Principal

Distribution: (3+pdf) Addressee

References

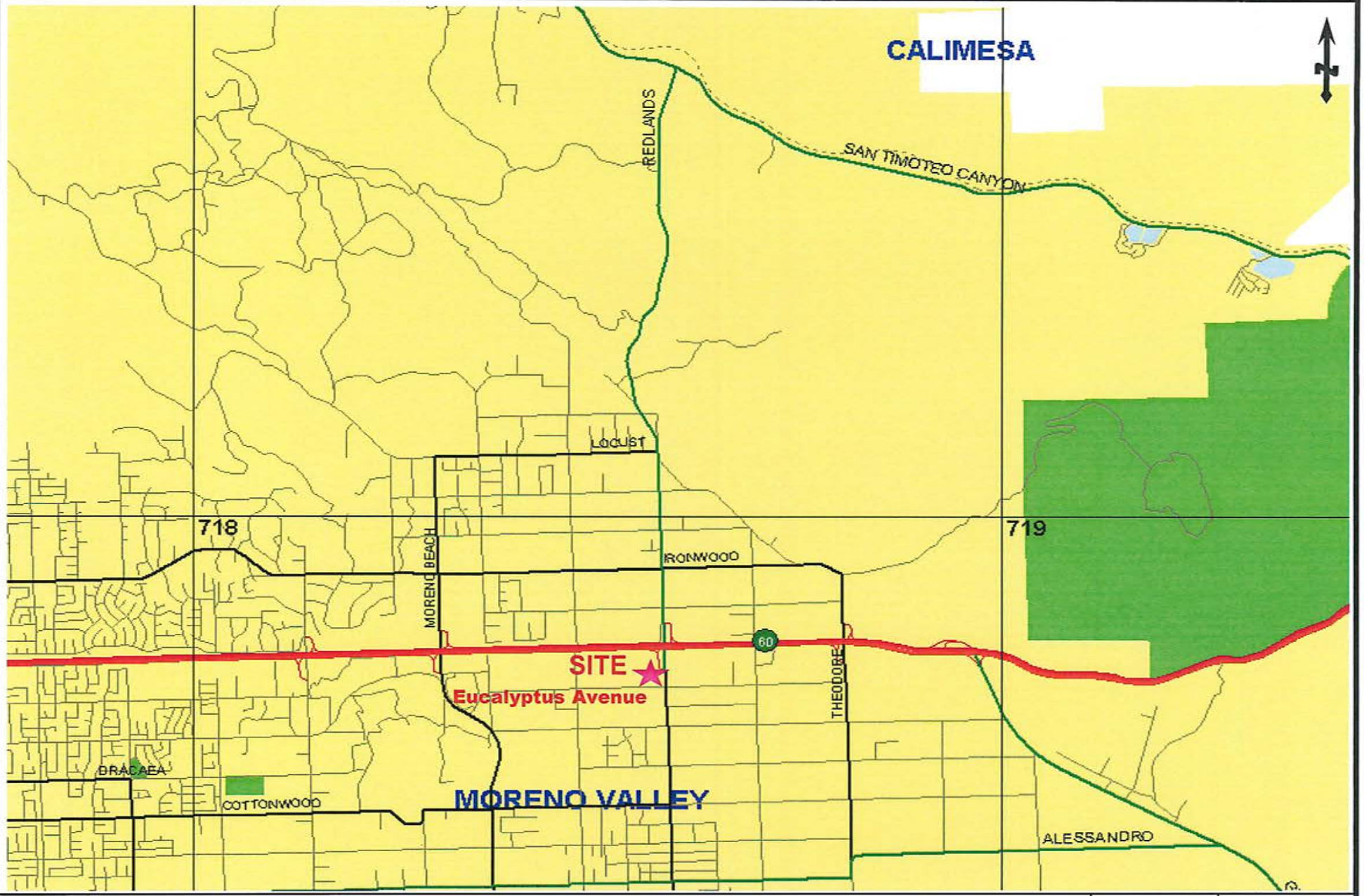
Geotechnical Solutions, Inc., 2021, "Geotechnical Evaluation Report for Moreno Valley pilot # 1316, Truck Stop Model, Located at South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, California", Project Number G-5852-01, dated February 26, 2021.

Appendix A

Plates

- Vicinity Map
- Plot Plan
- Google Map

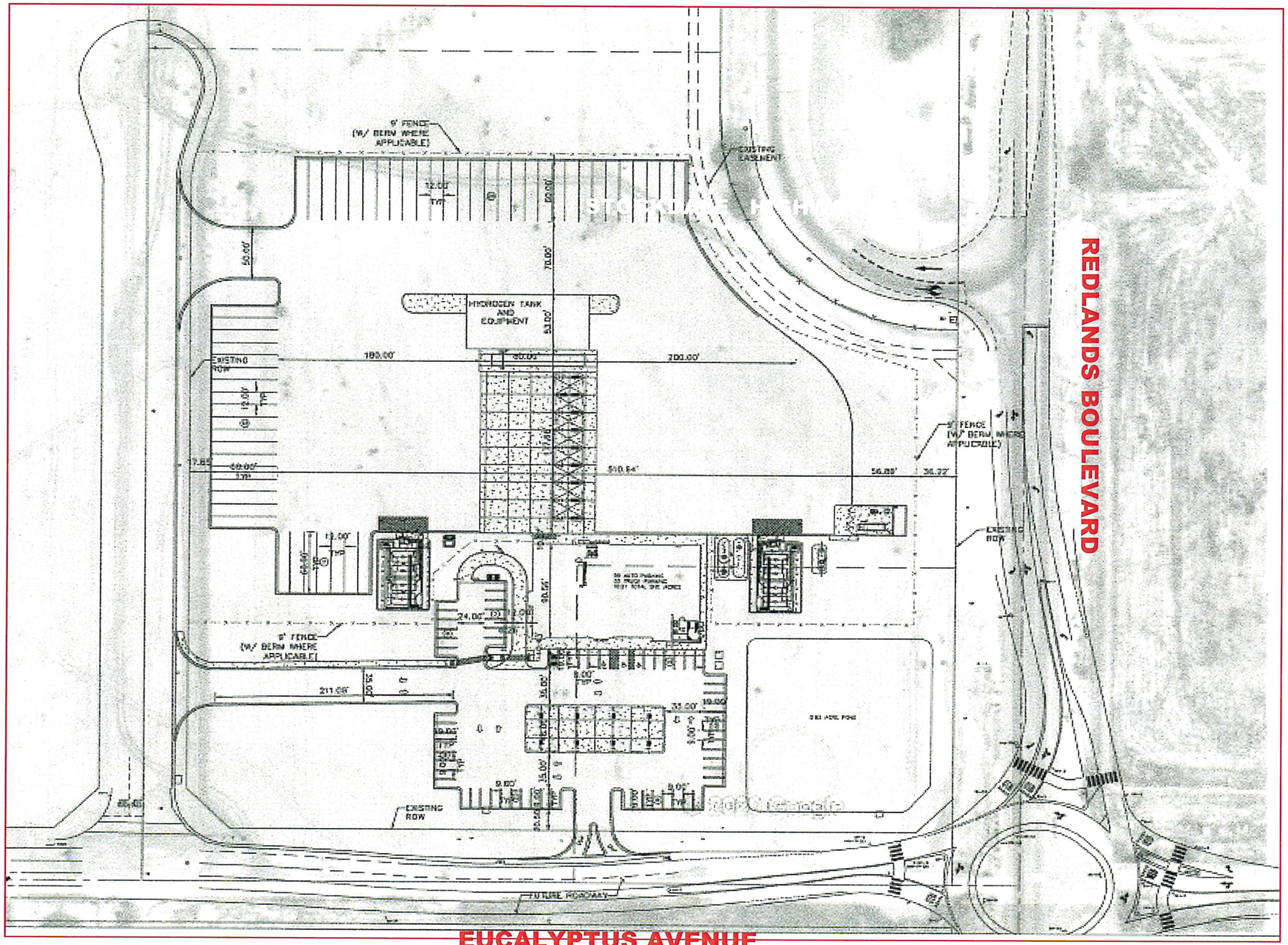
VICINITY MAP



Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	A

Geotechnical Solutions, Inc.

PLOT PLAN & BORING LOCATION MAP



SCALE: 1" = 100'

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	B

Geotechnical Solutions, Inc.

GOOGLE MAP

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	C
Geotechnical Solutions, Inc.		

Appendix B

Recommended Earthwork Specifications

RECOMMENDED EARTHWORK SPECIFICATIONS

1.0 General

1.1 Description

1.1.1 These specifications cover preparation of the subject site to receive fills, the type of soils suitable for use in fills, the compaction standards, and the methods of testing compacted fills.

1.1.2 The Contractor shall furnish all labor, supervision, equipment, operations, and materials to excavate to the required grade, support existing underground facilities, stockpile material, compact fill and backfill, and fine grade. The work of the Contractor shall include all clearing and grubbing, removing existing unsatisfactory material, preparing areas to be filled, spreading and compacting of fill in the areas to be filled and all other work necessary to complete the grading of the filled areas. It shall be the Contractor's responsibility to place, spread, moisten or dry, and compact the fill in strict accordance with these specifications to the lines and grades indicated on project plans or as directed in writing by the Civil Engineer.

1.1.3 Deviations from these specifications will be permitted only upon written authorization from the Owner or his representative.

1.2 Role of the Geotechnical Engineer

1.2.1 Construction - The Owner will employ a Geotechnical Consultant to observe and test this work as it is being performed. The Contractor shall cooperate with the Geotechnical Consultant and allow his unrestricted access to the site as required for the performance of his duties.

The Contractor shall provide a minimum notice of 48 hours to the Geotechnical Engineer before beginning or restarting earthwork operations that will require the presence of the Geotechnical Engineer or his representative on site.

1.2.2 Subsurface Investigations - A geotechnical engineering report for design purposes was prepared by Geotechnical Solutions, Inc., Irvine, California. Any recommendations made in the geotechnical report or subsequent reports are made part of these specifications. These reports are available for review upon request to the Owner.

1.2.3 Observation and Testing - The Geotechnical Engineer's representative shall observe the clearing and grubbing, excavation, filling and compacting operations and shall take density tests in the fill material so that he can state his opinion as to whether or not the fill was constructed in accordance with the specifications. All fill will be tested shortly after its placement to ascertain that the required compaction is achieved. A minimum of one density test will be made on each 500 cubic yards of fill placed, with a minimum of at least one test per every 2 feet of vertical height of fill. If the surface is disturbed, the density tests shall be made in the compacted materials below the disturbed zone. When these tests indicate that the density or water content of any layer of fill or portion thereof does not meet the specified density or water content, the particular layer or portions thereof shall be reworked until the specified density and water content have been obtained.

After the completion of grading, the Geotechnical Engineer will prepare a written opinion of grading. Neither the testing performed by the Geotechnical Consultant nor his opinion as to whether or not the fill was constructed in accordance with these Specifications shall relieve the Contractor of his responsibility to construct the fills in accordance with the Contract Documents.

1.3 Reference Standards

The following ASTM (American Society for Testing and Materials) codes and standards shall be used to the extent indicated by references herein. The most recent revision of the standards shall be used.

D 1556 - "Standard Test Method for Density of Soil in Place by the Sand-Cone Method"

D1557 - "Standard Test Methods for Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using 10-lb (4.54 kg) and 18-inch (457-mm) Drop"

D2216 - "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures"

D4318 - "Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils"

D4718 - "Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles"

D4829 - "Standard Test Method for Expansion Index of Soils"

D4944 - "Standard Test Method for Field Determination of Water (Moisture) Content of Soil by the Calcium Carbide Gas Pressure Tester Method."

D5195 - "Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)"

D6938 - "Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)"

D7928 - "Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis"

1.4 Degree of Fill Compaction

The degree to which fill is to be compacted is expressed in terms of "relative compaction." Relative compaction is defined as the ratio; expressed in percent, of the in-place dry density of the compacted fill to the reference maximum dry density. The reference maximum dry density shall be obtained following ASTM D1557. Optimum water content shall be obtained in the same test used to obtain the reference maximum dry density. Correction of the maximum dry density and optimum water content for

oversize particles of gravel and cobbles shall be made following ASTM D4718 when, in the opinion of the Geotechnical Engineer, such correction is appropriate. The in-place density shall be obtained following ASTM D1556 (sand cone method) or ASTM D6938 (nuclear method-shallow depth) test method. The in-place water content shall be obtained following ASTM D4944 (calcium carbide gas pressure meter), ASTM D5195 (nuclear method-shallow depth), or ASTM D2216 (oven drying). Correction of the in-place density and water content for oversize particles of gravel and cobbles shall be made following ASTM D4718 when, in the opinion of the Geotechnical Engineer, such correction is appropriate.

If any of the test methods specified in this section are judged by the Geotechnical Engineer to be impractical or unreliable because the material has a coarse particle size distribution, or for other reasons, the Geotechnical Engineer shall establish other procedures to obtain the required soil characteristics.

2.0 Products

2.1 Materials

2.1.1 General - During grading operations, soil types other than those identified in the geotechnical investigation report may be encountered by the Contractor. Consult the Geotechnical Consultant for his evaluation of the suitability of using these soils a fill material prior to placement or disposal.

2.1.2 General Fill - Materials for compacted fill shall consist of material imported from outside the site or excavated from the site that, in the opinion of the Geotechnical Engineer, is suitable for use in constructing engineered fills. The material shall not contain rocks or hard lumps greater than 6 inches in maximum dimension, and at least 70 percent (by weight) of its particles shall pass through a U.S. Standard 3/8 inch sieve. Material greater than 3 inches, but less than 6 inches in maximum dimension, shall be placed by the Contractor so that it is completely surrounded by compacted, finer material;

no nesting of rocks shall be permitted. Do not use any perishable, spongy, hazardous, or other undesirable materials as fill.

2.1.3 Select Fill - Select fill shall meet all criteria for general fill but shall also contain no rocks or hard lumps greater than 3 inches in maximum dimension, and at least 80 percent (by weight) shall pass through a U.S. Standard 3/8-inch sieve. The expansion index of select material shall be less than 50 (i.e., 5.0 percent swell) when tested in accordance with ASTM D4829.

3.0 Execution

3.1 Clearing and Grubbing

Within the project limits, tile Contractor shall demolish structures as specified on the Drawings.

Unless otherwise indicated on the Drawings or by the Owner in writing, the Contractor shall clear and grub all trees, stumps, roots, brush, grass, and other vegetation within construction, fill and stockpile areas to a minimum depth of 3 feet below the existing ground surface or below finished grade, whichever is deeper, unless otherwise recommended by the Geotechnical Engineer's Field Representative.

Remove cleared and grubbed materials from the site and dispose of them legally. No onsite burning or burying of cleared and grubbed materials is permitted. No placement of cleared and grubbed materials in topsoil stockpiles is permitted. No mulching of branches or roots is permitted. Incorporating vegetative matter into stockpiled materials, which are to be used in fill, is not permitted.

Stockpile organic-laden topsoil separate from other fill materials.

Remove any remaining vegetative matter from the deeper excavated soils, which may result from roots deeper than those encountered during clearing and grubbing operations.

All material thereby removed shall be piled at a location away from the immediate work area so as to avoid burying of piled material.

3.2 Compacted Fills

3.2.1 Preparing Areas to be Filled - Brush, grass, and other objectionable materials shall be collected, piled, and disposed of as indicated in Section 3.1 by the Contractor so as to leave the areas that have been cleared with a neat and finished appearance, free from unsightly debris.

Remove all loose soil, uncertified fill, landslide debris, and weathered bedrock to firm material or in-situ bedrock, as approved by the Geotechnical Consultant. The Contractor shall obtain approval from the Geotechnical Engineer or his representative of stripping and site preparation before the compaction of any fill subgrade begins. The surface shall then be scarified to a minimum depth of 6 inches until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment used, and shall be brought to the specified water content and relative compaction. Compact scarified materials to a minimum relative compaction of 90 percent, relative to ASTM D1557, prior to placement of any fill material.

3.2.2 Placing, Spreading, and Compacting, Fill Material - Onsite soil obtained from removals, borrow, or cut areas may be reused as compacted fill provided it is free from deleterious debris and meets the other requirements of the "Materials" portion of this Specification Section.

Use of soil containing deleterious debris from the clearing and grubbing operation or from other sources is not permitted. The fill materials shall be placed by the Contractor in horizontal layers not greater than 8 inches thick, measured before compaction. Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to obtain uniformity of material and moisture in each layer. The moisture content of material used for compacted fill should be adjusted to be at or above optimum water content as determined by ASTM D1557. When the water content of the fill material is too high, the

fill materials shall be aerated by the Contractor by blading, mixing, or other satisfactory methods until the water content is as specified.

After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted by the Contractor to a relative compaction of at least 90 percent of the maximum dry density as determined by ASTM D1557 for general fill, and 95 percent of the maximum dry density as determined by ASTM D1557 for select fill, compacted fill pads, and the upper 1 foot of pavement subgrade. Compaction shall be accomplished by: sheepsfoot rollers; vibratory rollers; multiple-wheel, pneumatic-tired rollers; or other types of acceptable compacting equipment. Equipment shall be of such design that it is able to compact the fill to the specified density. Compaction shall be continuous over the entire area, and the equipment shall make sufficient passes to obtain the desired density uniformly. All fill placed on site shall be treated in like manner until finished grades are attained. Jetting, puddling, and hydro consolidation techniques shall not be used, including backfill of utility trenches.

The placement of topsoil is subject to the approval of the Geotechnical Engineer. Topsoil shall not be placed beneath concrete flatwork, beneath or behind retaining walls, or within structural fill. All topsoil material is subject to the same moisture conditioning, placement, and compaction requirements as General Fill. Roots, branches and other organic debris are not permitted within the compacted topsoil layer.

When backfilling around footings and compacting behind retaining walls and flexible retaining structures, the Contractor shall use lightweight compaction equipment such as hand-operated equipment, shoring, or other means to avoid over-stressing structural walls. When using lightweight compaction equipment, the fill materials shall be spread in horizontal layers not greater than 6 inches thick, measured before compaction.

As an alternative, sand-cement slurry may be used to backfill trenches. The slurry shall have minimum cement content of 3 sacks per cubic yard within the zone of influence of foundations and other settlement sensitive structures. A minimum of 2 sacks per cubic

yard of slurry shall be used elsewhere within building limits, and a minimum of one sack per cubic yard of slurry shall be used elsewhere. Slurry shall not be used in those areas where such placement would result in the obstruction of water flow, and is subject to the approval of the Geotechnical Engineer.

3.3 Protection of Work and Adjacent Properties

3.3.1 During Construction - The Contractor shall grade all excavated surfaces to provide good drainage away from construction slopes and prevent ponding of water. He shall control surface water and the transport of silt and sediment to avoid damage to adjoining properties or to finished work on the site. The Contractor shall take remedial measures to prevent erosion of freshly graded areas until such time as permanent drainage and erosion control measures have been installed.

Dispose of all water resulting from dewatering operations legally and in ways that will not cause damage to public or private property, or constitute a nuisance or menace to the public, in accordance with municipal requirements.

The Contractor shall make every effort to minimize the amount of dust raised in excavating, on haul roads and access roads, and all other work areas in the course of construction activities.

Protect benchmarks, monuments, and other reference points against displacement or damage. Repair or replace benchmarks, monuments, and other permanent survey data that become displaced or damaged due to the performance of this work.

3.3.2 After Completion - After earthwork is completed and the, Geotechnical Engineer has finished his observations of the work, no further excavation, filling or backfilling shall be performed except under the observation of the Geotechnical Engineer.

Appendix H
Preliminary Water Quality Management Plan

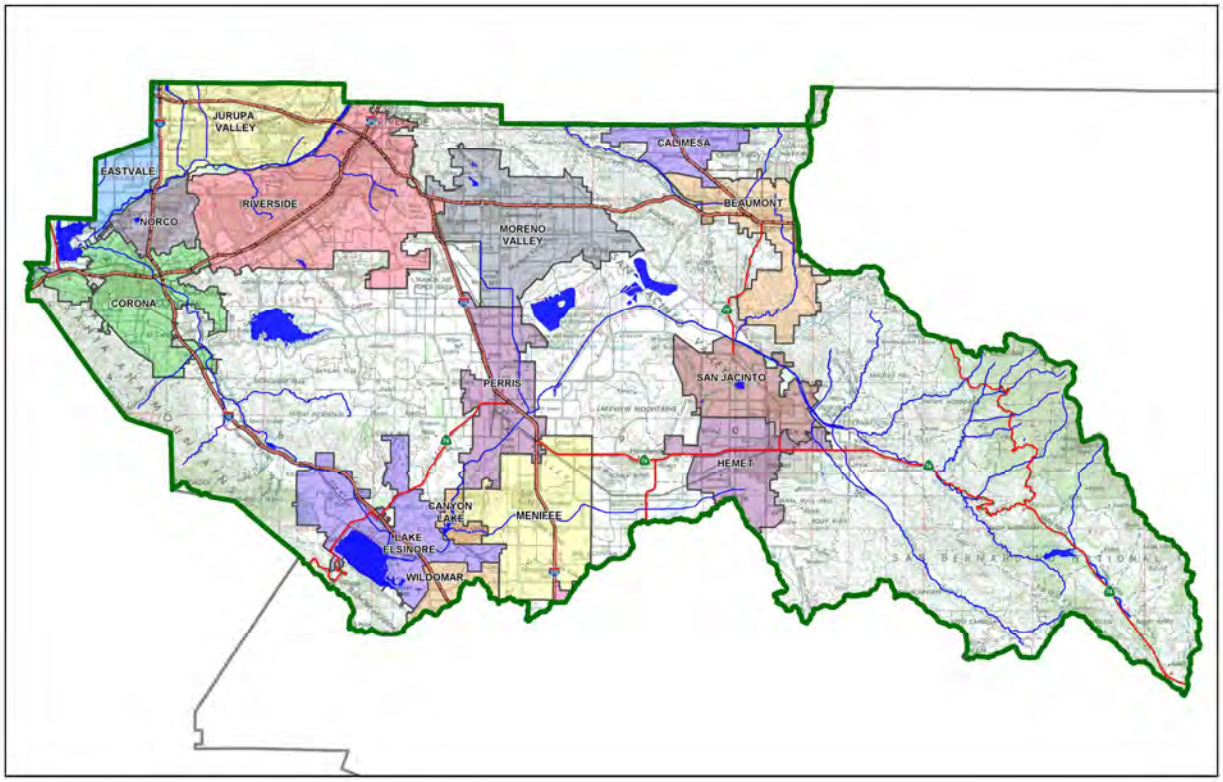
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Pilot Moreno Valley

Public Works No: PEN21-0077

Design Review/Case No: LWQ21-0018



☒ **Preliminary**

☐ **Final**

Original Date Prepared: 4/26/2021

Revision Date(s): 8/3/2021

Prepared for Compliance with Regional Board Order No. **R8-2010-0033**

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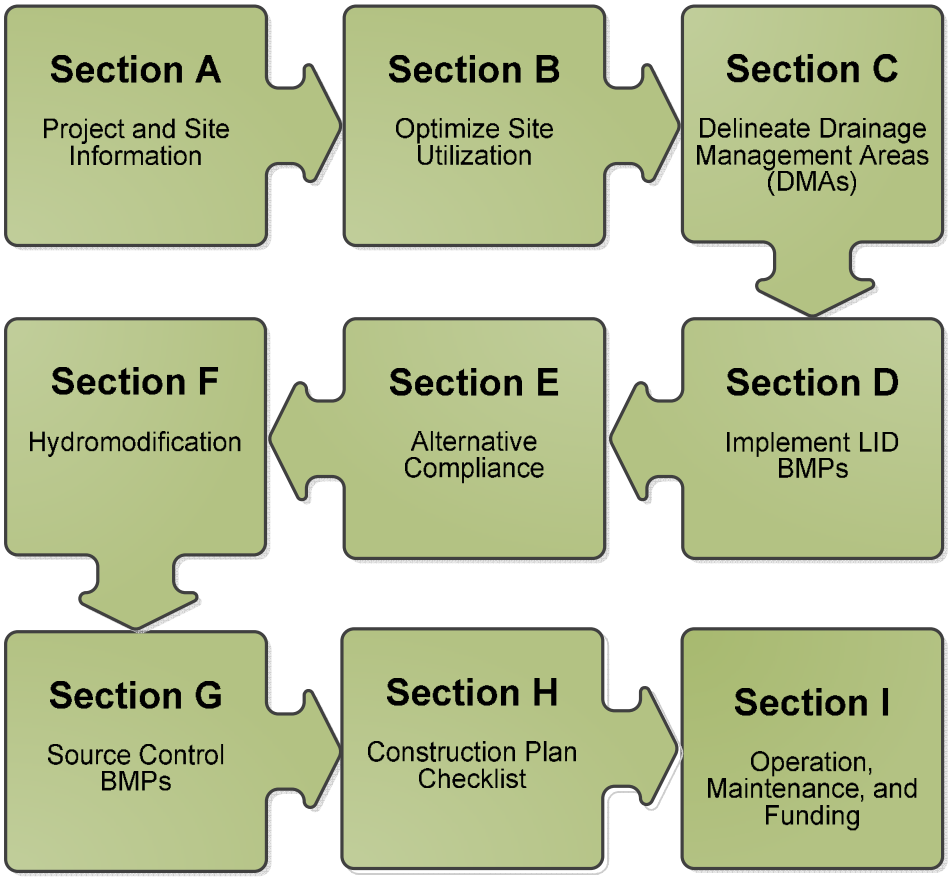
A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for **Pilot Travel Centers LLC** by **Kimley-Horn and Associates** for the **Pilot Moreno Valley** project.

This WQMP is intended to comply with the requirements of the City of Moreno Valley for Ordinance No. 827, which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under the City of Moreno Valley Water Quality Ordinance (Municipal Code Section 8.10).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature	08/03/2021 Date
Shea-Michael Anti Preparer's Printed Name	Senior Project Manager Preparer's Title/Position

Preparer's Licensure: C78274

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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	**Community Commercial - (Travel center with drive-thru restaurant and car/truck fueling)**
Planning Area:	**n/a**
Community Name:	**n/a**
Development Name:	**Pilot Moreno Valley**
PROJECT LOCATION	
Latitude & Longitude (DMS): **Lat: 33°56'11", Long: -117°9'29"**	
Project Watershed and Sub-Watershed: **Santa Ana Region Watershed, Santa Ana River Subwatershed**	
APN(s): **448-330-030, -035, -036, -037, and -038**	
Map Book and Page No.:	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	**Restaurant/Fueling Station**
Proposed or Potential SIC Code(s)	**5541, 5812**
Area of Impervious Project Footprint (SF)	**258,543 SF**
Total Area of proposed Impervious Surfaces within the Project Limits (SF)/or Replacement	**258,543 SF**
Does the project consist of offsite road improvements?	☐ Y ☒ N
Does the project propose to construct unpaved roads?	☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?	☐ Y ☒ N
EXISTING SITE CHARACTERISTICS	
Total area of existing Impervious Surfaces within the project limits (SF)	**0 sf**
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	n/a
Are there any natural hydrologic features on the project site?	☐ Y ☒ N
Is a Geotechnical Report attached?	☒ Y ☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	**Soils A**
What is the Water Quality Design Storm Depth for the project?	**0.67**

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

The proposed Pilot Moreno Valley development will include the construction of a truck stop and gas station with associated commercial landscaping, concrete hardscape, and asphalt paving parking. Offsite street improvements are not proposed as part of the project scope. The project site is approximately 9.55 acres and is located at the Norwest corner of Eucalyptus Avenue and Redlands Boulevard in the City of Moreno Valley. The existing site is approximately 0% impervious. Once the site is developed, the site will be approximately 62% impervious and 38% pervious.

The existing site is currently vacant and drains in a southeast direction towards Eucalyptus Avenue. Along the southerly property line of the project site there are 2 (two) CMP inlets which collect storm water discharge form the site. Under the existing condition, the site is accepting northern offsite flows. For the proposed condition, the northern offsite drainage will be intercepted and conveyed south into the existing storm drain system.

The proposed site grading intends to maintain the existing flow pattern by predominantly draining in a southeast direction. The proposed improvements onsite (DMA-1 and DMA-2) will drain in the southeast direction into two bio-retention basins (BMP-1 and BMP-2). The proposed bioretention basins are proposed for storm water quality treatment. The bioretention basins were sized to capture the DCV required for water quality purposes. The bioretention basin volume was calculated using the Riverside County Bio-retention Basin worksheet, which is based on the Riverside County Low Impact Development BMP Design Handbook.

There are also 3 (three) small de-minimis areas. Due to the connection to the existing street grades, 2 (two) of the de-minimis areas will drain west onto Aldi Place and 1 (one) de-minimis area will drain onto Eucalyptus Avenue. The de-minimis areas will not be treated and make up about 1% of the total project area.

On-site flows will predominately be intercepted by proposed grated inlets with filter inserts which will screen trash prior to entering the bio-retention basins as shown on the WQMP Site Plan. Drainage conveyed into the bio-retention basins will be intercepted by forebays before being discharged into the basins. Once the design capture volumes (DCV) are met, flows will be discharged via control structures located within the basins into the existing storm drain laterals. Refer to Appendix 4 for existing storm drain as-builts.

Appendix 1 includes a map of the local vicinity and existing site. In addition, WQMP Site Plan, located in Appendix 1, includes the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
San Jacinto River (Reach 3)	None	AGR, GWR, REC1, REC2, WARM, WILD, MUN	Not a water body classified as RARE
Canyon Lake (Aka: San Jacinto River Reach 2)	Nutrients, Pathogens	MUN, AGR, GWR, REC1, REC2, WARM, WILD	Not a water body classified as RARE
San Jacinto River (Reach 1)	None	MUN, AGR, GWR, REC1, REC2, WARM, WILD	Not a water body classified as RARE
Lake Elsinore	Nutrients, Organic Enrichments, Low Dissolved Oxygen, PCBs, Sediment Toxicity, Unknown Toxicity	REC1, REC2, WARM, WILD, MUN	Not a water body classified as RARE
Temescal Creek (Reach 6)	Indicator Bacteria	GWR, REC1, REC2, WARM, WILD, MUN	Not a water body classified as RARE
Temescal Creek (Reach 5)	None	AGR, GWR, REC1, REC2, WARM, WILD, RARE, MUN	22 miles
Temescal Creek (Reach 4)	None	AGR, GWR, REC1, REC2, WARM, WILD, RARE	28 miles
Temescal Creek (Reach 3) – Lee Lake	None	AGR, IND, GWR, REC1, REC2, WARM, WILD, MUN	Not a water body classified as RARE
Temescal Creek (Reach 2)	None	AGR, IND, GWR, REC1, REC2, WARM, WILD, MUN	Not a water body classified as RARE
Temescal Creek (Reach 1)	None	REC1, REC2, WARM, WILD	Not a water body classified as RARE
Santa Ana River (Reach 3)	Copper, Lead, Pathogens	AGR, GWR, REC1, REC2, WARM, WILD, RARE, MUN	47 miles
Prado Basin Management Zone	Pathogens, Nutrients	REC1, REC2, WARM, WILD, RARE, MUN	49 miles
Santa Ana River (Reach 2)	Indicator Bacteria	AGR, GWR, REC1, REC2, WARM, WILD, RARE, MUN	68 miles
Santa Ana River (Reach 1)	None	REC1, REC2, WARM, WILD, MUN	Not a water body classified as RARE
Tidal Prism of Santa Ana River (to within 1000' of Victoria Street) and Newport Slough	Enterococcus, Fecal Coliform, Total Coliform	REC1, REC2, COMM, WILD, RARE, MAR, MUN	77 miles
Pacific Ocean Nearshore Zone	None	IND, NAV, REC1, REC2, COMM, WILD, RARE, SPWN, MAR, SHEL, MUN	78 miles
Pacific Ocean Offshore Zone	None	IND, NAV, REC1, REC2, COMM, WILD, RARE, SPWN, MAR, MUN	80 miles

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☐ Y	☒ N
US Army Corps of Engineers, CWA Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage: **WDID # TBD prior to final approval**	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)* City of Moreno Valley Grading Permit City of Moreno Valley Building Permit	 ☒ Y ☒ Y	 ☐ N ☐ N

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, **constraints** might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. **Opportunities** might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your LID design and explain your design decisions to others.

The 2010 Santa Ana MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

Does the project identify and preserve existing drainage patterns? If so, how? If not, why?

Yes. The proposed site grading intends to maintain the existing flow pattern by predominantly draining in the southeast direction.

Does the project identify and protect existing vegetation? If so, how? If not, why?

No. The existing site is currently vacant and does not have any existing vegetation, other than annual grass. The proposed development will add landscape throughout the site, making the proposed development approximately 36% pervious.

Does the project identify and preserve natural infiltration capacity? If so, how? If not, why?

Yes, based on the Geotechnical Investigation and Percolation Test Results Report prepared by Geotechnical Solutions, Inc the proposed site experiences a percolation rate of 12.06 in/hr. The reported infiltration based on the Porchet Method was determined to be 0.808 in/hr (without a factor of safety applied). Therefore, bio-retention basins are proposed.

Does the project identify and minimize impervious area? If so, how? If not, why?

Yes. The site plan was done with the intent of maximizing the pervious area on the site. This was accomplished by using landscape planters throughout the site and perimeter planter areas.

Does the project identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

Yes. All roof drains and site drainage will be routed to the proposed pervious bioretention basins.

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)	Area (Sq. Ft.)	DMA Type
DMA-1	**Concrete/Asphalt/Landscape Areas**	**206,480**	**Type "D"**
DMA-2	**Drought Tolerant Ornamental Landscape**	**205,086**	**Type "D"**
DMA-3	**Concrete/Asphalt**	**2,391**	**(De-Minimus)**
DMA-4	**Concrete/Asphalt**	**987**	**(De-Minimus)**
DMA-5	**Concrete/Asphalt**	**1,241**	**(De-Minimus)**

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
N/A			

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				**Type 'C' DMAs that are draining to the Self-Retaining Area**		
DMA Name/ ID	Post-project surface type	Area (square feet)	Storm Depth (inches)	DMA Name / ID	[C] from Table C.4 =	Required Retention Depth (inches)
		[A]	[B]		[C]	[D]
N/A	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet)	Post-project surface type	Runoff factor	Product	DMA name /ID	Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]		[D]	[C]/[D]
N/A	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA-1	**Bio-retention Basin (BMP-1)**
DMA-2	**Bio-retention Basin (BMP-2)**

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☐ Y ☒ N

If yes has been checked, Infiltration BMPs shall not be used for the site. If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		X
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?	X	
If Yes, list affected DMAs: **DMA 1**		
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		X
Describe here:		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs.

D.2 Harvest and Use Assessment

Please check what applies:

☐ Reclaimed water will be used for the non-potable water demands for the project.

☐ Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).

☐ The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If neither of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: **3.45 acres**

Type of Landscaping (Conservation Design or Active Turf): **Conservation Design**

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: **6.1 acres**

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

The project EIATIA factor: **1.2**

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: 6.1 acres x 1.2 = **4.9 acres**

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
4.9 acres	**3.45 acres**

The project is not feasible for harvesting stormwater runoff for irrigation use.

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shutdowns or other lapses in occupancy:

Projected Number of Daily Toilet Users: 50

Project Type: ***Commercial***

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: ***6.1 acres***

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-2 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

The project TUTIA factor: ***145***

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users: 145 x 6.1 ac = ***885 toilet users***

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	Projected number of toilet users (Step 1)
885	**50**

The project is not feasible for harvesting stormwater runoff for toilet use.

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

N/A

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: **N/A**

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: **N/A**

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-3 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

The project factor: **N/A**

Step 4: Multiply the unit value obtained from Step 4 by the total of impervious areas from Step 3 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: **N/A**

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the Average Daily non-potable demand (Step 1) to the minimum required non-potable use (Step 4).

Minimum required non-potable use (Step 4)	Projected average daily use (Step 1)
N/A	**N/A**

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment, unless a site-specific analysis has been completed that demonstrates technical infeasibility as noted in D.3 below.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

☒ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA-1	☐	☐	☒	☐	☐
DMA-2	☐	☐	☒	☐	☐
DMA-3	☐	☐	☐	☐	☒
DMA-4	☐	☐	☐	☐	☒
DMA-5	☐	☐	☐	☐	☒

For those DMAs where LID BMPs are not feasible, provide a brief narrative below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section E below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

DMA-1 and DMA-2 are feasible for a structural LID BMP – Bioretention Basin. DMA-3, DMA-4, and DMA-5 are considered de-minimis areas. Refer to Appendix 1 for WQMP Exhibit.

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First, calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second, design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with the Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3.1 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Bio-retention Basin BMP-1		
DMA-1	[A]		[B]	[C]	[A] x [C]			
1A	138,540	Concrete or Asphalt	1	0.89	123,578	Design Storm Depth (in)	Design Capture Volume, V_{BMP} (cubic feet)	Proposed Volume on Plans (cubic feet)
1B	67,940	Ornamental Landscaping	0.1	0.11	7,505			
	A_T =384,386				Σ = [D] =131,082	[E] = 0.67	[F] = $\frac{[D]x[E]}{12}$ =7,286	[G] =7,370

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Bio-retention Basin BMP-2		
DMA-1	[A]		[B]	[C]	[A] x [C]			
2A	115,669	Concrete or Asphalt	1	0.89	103,177	Design Storm Depth (in)	Design Capture Volume, V_{BMP} (cubic feet)	Proposed Volume on Plans (cubic feet)
2B	89,417	Ornamental Landscaping	0.1	0.11	9877			
	A_T =384,386				Σ = [D] =113,054	[E] = 0.67	[F] = $\frac{[D]x[E]}{12}$ =6,284	[G] =6,566

[B], [C] are obtained from Section 2.3.1 of the WQMP Guidance Document
[E] is obtained from Exhibit A of the WQMP Guidance Document
[G] is obtained from LID BMP design procedure sheet, placed in Appendix 6

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

☒ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- Or -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Regional Board and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

N/A

E.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☐ Detached Residential Development	P	N	P	P	N	P	P	P
☐ Attached Residential Development	P	N	P	P	N	P	P	P[(2)]
☐ Commercial/Industrial Development	P[(3)]	P	P[(1)]	P[(1)]	P[(5)]	P[(1)]	P	P
☐ Automotive Repair Shops	N	P	N	N	P[(4, 5)]	N	P	P
☐ Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☐ Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☐ Parking Lots (>5,000 ft^2)	P[(6)]	P	P[(1)]	P[(1)]	P[(4)]	P[(1)]	P	P
☐ Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	☐	☐	☐	☐	☐	☐	☐	☐

P = Potential

N = Not Potential

(1) A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

(2) A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

(3) A potential Pollutant is land use involving animal waste

(4) Specifically, petroleum hydrocarbons

(5) Specifically, solvents

(6) Bacterial indicators are routinely detected in pavement runoff

E.2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
Total Credit Percentage[1]	

[1]*Cannot Exceed 50%*
[2]*Obtain corresponding data from Table 3-8 in the WQMP Guidance Document*

E.3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	DMA Area (square feet) [A]	Post-Project Surface Type	Effective Impervious Fraction, I_f [B]	DMA Runoff Factor [C]	DMA Area x Runoff Factor [A] x [C]		*Enter BMP Name / Identifier Here*		
						Design Storm Depth (in)	*Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*
	A_T = Σ[A]			Σ= [D]		[E]	$[F] = \frac{[D]x[E]}{[G]}$	[F] X (1-[H])	[I]

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12
[H] is from the Total Credit Percentage as Calculated from Table E.2 above
[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.
[2] Cross Reference Table E.1 above to populate this column.
[3] As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The City of Moreno Valley has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the City of Moreno Valley

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	Post-condition	% Difference
Time of Concentration			
Flow (CFS)			
Volume (Cubic Feet)			

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (Prado Dam, Santa Ana River) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Sensitivity Maps.

Does the project qualify for this HCOC Exemption? ☒ Y ☐ N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

The project site location is identified on the City of Moreno Valley Watershed Boundaries map (dated May 23, 2017) as a project that may be required to mitigate for hydromodification impact. However, hydrology and hydraulic analysis shows that the site drains into an existing triangular channel that is engineered, earthen, and maintained. (HCOC map and documentation supporting the claim are included in Appendix 7)

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

☐ a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

☐ b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

☐ c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Be sure to include all pertinent documentation used in your analysis of the items a, b, or c in Appendix 7.

Section G: Source Control BMPs

Source control BMPs include permanent, structural features that may be required in your project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. ***Identify Pollutant Sources*:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.

2. ***Note Locations on Project-Specific WQMP Exhibit*:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.

3. ***Prepare a Table and Narrative*:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.

4. ***Identify Operational Source Control BMPs:*** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
On-site storm drain inlets	Stencil inlet structures per City of Moreno Valley Std. MVFE-300B-0, Note 13.	Maintain and periodically repaint or replace inlet markings. Provide stormwater pollution prevention information to new site owners, lessees, or operators. See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance" provided in Appendix 10: Educational Materials. Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to
Need for future indoor & structural pest control	Incorporate building design features that discourage entry of pests: For Foundations and Slabs: use corrosion resistant, pest-resistant mesh on crawl space vents: foundation vents should be at least 6 inches above finish ground level; pour concrete patios as part of the main slabs to minimize entry of pests via joints; if slab joints are necessary, consider termite barriers; use epoxy sealants, or mesh barriers, or sand barriers for utility breaks. For Siding: use non-wood siding options; use high quality caulks and sealants; siding and stucco should begin at least six inches above soil level. For Lighting: use bird-resistant light fixtures. Use gutters with downspouts; use flap valves or mesh on downspouts to prevent rodents from entering downspouts. Use metal mesh to prevent animal access under sheds, decks, and porches.	Provide Integrated Pest Management information to owners, lessees, and operators. Provided "Pest Prevention by Design" Guidelines in Appendix 10.
Landscape/ Outdoor Pesticide Use	Final landscape plans will accomplish all of the following. Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. Consider using pest-resistant plants,	Maintain landscaping using minimum or no pesticides. See applicable operational BMPs in "What you should know for...Landscape and Gardening" provided in Appendix 10: Educational Materials. Provide IPM information to new owners, leases, and operators.

	especially adjacent to hardscape. To ensure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	
Pools, spas, ponds, decorative fountains, and other water features.		n/a
Refuse area	Outdoors Waste and Recycling enclosures with masonry walls and roofs will be constructed per City of Moreno Valley standards and architectural plans. Signs "Do not dump hazardous materials here" or similar will be posted on or near the bins. Outdoors trash receptacles will be provided at the common open space areas.	Provide adequate number of trash receptacles and bins. Inspect receptacles and bins regularly; repair or replace leaky receptacles and bins. Keep bins covered. Prohibit/ prevent dumping of liquid or hazardous waste. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" provided in Appendix 10.
Vehicle and equipment cleaning	Car wash area is not proposed on-site. Car washing shall be prohibited	n/a
Vehicle/Equipment Repair and Maintenance	Vehicle equipment repair and maintenance indoors and outdoors shall be prohibited.	n/a
Fire Sprinkler Test Water	Fire sprinkler water shall drain to the sanitary sewer.	See Fact Sheet SC-41, "Building and Grounds Maintenance" provided in Appendix 10.
Miscellaneous Drain Roofing, Gutters and Trim	Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	
Plazas, sidewalks, and parking lots.		Sweep sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect wash water containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Plan Sheet Number(s)	Latitude / Longitude
BMP-1	**Bioretention Basin Located southeast of the project site**	**TBD**	**TBD**
BMP-2	**Bioretention Basin Located southwest of the project site**	**TBD**	**TBD**

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred.
3. An outline of general maintenance requirements for the Stormwater BMPs selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism: Pilot Travel Centers, LLC

Will the proposed BMPs be maintained by a Homeowners' Association (HOA) or Property Owners Association (POA)?

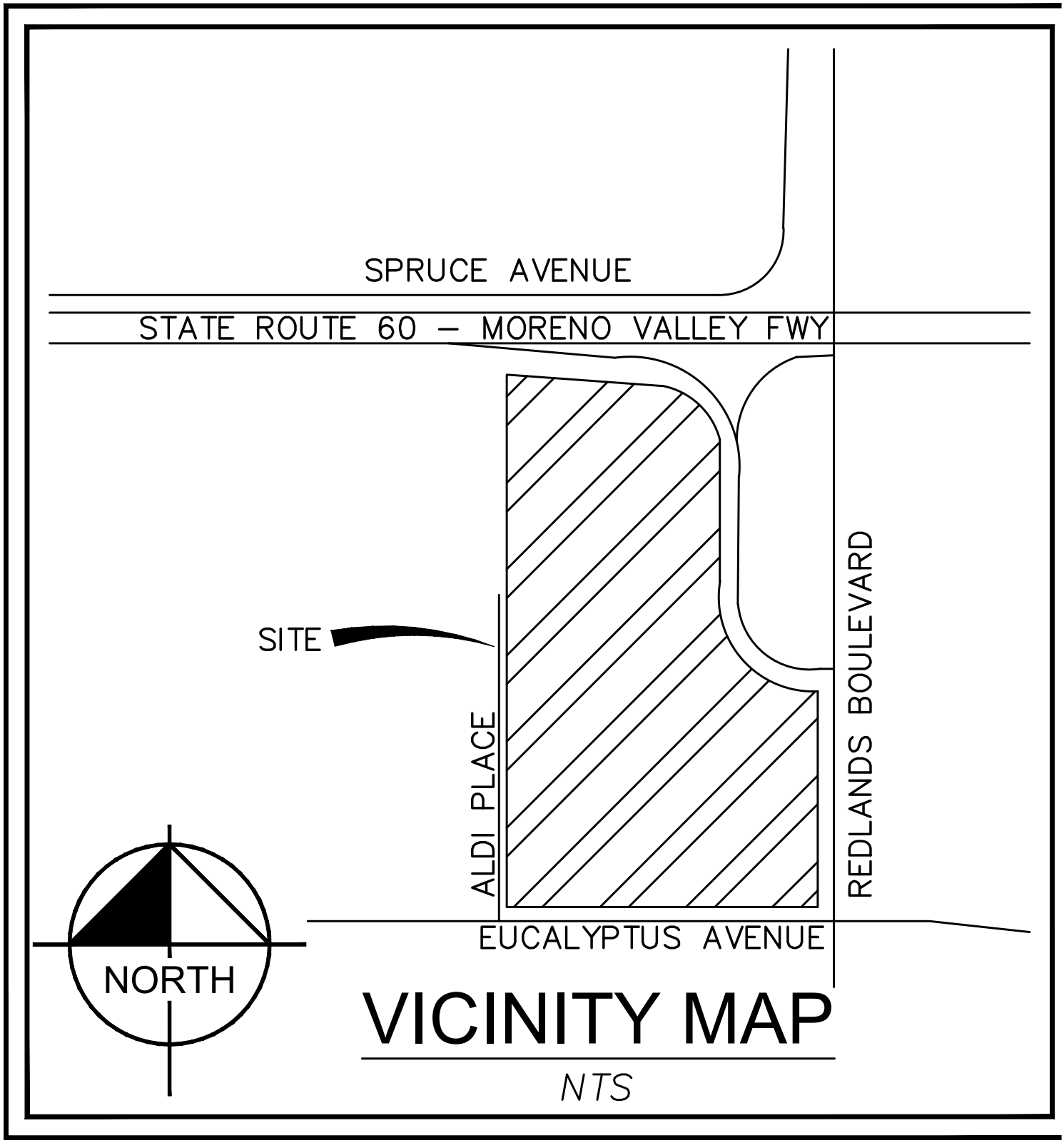
☐ Y ☒ N

Operation and Maintenance Plan and Maintenance Mechanism is included in Appendix 9. Educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP are included in Appendix 10.

Appendix 1: Maps and Site Plans

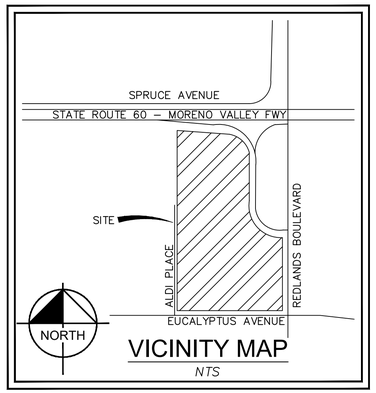
Location Map, WQMP Site Plan and Receiving Waters Map

LOCATION MAP



VICINITY MAP

NTS



VICINITY MAP
NTS

LEGEND

1695	PROPOSED CONTOUR
(1695)	EXISTING CONTOUR
	PROPERTY LINE/RIGHT OF WAY
	DRAINAGE AREA BOUNDARY (DA)
SD	PROPOSED STORM DRAIN
	FLOW ARROW
X / XX	DMA NAME / DMA AREA (IN ACRES)

LANDSCAPE NOTE:

FINISH GRADE OF LANDSCAPE AREAS IS TO BE DEPRESSED 1–2 INCHES (MIN.) BELOW TOP OF CURB, SIDEWALK OR PAVEMENT.

TREATMENT CONTROL & SOURCE CONTROL BMP'S	
BMP ID	BMP DESCRIPTION
TC–32	BIO–RETENTION FACILITY
SC–43	PARKING AREA MAINTENANCE
SC–44	DRAINAGE SYSTEM MAINTENANCE
SC–71	PLAZA & SIDEWALK CLEANING
SC–73	LANDSCAPE MAINTENANCE
SD–10	SITE DESIGN AND LANDSCAPE PLANNING
SD–11	ROOF RUNOFF CONTROL
SD–12	EFFICIENT IRRIGATION
SD–13	STORM DRAIN SIGNAGE
SD–32	TRASH STORAGE AREAS

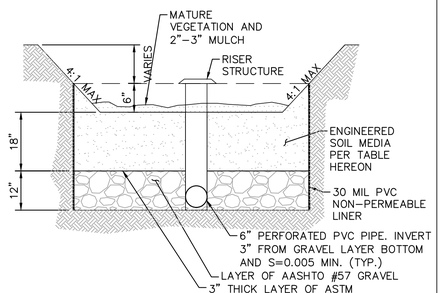
TABLE 1 MINERAL COMPONENT RANGE REQUIREMENTS FOR BIO–RETENTION FACILITY	
PERCENTAGE RANGE	COMPONENT
70–80	SAND
15–20	SILT
5–10	CLAY

THE TRIP TICKET, OR CERTIFICATE OF COMPLIANCE, SHALL BE MADE AVAILABLE TO THE INSPECTOR TO PROVE THE ENGINEERED MIX MEETS THIS SPECIFICATION.

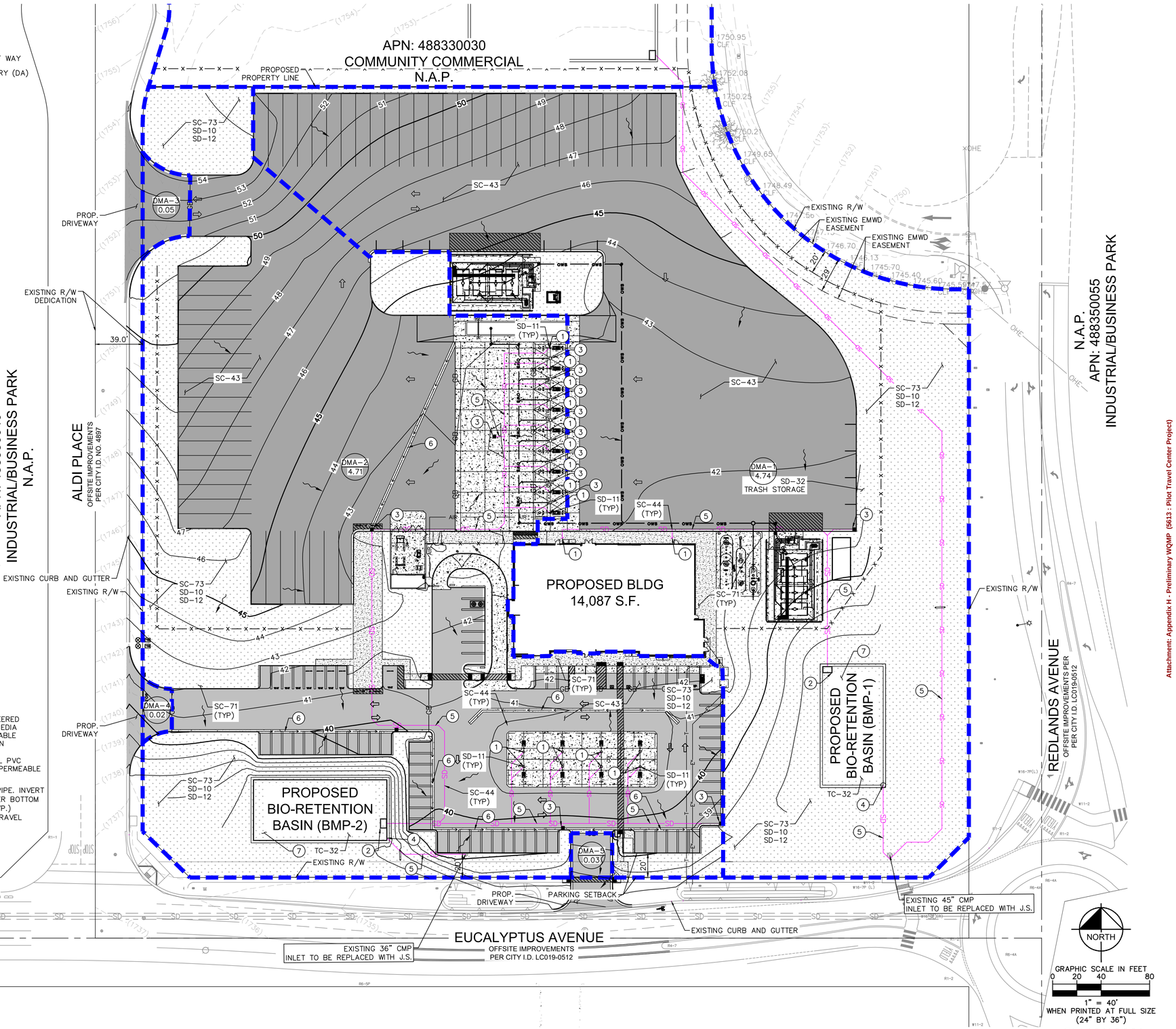
THE ENGINEERED SOIL MEDIA SHALL BE COMPRISED OF 85 PERCENT MINERAL COMPONENT AND 15 PERCENT ORGANIC COMPONENT, BY VOLUME, DRUM MIXED PRIOR TO PLACEMENT. THE MINERAL COMPONENT SHALL BE A CLASS A SANDY LOAM TOPSOIL THAT MEETS THE RANGE SPECIFIED IN TABLE 1 BELOW. THE ORGANIC COMPONENT SHALL BE NITROGEN STABILIZED COMPOST 1, SUCH THAT NITROGEN DOES NOT LEACH FROM THE MEDIA.

KEY NOTES:

1. PROPOSED ROOF DRAINS.
2. PROPOSED SAND FOREBAY.
3. PROPOSED GRATED INLET WITH FILTER INSERT PER DRAINAGE PLAN.
4. PROPOSED GRATED OVERFLOW OUTLET WITH FILTER INSERT PER DRAINAGE PLAN.
5. PROPOSED STORM DRAIN PIPE.
6. PROPOSED 3' RIBBON GUTTER.
7. PROPOSED BIO–RETENTION BASIN PER DETAIL HEREON.



BMP-1 & BMP-2 TYPICAL SECTION
NTS



PENXX-XXXX

Kimley»Horn

WQMP SITE PLAN
PILOT MORENO VALLEY

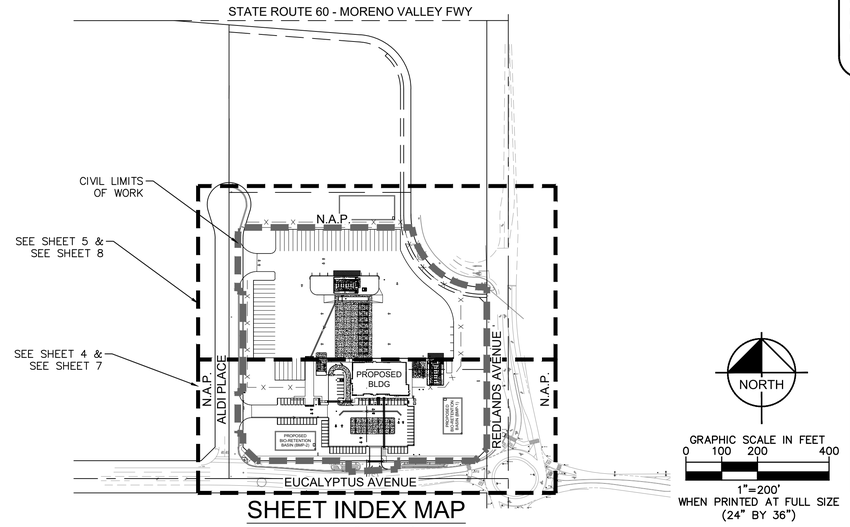
8/3/2021

Appendix 2: Construction Plans

Grading and Drainage Plans, Landscape, Wet and Dry Utilities

CITY OF MORENO VALLEY
PRECISE GRADING PLAN

PILOT MORENO VALLEY



SHEET INDEX MAP

SCALE 1" = 200'

NORTH

GRAPHIC SCALE IN FEET
0 100 200 400
1"=200'
WHEN PRINTED AT FULL SIZE (24" BY 36")

STANDARD GENERAL IMPROVEMENT NOTES:

1. ALL WORK CALLED FOR ON THE PLANS SHALL BE IN COMPLIANCE WITH CURRENT CITY STANDARD PLANS ADOPTED BY THE CITY COUNCIL.
2. A CONSTRUCTION PERMIT MUST BE OBTAINED FROM THE LAND DEVELOPMENT DIVISION COUNTER BY THE CONTRACTOR PRIOR TO GRADING AND/OR CONSTRUCTION WORK OF ANY TYPE WITHIN THE PUBLIC RIGHT-OF-WAY.
3. AN ENCROACHMENT PERMIT IS REQUIRED IN ALL CASES WHERE WORK WILL INTERFERE WITH EITHER VEHICULAR OR PEDESTRIAN TRAFFIC.
4. CITY INSPECTION OF THE WORK CALLED FOR ON THE PLANS SHALL NOT IN ANY WAY RELIEVE THE CONTRACTOR AND / OR THE DEVELOPER OF THEIR OBLIGATION TO PERFORM THE WORK IN COMPLIANCE WITH THE PLANS.
5. ANY ALTERATIONS OR VARIANCES FROM THE PLANS, EXCEPT MINOR ADJUSTMENTS IN THE FIELD TO MEET EXISTING CONDITIONS, SHALL BE REQUESTED IN WRITING AND MAY NOT BE INSTITUTED UNTIL APPROVED BY THE CITY ENGINEER OR DESIGNATED REPRESENTATIVE ACTING SPECIFICALLY ON HIS/HER INSTRUCTIONS.
6. THE GRADING AND/OR IMPROVEMENT PLANS ARE APPROVED FOR A PERIOD OF TWO (2) YEARS FROM THE DATE SIGNED BY THE CITY ENGINEER. AFTER THE TWO (2) YEAR PERIOD HAS LAPSED, THE ENGINEER OF RECORD MAY BE REQUIRED TO SUBMIT AND PROCESS FOR THE CITY ENGINEER APPROVAL, UPDATED PLANS THAT COMPLY WITH THE MOST CURRENT CITY STANDARDS, PRACTICES AND POLICIES.
7. ALL ELEVATIONS SHOWN ON THE PLAN ARE ESTABLISHED BY LOCAL BENCH MARK. SURVEY MONUMENTS SHALL BE PROTECTED IN PLACE.
8. QUANTITIES AS SHOWN ON THE PLAN ARE ESTIMATED AND THE CONTRACTOR IS ADVISED THAT ALL FINAL QUANTITIES OF MATERIAL AND WORK IN PLACE MAY BE SOMEWHAT GREATER OR LESS THAN THOSE INDICATED ON THE PLANS.
9. CONCRETE GUTTERS, ALLEY APPROACHES, DRIVEWAYS AND OTHER CONCRETE ITEMS SUBJECT TO VEHICULAR TRAFFIC SHALL BE BARRICADED WITH NO VEHICULAR TRAFFIC PERMITTED FOR A PERIOD NO LESS THAN SEVEN DAYS FOLLOWING THE PLACEMENT OF SAID CONCRETE ITEM(S). WHEN THE GENERAL PROVISIONS CALL FOR THE USE OF SAID CONCRETE ITEM(S) FOR VEHICULAR TRAFFIC EARLIER THAN THE SEVENTH DAY FOR CONVENIENCE OF OPERATION OR WHEN THE CONTRACTOR SO DESIRES, CONCRETE CONTAINING EIGHT SACKS OF CEMENT PER CUBIC YARD SHALL BE USED UNDER THE DIRECTION OF THE CITY ENGINEER TO ALLOW TRAFFIC AFTER 72 HOURS OF PLACEMENT OF CONCRETE.
10. IRRIGATION LINE WITHIN ANY CITY STREET SHALL HAVE A THIRTY INCH MINIMUM COVER FROM FINISH SURFACE UNLESS SAID IRRIGATION LINE IS ENCASED IN CONCRETE OR BEDDED IN A SPECIAL CONCRETE CRADLE.
11. THE CONTRACTOR SHALL OPERATE IN A MANNER COMPLIANT WITH ALL APPLICABLE SECTIONS OF THE MUNICIPAL CODE AND COMPLIANT WITH ALL APPLICABLE CITY COUNCIL RESOLUTIONS.
12. THE LOCATION OF UNDERGROUND UTILITY OR IRRIGATION LINES AS SHOWN ON THE PLANS, IS APPROXIMATE, AND SINCE THE ACTUAL LOCATION MAYBE SOMEWHAT DIFFERENT FROM THAT SHOWN, THE CONTRACTOR IS REQUIRED TO CONTACT THE INTERESTED UTILITY OR WATER COMPANY BEFORE EXCAVATING IN THE VICINITY OF ANY SUCH LINES.
13. PARKWAY TREES INSTALLED BY THE DEVELOPER SHALL BE PLANTED AND MAINTAINED IN COMPLIANCE WITH THE APPROPRIATE CITY STANDARD.
14. ALL STREET NAME AND TRAFFIC REGULATORY SIGNS INDICATED ON THE PLANS WILL BE INSTALLED BY THE DEVELOPER IN ACCORDANCE WITH THE APPROPRIATE CITY STANDARDS.
15. IF THE STREETS LIGHTS INDICATED ON THE PLANS ARE SERVICED BY SOUTHERN CALIFORNIA EDISON (SCE), THE STREET LIGHTS SHALL BE INSTALLED BY SCE. IF THE STREET LIGHTS INDICATED ON THE PLANS ARE SERVICED BY MORENO VALLEY UTILITY (MVU), THE STREET LIGHTS SHALL BE INSTALLED BY THE DEVELOPER. THE DEVELOPER SHALL WORK DIRECTLY WITH THE CORRESPONDING UTILITY PURVEYOR WHEN THE LIGHTS ARE TO BE SERVED FROM AN UNDERGROUND SYSTEM.
16. AN APPROVED WEED KILLER SHALL BE APPLIED TO THE PREPARED BASE PRIOR TO ASPHALT PAVING IN ALL AREAS WHERE THERE IS ANY EVIDENCE OF HUMUS OR ORGANIC MATERIAL PRESENT IN THE BASE (EITHER NATIVE OR IMPORTED) MATERIAL. ALL WEED KILLERS SHALL BE APPLIED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS.
17. PROVISIONS SHALL BE MADE BY THE CONTRACTOR FOR CONTRIBUTORY DRAINAGE AT ALL TIMES.
18. WHEN APPLICABLE, ALL ANTI-GRAFFITI COATING SHALL BE VITROCEM HI-BUILD GRAFFITI GLAZED COATING FOR CONCRETE BLOCK OR AN EQUAL APPROVED BY THE CITY ENGINEER.
19. HOURS OF OPERATION ARE 7:00 AM – 7:00 PM MONDAY – FRIDAY; 8:00 AM – 4:00 PM (RESIDENTIAL). SATURDAY BY PRIOR APPOINTMENT ONLY. NO WORK ON SUNDAY OR PUBLIC HOLIDAY WITHOUT PRIOR CITY APPROVAL.

LEGAL DESCRIPTION:

PARCEL C AND D OF LOT LINE ADJUSTMENT NO. 983 / CERTIFICATE OF COMPLIANCE IN THE CITY OF MORENO VALLEY, COUNTY RIVERSIDE, STATE OF CALIFORNIA RECORDED 03/16/2007 AS DOC #2007-0180759 IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY OF OFFICIAL RECORDS. REFER TO SHEET 2 FOR MORE INFORMATION.

FLOOD NOTE:

THE SUBJECT PROPERTY LIES WITHIN ZONE "X" – AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN SHOWN ON FLOOD INSURANCE RATE MAP PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY; MAP NUMBER 06065C0760G AND 06065C0770G, WHICH BEARS AN EFFECTIVE DATE AUGUST 28, 2008.

THE ABOVE STATEMENT IS FOR INFORMATION ONLY AND THE SURVEYOR ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THE CITED MAP. IN ADDITION, THE ABOVE STATEMENT DOES NOT REPRESENT THE SURVEYOR'S OPINION OF THE PROBABILITY OF FLOODING.

DECLARATION OF ENGINEER OF RECORD:

I HEREBY DECLARE THAT THE DESIGN OF THE IMPROVEMENTS AS SHOWN ON THESE PLANS COMPLIES WITH PROFESSIONAL ENGINEERING STANDARDS AND PRACTICES. AS THE ENGINEER IN RESPONSIBLE CHARGE OF DESIGN OF THESE IMPROVEMENTS, I ASSUME FULL RESPONSIBLE CHARGE FOR SUCH DESIGN. I UNDERSTAND AND ACKNOWLEDGE THAT THE PLAN CHECK OF THESE PLANS BY THE CITY OF MORENO VALLEY IS A REVIEW FOR THE LIMITED PURPOSE OF ENSURING THAT THE PLANS COMPLY WITH CITY PROCEDURES, APPLICABLE POLICIES, AND ORDINANCES. THE PLAN CHECK IS NOT A DETERMINATION OF THE TECHNICAL ADEQUACY OF THE DESIGN OF THE IMPROVEMENTS. SUCH PLAN CHECK DOES NOT, THEREFORE, RELIEVE ME OF MY RESPONSIBILITY FOR THE DESIGN OF THESE IMPROVEMENTS. AS ENGINEER OF RECORD (EOR), I AGREE TO INDEMNIFY AND HOLD THE CITY OF MORENO VALLEY, THE MORENO VALLEY HOUSING AUTHORITY, AND THE MORENO VALLEY COMMUNITY SERVICES DISTRICT (CSD), ITS OFFICERS, AGENTS, AND EMPLOYEES HARMLESS FROM ANY AND ALL LIABILITY OF CLAIMS, DAMAGES, OR INJURIES TO ANY PERSON OR PROPERTY WHICH MIGHT ARISE FROM THE NEGLIGENT ACTS, ERRORS, OR OMISSIONS OF THE ENGINEER OF RECORD. I HAVE READ AND INFORMED THE PROJECT APPLICANT/DEVELOPER THAT APPROVAL OF THESE PLANS DOES NOT RELIEVE THEM FROM THE REQUIREMENTS OF THE CONDITIONS OF APPROVAL (ATTACHED HEREIN OR IN OTHER APPROVED IMPROVEMENT PLANS).

I ALSO HEREBY DECLARE THAT I HAVE COMPARED THESE PLANS WITH ALL APPLICABLE ADA TITLE II AND TITLE 24 REQUIREMENTS FOR DISABILITY ACCESS FOR THIS PROJECT, AND THESE PLANS ARE IN FULL COMPLIANCE WITH THOSE REQUIREMENTS.

SHEA-MICHAEL ANTI, R.C.E. # C78274 DATE

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.

DIGALERT

CALL 811 or 1-800-422-4133
2 Working Days Before You Dig
WWW.CALL811.COM

ENGINEER'S NOTICE TO CONTRACTOR:

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. THESE LOCATIONS ARE APPROXIMATE AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR, SO THAT ANY NECESSARY ADJUSTMENT CAN BE MADE IN ALIGNMENT AND/OR GRADE OF THE PROPOSED IMPROVEMENTS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT ANY UTILITY FACILITIES SHOWN AND ANY OTHER FACILITIES NOT OF RECORD OR NOT SHOWN ON THESE PLANS.

BLDG SQ. FOOTAGE

TOTAL GROSS FLOOR AREA	14,087 SF

SITE INFORMATION

GROSS PARCEL	±9.55 ACRES
TOTAL PERVIOUS	±3.61 ACRES
TOTAL IMPERVIOUS (INCLUDING BUILDING)	±5.94 ACRES

ROUGH/PRECISE GRADING PLANS

RAW EARTHWORK	QUANTITIES CUT	FILL
ROUGH GRADING	21,772 CY	2,683 CY
OVER-EXCAVATION WORK	-- CY	-- CY
REMEDIAL WORK	-- CY	-- CY
SHRINKAGE (0%)	-- CY	-- CY
SUBTOTAL PROJECT EARTHWORK QUANTITIES	-- CY	-- CY
IMPORT MATERIAL	-- CY	-- CY
EXPORT MATERIAL	-- CY	-- CY
TOTAL PROJECT EARTHWORK QUANTITIES	19,089 CY	0 CY

THE OPINION OF EARHTWORK QUANTITIES SHOWN ABOVE ARE UNADJUSTED GROSS VOLUMES AND DO NOT INCLUDE THE EFFECTS OF SCARIFYING, OVEREXCAVATION, RECOMPACTION, SHRINKAGE SUBSIDENCE, OR OTHER FACTORS AND ARE SUBJECT TO FIELD CONDITIONS THAT MAY BE SPECIFIED IN THE SOILS REPORT AND ARE FOR REFERENCE AND FEE. THE CIVIL ENGINEER ASSUMES NO RESPONSIBILITY FOR FINAL EARTHWORK QUANTITIES.

LEGEND

	PROPERTY LINE / RIGHT-OF-WAY LINE
	LIMITS OF WORK
	CENTER LINE
	SETBACK LINE
	EASEMENT LINE
x x x	FENCE
GB	GRADE BREAK LINE
(1745.00 TC) (1745.00 TP)	PROPOSED SPOT ELEVATION
1745.00 TC 1745.00 TP	EXISTING SPOT ELEVATION
0.71%	PROPOSED FLOW (DIRECTION AND SLOPE)
	DIRECTION OF FLOW
	CURB DRAIN INLET
	PARKING COUNT

ABBREVIATIONS

AB	AGGREGATE BASE
APN	ASSESSOR'S PARCEL NUMBER
ARCH	ARCHITECT
BLDG	BUILDING
BR	BOTTOM OF RAMP
BW	BACK OF WALK
CY	CUBIC YARD
EX	EXISTING
F	FIRE
FAR	FLOOR TO AREA RATIO
FL	FLOW LINE
FS	FINISHED SURFACE
GB	GRADE BREAK
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
NO	NUMBER
POC	POINT OF CONNECTION
POT	PATH OF TRAVEL
R	RIDGE
S	SEWER
STD	STANDARD
TC	TOP OF CURB
TP	TOP OF PAVEMENT
TR	TOP OF RAMP
TYP	TYPICAL
W	WATER

PAVEMENT LEGEND

	STANDARD DUTY CONCRETE PAVEMENT
	HEAVY DUTY CONCRETE PAVEMENT
	HEAVY DUTY ASPHALT PAVEMENT
	STANDARD DUTY ASPHALT
	PAVEMENT LANDSCAPE/ PLANTER AREA
	DETECTABLE WARNINGS

ZONING DESIGNATION

EXISTING: COMMUNITY COMMERCIAL (CC)

PROPOSED: COMMUNITY COMMERCIAL (CC)

PROJECT DESCRIPTION

PROPOSED DEVELOPMENT OF VACANT COMMUNITY COMMERCIAL LOT LOCATED AT THE NORTHWEST CORNER OF REDLANDS AVENUE AND EUCALYPTUS AVENUE, MORENO VALLEY, CA 92555.

PROPOSED PILOT TRAVEL CENTER WITH 13,917 SQ FT. BUILDING WITH RESTAURANT, DRIVE-THRU, AND CAR/TRUCK FUELING AREAS.

BENCHMARK AND BASIS OF ELEVATION

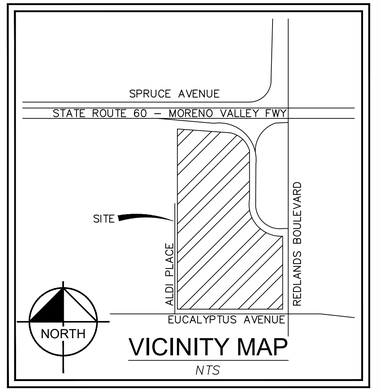
THE BASIS OF ELEVATIONS IS THE METRO WATER DISTR OF SO. CALIFORNIA BENCHMARK STAMPED "IVF 55 1993" -DIRECTIONS: FROM THE INTERSECTION OF THE FREEWAY AND REDLANDS BLVD, NORTH ON REDLANDS BLVD, APPROX. 500 FEET (152.4 M) TO THE NORTHWEST CORNER OF REDLANDS BLVD AND SPRUCE ST. BENCHMARK IS LOCATED 43 FEET (13.1 M) WEST OF THE CENTERLINE OF REDLANDS BLVD. AND 29 FEET (8.8 M) NORTH OF THE CENTERLINE OF SPRUCE ST., IN TOP OF A 10 INCH WIDE BY 7.5 FEET (2.3 M) LONG CONCRETE HEADWALL AT WEST END. EL=1785.67, NAVD 88.

ASSESORS PARCEL NUMBER (APN)

488-330-030, -035, -036, -037, -038

UTILITY COMPANIES	PHONE NUMBERS
BOX SPRINGS MUTUAL WATER COMPANY	(951) 653-6419
CHARTER SPECTRUM	(877) 906-9121
CROWN CASTLE	(855) 913-4237
EASTERN MUNICIPAL WATER DIST	(951) 928-3777
EDGEMONT COMMUNITY SERVICES DIST.	(951) 784-2632
FRONTIER COMMUNICATION	(800) 921-8101
SC EDISON COMPANY	(800) 655-4555
SC GAS COMPANY	(800) 427-2200
SUNESYS	(951) 278-0400
RIVERSIDE TRANSIT AGENCY	(951) 565-5164
UNDERGROUND SERVICE ALERT	(800) 422-4133
MORENO VALLEY UTILITY	(951) 413-3500
MORENO VALLEY SPECIAL DISTRICTS	(951) 413-3480
TRAFFIC SIGNAL MAINTENANCE (CITY)	(951) 413-3140
VERIZON WIRELESS	(800) 922-0204

SHEET INDEX



VICINITY MAP

NTS

THE GRADING AND/OR IMPROVEMENT PLANS ARE APPROVED FOR A PERIOD OF TWO (2) YEARS FROM THE DATE SIGNED BY THE CITY ENGINEER. AFTER THE TWO (2) YEAR PERIOD HAS LAPSED, THE ENGINEER OF RECORD MAY BE REQUIRED TO SUBMIT AND PROCESS FOR CITY ENGINEER APPROVAL, UPDATED PLANS THAT COMPLY WITH THE MOST CURRENT CITY STANDARDS, PRACTICES, AND POLICIES.

UTILITY NOTE:
APPROVAL OF THESE PLANS BY CITY OF MORENO VALLEY LAND DEVELOPMENT DIVISION DOES NOT CONSTITUTE FINAL APPROVAL FOR THE CONSTRUCTION OF WATER AND SEWER UTILITIES UNTIL REVIEWED, APPROVED, AND PERMIT ISSUED BY THE BUILDING AND SAFETY DIVISION.

A SEPARATE ON-SITE UNDERGROUND FIRE SERVICE PLAN FOR CONSTRUCTION SHALL BE SUBMITTED TO THE FIRE PREVENTION BUREAU FOR REVIEW AND APPROVAL.

GEOTECH AND GEOLOGIST CERTIFICATION

THIS GRADING PLAN HAS BEEN REVIEWED BY THE UNDERSIGNED AND FOUND TO BE IN CONFORMANCE WITH THE RECOMMENDATIONS AS OUTLINED IN THE FOLLOWING SOILS AND GEOLOGICAL REPORT FOR THIS PROJECT.

REPORT TITLE: GEOTECHNICAL EVALUATION REPORT MORENO VALLEY TRUCK STOP MODEL, GEOTECHNICAL ENGINEERING PERCOLATION/INFILTRATION TEST REPORT FOR MORENO VALLEY TRUCK STOP PILOT # 1316, AND GEOTECHNICAL ADDENDUM REPORT MORENO VALLEY PILOT #1316 TRUCK MODEL STOP.

REPORT DATE: FEBRUARY 26, 2021
REVISED: MARCH 1, 2021

FIRM NAME: GEOTECHNICAL SOLUTIONS, INC

BY: .....
DHARMA SHAKYA, GE 2773 DATE

OWNER/APPLICANT

PILOT TRAVEL CENTERS LLC
5508 LONAS DRIVE
KNOXVILLE, TN 37909
(865) 588-7488

DEVELOPER

PILOT TRAVEL CENTERS LLC
5508 LONAS DRIVE
KNOXVILLE, TN 37909
(865) 588-7488
ATTN: RYAN ROBINSON
RYAN.ROBINSON@PILOTTRAVELCENTERS.COM

CIVIL ENGINEER

KIMLEY HORN & ASSOCIATES, INC.
3880 LEMON STREET # 420
RIVERSIDE, CA 92501
ATTN: SHEA-MICHAEL ANTI
(760) 565-5146
SHEA.ANTI@KIMLEY-HORN.COM

SURVEYOR

LG LAND SURVEYING, INC
30355 CALLE FELIZ TER
VALLEY CENTER, CA 92082
ATTN: JOHN GERVAIS, PLS 8674
(619) 535-1172
JOHN@LGLSINC.COM
DATE OF FIELD SURVEY: JANUARY 28, 2021

SOILS ENGINEER

GEOTECHNICAL SOLUTIONS, INC
27 MAUCHLY, SUITE 210
IRVINE, CA 92618
ATTN: DHARMA SHAKYA, PhD, PE, GE
(949) 453-0406'
PROJECT: G-5852-08, G-5852-01

ADA NOTE:
ALL ADA/TITLE 24 REQUIREMENTS AND PATH OF TRAVEL INCLUDING BUT NOT LIMITED TO ACCESS SHALL BE REVIEWED AND APPROVED BY CITY OF MORENO VALLEY BUILDING AND SAFETY DIVISION. APPROVAL OF THESE PLANS DOES NOT CONSTITUTE FINAL APPROVAL OF THE ACCESS REQUIREMENTS.

WDID No.

PENXX-XXXX WQMP No.

BENCHMARK	BASIS OF BEARING
SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97-100 I.E. N00°27'05"E.

REVIEW BY CITY STAFF

OFFICE	INITIAL	DATE
ENGINEERING DIVISION MANAGER		
LAND DEVELOPMENT		
PLANNING		
TRANSPORTATION		
PARKS AND COMMUNITY SERVICES		
SPECIAL DISTRICTS		
STORM WATER MANAGEMENT PRGM		

MARK	DATE	INITIAL	DESCRIPTION	REC	APPR	DATE
		EOR	REVISION			

CITY OF MORENO VALLEY APPROVALS

RECOMMENDED:

MICHAEL D. LLOYD, PE DATE
ENGINEERING DIVISION MANAGER/
ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:

MICHAEL L. WOLFE, PE DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL

SHEA-MICHAEL ANTI
RCE NO. 78274
REGISTERED PROFESSIONAL ENGINEER
CIVIL
STATE OF CALIFORNIA

8/3/2021

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951-543-9868

UNDER THE SUPERVISION OF:

SHEA-MICHAEL ANTI 8/3/2021
RCE C78274 DATE

CITY OF MORENO VALLEY

PRECISE GRADING PLAN
PILOT MORENO VALLEY
TITLE SHEET

SHEET 1 OF 8

CITY ID No.
LGRXX-XXXX

Plotted By:Alvarez, Leticia Sheet Set:Pilot Moreno Valley Layout:TITLE SHEET August 04, 2021 12:44:18pm K:\RIV_LDEV\Pilot\09542608_Pilot Moreno Valley\CADD\PlanSheets\Precise Grading Plan\CV-09542608.dwg

Attachment: Appendix H - Preliminary WQMP (5613 : Pilot Travel Center Project)

STANDARD GRADING NOTES

1. ALL WORK SHALL CONFORM TO THE CITY OF MORENO VALLEY GRADING REGULATIONS, THE ADOPTED CALIFORNIA BUILDING CODE, AND THE LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF ALL UTILITIES OR STRUCTURES ABOVE OR BELOW GROUND, SHOWN OR NOT SHOWN ON THESE PLANS. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ALL DAMAGE TO ANY UTILITIES OR STRUCTURES CAUSED BY HIS/HER OPERATION.
3. ADJACENT STREETS ARE TO BE CLEANED DAILY OF ALL DIRT AND DEBRIS THAT ARE THE RESULT OF OPERATION.
4. DUST SHALL BE CONTROLLED BY WATERING OR OTHER APPROVED METHODS.
5. HOURS OF OPERATION ARE 7:00 AM – 7:00 PM MONDAY– FRIDAY; 8:00 AM – 4:00 PM (RESIDENTIAL). SATURDAY BY PRIOR APPOINTMENT ONLY. NO WORK ON SUNDAY OR PUBLIC HOLIDAY WITHOUT PRIOR CITY APPROVAL.
6. THE CITY PUBLIC WORKS DEPT SHALL BE CONTACTED AT (951) 413–3120 TO SCHEDULE A PRE–GRADING MEETING 48 HOURS PRIOR TO BEGINNING OF GRADING.

ALL GRADING SHALL BE COMPLETED UNDER THE SUPERVISION OF A REGISTERED SOILS ENGINEER OF RECORD IN CONFORMANCE WITH RECOMMENDATIONS OF THE GEOTECHNICAL EVALUATION REPORT AND GEOTECHNICAL ENGINEERING PERCOLATION/INFILTRATION TEST REPORT AT SOUTH OF FREEWAY 60 & REDLANDS BOULEVARD MORENO VALLEY, CALIFORNIA DATED FEBRUARY 26, 2021; AND GEOTECHNICAL ADDENDUM REPORT AT SOUTH OF FREEWAY 60 & REDLANDS BOULEVARD MORENO VALLEY, CALIFORNIA DATED MARCH 1, 2021 PREPARED BY GEOTECHNICAL SOLUTIONS, INC..

7. TWO SETS OF THE FINAL SOILS REPORT SHALL BE SUBMITTED TO THE ENGINEERING DEPT FOR REVIEW AND APPROVAL PRIOR TO THE ISSUANCE OF A BUILDING PERMIT. THE SOILS REPORT SHALL REFLECT THE FACT THAT THE COMPACTION HAS BEEN OBTAINED NOT ONLY IN THE BUILDING PAD LOCATIONS, BUT IN THE REMAINDER OF THE SITE, INCLUDING THE SLOPES. FINAL SOILS GRADING CERTIFICATION SHALL BE SUBMITTED BY THE SOILS ENGINEER OF RECORD THAT THE FINAL GRADING CONFORMS TO APPENDIX J OF THE CALIFORNIA BUILDING CODE (CBC) AND THE APPROVED GRADING PLAN.
8. ALL SLOPES SHALL BE A MAXIMUM OF 2:1, CUT OR FILL, UNLESS OTHERWISE RECOMMENDED BY REGISTERED SOILS ENGINEER AND APPROVED BY THE CITY ENGINEER.
9. ALL PADS AND SWALES SHALL DRAIN A MINIMUM OF 2% ADJACENT TO AND WITHIN 10' OF A BUILDING, THEN A MINIMUM OF 1% TO THE STREET OR DRIVES.
10. ALL TRENCH BACKFILLS SHALL BE TESTED AND CERTIFIED BY THE SOILS ENGINEER OF RECORD TO NOT LESS THAN 90% MAXIMUM DENSITY AS DETERMINED BY ASTM SOIL COMPACTION TEST D1557. THE TOP 1.5 FT. OF SUBGRADE BELOW THE STREET PAVEMENT STRUCTURAL SECTION SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.
11. SEPARATE PERMITS SHALL BE REQUIRED FOR ANY IMPROVEMENT WORK WITHIN THE PUBLIC RIGHT OF WAY.
12. CUT SLOPES GREATER THAN 5 FEET IN VERTICAL HEIGHT, AND FILL SLOPES GREATER THAN 3 FEET IN VERTICAL HEIGHT SHALL BE PLANTED WITH APPROVED GROUND COVER OR OTHER APPROVED SLOPE EROSION CONTROL METHOD TO PROTECT SLOPE FROM EROSION AND INSTABILITY IN ACCORDANCE WITH THE GRADING REGULATIONS.
13. SEPARATE PERMITS FROM THE BUILDING DEPT SHALL BE REQUIRED FOR ALL WALLS AND FENCES.
14. SEPARATE PERMITS FROM THE BUILDING DEPT SHALL BE REQUIRED FOR ALL ONSITE WATER AND SEWER INSTALLATIONS.
15. ALL SLOPES ADJACENT TO THE PUBLIC RIGHT OF WAY SHALL BE SET BACK 2 FEET IF HEIGHT IS LESS THAN 10 FEET, AND 3 FEET IF HEIGHT IS GREATER THAN 10 FEET.
16. DAMAGED OR ALTERED PUBLIC IMPROVEMENTS SHALL BE REPAIRED OR REPLACED AS REQUIRED BY THE CITY ENGINEER.
17. AN "AS – BUILT" GRADING PLAN SHALL BE SUBMITTED AT THE COMPLETION OF WORK, AND PRIOR TO THE ISSUANCE OF THE OCCUPANCY PERMIT.
18. CERTIFICATION BY THE RCE OF RECORD THAT THE ROUGH GRADING SOIL COMPACTION HAS BEEN COMPLETED PER ITEMS 7, 8, AND 11 AND THE SITE CONFORMS TO THIS PLAN AS TO LINE AND GRADE SHALL BE REQUIRED PRIOR TO ISSUANCE OF BUILDING PERMIT.
19. THE RCE OF RECORD SIGNING THESE PLANS IS RESPONSIBLE FOR ASSURING THE ACCURACY AND ACCEPTABILITY OF THE DESIGN HEREON. IN THE EVENT OF DISCREPANCIES ARISING DURING CONSTRUCTION, THE RCE OF RECORD SHALL BE RESPONSIBLE FOR DETERMINING AND ACCEPTABLE SOLUTION AND REVISING THE PLANS FOR APPROVAL BY THE CITY ENGINEER.
20. ALL IMPORTED SOIL SHALL HAVE A CERTIFICATE GIVEN TO THE CITY ENGINEER STATING THAT THE SOIL IS FREE FROM CONTAMINANTS BEFORE SOIL IS UNLOADED.

I HEREBY STATE THAT THIS PLAN WAS PREPARED UNDER MY SUPERVISION AND THAT IT CONFORMS TO THE LATEST EDITION OF THE CALIFORNIA BUILDING CODE (CBC) AS MODIFIED BY CITY OF MORENO VALLEY ORDINANCES, THE INTERIM GUIDELINES, AND THE PRELIMINARY SOILS REPORT PREPARED FOR THIS PROJECT.

NAME _____

RCE # _____

DATE _____

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.

DIGALERT

CALL 811 or 1–800–422–4133
2 Working Days Before You Dig
WWW.CALL811.COM

RECORD DRAWINGS

1. WHERE LOCAL JURISDICTIONS REQUIRE RECORD DRAWINGS, THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER AND OWNER COPIES OF A PAVING, GRADING AND DRAINAGE RECORD DRAWING AND A SEPARATE UTILITY RECORD DRAWING, BOTH PREPARED BY A CALIFORNIA REGISTERED SURVEYOR. THE RECORD DRAWINGS SHALL VERIFY ALL DESIGN INFORMATION INCLUDED ON THE DESIGN PLANS OF THE SAME NAME.

PROJECT CLOSEOUT

CONTRACTOR SHALL PROVIDE THE NECESSARY ITEMS INCLUDING ANY TESTING, REPORTS, OR CERTIFICATION DOCUMENTS REQUIRED BY THE GOVERNING JURISDICTIONS TO PROPERLY CLOSEOUT THE PROJECT BEFORE IT CAN BE DEEMED COMPLETE.

EASEMENTS

3 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
GRANTED TO: EASTERN MUNICIPAL WATER DISTRICT
PURPOSE: PIPELINES
RECORDING DATE: SEPTEMBER 19, 1962
RECORDING NO: 87666 OF OFFICIAL RECORDS
AFFECTS: A PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED IN SAID DOCUMENT

4 THE OWNERSHIP OF SAID LAND DOES NOT INCLUDE RIGHTS OF ACCESS TO OR FROM THE STREET, HIGHWAY, OR FREEWAY ABUTTING SAID LAND, SUCH RIGHTS HAVING BEEN RELINQUISHED BY THE DOCUMENT,
RECORDING DATE: DECEMBER 27, 1962
RECORDING NO: 119151 OF OFFICIAL RECORDS
AFFECTS: STATE HIGHWAY 60
WAIVER OF ANY CLAIMS FOR DAMAGES TO SAID PROPERTY BY REASON OF THE LOCATION, CONSTRUCTION, LANDSCAPING OR MAINTENANCE OF THE FREEWAY ADJOINING SAID PROPERTY, AS CONTAINED IN THE DEED TO THE STATE OF CALIFORNIA RECORDED DECEMBER 27, 1962, INSTRUMENT NO. 119151 OF OFFICIAL RECORDS.

7 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
GRANTED TO: EASTERN MUNICIPAL WATER DISTRICT
PURPOSE: PIPELINES
RECORDING DATE: APRIL 13, 2011
RECORDING NO: 2011–0163138 OF OFFICIAL RECORDS
AFFECTS: A PORTION OF SAID LAND OVER PARCELS B AND C OF LOT LINE ADJUSTMENT NO. 983

9 AN IRREVOCABLE OFFER TO DEDICATE AN EASEMENT OVER A PORTION OF SAID LAND FOR PURPOSE(S): PUBLIC HIGHWAY RECORDING DATE: DECEMBER 20, 2013
RECORDING NO: 2013–0590126 OF OFFICIAL RECORDS AFFECTS: A PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED IN SAID DOCUMENT SAID OFFER OF DEDICATION WAS ACCEPTED BY THE CITY ENGINEER PURSUANT TO THE AUTHORITY CONFERRED BY RESOLUTION NO. 94–5 OF THE CITY COUNCIL OF MORENO VALLEY. (PLOTTED HEREON)

LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS: PARCELS B, C & D AS SHOWN ON LOT LINE ADJUSTMENT NO. 983 AS EVIDENCED BY DOCUMENT RECORDED MARCH 16, 2007 AS INSTRUMENT NO. 07–180759 OF OFFICIAL RECORDS, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

PARCEL "B":
IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, BEING A PORTION OF LOTS 1 AND 2, BLOCK 35 OF MAP NO. 1 BEAR VALLEY AND ALESSANDRO, AS SHOWN BY MAP ON FILE IN BOOK 11, PAGE 10 OF MAPS, RECORDS OF SAN BERNARDINO COUNTY, STATE OF CALIFORNIA, LYING IN SECTION 2, TOWNSHIP 3 SOUTH, RANGE 3 WEST, SAN BERNARDINO MERIDIAN, MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE CENTERLINE INTERSECTION OF REDLANDS BOULEVARD, 120 FEET IN WIDTH, AND GREVILLEA AVENUE, 80 FEET IN WIDTH, AS SHOWN ON SAID MAP NO. 1; THENCE ALONG THE CENTERLINE OF SAID REDLANDS BOULEVARD SOUTH 00°26'55" WEST A DISTANCE OF 40.00 FEET TO A POINT ON THE EASTERLY PROLONGATION OF THE SOUTHERLY RIGHT–OF– WAY OF SAID GREVILLEA AVENUE; THENCE ALONG SAID EASTERLY PROLONGATION NORTH 89°33'42" WEST A DISTANCE OF 60.00 FEET TO A POINT DESCRIBED AS THE BEGINNING OF COURSE "A" OF PARCEL "L" PER BOOK 3289, PAGE 186 OF THE DEEDS TO THE STATE OF CALIFORNIA AS RECORDED ON DECEMBER 27, 1962 AS INSTRUMENT NO. 119152 OF OFFICIAL RECORDS, IN THE OFFICE OF THE RIVERSIDE COUNTY RECORDER, SAID POINT BEING ON THE WEST LINE OF SAID REDLANDS BOULEVARD; THENCE ALONG SAID COURSE "A" NORTH 89°33'42" WEST 874.11 FEET TO THE WESTERLY TERMINUS OF SAID COURSE "A"; THENCE CONTINUING ALONG SAID COURSE "A" SOUTH 85°11'19" EAST A DISTANCE OF 154.38 FEET TO THE TRUE POINT OF BEGINNING; THENCE ALONG SAID COURSE "A" THE FOLLOWING COURSES: SOUTH 85°11'19" EAST A DISTANCE OF 368.73 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHWESTERLY HAVING A RADIUS OF 152.00 FEET WITH A RADIAL BEARING OF NORTH 04°48'41" EAST; THENCE SOUTHEASTERLY AND SOUTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 85°37'09" AN ARC LENGTH OF 227.14 FEET; THENCE SOUTH 00°25'50" WEST A DISTANCE OF 288.91 FEET TO A POINT THEREIN; THENCE LEAVING SAID COURSE "A", ON A LINE

PARALLEL WITH AND 480.34 FEET DISTANT FROM THE SOUTHERLY RIGHT–OF–WAY OF SAID GREVILLEA AVENUE NORTH 89°33'42" WEST A DISTANCE OF 508.20 FEET; THENCE ON A LINE PARALLEL WITH AND 540.00 FEET DISTANT FROM THE WESTERLY LINE OF SAID LOT 2 NORTH 00°26'58" EAST A DISTANCE OF 468.56 FEET TO THE TRUE POINT OF BEGINNING.
APN 488–330–30; APN 488–330–36

PARCEL "C":
IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, BEING A PORTION OF LOTS 1, 2, 7 AND 8, BLOCK 35 OF MAP NO. 1 BEAR VALLEY AND ALESSANDRO, AS SHOWN BY MAP ON FILE IN BOOK 11, PAGE 10 OF MAPS, RECORDS OF SAN BERNARDINO COUNTY, STATE OF CALIFORNIA, TOGETHER WITH THAT PORTION OF FIR AVENUE WITHIN SAID BLOCK 35 LYING EAST OF THE WEST LINE OF SAID LOT 7 PROLONGED SOUTHERLY LYING IN SECTION 2, TOWNSHIP 3 SOUTH, RANGE 3 WEST, SAN BERNARDINO MERIDIAN, MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE CENTERLINE INTERSECTION OF REDLANDS BOULEVARD, 120 FEET IN WIDTH, AND GREVILLEA AVENUE, 80 FEET IN WIDTH, AS SHOWN ON SAID MAP NO. 1; THENCE ALONG THE CENTERLINE OF SAID REDLANDS BOULEVARD SOUTH 00°26'55" WEST A DISTANCE OF 40.00 FEET TO A POINT ON THE EASTERLY PROLONGATION OF THE SOUTHERLY RIGHTOF– WAY OF SAID GREVILLEA AVENUE; THENCE ALONG SAID EASTERLY PROLONGATION NORTH 89°33'42" WEST A DISTANCE OF 60.00 FEET TO A POINT DESCRIBED AS THE BEGINNING OF COURSE "A" OF PARCEL "L" PER BOOK 3289, PAGE 186 OF DEEDS, TO THE STATE OF CALIFORNIA AS RECORDED ON DECEMBER 27, 1962 AS INSTRUMENT NO. 119152 OF OFFICIAL RECORDS, IN THE OFFICE OF THE RIVERSIDE COUNTY RECORDER, SAID POINT BEING ON THE WESTERLY LINE OF SAID REDLANDS BOULEVARD, 120 FEET WIDE AS SHOWN ON SAID MAP NO. 1; THENCE ON A LINE PARALLEL WITH AND 60 DISTANT FROM SAID CENTERLINE SOUTH 00°26'55" WEST A DISTANCE OF 744.99 FEET TO THE SOUTHEAST CORNER OR COURSE "B" OF SAID PARCEL "L" SAID POINT BEING THE TRUE POINT OF BEGINNING; THENCE CONTINUING ALONG THE WESTERLY LINE OF SAID REDLANDS BOULEVARD SOUTH 00°26'55" WEST A DISTANCE OF 230.34 FEET; THENCE LEAVING SAID WESTERLY LINE, ON A LINE PARALLEL WITH AND 305.00 FEET DISTANT FROM THE CENTERLINE OF SAID FIR AVENUE NORTH 89°33'43" WEST A DISTANCE OF 336.00 FEET TO A POINT 396.00 FEET DISTANT FROM THE CENTERLINE OF SAID REDLANDS BOULEVARD; THENCE LEAVING SAID PARALLEL LINE, ON A LINE PARALLEL AND 396.00 FEET DISTANT FROM THE CENTERLINE OF SAID REDLANDS BOULEVARD, SOUTH 00°26'55" WEST A DISTANCE OF 305.00 FEET TO A POINT ON THE CENTERLINE OF SAID FIR AVENUE; THENCE ALONG SAID CENTERLINE NORTH 89°33'43" WEST A DISTANCE OF 384.19 FEET TO A POINT 540.00 FEET EAST OF THE WESTERLY LINE OF SAID LOT 7; THENCE ON A LINE PARALLEL WITH AND 540.00 FEET DISTANT FROM SAID WESTERLY LINE NORTH 00°26'58" EAST A DISTANCE OF 800.00 FEET TO A POINT 480.34 FEET DISTANT FROM THE SOUTHERLY RIGHT–OF–WAY OF SAID GREVILLEA AVENUE; THENCE ON A LINE PARALLEL WITH AND 480.34 FEET DISTANT FROM SAID SOUTHERLY LINE SOUTH 89°33'42" EAST A DISTANCE OF 508.20 FEET TO A POINT ON

THE LINE OF SAID COURSE "A"; THENCE ALONG SAID COURSE "A" THE FOLLOWING COURSES: SOUTH 00°25'50" WEST A DISTANCE OF 64.68 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE NORTHEASTERLY HAVING A RADIUS OF 200.00 FEET WITH A RADIAL BEARING OF NORTH 89°34'10" WEST; THENCE SOUTHERLY AND SOUTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 89°58'55" AN ARC LENGTH OF 314.10 FEET TO A POINT DESCRIBED AS THE BEGINNING OF COURSE "B" OF SAID PARCEL "L"; THENCE LEAVING SAID COURSE "A", ALONG SAID COURSE "B" SOUTH 89°33'05" EAST A DISTANCE OF 11.96 FEET TO A POINT ON THE WEST LINE OF SAID REDLANDS BOULEVARD, SAID POINT BEING THE TRUE POINT OF BEGINNING.

APN 488–330–035; APN 488–330–037

PARCEL "D":
IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, BEING A PORTION OF LOT 8, BLOCK 35 OF MAP NO. 1 BEAR VALLEY AND ALESSANDRO, AS SHOWN BY MAP ON FILE IN BOOK 11, PAGE 10 OF MAPS, RECORDS OF SAN BERNARDINO COUNTY, STATE OF CALIFORNIA, TOGETHER WITH THAT PORTION OF FIR AVENUE WITHIN SAID BLOCK 35 LYING EAST OF THE WEST LINE OF SAID LOT 7 PROLONGED SOUTHERLY LYING IN SECTION 2, TOWNSHIP 3 SOUTH, RANGE 3 WEST, SAN BERNARDINO MERIDIAN, MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE CENTERLINE INTERSECTION OF REDLANDS BOULEVARD, 120 FEET IN WIDTH, AND GREVILLEA AVENUE, 80 FEET IN WIDTH, AS SHOWN ON SAID MAP NO. 1; THENCE ALONG THE CENTERLINE OF SAID REDLANDS BOULEVARD SOUTH 00°26'55" WEST A DISTANCE OF 40.00 FEET TO A POINT ON THE EASTERLY PROLONGATION OF THE SOUTHERLY RIGHTOF– WAY OF SAID GREVILLEA AVENUE; THENCE ALONG SAID EASTERLY PROLONGATION NORTH 89°33'42" WEST A DISTANCE OF 60.00 FEET TO A POINT DESCRIBED AS THE BEGINNING OF COURSE "A" OF PARCEL "L" PER BOOK 3289, PAGE 186 OF DEEDS, TO THE STATE OF CALIFORNIA AS RECORDED ON DECEMBER 27, 1962 AS INSTRUMENT NO. 119152 OF OFFICIAL RECORDS, IN THE OFFICE OF THE RIVERSIDE COUNTY RECORDER, SAID POINT BEING ON THE WESTERLY LINE OF SAID REDLANDS BOULEVARD, 120 FEET WIDE AS SHOWN ON SAID MAP NO. 1; THENCE ON A LINE PARALLEL WITH AND 60 DISTANT FROM SAID CENTERLINE SOUTH 00°26'55" WEST A DISTANCE OF 744.99 FEET TO THE SOUTHEAST CORNER OF COURSE "B" OF SAID PARCEL "L"; THENCE CONTINUING ALONG THE WESTERLY LINE OF SAID REDLANDS BOULEVARD SOUTH 00°26'55" WEST A DISTANCE OF 230.34 FEET TO THE TRUE POINT OF BEGINNING; THENCE LEAVING SAID WESTERLY LINE ON A LINE PARALLEL WITH AND 305.00 FEET DISTANT FROM THE CENTERLINE OF SAID FIR AVENUE NORTH 89°33'43" WEST A DISTANCE OF 336.00 FEET TO A POINT 396.00 FEET DISTANT FROM THE CENTERLINE OF SAID REDLANDS BOULEVARD; THENCE LEAVING SAID PARALLEL LINE, ON A LINE PARALLEL WITH AND 396.00 FEET DISTANT FROM THE CENTERLINE OF SAID REDLANDS BOULEVARD SOUTH 00°26'55" WEST A DISTANCE OF 305.00 FEET TO THE CENTERLINE OF SAID FIR AVENUE; THENCE LEAVING SAID PARALLEL LINE, ALONG THE CENTERLINE OF SAID FIR AVENUE SOUTH 89°33'43" EAST A DISTANCE OF 336.00 FEET TO A POINT ON THE WESTERLY LINE OF SAID REDLANDS BOULEVARD, SAID POINT BEING THE SOUTHEAST CORNER OF LOT 8, BLOCK 35 OF SAID MAP NO. 1; THENCE ALONG SAID WESTERLY LINE NORTH 00°26'55" EAST A DISTANCE OF 305.00 FEET TO THE TRUE POINT OF BEGINNING.

APN 488–330–038

PENXX-XXXX

BENCHMARK	BASIS OF BEARING
SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97–100 I.E. N00°27'05"E.

REVIEW BY CITY STAFF		
OFFICE	INITIAL	DATE
ENGINEERING DIVISION MANAGER		
LAND DEVELOPMENT		
PLANNING		
TRANSPORTATION		
PARKS AND COMMUNITY SERVICES		
SPECIAL DISTRICTS		
STORM WATER MANAGEMENT PRGM		

MARK	DATE	INITIAL	DESCRIPTION	REC	APPR	DATE
		EOR	REVISION			

CITY OF MORENO VALLEY APPROVALS

RECOMMENDED:
MICHAEL D. LLOYD, PE — DATE
ENGINEERING DIVISION MANAGER/ ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:
MICHAEL L. WOLFE, PE — DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL
REGISTERED PROFESSIONAL ENGINEER — SHEA–MICHAEL ANTI — RCE NO. 78274 — STATE OF CALIFORNIA — CIVIL
8/3/2021

Kimley»Horn

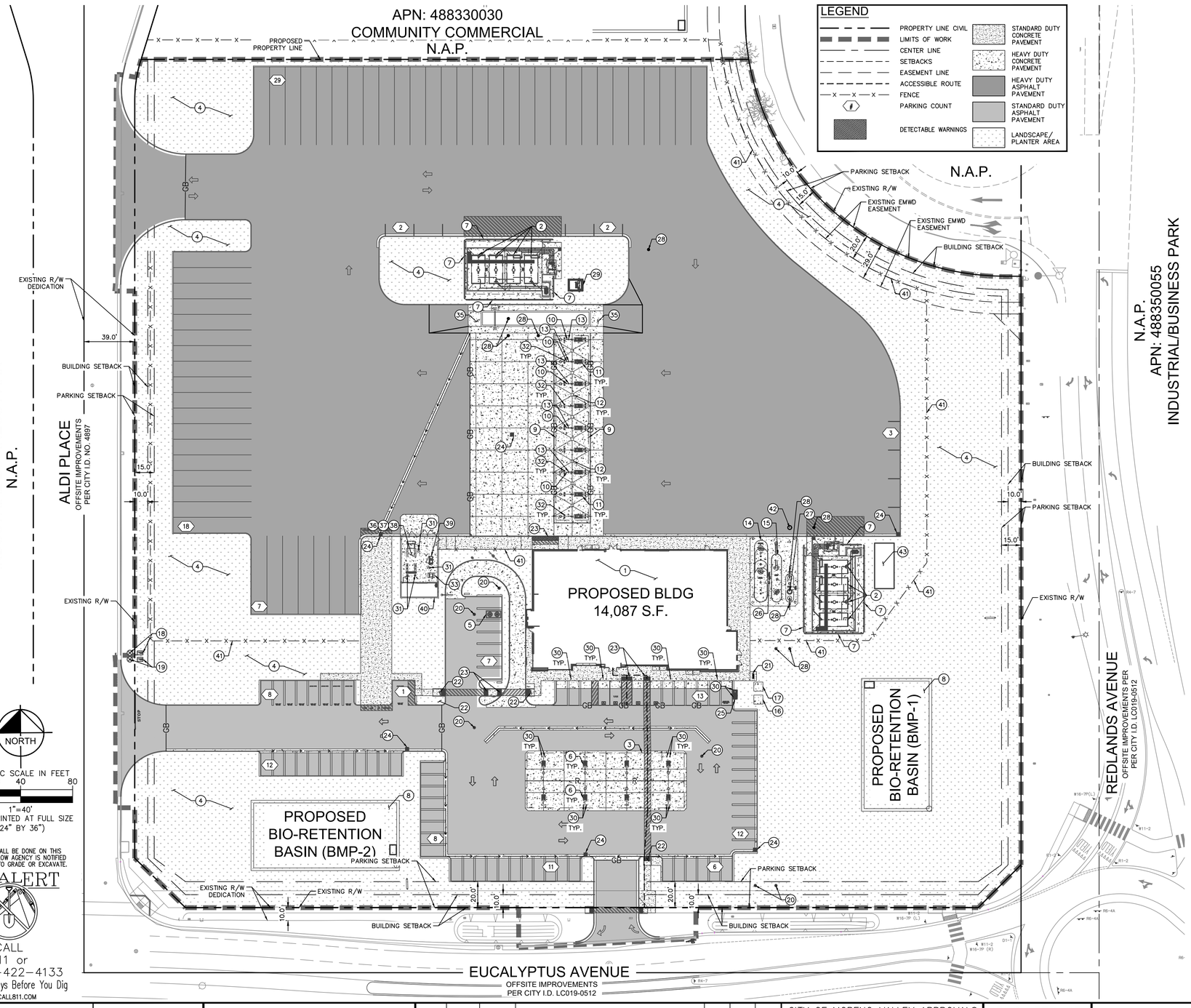
3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951–543–9868

UNDER THE SUPERVISION OF:
SHEA–MICHAEL ANTI — 8/3/2021 — DATE
RCE C78274

CITY OF MORENO VALLEY

PRECISE GRADING PLAN
PILOT MORENO VALLEY
GENERAL NOTES

SHEET 2 OF 8
CITY ID No.
LGRXX–XXXX



LEGEND

- PROPERTY LINE CIVIL
- LIMITS OF WORK
- CENTER LINE
- SETBACKS
- EASEMENT LINE
- ACCESSIBLE ROUTE
- FENCE
- PARKING COUNT
- DETECTABLE WARNINGS
- STANDARD DUTY CONCRETE PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- HEAVY DUTY ASPHALT PAVEMENT
- STANDARD DUTY ASPHALT PAVEMENT
- LANDSCAPE/ PLANTER AREA

SITE INFORMATION

APPLICANT/DEVELOPER: PILOT TRAVEL CENTERS, LLC

APN'S: 488-330-030, -035, -036, -037, -038

SITE AREA	±9.55 ACRES
TOTAL PERVIOUS	±3.61 ACRES
TOTAL IMPERVIOUS (INCLUDING BUILDING)	±5.94 ACRES
TOTAL GROSS FLOOR AREA	14,087 SF

EXISTING: COMMUNITY COMMERCIAL (CC)

PROPOSED: COMMUNITY COMMERCIAL (CC)

FEMA FLOOD ZONE DESIGNATION: ZONE X-SHADED

FRONT BUILDING SETBACK: 10'

SIDE BUILDING SETBACK: 10'

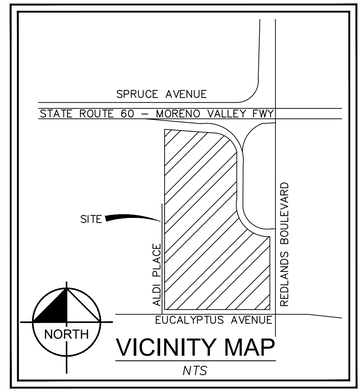
FRONT PARKING SETBACK: 20'

SIDE PARKING SETBACK: 15'

TOTAL REQUIRED PARKING: 83 SPACES

TOTAL PROVIDED AUTO PARKING: 85 SPACES

TOTAL PROVIDED TRUCK PARKING: 54 SPACES



CONSTRUCTION NOTES

1. PILOT TRAVEL CENTER BUILDING (SEE ARCHITECTURAL DRAWINGS), INSTALLED BY CONTRACTOR.
2. ABOVE GROUND STORAGE TANK FARM WITH CONTAINMENT. EACH AST FARM CONTAINS (4) 12,000 GALLON TACKS FOR DIESEL AND BIO. SEE PRODUCT PIPING DRAWINGS FOR MORE INFORMATION.
3. 42'-3" x 120'-10" AUTO CANOPY, FURNISHED AND INSTALLED BY CANOPY SUPPLIER. CANOPY FOUNDATIONS INSTALLED BY CONTRACTOR.
4. LANDSCAPE AREA INSTALLED BY CONTRACTOR. REFER TO LANDSCAPE AND IRRIGATION PLANS FOR MORE INFORMATION.
5. GREASE TRAP. FURNISHED AND INSTALLED BY CONTRACTOR.
6. CONCRETE ISLAND WITH A GAS/AUTO DIESEL (3+1) DISPENSER AND CONTAINMENT BOX TYPICAL AT (8) PLACES, INSTALLED BY CONTRACTOR.
7. 2'-0" HIGH GUARDRAIL AROUND CONTAINMENT AREA, 1'-0" OUTSIDE OF FENCE.
8. PROPOSED BIORETENTION BASIN. SEE UTILITY PLAN FOR MORE INFORMATION.
9. 25'-0" x 141'-9" TRUCK CANOPY, FURNISHED AND INSTALLED BY CANOPY SUPPLIER, CANOPY FOUNDATIONS INSTALLED BY CONTRACTOR.
10. TRUCK AIR STAND, TYPICAL AT EVERY OTHER TRUCK FUELING ISLAND, SUPPLIED BY OWNER AND INSTALLED BY CONTRACTOR.
11. CONCRETE ISLAND WITH A DIESEL DISPENSER AND CONTAINMENT BOX TYPICAL AT (9) PLACES, INSTALLED BY CONTRACTOR.
12. PREFABRICATED TRUCK ISLAND CATCH BASIN (TYP (8) PLACES). SUPPLIED BY OWNER INSTALLED BY CONTRACTOR
13. TRUCK FREEZE PROOF WATER STAND TYPICAL AT EVERY OTHER TRUCK FUELING ISLAND FURNISHED AND INSTALLED BY CONTRACTOR.
14. TANK #1, PRODUCT #1. 20,000 GALLON, 10'-0"ø X 37'-8 3/4" LONG, DOUBLE-WALL FIBERGLASS UNDERGROUND REGULAR UNLEADED GASOLINE TANK. FURNISHED BY OWNER, INSTALLED BY CONTRACTOR (TYP (1) PLACE). SEE PP DRAWINGS FOR MORE INFORMATION.
15. TANK #2 AND TANK #3. 20,000 GALLON, 10'-0"ø X 37'-10" LONG (2) CHAMBER UNDERGROUND DOUBLE WALL FIBERGLASS TANK, TANK #2, PRODUCT #2 – 12,000 GALLON SUPER UNLEADED GASOLINE, TANK #3, PRODUCT #3 – 8,000 AUTO DIESEL. FURNISHED BY OWNER, INSTALLED BY CONTRACTOR. (SEE PP DRAWINGS FOR MORE INFORMATION).
16. LOCAL UTILITY ELECTRICAL TRANSFORMER INSTALLED BY CONTRACTOR.
17. TRAVEL CENTER DISTRIBUTION ELECTRICAL TRANSFORMER INSTALLED BY CONTRACTOR.
18. PROPOSED WATER METER AND BACKFLOW. SEE UTILITY PLAN FOR MORE INFORMATION.
19. PROPOSED IRRIGATION METER AND BACKFLOW PREVENTOR. SEE UTILITY PLAN FOR MORE INFORMATION.
20. PROPOSED SEWER CLEANOUT. SEE UTILITY PLAN FOR MORE INFORMATION.
21. PROPOSED U-SHAPED BIKE RACKS PER CITY STANDARDS AND SPECIFICATIONS.
22. INSTALL ACCESSIBLE RAMP. INSTALL CAST-IN-PLACE DETECTABLE WARNING SYSTEM (TRUNCATED DOMES) PER ARMOR TILE – 36" X 48" PANEL. PRODUCT NO. ADA-C-3648W.
23. INSTALL DETECTABLE WARNINGS.
24. PROPOSED CATCH BASIN. SEE UTILITY PLAN FOR MORE INFORMATION.
25. AUTO AIR/VACUUM (PROVIDED BY OWNER, ELECTRICAL BY CONTRACTOR), YARD HYDRANT BY CONTRACTOR.
26. NEW TANK VENT RISER CLUSTER, INSTALLED BY CONTRACTOR.
27. 4,000 GALLON, 6'-0"ø x 21'-11" LONG, SINGLE-WALL FIBERGLASS UNDERGROUND OIL/ WATER SEPARATOR, FURNISHED BY OWNER, INSTALLED BY CONTRACTOR.
28. CLEAN OUT FOR OIL/WATER SEPARATOR FURNISHED AND INSTALLED BY CONTRACTOR.
29. B99 INJECTION SHED WITH SUMP. SUPPLIED BY OWNER. (SEE PRODUCT PIPING DRAWINGS FOR MORE INFORMATION).
30. 4" STEEL PIPE BOLLARD FURNISHED, INSTALLED BY CONTRACTOR (SEE CIVIL DWGS FOR SPECS.).
31. 6" STEEL PIPE BOLLARD FURNISHED, INSTALLED BY CONTRACTOR (SEE CIVIL DWGS FOR SPECS.).
32. 1'-0" CONCRETE BOLLARD FURNISHED, INSTALLED AND PAINTED BY CONTRACTOR (SEE CIVIL DWGS FOR SPECS.).
33. GREASE CONTAINER, PROVIDED BY OWNER.
34. SITE LIGHT, FURNISHED BY OWNER, INSTALLED BY CONTRACTOR.
35. TRUCK SCALE, CONCRETE TRUCK SCALE PIT AND TRUCK SCALE FURNISHED AND INSTALLED BY TRUCK SCALE SUPPLIER. ELECTRICAL, COMMUNICATIONS AND DRAINAGE PROVIDED TO THE SCALE PIT BY CONTRACTOR, COORDINATION BY CONTRACTOR.
36. PARKING AREA DESIGNATED FOR GOLF CART.
37. TRASH ENCLOSURE 8' CHAIN LINK FENCE WITH VINYL INSERTS MOUNTED ON REINFORCED CONCRETE PAD WITH PROTECTIVE STEEL BOLLARDS, INSTALLED BY CONTRACTOR (SEE ARCH DWGS FOR DETAILS).
38. TRASH COMPACTOR, FURNISHED AND INSTALLED BY TRASH COMPACTOR SUPPLIER.
39. CARDBOARD BAILER OR RECYCLE DUMPSTER, FURNISHED AND INSTALLED BY DUMPSTER SUPPLIER.
40. STORAGE UNIT, FURNISHED BY OWNER. ELECTRICAL & A/C INSTALL BY CONTRACTOR.
41. PROPOSED "CERTAIN TEED BRAND; BUFFTECH VINYL FENCING; PRIVACY SERIES; STYLE "GALVESTON", 8' TALL; COLOR ALMOND." OR APPROVED EQUAL. FURNISHED AND INSTALLED BY CONTRACTOR.
42. 36" MANHOLE BY JENSEN REFER TO UTILITY PLAN FOR MORE INFORMATION.
43. FUTURE HYDROGEN TANK LOCATION.

PENXX-XXXX

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.

DIGALERT

CALL 811 or 1-800-422-4133
2 Working Days Before You Dig
WWW.CALL811.COM

BENCHMARK	BASIS OF BEARING
SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97-100 I.E. N00°27'05"E.

REVIEW BY CITY STAFF

OFFICE	INITIAL	DATE
ENGINEERING DIVISION MANAGER		
LAND DEVELOPMENT		
PLANNING		
TRANSPORTATION		
PARKS AND COMMUNITY SERVICES		
SPECIAL DISTRICTS		
STORM WATER MANAGEMENT PRGM		

MARK	DATE	INITIAL	DESCRIPTION	REC	APPR	DATE
		EOR	REVISION			

CITY OF MORENO VALLEY APPROVALS

RECOMMENDED:

MICHAEL D. LLOYD, PE — DATE
ENGINEERING DIVISION MANAGER/ ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:

MICHAEL L. WOLFE, PE — DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL

REGISTERED PROFESSIONAL ENGINEER — SHEA MICHAEL ANTI — RCE NO. 78274 — STATE OF CALIFORNIA — CIVIL

8/3/2021

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951-543-9868

UNDER THE SUPERVISION OF:

SHEA MICHAEL ANTI, RCE C78274 — 8/3/2021 DATE

CITY OF MORENO VALLEY

PRECISE GRADING PLAN
PILOT MORENO VALLEY
SITE PLAN

SHEET 3 OF 8

CITY ID No. LGRXX-XXXX

APN: 488330040
INDUSTRIAL/BUSINESS PARK
N.A.P.

ALDI PLACE
OFFSITE IMPROVEMENTS
PER CITY I.D. NO. 4897

SEE SHEET 5

PROPOSED BLDG
14,087 S.F.

PROPOSED
BIO-RETENTION
BASIN (BMP-1)

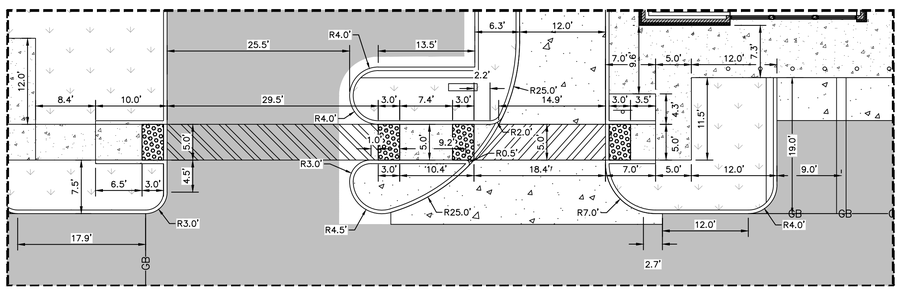
PROPOSED
BIO-RETENTION
BASIN (BMP-2)

REDLANDS AVENUE
OFFSITE IMPROVEMENTS
PER CITY I.D. LC019-0512

N.A.P.
APN: 488350055
INDUSTRIAL/BUSINESS PARK

EUCALYPTUS AVENUE
OFFSITE IMPROVEMENTS
PER CITY I.D. LC019-0512

EXISTING R/W
PARKING SETBACK
BUILDING SETBACK
EXISTING R/W DEDICATION
DETAIL 1 HEREON
STOP
GB
N89°33'03"W 609.39'
N00°27'05"E 432.44'



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LEGEND

- PROPERTY LINE CIVIL
- LIMITS OF WORK
- CENTER LINE
- SETBACKS
- EASEMENT LINE
- GB GRADE BREAK
- DETECTABLE WARNINGS
- STANDARD DUTY CONCRETE PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- HEAVY DUTY ASPHALT PAVEMENT
- STANDARD DUTY ASPHALT PAVEMENT
- LANDSCAPE/ PLANTER AREA

NORTH
GRAPHIC SCALE IN FEET
0 15 30 60
1"=30'
WHEN PRINTED AT FULL SIZE
(24" BY 36")

PENXX-XXXX

BENCHMARK	BASIS OF BEARING
SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97-100 I.E. N00°27'05"E.

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ASSISTANT CITY ENGINEER
RCE 69563

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PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL
REGISTERED PROFESSIONAL ENGINEER
SHEA-MICHAEL ANTI
RCE NO. 78274
CIVIL
STATE OF CALIFORNIA
8/3/2021

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951-543-9868
UNDER THE SUPERVISION OF:
SHEA-MICHAEL ANTI
RCE C78274
8/3/2021
DATE

CITY OF MORENO VALLEY

PRECISE GRADING PLAN
PILOT MORENO VALLEY
HORIZONTAL CONTROL PLAN

SHEET 4 OF 8
CITY ID No.
LGRXX-XXXX

APN: 488330040
INDUSTRIAL/BUSINESS PARK
N.A.P.

ALDI PLACE
OFFSITE IMPROVEMENTS
PER CITY I.D. NO. 4897

APN: 488330030
COMMUNITY COMMERCIAL
N.A.P.

N.A.P.

REDLANDS AVENUE
OFFSITE IMPROVEMENTS
PER CITY I.D. LC019-0512

N.A.P.
APN: 488350055
INDUSTRIAL/BUSINESS PARK

PROPOSED PROPERTY LINE
N17°39'34"E 1.44'
N89°33'03"W 467.14'
N00°27'05"E 583.11'
N00°27'05"E 432.44'
348.0'
91.6'
52.3'
60.0' TYP
51.0'
12.0' TYP
70.0'
37.4'
50.0'
34.0'
98.0'
55.0'
60.0' TYP
12.0' TYP
39.0'
29.7'
216.0'
168.0'
64.6'
228.0'
R50.0'
R15.0'
R5.0'
R248.4'
R100.0'
22.0'
16.5'
74.9'
3.0'
4.0'
15.0'
53.0'
24.0'
18.7'
30.0'
19.8'
103.7'
21.7'
64.5'
66.0'
28.0'
10.0'
156.0'
59.1'
BUILDING SETBACK
PARKING SETBACK
EXISTING EMWD EASEMENT
EXISTING R/W
EXISTING R/W DEDICATION
R=500.71'
120.0'
29.0'
OHE
GB
SEE SHEET 4
25.3'
19.0'
14.6'
24.2'
47.8'
16.7'
11.0'
17.0'
114.7'
32.6'
9.0'
44.1'
27.6'
8.8'

LEGEND

- PROPERTY LINE CIVIL
- LIMITS OF WORK
- CENTER LINE
- SETBACKS
- EASEMENT LINE
- GB — GRADE BREAK
- DETECTABLE WARNINGS
- STANDARD DUTY CONCRETE PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- HEAVY DUTY ASPHALT PAVEMENT
- STANDARD DUTY ASPHALT PAVEMENT
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1"=30'
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PENXX-XXXX

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SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97-100 I.E. N00°27'05"E.

REVIEW BY CITY STAFF

OFFICE	INITIAL	DATE
ENGINEERING DIVISION MANAGER		
LAND DEVELOPMENT		
PLANNING		
TRANSPORTATION		
PARKS AND COMMUNITY SERVICES		
SPECIAL DISTRICTS		
STORM WATER MANAGEMENT PRGM		

MARK	DATE	INITIAL	DESCRIPTION	REC	APPR	DATE
		EOR	REVISION			

CITY OF MORENO VALLEY APPROVALS

RECOMMENDED:
MICHAEL D. LLOYD, PE — DATE
ENGINEERING DIVISION MANAGER/
ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:
MICHAEL L. WOLFE, PE — DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL
REGISTERED PROFESSIONAL ENGINEER
SHEA, MICHAEL ANTI
RCE NO. 78274
STATE OF CALIFORNIA - CIVIL
8/3/2021

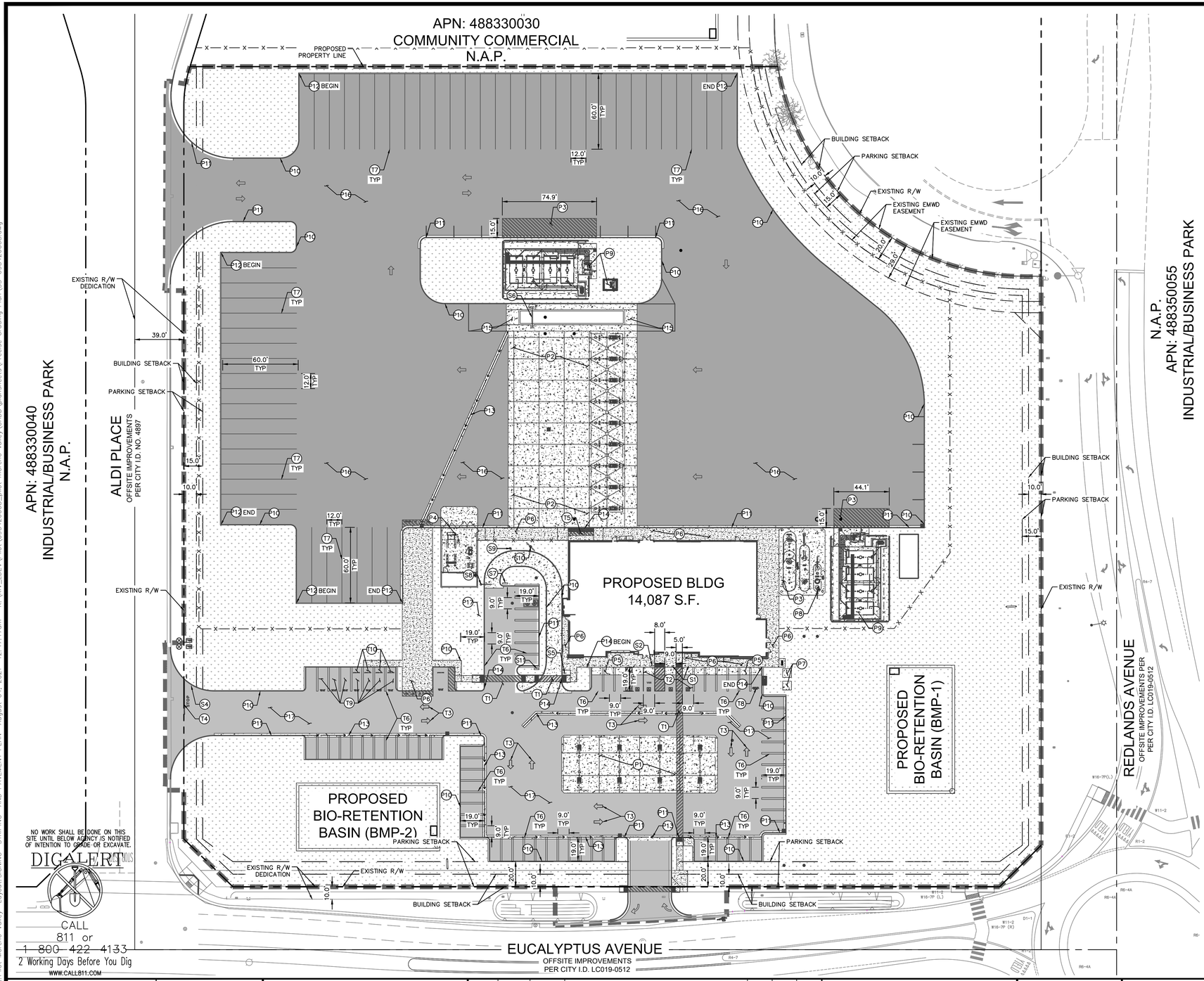
Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951-543-9868
UNDER THE SUPERVISION OF:
SHEA, MICHAEL ANTI
RCE C78274
8/3/2021
DATE

CITY OF MORENO VALLEY

PRECISE GRADING PLAN
PILOT MORENO VALLEY
HORIZONTAL CONTROL PLAN

SHEET 5 OF 8
CITY ID No.
LGRXX-XXXX



LEGEND

- PROPERTY LINE
- CIVIL LIMITS OF WORK
- CENTER LINE
- SETBACKS
- EASEMENT LINE
- FENCE
- DETECTABLE WARNINGS
- STANDARD DUTY CONCRETE PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- HEAVY DUTY ASPHALT PAVEMENT
- STANDARD DUTY ASPHALT PAVEMENT
- LANDSCAPE/ PLANTER AREA

PAVEMENT NOTES

(P1) 6" REINFORCED CONCRETE PAD FOR AUTO CANOPY. WATER FROM SITE SHOULD NOT DRAIN ACROSS THE CONCRETE PAD FOR THE AUTO CANOPY. ASPHALT PAVING ON ALL (4) SIDES OF THE CONCRETE PAD SHOULD DRAIN AWAY FROM CONCRETE PAD. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS, INSTALLED BY CONTRACTOR.

(P2) 8" REINFORCED CONCRETE PAD FOR TRUCK CANOPY. WATER FROM SITE SHOULD NOT DRAIN ACROSS THE CONCRETE PAD FOR THE TRUCK CANOPY. ASPHALT PAVING ON BOTH SIDES OF THE CONCRETE PAD SHOULD DRAIN AWAY FROM CONCRETE PAD. CONCRETE PAD FOR THE TRUCK CANOPY MUST DRAIN TO CATCH BASIN. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

(P3) 8" REINFORCED CONCRETE PAD AT TANK FARM. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

(P4) 8" REINFORCED CONCRETE PAD TRASH ENCLOSURE. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

(P5) 6" REINFORCED CONCRETE PARKING APRON AT PARKING SPACES IN FRONT OF BUILDING. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

(P6) 4" REINFORCED CONCRETE SIDEWALK. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

(P7) 7'-0" X 7'-0" X 6" REINFORCED CONCRETE PAD FOR ELECTRICAL TRANSFORMER. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY FOR SIZE AND REINFORCING REQUIREMENTS. INSTALLED BY CONTRACTOR.

(P8) 4" REINFORCED CONCRETE PAD AT OIL/WATER SEPARATOR. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

(P9) SEE PP DRAWINGS FOR AST AND BIO SHED FOUNDATION DESIGN.

(P10) STANDARD DUTY CURB. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

(P11) STANDARD DUTY CURB AND GUTTER. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

(P12) HEAVY DUTY CURB. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

(P13) INSTALL RIBBON GUTTER.

(P14) ZERO ELEVATION CURB. SEE GRADING PLANS FOR DETAILS AND SPECIFICATIONS.

(P15) 8" REINFORCED CONCRETE RAMP FOR CAT SCALE.

(P16) CONSTRUCT HEAVY DUTY ASPHALT PAVEMENT.

(P17) CONSTRUCT STANDARD DUTY ASPHALT PAVEMENT.

STRIPING NOTES

(T1) INSTALL ACCESSIBLE PATH OF TRAVEL STRIPING.

(T2) INSTALL ACCESSIBLE STRIPING PARKING STALL AND ACCESSIBLE PARKING SYMBOL.

(T3) ALL DIRECTIONAL AND PARKING STRIPING TO BE SAFETY YELLOW-UNLESS NOTED OTHERWISE (TYP).

(T4) STOP LINE INSTALLED BY CONTRACTOR.

(T5) 5'-0" X 20'-0" PASSENGER DROP-OFF/LOADING ZONE. TRAFFIC STRIPING 4" WIDE PAINTED (SAFETY YELLOW) PARALLEL STRIPES AT 16" O.C. FURNISHED AND INSTALLED BY CONTRACTOR.

(T6) 4" YELLOW DOUBLE HAIRPIN STRIPING, TYP. (COLOR PER CITY CODE).

(T7) 4" YELLOW PAINTED SOLID LINE, TYP. (COLOR PER CITY CODE).

(T8) PROPOSED "PARKING FOR SERVICE ISLAND USE ONLY." PAVEMENT MARKING.

(T9) PROPOSED "CLEAN AIR/ VAN POOL." PAVEMENT MARKING.

(T10) PROPOSED FUTURE EVCS PARKING STALLS.

SIGNING NOTES

(S1) INSTALL ACCESSIBLE PARKING STALL SIGN AND SINGLE BASE SIGN POST.

(S2) INSTALL VAN ACCESSIBLE PARKING STALL SIGN AND SINGLE BASE SIGN POST.

(S3) "PASSENGER LOADING ZONE ONLY" SIGN FURNISHED AND INSTALLED BY CONTRACTOR.

(S4) "STOP SIGN" SIGN INSTALLED BY CONTRACTOR.

(S5) "PED-XING" SIGN FURNISHED AND INSTALLED BY CONTRACTOR.

(S6) SEE SS DRAWINGS FOR ALL OTHER SIGNAGE.

(S7) RESTAURANT "DRIVE-THRU" (INTERNALLY ILLUMINATED) DIRECTIONAL SIGN FURNISHED BY OWNER, INSTALLED BY SIGN SUPPLIER. CONCRETE FOUNDATION AND ELECTRICAL INSTALLED BY CONTRACTOR.

(S8) "DRIVE-THRU CLEARANCE 9 FT. 6 IN." SIGN FURNISHED BY OWNER, INSTALLED BY SIGN SUPPLIER. CONCRETE FOUNDATION INSTALLED BY CONTRACTOR.

(S9) RESTAURANT PREVIEW BOARD (INTERNALLY ILLUMINATED) FURNISHED BY OWNER, INSTALLED BY SIGN SUPPLIER. CONCRETE FOUNDATION AND ELECTRICAL INSTALLED BY CONTRACTOR.

(S10) "RESTAURANT" MENU BOARD (INTERNALLY ILLUMINATED) AND INTERCOM SYSTEM FURNISHED BY OWNER, INSTALLED BY SIGN SUPPLIER. CONCRETE FOUNDATION AND ELECTRICAL INSTALLED BY CONTRACTOR.

(S11) "THANK YOU / DO NOT ENTER" DIRECTIONAL SIGN (INTERNALLY ILLUMINATED) FURNISHED BY OWNER, INSTALLED BY SIGN SUPPLIER. CONCRETE FOUNDATION AND ELECTRICAL INSTALLED BY CONTRACTOR.

GENERAL PAVING NOTES

1. ALL MANHOLES MUST BE SET 2" HIGHER THAN PAVING TO PROVIDE A CROWN IN A 24"Ø AREA AROUND EACH MANHOLE.
2. SUB-BASE MUST BE COMPACTED TO 95% STANDARD PROCTOR WITH A WATER CONTENT WITHIN 1.5% OF OPTIMUM.
3. STONE BASE MUST BE COMPACTED TO 95% STANDARD PROCTOR WITH A WATER CONTENT WITHIN 1.5% OF OPTIMUM.
4. PRIOR TO INSTALLING BITUMINOUS PAVING CONTRACTOR IS TO PROOF-ROLL SUB-BASE USING HEAVY, PNEUMATIC-TIRED ROLLERS TO LOCATE AREAS THAT ARE UNSTABLE OR THAT REQUIRE FURTHER COMPACTION. NOTIFY CONSTRUCTION MANAGER IN WRITING OF ANY UNSATISFACTORY CONDITIONS. DO NOT BEGIN PAVING INSTALLATION UNTIL THESE CONDITIONS HAVE BEEN SATISFACTORILY CORRECTED.
5. ASPHALT PAVING @ EDGE OF CONCRETE PAD FOR THE TRUCK CANOPY SHOULD BE LAID @1/4" HIGHER THAN CONCRETE PAD ON EXIT SIDE CANOPY.
6. CONCRETE COLLAR IS REQUIRED FOR ALL STRUCTURES IN PAVEMENT.

NORTH

GRAPHIC SCALE IN FEET
0 20 40 80
1"=40'
WHEN PRINTED AT FULL SIZE (24" BY 36")

PENXX-XXXX

BENCHMARK	BASIS OF BEARING
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STORM WATER MANAGEMENT PRGM		

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		EOR	REVISION			

CITY OF MORENO VALLEY APPROVALS

RECOMMENDED:

MICHAEL D. LLOYD, PE — DATE
ENGINEERING DIVISION MANAGER/ ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:

MICHAEL L. WOLFE, PE — DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL

REGISTERED PROFESSIONAL ENGINEER — SHEA-MICHAEL ANTI — RCE NO. 78274 — STATE OF CALIFORNIA — CIVIL

8/3/2021

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951-543-9868

UNDER THE SUPERVISION OF:

SHEA-MICHAEL ANTI — 8/3/2021 — DATE
RCE C78274

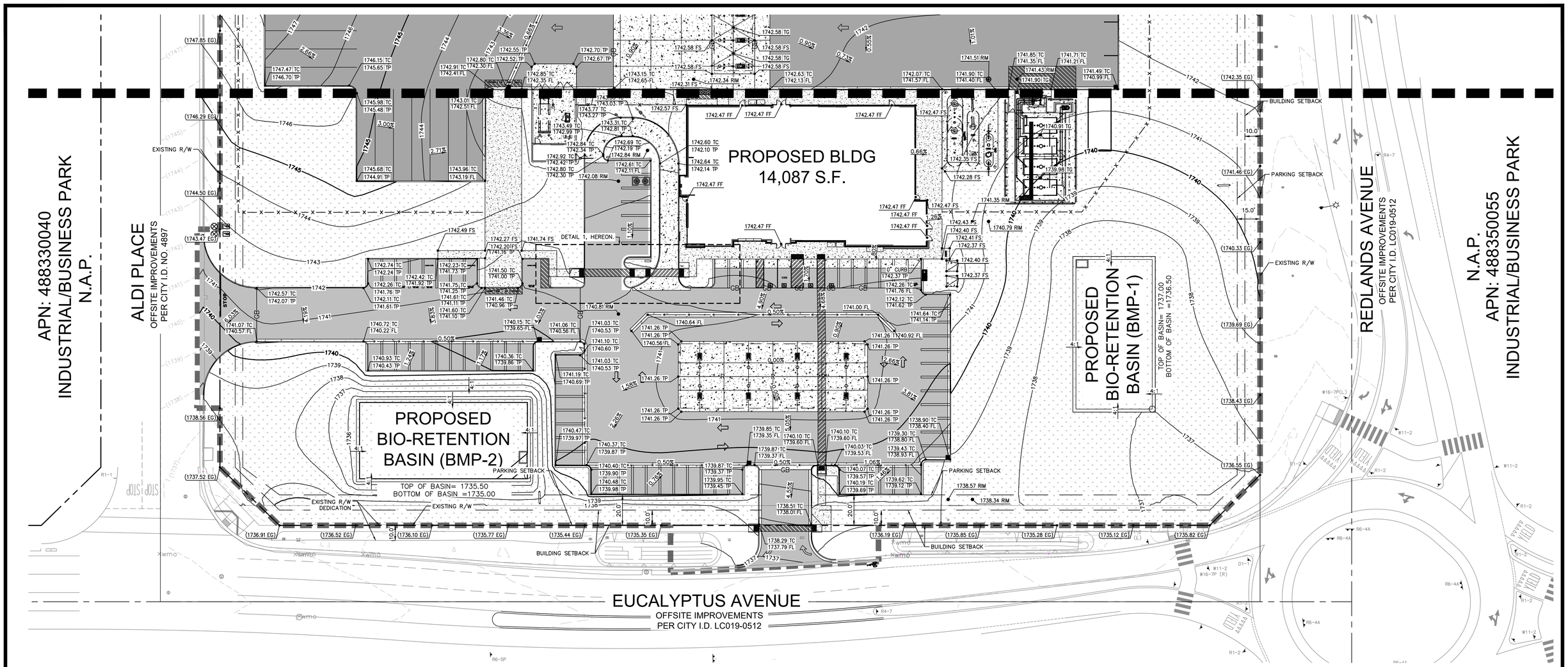
CITY OF MORENO VALLEY

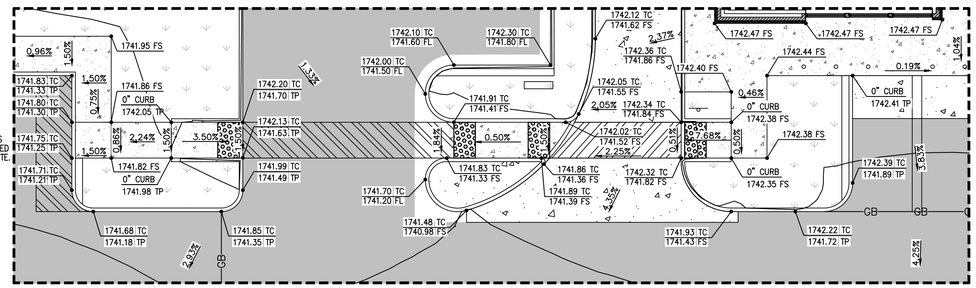
PRECISE GRADING PLAN
PILOT MORENO VALLEY
SIGNING, STRIPING, AND PAVEMENT PLAN

SHEET 6 OF 8

CITY ID No.
LGRXX-XXXX

Plotted By: Alvarez, Leticia Sheet Set: Pilot Moreno Valley Layout: SIGNING, STRIPING AND PAVEMENT PLAN August 04, 2021 12:47:17pm K:\RIV_LDEV\Pilot\09542600B_pilot moreno valley\CADD\plotsheets\Precise Grading Plan\SS-09542600B.dwg





DETAIL 1
1"=10'

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GRADING NOTES

1. CONTRACTOR TO VERIFY ALL EXISTING TOPOGRAPHY AND STRUCTURES ON THE SITE AND IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.
2. ALL PAVEMENT SPOT GRADE ELEVATIONS AND RIM ELEVATIONS WITHIN OR ALONG CURB AND GUTTER REFER TO FLOW LINE ELEVATIONS UNLESS OTHERWISE NOTED.
3. ALL ELEVATIONS SHOWN DEPICT FINISHED GRADE OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED. GENERAL CONTRACTOR TO COORDINATE WITH EXCAVATION, LANDSCAPE AND PAVING SUBCONTRACTORS REGARDING TOPSOIL THICKNESS FOR LANDSCAPE AREAS AND PAVEMENT SECTION THICKNESS FOR PAVED AREAS TO PROPERLY ENSURE ADEQUATE CUT TO ESTABLISH SUBGRADE ELEVATIONS.
4. NO EARTHEN SLOPE SHALL BE GREATER THAN 2:1, UNLESS OTHERWISE NOTED.
5. MAXIMUM SLOPE IN ACCESSIBLE PARKING SPACES AND LOADING ZONES SHALL NOT EXCEED 2.0% IN ALL DIRECTIONS.
6. MAXIMUM RUNNING SLOPE SHALL NOT EXCEED 5% AND CROSS SLOPE SHALL NOT EXCEED 2% ON ALL SIDEWALKS AND ACCESSIBLE ROUTES.
7. MATCH EXISTING ELEVATIONS AT THE PROPERTY LIMITS.
8. REFER TO STORM DRAIN PLANS FOR INLET SIZE AND LOCATION.
9. EARTHWORK AND PAVING SPECIFICATION PER GEOTECHNICAL REPORT.
10. A GRADING PERMIT FROM THE CITY OF MORENO VALLEY WILL BE REQUIRED PRIOR TO COMMENCEMENT OF WORK.
11. ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF MORENO VALLEY STANDARDS AND SPECIFICATIONS.

LEGEND

- PROPERTY LINE CIVIL
- LIMITS OF WORK
- CENTER LINE
- SETBACKS
- EASEMENT LINE
- GB — GRADE BREAK
- (1745.00 TC) / (1745.00 TP) / 1745.00 TC / 1745.00 TP — PROPOSED ELEVATION / EXISTING ELEVATION
- 0.71% — SLOPE
- DETECTABLE WARNINGS
- STANDARD DUTY CONCRETE PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- HEAVY DUTY ASPHALT PAVEMENT
- STANDARD DUTY ASPHALT PAVEMENT
- LANDSCAPE/ PLANTER AREA

ABBREVIATIONS:

EG	EXISTING GROUND
FF	FINISHED FLOOR ELEVATION
FS	FINISH SURFACE
FG	FINISH GROUND
FL	FLOW LINE
GB	GRADE BREAK
HP	HIGH POINT
N.A.P	NOT A PART
TC	TOP OF CURB
TG	TOP OF GRATE
TP	TOP OF PAVEMENT

NORTH

GRAPHIC SCALE IN FEET
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WHEN PRINTED AT FULL SIZE
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PENXX-XXXX

BENCHMARK	BASIS OF BEARING
SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97-100 I.E. N00°27'05"E.

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SPECIAL DISTRICTS		
STORM WATER MANAGEMENT PRGM		

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		EOR	REVISION			

CITY OF MORENO VALLEY APPROVALS

RECOMMENDED:

MICHAEL D. LLOYD, PE — DATE
ENGINEERING DIVISION MANAGER/
ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:

MICHAEL L. WOLFE, PE — DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL

REGISTERED PROFESSIONAL ENGINEER
SHEA-MICHAEL ANTI
RCE NO. 78274
STATE OF CALIFORNIA
CIVIL

8/3/2021

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951-543-9868

UNDER THE SUPERVISION OF:

SHEA-MICHAEL ANTI
RCE C78274

8/3/2021
DATE

CITY OF MORENO VALLEY

PRECISE GRADING PLAN
PILOT MORENO VALLEY
PRECISE GRADING PLAN

SHEET 7 OF 8

CITY ID No.
LGRXX-XXXX

APN: 488330040
INDUSTRIAL/BUSINESS PARK
N.A.P.

APN: 488330030
COMMUNITY COMMERCIAL
N.A.P.

N.A.P.

N.A.P.
APN: 488350055
INDUSTRIAL/BUSINESS PARK

ALDI PLACE
OFFSITE IMPROVEMENTS
PER CITY I.D. NO. 4897

REDLANDS AVENUE
OFFSITE IMPROVEMENTS
PER CITY I.D. LC019-0512

PROPOSED PROPERTY LINE

EXISTING R/W DEDICATION

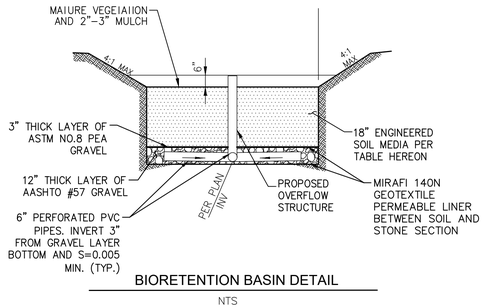
BUILDING SETBACK

PARKING SETBACK

EXISTING EMWD EASEMENT

EXISTING R/W

EXISTING EMWD EASEMENT



BIORETENTION BASIN DETAIL

NTS

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8/3/2021
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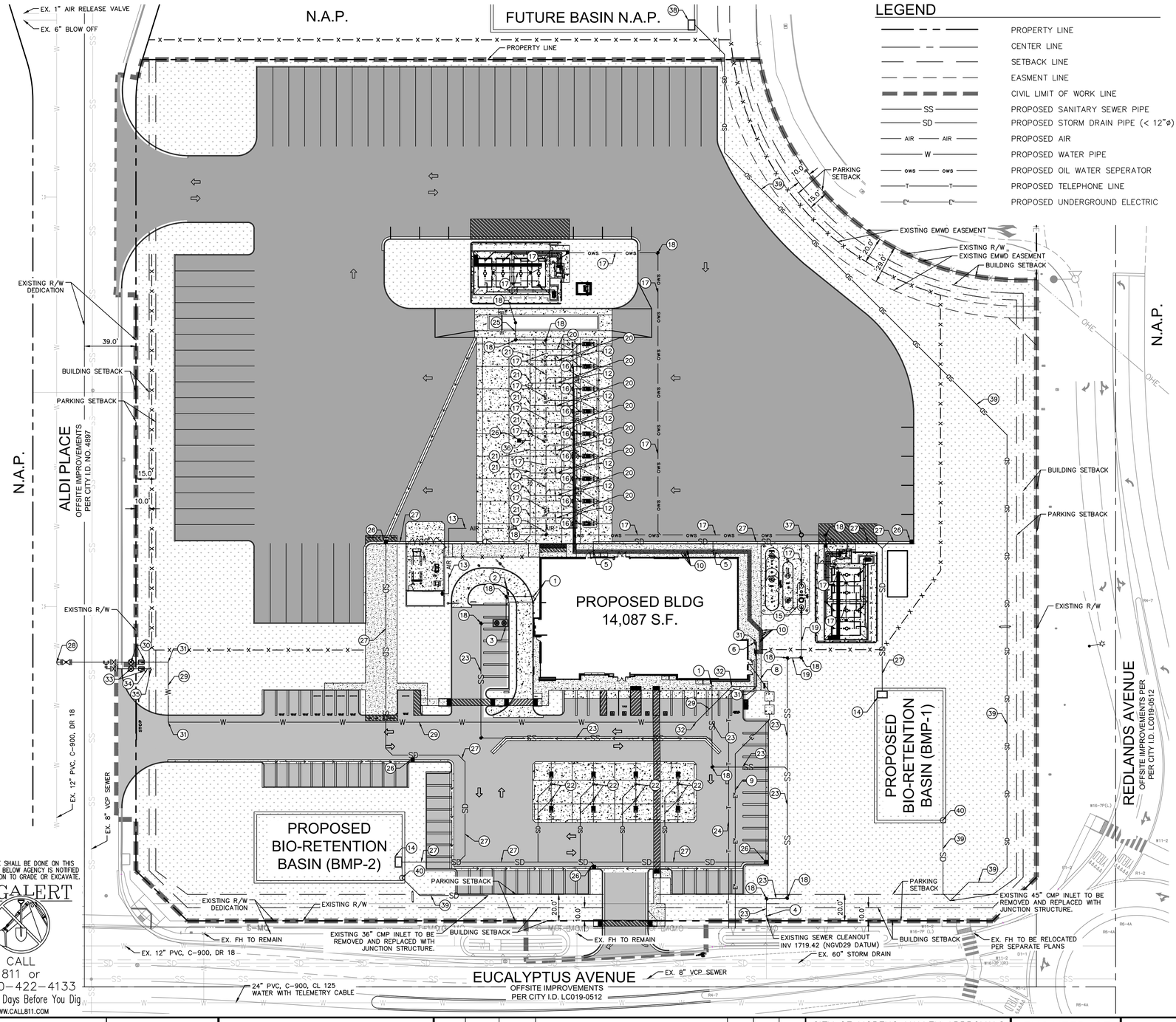
CITY OF MORENO VALLEY

PRECISE GRADING PLAN
PILOT MORENO VALLEY
PRECISE GRADING PLAN

SHEET 8 OF 8
CITY ID No.
LGRXX-XXXX



LEGEND

	PROPERTY LINE
	CENTER LINE
	SETBACK LINE
	EASMENT LINE
	CIVIL LIMIT OF WORK LINE
SS	PROPOSED SANITARY SEWER PIPE
SD	PROPOSED STORM DRAIN PIPE (< 12"ø)
AIR	PROPOSED AIR
W	PROPOSED WATER PIPE
OWS	PROPOSED OIL WATER SEPERATOR
T	PROPOSED TELEPHONE LINE
E	PROPOSED UNDERGROUND ELECTRIC

UTILITY PLAN CONSTRUCTION NOTES

1. CONTRACTOR TO CONNECT TO 6" BUILDING SANITARY SEWER LINE. (4.00' MIN. BELOW FF)
2. CONTRACTOR TO CONNECT 6" BUILDING SANITARY SEWER LINE FROM BUILDING TO THE GREASE TRAP. INVERT ELEVATION AT THE GREASE TRAP OUTLET PER PLAN.
3. INSTALL GREASE TRAP. REFER TO MEP PLANS FOR MORE INFORMATION.
4. CONNECT INTO EXISTING 6" SEWER STUB PER EMWD STANDARDS AND SPECIFICATION. GENERAL CONTRACTOR SHALL VERIFY INVERT ELEVATION AT CONNECTION PRIOR TO COMMENCEMENT OF WORK. GENERAL CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES.
5. CONTRACTOR TO CONNECT TO 6" BUILDING ROOF DRAIN. (1.50' MIN. BELOW FF).
6. CONTRACTOR TO CONNECT TO 2" WATER SERVICE LINE AT THE BUILDING. WATER SERVICE LINE SHALL BE COPPER.
7. CONTRACTOR TO CONNECT TO 3" GAS LINE AT THE BUILDING.
8. CONTRACTOR TO INSTALL ELECTRICAL SERVICE LINE FROM ELECTRICAL TRANSFORMER PAD TO BUILDING ELECTRICAL PANELS.
9. CONTRACTOR TO INSTALL AND/OR COORDINATE ELECTRICAL SERVICE LINE FROM ELECTRICAL TRANSFORMER TO THE LOCATION WHERE THE LOCAL UTILITY BRINGS SERVICE.
10. CONTRACTOR TO INSTALL 3/4" PEX WATER LINES INSIDE OF 2" PVC SLEEVES FROM BUILDING TO TRUCK FREEZE PROOF WATER STAND (FURNISHED AND INSTALLED BY CONTRACTOR) LOCATED AT EVERY OTHER TRUCK FUELING ISLAND. PEX AND PVC SLEEVE TO BE PROVIDED AND INSTALLED BY CONTRACTOR. SEE CIVIL SHEETS FOR DETAILS.
11. CONTRACTOR TO INSTALL 1/2" PEX WATER LINE INSIDE OF 2" PVC SLEEVE FROM BUILDING TO AUTO AIR/WATER STAND (TYP. (1) PLACE). PEX AND SLEEVE TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
12. INSTALL PREFABRICATED TRUCK ISLAND CATCH BASIN 2' BY 2' FOR OIL/WATER SEPARATION.
13. CONTRACTOR TO INSTALL 1/2" COPPER AIR LINE FROM AIR COMPRESSOR IN THE YARD MAINTENANCE BUILDING TO THE TRUCK AIR STAND LOCATED AT EVERY OTHER TRUCK FUELING ISLAND. SEE TC SHEETS FOR DETAILS.
14. CONSTRUCT SAND FOREBAY.
15. PROPOSED OIL/WATER SEPARATOR.
16. CONTRACTOR TO INSTALL 4" SCHEDULE 40 PVC PIPE AND GLUED FITTINGS FROM THE TRUCK CANOPY PAD CATCH BASIN – TYPICAL AT EACH DRAIN. NO "FERNCO" TYPE FITTINGS ALLOWED AT ANY PART OF THE OWS PIPING SYSTEM.
17. CONTRACTOR TO INSTALL 6" SCHEDULE 40 PVC PIPE AND GLUED FITTINGS FROM 4" PVC CATCH BASIN LINES TO INLET OF OIL/ WATER INTERCEPTOR. INVERT ELEVATION AT INTERCEPTOR INLET PER PLAN. NO "FERNCO" TYPE FITTINGS ALLOWED AT ANY PART OF THE OWS PIPING SYSTEM.
18. INSTALL CLEANOUT.
19. CONTRACTOR TO FURNISH AND INSTALL 6" SCHEDULE 40 PVC PIPE AND GLUED FITTINGS FROM OIL/WATER SEPARATOR TO THE SEWER PIPE. INVERT ELEVATION AT OIL/WATER SEPARATOR OUTLET PER PLAN. INVERT ELEVATION AT THE STORM POND INLET PER PLAN. NO "FERNCO" TYPE FITTINGS ALLOWED AT ANY PART OF THE OWS PIPING SYSTEM.
20. CONTRACTOR TO INSTALL 3" PVC FROM TRUCK CANOPY DRAINS. INVERT ELEVATION AT EACH ISLAND=1.25' BELOW CANOPY PAD FINISH GRADE.
21. CONTRACTOR TO INSTALL 6" PVC TRUNK LINE FROM 3" PVC CANOPY DRAIN LINES TO STORM WATER DRAINAGE.
22. CONTRACTOR TO INSTALL 3" PVC FROM AUTO CANOPY DRAINS. INVERT ELEVATION AT EACH ISLAND =1.25' BELOW CANOPY PAD FINISH GRADE.
23. INSTALL 6" SDR-35 PVC AT MINIMUM 1% SLOPE.
24. CONTRACTOR TO INSTALL (2) 4" PVC SCH 40 CONDUIT BURIED TO MIN. DEPTH OF 24" W/200 LB. PULL STRING AND CAPPED ON BOTH ENDS FOR TELEPHONE SERVICE, TO LOCATION WHERE LOCAL UTILITY BRINGS SERVICE. MINIMUM 3 FT. SWEEPING RADIUS (NO RIGHT ANGLES), NO MORE THAN THREE 90 DEGREE TURNS WITHOUT A PULL BOX (12"x12"x18" MINIMUM), AND PATHS LONGER THAN 300 FT. WILL REQUIRE A PULL BOX.
25. CONTRACTOR TO INSTALL 3" PVC FROM TRUCK SCALE SUMP TO 6" TRUNK LINE TO GRIT CHAMBER.
26. INSTALL 24" BY 24" JENSEN CATCH BASIN WITH FLOGARD INSERT FILTER.
27. INSTALL 12" HDPE STORM DRAIN PIPE.
28. HOT TAP INTO EXISTING 21" PVC WATER MAIN. CONTRACTOR TO COORDINATE WITH UTILITY SERVICE PROVIDER.
29. INSTALL 2-1/2" COPPER WATER SERVICE LINE. MAINTAIN 3' MINIMUM COVER.
30. INSTALL WATER METER AND BACKFLOW PREVENTOR. CONTRACTOR TO COORDINATE WITH UTILITY SERVICE PROVIDER.
31. INSTALL 90° DOMESTIC WATER PIPE BEND.
32. INSTAL 45° DOMESTIC WATER PIPE BEND.
33. INSTALL 1" IRRIGATION METER AND 1.5" BACKFLOW PREVENTOR. CONTRACTOR TO COORDINATE WITH UTILITY SERVICE PURVEYOR.
34. INSTALL 1" IRRIGATION WATER SERVICE LINE. CONTRACTOR TO COORDINATE WITH UTILITY SERVICE PURVEYOR.
35. REFER TO LANDSCAPE AND IRRIGATION PLANS FOR CONTINUATION.
36. INSTALL 6" HDPE STORM DRAIN PIPE.
37. INSTALL 36" MANHOLE BY JENSEN.
38. PROPOSED DRAINAGE STRUCTURE TO INTERCEPT OFFSITE FLOWS.
39. PROPOSED OVERFLOW STORM DRAIN PIPE.
40. PROPOSED OVERFLOW STRUCTURE.

WATER AND SEWER UTILITY NOTES

SEE SHEET 2, FOR WATER AND SEWER UTILITY NOTES.

FIRE SCOPE OF WORK

UNDERGROUND FIRE WATER SYSTEM IMPROVEMENTS INCLUDE XX LF OF PRIVATE FIRE WATER MAIN, X FIRE HYDRANTS, AND MISC APPURTENANCES.

FIRE SPRINKLER NOTE

FIRE AND SPRINKLER CONTRACTOR TO VERIFY SPRINKLER DEMAND AND CORRESPONDING FIRE SERVICE LATERAL SIZE PRIOR TO CONSTRUCTION.

EXISTING UTILITY NOTE

- THE EXISTING UTILITIES SHOWN ON THE PLAN ARE BASED ON AVAILABLE RECORDS. THE CONTRACTOR MUST FIELD DETERMINE THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO ANY CONSTRUCTION. REPORT DISCREPANCIES AND POTENTIAL CONFLICTS WITH PROPOSED UTILITIES TO ENGINEER PRIOR TO INSTALLATION OF ANY PIPING.
- ALL SHUT DOWN OF EXISTING WATER MAIN TO BE DONE BY AND COORDINATED WITH THE CITY UTILITY DIVISION. CONTRACTOR SHALL NOTIFY ALL AFFECTED WATER USERS 72 HOURS IN ADVANCE OF SHUT DOWN.

GENERAL NOTES

1. PRIOR TO ANY WORK PERFORMED IN THE RIGHT-OF-WAY A PERMIT FROM THE CITY OF MORENO VALLEY ENGINEERING DEPARTMENT IS REQUIRED.
2. ALL CATCH BASIN COVERS/GRATES AND CLEANOUT/MANHOLE COVERS EXPOSED TO VEHICULAR LOADS SHALL BE TRAFFIC RATED.
3. FOR TRENCHING, PIPE BEDDING & ROADWAY PAVEMENT REPAIRS DETAILS & SPECIFICATIONS, TRENCH AND BACKFILL PER EMWD STANDARDS AND SPECIFICATIONS.
4. STUB POINT OF CONNECTION 5' FROM BUILDING. REFER TO MEP PLAN FOR CONTINUATION OF BUIDING.
5. CONTRACTOR TO MAINTAIN A VERTICAL SEPARATION OF A MINIMUM OF 1-FOOT FOR ALL UTILITY CROSSINGS SHOWN ON THIS PLAN PER DETAIL X, SHEET XX.

BENCHMARK AND BASIS OF ELEVATION

THE BASIS OF ELEVATIONS IS THE METRO WATER DISTR OF SO. CALIFORNIA BENCHMARK STAMPED "IVF 55 1993" -DIRECTIONS: FROM THE INTERSECTION OF THE FREEWAY AND REDLANDS BLVD, NORTH ON REDLANDS BLVD, APPROX. 500 FEET (152.4 M) TO THE NORTHWEST CORNER OF REDLANDS BLVD AND SPRUCE ST. BENCHMARK IS LOCATED 43 FEET (13.1 M) WEST OF THE CENTERLINE OF REDLANDS BLVD. AND 29 FEET (8.8 M) NORTH OF THE CENTERLINE OF SPRUCE ST., IN TOP OF A 10 INCH WIDE BY 7.5 FEET (2.3 M) LONG CONCRETE HEADWALL AT WEST END. EL=1785.67, NAVD 88.

NORTH

GRAPHIC SCALE IN FEET
0 20 40 80
SCALE 1"=40'
WHEN PRINTED AT FULL SIZE (24" BY 36")

PENXX-XXXX

PERMIT # FWTXX-XXXX

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.

DIGALERT

CALL 811 or 1-800-422-4133 2 Working Days Before You Dig

WWW.CALL811.COM

BENCHMARK	BASIS OF BEARING
SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97-100 I.E. N00°27'05"E.

REVIEW BY CITY STAFF		
OFFICE	INITIAL	DATE
ENGINEERING DIVISION MANAGER		
LAND DEVELOPMENT		
PLANNING		
TRANSPORTATION		
PARKS AND COMMUNITY SERVICES		
SPECIAL DISTRICTS		
STORM WATER MANAGEMENT PRGM		

MARK	DATE	INITIAL	DESCRIPTION	REC	APPR	DATE
		EOR	REVISION			

CITY OF MORENO VALLEY APPROVALS

RECOMMENDED:

MICHAEL D. LLOYD, PE — DATE
ENGINEERING DIVISION MANAGER/ ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:

MICHAEL L. WOLFE, PE — DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL

REGISTERED PROFESSIONAL ENGINEER — SHEA-MICHAEL ANTI — RCE NO. 78274 — STATE OF CALIFORNIA — CIVIL

8/3/2021

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951-543-9868

UNDER THE SUPERVISION OF:

SHEA-MICHAEL ANTI
RCE C78274

8/3/2021
DATE

CITY OF MORENO VALLEY

BUILDING PERMIT PLANS
PILOT MORENO VALLEY
ONSITE UTILITY PLANS

SHEET 1 OF 2

CITY ID No.
LGRXX-XXXX

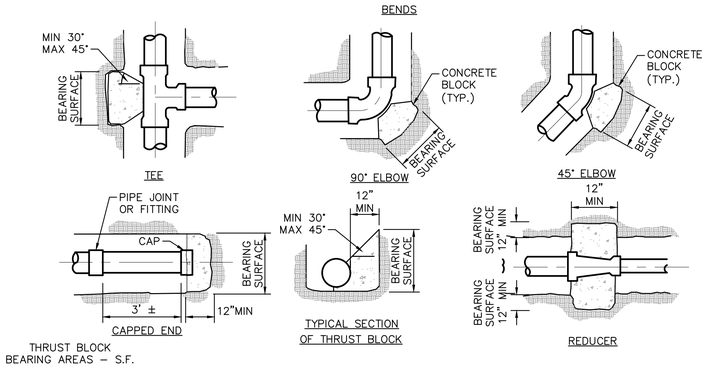
Plotted By: Alvarez, Leticia Sheet Set: Pilot Moreno Valley Layout: UTILITY PLAN August 03, 2021 11:45:53pm K:\RIV_LDEV\Pilot\095426008_pilot moreno valley\CADD\plansheets\Utility Plan\UT-095426008.dwg

FIRE NOTES

1. IDENTIFICATION SIGNS – A SIGN SHALL BE PROVIDED AT EACH VALVE TO INDICATE ITS FUNCTION AND WHAT IT CONTROLS (OS&Y, SECTIONAL AND PIV VALVES). FDC S SHALL BE LABELED "AUTO SPRINKLER, OPEN SPRINKLER, OR STANDPIPE AND SHOW THE APPROPRIATE ADDRESS AND PORTION OF THE BUILDING SERVED PER SECTION 6.6.1 & 5.9.5.6.
2. VALVE MONITORING – SHALL BE INSTALLED ON ABOVEGROUND DETECTOR CHECKS AND PIVS"
3. DEPTH OF COVER – SHALL BE AS FOLLOWS; IN LOCATIONS WHERE FROST IS NOT A FACTOR THE DEPTH OF COVER SHALL NOT BE LESS THAN 2–1/2 FT TO PREVENT MECHANICAL DAMAGE, IF PIPING IS INSTALLED UNDER DRIVEWAYS THE DEPTH SHALL BE NO LESS THAN 3 FT.
4. PRIVATE FIRE SERVICE MAINS – PRIVATE FIRE SERVICE MAINS AND APPURTENANCES SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 24, AND THE APPLICABLE PROVISIONS OF NFPA 13 PER 787 SECTION 508.21.
5. TIMING OF INSTALLATION – AN APPROVED PERMANENT WATER SUPPLY CAPABLE OF SUPPLYING THE REQUIRED FIRE FLOW FOR FIRE PROTECTION SHALL BE PROVIDED BY THE DEVELOPER PRIOR TO THE COMMENCEMENT OF CONSTRUCTION TO ALL PREMISES UPON WHICH BUILDINGS OF PORTIONS OF BUILDINGS ARE HEREAFTER CONSTRUCTED OR MOVED INTO OR WITHIN THE JURISDICTION OF RIVERSIDE COUNTY.
6. RISER CLEARANCE – "A NOMINAL GAP OF 4" AROUND ALL RISERS PASSING THROUGH FLOORS SHALL BE PROVIDED" UNLESS OTHERWISE SPECIFIED IN NFPA 13 SECTION 9.3.4.
7. NON–INDICATING VALVES – "A NON–INDICATING VALVE SUCH AS AN UNDERGROUND GATE VALVE WITH APPROVED ROADWAY BOX, COMPLETE WITH T–WRENCH, AND ACCEPTED BY THE AUTHORITY HAVING JURISDICTION, SHALL BE PERMITTED"
8. LICENSED CONTRACTOR – THESE PLANS ARE NOT VALID FOR INSTALLATION UNTIL A CALIFORNIA LICENSED CONTRACTOR IS APPROVED, A JOB CARD IS ISSUED, AND ALL LISTED PIPING MATERIALS ARE APPROVED BY THE RIVERSIDE COUNTY FIRE DEPARTMENT.
9. CONTRACTOR'S MATERIALS AND TEST CERTIFICATE – "BEFORE ASKING FINAL APPROVAL OF AN INSTALLATION BY THE AUTHORITY HAVING JURISDICTION, THE INSTALLING CONTRACTOR SHALL FURNISH A CONTRACTORS MATERIAL AND TEST CERTIFICATE, COUNTER SIGNED BY THE OWNER OR REPRESENTATIVE." A TYPICAL CERTIFICATE IS SHOWN IN FIGURE 10.10.1.
10. ENGINEER'S CERTIFICATION BLOCK – PLANS MUST BE SIGNED BY A REGISTERED LICENSED CIVIL ENGINEER OR CALIFORNIA CERTIFIED CONTRACTOR'S LICENSE WITH THE FOLLOWING CERTIFICATION: "I CERTIFY THAT THE DESIGN OF THE WATER SYSTEM IS IN ACCORDANCE WITH RIVERSIDE COUNTY FIRE DEPARTMENT PRESCRIBED REQUIREMENTS".
11. INSTALLER'S KNOWLEDGE – JOINTS SHALL BE ASSEMBLED BY PERSONS FAMILIAR WITH THE PARTICULAR MATERIALS BEING USED AND IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND SPECIFICATIONS PER SECTION 10.3.6.1.
12. BOLTED JOINTS – "ALL BOLTED JOINT ACCESSORIES SHALL BE CLEANED AND THOROUGHLY COATED WITH ASPHALT OR OTHER CORROSION–RETARDING MATERIAL AFTER INSTALLATION" PER SECTION 10.3.6.2.
13. FERROUS METAL – PIPING SHALL BE LINED AND, ADDITIONALLY, STEEL PIPE SHALL BE COATED AND WRAPPED. FOR BURIED PIPE, GALVANIZING, INTERNALLY OR EXTERNALLY, DOES NOT MEET THE REQUIREMENTS OF THIS SECTION 10.1.6.1.
14. ACCEPTANCE TESTING CRITERIA:
    - 14.1. VISUAL INSPECTION – ALL PRIVATE UNDERGROUND SYSTEMS SHALL BE INSPECTED PRIOR TO HYDROSTATIC TESTING.
    - 14.2. HYDROSTATIC TEST – ALL PRIVATE UNDERGROUND SYSTEMS SHALL HYDROSTATICALLY TESTED FOR A PERIOD OF NOT LESS THAN 2 HOURS AT 200PSI OR 50 OVER WORKING PRESSURE. PIPING MAY BE CENTER LOADED BUT, ALL BELLS AND THRUST BLOCKS SHALL BE EXPOSED FOR INSPECTION.
    - 14.3. FLUSH TEST – PRIOR TO CONNECTION OF THE ABOVE GROUND SPRINKLER PIPING A FLUSH SHALL BE WITNESSED BY RIVERSIDE COUNTY FIRE DEPARTMENT AND THE VELOCITY SHALL NOT BE LESS THAN 10 FEET PER SECOND IN ACCORDANCE WITH NFPA 24 2016 EDITION. UPON FIELD APPROVAL FOR THE UNDERGROUND THE CONTRACTORS MATERIAL AND TEST CERTIFICATE MUST BE PRESENTED COUNTER SIGNED BY THE OWNER.

WATER AND SEWER UTILITY NOTES

1. THE CONTRACTOR SHALL CONSTRUCT GRAVITY SEWER LATERALS, CLEANOUTS, GRAVITY SEWER LINES, AND DOMESTIC WATER AND FIRE PROTECTION SYSTEM AS SHOWN ON THESE PLANS. THE CONTRACTOR SHALL FURNISH ALL NECESSARY MATERIALS, EQUIPMENT, MACHINERY, TOOLS, MEANS OF TRANSPORTATION AND LABOR NECESSARY TO COMPLETE THE WORK IN FULL AND COMPLETE ACCORDANCE WITH THE SHOWN, DESCRIBED AND REASONABLY INTENDED REQUIREMENTS OF THE CONTRACT DOCUMENTS AND JURISDICTIONAL AGENCY REQUIREMENTS. IN THE EVENT THAT THE CONTRACT DOCUMENTS AND THE JURISDICTIONAL AGENCY REQUIREMENTS ARE NOT IN AGREEMENT, THE MOST STRINGENT SHALL GOVERN.
2. ALL EXISTING UNDERGROUND UTILITY LOCATIONS SHOWN ARE APPROXIMATE THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS FOR UTILITY LOCATION AND COORDINATION IN ACCORDANCE WITH THE NOTES CONTAINED IN THE GENERAL CONSTRUCTION SECTION OF THIS SHEET. THE CONTRACTOR SHALL ALSO SCOPE THE SEWER LINES ON SITE AND RECORD A DVD.
3. THE CONTRACTOR SHALL RESTORE ALL DISTURBED VEGETATION IN KIND, UNLESS SHOWN OTHERWISE.
4. DEFLECTION OF PIPE JOINTS AND CURVATURE OF PIPE SHALL NOT EXCEED THE MANUFACTURER'S SPECIFICATIONS. SECURELY CLOSE ALL OPEN ENDS OF PIPE AND FITTINGS WITH A WATERTIGHT PLUG WHEN WORK IS NOT IN PROGRESS. THE INTERIOR OF ALL PIPES SHALL BE CLEAN AND JOINT SURFACES WIPED CLEAN AND DRY AFTER THE PIPE HAS BEEN LOWERED INTO THE TRENCH. VALVES SHALL BE PLUMB AND LOCATED ACCORDING TO THE PLANS.
5. ALL PHASES OF INSTALLATION, INCLUDING UNLOADING, TRENCHING, LAYING AND BACK FILLING, SHALL BE DONE IN A FIRST CLASS WORKMANLIKE MANNER. ALL PIPE AND FITTINGS SHALL BE CAREFULLY STORED FOLLOWING MANUFACTURER'S RECOMMENDATIONS. CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE COATING OR LINING IN ANY D.I. PIPE FITTINGS. ANY PIPE OR FITTING WHICH IS DAMAGED OR WHICH HAS FLAWS OR IMPERFECTIONS WHICH, IN THE OPINION OF THE ENGINEER OR OWNER, RENDERS IT UNFIT FOR USE, SHALL NOT BE USED. ANY PIPE NOT SATISFACTORY FOR USE SHALL BE CLEARLY MARKED AND IMMEDIATELY REMOVED FROM THE JOB SITE, AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
6. WATER FOR FIRE FIGHTING SHALL BE AVAILABLE FOR USE PRIOR TO COMBUSTIBLES BEING BROUGHT ON SITE.
7. ALL UTILITY AND STORM DRAIN TRENCHES LOCATED UNDER AREAS TO RECEIVE PAVING SHALL BE COMPLETELY BACK FILLED IN ACCORDANCE WITH THE GOVERNING JURISDICTIONAL AGENCY'S SPECIFICATIONS. IN THE EVENT THAT THE CONTRACT DOCUMENTS AND THE JURISDICTIONAL AGENCY REQUIREMENTS ARE NOT IN AGREEMENT, THE MOST STRINGENT SHALL GOVERN.
8. CONTRACTOR SHALL PERFORM, AT HIS OWN EXPENSE, ANY AND ALL TESTS REQUIRED BY THE SPECIFICATIONS AND/OR ANY AGENCY HAVING JURISDICTION. THESE TESTS MAY INCLUDE, BUT MAY NOT BE LIMITED TO, INFILTRATION AND EXFILTRATION, TELEVISION INSPECTION AND A MANDREL TEST ON GRAVITY SEWER. A COPY OF THE TEST RESULTS SHALL BE PROVIDED TO THE UTILITY PROVIDER, OWNER AND JURISDICTIONAL AGENCY AS REQUIRED.
9. THE EXISTING UTILITIES SHOWN ON THE PLAN ARE BASED ON AVAILABLE RECORDS. THE CONTRACTOR MUST FIELD DETERMINE THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO ANY CONSTRUCTION. REPORT DISCREPANCIES AND POTENTIAL CONFLICTS WITH PROPOSED UTILITIES TO ENGINEER PRIOR TO INSTALLATION OF ANY PIPING.
10. DIMENSIONS PROVIDED ARE TO OUTSIDE PIPE DIAMETERS.
11. ALL WATER LINES ARE TO BE BURIED A MINIMUM OF 40" DEEP, MEASURED TO TOP OF PIPE.
12. WATER PIPE TRENCHING PER CITY OF MORENO VALLEY TYPICAL TRENCH/ PIPE ZONE BACKFILL SCHEMATIC STANDARD W–36.
13. SEWER PIPE TRENCHING PER CITY OF MORENO VALLEY TYPICAL TRENCH/ PIPE ZONE BACKFILL SCHEMATIC STANDARD W–36.
14. CONFIRM UTILITY TIE–IN POINTS IN FIELD AND WITH MEP PLANS PRIOR TO CONSTRUCTION.



THRUST BLOCK BEARING AREAS – S.F.

NOTES:
1. ALL THRUST/ANCHOR BLOCKS SHALL BEAR AGAINST UNDISTURBED SOIL.
2. CONCRETE SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI.
3. ALL ANCHOR RODS AND ANCHOR BOLTS SHALL BE MINIMUM 1/2" DIA. & ANCHOR STRAPS SHALL BE 1/2" X 2" BAR.
4. THRUST BLOCK DESIGN IS BASED ON A WATER PRESSURE OF 200 P.S.I., AND A MAXIMUM ALLOWABLE SOIL BEARING VALUE OF 1500 P.S.F.
5. THE RATIO OF WIDTH TO HEIGHT OF THRUST BLOCKS SHALL NOT EXCEED 1.5 TO 1.

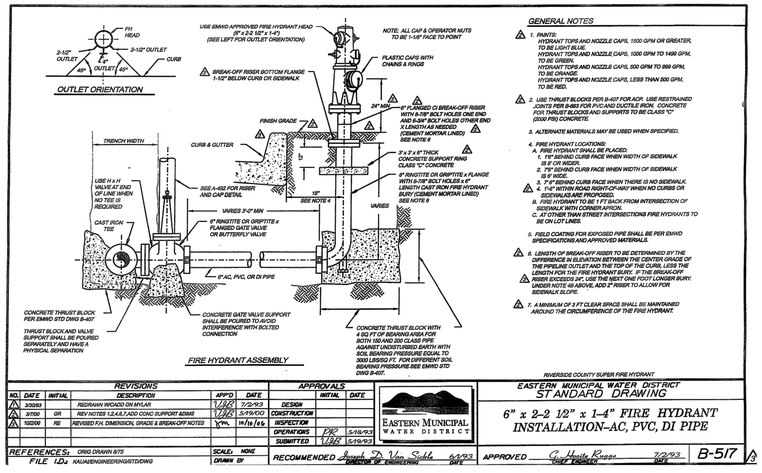
THRUST BLOCK DETAILS

NOT TO SCALE

NFPA 24 Thrust Block Tables

(A.10.8.2 & Figure A.10.8.2)
Based on 200psi internal water pressure
1,500psf soil bearing pressure
Square Feet = {[(Thrust force * (1.5 Safety Factor)]/Soil Bearing Strength}

	Pipe Size	Dead End "T"	90	45	22 1/2
Thrust Forces	4"	3,620	5118	2770	1412
Square Feet		3.62	5.118	2.8	1.4
H x W		2 x 2	2 x 3	1.5 x 2	1 x 1.6
Thrust Forces	6"	7,478	10,576	5,724	2,918
Square Feet		7.5	10.6	5.7	2.9
H x W		2'6 " x 3	3 x 4	2 x 3	1'6" x 2
Thrust Forces	8"	12,866	18,194	9,846	5,020
Square Feet		12.9	18	9.8	5
H x W		3 x 4'6"	3'6" x 5'6"	3 x 3'6"	2 x 2'6"
Thrust Forces	10"	19,354	27,370	14,812	7,552
Square Feet		19.5	27.5	15	8
H x W		4 x 5	5 x 6	3 x 5	2'6" x 3'6"
Thrust Forces	12"	27,370	38,706	20,948	10,680
Square Feet		27.5	39	21	11
H x W		5 x 6	5 x 8	4 x 5'6"	3 x 4



FIRE HYDRANT DETAIL

NOT TO SCALE

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DIGALERT

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2 Working Days Before You Dig
WWW.CALL811.COM

PENXX–XXXX PERMIT # FWTXX-XXXX

BENCHMARK	BASIS OF BEARING
SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97–100 I.E. N00°27'05"E.

REVIEW BY CITY STAFF		
OFFICE	INITIAL	DATE
ENGINEERING DIVISION MANAGER		
LAND DEVELOPMENT		
PLANNING		
TRANSPORTATION		
PARKS AND COMMUNITY SERVICES		
SPECIAL DISTRICTS		
STORM WATER MANAGEMENT PRGM		

MARK	DATE	INITIAL	DESCRIPTION	REC	APPR	DATE
		EOR	REVISION			

CITY OF MORENO VALLEY APPROVALS

RECOMMENDED:
MICHAEL D. LLOYD, PE — DATE
ENGINEERING DIVISION MANAGER/ ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:
MICHAEL L. WOLFE, PE — DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL
REGISTERED PROFESSIONAL ENGINEER — SHEA–MICHAEL ANTI — RCE NO. 78274 — CIVIL — STATE OF CALIFORNIA
8/3/2021

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951–543–9868
UNDER THE SUPERVISION OF:
SHEA–MICHAEL ANTI RCE C78274 — 8/3/2021 DATE

CITY OF MORENO VALLEY

BUILDING PERMIT PLANS
PILOT MORENO VALLEY
ONSITE UTILITY PLANS DETAILS

SHEET 2 OF 2
CITY ID No. LGRXX–XXXX

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

WQMP Project Report

County of Riverside Stormwater Program

Santa Ana River Watershed Geodatabase

Tuesday, March 23, 2021

Note: The information provided in this report and on the Stormwater Geodatabase for the County of Riverside Stormwater Program is intended to provide basic guidance in the preparation of the applicantï¿½s Water Quality Management Plan (WQMP) and should not be relied upon without independent verification.

Project Site Parcel Number(s):	488330037, 488330036, 488330038, 488330030, 488330035
Latitude/Longitude:	33.9371, -117.1582
Thomas Brothers Page:	
Project Site Acreage:	12.60
Watershed(s):	SANTA ANA
This Project Site Resides in the following Hydrologic Unit(s) (HUC):	**HUC Name** - HUC Number **Moreno Valley** - 180702020304
The HUCs Contribute stormwater to the following 303d listed water bodies and TMDLs which may include drainage from your proposed Project Site:	**WBID Name** - WBID Number **Canyon Lake (Railroad Canyon Reservoir)** - CAL8021100019990208151525 **Elsinore, Lake** - CAL8023100019990208151100
These 303d listed Water bodies and TMDLs have the following Pollutants of Concern (POC):	**Bacterial Indicators** - Pathogens **Nutrients** - Nutrients, Organic Enrichment/Low Dissolved Oxygen **Other Organics** - PCBs (Polychlorinated biphenyls) **Toxicity** - Sediment Toxicity, Unknown Toxicity
Is the Site subject to Hydromodification:	Yes
Limitations on Infiltration:	**Project Site Onsite Soils Group(s)** - A **Known Groundwater Contamination Plumes within 1000'** - No **Adjacent Water Supply Wells(s)** - No information available please contact your local water agency for more information. Your local contact agency is EASTERN MUNICIPAL W.D.. Your local wholesaler contact agency is METROPOLITAN WATER DISTRICT.
Environmentally Sensitive Areas within 200'(Fish and Wildlife Habitat/Species):	None

Environmentally Sensitive Areas within 200'(CVMSHCP):	None
Environmentally Sensitive Areas within 200'(WRMSHCP):	Burrowing Owl Survey Required Area
Groundwater elevation from Mean Sea Level:	1566
85th Percentile Design Storm Depth (in):	0.667
Groundwater Basin:	San Jacinto-Lower Pressure
MSHCP/CVMSHCP Criteria Cell (s):	No Data
Retention Ordinance Information:	No Data
Studies and Reports Related to Project Site:	Comprehensive Nutrient Reduction Plan IBI Scores - Southern Cal bulletin118_4-sc water_fact_3_7.11 8039-SAR-Hydromodification Moreno MDP West San Jacinto GW Basin Management Plan Moreno ADP Report Moreno ADP Map

United States Department of Agriculture

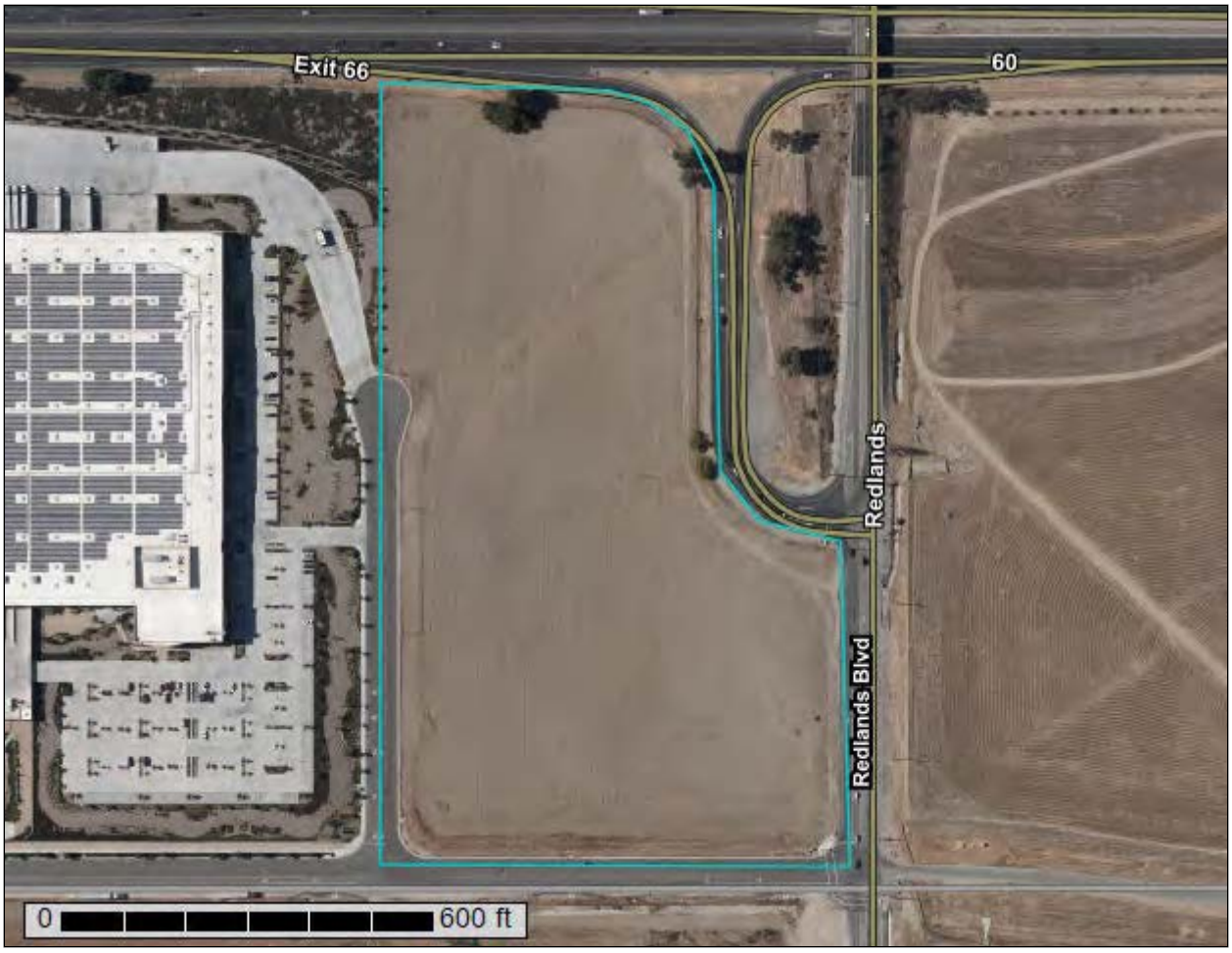
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Western Riverside Area, California

Pilot Moreno Valley



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:2,250 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 13, May 27, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 25, 2019—Jun 25, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
SeC2	San Emigdio fine sandy loam, 2 to 8 percent slopes, eroded	9.6	53.2%
SgC	San Emigdio loam, 2 to 8 percent slopes	8.5	46.8%
Totals for Area of Interest		**18.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Western Riverside Area, California

SeC2—San Emigdio fine sandy loam, 2 to 8 percent slopes, eroded

Map Unit Setting

National map unit symbol: hcys
Elevation: 600 to 1,800 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 220 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

San emigdio and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Emigdio

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 40 inches: fine sandy loam
H3 - 40 to 60 inches: stratified sandy loam to silt loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: R019XD029CA
Hydric soil rating: No

Minor Components

Metz

Percent of map unit: 10 percent

Hydric soil rating: No

San timoteo

Percent of map unit: 5 percent
Hydric soil rating: No

SgC—San Emigdio loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: hcyx
Elevation: 600 to 1,800 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 220 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

San emigdio and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Emigdio

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 40 inches: fine sandy loam
H3 - 40 to 60 inches: stratified sandy loam to silt loam

Properties and qualities

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Depth to restrictive feature: More than 80 inches
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Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
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Land capability classification (irrigated): 2e

Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: R019XD029CA
Hydric soil rating: No

Minor Components

Metz

Percent of map unit: 10 percent
Hydric soil rating: No

San timoteo

Percent of map unit: 5 percent
Hydric soil rating: No

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GEOTECHNICAL EVALUATION REPORT

MORENO VALLEY
TRUCK STOP MODEL

AT

SOUTH OF FREEWAY 60 &
WEST OF REDLANDS BOULEVARD
MORENO VALLEY, CALIFORNIA 92553

PREPARED FOR:

BROADBENT, INC.
WEST PACIFIC AVENUE
HENDERSON, NEVADA, 89015

PROJECT NO: G-5852-01

FEBRUARY 26, 2021

PREPARED BY:

GEOTECHNICAL SOLUTIONS, INC.
GEOTECHNICAL & ENVIRONMENTAL
ENGINEERING

Geotechnical Solutions, Inc.
Geotechnical, Structural & Environmental Engineering

February 26, 2021

Project No: G-5852-01

Broadbent, Inc.
8 West Pacific Avenue
Henderson, Nevada, 89015

Attention: Mr. Mark E. Kazelskis, PG, CHG, CEM
Principal Geologist

Via Email: mkazelskis@broadbentinc.com

Re: Geotechnical Engineering Evaluation Report
Truck Stop – Moreno Valley Pilot # 1316
South of Freeway 60 &
West of Redlands Boulevard
Moreno Valley, California 92553

Gentlemen:

Submitted herewith is the report of the Geotechnical Engineering evaluation study conducted by this office for Moreno Valley Truck Stop Model Pilot # 1316 at the referenced site.

The project site is located just northwest of Redlands Boulevard and Eucalyptus Avenue Intersection and south of Moreno Highway 60 in Moreno Valley, California as shown on Vicinity Map (Plate A) and Google Map (Plate D).

Based on our study findings, it is our opinion that the site is suitable for the proposed development from a geotechnical-engineering standpoint, provided that the recommendations of this report are successfully implemented.

The investigation was made in accordance with generally accepted geotechnical engineering principles and procedures and included such field and laboratory tests considered necessary in the circumstances.

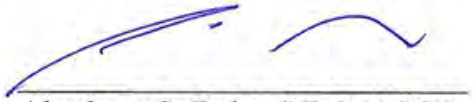
In the opinion of the undersigned, the accompanying report has been substantiated by data, observations, analysis, and opinions and presents fairly the design information requested by you.

This completes our scope of services for the initial design phase of the project. We have appreciated this opportunity to be of service to you on this project.

Respectfully Submitted,

Geotechnical Solutions, Inc.

Dharma Shakya, PhD, PE, GE
Principal Geotechnical Engineer



Abraham S. Baha, PE, MASCE
Sr. Principal

Distribution: (3 +pdf) Addressee

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Purpose and Scope

The primary objectives of this study were to explore subsurface conditions beneath the project site and evaluate the existing earth materials relative to foundation support and lateral pressure design factors, seismic conditions and earthquake-induced liquefaction potential.

In general, the study objectives were met by a visual reconnaissance of the site and vicinity, review of available tentative development plans, exploratory drilling and sampling of earth materials, laboratory testing, seismic evaluations, geologic hazards study, and engineering analysis. The general scope and objectives of the study were established in collaboration with the client/project team. Items considered in our study relevant to this site included the following:

- Near surface and subsurface soil types,
- Expansion potential,
- Settlement and hydro-collapse potential,
- Bearing capacity and Foundation Design Parameters,
- Slabs-on-grade,
- Lateral earth pressures,
- Drainage considerations,
- Temporary excavation support,
- Corrosion potential,
- Groundwater conditions,
- Likely excavation conditions,
- Seismic Conditions,
- Earthquake induced liquefaction potential,

- Pavements,
- Grading considerations, and
- Construction observation and testing considerations.

To address these, the following scope of work was executed:

1. Review of preliminary project plans, available documents, and coordination with the owner's representatives and project design professionals.
2. Site reconnaissance.
3. Evaluation of seismic conditions for the subject location.
4. Hollow Stem Auger drilling, sampling and logging of ten test holes to investigate subsurface conditions.
5. Laboratory testing of soil samples obtained from subsurface explorations, to determine their physical and engineering properties.
6. Geotechnical analysis of the data obtained.
7. Developing conclusions and recommendations for foundation design.
8. Preparation of this report.

1.2 Project Description

Based on the information provided, the proposed Truck Stop will have total site area of 10.21 acres and will consist of mainly constructing the Hydrogen tank and Equipment, above ground storage tanks (ASTs – east and west), building, truck diesel canopy, 0.62 acre pond, gas canopy, cat scale, and truck approach at the location shown on Plot Plan and Boring Location Map (Plate B in Appendix A).

Also, the project consists of heavy duty asphalt pavement for parking and driveways with some rigid concrete pavement sections to accommodate 59 auto parking and 55 truck parking.

1.3 Site Description and Topography

The project site is located just southwest of Redlands Boulevard and Eucalyptus Avenue Intersection and south of Moreno Highway as shown on Vicinity Map (Plate A) and Google Map (Plate D) in Appendix A. At the time of our field exploration, the site was vacant and covered with grass all around.

No hilly terrain or drainage problems exist at the subject property.

1.4 Site Geologic Setting

The City of Moreno Valley lies primarily on bedrock known as the Perris Block. This structural unit is located within the peninsular Range Geomorphic Province, one of the major geologic provinces of Southern California. The Perris Block is a large mass of granitic rock generally bounded by the San Jacinto Fault, the Santa Ana River and a non-defined southwest boundary. The Perris Block has had a history of vertical land movements of several thousand feet due to shifts in the Elsinore and San Jacinto Faults.

The most significant geologic hazard to the project is the potential for moderate to severe ground shaking resulting from earthquakes generated on the faults close to the site. The site is not located in an Alquist-Priolo Special Studies zone for earthquake rupture hazard. The potential for direct surface fault rupture in the project area is considered very low.

1.5 Other Geologic Hazards

Since the site is located in a relatively flat area, we do not consider landslides or other forms of natural slope instability to represent a hazard to the project. The site is not located near any impounded bodies of water therefore tsunamis and seiches are not

considered a potential hazard to the project. The proposed project is an area of stable soil conditions with low shrink-swell potential; hence, no impact is anticipated.

In addition to possible strong earthquake ground motion at the site, the secondary effects of earthquake-induced liquefaction, and earthquake-induced landsliding, were considered. Guidelines for evaluating and mitigation seismic hazards in California (CGS, 2008, SP-117A) summarize procedures for evaluating the earthquake-induced landslide and liquefaction potential.

1.5.1 Earthquake-Induced Liquefaction

The site has not been evaluated for earthquake-induced liquefaction potential as per California Geologic Survey (Plate F, Appendix A). Liquefaction is discussed in more detail in the proceeding sections.

1.5.2 Induced Flooding

The site lies far and/or high enough from the coast or large inland body of water to preclude the hazards of tsunami or seiche waves or inundation from the rupture of an up gradient reservoir.

1.5.3 Eathquake-Induced Landsliding

The site has not been evaluated by California Geologic Survey (CGS) for earthquake-induced landsliding potential. Since the site is far enough from steep slopes, landsliding will be unlikely.

2.0 FIELD EXPLORATION

2.1 Scope

Ten (10) hollow stem auger borings were drilled to depths varying from 11.5 feet to 51.5 feet below the existing site ground level in the proposed development areas. The borings,

B-1 through B-10 are shown on the Plot Plan and Boring Location Map (Plate B) in Appendix A. A continuous record of the materials encountered during the drilling was made by our field engineer and Log of all the test borings are presented on Appendix A

2.2 Drilling and Sampling Procedures

A truck-mounted CME-85 drill rig using 8-inch diameter hollow-stem augers was used to advance the borings.

The lines designating the interface between soil strata on the log of Test Holes represent approximate boundaries. The transition between strata may be gradual. Undisturbed samples were secured at frequent intervals from various locations for laboratory testing.

Core samples and bulk samples were secured at frequent depth intervals for laboratory examination and testing. Both California standard ring samples (CA) and split spoon samples with Penetration test (SPT) blow counts were obtained for further evaluation. Disturbed bulk samples, representative of the surficial subgrade materials were also obtained.

The relative sampler penetration resistance (SPT) exhibited by the deposits sample is tabulated in the Blow per Foot column of the pertinent test hole log. Recorded blow counts for 12 inches of sampler penetration were generally indicative of medium to high shear resistance (140 pounds hammer at a 30-inch drop).

2.3 Field Tests and Measurements

The test holes were examined and logged in the field. Representative samples were obtained to classify the soils. The Unified Soil Classification System (USCS) was used to classify the soils. The soil classification symbols appear on the boring logs and are briefly described in Appendix A. Local and regional geologic characteristics were used to estimate the seismic design criteria.

In addition, relatively undisturbed California ring samples were obtained for laboratory testing. The attached logs tabulate data based on laboratory classification tests and visual observation by the field geologist at the site.

2.4 Standard Penetration Resistance

A sediment is considered to be susceptible to transformation to a fluid mass during a strong seismic event only if the packing of the grains (relative density) is relatively low. Sediments with high relative densities cannot reduce their total volume through the compactive effort induced by the ground shaking. The number of blows necessary to drive a standard sampler (1½" I.D.)-12 inches into the individual stratum is a measurement of a specific property that has been correlated to relative density. The sampling (penetration) resistance offered by sediment from successive blows delivered by a 140-pound hammer falling 30 inches is counted. The number of blows to drive the standard sampler full 12 inches is recorded as the N-Value.

The on-site material yielded penetration resistance which indicates loose to medium dense to dense silty sand/sand to medium stiff to stiff sandy silt with some clay were encountered within the boring depth. The standard penetration resistances of the on-site materials at 5-feet intervals are presented on the boring logs (Appendix A).

3.0 LABORATORY TESTING AND SUMMARY METHODS

Laboratory testing was programmed following a review of field investigation data and after considering the various foundations, floor slabs, and grading elements to be evaluated. In general, this includes physical testing to establish foundation-bearing characteristics, and classification tests.

A. In-Place Moisture & Density (ASTM D2216 & D2937)

In situ moisture content and density were determined for all the undisturbed core samples

obtained during test boring drilling operations. Test results are tabulated on Plates I-1 through I-10, Log of Test Hole.

B. Mechanical Analysis (ASTM D422)

The texture composition of a selected typical sample determined by the hydrometer test method was as follows:

Boring No.	Depth (Feet)	Percent Sand	Percent Silt	Percent Clay
B-3	0-3	46	34	20
B-7	0-3	51	31	18
B-8	0-3	46	31	23

C. Direct Shear (ASTM D3080)

Direct shear tests were performed on undisturbed natural samples of soil encountered within the full depth explored and was considered most pertinent in the design of mat/ spread footings, and moderately deep pier. Tests were performed in the saturated condition at the field density. Individual test results are shown on Plate J.

D. Expansion (ASTM D4829)

Expansion characteristics were determined by the Expansion Index test on a typical bulk sample considered to be generally representative of the near subgrade soils. Test results were as follows:

Test Boring No.	Moisture Content (%)	Dry Density (pcf)	Expansion Index	Remarks
B-8	11.2	104.8	18	Very Low Expansive

According to the test results, the underlying soils generally exhibit very low expansive potential.

E. Consolidation (ASTM D2435)

Consolidation (load deformation) tests were performed on undisturbed samples at selected depths. Plotted test results are presented on Plates K through M.

F. Chemical Sulfate Analysis (CAL 417-A Method)

Chemical sulfate analysis was performed on a representative sample by the CAL 417-A method. A soluble sulfate of 420 parts per million was indicated, which is negligible exposure to concrete, however we recommend using Type II Portland cement for the foundation elements in contact with the underlying soil.

G. R-Value Test (ASTM D-2844)

Representative samples of the subgrade soils were obtained and tested to determine the R-value. The material is thought to be typical and presumed to be representative of the subgrade soils. Testing was performed in general accordance with the latest revisions to the Department of Transportation, State of California, Material & Research Test Method No. 301. Pavement design recommendations are based on the latest Traffic Indices (TI's) and recently tested R-value.

An R-Value test was conducted on a representative sample of the near surface soil consisting of clayey sand with trace of silt. The specimens were tested in a state as near to full saturation as possible to simulate the condition the soil might attain at typical field density and under adverse moisture conditions. The R-Value for a representative soil was determined to be 30. Test results are as follows:

The R-Value for a representative soil was determined to be 30. Test results are as follows:

Test Number	Moisture @ Compaction (%)	Density (pcf)	Exudation Pressure (psi)	Stabilometer "R"-Value
a	12.0	119.3	200	24
b	11.1	120.	350	33
c	10.7	121.8	470	40

* Interpolated 300 psi by Exudation , Rv = 30

4.0 SUBSURFACE DISCUSSION

4.1 General

The recommendations presented are based on entirely upon data derived from a limited number of samples obtained from widely spaced borings. The attached logs, B-1 through B-10 presented in Appendix A are indicators of subsurface conditions only at the specific locations and times noted. This report assumes the uniformity of the geology and soil structure between the borings, however variations can and often do exist. Whenever there is any deviation, difference or change is encountered or becomes known, we should be contacted.

4.2 Material and Soil Conditions Summary

No appreciable artificial fill was encountered at the boring locations during the exploratory drilling. The upper and underlying natural soils are alluvium, light gray, slightly moist to moist, generally fine to very fine grained, medium dense to dense, silty sand and sandy silt, medium stiff to stiff. A more detailed soil profiles are shown on Plates I-1 through I-10, Log of Test Hole (Appendix A).

4.3 Groundwater

Surface water on this site is the likely result of precipitation or surface run-off from surrounding sites. Overall site drainage is in a south and southwesterly direction.

Provisions for surface drainage will need to be accounted for by the project civil engineer.

We recommend that all surface runoff should not be allowed to pond above or flow freely over adjacent slope surfaces. Collected water should be conveyed via a non-erosive device to a suitable storm drain system.

Groundwater was not encountered within a drilled hole depth of 51.5-feet during the field study. No springs or perennial stream flow in local drainages exist based on older topographic maps. We believe the historic groundwater depth is way deeper than 50-feet below existing ground surface.

Groundwater is not anticipated to affect the site adversely. However, these observations reflect site conditions at the time of the investigation and do not preclude changes in local groundwater conditions, localized seepage due to variations in rainfall, heavy irrigation, damaged structure (pipes, etc.), or altered site drainage pattern(s).

Proper surface drainage is imperative to collect and convey any surface water off site to a suitable storm drain system.

4.4 Faulting and Seismicity

The project site is located in the highly seismic Southern California region within the influence of several fault systems that are considered to be active or potentially active. An active fault is defined by the State of California as a "sufficiently active and well defined fault" that has exhibited surface displacement within the Holocene time (about the last 11,000 years).

A potentially active fault is defined by the State as a fault with a history of movement within Pleistocene time (between 11,000 and 1.6 million years ago).

No faults have been mapped trending towards or through the site area. The site area does not lie within an Alquist-Priolo Earthquake Fault Zone as designated by the California

Geological Survey (CGS) (Hart, 1997). For this reason, the potential for direct surface rupture is considered unlikely.

4.4.1 Faults Close to the Site

USGS National Seismic Hazard Maps for Source parameters interactive query has been used to determine the closest fault to the site within 50 miles and has been tabulated on Table – 1 in Appendix B.

The closest known active fault capable of producing a major earthquake is the San Jacinto (SBV+SJV+A) Fault, which is located about 1.03 miles (1.6 km) away from the site. The San Jacinto (SBV+SJV+A) Fault has been assigned to 7.63 Mw magnitude and slip rate of N/A.

4.4.2 U.S.G.S. Earthquake Hazard Program

Latest Interactive U.S.G.S. Earthquake Hazard Program using Unified Hazard Tool has been utilized for Conterminous U.S. 2008 (v3.2.x) and peak ground acceleration.

Peak Horizontal Ground Acceleration for 10% probability of exceedance in 50 years i.e. return period of 475 years	0.6345g
Peak Horizontal Ground Acceleration for 5% probability of exceedance in 50 years i.e. return period of 975 years	0.8106g
Peak Horizontal Ground Acceleration for 2% probability of exceedance in 50 years i.e. return period of 2,475 years	1.0575g

Interactive **Hazard Curve** and **Uniform Hazard Response Spectrum** have been plotted and presented in Appendix B.

4.4.3 Seismic Factors

The following are the geotechnical parameters for earthquake design data in accordance with USGS Design Maps Summary and Detailed Report presented in Appendix B:

Latitude: **33.9364**^{0} and Longitude: **-117.1581**^{0}

NO.	PARAMETERS	VALUES	REFERENCE
1	0.2-Second Mapped Spectral Response Accelerations, **S_s (MCE_R Ground Motion)**	**2.225g**	ASCE 7-16
2	1-Second Mapped Spectral Response Accelerations, **S_1 (MCE_R Ground Motion)**	**0.900g**	ASCE 7-16
3	Site Class	**D**	ASCE 7-16
4	Site Amplification Factor at 0.2 sec, **F_a** According to Section 11.4.4, F_a should not be less than 1.2	**1.0** 1.2	ASCE 7-16 Use
5	Site Amplification Factor at 1.0 sec, **F_v,** however, according to Table 11.4.2, **F_v should be 1.7**	**Null** 1.7	ASCE 7-16 Use
6	Site Modified Spectral Acceleration Value, S_{MS} $S_{MS} = F_a S_s = 1.2 \times 2.225 = 2.670$	**2.670g** 2.670g	ASCE 7-16 Use
7	Site Modified Spectral Acceleration Value, S_{M1} **$SM_1 = F_v S_1 = 1.7 \times 0.900 = 1.530$**	**Null** 1.530g	ASCE 7-16 Use
8	Numeric Seismic Design value at 0.2 sec SA, **S_{DS} = 2/3 of S_{MS} = 2/3 x 2.670 = 1.780**	**1.780g** 1.780g	ASCE 7-16 Use

9	Numeric Seismic Design value at 1.0 sec SA, **S_{D1} = 2/3 of SM_1 = 2/3 x 1.530 = 1.020g**	**Null** **1.020g**	ASCE 7-16 Use

Other seismic parameters are as follows:

Closest Fault Distance	1.03 miles (1.65 km)
Fault Name	San Jacinto (SBV+SJV+A) Fault
Earthquake Magnitude	7.63 M_w
Slip Rate (mm/year)	N/A
PGA_M Site Modified Peak Ground Acceleration	**1.172g**
5% Damped Design Spectral Acceleration at short period, S_{DS}	**1.780g**
5% Damped Design Spectral Acceleration at 1-sec period, S_{D1}	**1.020g**
Seismic Design Category	E
Risk Category	II
Soil Site Class	D

4.5 Design Values

Representative values were selected from the test data and other sources for design and is tabulated below:

Field Density	120 pcf
Expansion Index	18
Angle of Internal Friction (Ult/Peak)	30/31 & 33/34 deg.
Cohesion (Ult/Peak)	350/400 & 200/250 psf
Subgrade K-Value	100 pci

5.0 SITE CONSIDERATIONS

5.1 Site Preparation

5.1.1 General

It is our professional opinion that the proposed construction will not be subject to geologic hazard from settlement, slippage, or landslide, provided the recommendations of this report are incorporated into the proposed construction. It is also our opinion that the proposed construction will not adversely affect the geologic stability of the site or adjacent properties provided the recommendations contained in this report are incorporated into the proposed construction.

The validity of the conclusions contained in this report is based on compliance with the recommendations presented in this section. Any excavating, trenching, or disturbances that occur after completion of the earthwork must be backfilled, compacted and tested in accordance with the recommendations contained herein. If any unobserved and untested earthwork, trenching, or backfilling occurs, then the conclusions and recommendations in this report may not be relied on.

5.1.2 Site Clearing

Prior to grading, all debris including construction materials should entirely be removed from the site and disposed of off-site. Existing any undesirable materials should also be removed and hauled off-site. Existing utilities (if Any) should be removed and relocated as required. Any construction debris or ant buried or other contaminated exposed during site clearance should be removed and hauled away from the site. The resulting excavation from any removal should be cleared of loose material then backfilled with compacted soil. Oversized rocks greater than 6 inches should be removed.

5.1.3 Excavation

Excavations into the on-site soils may encounter a variety of conditions. Caving on clean sands may be encountered. The contractor should be made responsible for designing and constructing stable, temporary excavations as required to maintain stability of the excavation sides. All excavations should be sloped or shored in the interest of safety following local and federal regulations including current OSHA excavation and trench safety standards.

Conventional equipment can be used for the excavations for shallow foundations, drilled shafts, and utility trenches for the proposed construction. The speed and ease of excavation are dependent on the nature of the deposit, the type of equipment used, and the skill and experience of the equipment operator.

5.1.4 ASTs Pad Preparation

At the locations where Above Ground Storage tanks (ASTs) are located, proof-roll the exposed subgrade to observe for any loose or disturbed soils that may remain. Remove and replace any loose or disturbed soils prior to placing any additional fill materials required to reach the finished subgrade elevation.

5.1.5 Compliance

Recommendations for foundations and slabs-on-grade supported on compacted fills or prepared subgrade depend upon compliance with the **Site Preparation recommendations** and Recommended Earthwork Specifications in Appendix D.

To assess compliance, observation and testing should be performed under the direction of a geotechnical engineer. Please contact us to provide observation and testing services.

5.2 Lateral Earth Pressures

5.2.1 Lateral Passive Resistance

Horizontal forces may be resisted by passive pressure acting on the side and sliding resistance. The passive pressure may be 300 psf per foot of embedment from the lowest adjacent grade up to a maximum of 4,500 psf.

Friction between base of footings and/or floor slabs, and the underlying soils may be assumed to be 40 percent of the dead loads.

The allowable bearing capacity and the allowable resistance of horizontal forces may be increased one-third for transient forces.

Friction and lateral pressure may be combined, but not to exceed two-thirds of the allowable lateral pressure.

5.2.2 Retaining Wall Recommendations (If Any)

The retaining wall structures may be supported by shallow footings bearing on compacted fill or competent subgrade soil. Following bearing values may be used for foundation design.

Shallow footings for the wall and/or secondary structure may be designed for an allowable bearing value of 1,500 pounds per square foot (psf) embedded at least 18 inches, a minimum width of 12 inches, placed over a minimum 12-inch thick engineered fill compacted to 90% relative density or over a competent subgrade soil. This basic bearing value may be increased by 200 psf for each one-foot increase in depth, and by 100 psf for each additional 12 inches in width to a maximum value of 2,500 psf.

Recommended bearing values are for dead plus live loads and may be increased by one-third for combined dead, live, and transient forces such as wind load and seismic forces.

It is recommended that all foundations be reinforced per structural design, but no less than a minimum reinforcement of 2#5 bars top and 2#5 bars at the bottom.

It is estimated that total settlement will be less than 0.50" and differential settlement will be less than 0.25" over a horizontal distance of 30 feet.

5.2.3 Active Pressure

Recommended active lateral soil pressure values for design of drained retaining wall are as follows:

Surface Slope of Retained Material (Horizontal:Vertical)	Equivalent Fluid Weight (pcf) (Native Backfill)
Level	35
2:1	45

A Pipe and gravel drain (4" perforated PVC embedded in at least three cubic feet of gravel per lineal foot of pipe wrapped with Mirafi geofabric 10N or equivalent) should be provided on the retained earth side and near the base of all the retaining walls. Backfill should consist of sand and/or gravel. While all backfills should be compacted to the required degree, care should be taken when working close to the walls to prevent excessive pressure.

5.2.4 At-Rest Earth Pressure (If Any)

Retaining walls (basement walls, underground vault, if applicable) should be designed for at-rest conditions. The recommended earth pressure for at-rest conditions is an equivalent fluid density of 60 pounds per cubic foot without surcharge loading.

Note:

The equivalent fluid pressures presented herein do not include the lateral pressures arising from the presence of the following:

- Hydrostatic conditions, submergence or partial submergence
- Sloping backfill, positively or negatively
- Surcharge loading, permanent or temporary
- Seismic or dynamic conditions

5.2.5 Seismic Force on Wall

Lateral forces on retaining walls (exceeding 6 feet in height) due to earthquake movements in accordance with Section 1803A.5.12 of the 2019 CBC for active and at-rest conditions may be calculated as follows:

Seismic active Force = 11 H^2 pounds/ft of wall (Inverted triangular distribution, acting at 0.6H from bottom).

Seismic at-rest Force = 22 H^2 pounds/ft of wall (Rectangular Distribution, acting at 0.6H from bottom).

Where, H = Height of the retaining wall in feet

5.3 On-Site Fill Soils

5.3.1 Materials

On-site clean, low-expansive potential soils, or imported materials may be used as fill material for the following:

- Foundation Areas
- Interior Slab Areas

- Pavement Areas
- Backfill

Any earth materials imported or excavated on the property may be utilized in the fill provided that each material has been determined to be suitable by the soil engineer. These materials should be free of roots, tree branches, other organic matter or other deleterious materials. Soils of poor gradation, undesirable expansion potential, or substandard strength characteristics may be designated by the consultant as unsuitable and may require blending with other soils to serve as a satisfactory fill material.

Gradation (as per ASTM C136) should be as follows:

Size	% by Weight
6"	100
4"	85-100
¾"	70-100
No 4 Sieve	50-100
No. 200 Sieve	40 (max)

Any import material should have an expansion Index, EI less than 20.

5.3.2 Placement and Compaction

a. Place and compact approved fill material in nearly horizontal layers that when compacted should not exceed 6 inches in thickness.

b. Use appropriate equipment and procedures that will produce recommended densities and water contents throughout the lift. Moisture condition, blending, and mixing of the fill layer should continue until the fill materials have a uniform moisture content at or above optimum moisture.

c. Uncompacted fill lifts should not exceed 8 inches.

d. Materials should be compacted to the following:

- On-site or imported soil, reworked and fill:

	Minimum % (ASTM D-1557 Laboratory Standard)
Subgrade Below Footings	90
Subgrade Below Slab-on Grade	90
Subgrade Below Pavement	90
Crush Rock Below Slab-on-Grade	95
Aggregate Base below pavement	95

5.4 Soil Corrosivity

5.4.1 Corrosion and Sulfate Attack Protection

A major factor in determining soil corrosivity is electrical Resistivity. The electrical Resistivity of a soil is a measure of its resistance to the flow of electrical current. Corrosion of buried metal is an electrochemical process in which the amount of metal loss due to corrosion is directly proportional to the flow of electrical current (DC) from the metal into the soil. Corrosion currents, following Ohm's Law, are inversely proportional to soil Resistivity. Lower electrical resistivities result from higher moisture and chemical contents and indicate corrosive soil. Other soil characteristics that can influence corrosivity toward metals are pH, chemical content, soil types and site drainage.

Based on test results and our past experience at this site, soils are classified as corrosive to ferrous metals and negligible sulfate exposure to concrete. The type of alluvial deposits encountered at this site and in this area in general is known to cause

corrosion problems. Reportedly, there has been such experience with metal pipes at this specific site. Ferrous metals and pipes should be properly coated and wrapped. Please be advised that this firm does not practice corrosion engineering; therefore, we recommend that upon completion of precise grading, onsite soils be analyzed by a qualified corrosion engineer to evaluate the impact of chemical activity of these soils on buried metallic pipes and other underground structures. If necessary, more elaborate corrosion protection systems may be considered as may be recommended by a corrosion expert.

5.4.2 Concrete

Concrete for foundation where in contact with the underlying soils should be designed in accordance with the 2019 CBC, ACI 318 Section 4.3, Table 4.3.1 (2005). As the potential for sulfate attack on concrete appears negligible, however, we recommend that the use of type II Portland cement, with a maximum water-cement ratio of 0.50, and a minimum compressive strength of 3,000 psi should be taken into consideration for the foundation elements in contact with the soil.

For all concrete in contact with soil, concrete cover over rebar should be maintained per California Building Code (CBC 2019).

5.5 Building Foundation Recommendations

Based upon results of the field explorations, laboratory testing and engineering analysis, it is concluded that the site is suitable for the proposed development at the subject site. The site is subject to ground shaking typical of the Southern California area, any construction should conform to the current seismic design provision of the California Building Code (2019), and/or other regulatory codes.

Following are more specific recommendations:

5.5.1 Conventional/Spread Foundations

The planned ASTs and the proposed building may be supported by conventional continuous and/or isolated shallow spread pad footings, bearing on certified compacted fill. The foundations should bear on engineered fills achieved by removal and re-compaction of the soils below foundation and slab elements.

Footings placed at least 18 inches below finish subgrade and 3 feet x 3 feet spread footings, 24 inches deep may be designed for an allowable bearing value of 1,500 pounds per square foot (psf). The footing width should be a minimum of 18 inches. An increase of 100 psf and 200 psf are allowed for each additional foot of increase in width and depth, respectively to a maximum value of 2,000 psf.

This allowable bearing value is for dead plus live load and may be increased by one-third for combined dead, live, and transient loads such are wind or seismic forces.

All footings at minimum shall be incorporated with 2#5 bars at top and 2#5 bars at the bottom.

Isolated column footings should be connected to other foundation elements with reinforced grade beams.

Total settlement is estimated to be less than ½ inch for loading of 2 kips per square foot. Differential settlement will be 1/3 of an inch maximum for a horizontal distance of 30 feet. Additional foundation movements could occur if water from any source infiltrates the foundation soils. Therefore, proper drainage should be provided in the final design and during construction.

All footings, stem walls, and masonry walls should be steel-reinforced to reduce the potential for distress caused by differential foundation movements. The use of joints at openings or other discontinuities in masonry walls is recommended.

We recommend that geotechnical engineer, or his representative thereof, observe the footing excavations before reinforcing steel and concrete are placed. This observation is to assess whether the soils exposed are similar to those anticipated based on our exploration. Any soft, loose, or otherwise unacceptable soils should be undercut to suitable materials and backfilled with approved fill materials, or controlled density fill (i.e., lean concrete). Soil backfill should be properly placed and compacted.

5.5.2 Mat Foundation (Alternate Foundation for ASTs)

Alternatively, above ground storage tanks (ASTs) and proposed building may be supported on the mat foundation. The semi-rigid mat foundation should be at least 4-feet or more below the finish grade and may be designed for an allowable bearing capacity of 2,000 pounds per square foot. This basic allowable bearing value is for dead load plus live load and may be increased by one-third for short duration loading, such as wind or seismic forces. Modulus of subgrade reaction, k value may be taken as 125 pci for subgrade soil at 4 feet depth.

For lateral support, an average passive capacity of 300 pounds per square foot per foot to a maximum of 4,500 psf may be used for mat footing.

Minimum thickness of mat footing should be 24 inches. The bottom of excavation at 4 feet below the finish grade should be compacted to 90 % of the maximum density as per ASTM D-1557 laboratory Standard, certified by the Geotechnical Engineer of record prior to pouring concrete. Other aspects of the design including reinforcement and the thickness of the mat should be determined by the project structural engineer. The mat may be buried and should be backfilled with on-site material compacted to 90 percent.

5.5.3 Drilled Shafts for Canopy Foundation

Proposed truck diesel and gas canopies may be supported by moderately deep cast-in-place concrete caisson bearing into natural subgrade materials.

The lateral forces will be the controlling element in this case depending on the height of the canopies, wind load, and/or seismic loads. Therefore, it is recommended that the minimum pier diameter should be 36 inches and should be extended to a minimum depth of 10 feet into native alluvial material.

The pier may be designed for an allowable end bearing of 3,000 pounds per square foot or for an average frictional resistance of 300 pounds per square foot. Either skin resistance or end bearing or combined will provide adequate foundation support for the proposed canopies. The uppermost length of the drilled shaft foundation equal to the diameter of the shaft should be ignored when evaluating allowable capacities.

For lateral support, a passive capacity of 350 pounds per square foot per foot to a maximum of 5,000 psf may be used.

It is recommended that concrete be placed immediately after drilling. The concrete for the pier should be placed through tremmie or other directional devices. Pier drilling operations should be subject to observation by this office to confirm the conditions encountered are consistent with the conclusions and recommendations of this report and/or to make any appropriate modifications, if necessary. Please note that caving is very likely to be encountered during caisson drilling. The contractor should be ready to provide either casing or other methods to prevent caving.

We anticipate that total settlement of the proposed structures, supported by drilled shaft foundations as recommended, should be less than ½-inch. Additional foundation could occur if water from any source infiltrates the foundation soils.

Therefore, proper drainage should be provided in the final design and during construction.

5.6 Slab Design Recommendation

Based on test results, the underlying surface soils are low expansive, therefore it is recommended to maintain subgrade soil at near optimum moisture content during precise grading and / or by periodic watering following grading and incorporated slab reinforcement of No. 3 bars 16 inches center to center cross pattern. The slab thickness should be 5 inches minimum. However, the thickness and reinforcement requirements of the slab should be evaluated by the project structural engineer.

It is further recommended that moisture retarder (Stego 15 mil or approved equivalent) be provided over a minimum of 6 inches of ¾" aggregate rock rolled and compacted to 95% relative compaction, with the gradation (90-100% passing on sieve ¾" size, 1-10% passing on No. 4 sieve, and 0-3% passing on No. 100 sieve) over the compacted fill subgrade compacted to 90% relative compaction.

The modulus of subgrade reaction (k) is estimated to be 100 pounds per cubic inch (pci).

All concrete placement and curing operations should follow the American Concrete Institute (ACI 318-19) manual recommendations. Improper curing techniques, high slump (high water-cement ratio), or both, could cause excessive shrinkage, cracking, or curling. Concrete slabs should be allowed to cure properly before placing vinyl or other moisture-sensitive floor coverings.

5.7 General Drainage and Moisture Protection

It is recommended to provide positive surface drainage systems consisting of a combination of sloped concrete flatwork, sheet flow gradients, swales, surface area drains (where needed) around the structures. Ground surface should have a minimum gradient of 2 percent away from any building foundations and similar structures. Surface waters should not be allowed to collect or pond against building foundations and within the level

areas of the site. Buildings should be provided with gutters and downspouts. Downspouts shall be connected to area drains by pipes.

Planters near the building should be avoided if possible and if used, they should be water proofed. Irrigation should be controlled and an area drain system should be provided to avoid water intrusion beneath the structure.

5.8 Volume Changes

Based on our experience, there is typically a reduction in soil volume when the native soils are excavated and then compacted. Typical shrinkage percentages are usually in the range of 10 to 20 percent when the soils are compacted depending on the native in-place density.

5.9 Underground Utilities

Utility backfill should be placed and compacted by mechanical means as recommended in this report. Testing of the backfill should be conducted to verify conformance to the required specifications. Ponding or water jetting of the backfill should not be conducted.

Exterior trenches adjacent to, and within areas extending below a 1:1 plane projected from the outside bottom edge of the footing, and all trenches beneath hardscape features should be compacted to at least 90% of the laboratory standard. Sand backfill, unless excavated from the trench, should not be used in these backfill areas. Compaction testing and observations, along with probing, should be accomplished to verify the desired results.

All trench excavations should conform to CAL_OSHA and local safety codes.

5.10 Pavement Design

5.10.1 Pavement Section

The pavement sections presented on the following page are based on the R-value data tested, the assumed TI values, and the guidelines presented in the latest revision to the California Department of Transportation "Highway Design Manual," latest edition.

Typical categories of paved areas with corresponding traffic indices are listed as follows:

T.I.	5.0	Parking Stalls
T.I.	6.0	Driveways
T.I.	8.0	Trucks Route, Fire Lane, Truck Parking

The recommended pavement sections provided below are intended as a minimum guideline. If thinner or highly variable pavement sections are constructed, increased maintenance and repair could be expected.

If the ADT (average daily traffic) or ADTT (average daily truck traffic) increases beyond that intended, as reflected by the TI used for design, increased maintenance and repair could be required for the pavement sections.

Consideration should be given to the increased potential for distress from overuse of paved areas by heavy equipment and/or construction related traffic (e.g., concrete trucks, loaded supply trucks, etc.), particularly when the final section is not in place (i.e., topcoat). Best management construction practices should be followed at all times, especially during inclement weather.

Based on an "R" Value of 30, the following thickness of aggregate base was determined for vehicular and non-vehicular areas.

Asphalt Concrete Pavement Section Design Table

Pavement Areas	Traffic Index, TI	Asphalt Concrete AC (inch)	Aggregate Base AB (inch)
Truck Route, Fire lane Truck Parking	8	4"	12"
Driveway/Under Canopy	6	4"	6"
Parking Stall	5	4"	4"

Rigid Concrete Pavement Section Design Table

Pavement Areas	Traffic Index, TI	Concrete (inch)	Aggregate Base AB (inch)
Heavy Truck Vehicular Areas	6	6"	10"
Walkways	-	4"	4"

For concrete section, #4 reinforcement 12-inch center to center each way cross pattern are recommended. However structural design by structural engineer will suffix.

5.10.2 Pavement Grading Recommendations

5.10.3 General

A representative of Geotechnical Solutions, Inc. (GSI) should be present for the preparation of subgrade, aggregate base, and asphalt concrete for flexible pavement and concrete for rigid pavement.

5.10.4 Subgrade Preparation

After removing the existing deleterious materials on the pavement areas and hauled offsite, all surficial deposits of loose soil material should be removed and excavate 12

inches below the base and recompacted as recommended. The bottom is further scarified to a depth of at least 6 inches; moisture conditioned as necessary and compacted to 90 percent of the maximum laboratory density as determined by ASTM Test Method D-1557.

Deleterious material, excessively wet or dry pockets, concentrated zones of oversized rock fragments, and any other unsuitable materials encountered during excavation or grading should be removed. The compacted fill material should then be brought to the elevation of the proposed subgrade for the pavement. The subgrade should be proof-rolled in order to ensure a uniform, firm and unyielding surface. All grading and fill placement should be observed by the project soils engineer and/or his representative.

5.10.5 Aggregate Base

Compaction and rolling are required for the recommended base section. Minimum relative compaction required will be 95 percent of the laboratory maximum density as determined by ASTM Test Designation D-1557. Aggregate base should be in accordance with Crush Rock Class II aggregate base (minimum R-value=78) and sample should be brought for testing and approval prior to delivery to the site. Please note that crush miscellaneous base is not allowed.

5.10.6 Asphalt Concrete Pavement

Asphalt concrete pavement should be Performance Grade PG 64-10 1/2" maximum aggregate size and should be placed and compacted in two layers. Asphalt concrete shall be compacted to 95 percent of the Hveem Laboratory Standard.

5.10.7 Concrete Pavement Areas:

Concrete flatwork including sidewalks, patio-type slabs and concrete sub-slabs to be covered with decorative pavers should be at least 4 inches thick and provided with construction joints or expansion joints every 6 feet or less.

Concrete driveway slabs should be at least 6 inches thick over 6 inches of aggregate base (for vehicular areas) and 4" of concrete over 4" of aggregate base (Non-vehicular areas) over approved subgrade, providing #4 reinforcement 12" center to center each way cross pattern and provided with construction joints or expansion joints every 10 feet or less.

At the driveway areas, the top 12 inches of subgrade should be excavated; moisture conditioned and recompacted with minimum 90% compaction immediately prior to placing the rock base and asphalt concrete. Rock-base material shall be class II aggregate base and to be compacted to 95 percent minimum.

Design section must be verified during site grading, based on R value test and appropriate modifications shall be made, if required.

5.11 Exterior Concrete Flatwork

In order to reduce the potential for unsightly cracking, concrete sidewalks, deck and patio slabs and concrete sub-slabs to be covered with decorative pavers should be at least 4 inches thick and provided with construction joints or expansion joints every 6 feet or less. Concrete driveway slabs should be at least 5 inches thick and provided with construction joints or expansion joints every 10 feet or less.

5.12 Temporary Excavations

Temporary excavations may not be required but in case it is needed then the Contractor should be made fully responsible for adequate support of the excavation at all times. Temporary support of excavation structures plans should be designed by a Professional Engineer licensed in the State of California and experienced in such work and these plans should be reviewed by us and approved by the City of Moreno Valley, if necessary.

Since the site has adequate room to lay back with temporary excavation slopes, shoring may not be needed, but this should be evaluated based on field conditions.

The stability of temporary excavations depends on many factors, including the slope angle, the shearing strength of the existing material, orientation and inclination of geologic structure, the height of the slope and the length of time the excavation remains unsupported and exposed to equipment vibrations and rainfall. All excavations should be observed by the engineering geologist during excavation.

The possibility of temporary excavations failing may be minimized by: 1) keeping the time between cutting and filling operations to a minimum; 2) limiting excavation length exposed at any one time; and, 3) cutting no steeper than a 1:1 (horizontal to vertical [h:v]) inclination and no steeper for false cuts along the toe for key excavations, cleanouts, etc.

Following is the temporary excavation recommendation, subject to field verification by the geotechnical consultant.

Excavation up to 4 feet	Vertical
Excavation over 4' but not to exceed 12'	1:1 (H: V)
Excavation from 12' to 20'	1½:1 (H: V)

6.0 GENERAL COMMENTS AND LIMITATIONS

6.1 Plan Review

Final project plans should be reviewed by this office prior to construction, so that construction is in accordance with the conclusions and recommendations of this report. Based on our review, supplemental recommendations and/or further geotechnical studies may be warranted.

6.2 Geotechnical Observation and Testing

All footing trenches for the proposed structure should be observed by a representative of this firm to verify that they were excavated into competent bearing soils per the recommendations of this report as well as to the minimum depths recommended above.

These observations should be performed prior to the placement of forms or reinforcement. The excavations should be trimmed neat, level and square. All loose, sloughed or moisture softened soil should be removed prior to placing concrete.

6.3 Construction Verification Procedure

Construction of foundations and placement of engineered fill should be done under the observation and documentation of a representative of the project Geotechnical Engineer. The following are noted as items requiring verification during construction.

Pre-Grading Meeting:

A pre-grading meeting should be held prior to the start of any grading activities. Attendees of this meeting should include the Owner, the Architect, the Geotechnical Engineer, and the Contractor, to review procedures and scheduling.

Footing Observations:

Construction of foundation and slab should be performed under inspection of the Geotechnical Engineer. Footings should be observed and certified by Geotechnical Engineer of Record after excavation and prior to placement of reinforcing bars.

Earthwork Observations:

Relative compaction of all fill materials placed on site should be tested in accordance with ASTM D6938. All new fill shall be brought to near optimum moisture, placed in layers not exceeding six inches in thickness, and compacted to at least 90 percent relative compaction for subgrade and 95 percent relative compaction for aggregate base. No jetting or water tamping of fill soils shall be permitted. All imported soil for engineered fill should be pre-approved by the Geotechnical Engineer and consist of clean, granular, non-expansive soil, free of vegetation and other debris with an Expansion Index of 20 or less.

At all times, the contractor should have a responsible field superintendent on the project in full charge of the work, with authority to make decisions. He should cooperate fully with the Geotechnical Engineer in carrying out the work.

All footing trenches for continuous and spread footings and subgrade for the slab areas should be observed by the project Geotechnical Engineer to verify that over-excavation and re-compaction operations of adequate depth, thickness, and compaction have been performed as specified. All footing excavations should be trimmed neat, level and square. All loose, sloughed or moisture softened soil should be removed and replaced with properly compacted soil.

6.4 Recommendations for Construction

Surveying: The contractor shall set necessary stakes to verify lines and grades as shown on the plan.

Changed Conditions: Any changed conditions not found during exploration should be brought to the attention of the soil engineer. As a result of the changed conditions, the soil engineer will provide further recommendations.

Site Drainage: The site should be sloped to direct water away from all structures and divert to a positive drainage device at the street. Roof gutters and down spouts shall be provided for roof drainage. Down spouts shall be connected to the positive area drains.

Footing and Utilities Trenches. All the Footing excavations as well as utility trenches should be observed by a representative of Geotechnical Solutions, prior to placement of steel.

6.5 Limitations

This report is issued with the understanding that it is the responsibility of the owner or his representative to see that the information and recommendations contained herein are

called to the attention of the other members of the design team for the project and that the applicable information is incorporated into the plans, and that the necessary steps are taken to see that the contractors and the subcontractors carry out such recommendations. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or in part, by changes outside of our control. The validity of the recommendations of this report assumes that Geotechnical Solutions, Inc. will be retained to provide construction monitoring services. The scope of our services did not include any investigation for the presence or absence of hazardous or toxic materials.

6.6 Closure

The Conclusions and recommendations contained herein are based on the findings and observations made at the test boring locations. It is not unusual to find conditions between and beyond such locations, which differ from the conditions encountered. If conditions are encountered during construction, which appear to differ from those previously disclosed, this office should be notified so as to consider the need for modifications. On-site construction observations and wherever appropriate, tests should be performed during the course of construction by a representative of this office to evaluate compliance with the design concepts, specifications, and recommendations contained herein.

This report has been compiled for the exclusive use of our client, it shall not be transferred to, or used by, other parties, or applied to any project on this site other than described herein without consent and /or thorough review by this office.

Geotechnical Solutions, Inc.

References

California Department of Water Resources groundwater well data http://wdl.water.ca.gov.

California Division of Mines and Geology, 1997, Fault-Rupture Hazard Zones in California, Special Publication 42.

California, Division of Mines and Geology, 2008, Special Publication 117A, Guidelines for Evaluating and Mitigating Seismic Hazards.

International Conference of Building Officials (ICBO), 2019, California Building Code, California Code of Regulations, Title 24, Part 2, Volume 2.

Jennings, C.W., 1994, Preliminary Fault Activity Map of California, Scale 1:750,000, DMG Open File Report 92-03.

Morton, D.M. and F.K. Miller, 2006, "Geologic Map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California: U.S. Geological Survey, Open-File Report OF-2006-1217, Scale 1:100,000.

U.S. Seismic Design Maps Summary & Detailed Report (SEAOC/OSHPOD)

2008 National Seismic Hazard Maps – Source Parameters.
https://earthquake.usgs.gov/cfusion/hazfaults_2008_search/query_results.cfm

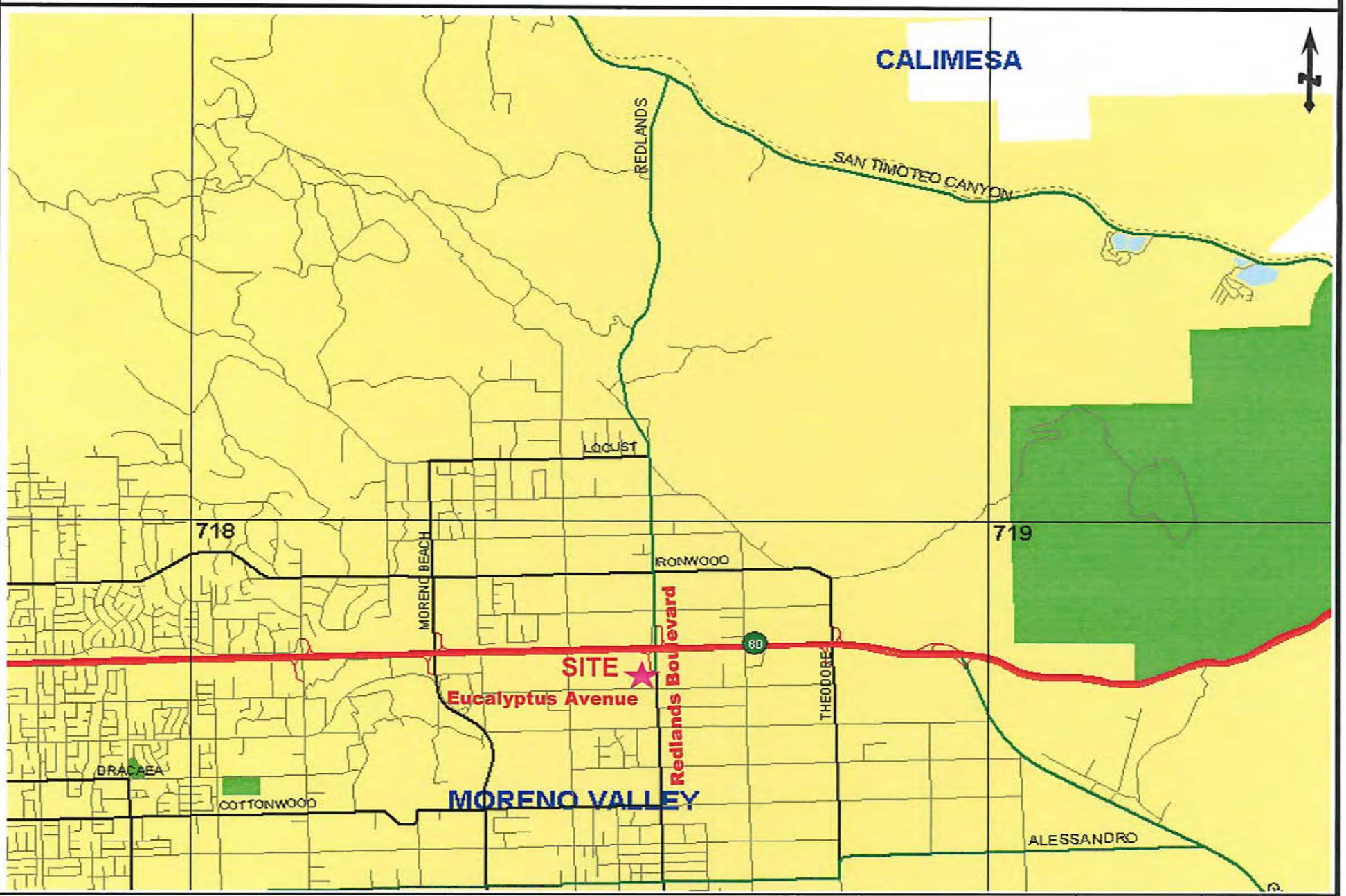
U.S.G.S., Earthquake Hazards Program, Unified Hazard Tool – Interactive Hazard Curve and Interactive Deaggregation web Site.
https://earthquake.usgs.gov/hazards/interactive/

Appendix A

Plates:

- Vicinity Map
- Plot Plan and Boring Location Map
- Topographic Map
- Google Map
- Geologic Map
- Seismic Hazard Map – CGS
- Fault, Liquefaction and Flood Zones
- Groundwater Closest Well
- Groundwater Map
- Log of Test Holes
- Direct Shear Tests
- Consolidation Tests

VICINITY MAP



Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	A

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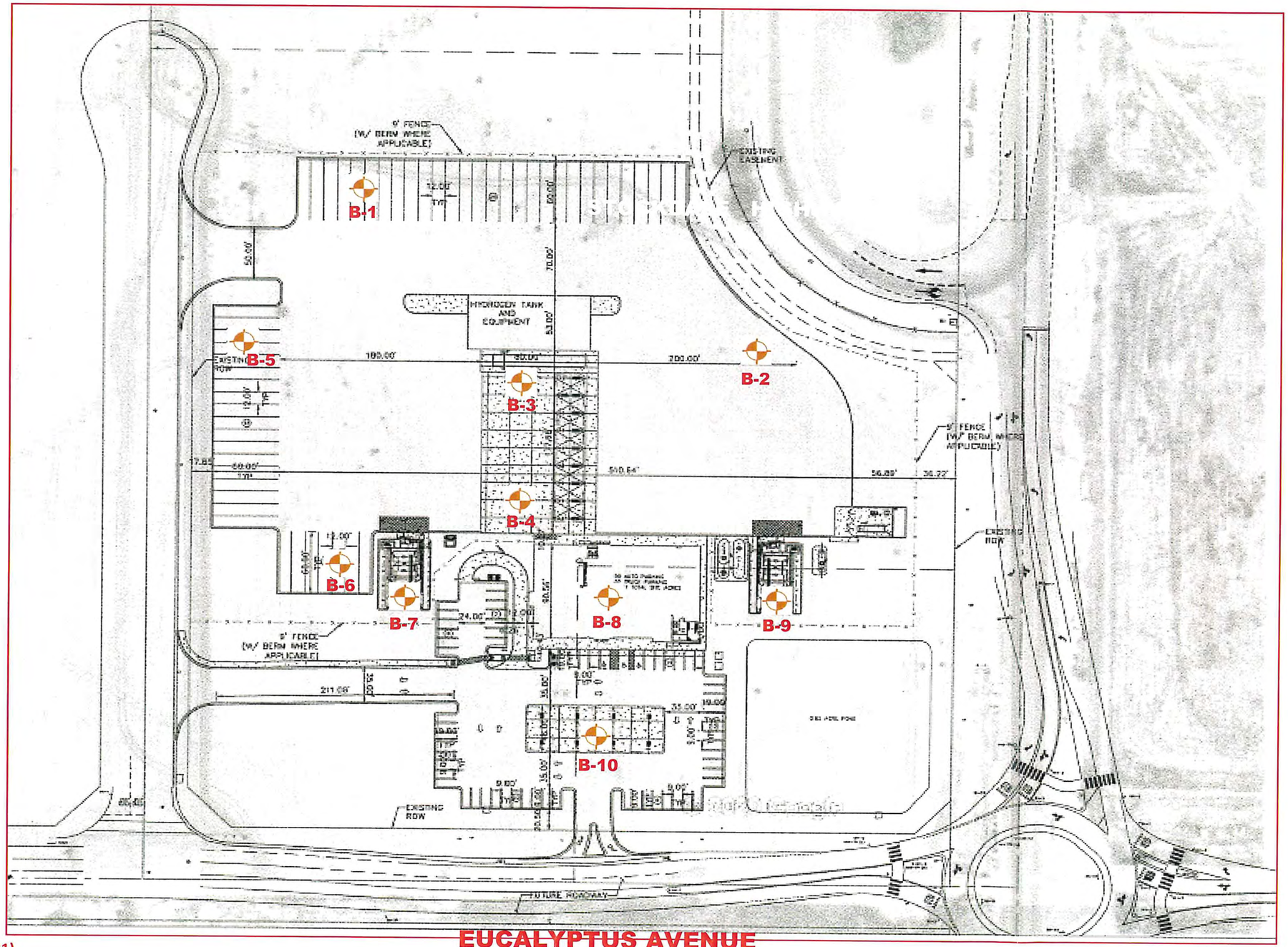
PLOT PLAN & BORING LOCATION MAP



B-10 Hollow Stem Auger Borings (2021)

SCALE: 1" = 100'

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South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	B
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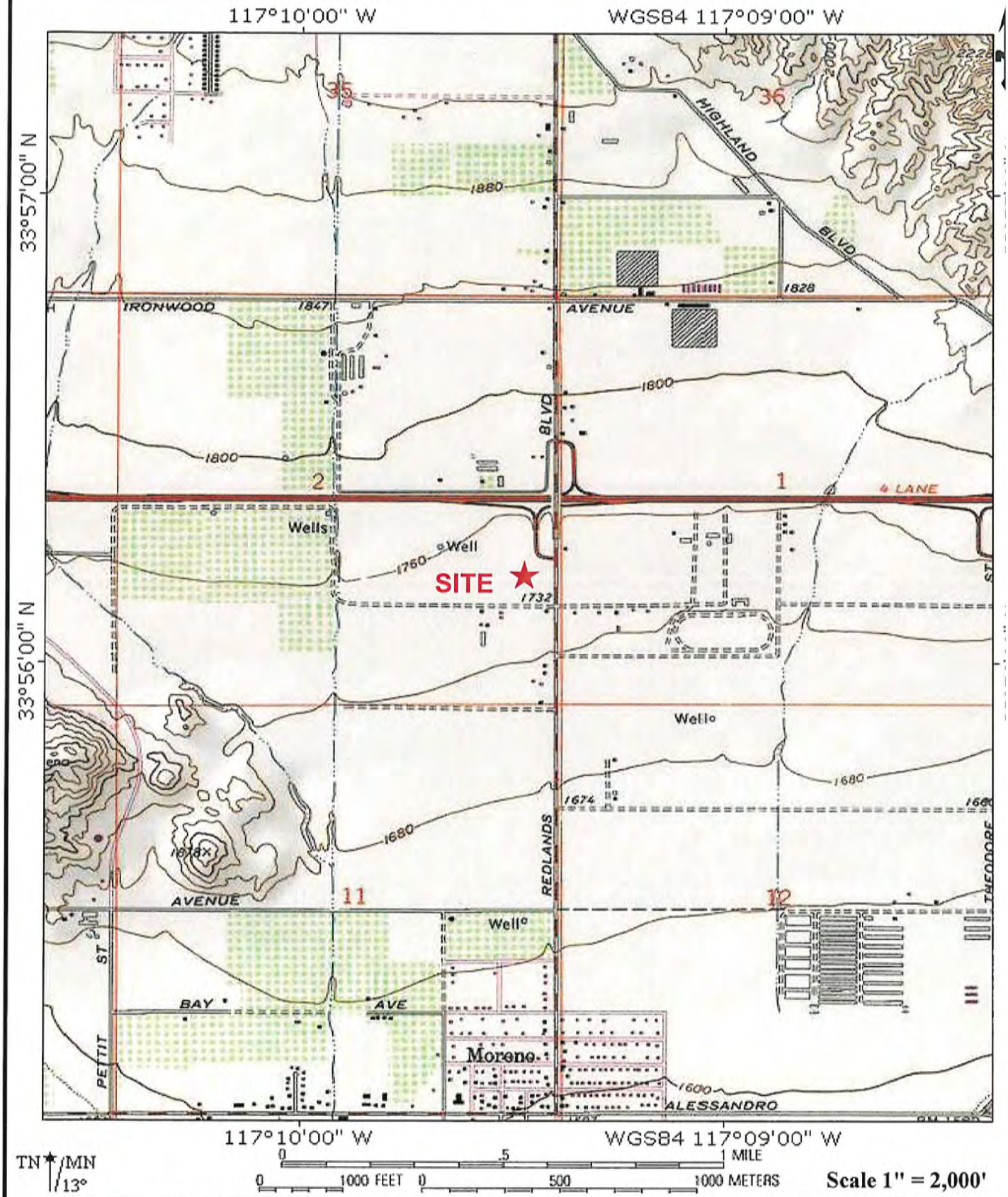
TOPOGRAPHIC MAP



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South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	C

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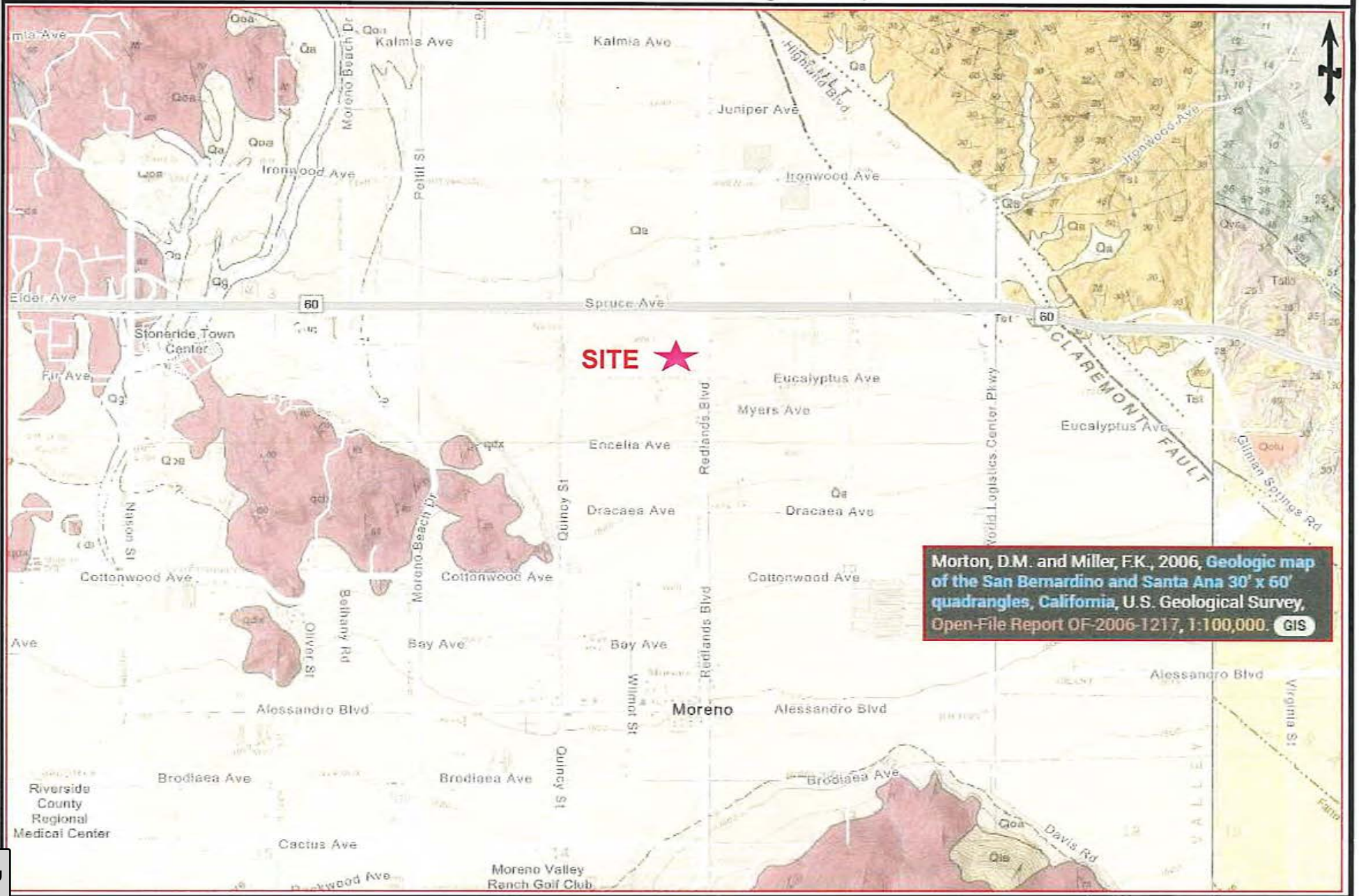
GOOGLE MAP

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	D
Geotechnical Solutions, Inc.		

Site Regional Geologic Map



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South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	E

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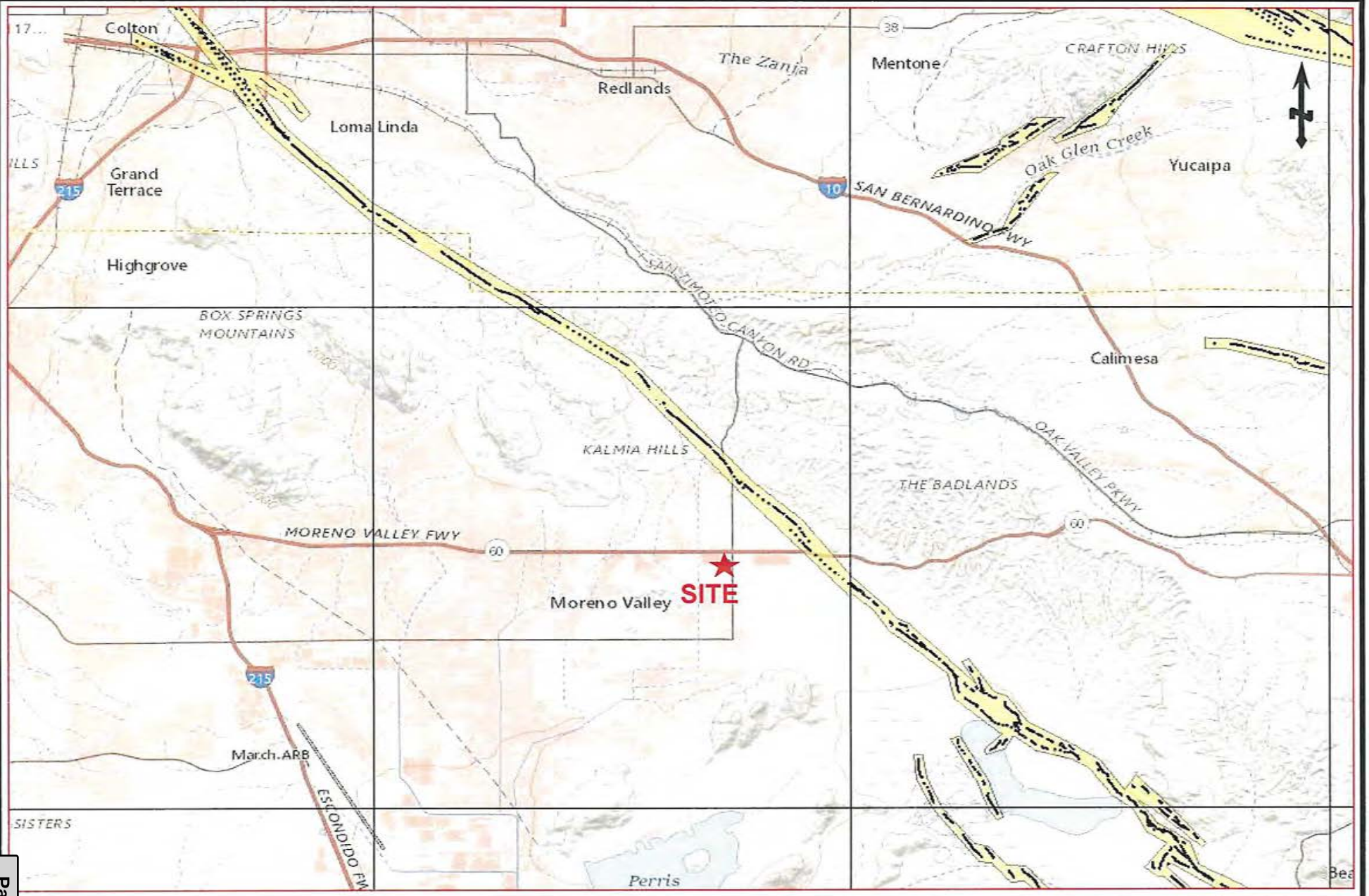
Seismic Hazard Fault Map



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South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	F

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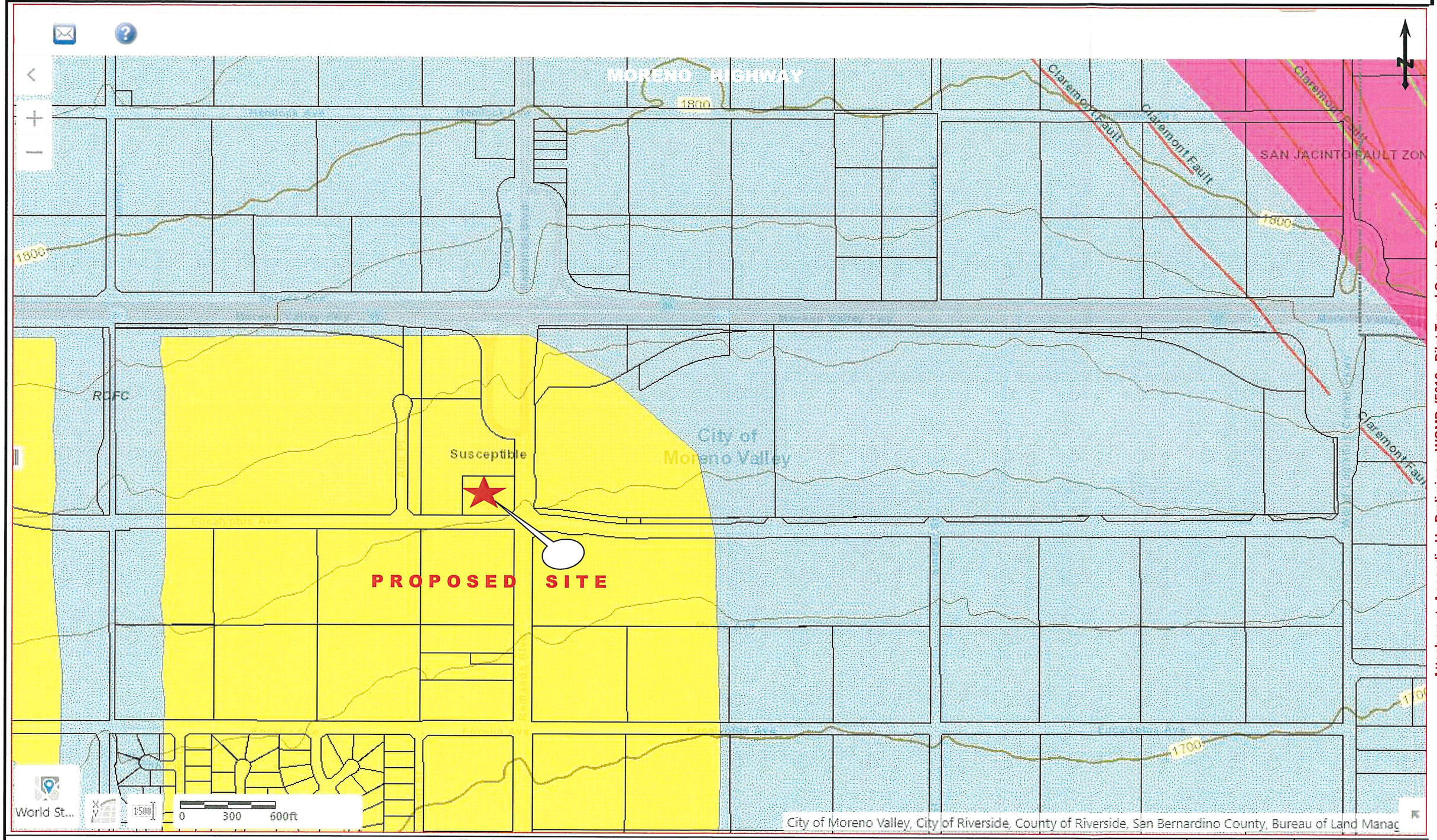
FAULT, LIQUEFACTION, FLOOD ZONES



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South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA

Project No.	G-5852-01
Plate:	G

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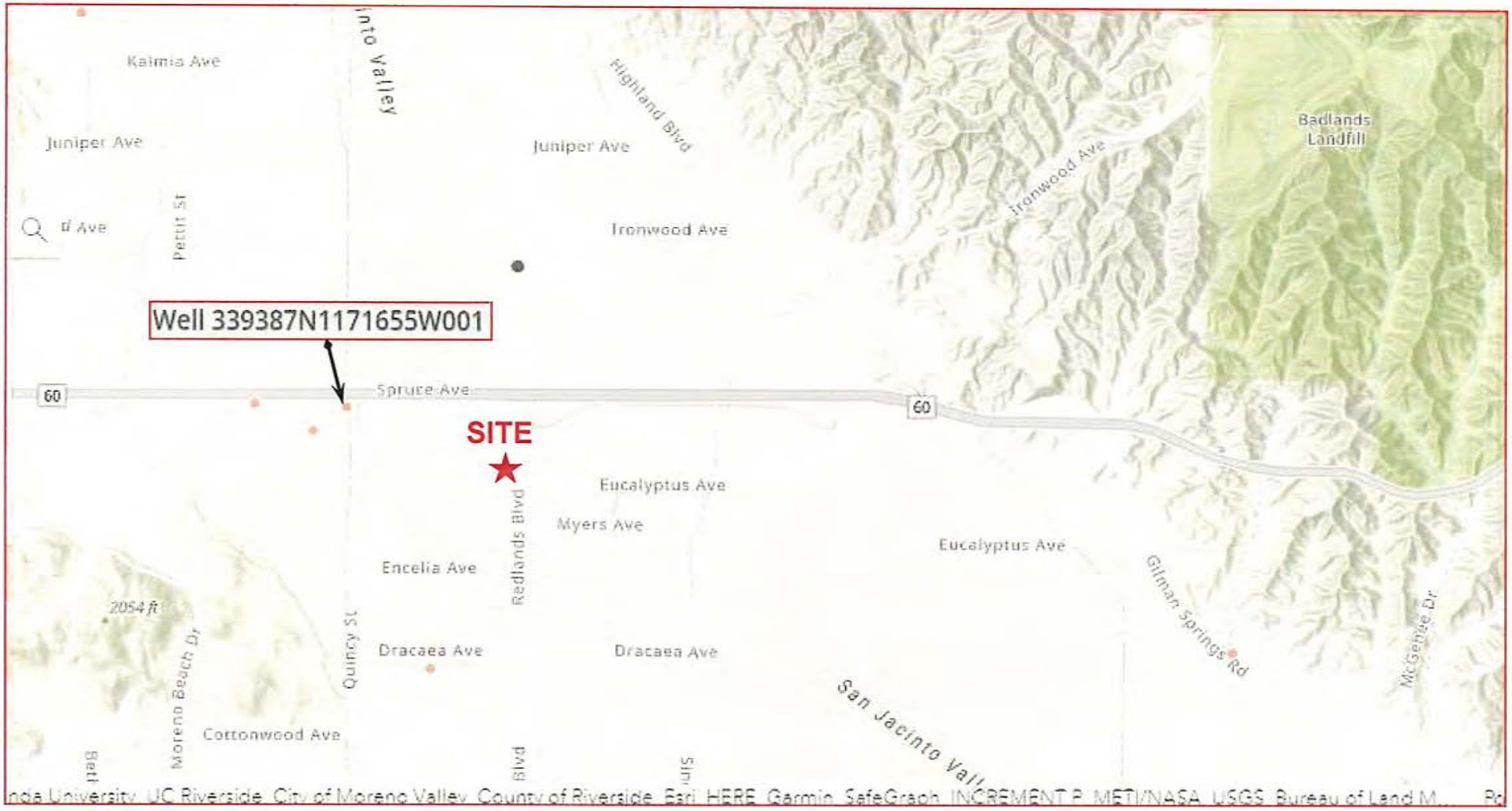
GROUNDWATER MAP - CLOSEST WELL DATA



Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	H-1

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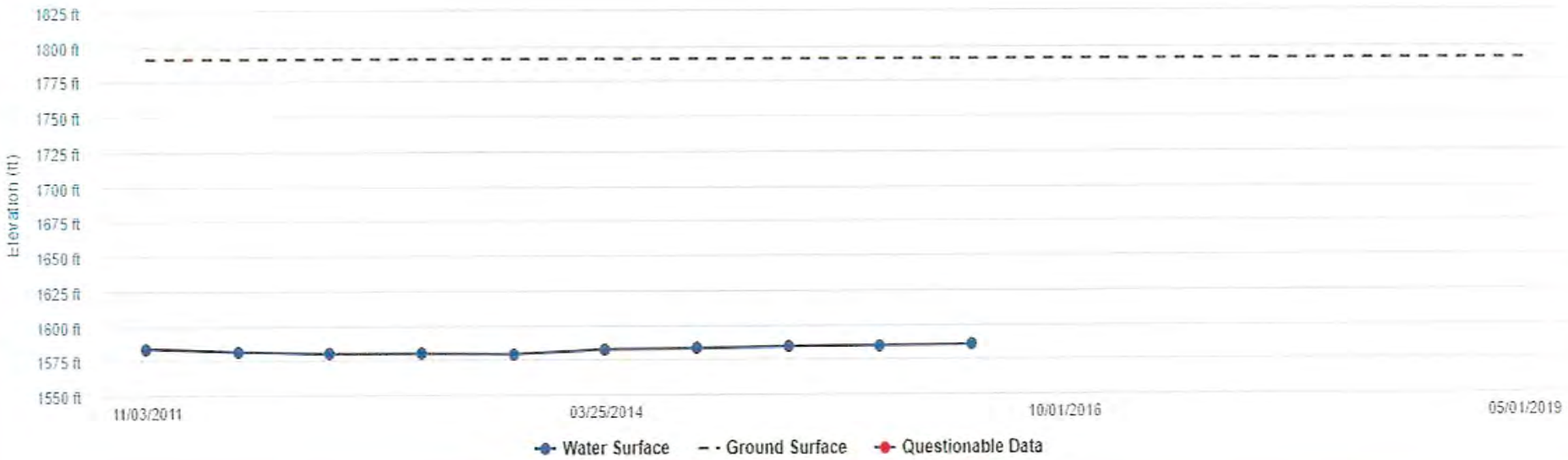
GROUNDWATER MAP - WELL DATA

Groundwater Levels for Well 339387N1171655W001



Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency
11/03/2011 00:00:00	1791.640	1790.840	208.2	1583.44	207.4		Eastern Municipal Water D...
02/15/2012 00:00:00	1791.640	1790.840	210.5	1581.14	209.7		Eastern Municipal Water D...
10/16/2012 00:00:00	1791.640	1790.840	212.3	1579.34	211.5		Eastern Municipal Water D...
05/08/2013 00:00:00	1791.640	1790.840	212.3	1579.34	211.5		Eastern Municipal Water D...
10/31/2013 00:00:00	1791.640	1790.840	212.7	1578.94	211.9		Eastern Municipal Water D...

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	H-2

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-1
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-1
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA/AB	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	11.5
Drill Rig Type :	B-61	Drilling Contractor :	Whitecomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
			Bag #1				Sandy Silt, light gray, soft			52	HD:48(SA):36(SI):16(CL)
	2		C-1	3-5-7		12	@2':Sandy Silt/Silty Sand, very fine, light gray, slightly moist, medium stiff/ loose	3	101		
1741	5		C-2	3-3-7		10	@5':Sandy Silt (ML) w/clay, very fine grained, gray, moist, medium stiff	7	103		
										35	HD:65(SA):30(SI):5(CL)
1736	10		C-3	4-7-11		18	@10':Silty Sand (SM), very fine, light gray, moist, medium dense	11	106		DS: P=Peak / Ult=Ultimate $\phi = 34^0$, c =250 psf (P) $\phi = 33^0$, c = 200 psf (Ult)
1731	15						End of Boring = 11.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1726	20										
1721	25										
1716	30										
1711	35										
1706	40										
1701	45										

Geotechnical Solutions, Inc.

Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-2
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-2
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	11.5
Drill Rig Type :	B-61	Drilling Contractor :	Whitecomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES Penetration Resistance, Blows / 6"	SAMPLES Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
	2		Bag #1				Sandy Silt, light gray, moist				
			C-1	7-10-8		18	@2':Silty Sand (SM) w/clay, very fin, light gray, moist, medium dense	7	104		
1741	5		C-2	3-4-7		11	@5':Sandy Silt (ML) w/clay, very fine grained, gray, moist, medium stiff	9	101		
1736	10		C-3	3-3-7		10	@10': Same as above	8	89		
1731	15						End of Boring = 11.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1726	20										
1721	25										
1716	30										
1711	35										
1706	40										
1701	45										

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-3
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-3
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA/AB	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	51.5
Drill Rig Type :	B-61	Drilling Contractor :	Randy - Whitcomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
	2		Bag #1				@ 0-2'; Sandy Silt (ML), light gray, moist, very fine grained, slightly moist			54	HD:46(SA):34(SI):20(CL)
			C-1	12-7-7		14	@2': Silty Sand (SM), light gray, slightly moist, loose	2	106		
1741	5		C-2	4-5-7		12	@5':Sandy Silt (ML), very fine grained, light gray, moist, medium stiff	5	104		DS: P=Peak / Ult=Ultimate $\phi = 31^0$, c =400 psf (P) $\phi = 30^0$, c = 350 psf (Ult)
1736	10		C-3	4-5-8		13	@10':Same as above	4	113		
1731	15		S-1	3-3-5		8	@ 15': Silty Sand (SM), moist, light gray, medium dense	6	-		
1726	20		S-2	4-3-6		9	@20': Same as above	6	-		
1721	25		S-3	4-4-6		10	@25': Same as above	5	-		
1716	30		S-4	3-4-7		11	@30': Same as above	4	-		
1711	35						End of Boring = 31.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1706	40										
1701	45										

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-4
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-4
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	21.5
Drill Rig Type :	B-61	Drilling Contractor :	Randy - Whitcomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
	2		Bag #1				@ 0-2': Silty SAND (SM), light gray, moist, very fine grained loose				
			C-1	4-7-9		16	@2':Sandy Silt (ML), gray, slightly moist, stiff, fine to medium grained	2	99		
1741	5		C-2	4-4-6		10	@5':Sandy Silt (ML), fine to very fine, light gray, moist, medium stiff	7	94		
1736	10		C-3	6-6-8		14	@10': Same as above, stiff	5	115		
1731	15		S-1	4-4-6		10	@ 15': Same as above, sample disturbed	2	-		
1726	20		S-2	3-4-5		9	@20': Sandy Silt (ML), moist, gray, stiff	5	-		
1721	25						End of Boring = 21.5 feet No groundwater encountered No Caving but possible for bigger diameter holes Backfilled w/Cuttings				
1716	30										
1711	35										
1706	40										
1701	45										

Geotechnical Solutions, Inc.

Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-5
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-5
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	11.5
Drill Rig Type :	B-61	Drilling Contractor :	Whitecomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
			Bag #1				Silty Sand, light gray, loose				
	2		C-1	8-9-10		20	@2':Silty Sand (SM) w/clay, very fin, light gray, moist, medium dense	6	106		
1741	5		C-2	3-3-9		12	@5':Sandy Silt (ML) w/clay, very fine grained, gray, moist, medium stiff	8	104		
1736	10		C-3	3-4-8		12	@10': Same as above	10	101		
1731	15						End of Boring = 11.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1726	20										
1721	25										
1716	30										
1711	35										
1706	40										
1701	45										

Geotechnical Solutions, Inc.

Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-6
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-6
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	11.5
Drill Rig Type :	B-61	Drilling Contractor :	Whitecomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
			Bag #1				Sandy Silt (ML), light gray,soft				
	2										
			C-1	3-3-4		7	@2';Silty Sand (SM) w/clay, very fine, light gray, moist, medium dense	4	103		
1741	5										
			C-2	3-5-6		11	@5';Sandy Silt (ML) w/clay, very fine grained, gray, moist, medium stiff	7	95		
1736	10										
			C-3	2-5-9		14	@10': Same as above	9	106		
1731	15						End of Boring = 11.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1726	20										
1721	25										
1716	30										
1711	35										
1706	40										
1701	45										

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-7
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-7
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	51.5
Drill Rig Type :	B-61	Drilling Contractor :	Randy - Whitcomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
	2		Bag #1				@ 0-2';Sandy Silt (ML), light gray, moist, very fine grained soft			49	HD:51(SA):31(SI):18(CL)
			C-1	5-5-8		13	@2':Same as above, medium stiff	3	101		
1741	5		C-2	4-8-10		17	@5'Sandy Silt (ML), fine to very fine, light gray, moist, stiff	5	97		
1736	10		C-3	6-8-13		21	@10':same as above	8	107		
1731	15		S-1	8-7-8		15	@ 15': Sand, silty, light brown, slightly moist, medium dense	3	-		
1726	20		S-2	7-13-18		31	@20': Sand (SP), silty, moist, gray, dense	5	-		
1721	25						End of Boring = 21.5 feet No groundwater encountered No Caving but possible for bigger diameter holes Backfilled w/Cuttings				
1716	30										
1711	35										
1706	40										
1701	45										

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-8
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-8a
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA/AB	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	51.5
Drill Rig Type :	B-61	Drilling Contractor :	Randy - Whitcomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
	2		Bag #1				@ 0-2'; Sandy Silt (ML), light gray, moist, very fine grained, slightly moist			54	HD:46(SA):31(SI):23(CL)
			C-1	3-3-5		8	@2': Silty Sand (SM), light gray, slightly moist, loose	4	101		
1741	5		C-2	3-7-7		14	@5':Sandy Silt (ML), very fine grained, light gray, moist, stiff	7	99		
1736	10		C-3	4-7-9		16	@10':Same as above	8	105		
1731	15		S-1	3-7-5		12	@ 15': Silty Sand (SM), moist, light gray, medium dense	7	-		
1726	20		S-2	4-6-6		12	@20': Same as above	7	-		
1721	25		S-3	6-9-10		19	@25': Same as above	8	-		
1716	30		S-4	12-13-14		27	@30': Same as above	6	-		
1711	35		S-5	6-8-9		17	@35': Same as above	8	-		
1706	40		S-6	40-23-24		47	@40': Sand (SP), dense, brownish gray, slightly moist, coarse grained	7	-		
1701	45		S-7	5-7-10		17	@45': Same as above	13	-		

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-8
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-8b
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	51.5
Drill Rig Type :	B-61	Drilling Contractor :	Randy - Whitcomb Drilling	Approx. Surface Elevation, feet :	303 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
258	45		S-7	5-7-10		17	@45'; SAND (SP), brownish gray, slightly moist, medium to coarse grained, dense	13	-		
253	50		S-8	7-9-10		19	@5':Same as above	10	-		
248							End of Boring = 51.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/cuttings				
248											
243											
238											
233											
228											
223											

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-9
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-9
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	11.5
Drill Rig Type :	B-61	Drilling Contractor :	Whitecomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
			Bag #1				Sandy Silt (ML), light gray,soft				
	2		C-1	3-5-7		12	@2':Sandy Silt (ML), very fine, light gray, moist, medium stiff	5	93		
1741	5		C-2	4-8-10		18	@5':Sandy Silt (ML) w/clay, very fine grained, gray, moist, medium stiff	6	105		
1736	10		C-3	10-11-14		25	@10': Same as above	4	106	32	HD:68(SA):25(SI):7(CL)
1731	15						End of Boring = 11.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1726	20										
1721	25										
1716	30										
1711	35										
1706	40										
1701	45										

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-10
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. I-10
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	21.5
Drill Rig Type :	B-61	Drilling Contractor :	Randy - Whitcomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass/Weeds				
	2		Bag #1				@ 0-2'; Silty SAND (SM), light gray, moist, very fine grained loose				
			C-1	5-8-10		18	@2':Silty Sand (SM), gray, slightly moist, loose to medium dense fine to medium grained	3	100		
1741	5		C-2	4-6-6		12	@5':Sandy Silt (ML), fine to very fine, light gray, moist, medium stiff	8	99		
1736	10		C-3	7-7-9		16	@10': Same as above.	7	114		
1731	15		S-1	3-4-7		11	@ 15'; Same as above, sample disturbed	5	-		
1726	20		S-2	4-5-5		10	@20': Sandy Silt (ML), moist, gray, stiff	4	-		
1721	25						End of Boring = 21.5 feet No groundwater encountered No Caving but possible for bigger diameter holes Backfilled w/Cuttings				
1716	30										
1711	35										
1706	40										
1701	45										

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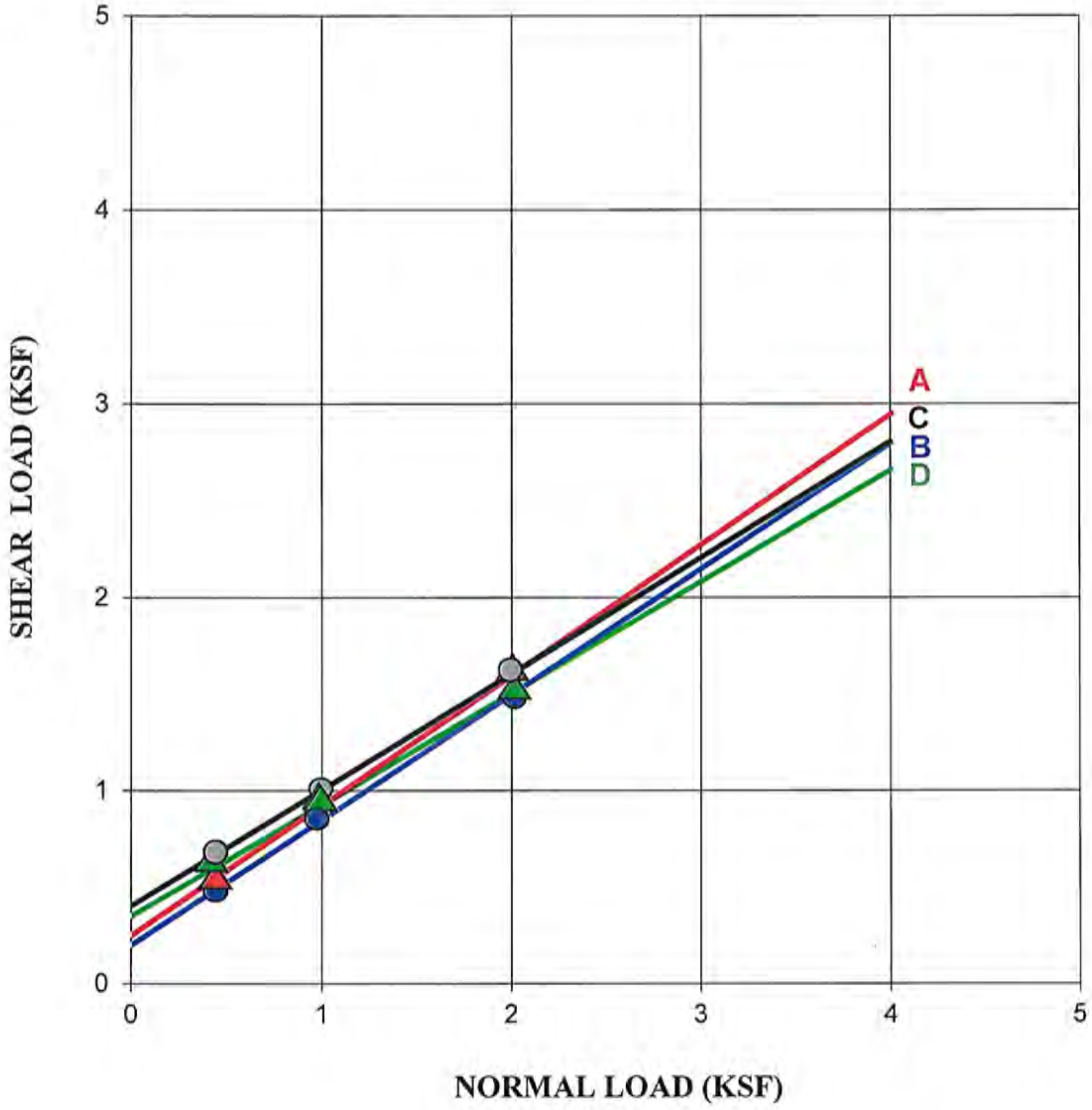
DIRECT SHEAR



SYMBOL	LOCATION	DEPTH (FT)	TEST CONDITION		COHESION (PSF)	FRICTION (DEG)
A	B-1	10'	Saturated - Drained	Peak	250	34
B	B-1	10'	Saturated - Drained	Ultimate	200	33
C	B-3	5'	Saturated - Drained	Peak	400	31
D	B-3	5'	Saturated - Drained	Ultimate	350	30

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	J

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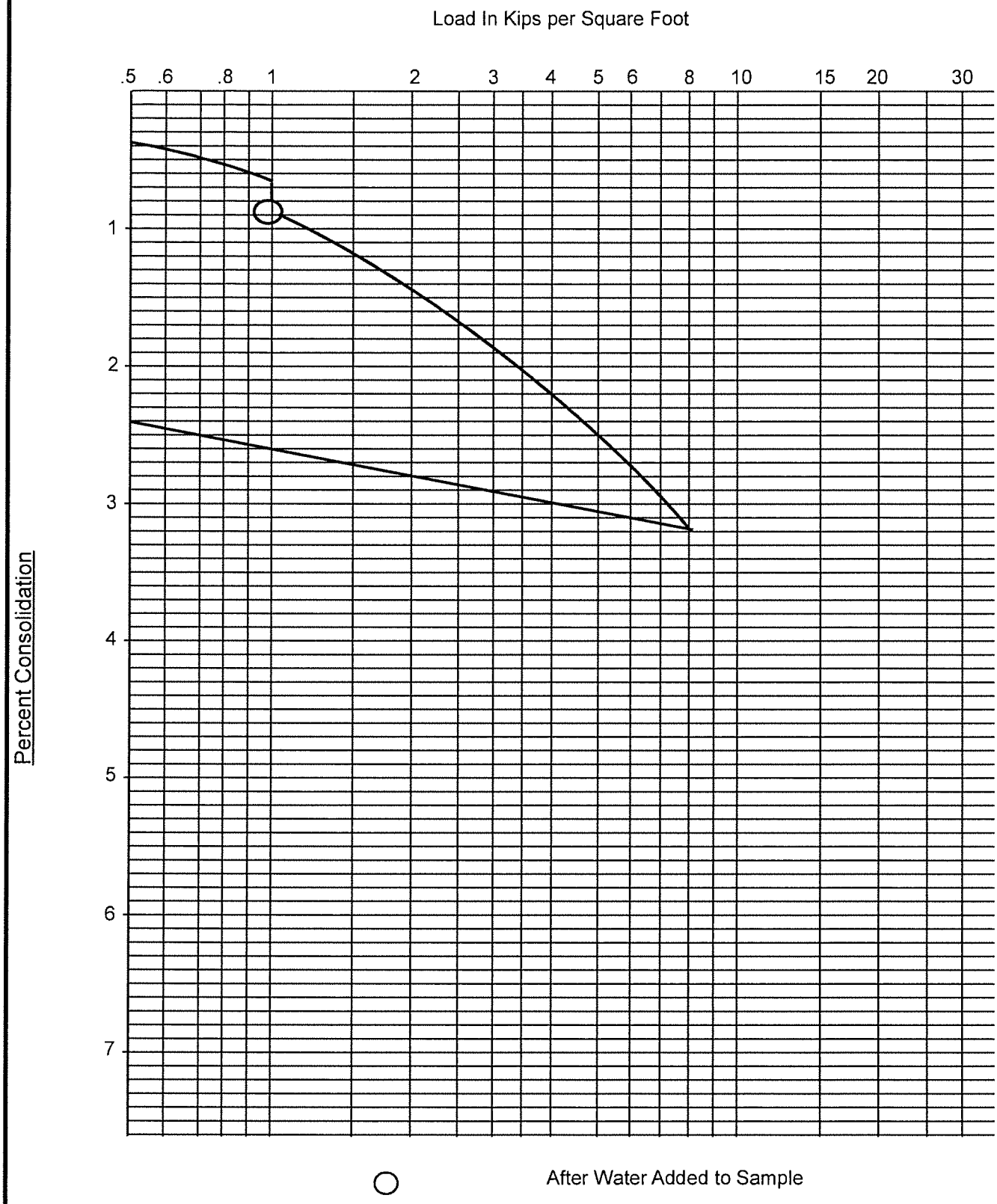
CONSOLIDATION



B-1 @ 2'

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	K

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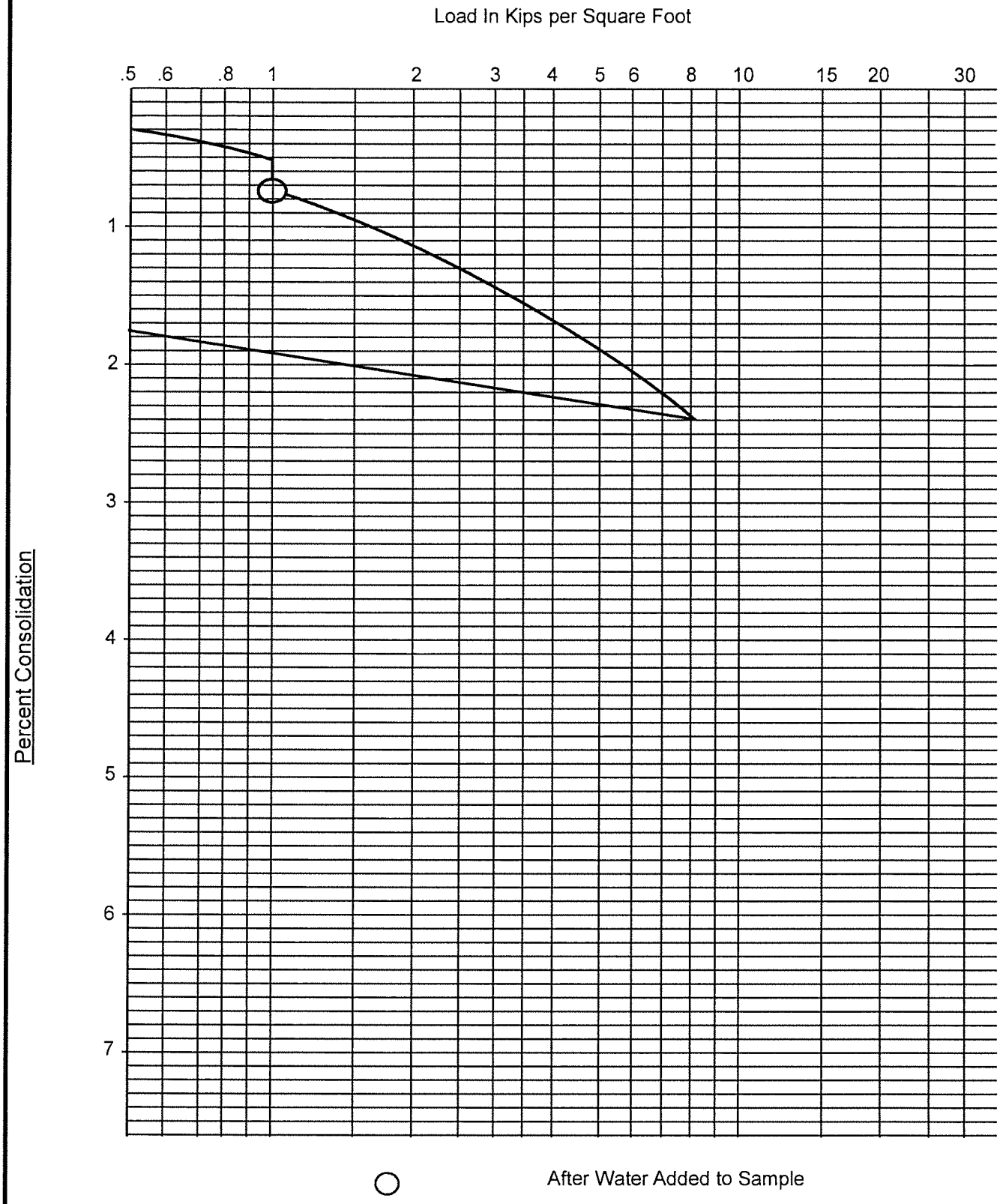
CONSOLIDATION



Boring 1 @ 10'

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	L

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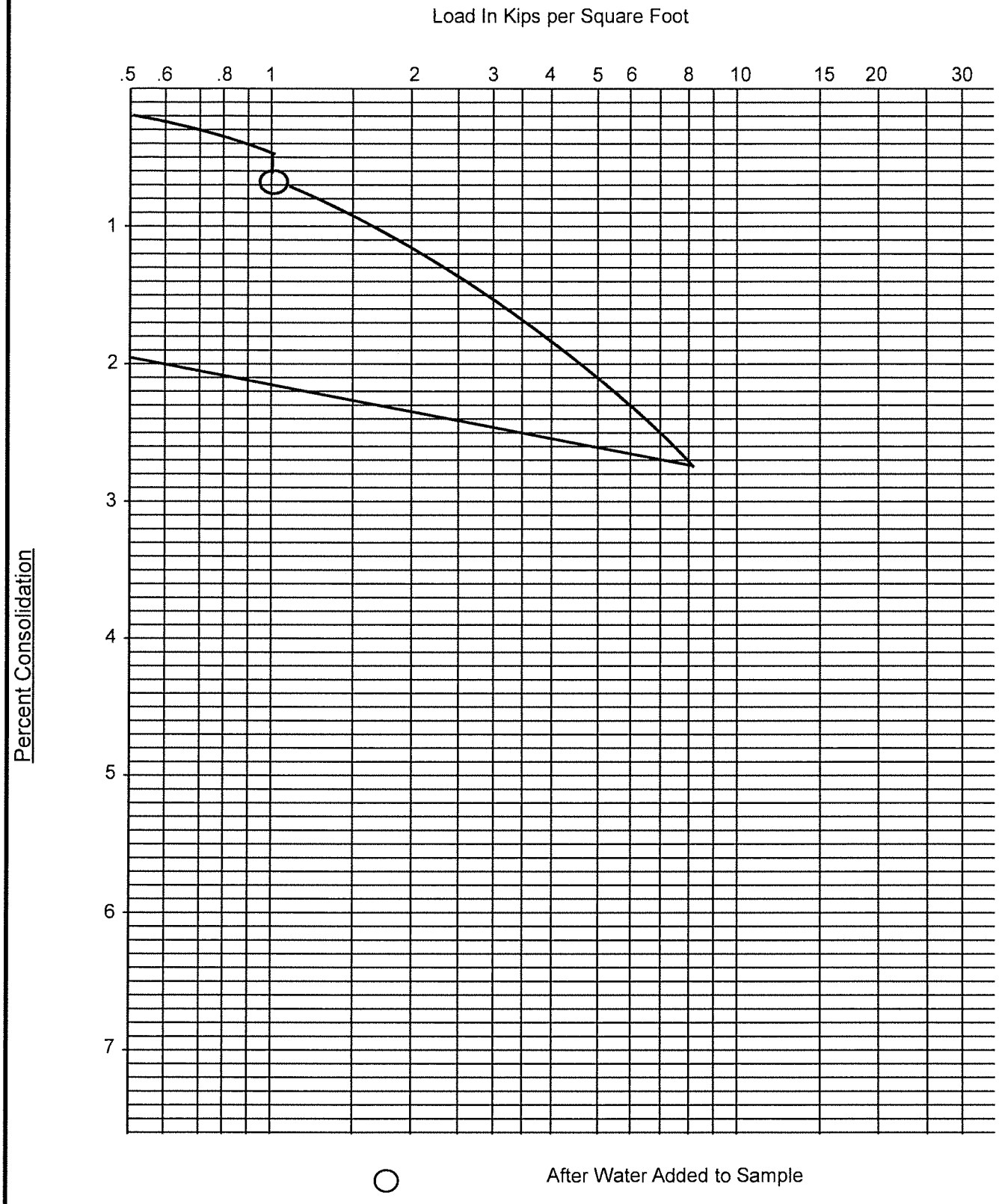
CONSOLIDATION



B-8 @ 5'

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	M

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Appendix B

Seismic Data

- Table 1 - Faults Table
- Unified Hazard Tool – Hazard Curve
- U.S. Seismic Design Maps Summary & Detailed Report (SEAOC / OSHPD)

Table-1
2008 National Seismic Hazard Maps - Source Parameters
Moreno Valley Truck Stop

Distance in Miles	Name	State	Pref Slip Rate (mm/yr)	Dip (degrees)	Dip Dir	Slip Sense	Rupture Top (km)	Rupture Bottom (km)	Length (km)
1.03	San Jacinto;SBV+SJV+A	CA	n/a	90	V	strike slip	0	16	134
1.03	San Jacinto;SJV	CA	18	90	V	strike slip	0	16	43
1.03	San Jacinto;SBV+SJV+A+CC+B+SM	CA	n/a	90	V	strike slip	0.1	15	241
1.03	San Jacinto;SJV+A+C	CA	n/a	90	V	strike slip	0	17	136
1.03	San Jacinto;SBV+SJV+A+CC	CA	n/a	90	V	strike slip	0	16	181
1.03	San Jacinto;SJV+A	CA	n/a	90	V	strike slip	0	17	89
1.03	San Jacinto;SJV+A+CC+B	CA	n/a	90	V	strike slip	0.1	15	170
1.03	San Jacinto;SBV+SJV+A+C	CA	n/a	90	V	strike slip	0	17	181
1.03	San Jacinto;SBV+SJV	CA	n/a	90	V	strike slip	0	16	88
1.03	San Jacinto;SJV+A+CC	CA	n/a	90	V	strike slip	0	16	136
1.03	San Jacinto;SBV+SJV+A+CC+B	CA	n/a	90	V	strike slip	0.1	15	215
1.03	San Jacinto;SJV+A+CC+B+SM	CA	n/a	90	V	strike slip	0.1	15	196
4.22	San Jacinto;A	CA	9	90	V	strike slip	0	17	71
4.22	San Jacinto;A+CC+B	CA	n/a	90	V	strike slip	0.1	15	152
4.22	San Jacinto;A+CC	CA	n/a	90	V	strike slip	0	16	118
4.22	San Jacinto;A+C	CA	n/a	90	V	strike slip	0	17	118
4.22	San Jacinto;A+CC+B+SM	CA	n/a	90	V	strike slip	0.1	15	178
7.21	San Jacinto;SBV	CA	6	90	V	strike slip	0	16	45
11.95	S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	14	384

11.95	S. San Andreas;CC+BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	86		strike slip	0.1	13	449
11.95	S. San Andreas;CC+BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	14	322
11.95	S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	86		strike slip	0.1	13	512
11.95	S. San Andreas;SSB+BG	CA	n/a	71		strike slip	0	13	101
11.95	S. San Andreas;NSB+SSB+BG+CO	CA	n/a	79		strike slip	0.2	12	206
11.95	S. San Andreas;CC+BB+NM+SM+NSB+SSB+BG	CA	n/a	85		strike slip	0	14	380
11.95	S. San Andreas;BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	85		strike slip	0.1	13	390
11.95	S. San Andreas;BB+NM+SM+NSB+SSB+BG	CA	n/a	84		strike slip	0	14	321
11.95	S. San Andreas;BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	14	263
11.95	S. San Andreas;SSB+BG+CO	CA	n/a	77		strike slip	0.2	12	170
11.95	S. San Andreas;SSB	CA	16	90	V	strike slip	0	13	43
11.95	S. San Andreas;SM+NSB+SSB+BG+CO	CA	n/a	83		strike slip	0.1	13	303
11.95	S. San Andreas;SM+NSB+SSB+BG	CA	n/a	81		strike slip	0	13	234
11.95	S. San Andreas;SM+NSB+SSB	CA	n/a	90	V	strike slip	0	13	176
11.95	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	86		strike slip	0.1	13	548

11.95	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB+BG	CA	n/a	86		strike slip	0.1	13	479
11.95	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0.1	13	421
11.95	S. San Andreas;NSB+SSB+BG	CA	n/a	75		strike slip	0	14	136
11.95	S. San Andreas;NSB+SSB	CA	n/a	90	V	strike slip	0	13	79
11.95	S. San Andreas;NM+SM+NSB+SSB+BG+CO	CA	n/a	84		strike slip	0.1	13	340
11.95	S. San Andreas;NM+SM+NSB+SSB+BG	CA	n/a	83		strike slip	0	14	271
11.95	S. San Andreas;NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	13	213
11.95	S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB+BG	CA	n/a	86		strike slip	0	14	442
15.19	S. San Andreas;BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0	14	220
15.19	S. San Andreas;SM+NSB	CA	n/a	90	V	strike slip	0	13	133
15.19	S. San Andreas;CH+CC+BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0	14	341
15.19	S. San Andreas;NM+SM+NSB	CA	n/a	90	V	strike slip	0	13	170
15.19	S. San Andreas;CC+BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0	14	279
15.19	S. San Andreas;NSB	CA	22	90	V	strike slip	0	13	35
15.19	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0.1	13	377
20.47	S. San Andreas;BG	CA	n/a	58		strike slip	0	13	56
20.47	S. San Andreas;BG+CO	CA	n/a	72		strike slip	0.3	12	125
21.27	Elsinore;GI+T	CA	5	90	V	strike slip	0	14	78
21.27	Elsinore;GI	CA	5	90	V	strike slip	0	13	37
21.27	Elsinore;W+GI	CA	n/a	81	NE	strike slip	0	14	83

21.27	Elsinore;W+GI+T	CA	n/a	84	NE	strike slip	0	14	124
21.27	Elsinore;W+GI+T+J	CA	n/a	84	NE	strike slip	0	16	199
21.27	Elsinore;W+GI+T+J+CM	CA	n/a	84	NE	strike slip	0	16	241
21.27	Elsinore;GI+T+J	CA	n/a	86	NE	strike slip	0	17	153
21.27	Elsinore;GI+T+J+CM	CA	n/a	86	NE	strike slip	0	16	195
22.74	Elsinore;T	CA	5	90	V	strike slip	0	14	52
22.74	Elsinore;T+J+CM	CA	n/a	85	NE	strike slip	0	16	169
22.74	Elsinore;T+J	CA	n/a	86	NE	strike slip	0	17	127
23.43	Cucamonga	CA	5	45	N	thrust	0	8	28
23.97	Cleghorn	CA	3	90	V	strike slip	0	16	25
24.72	Chino, alt 2	CA	1	65	SW	strike slip	0	14	29
25.94	Chino, alt 1	CA	1	50	SW	strike slip	0	9	24
25.96	Elsinore;W	CA	2.5	75	NE	strike slip	0	14	46
26.37	Pinto Mtn	CA	2.5	90	V	strike slip	0	16	74
27.01	North Frontal (West)	CA	1	49	S	reverse	0	16	50
32.94	San Jose	CA	0.5	74	NW	strike slip	0	15	20
33.19	Helendale-So Lockhart	CA	0.6	90	V	strike slip	0	13	114
34.38	North Frontal (East)	CA	0.5	41	S	thrust	0	16	27
34.5	S. San Andreas;CC+BB+NM+SM	CA	n/a	90	V	strike slip	0	14	243
34.5	S. San Andreas;SM	CA	29	90	V	strike slip	0	13	98
34.5	S. San Andreas;CH+CC+BB+NM+SM	CA	n/a	90	V	strike slip	0	14	306
34.5	S. San Andreas;NM+SM	CA	n/a	90	V	strike slip	0	14	134
34.5	S. San Andreas;BB+NM+SM	CA	n/a	90	V	strike slip	0	14	184
34.5	S. San Andreas;PK+CH+CC+BB+NM+SM	CA	n/a	90	V	strike slip	0.1	13	342
35.83	Sierra Madre	CA	2	53	N	reverse	0	14	57
35.83	Sierra Madre Connected	CA	2	51		reverse	0	14	76
37.84	San Joaquin Hills	CA	0.5	23	SW	thrust	2	13	27
40.89	Puente Hills (Coyote Hills)	CA	0.7	26	N	thrust	2.8	15	17
41	Lenwood-Lockhart-Old Woman Springs	CA	0.9	90	V	strike slip	0	13	145
41.93	Elsinore;J	CA	3	84	NE	strike slip	0	19	75

41.93	Elsinore;J+CM	CA	3	84	NE	strike slip	0	17	118
43.59	Burnt Mtn	CA	0.6	67	W	strike slip	0	16	21
44.69	Clamshell-Sawpit	CA	0.5	50	NW	reverse	0	14	16
45.04	Landers	CA	0.6	90	V	strike slip	0	15	95
45.61	Eureka Peak	CA	0.6	90	V	strike slip	0	15	19
47.25	Newport Inglewood Connected alt 1	CA	1.3	89		strike slip	0	11	208
47.25	Newport-Inglewood (Offshore)	CA	1.5	90	V	strike slip	0	10	66
47.25	Newport Inglewood Connected alt 2	CA	1.3	90	V	strike slip	0	11	208
47.28	Johnson Valley (No)	CA	0.6	90	V	strike slip	0	16	35
47.85	San Jacinto;CC+B+SM	CA	n/a	90	V	strike slip	0.2	14	103
47.85	San Jacinto;CC+B	CA	n/a	90	V	strike slip	0.2	14	77
47.85	San Jacinto;CC	CA	4	90	V	strike slip	0	16	43
48.2	San Jacinto;C	CA	14	90	V	strike slip	0	17	47
49.44	Puente Hills (Santa Fe Springs)	CA	0.7	29	N	thrust	2.8	15	11
49.96	Newport-Inglewood, alt 1	CA	1	88		strike slip	0	15	65

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Conterminous U.S. 2008 (v3.2.x)

Spectral Period

Peak Ground Acceleration

Latitude

Decimal degrees

33.9364

Time Horizon

Return period in years

475 Moreno Valley Truck Stop

Longitude

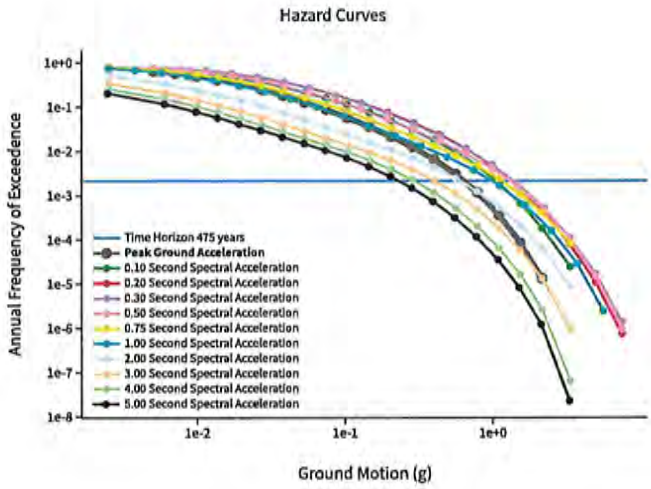
Decimal degrees, negative values for western longitudes

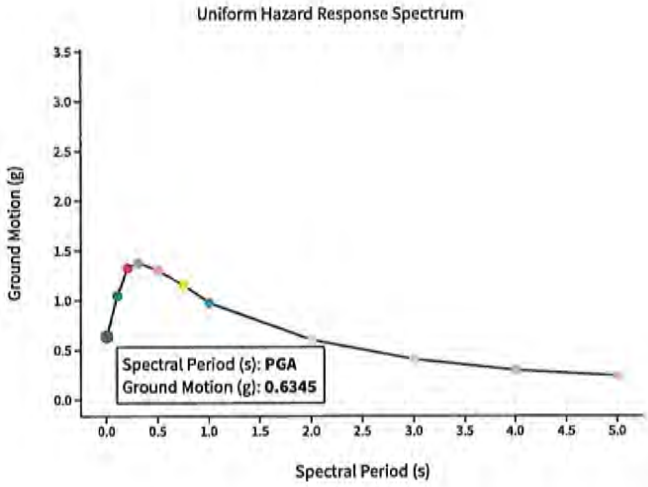
-117.1581

Site Class

259 m/s (Site class D)

Hazard Curve





View Raw Data

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Conterminous U.S. 2008 (v3.2.x)

Spectral Period

Peak Ground Acceleration

Latitude

Decimal degrees

33.9364

Time Horizon

Return period in years

975 Moreno Valley Truck Stop

Longitude

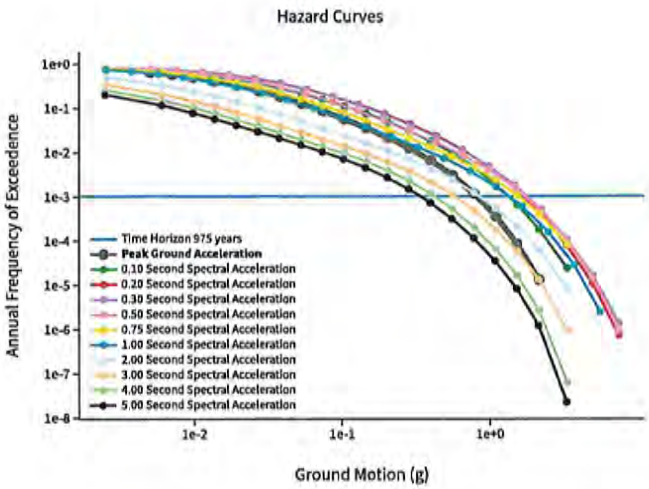
Decimal degrees, negative values for western longitudes

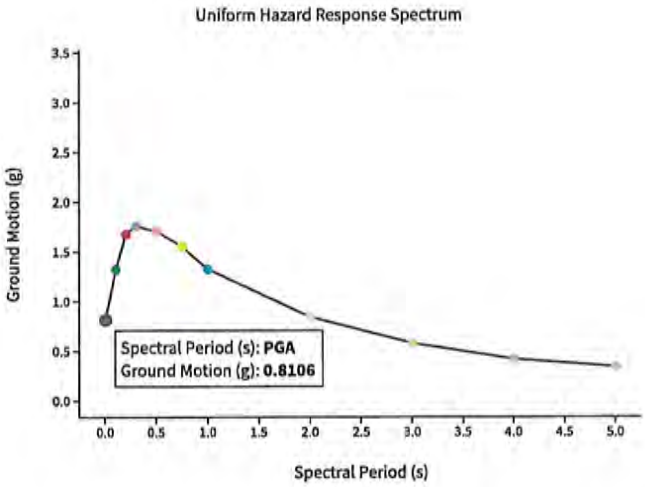
-117.1581

Site Class

259 m/s (Site class D)

Hazard Curve





View Raw Data

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

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Input

Edition

Conterminous U.S. 2008 (v3.2.x)

Spectral Period

Peak Ground Acceleration

Latitude

Decimal degrees

33.9364

Time Horizon

Return period in years

2475 Moreno Valley Truck Stop

Longitude

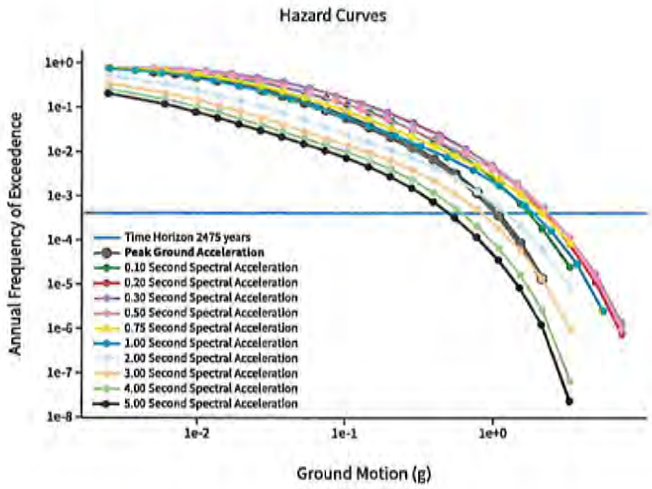
Decimal degrees, negative values for western longitudes

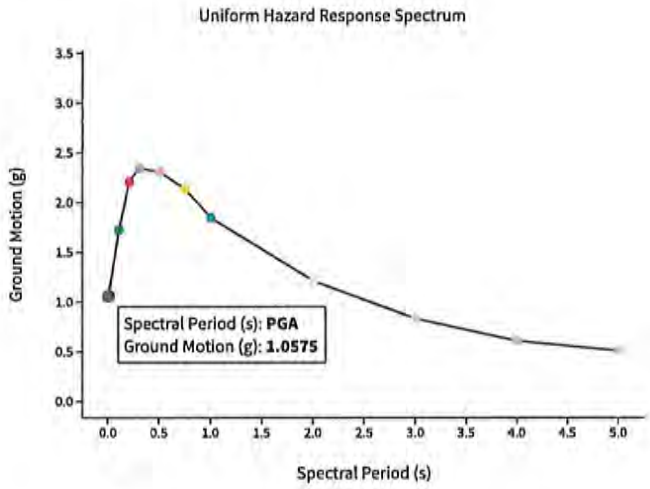
-117.1581

Site Class

259 m/s (Site class D)

Hazard Curve





View Raw Data

OSHPD

Moreno Valley Truck Stop

Latitude, Longitude: 33.9364, -117.1581

Date	2/9/2021, 8:02:18 AM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	2.225	MCE_R ground motion. (for 0.2 second period)
S_1	0.9	MCE_R ground motion. (for 1.0s period)
S_{MS}	2.67	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.78	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1.2	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.977	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	1.172	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	2.225	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	2.468	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	2.319	Factored deterministic acceleration value. (0.2 second)
S1RT	0.9	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	1.02	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.927	Factored deterministic acceleration value. (1.0 second)
PGAd	0.977	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.901	Mapped value of the risk coefficient at short periods
C_{R1}	0.882	Mapped value of the risk coefficient at a period of 1 s

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Appendix C

Recommended Earthwork Specifications

RECOMMENDED EARTHWORK SPECIFICATIONS

1.0 General

1.1 Description

1.1.1 These specifications cover preparation of the subject site to receive fills, the type of soils suitable for use in fills, the compaction standards, and the methods of testing compacted fills.

1.1.2 The Contractor shall furnish all labor, supervision, equipment, operations, and materials to excavate to the required grade, support existing underground facilities, stockpile material, compact fill and backfill, and fine grade. The work of the Contractor shall include all clearing and grubbing, removing existing unsatisfactory material, preparing areas to be filled, spreading and compacting of fill in the areas to be filled and all other work necessary to complete the grading of the filled areas. It shall be the Contractor's responsibility to place, spread, moisten or dry, and compact the fill in strict accordance with these specifications to the lines and grades indicated on project plans or as directed in writing by the Civil Engineer.

1.1.3 Deviations from these specifications will be permitted only upon written authorization from the Owner or his representative.

1.2 Role of the Geotechnical Engineer

1.2.1 Construction - The Owner will employ a Geotechnical Consultant to observe and test this work as it is being performed. The Contractor shall cooperate with the Geotechnical Consultant and allow his unrestricted access to the site as required for the performance of his duties.

The Contractor shall provide a minimum notice of 48 hours to the Geotechnical Engineer before beginning or restarting earthwork operations that will require the presence of the Geotechnical Engineer or his representative on site.

1.2.2 Subsurface Investigations - A geotechnical engineering report for design purposes was prepared by Geotechnical Solutions, Inc., Irvine, California. Any recommendations made in the geotechnical report or subsequent reports are made part of these specifications. These reports are available for review upon request to the Owner.

1.2.3 Observation and Testing - The Geotechnical Engineer's representative shall observe the clearing and grubbing, excavation, filling and compacting operations and shall take density tests in the fill material so that he can state his opinion as to whether or not the fill was constructed in accordance with the specifications. All fill will be tested shortly after its placement to ascertain that the required compaction is achieved. A minimum of one density test will be made on each 500 cubic yards of fill placed, with a minimum of at least one test per every 2 feet of vertical height of fill. If the surface is disturbed, the density tests shall be made in the compacted materials below the disturbed zone. When these tests indicate that the density or water content of any layer of fill or portion thereof does not meet the specified density or water content, the particular layer or portions thereof shall be reworked until the specified density and water content have been obtained.

After the completion of grading, the Geotechnical Engineer will prepare a written opinion of grading. Neither the testing performed by the Geotechnical Consultant nor his opinion as to whether or not the fill was constructed in accordance with these Specifications shall relieve the Contractor of his responsibility to construct the fills in accordance with the Contract Documents.

1.3 Reference Standards

The following ASTM (American Society for Testing and Materials) codes and standards shall be used to the extent indicated by references herein. The most recent revision of the standards shall be used.

D 1556 - "Standard Test Method for Density of Soil in Place by the Sand-Cone Method"

D1557 - "Standard Test Methods for Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using 10-lb (4.54 kg) and 18-inch (457-mm) Drop"

D2216 - "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures"

D4318 - "Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils"

D4718 - "Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles"

D4829 - "Standard Test Method for Expansion Index of Soils"

D4944 - "Standard Test Method for Field Determination of Water (Moisture) Content of Soil by the Calcium Carbide Gas Pressure Tester Method."

D5195 - "Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)"

D6938 - "Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)"

D7928 - "Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis"

1.4 Degree of Fill Compaction

The degree to which fill is to be compacted is expressed in terms of "relative compaction." Relative compaction is defined as the ratio; expressed in percent, of the in-place dry density of the compacted fill to the reference maximum dry density. The reference maximum dry density shall be obtained following ASTM D1557. Optimum water content shall be obtained in the same test used to obtain the reference maximum dry density. Correction of the maximum dry density and optimum water content for

oversize particles of gravel and cobbles shall be made following ASTM D4718 when, in the opinion of the Geotechnical Engineer, such correction is appropriate. The in-place density shall be obtained following ASTM D1556 (sand cone method) or ASTM D6938 (nuclear method-shallow depth) test method. The in-place water content shall be obtained following ASTM D4944 (calcium carbide gas pressure meter), ASTM D5195 (nuclear method-shallow depth), or ASTM D2216 (oven drying). Correction of the in-place density and water content for oversize particles of gravel and cobbles shall be made following ASTM D4718 when, in the opinion of the Geotechnical Engineer, such correction is appropriate.

If any of the test methods specified in this section are judged by the Geotechnical Engineer to be impractical or unreliable because the material has a coarse particle size distribution, or for other reasons, the Geotechnical Engineer shall establish other procedures to obtain the required soil characteristics.

2.0 Products

2.1 Materials

2.1.1 General - During grading operations, soil types other than those identified in the geotechnical investigation report may be encountered by the Contractor. Consult the Geotechnical Consultant for his evaluation of the suitability of using these soils a fill material prior to placement or disposal.

2.1.2 General Fill - Materials for compacted fill shall consist of material imported from outside the site or excavated from the site that, in the opinion of the Geotechnical Engineer, is suitable for use in constructing engineered fills. The material shall not contain rocks or hard lumps greater than 6 inches in maximum dimension, and at least 70 percent (by weight) of its particles shall pass through a U.S. Standard 3/8 inch sieve. Material greater than 3 inches, but less than 6 inches in maximum dimension, shall be placed by the Contractor so that it is completely surrounded by compacted, finer material;

no nesting of rocks shall be permitted. Do not use any perishable, spongy, hazardous, or other undesirable materials as fill.

2.1.3 Select Fill - Select fill shall meet all criteria for general fill but shall also contain no rocks or hard lumps greater than 3 inches in maximum dimension, and at least 80 percent (by weight) shall pass through a U.S. Standard 3/8-inch sieve. The expansion index of select material shall be less than 50 (i.e., 5.0 percent swell) when tested in accordance with ASTM D4829.

3.0 Execution

3.1 Clearing and Grubbing

Within the project limits, tile Contractor shall demolish structures as specified on the Drawings.

Unless otherwise indicated on the Drawings or by the Owner in writing, the Contractor shall clear and grub all trees, stumps, roots, brush, grass, and other vegetation within construction, fill and stockpile areas to a minimum depth of 3 feet below the existing ground surface or below finished grade, whichever is deeper, unless otherwise recommended by the Geotechnical Engineer's Field Representative.

Remove cleared and grubbed materials from the site and dispose of them legally. No onsite burning or burying of cleared and grubbed materials is permitted. No placement of cleared and grubbed materials in topsoil stockpiles is permitted. No mulching of branches or roots is permitted. Incorporating vegetative matter into stockpiled materials, which are to be used in fill, is not permitted.

Stockpile organic-laden topsoil separate from other fill materials.

Remove any remaining vegetative matter from the deeper excavated soils, which may result from roots deeper than those encountered during clearing and grubbing operations.

All material thereby removed shall be piled at a location away from the immediate work area so as to avoid burying of piled material.

3.2 Compacted Fills

3.2.1 Preparing Areas to be Filled - Brush, grass, and other objectionable materials shall be collected, piled, and disposed of as indicated in Section 3.1 by the Contractor so as to leave the areas that have been cleared with a neat and finished appearance, free from unsightly debris.

Remove all loose soil, uncertified fill, landslide debris, and weathered bedrock to firm material or in-situ bedrock, as approved by the Geotechnical Consultant. The Contractor shall obtain approval from the Geotechnical Engineer or his representative of stripping and site preparation before the compaction of any fill subgrade begins. The surface shall then be scarified to a minimum depth of 6 inches until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment used, and shall be brought to the specified water content and relative compaction. Compact scarified materials to a minimum relative compaction of 90 percent, relative to ASTM D1557, prior to placement of any fill material.

3.2.2 Placing, Spreading, and Compacting, Fill Material - Onsite soil obtained from removals, borrow, or cut areas may be reused as compacted fill provided it is free from deleterious debris and meets the other requirements of the "Materials" portion of this Specification Section.

Use of soil containing deleterious debris from the clearing and grubbing operation or from other sources is not permitted. The fill materials shall be placed by the Contractor in horizontal layers not greater than 8 inches thick, measured before compaction. Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to obtain uniformity of material and moisture in each layer. The moisture content of material used for compacted fill should be adjusted to be at or above optimum water content as determined by ASTM D1557. When the water content of the fill material is too high, the

fill materials shall be aerated by the Contractor by blading, mixing, or other satisfactory methods until the water content is as specified.

After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted by the Contractor to a relative compaction of at least 90 percent of the maximum dry density as determined by ASTM D1557 for general fill, and 95 percent of the maximum dry density as determined by ASTM D1557 for select fill, compacted fill pads, and the upper 1 foot of pavement subgrade. Compaction shall be accomplished by: sheepsfoot rollers; vibratory rollers; multiple-wheel, pneumatic-tired rollers; or other types of acceptable compacting equipment. Equipment shall be of such design that it is able to compact the fill to the specified density. Compaction shall be continuous over the entire area, and the equipment shall make sufficient passes to obtain the desired density uniformly. All fill placed on site shall be treated in like manner until finished grades are attained. Jetting, puddling, and hydro consolidation techniques shall not be used, including backfill of utility trenches.

The placement of topsoil is subject to the approval of the Geotechnical Engineer. Topsoil shall not be placed beneath concrete flatwork, beneath or behind retaining walls, or within structural fill. All topsoil material is subject to the same moisture conditioning, placement, and compaction requirements as General Fill. Roots, branches and other organic debris are not permitted within the compacted topsoil layer.

When backfilling around footings and compacting behind retaining walls and flexible retaining structures, the Contractor shall use lightweight compaction equipment such as hand-operated equipment, shoring, or other means to avoid over-stressing structural walls. When using lightweight compaction equipment, the fill materials shall be spread in horizontal layers not greater than 6 inches thick, measured before compaction.

As an alternative, sand-cement slurry may be used to backfill trenches. The slurry shall have minimum cement content of 3 sacks per cubic yard within the zone of influence of foundations and other settlement sensitive structures. A minimum of 2 sacks per cubic

yard of slurry shall be used elsewhere within building limits, and a minimum of one sack per cubic yard of slurry shall be used elsewhere. Slurry shall not be used in those areas where such placement would result in the obstruction of water flow, and is subject to the approval of the Geotechnical Engineer.

3.3 Protection of Work and Adjacent Properties

3.3.1 During Construction - The Contractor shall grade all excavated surfaces to provide good drainage away from construction slopes and prevent ponding of water. He shall control surface water and the transport of silt and sediment to avoid damage to adjoining properties or to finished work on the site. The Contractor shall take remedial measures to prevent erosion of freshly graded areas until such time as permanent drainage and erosion control measures have been installed.

Dispose of all water resulting from dewatering operations legally and in ways that will not cause damage to public or private property, or constitute a nuisance or menace to the public, in accordance with municipal requirements.

The Contractor shall make every effort to minimize the amount of dust raised in excavating, on haul roads and access roads, and all other work areas in the course of construction activities.

Protect benchmarks, monuments, and other reference points against displacement or damage. Repair or replace benchmarks, monuments, and other permanent survey data that become displaced or damaged due to the performance of this work.

3.3.2 After Completion - After earthwork is completed and the, Geotechnical Engineer has finished his observations of the work, no further excavation, filling or backfilling shall be performed except under the observation of the Geotechnical Engineer.

GEOTECHNICAL ENGINEERING
PERCOLATION / INFILTRATION
TEST REPORT

MORENO VALLEY TRUCK STOP
PILOT # 1316

AT

SOUTH OF FREEWAY 60 &
REDLANDS BOULEVARD
MORENO VALLEY, CALIFORNIA

PREPARED FOR:

BROADBENT, INC.
8 WEST PACIFIC AVENUE
HENDERSON, NEVADA 89015

PROJECT NO: G-5852-08

FEBRUARY 26, 2021

GEOTECHNICAL SOLUTIONS, INC.
GEOTECHNICAL & ENVIRONMENTAL
ENGINEERING

Geotechnical Solutions, Inc.
Geotechnical, Structural & Environmental Engineering

February 26, 2021

Project: G-5852-08

BROADBENT, INC.
8 West Pacific Avenue
Henderson, Nevada 89015

Attention: **Mr. Mark E. Kazelskis, PG, CHG, CEM**
Principal Geologist

Via Email: mkazelski@broadbentinc.com

Re: **Geotechnical Engineering Percolation / Infiltration Report**
Moreno Valley Truck Stop – Pilot # 1316
NW of Redlands Boulevard & Eucalyptus Avenue
Moreno Valley, California 92553

Gentlemen:

Per your authorization, we have performed our geotechnical engineering field percolation tests to evaluate the subgrade percolation and infiltration rate at the referenced Moreno Valley Pilot # 1316 site in the City of Moreno Valley, California. Proposed development consists of improving or incorporating Storm Water Permanent Best Management Practice (BMP).

The accompanying geotechnical engineering report presents the results of our field borings, sampling of subgrade material, field percolation tests, reviewing site plan, performing laboratory tests, analyzing field and laboratory data and our conclusions and recommendations for the project.

Our services were performed using the standard of care ordinarily exercised in this locality, at the time when the report was prepared.

The closest known active fault capable of producing a major earthquake is the San Jacinto (SBV+SJV+A) Fault, which is located approximately 1.03 miles (1.65 km) away from the project site.

The site does not lie within Alquist-Priolo Earthquake Fault Zone as designated by the California Geological Survey (CGS). The potential for direct surface fault rupture at the site is considered unlikely.

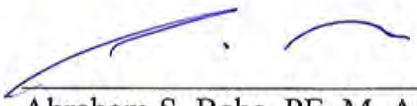
The investigation was made in accordance with generally accepted geotechnical engineering principles and procedures and included such field and laboratory tests considered necessary under the circumstances.

In the opinion of the undersigned, the accompanying report has been substantiated by mathematical and other data and presents fairly the design information requested by your organization.

Respectfully Submitted,

Geotechnical Solutions, Inc.

Dharma Shakya, PhD, PE, GE
Principal Geotechnical Engineer



Abraham S. Baha, PE, M. ASCE
Sr. Principal

Distribution: (3+pdf) Addressee

TABLE OF CONTENTS

Introduction

Geotechnical Solutions, Inc. (GSI) has performed field investigation including borings and sampling of earth material and field percolation tests at the proposed locations as shown on Plot Plan & Percolation Tests Location Map (Plate B in Appendix A) at Moreno Valley Truck Stop, Pilot # 1316 in the City of Moreno Valley, California.

The main purpose of this study is to provide infiltration rates of subgrade material based on field percolation tests so that an appropriate system incorporating Storm Water permanent best management practice (BMP) to manage surface water into the ground and the appropriate infiltration basin or any other approved system may be designed and existing drainage be improved.

Field Exploration

Field exploration consisted of drilling two borings, PC-1 and PC-2, 8-inches in diameter and extended 10-feet below existing ground as shown on Plot Plan and Percolation Tests Location Map (Plate B). Also shown hollow stem auger borings, B-1 and B-9 close to PC-1 and PC-2 percolation test areas and are presented on Plates E-1 and E-2 respectively. The percolation test logs are presented on Plates D-1 and D-2 in Appendix A.

The attached logs tabulate data based on laboratory classification tests and visual observation by the field engineer at the site. During drilling bulk samples of earth material obtained for further laboratory test.

Groundwater

Groundwater was not encountered at a depth of 51.5-feet below grade in our borings (Borings drilled for this project). Also, in accordance with the available groundwater well maps data, http://wdl.water.ca.gov/water_data_library, historical high groundwater

level as shown on Plates C-1 and C-2 presented in Appendix A are much deeper than 50 feet.

The potential for ground water to rise to the ground surface in the site area is considered to be very unlikely.

Laboratory Testing

Laboratory testing was programmed following a review of the field investigation data to be evaluated. Tests included physical testing to determine soil characteristics and selective tests. Test results are presented in Appendix A.

Mechanical Analysis (ASTM D-422)

Mechanical analyses by the hydrometer test method were performed to confirm field classifications. Test results are as follows:

Test Hole No.	Sample Depth (ft)	Sand Percent	Silt Percent	Clay Percent
PC-1	10.0	70	20	10
PC-2	10.0	62	26	12
B-1	10	65	30	5
B-9	10	68	25	7

Field Percolation Tests

We performed field percolation tests at PC-1 and PC-2 locations as shown on Plot Plan and Percolation Tests Location Map (Plate B). The percolation test procedure performed in accordance with the current acceptable method for shallow percolation test (less than 10 feet) by qualified personnel under the supervision of registered geotechnical engineer as per Technical Guidance Document, Orange County Public Works.

- Borehole diameter was 8 inches.
- Bottom elevation of test holes correspond to bottom elevation of proposed retention basins which are proposed at 10-feet in depth below the ground surface in accordance with the following locations:

  PC-1 10 feet below the ground surface

  PC-2 10 feet below the ground surface

- The bottom of the test hole was covered with 2 inches of gravel prior to testing.
- Sides of the hole were not smeared after drilling and there was no caving.
- Holes were filled with clear water to appropriate depths from the ground surface (Minimum required is 5 x radius of the hole (5 x 4" = 20 inches) from the bottom.
- On all these two locations, two consecutive measurements showed that more than 6 inches of water seeped away in 25 minutes test (Pre-Percolation Data Sheets, Plates 1 and 3). Thus, pre-soaking overnight for about 24 hours was not required.
- The tests were then run for an additional one-hour duration, measurements being taken every 10 minutes (Percolation Test Results). The drop that occurs during the final reading is used to calculate the percolation and then infiltration rate. Both Pre-Percolation data Sheets and Field Percolation
- Test Results are presented on Plates 2 and 4 respectively for PC-1 and PC-2 in Appendix B, Infiltration calculations are presented on Plates 5 and 6 and presented in Appendix C. Infiltration results using another method, Reduction Factor Method, Rf are presented on Plates 7 and 8 in Appendix D.
- Measurements were taken with a precision of 0.25 inches or better.
- All the field percolation tests are tabulated and are presented in Appendix B.

- The holes were backfilled with soil cuttings.

Percolation Rate Evaluation

To evaluate the percolation rates, testing was performed by filling the borehole with water and observing the rate of water drop from the fixed reference point on the ground surface. The depths of water drop for every 10 minutes intervals were noted and tabulated and plotted as shown on Plates 2 and 4, respectively for PC-1 and PC-2 in Appendix B.

Percolation rate, k can be correlated with the data in the form of the straight line equation as shown below:

$$t/R = b + kt$$

Where, t = average time in minutes

$$R = \Delta t / d$$

Δt = Time Interval, minutes

d = drop in inch = R1 – R2

R1 = Initial Readings, inch

R2 = Final Readings, inch

k = Percolation Rate inch/minute

R = 1/k at equilibrium rate

t/R is plotted against t as shown on the plots (Plates 2 and 6 for PC-1 and PC-2, respectively) and the regression analyses were performed to interpolate the data obtained in the field. Straight line interpolation gives the slope as a percolation rate, k.

Results of the Tests

The results obtained from the analyses are as follows:

1. Near surface material consisted of sandy silt with some silty sand, medium dense and gray in color generally.

2. Around and below 10 feet, the subgrade materials consisted of Silty Sand with little clay, medium dense to dense and medium gray in color.

3. Field Percolation tests at 10 feet depth show the following results:

Location	Coefficient of Permeability, k			
	Inch/minute	Cm/sec	**Inch/hour Average**	**Inch/hr** based on last 10 Minutes Reading
PC-1	**0.2014**	**8.50 x E-03**	**12.084**	**18.0**
PC-2	**0.2007**	**8.50 x E-03**	**12.042**	**15.0**
Average	**0.2011**	**8.5 x E-03**	**12.063**	**16.5**
		Average:	**14.281 inch/hour**	

4. Based on the data presented in this report and the testing information accumulated, it is our judgment that the percolation rate is an average of **14.281** inch per hour. It takes about **4.2 minutes to percolate 1 inch**. This conclusion regarding percolation rate is based on the results of our field exploration and testing.

5. General range of permeability for some of the subgrade soils are as follows:

Type of Soil	Permeability (Cm/Sec)
Medium to coarse gravel	$> 10^{-1}$
Coarse sand to fine sand	between $1x10^{-1}$ to $1x10^{-3}$
fine sand and silty sand	between $1x10^{-3}$ to $1x10^{-5}$
silt, clayey silt or silty clay	between $1x10^{-4}$ to $1x10^{-6}$

Clays	$1x10^{-7}$ or less

Since the percolation rate average is **8.5 x E-03 Cm/Sec**, it falls into coarse Sand to fine Sand **category** as tabulated above.

As per Technical Guidance Document, Infiltration rate, I_t is calculated based on Percolation Rate Conversion using Porchet Method, aka Inverse Borehole Method.

The bottom of the proposed infiltration basin would be at 10-feet below the existing ground surface. Percolation tests were performed with the depth of the test hole set at the infiltration surface level (bottom of basin).

After the minimum required number of testing intervals, the test was complete. The data collected at the final interval was used to calculate infiltration rates.

The calculations and the results are tabulated and presented on Plates 5 and 6 in Appendix C.

Location	Percolation Rate inch/hour Based on Average Reading	Infiltration Rate Inch/hour Based on Porchet Method aka Inverse Borehole Method
PC-1	12.08	1.014
PC-2	12.04	0.603
Average	**12.06**	**0.808**

Using factor of safety of 2.0 for uncertainty and bias, **percolation test result is 6.03 inch per hour** and **Infiltration Rate = 0.404 "/ hour**, which is greater than **0.3"/hour** in accordance with **TGD VII.2.**

Thus, it **does meet** the standard criteria, hence **PASSED**.

Reduction Factor (R_f) Method

We have used Reduction Factor (R_f) Method which is another acceptable and approved method for calculating Infiltration Rate, I_f.

Infiltration Rates as calculated by this method have been tabulated on Plates 4 and 8 in Appendix D. The results are as follows:

Location	I_f Using (Reduction Factor Method) (inch/hour)
PC-1	0.9143
PC-2	0.8136
AVERAGE:	**0.8640**
With FOS = 2	**0.4320**
	> 0.3 inch/hour - "PASSED"

Conclusions

The subgrade soils consist of generally sandy silt (ML) to silty Sand (SM), medium dense to dense, light gray to brown in color, fine to coarse grained and slightly moist to moist. Percolation tests performed for two locations at 10 feet depth met the prescribed criteria.

Also, since the groundwater is very deep more than 50 feet, there is a room for the basin (Groundwater to be minimum of 10 feet below the bottom of the proposed basin at 10 feet which is required in accordance with the technical guidance document), hence the project is feasible.

Additional Services

This office will be available for further consultation.

Closure

Based on the data presented in this report and the testing information accumulated, it is the judgment of the writers of this report that BMP infiltration system seems to be **feasible** at these locations. The conclusions presented in this report are based on the results of our field exploration, percolation tests, and other laboratory tests.

This report has been compiled for the exclusive use on the above referenced site, for the purpose stated above. It should not be transferred to or used by another party, or applied to any other project on this site, other than as described herein, without consent and/or thorough review by this office.

Geotechnical Solutions, Inc.

References

California Building Code, 2019, California Code of Regulations, Title 24, Volume 2 of Part 2.

California Department of Water Resources groundwater well data **http://wdl.water.ca.gov**.

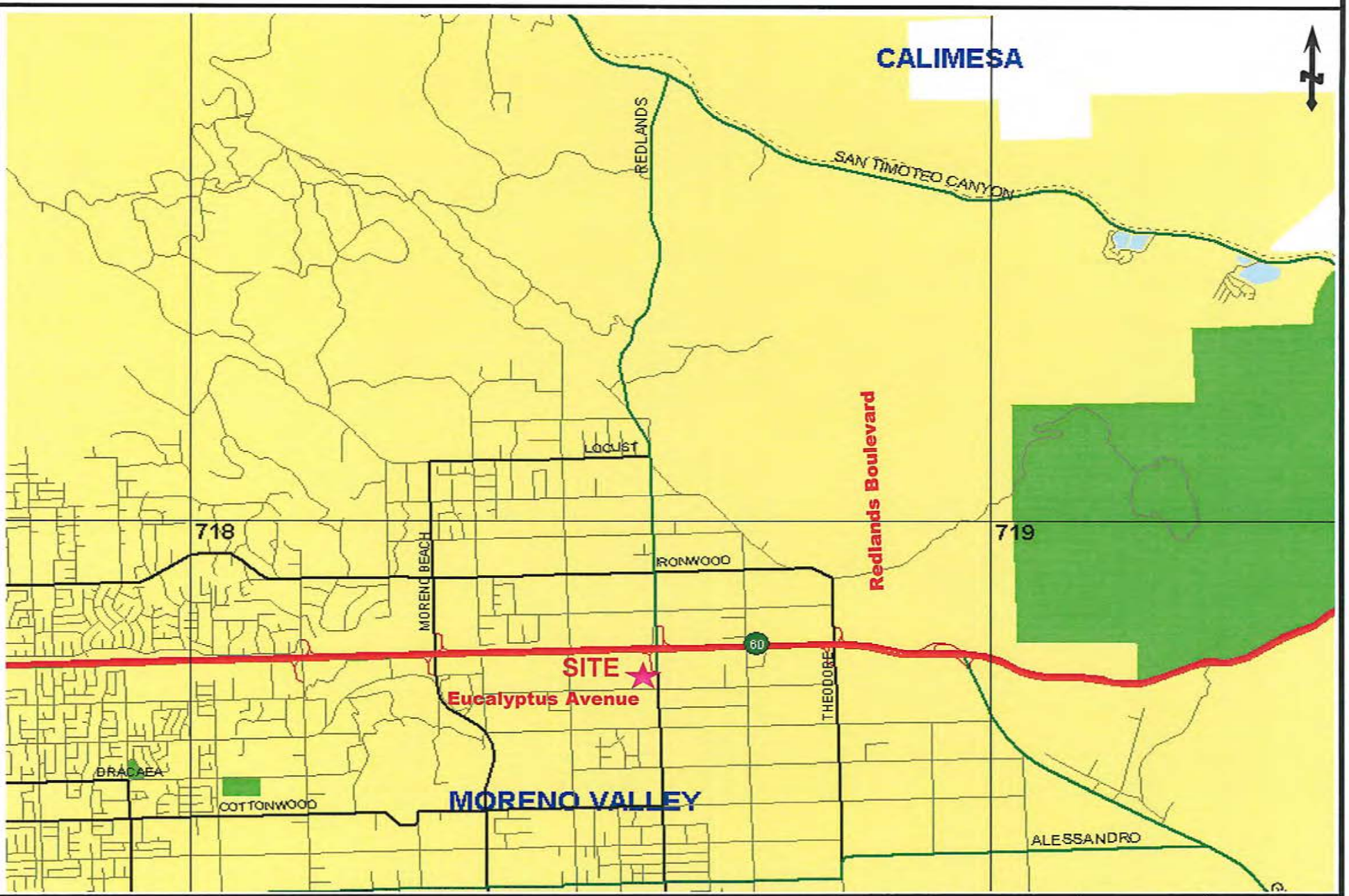
Orange County, Technical Guidance Document (TGD) for the Preparation of Conceptual / Preliminary and/or Project Water Quality Management Plans (WQMPs) dated December, 2013.

Appendix A

Plates:

- Vicinity Map
- Plot Plan & Percolation Tests Location Map
- Groundwater Map (Closest Well Data)
- Groundwater Map – Well Data
- Hollow Stem Auger Boring Logs (Percolation Tests) PC-1 & PC-2
- Boring B-1 Close to PC-1
- Boring B-9 Close to PC-2

VICINITY MAP



Truck Stop - Moreno Valley Pilot # 1316 - Percolation Tests	Project No.	G-5852-08
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	A

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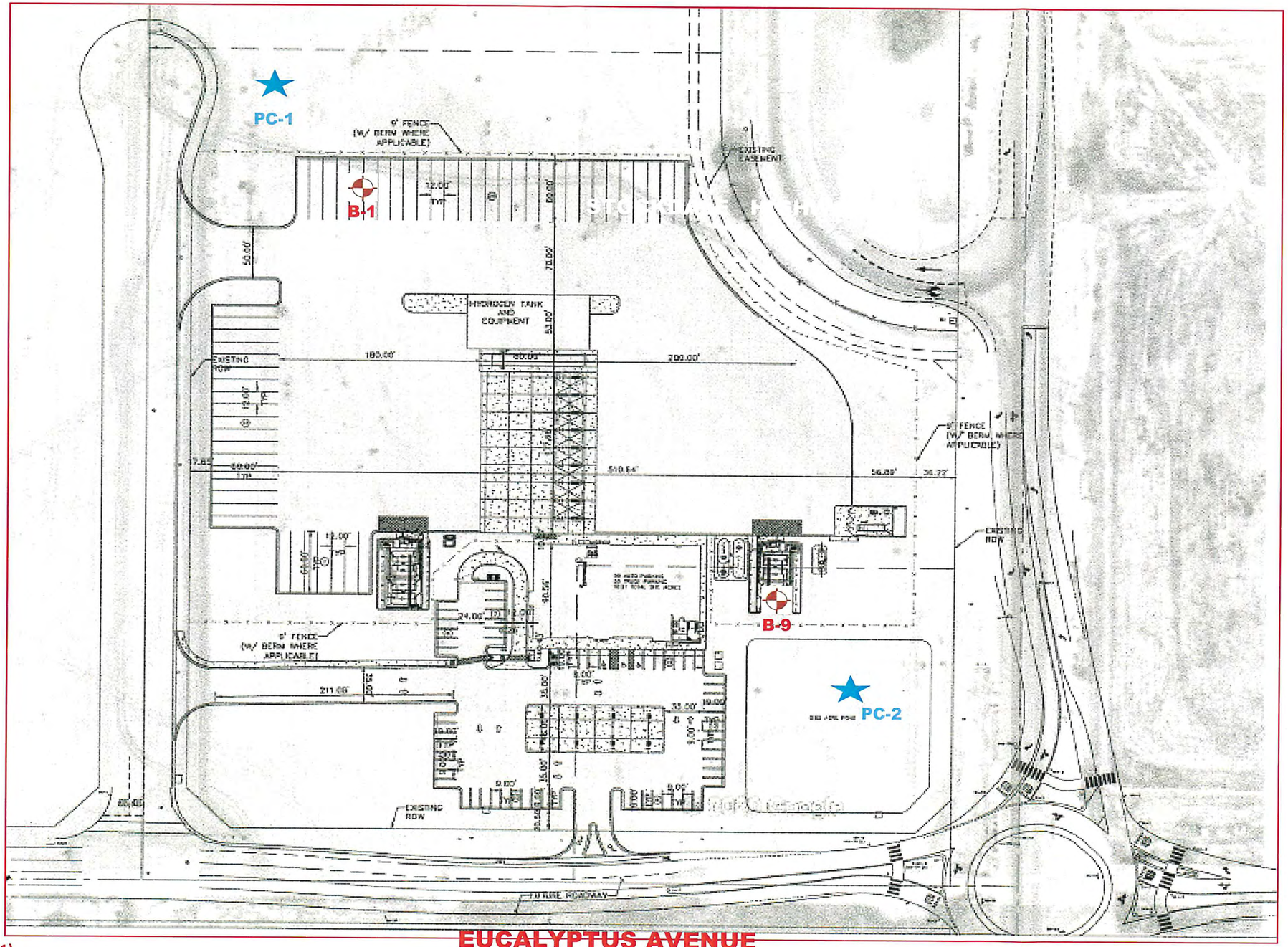
PLOT PLAN & PERCOLATION TEST LOCATION MAP



Percolation Tests

PC-2

B-9 Hollow Stem Auger Borings (2021)

SCALE: 1" = 100'

Truck Stop - Moreno Valley Pilot # 1316 - Percolation Tests	Project No.	G-5852-08
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	B
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GROUNDWATER MAP - CLOSEST WELL DATA

Truck Stop - Moreno Valley Pilot # 1316 - Percolation Tests	Project No.	G-5852-08
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	C-1

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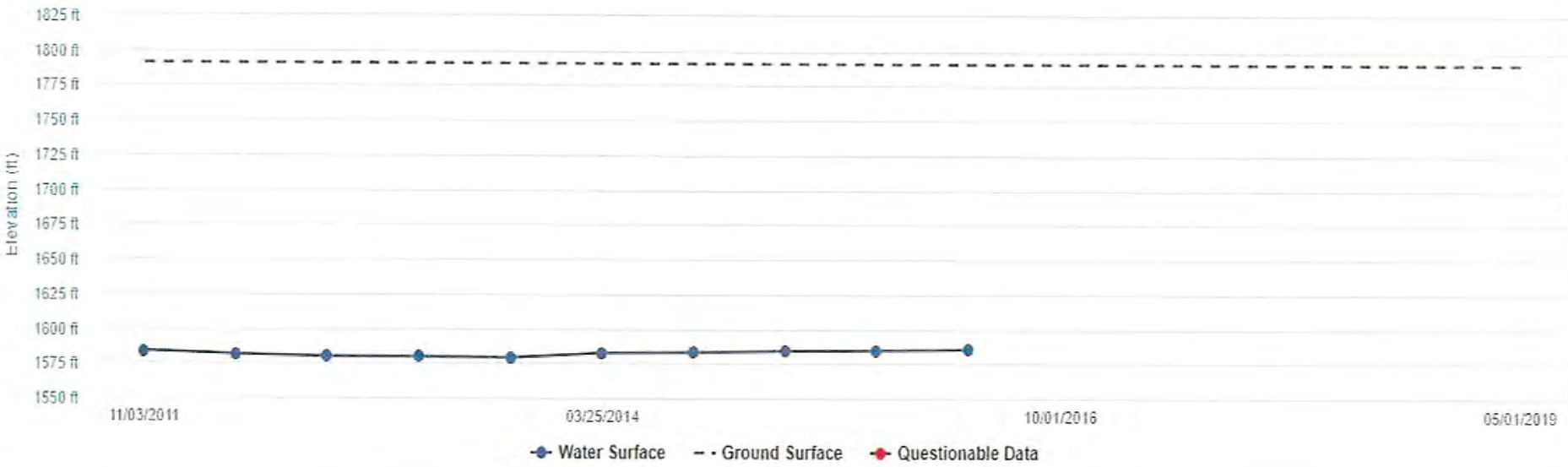
GROUNDWATER MAP - WELL DATA

Groundwater Levels for Well 339387N1171655W001



Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency
11/03/2011 00:00:00	1791.640	1790.840	208.2	1583.44	207.4		Eastern Municipal Water D...
02/15/2012 00:00:00	1791.640	1790.840	210.5	1581.14	209.7		Eastern Municipal Water D...
10/16/2012 00:00:00	1791.640	1790.840	212.3	1579.34	211.5		Eastern Municipal Water D...
05/08/2013 00:00:00	1791.640	1790.840	212.3	1579.34	211.5		Eastern Municipal Water D...
10/31/2013 00:00:00	1791.640	1790.840	212.7	1578.94	211.9		Eastern Municipal Water D...

Truck Stop - Moreno Valley Pilot # 1316 - Percolation Tests	Project No.	G-5852-08
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	C-2

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Project:	Truck Stop - Moreno Valley Pilot # 1316 - Percolation Tests
Project Location:	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA
Project Number:	G-5852-08

Key to Log of Test Hole
Plate No. D

Elevation, feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Penetration Resistance, Blows / 6 in.	Graphic Symbol	Blows / Last 12 in	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve	OTHER TESTS AND REMARKS
1	2	3	4	5	6	7	8	9	10	11	12

COLUMN DESCRIPTIONS

1 **Elevation:** Elevation in feet referenced to mean sea level (MSL) or site datum.

2 **Depth:** Depth in feet below the ground surface.

3 **Sample Type:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.

4 **Sample Number:** Sample identification number; "[NR]" after number indicates no sample recovery.

5 **Blows / 6 in.:** Number of blows to advance driven sampler each 6-inch drive interval, or distance notes, using a 140-lb hammer with a 30-inch drop (unless otherwise noted)

6 **Graphic Symbol** Soil Type Symbol

7 **Blows / 12 in.:** Blows per 12" based on Col. 5 equal to uncorrected N-Value where SPT used

8 **Material Description:** Description of material encountered; may include color, moisture, grain size, and density / consistency. Approx. "and" = 35%-50%; "some" = 20%-35%; "little" = 10%-20%; "trace" = 0%-10%.

9 **Moisture Content:** Moisture content of sample, as percentage of dry weight of soil, meausred in lab according to ASTM D2937.

10 **Dry Unit Weight:** Dry unit weight of soil sample, in pounds per cubic foot, measured in lab according to ASTM D422.

11 **Percent Passing No. 200 Sieve:** Percent of soil by weight finer than the No. 200 sieve according to ASTM D422.

12 **Other Tests and Remarks:** Comments and observations regarding drilling or sampling made by driller or field personnel. Other lab tests are indicated using abbreviations explained below.

TYPICAL SAMPLER GRAPHIC SYMBOLS

- California (ring-lined)
- Modified California (brass tube-lined)
- Standard Penetration Test (SPT) split spoon
- Shelby Tube
- Bulk Sample
- Grab Sample

OTHER LABORATORY TEST ABBREVIATIONS

AL	Atterberg Limits Test (ASTM D4318)
COMP	Compaction test by modified effort (ASTM D1557)
CONS	One-dimensional consolidation test (ASTM D2435)
DS	Direct shear test (ASTM D3080)
EI	Expansion index test (ASTM 4829), index at 50% saturation
HD	Hydrometer analysis (ASTM D422), %<5 micros
LL	Liquid Limit from Atterberg Limites test
PI	Plasticity Index from Atterberg Limits test
SA	Sieve analysis (ASTM D422), %<#200 sieve
SE	Sand equivalent test for fines contamination (ASTM D2419)
UC	Unconfined compressive strength test (ASTM D2166)
WA	Wash analysis (ASTM D422), %<#200 sieve

OTHER GRAPHIC SYMBOLS

- First water encountered at time of drilling and sampling (ATD)
- Static water level measured at specified time after drilling
- Change in material properties within a lithologic stratum
- Inferred contact between soil strata or gradational lithologic change

Soil Classification are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive; field descriptions may have been modified to reflect lab test results. Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced; they are not warranted to be representative of subsurface conditions between samples, at other locations, or times.

Project :	Truck Stop - Moreno Valley Pilot # 1316 - Percolation Tests	LOG OF TEST HOLE	Borehole No. PC-1
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. D-1
Project Number :	G-5852-08		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA/ASB	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch-Auger	Total Depth of Borehole, feet :	10'
Drill Rig Type :	Mbile B-57	Drilling Contractor :	Whitecomb Drilling, Inc.	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Ground Water Encountered	Sampling Method :	California (ring), bulk	Hammer Data :	Downhole wire 140 lbs / 30-inch drop
Borehole Backfill :	Drill cuttings	Comments :	Refer to site plan for location		

Elevation, feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Penetration Resistance, Blows / 6"	SAMPLES: No Recovery (NR)	SAMPLES: Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
							Sandy Silt (ML), light gray, soft				
	2						@2': Sandy Silt/Silty Sand, Light brown, moist, soft/loose				
1741	5						@5': Sandy Silt (ML), very fine grained, gray, moist, medium stiff				
1736	10						@10':Silty Sand (SM) med dense, light gray, moist 2" Gravel at the bottom			30	HD:70(SA):20(SI):10(CL)
1731	15						Drilled for Percolation test to 10' Add 2" of gravel at the bottom Backfilled w/cuttings after percolation test. No Ground Water Encountered				
1726	20										
1721	25										
	30										
	35										
	40										
	45										

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Project :	Truck Stop - Moreno Valley Pilot # 1316 - Percolation Tests	LOG OF TEST HOLE	Borehole No. PC-2
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. D-2
Project Number :	G-5852-08		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA/ASB	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch-Auger	Total Depth of Borehole, feet :	10'
Drill Rig Type :	Mbile B-57	Drilling Contractor :	Whitecomb Drilling, Inc.	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Ground Water Encountered	Sampling Method :	California (ring), bulk	Hammer Data :	Downhole wire 140 lbs / 30-inch drop
Borehole Backfill :	Drill cuttings	Comments :	Refer to site plan for location		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES Penetration Resistance, Blows / 6"	SAMPLES No Recovery (NR)	SAMPLES Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
							Sandy Silt (ML), light gray, soft				
	2										
1741	5						@5': Sandy Silt (ML), very fine grained, gray, moist, medium stiff				
1736	10						@10':Silty Sand (SM) med dense, light gray, moist 2" Gravel at the bottom			38	HD:62(SA):26(SI):12(CL)
							Drilled for Percolation test to 10' Add 2" of gravel at the bottom Backfilled w/cuttings after percolation test. No Ground Water Encountered				
1731	15										
1726	20										
1721	25										
	30										
	35										
	40										
	45										

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-1
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. E-1
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA/AB	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	11.5
Drill Rig Type :	B-61	Drilling Contractor :	Whitecomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	Number	Penetration Resistance, Blows / 6"	Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
			Bag #1				Sandy Silt, light gray, soft			52	HD:48(SA):36(SI):16(CL)
	2		C-1	3-5-7		12	@2':Sandy Silt/Silty Sand, very fine, light gray, slightly moist, medium stiff/ loose	3	101		
1741	5		C-2	3-3-7		10	@5':Sandy Silt (ML) w/clay, very fine grained, gray, moist, medium stiff	7	103		
										35	HD:65(SA):30(SI):5(CL)
1736	10		C-3	4-7-11		18	@10':Silty Sand (SM), very fine, light gray, moist, medium dense	11	106		DS: P=Peak / Ult=Ultimate $\phi = 34^0$, c =250 psf (P) $\phi = 33^0$, c = 200 psf (Ult)
1731	15						End of Boring = 11.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1726	20										
1721	25										
1716	30										
1711	35										
1706	40										
1701	45										

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Project :	Truck Stop - Moreno Valley Pilot # 1316	LOG OF TEST HOLE	Borehole No. B-9
Project Location :	South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA		Plate No. E-2
Project Number :	G-5852-01		Page 1 of 1

Date(s) Drilled :	February 19, 2021	Logged By :	BA	Checked By :	DXS
Drilling Method :	Hollow Stem Auger	Drill Bit Size / Type :	8-inch	Total Depth of Borehole, feet :	11.5
Drill Rig Type :	B-61	Drilling Contractor :	Whitecomb Drilling	Approx. Surface Elevation, feet :	1746 feet MSL
Groundwater Level and Date Measured:	No Water encountered at the time of drilling	Sampling Method :	California (ring), bulk, SPT	Hammer Data :	140 lbs dropping 30 inches
Borehole Backfill :	Drill cuttings	Comments :	Refer to plot plan for location;		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES Penetration Resistance, Blows / 6"	SAMPLES Graphics	Blows / 12"	MATERIAL DESCRIPTION	Moisture Content, %	Dry Unit Weight, pcf	Percent Passing No. 200 Sieve (%)	OTHER TESTS AND REMARKS
1746	0						Grass				
			Bag #1				Sandy Silt (ML), light gray,soft				
	2		C-1	3-5-7		12	@2':Sandy Silt (ML), very fine, light gray, moist, medium stiff	5	93		
1741	5		C-2	4-8-10		18	@5':Sandy Silt (ML) w/clay, very fine grained, gray, moist, medium stiff	6	105		
1736	10		C-3	10-11-14		25	@10':Silty Sand/ Sand (SM/SP), gray, moist, medium dense	4	106	32	HD:68(SA):25(SI):7(CL)
							2" Gravel				
1731	15						End of Boring = 11.5 feet No groundwater encountered No Caving but possible for bigger diameter hole Backfilled w/Cuttings				
1726	20										
1721	25										
1716	30										
1711	35										
1706	40										
1701	45										

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Appendix B

Pre-Test & Percolation Test Results

- Pre-Test Percolation Data Sheet (PC-1)
- Percolation Test Result at Location PC-1
- Pre-Test Percolation Data Sheet (PC-2)
- Percolation Test Result at Location PC-2

PRE- PERCOLATION TEST DATA SHEET

Project:	Moreno Valley #1316	Project No.:	G-5852-08	Date:	2/19/2021
Test Hole Number:	**PC-1**	Tested By:	BA/ASB		
Depth of Test Hole, DT	10'	USCS Soil Classification:	Sand (SP)		
Test Hole Dimensions (inches)			Length	Width	
Diameter (if Round) =	8"	Sides (if Rectangular) =			

Sandy Soil Criteria Test *

Trial No.	Start Time	Stop Time	Time Interval (Min)	Initial Depth to Water (in)	Final Depth to Water (in)	Change in Water Level (in)	Greater than or Equal to 6"? y/n
1	7:47 AM	8:12 AM	25	60	88	28	> 6"
2	8:12 AM	8:37 AM	25	88	110	22	> 6"

* If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight. Obtain at least twelve measurements per hole over at least six hours (approximately 30 minute Intervals) with a precision of at least 0.25".

PERCOLATION TEST

Borehole No. **PC-1** Depth **120** inch

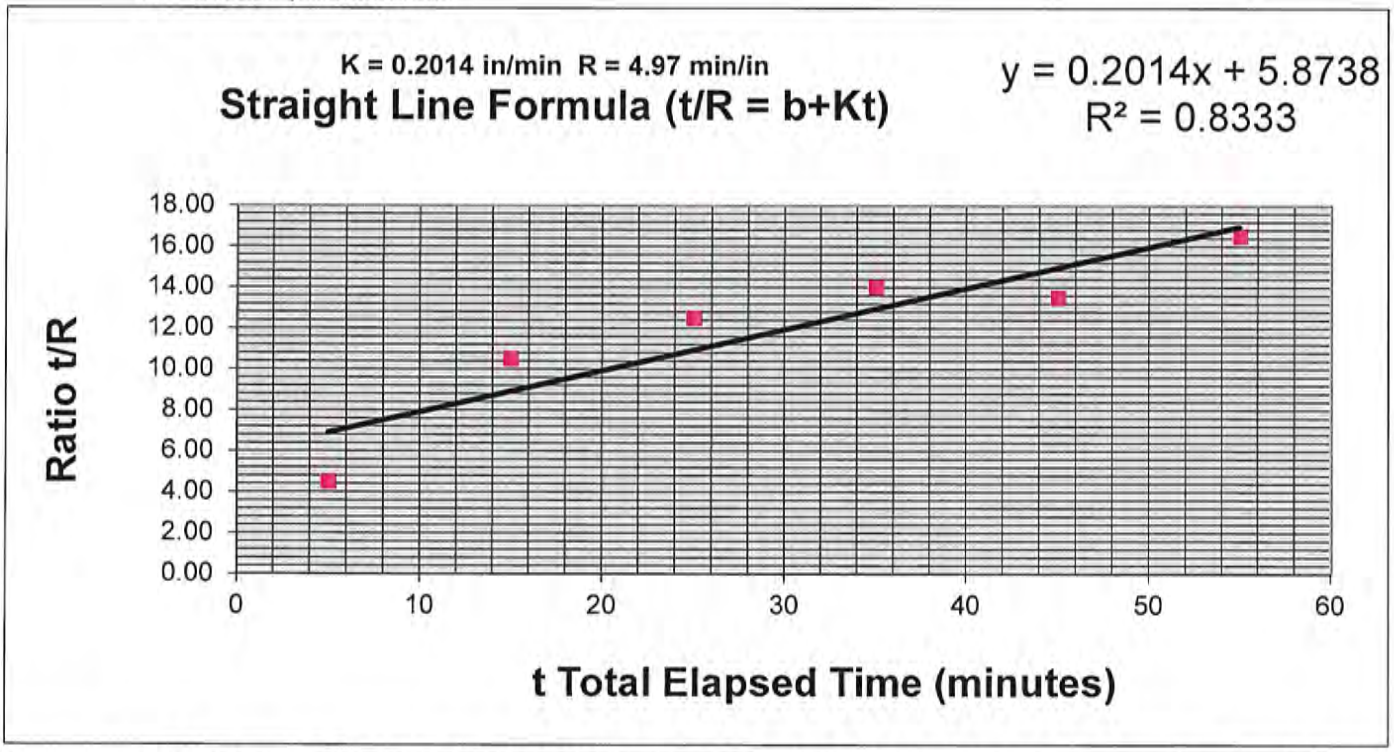
Date	Time of Reading	Δt (min.)	Total Elapsed Time (t)	Average t (minutes)	Reading R_1 (inches)	Reading R_2 (inches)	Drop d (inches)	R=Δt/d (min./in.)	t/R (in.)	k * 1000 (cm/s)
2/19/2021	8:42 AM	0	0							
	8:52 AM	10	10	5	57.00	66.00	9.00	1.11	4.50	38.1
	9:02 AM	10	20	15	66.00	73.00	7.00	1.43	10.50	29.6
	9:12 AM	10	30	25	73.00	78.00	5.00	2.00	12.50	21.2
	9:22 AM	10	40	35	78.00	82.00	4.00	2.50	14.00	16.9
	9:32 AM	10	50	45	82.00	85.00	3.00	3.33	13.50	12.7
	9:42 AM	10	60	55	85.00	88.00	3.00	3.33	16.50	12.7

Plot: t/R as ordinate vs. 't' as abscissa; tanOC = K.

R_1 = Vertical distance from reference point to water level after refilling at beginning of increment period.

R_2 = Vertical distance from reference point to water level at the end of increment period.

R = 1/K at equilibrium rate.



Truck Stop - Moreno Valley Pilot # 1316 - Percolation Tests
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA

Project: G-5852-08
Plate: 2

GEOTECHNICAL SOLUTIONS, INC.

PRE- PERCOLATION TEST DATA SHEET

Project:	Moreno Valley # 1316	Project No.:	G-5852-08	Date:	2/19/2021
Moreneo	**PC-2**	Tested By:	BA/ASB		
Depth of Test Hole, DT	10'	USCS Soil Classification:	Sand (SP)		
Test Hole Dimensions (inches)			Length	Width	
Diameter (if Round) =	8"	Sides (if Rectangular) =			

Sandy Soil Criteria Test *

Trial No.	Start Time	Stop Time	Time Interval (Min)	Initial Depth to Water (in)	Final Depth to Water (in)	Change in Water Level (in)	Greater than or Equal to 6"? y/n
1	8:05 AM	8:30 AM	25	48	64	16	> 6"
2	8:30 AM	8:55 AM	25	64	72	8	> 6"

* If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight. Obtain at least twelve measurements per hole over at least six hours (approximately 30 minute Intervals) with a precision of at least 0.25".

PERCOLATION TEST

Borehole No. **PC-2** Depth **120** inch

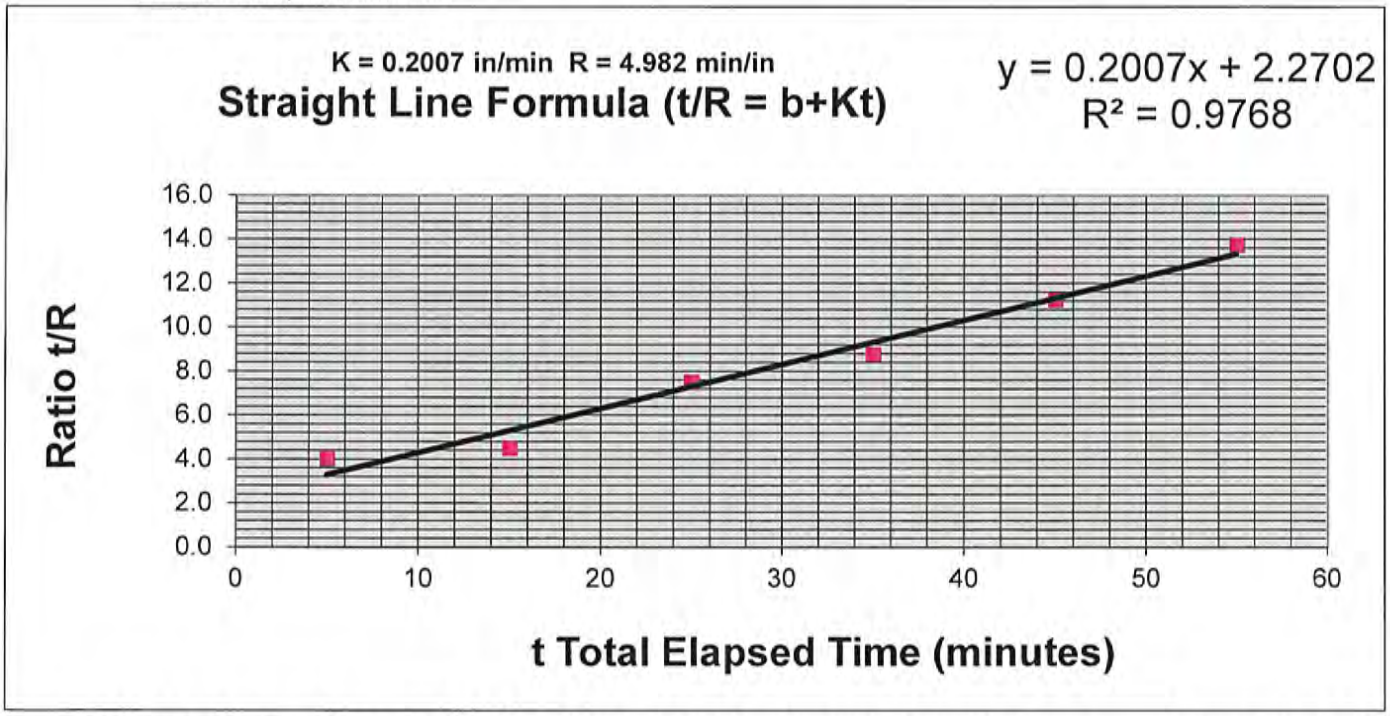
Date	Time of Reading	Δt (min.)	Total Elapsed Time (t)	Average t (minutes)	Reading R_1 (inches)	Reading R_2 (inches)	Drop d (inches)	R=Δt/d (min./in.)	t/R (in.)	k * 1000 (cm/s)
2/19/2021	9:05 AM	0	0							
	9:15 AM	10	10	5	52.00	60.00	8.00	1.25	4.00	33.9
	9:25 AM	10	20	15	60.00	63.00	3.00	3.33	4.50	12.7
	9:35 AM	10	30	25	63.00	66.00	3.00	3.33	7.50	12.7
	9:45 AM	10	40	35	66.00	68.50	2.50	4.00	8.75	10.6
	9:55 AM	10	50	45	68.50	71.00	2.50	4.00	11.25	10.6
	10:05 AM	10	60	55	71.00	73.50	2.50	4.00	13.75	10.6

Plot: t/R as ordinate vs. 't' as abscissa; tanOC = K.

R_1 = Vertical distance from reference point to water level after refilling at beginning of increment period.

R_2 = Vertical distance from reference point to water level at the end of increment period.

R = 1/K at equilibrium rate.



Truck Stop - Moreno Valley Pilot # 1316 - Percolation Tests	Project:	G-5852-08
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	4
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Appendix C – Infiltration Rates

Infiltration Rate I_f Calculations

- PC-1
- PC-2

Percolation Rate Conversion
Infiltration Rate, I_t
Porchet Method, aka Inverse Borehole Method

Infiltration test
Project No: G-5729-08

Data collected at the Final Interval analysed:

Percolation Test PC-1

As per Test Result, Percolation Rate = 0.2014 inch/Min = 12.08 inch/hour

Time Interval, Δt	=	10	Minutes	Initial Depth to Water, D_0	=	85	Inches
Total Depth of Test Hole, D_t	=	120	Inches	Final Depth to Water, D_f	=	88	Inches
Test Hole Radius, r	=	4	Inches				

Initial Height of Water at the selected time interval, H_0	=	35	Inches	$(D_t - D_0)$
Final Height of Water at the Selected time interval, H_f	=	32	Inches	$(D_t - D_f)$
Change in Height over the time interval, ΔH	=	3	Inches	$(H_0 - H_f)$
Average Head Height over the time interval, H_{avg}	=	33.5	Inches	$(H_0 + H_f)/2$

Tested Infiltration Rate, $I_t = \Delta H\,(60\,r) / ((\Delta t)(r + 2\,H_{avg}))$ **in/hr**

Therefore, I_t = **1.014085 inch/hour**

I_t = **0.507042 inch/hour** **FS: 2**

> 0.3 inch/hour requirement
PASSED

INFILTRATION RATE PLATE - 5

Percolation Rate Conversion
Infiltration Rate, I_t
Porchet Method, aka Inverse Borehole Method

Infiltration Test
Project No: G-5852-08

Data collected at the Final Interval analysed:

Percolation Test PC-2

As per Test Result, Percolation Rate = 0.2007 inch/Min = 12.04 inch/hour

Time Interval, Δ t	=	10	Minutes	Initial Depth to Water, D_0	=	71	Inches
Total Depth of Test Hole, D_t	=	120	Inches	Final Depth to Water, D_f	=	73.5	Inches
Test Hole Radius, r	=	4	Inches				

Initial Height of Water at the selected time interval, H_0	=	49	Inches	$(D_t - D_0)$
Final Height of Water at the Selected time interval, H_f	=	46.5	Inches	$(D_t - D_f)$
Change in Height over the time interval, Δ H	=	2.5	Inches	$(H_0 - H_f)$
Average Head Height over the time interval, H_{avg}	=	47.75	Inches	$(H_0 + H_f)/2$

Tested Infiltration Rate, $I_t = \Delta H\,(60\,r)\,/((\Delta t)(r + 2\,H_{avg}))$ **in/hr**

Therefore, I_t = **0.6030 inch/hour**

I_t = **0.301508 inch/hour** **FS: 2**

> 0.3 inch/hour- PASSED

PLATE - 6

INFILTRATION RATE

Appendix D

Infiltration Rates Using Reduction Factor Method R_f

- PC-1
- PC-2

REDUCTION FACTOR, R_f

Project:	Moreno Valley # 1316	Project No.:	G-5852-08	Date:	2/19/2021
Test Hole Number:	**PC-1**	Tested By:	BA/ASB		
Depth of Test Hole, DT	10'	Initial Water Depth (Inches)	85		
Test Hole Dimensions (inches)				Length	Width
Diameter (if Round), Dia =	8	Sides (if Rectangular)	=		

Percolation Test	Pre-Adjusted Percolation Rate, in/hr	Initial Depth to Water, **d1** (in)	Water level Drop, Δ**d** (in)	R_f	I_f
PC-1	20	85	3	21.88	0.9143

The average drop of the stabilized rate over the last three consecutive readings is the pre-adjusted percolation rate at the test location in inches per hour.

The pre-adjusted percolation rate must be reduced to account for the discharge of water from both the sides and bottom of the boring (non-vertical flow).

Use the Formula: Reduction Factor, $R_f = [(2d1 - \Delta d) / Dia] + 1$ where d_1 = Initial water Depth, in

Δ d = Water level drop of Final Period or Stabilized Rate (in)

REDUCTION FACTOR, R_f

Project:	Moreno Valley # 1316	Project No.:	G-5852-08	Date:	2/19/2021
Test Hole Number:	**PC-2**	Tested By:	BA/ASB		
Depth of Test Hole, DT	10'	Initial Water Depth (Inches)	71		
Test Hole Dimensions (inches)				Length	Width
Diameter (if Round), Dia =	8	Sides (if Rectangular)	=		

Percolation Test	Pre-Adjusted Percolation Rate, in/hr	Initial Depth to Water, **d1** (in)	Water level Drop, Δ**d** (in)	R_f	I_f
PC-2	15	71	2.5	18.44	0.8136

The pre-adjusted percolation rate must be reduced to account for the discharge of water from both the sides and bottom of the boring (non-vertical flow).

Use the Formula: Reduction Factor, $R_f = [(2d1 - \Delta d) / Dia] + 1$ where d_1 = Initial water Depth, in

Δ d = Water level drop of Final Period or Stabilized Rate (in)

GEOTECHNICAL ADDENDUM REPORT

MORENO VALLEY PILOT # 1316
TRUCK STOP MODEL

AT

SOUTH OF FREEWAY 60 &
WEST OF REDLANDS BOULEVARD
MORENO VALLEY, CALIFORNIA 92553

PREPARED FOR:

BROADBENT, INC.
WEST PACIFIC AVENUE
HENDERSON, NEVADA, 89015

PROJECT NO: G-5852-01

MARCH 1, 2021

PREPARED BY:

GEOTECHNICAL SOLUTIONS, INC.
GEOTECHNICAL & ENVIRONMENTAL
ENGINEERING

Geotechnical Solutions, Inc.
Geotechnical, Structural & Environmental Engineering

March 1, 2021

Project No: G-5852-01

Broadbent, Inc.
8 West Pacific Avenue
Henderson, Nevada, 89015

Attention: Mr. Mark E. Kazelskis, PG, CHG, CEM

Via Email: mkazelskis@broadbentinc.com

Re: Geotechnical Engineering Addendum Report
Truck Stop – Moreno Valley Pilot # 1316
South of Freeway 60 &
West of Redlands Boulevard
Moreno Valley, California 92553

Gentlemen:

Submitted herewith is the addendum report to our geotechnical engineering report dated February 26, 2021 conducted by this office for Moreno Valley Truck Stop Model Pilot # 1316 at the referenced site.

Recommendations regarding over excavation have been included in this addendum report for the Moreno Valley Truck Stop Model Pilot # 1316 located just northwest of Redlands Boulevard and Eucalyptus Avenue Intersection and south of Moreno Highway 60 in Moreno Valley, California as shown on Vicinity Map (Plate A) and Google Map (Plate D).

Site Clearing

Prior to grading, all debris including construction materials should entirely be removed from the site and disposed of off-site. Existing any undesirable materials should also be

removed and hauled off-site. Existing utilities (if Any) should be removed and relocated as required. Any construction debris or ant buried or other contaminated exposed during site clearance should be removed and hauled away from the site. The resulting excavation from any removal should be cleared of loose material then backfilled with compacted soil. Oversized rocks greater than 6 inches should be removed.

Excavation

Excavations into the on-site soils may encounter a variety of conditions. Caving on clean sands may be encountered. The contractor should be made responsible for designing and constructing stable, temporary excavations as required to maintain stability of the excavation sides. All excavations should be sloped or shored in the interest of safety following local and federal regulations including current OSHA excavation and trench safety standards.

Conventional equipment can be used for the excavations for shallow foundations, drilled shafts, and utility trenches for the proposed construction. The speed and ease of excavation are dependent on the nature of the deposit, the type of equipment used, and the skill and experience of the equipment operator.

Building Pad Over-excavation (Above Ground Storage Tanks, AST's)

After removal of existing debris, the above ground storage tank areas should be over-excavated at least 3 feet below the lowest grade or 24 inches below the bottom of the footings whichever is greater. Excavation should be extended 3-feet outside building perimeters. Remove and replace any loose or disturbed soils prior to placing any additional fill materials required to reach the finished subgrade elevations. The over-excavation should be backfilled to the foundation base elevation with the compacted engineering fill or lean concrete in accordance with the recommendations presented in this report.

The stability of the subgrade may be affected by precipitation, repetitive construction traffic or other factors. If unstable conditions develop, workability may be improved by scarifying and drying. Alternatively, over-excavation of wet zones and replacement with granular materials may be used, or crushed gravel and/or rock can be tracked or "crowded' into the unstable surface soil until a stable working surface is attained. Lightweight excavation equipment may also be used to reduce subgrade pumping.

Compliance

Recommendations for foundations and slabs-on-grade supported on compacted fills or prepared subgrade depend upon compliance with the General Grading and Recommended Earthwork Specifications in Appendix B.

To assess compliance, observation and testing should be performed under the direction of a geotechnical engineer. Please contact us to provide observation and testing services.

Backfill Materials

On-site clean, low-expansive potential soils, or imported materials may be used as fill material for the following:

- Foundation Areas
- Interior Slab Areas
- Pavement Areas
- Backfill

Any earth materials imported or excavated on the property may be utilized in the fill provided that each material has been determined to be suitable by the soil engineer. These materials should be free of roots, tree branches, other organic matter or other deleterious materials. Soils of poor gradation, undesirable expansion potential, or substandard

strength characteristics may be designated by the consultant as unsuitable and may require blending with other soils to serve as a satisfactory fill material.

Gradation (as per ASTM C136) should be as follows:

Size	% by Weight
6"	100
4"	85-100
¾"	70-100
No 4 Sieve	50-100
No. 200 Sieve	40 (max)

Any import material should have an expansion Index, EI less than 20. Import material should also meet the following criteria:

Soil Properties	**Values**
Liquid Limit	35 (Max)
Plastic Limit	6 (Max)

Placement and Compaction

Place and compact approved fill material in nearly horizontal layers that when compacted should not exceed 6 inches in thickness.

Use appropriate equipment and procedures that will produce recommended densities and water contents throughout the lift. Moisture condition, blending, and mixing of the fill layer should continue until the fill materials have a uniform moisture content at or above optimum moisture.

Uncompacted fill lifts should not exceed 8 inches.

Materials should be compacted to the following:

On-site or imported soil, reworked and fill: Minimum % (ASTM D-1557

	Laboratory Standard)
Subgrade Below Footings	90
Subgrade Below Slab-on Grade	90
Subgrade Below Pavement	90
Crush Rock Below Slab-on-Grade	95
Aggregate Base below pavement	95

Excavations at Pavement Areas

Subgrade Preparation

After removing the existing deleterious materials on the pavement areas and hauled offsite, all surficial deposits of loose soil material should be removed and excavate 12 inches below the base and recompacted as recommended. The bottom is further scarified to a depth of at least 6 inches; moisture conditioned as necessary and compacted to 90 percent of the maximum laboratory density as determined by ASTM Test Method D-1557.

Deleterious material, excessively wet or dry pockets, concentrated zones of oversized rock fragments, and any other unsuitable materials encountered during excavation or grading should be removed. The compacted fill material should then be brought to the elevation of the proposed subgrade for the pavement. The subgrade should be proof-rolled in order to ensure a uniform, firm and unyielding surface. All grading and fill placement should be observed by the project soils engineer and/or his representative.

Aggregate Base

Compaction and rolling are required for the recommended base section. Minimum relative compaction required will be 95 percent of the laboratory maximum density as determined by ASTM Test Designation D-1557. Aggregate base should be in accordance with 200-2.2 crushed Aggregate base Class II base (minimum R-value=78) and sample

should be brought for testing and approval prior to delivery to the site. No crushed miscellaneous base (CMB) should be accepted.

Asphalt Concrete Pavement

Asphalt concrete pavement should be Performance Grade PG 64-10 1/2" maximum aggregate size and should be placed and compacted in two layers. Asphalt concrete shall be compacted to 95 percent of the Hveem Laboratory Standard.

Earthwork Observations:

Relative compaction of all fill materials placed on site should be tested in accordance with ASTM D6938. All new fill shall be brought to near optimum moisture, placed in layers not exceeding six inches in thickness, and compacted to at least 90 percent relative compaction for subgrade and 95 percent relative compaction for aggregate base. No jetting or water tamping of fill soils shall be permitted. All imported soil for engineered fill should be pre-approved by the Geotechnical Engineer and consist of clean, granular, non-expansive soil, free of vegetation and other debris with an Expansion Index of 20 or less.

At all times, the contractor should have a responsible field superintendent on the project in full charge of the work, with authority to make decisions. He should cooperate fully with the Geotechnical Engineer in carrying out the work.

All footing trenches for continuous and spread footings and subgrade for the slab areas should be observed by the project Geotechnical Engineer to verify that over-excavation and re-compaction operations of adequate depth, thickness, and compaction have been performed as specified. All footing excavations should be trimmed neat, level and square. All loose, sloughed or moisture softened soil should be removed and replaced with properly compacted soil.

General Grading

All grading should conform to the guidelines presented in the California Building Code (CBC, 2019), the City of Moreno Valley, International Conference of Building Officials (ICBO, 2018), and Appendix B in this report, except where specifically superceded in the text of this report. When code references are not equivalent, the more stringent code should be followed. During earthwork construction, all site preparation and the general grading procedures of the contractor should be observed, and the fill selectively tested by a representative (s) of Geotechnical Solutions, Inc. (GSI). If unusual or unexpected conditions are exposed in the field, they should be reviewed by this office and if warranted, modified and /or additional recommendations will be offered. All applicable requirements of local and national construction and general industry safety orders, the Occupational Safety and Health Act and the construction Safety Act should be met.

Closure

The Conclusions and recommendations contained herein are based on the findings and observations made at the test boring locations. It is not unusual to find conditions between and beyond such locations, which differ from the conditions encountered. If conditions are encountered during construction, which appear to differ from those previously disclosed, this office should be notified so as to consider the need for modifications. On-site construction observations and wherever appropriate, tests should be performed during the course of construction by a representative of this office to evaluate compliance with the design concepts, specifications, and recommendations contained herein.

This report has been compiled for the exclusive use of our client, it shall not be transferred to, or used by, other parties, or applied to any project on this site other than described herein without consent and /or thorough review by this office.

The investigation was made in accordance with generally accepted geotechnical engineering principles and procedures and included such field and laboratory tests considered necessary under the circumstances.

In the opinion of the undersigned, the accompanying report has been substantiated by mathematical and other data and presents fairly the design information requested by your organization.

Respectfully Submitted,

Geotechnical Solutions, Inc.

Dharma Shakya, PhD, PE, GE
Principal Geotechnical Engineer

Abraham S. Baha, PE, M. ASCE
Sr. Principal

Distribution: (3+pdf) Addressee

References

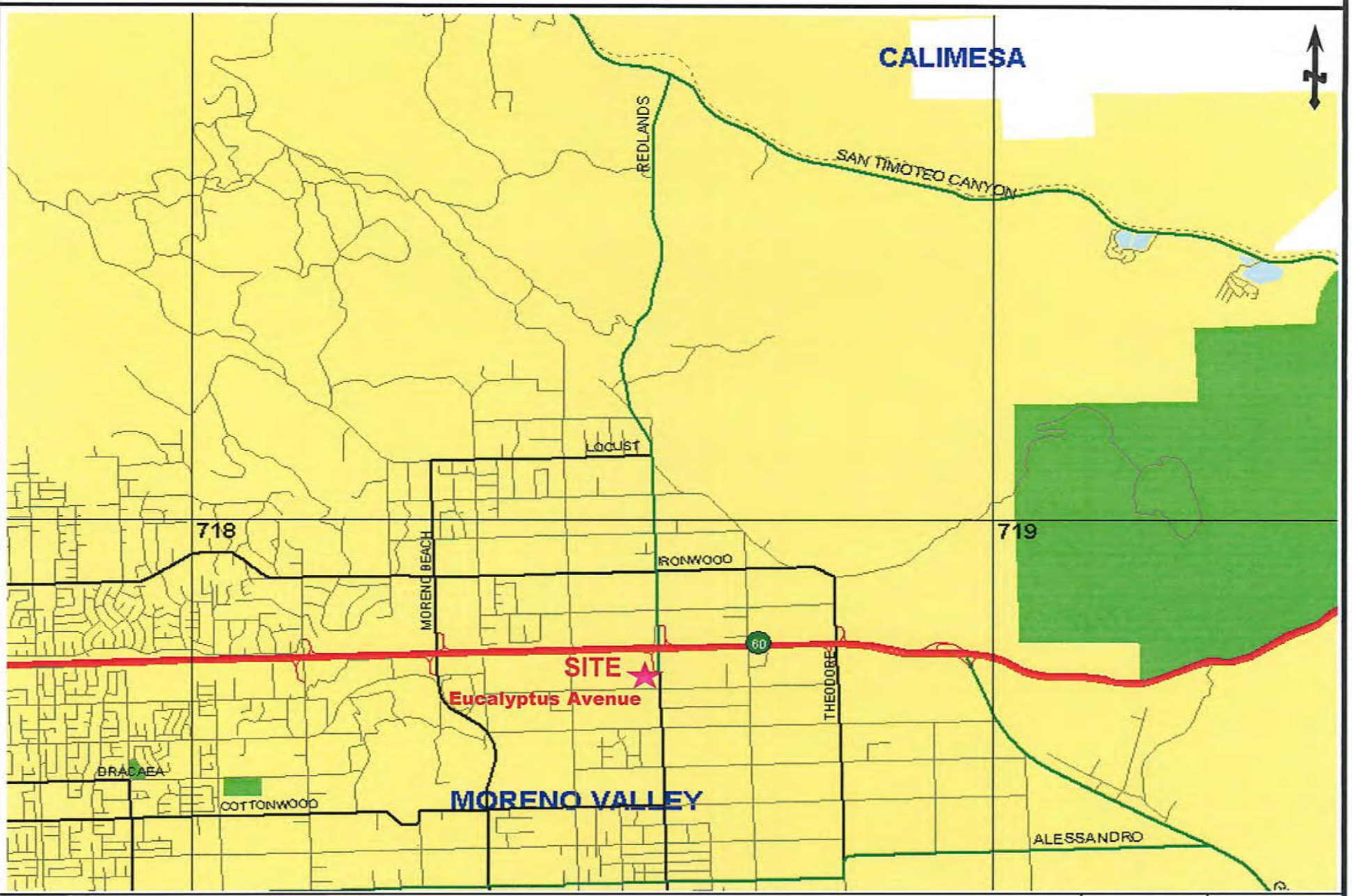
Geotechnical Solutions, Inc., 2021, "Geotechnical Evaluation Report for Moreno Valley pilot # 1316, Truck Stop Model, Located at South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, California", Project Number G-5852-01, dated February 26, 2021.

Appendix A

Plates

- Vicinity Map
- Plot Plan
- Google Map

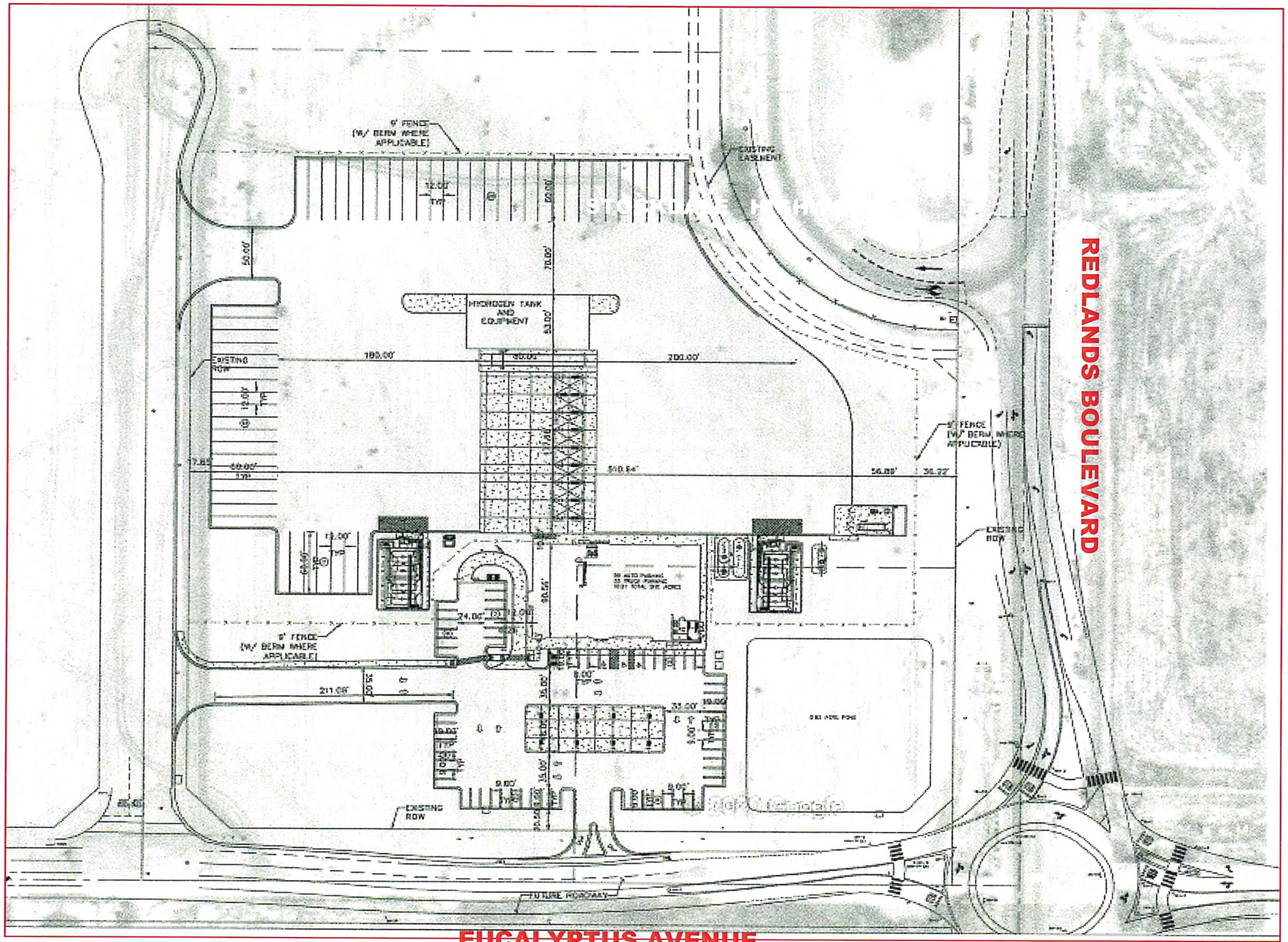
VICINITY MAP



Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	A

Geotechnical Solutions, Inc.

PLOT PLAN & BORING LOCATION MAP



SCALE: 1" = 100'

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	B
Geotechnical Solutions, Inc.		

GOOGLE MAP

Truck Stop - Moreno Valley Pilot # 1316	Project No.	G-5852-01
South of Freeway 60 & West of Redlands Boulevard, Moreno Valley, CA	Plate:	C
Geotechnical Solutions, Inc.		

Appendix B

Recommended Earthwork Specifications

RECOMMENDED EARTHWORK SPECIFICATIONS

1.0 General

1.1 Description

1.1.1 These specifications cover preparation of the subject site to receive fills, the type of soils suitable for use in fills, the compaction standards, and the methods of testing compacted fills.

1.1.2 The Contractor shall furnish all labor, supervision, equipment, operations, and materials to excavate to the required grade, support existing underground facilities, stockpile material, compact fill and backfill, and fine grade. The work of the Contractor shall include all clearing and grubbing, removing existing unsatisfactory material, preparing areas to be filled, spreading and compacting of fill in the areas to be filled and all other work necessary to complete the grading of the filled areas. It shall be the Contractor's responsibility to place, spread, moisten or dry, and compact the fill in strict accordance with these specifications to the lines and grades indicated on project plans or as directed in writing by the Civil Engineer.

1.1.3 Deviations from these specifications will be permitted only upon written authorization from the Owner or his representative.

1.2 Role of the Geotechnical Engineer

1.2.1 Construction - The Owner will employ a Geotechnical Consultant to observe and test this work as it is being performed. The Contractor shall cooperate with the Geotechnical Consultant and allow his unrestricted access to the site as required for the performance of his duties.

The Contractor shall provide a minimum notice of 48 hours to the Geotechnical Engineer before beginning or restarting earthwork operations that will require the presence of the Geotechnical Engineer or his representative on site.

1.2.2 Subsurface Investigations - A geotechnical engineering report for design purposes was prepared by Geotechnical Solutions, Inc., Irvine, California. Any recommendations made in the geotechnical report or subsequent reports are made part of these specifications. These reports are available for review upon request to the Owner.

1.2.3 Observation and Testing - The Geotechnical Engineer's representative shall observe the clearing and grubbing, excavation, filling and compacting operations and shall take density tests in the fill material so that he can state his opinion as to whether or not the fill was constructed in accordance with the specifications. All fill will be tested shortly after its placement to ascertain that the required compaction is achieved. A minimum of one density test will be made on each 500 cubic yards of fill placed, with a minimum of at least one test per every 2 feet of vertical height of fill. If the surface is disturbed, the density tests shall be made in the compacted materials below the disturbed zone. When these tests indicate that the density or water content of any layer of fill or portion thereof does not meet the specified density or water content, the particular layer or portions thereof shall be reworked until the specified density and water content have been obtained.

After the completion of grading, the Geotechnical Engineer will prepare a written opinion of grading. Neither the testing performed by the Geotechnical Consultant nor his opinion as to whether or not the fill was constructed in accordance with these Specifications shall relieve the Contractor of his responsibility to construct the fills in accordance with the Contract Documents.

1.3 Reference Standards

The following ASTM (American Society for Testing and Materials) codes and standards shall be used to the extent indicated by references herein. The most recent revision of the standards shall be used.

D 1556 - "Standard Test Method for Density of Soil in Place by the Sand-Cone Method"

D1557 - "Standard Test Methods for Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using 10-lb (4.54 kg) and 18-inch (457-mm) Drop"

D2216 - "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures"

D4318 - "Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils"

D4718 - "Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles"

D4829 - "Standard Test Method for Expansion Index of Soils"

D4944 - "Standard Test Method for Field Determination of Water (Moisture) Content of Soil by the Calcium Carbide Gas Pressure Tester Method."

D5195 - "Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)"

D6938 - "Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)"

D7928 - "Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis"

1.4 Degree of Fill Compaction

The degree to which fill is to be compacted is expressed in terms of "relative compaction." Relative compaction is defined as the ratio; expressed in percent, of the in-place dry density of the compacted fill to the reference maximum dry density. The reference maximum dry density shall be obtained following ASTM D1557. Optimum water content shall be obtained in the same test used to obtain the reference maximum dry density. Correction of the maximum dry density and optimum water content for

oversize particles of gravel and cobbles shall be made following ASTM D4718 when, in the opinion of the Geotechnical Engineer, such correction is appropriate. The in-place density shall be obtained following ASTM D1556 (sand cone method) or ASTM D6938 (nuclear method-shallow depth) test method. The in-place water content shall be obtained following ASTM D4944 (calcium carbide gas pressure meter), ASTM D5195 (nuclear method-shallow depth), or ASTM D2216 (oven drying). Correction of the in-place density and water content for oversize particles of gravel and cobbles shall be made following ASTM D4718 when, in the opinion of the Geotechnical Engineer, such correction is appropriate.

If any of the test methods specified in this section are judged by the Geotechnical Engineer to be impractical or unreliable because the material has a coarse particle size distribution, or for other reasons, the Geotechnical Engineer shall establish other procedures to obtain the required soil characteristics.

2.0 Products

2.1 Materials

2.1.1 General - During grading operations, soil types other than those identified in the geotechnical investigation report may be encountered by the Contractor. Consult the Geotechnical Consultant for his evaluation of the suitability of using these soils a fill material prior to placement or disposal.

2.1.2 General Fill - Materials for compacted fill shall consist of material imported from outside the site or excavated from the site that, in the opinion of the Geotechnical Engineer, is suitable for use in constructing engineered fills. The material shall not contain rocks or hard lumps greater than 6 inches in maximum dimension, and at least 70 percent (by weight) of its particles shall pass through a U.S. Standard 3/8 inch sieve. Material greater than 3 inches, but less than 6 inches in maximum dimension, shall be placed by the Contractor so that it is completely surrounded by compacted, finer material;

no nesting of rocks shall be permitted. Do not use any perishable, spongy, hazardous, or other undesirable materials as fill.

2.1.3 Select Fill - Select fill shall meet all criteria for general fill but shall also contain no rocks or hard lumps greater than 3 inches in maximum dimension, and at least 80 percent (by weight) shall pass through a U.S. Standard 3/8-inch sieve. The expansion index of select material shall be less than 50 (i.e., 5.0 percent swell) when tested in accordance with ASTM D4829.

3.0 Execution

3.1 Clearing and Grubbing

Within the project limits, tile Contractor shall demolish structures as specified on the Drawings.

Unless otherwise indicated on the Drawings or by the Owner in writing, the Contractor shall clear and grub all trees, stumps, roots, brush, grass, and other vegetation within construction, fill and stockpile areas to a minimum depth of 3 feet below the existing ground surface or below finished grade, whichever is deeper, unless otherwise recommended by the Geotechnical Engineer's Field Representative.

Remove cleared and grubbed materials from the site and dispose of them legally. No onsite burning or burying of cleared and grubbed materials is permitted. No placement of cleared and grubbed materials in topsoil stockpiles is permitted. No mulching of branches or roots is permitted. Incorporating vegetative matter into stockpiled materials, which are to be used in fill, is not permitted.

Stockpile organic-laden topsoil separate from other fill materials.

Remove any remaining vegetative matter from the deeper excavated soils, which may result from roots deeper than those encountered during clearing and grubbing operations.

All material thereby removed shall be piled at a location away from the immediate work area so as to avoid burying of piled material.

3.2 Compacted Fills

3.2.1 Preparing Areas to be Filled - Brush, grass, and other objectionable materials shall be collected, piled, and disposed of as indicated in Section 3.1 by the Contractor so as to leave the areas that have been cleared with a neat and finished appearance, free from unsightly debris.

Remove all loose soil, uncertified fill, landslide debris, and weathered bedrock to firm material or in-situ bedrock, as approved by the Geotechnical Consultant. The Contractor shall obtain approval from the Geotechnical Engineer or his representative of stripping and site preparation before the compaction of any fill subgrade begins. The surface shall then be scarified to a minimum depth of 6 inches until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment used, and shall be brought to the specified water content and relative compaction. Compact scarified materials to a minimum relative compaction of 90 percent, relative to ASTM D1557, prior to placement of any fill material.

3.2.2 Placing, Spreading, and Compacting, Fill Material - Onsite soil obtained from removals, borrow, or cut areas may be reused as compacted fill provided it is free from deleterious debris and meets the other requirements of the "Materials" portion of this Specification Section.

Use of soil containing deleterious debris from the clearing and grubbing operation or from other sources is not permitted. The fill materials shall be placed by the Contractor in horizontal layers not greater than 8 inches thick, measured before compaction. Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to obtain uniformity of material and moisture in each layer. The moisture content of material used for compacted fill should be adjusted to be at or above optimum water content as determined by ASTM D1557. When the water content of the fill material is too high, the

fill materials shall be aerated by the Contractor by blading, mixing, or other satisfactory methods until the water content is as specified.

After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted by the Contractor to a relative compaction of at least 90 percent of the maximum dry density as determined by ASTM D1557 for general fill, and 95 percent of the maximum dry density as determined by ASTM D1557 for select fill, compacted fill pads, and the upper 1 foot of pavement subgrade. Compaction shall be accomplished by: sheepsfoot rollers; vibratory rollers; multiple-wheel, pneumatic-tired rollers; or other types of acceptable compacting equipment. Equipment shall be of such design that it is able to compact the fill to the specified density. Compaction shall be continuous over the entire area, and the equipment shall make sufficient passes to obtain the desired density uniformly. All fill placed on site shall be treated in like manner until finished grades are attained. Jetting, puddling, and hydro consolidation techniques shall not be used, including backfill of utility trenches.

The placement of topsoil is subject to the approval of the Geotechnical Engineer. Topsoil shall not be placed beneath concrete flatwork, beneath or behind retaining walls, or within structural fill. All topsoil material is subject to the same moisture conditioning, placement, and compaction requirements as General Fill. Roots, branches and other organic debris are not permitted within the compacted topsoil layer.

When backfilling around footings and compacting behind retaining walls and flexible retaining structures, the Contractor shall use lightweight compaction equipment such as hand-operated equipment, shoring, or other means to avoid over-stressing structural walls. When using lightweight compaction equipment, the fill materials shall be spread in horizontal layers not greater than 6 inches thick, measured before compaction.

As an alternative, sand-cement slurry may be used to backfill trenches. The slurry shall have minimum cement content of 3 sacks per cubic yard within the zone of influence of foundations and other settlement sensitive structures. A minimum of 2 sacks per cubic

yard of slurry shall be used elsewhere within building limits, and a minimum of one sack per cubic yard of slurry shall be used elsewhere. Slurry shall not be used in those areas where such placement would result in the obstruction of water flow, and is subject to the approval of the Geotechnical Engineer.

3.3 Protection of Work and Adjacent Properties

3.3.1 During Construction - The Contractor shall grade all excavated surfaces to provide good drainage away from construction slopes and prevent ponding of water. He shall control surface water and the transport of silt and sediment to avoid damage to adjoining properties or to finished work on the site. The Contractor shall take remedial measures to prevent erosion of freshly graded areas until such time as permanent drainage and erosion control measures have been installed.

Dispose of all water resulting from dewatering operations legally and in ways that will not cause damage to public or private property, or constitute a nuisance or menace to the public, in accordance with municipal requirements.

The Contractor shall make every effort to minimize the amount of dust raised in excavating, on haul roads and access roads, and all other work areas in the course of construction activities.

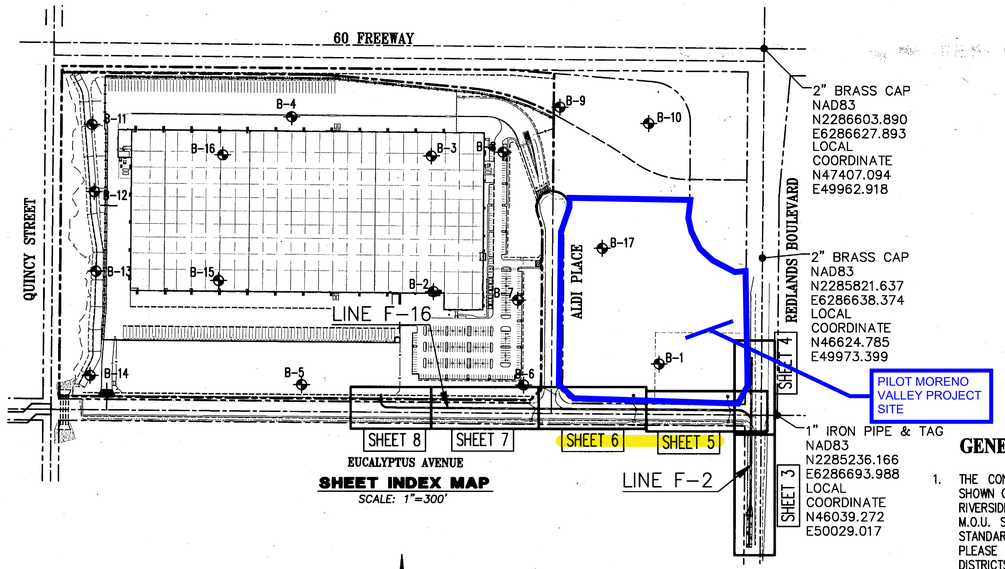
Protect benchmarks, monuments, and other reference points against displacement or damage. Repair or replace benchmarks, monuments, and other permanent survey data that become displaced or damaged due to the performance of this work.

3.3.2 After Completion - After earthwork is completed and the, Geotechnical Engineer has finished his observations of the work, no further excavation, filling or backfilling shall be performed except under the observation of the Geotechnical Engineer.

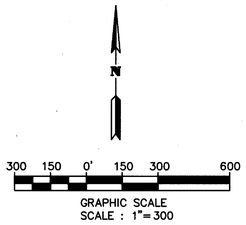
Appendix 4: Historical Site Conditions

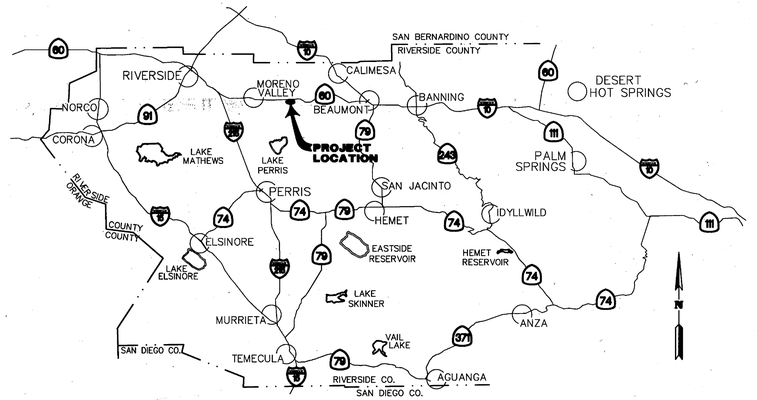
Phase I Environmental Site Assessment or Other Information on Past Site Use

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT



SHEET INDEX MAP
SCALE: 1"=300'





VICINITY MAP
NOT TO SCALE

R.C.F.C. & W.C.D. STANDARD DRAWINGS

CB 100	CATCH BASIN No. 1
CB 103	MANHOLE FRAME AND COVER
CB 105	DETAIL OF CATCH BASIN OPENING & INSTALLATION DETAILS/REMOVABLE PROTECTION BAR FOR C.B.
CB 106	CATCH BASIN REINFORCEMENT
CB 109	SPECIAL CONNECTIONS TO CATCH BASIN
CB 110	CONCRETE DROP INLET
LD 201	LOCAL DEPRESSION No. 2
JS 226	JUNCTION STRUCTURE No. 1
JS 227	JUNCTION STRUCTURE No. 2
JS 228	JUNCTION STRUCTURE No. 3
JS 229	JUNCTION STRUCTURE No. 4
JS 231	JUNCTION STRUCTURE No. 6
MH 252	MANHOLE NO. 2
MH 253	MANHOLE NO. 3
MH 254	MANHOLE NO. 4
MH 255	MANHOLE FRAME & COVER NON-ROCKING
MH 257	MANHOLE SHAFT FOR CAST PIPE
MH 259	STANDARD DROP STEP
TS 301	TRANSITION STRUCTURE No. 1
CH 326	TRAPEZOIDAL CHANNEL DETAILS
CH 329	TRANSITION STRUCTURAL DETAILS
BX 401	SINGLE CELL R.C.B. STRUCTURAL DETAILS
M 801	CHAIN LINK FENCE DETAILS
M 803	CONCRETE COLLAR FOR PIPE
M 806	PIPE SUPPORTS ACROSS TRENCHES
M 808	REMODELING DETAILS – HOUSE CONNECTION SEWERS
M 814	ABBREVIATIONS AND SYMBOLS
M 815	BEDDING AND PAY LINES
M 816	CONCRETE BULKHEAD
M 819	MAXIMUM CHORD LENGTHS FOR CURVED SECTIONS

LEGEND

SOIL BORING LOCATION

SHEET INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	CONSTRUCTION NOTES AND DETAILS
3–8	STORM DRAIN PLAN & PROFILE SHEETS
9–11	STORM DRAIN LATERAL PROFILES

GENERAL NOTES

1. THE CONTRACTOR SHALL CONSTRUCT THE FLOOD CONTROL IMPROVEMENTS SHOWN ON THE DRAWINGS IN CONFORMANCE WITH THE REQUIREMENTS OF THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICTS M.O.U. STANDARD SPECIFICATIONS DATED JUNE 24, 2008, AND RCFC&WCD STANDARD MANUAL. FOR THE LATEST DRAWINGS OF THE STANDARD MANUAL, PLEASE REFER TO THE "PUBLICATIONS AND RECORDS" PAGE FOUND ON THE DISTRICTS WEBSITE.
2. CONTACT THE ENCROACHMENT PERMIT ENGINEER AT 951.955.1266 IF AN ENCROACHMENT PERMIT IS REQUIRED FROM RIVERSIDE COUNTY FLOOD CONTROL. AFTER THE PERMIT IS ISSUED THE DISTRICT MUST BE NOTIFIED ONE WEEK PRIOR CONSTRUCTION.
3. CONTACT CONTRACT ADMINISTRATION AT 951.955.1288 IF CONSTRUCTION INSPECTION WILL BE PERFORMED BY RIVERSIDE COUNTY FLOOD CONTROL. THE DISTRICT MUST BE NOTIFIED TWENTY DAYS (20) PRIOR TO CONSTRUCTION.
4. ALL STATIONING REFERS TO CENTERLINE OF CONSTRUCTION UNLESS OTHERWISE NOTED.
5. STATIONING FOR LATERALS AND CONNECTOR PIPE REFER TO THE CENTERLINE INTERSECTION STATIONS.
6. FORTY-EIGHT HOURS BEFORE EXCAVATION, CALL UNDERGROUND SERVICE ALERT 1.800.227.2600.
7. ALL ELEVATIONS SHOWN ARE IN FEET AND DECIMALS THEREOF BASED ON THE NATIONAL GEODETIC VERTICAL DATUM (NGVD 29).
8. ALL COORDINATES ARE SHOWN IN FEET AND DECIMALS THEREOF BASED ON THE AN ASSUMED GROUND COORDINATE SYSTEM.
9. ALL CROSS SECTIONS ARE TAKEN LOOKING DOWNSTREAM.
10. ELEVATIONS OF UTILITIES ARE APPROXIMATE UNLESS OTHERWISE NOTED.
11. UNLESS OTHERWISE SPECIFIED, MINIMUM STREET RECONSTRUCTION SHALL BE 4" TYPE "B" HOT MIX ASPHALT OVER 6" CLASS 2 AGGREGATE BASE OR AS SPECIFIED BY THE ENGINEER.
12. OPENINGS RESULTING FROM THE CUTTING OR PARTIAL REMOVAL OF EXISTING CULVERTS, PIPES OR SIMILAR STRUCTURES TO BE ABANDONED SHALL BE SEALED WITH 6" OF CLASS "B" CONCRETE.
13. PIPE CONNECTED TO THE MAINLINE PIPE SHALL CONFORM TO JUNCTION STRUCTURE NO. 4 (JS 229) UNLESS OTHERWISE NOTED.
14. PIPE BEDDING SHALL CONFORM TO RCFC&WCD STD. DWG. NO. M815 EXCEPT FOR COVER <2 FEET. FOR COVER <2 FEET, CONCRETE SLURRY (2000 PSI – 2 SACK) SHALL BE USED. THE ENTIRE TRENCH SHALL BE SLURRY EXTENDING 4 INCHES MINIMUM AND 12 INCHES MAXIMUM ABOVE THE TOP OF THE PIPE.
15. B-1 INDICATES SOIL BORING LOCATIONS BASED ON THE SOILS REPORT DATED JANUARY 23, 2012. LOCATIONS SHOWN ARE APPROXIMATE.
16. "V" IS THE DEPTH OF CATCH BASINS MEASURED FROM THE TOP OF CURB TO INVERT OF CONNECTOR PIPE.
17. CATCH BASINS SHALL BE LOCATED SO THAT LOCAL DEPRESSION SHALL BEGIN AT EXISTING CURB RETURN JOINT, UNLESS OTHERWISE SPECIFIED.
18. ALL CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS AND OTHER EXISTING IMPROVEMENTS TO BE RECONSTRUCTED IN KIND AND AT THE SAME ELEVATION AND LOCATION AS THE EXISTING IMPROVEMENTS UNLESS OTHERWISE NOTED.
19. STANDARD DRAWINGS CALLED FOR ON THE PLAN AND PROFILE SHALL CONFORM TO DISTRICT STANDARD DRAWINGS UNLESS NOTED OTHERWISE.
20. THE CONTRACTOR IS REQUIRED TO CALL ALL UTILITY AGENCIES REGARDING TEMPORARY SHORING AND SUPPORT REQUIREMENTS FOR THE VARIOUS UTILITY LINES SHOWN ON THESE PLANS.
21. DURING ROUGH GRADING OPERATIONS AND PRIOR TO CONSTRUCTION OF PERMANENT DRAINAGE STRUCTURES, TEMPORARY DRAINAGE CONTROL SHOULD BE PROVIDED TO PREVENT PONDING WATER AND DAMAGE TO ADJACENT PROPERTIES.
22. APPROVAL OF THESE PLANS BY THE RIVERSIDE COUNT FLOOD CONTROL AND WATER CONSERVATION DISTRICT DOES NOT RELIEVE THE DEVELOPER'S ENGINEER OF RESPONSIBILITY FOR THE ENGINEERING DESIGN. IF FIELD CHANGES ARE REQUIRED, IT WILL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER TO MAKE THE NECESSARY CORRECTIONS.
23. THE CONTRACTOR OR DEVELOPERS SHALL SECURE ALL REQUIRED ENCROACHMENT AND/OR STATE AND FEDERAL REGULATORY PERMITS PRIOR TO THE COMMENCEMENT OF ANY WORK.
24. THE CONCRETE COATING ON THE INSIDE OF ALL REINFORCED CONCRETE PIPES MUST BE INCREASED TO PROVIDE A MINIMUM OF 1-1/2 INCHES OVER THE REINFORCING AND INCREASED TO A MINIMUM OF 3-1/2 INCHES OVER REINFORCING FOR BOX CULVERT, WHEN DESIGN VELOCITIES EXCEED 20 FEET PER SECOND. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE F'C=5,000 PSI FOR VELOCITIES EXCEEDING 20 FEET PER SECOND AND F'C=6,000 PSI FOR VELOCITIES EXCEEDING 30 FEET PER SECOND.
25. CONSTRUCTION JOINTS FOR CALTRANS STANDARD REINFORCED CONCRETE BOX SHALL BE PLACED ACCORDING TO RCFC&WCD STANDARD DRAWING NO. BOX 401.

PA08-0097 (PLOT PLAN)
P13-111 (AMENDED PLOT PLAN)
PA09-0022 (TENTATIVE PARCEL MAP)

CITY OF MORENO VALLEY APPROVALS
PA09-0022 CITY ID# 4898

RECOMMENDED BY:
for PREM KUMAR, DEPT. PUBLIC WORKS DIR./ASST. CITY ENGINEER, R.C.E. NO. C52463 — DATE 3/3/14

APPROVED BY:
AHMAD R. ANSARI, PUBLIC WORKS DIRECTOR/CITY ENGINEER, R.C.E. NO. C51318 — DATE 3/4/14

THESE PLANS HAVE BEEN REVIEWED FOR CONFORMANCE WITH CITY STANDARDS AND PRACTICES AND WE ARE RECOMMENDING THE PLANS FOR CITY APPROVAL
RCE # 34283 — DATE 2/19/14 — MDC

DUPLICATE OF ORIGINAL – DO NOT REVISE

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

BASIS OF BEARINGS:
BEARINGS SHOWN HEREON ARE BASED ON THE BEARING BETWEEN THE CALIFORNIA SPATIAL REFERENCE CENTER (CSRC) CONTINUOUS OPERATING REFERENCE STATIONS (CORS) PPSF AND MLFP BEING NORTH 53°20'17.66" WEST PER RECORDS ON FILE WITH THE CSRC.
BENCH MARK: IVF55 ELEVATION 1785.67
LOCATION
BRASS DISK IN TOP OF HEADWALL, NORTHWEST CORNER REDLANDS BOULEVARD AND SPRUCE AVENUE. (NGVD29 DATUM)

REF.	REVISIONS	ENGINEER APPR.	ENGINEER DATE	RCFC/ APPR.	RCFC/ DATE

DESIGNED BY: M.H.M.
DRAWN BY: H-Z STAFF
DATE DRAWN: 03-2013
CHECKED BY: M.H.M.

REGISTERED PROFESSIONAL ENGINEER MAURICE H. MURAD NO. 33366 EXPIRATION 6-30-2014 CIVIL STATE OF CALIFORNIA

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
3990 CONCOURS, SUITE 330 * ONTARIO, CALIFORNIA 91764 * (909) 941-7799
PREPARED UNDER THE SUPERVISION OF: MAURICE H. MURAD
R.C.E. 33366 EXPIRES 6-30-14 DATE 2/14/14

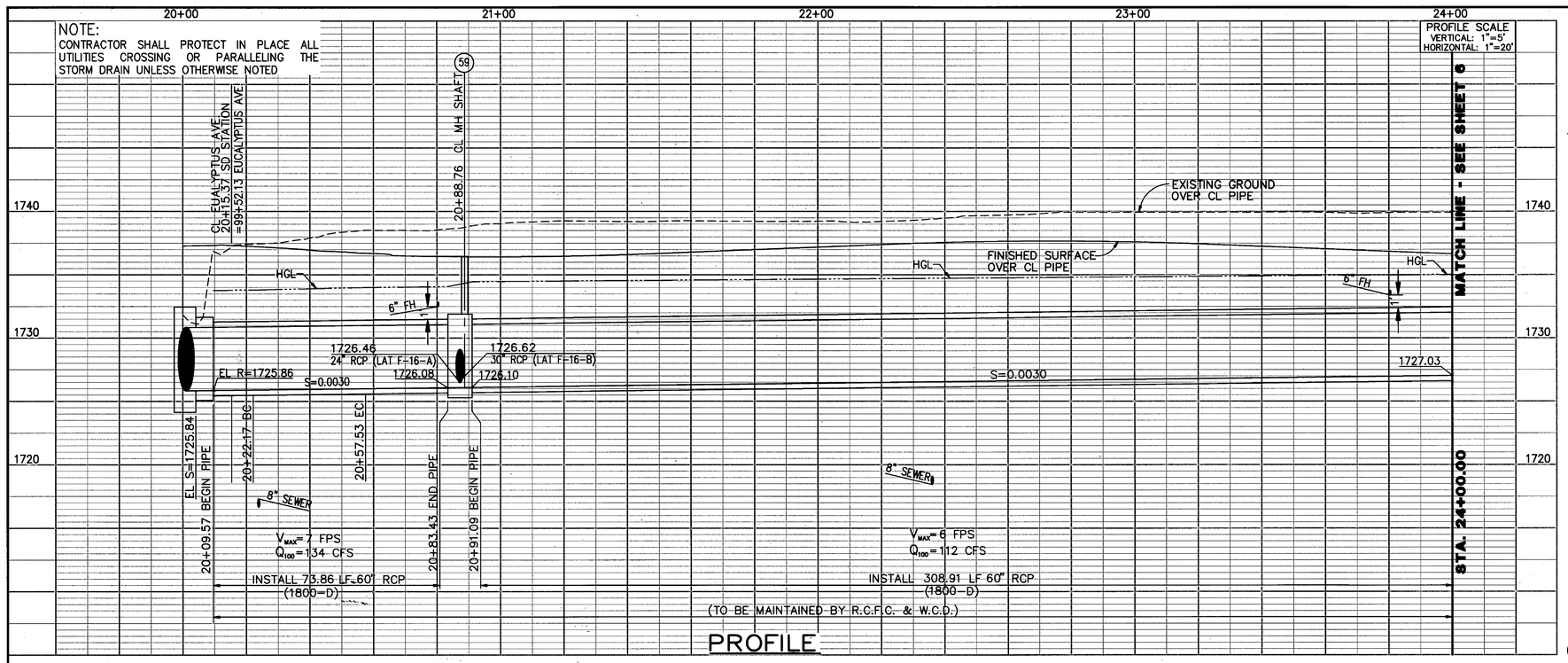
RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: PLANNING ENGINEER — DATE: 5/8/2014
APPROVED BY: CHIEF ENGINEER — DATE:

P.M. 36207
MORENO MDP LINE F-2 AND F-16
TITLE SHEET

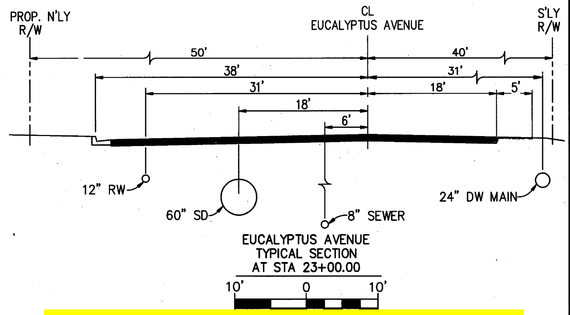
PROJECT NO. 4-0-00400 4-0-00401
DRAWING NO. 4-1068
SHEET NO. 1 OF 11

NOTE:
CONTRACTOR SHALL PROTECT IN PLACE ALL UTILITIES CROSSING OR PARALLELING THE STORM DRAIN UNLESS OTHERWISE NOTED

PROFILE SCALE
VERTICAL: 1"=5'
HORIZONTAL: 1"=20'

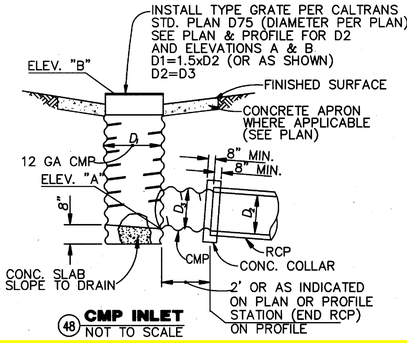


PROFILE



EUCALYPTUS AVENUE
TYPICAL SECTION
AT STA 23+00.00

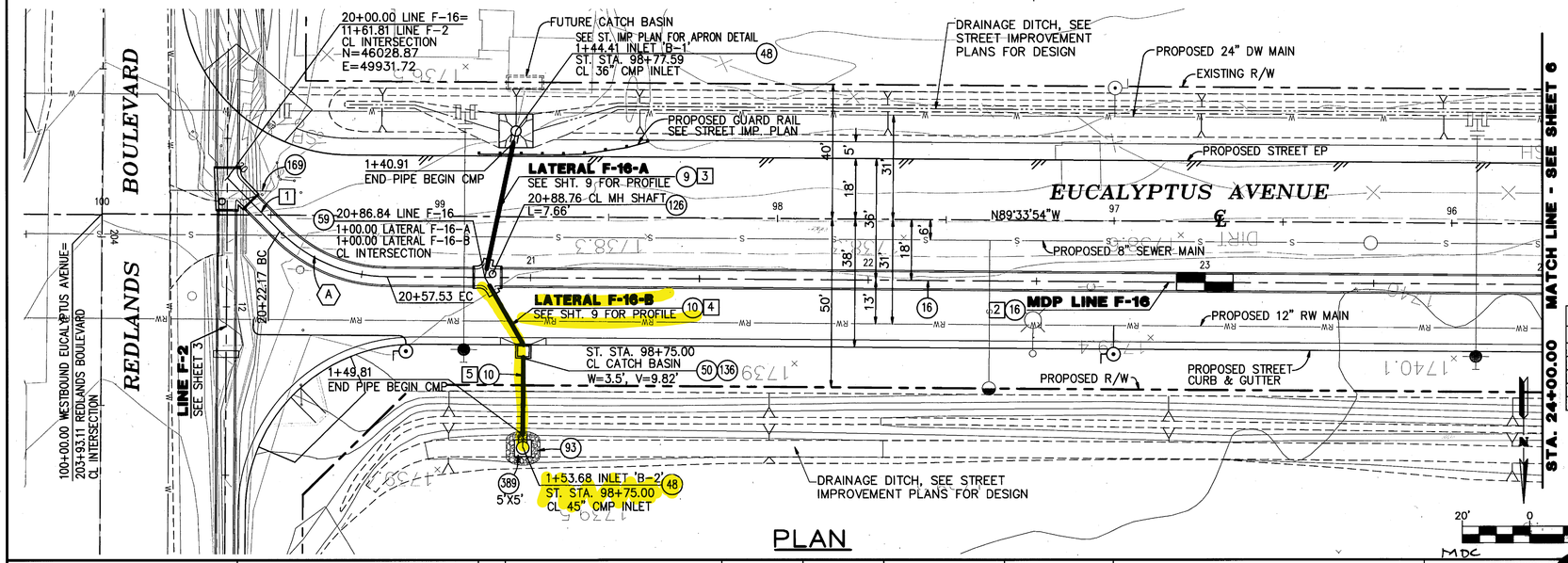
10' 0 10'



48 CMP INLET
NOT TO SCALE

CONSTRUCTION NOTES

- (9) INSTALL 24" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
- (10) INSTALL 30" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
- (16) INSTALL 60" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
- (48) CONSTRUCT CMP INLET PER DETAIL ON THIS SHEET (12 GAUGE – RISER ø PER PLAN)
- (50) CONSTRUCT CATCH BASIN PER R.C.F.C. & WCD STD. PLAN CB100 (WIDTH & V-DEPTH PER PLAN)
- (59) CONSTRUCT MANHOLE No.4 PER R.C.F.C. & WCD STD. PLAN MH254
- (93) INSTALL GROUTED RIP RAP PER DETAIL ON SHEET 6 TO BE MAINTAINED BY CITY OF MORENO VALLEY
- (126) ADJUST MANHOLE RIM TO GRADE AFTER FINAL SURFACE HAS BEEN INSTALLED
- (136) FOR CONSTRUCTION OF LOCAL DEPRESSION SEE PUBLIC STREET IMPROVEMENT PLANS
- (169) LOWER OR RAISE EXISTING WATER LINE TO EMWD STANDARD SPECIFICATION TO CLEAR PROPOSED STORM DRAIN PIPING
- (389) CONSTRUCT 4" THICK PCC APRON (HORIZONTAL DIMENSIONS AS SHOWN ON PLAN) APRON FS TO MATCH DITCH FG ELEVATION



PLAN

MANHOLE DATA TABLE

S.D. MAINLINE STA.	STRUCTURE TYPE	LATERAL	ANGLE "A"	B	C	D1	D2	EL. S	EL. R
20+86.84	MH NO. 4	F-16-A	78°21'55"	24"	2.5'	60"	60"	1726.46	1726.47
20+86.84	MH NO. 4	F-16-B	60°00'00"	30"	2.5'	60"	60"	1726.62	1726.63

COURSE DATA

	BEARING	DISTANCE
1	N44°33'08"E	22.17'
2	N89°33'54"W	342.48'
3	N12°04'11"E	33.72'
4	N29°33'54"W	23.09'
5	N00°27'05"E	34.03'

CURVE DATA

	Δ	R	L	T
A	45°00'46"	45.00'	35.35'	18.65'

PI

N	E
46057.96	49903.08

PA08-0097 (PLOT PLAN)
P13-111 (AMENDED PLOT PLAN)
PA09-0022 (TENTATIVE PARCEL MAP)

* NOTE:
HORIZONTAL AND VERTICAL LOCATIONS TO BE VERIFIED IN THE FIELD AND ENGINEER NOTIFIED OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

CITY OF MORENO VALLEY APPROVALS
PA09-0022 CITY ID# 4898

RECOMMENDED BY:
for PREM KUMAR
DEPT. PUBLIC WORKS DIR./ASST. CITY ENGINEER
R.C.E. NO. C52463
3/3/14 DATE

APPROVED BY:
AHMAD R. ANSARI
PUBLIC WORKS DIRECTOR/CITY ENGINEER
R.C.E. NO. C51318
3/4/14 DATE

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TWO WORKING DAYS BEFORE YOU DIG

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BEARINGS SHOWN HEREON ARE BASED ON THE BEARING BETWEEN THE CALIFORNIA SPATIAL REFERENCE CENTER (CSRC) CONTINUOUS OPERATING REFERENCE STATIONS (CORS) PPSF AND MLFP BEING NORTH 5720117.66' WEST PER RECORDS ON FILE WITH THE CSRC.

BENCH MARK: IVF55 ELEVATION 1785.67
LOCATION
BRASS DISK IN TOP OF HEADWALL, NORTHWEST CORNER REDLANDS BOULEVARD AND SPRUCE AVENUE. (NGVD29 DATUM)

REF.	DESCRIPTION	ENGINEER APPR.	ENGINEER DATE	RCFC/ APPR.	RCFC/ DATE
	REVISIONS				

DESIGNED BY: M.H.M.
DRAWN BY: H-Z STAFF
DATE DRAWN: 03-2013
CHECKED BY: M.H.M.

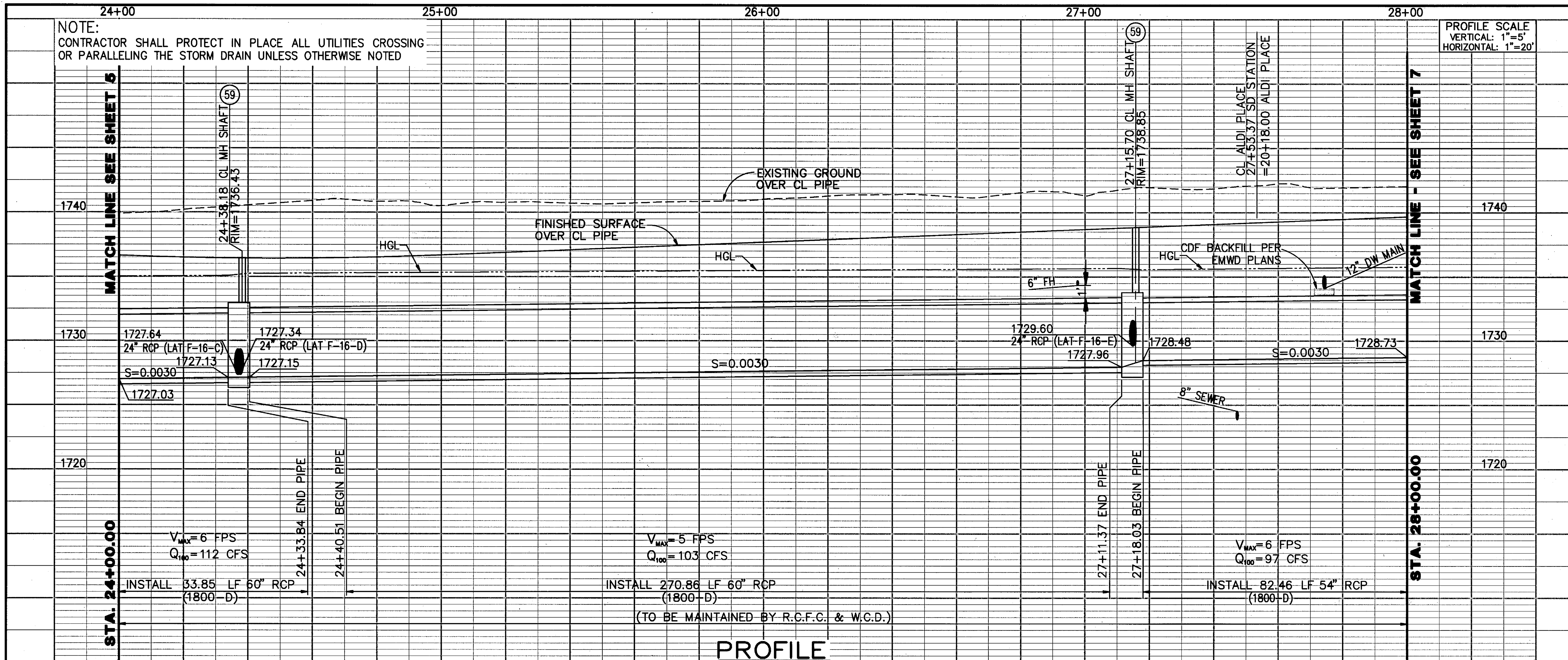
REGISTERED PROFESSIONAL ENGINEER MAURICE H. MURAD NO. 33366 EXPIRATION 6-30-2014 CIVIL STATE OF CALIFORNIA

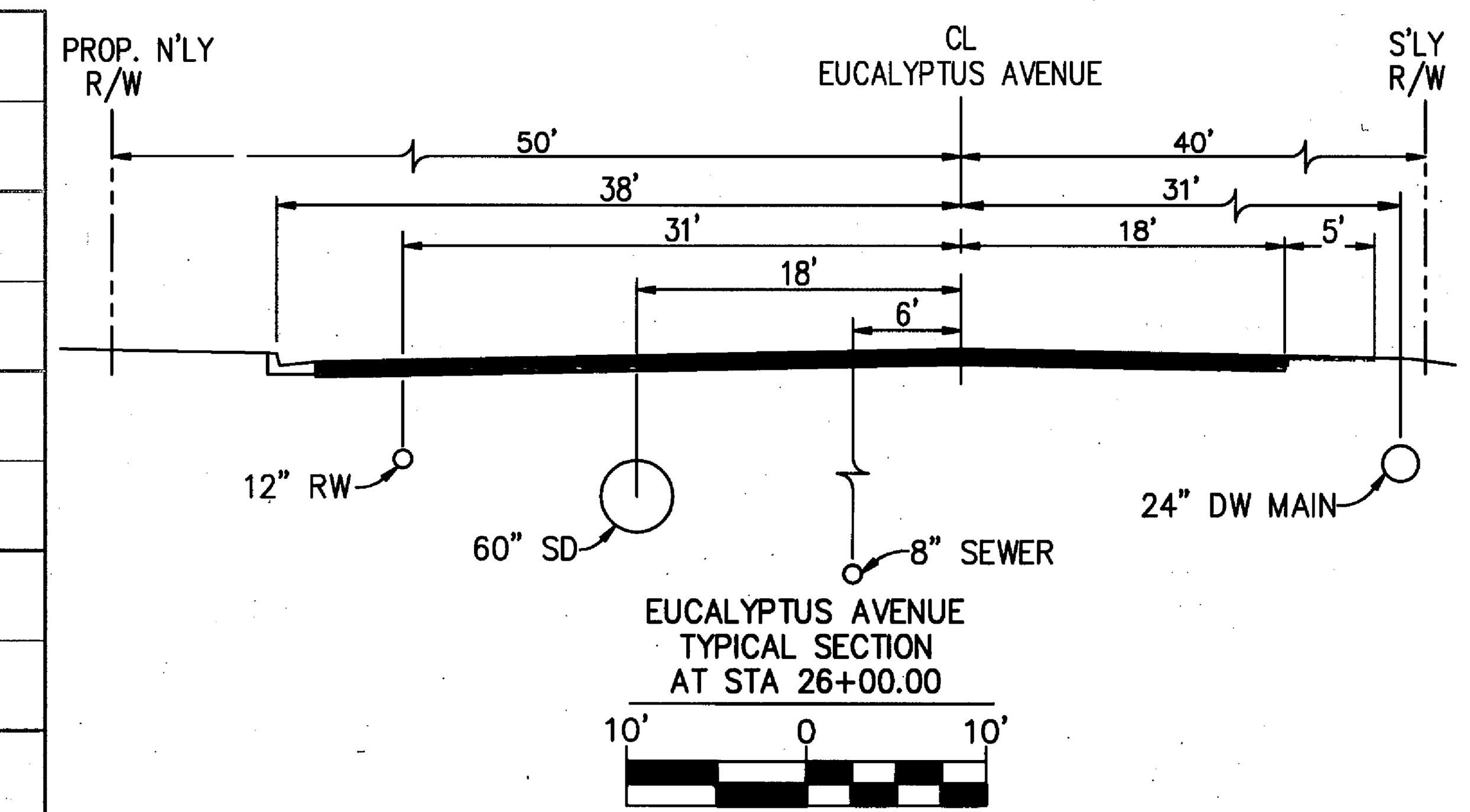
HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
3990 CONCOURS, SUITE 330 * ONTARIO, CALIFORNIA 91764 * (909) 941-7799
PREPARED UNDER THE SUPERVISION OF: MAURICE H. MURAD
R.C.E. 33366 EXPIRES 6-30-14 DATE 2/14/14

RIVERSIDE COUNTY FLOOD CONTROL
WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY:
DATE: 2/7/14
APPROVED BY: Mark H. Wills
DATE: 5/8/2014

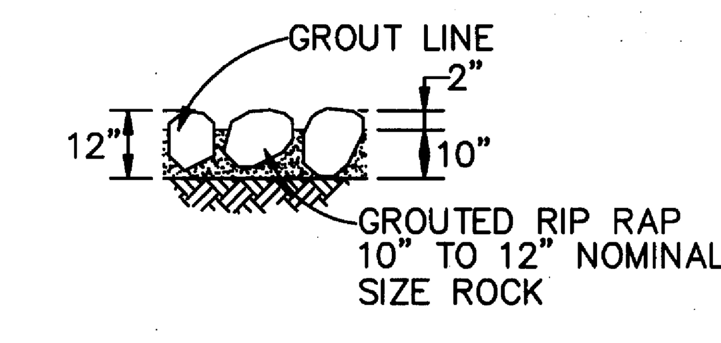
MORENO MDP LINE F-16
20+00.00 TO 24+00.00
AND
LATERALS F-16-A, AND F-16-B

PROJECT NO. 4-0-00401
DRAWING NO. 4-1068
SHEET NO. 5 OF 11



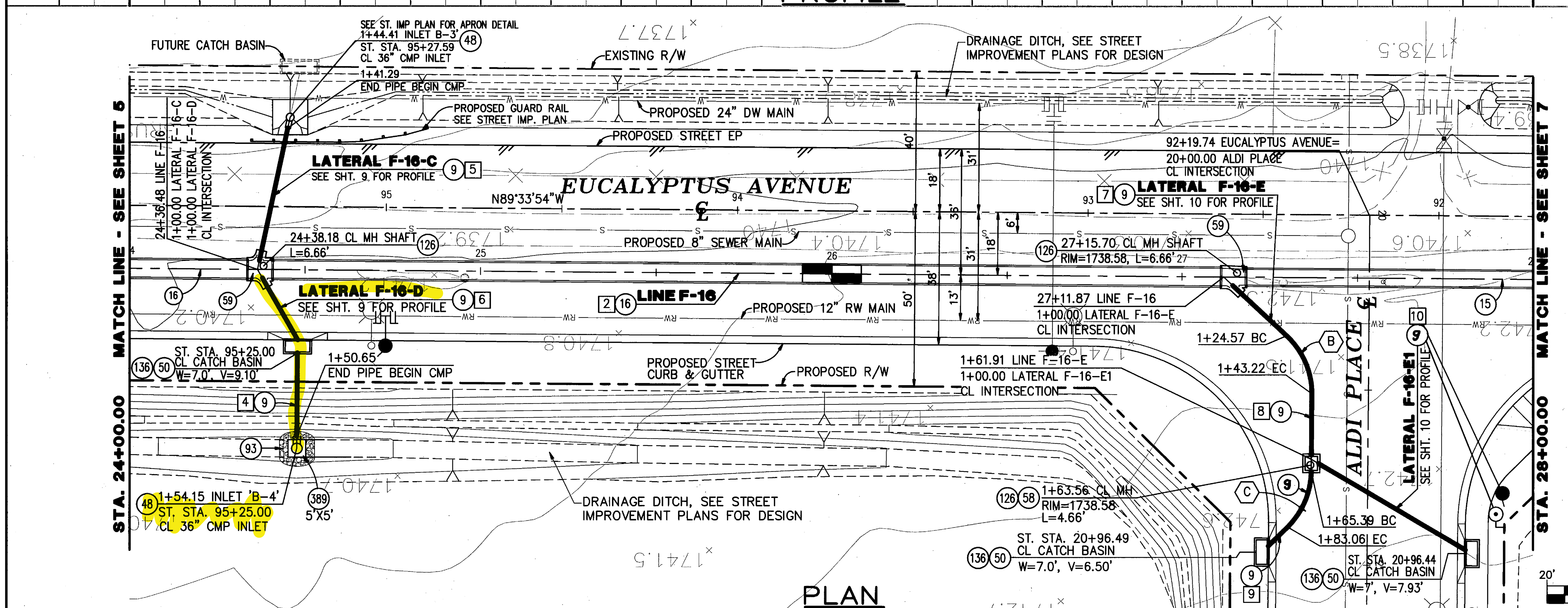


COURSE DATA		
☐	BEARING	DISTANCE
2	N89°33'54"W	400.00'
4	N00°27'05"E	34.03
5	N12°04'11"E	41.86'
6	N29°33'54"W	23.09'
7	N47°02'40"W	24.57'
8	N00°27'05"E	22.17
9	N45°27'05"E	7.76'
10	N59°25'03"W	50.97'



(93) **GROUTED RIP RAP DETAIL**
NOT TO SCALE

CURVE DATA					PI	
⬡	Δ	R	L	T	N	E
B	47°29'45"	22.50'	18.65'	9.90'	46086.56	49204.89
C	45°00'01"	22.50'	17.67'	9.32'	46127.95	49205.22



CONSTRUCTION NOTES

- (9) INSTALL 24" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
- (15) INSTALL 54" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
- (16) INSTALL 60" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
- (48) CONSTRUCT CMP INLET PER DETAIL ON SHEET 5 (12 GAUGE - RISER ø PER PLAN)
- (50) CONSTRUCT CATCH BASIN PER R.C.F.C. & WCD STD. PLAN CB100 (WIDTH & V-DEPTH PER PLAN)
- (58) CONSTRUCT MANHOLE No.1 PER R.C.F.C. & WCD STD. PLAN MH251
- (59) CONSTRUCT MANHOLE No.4 PER R.C.F.C. & WCD STD. PLAN MH254
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- (136) FOR CONSTRUCTION OF LOCAL DEPRESSION SEE PUBLIC STREET IMPROVEMENT PLANS
- (389) CONSTRUCT 4" THICK PCC APRON (HORIZONTAL DIMENSIONS AS SHOWN ON PLAN) APRON FS TO MATCH DITCH FG ELEVATION

MANHOLE DATA TABLE									
S.D. MAINLINE STA.	STRUCTURE TYPE	LATERAL	ANGLE "A"	B	C	D1	D2	EL. S	EL. R
24+36.48	MH NO. 4	F-16-C	78°21'55"	18"	2.5'	60"	60"	1727.64	1727.65
24+36.48	MH NO. 4	F-16-D	60°00'00"	18"	2.5'	60"	60"	1727.34	1727.35
27+11.87	MH NO. 4	F-16-E	42°71'54"	24"	3'	54"	60"	1729.60	1729.64

PA08-0097 (PLOT PLAN)
P13-111 (AMENDED PLOT PLAN)
PA09-0022 (TENTATIVE PARCEL MAP)

* NOTE:
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CITY OF MORENO VALLEY APPROVALS
PA09-0022 CITY ID# 4898

RECOMMENDED BY: Henyngo C 58590 3/3/14
for PREM KUMAR
DEPT. PUBLIC WORKS DIR./ASST. CITY ENGINEER
R.C.E. NO. C52463
DATE

APPROVED BY: 3/4/14
AHMAD R. ANSARI
PUBLIC WORKS DIRECTOR/CITY ENGINEER
R.C.E. NO. C51318
DATE

20' 0 20'

MDC

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BENCH MARK: IVF55 ELEVATION 1785.67
LOCATION
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DESIGNED BY: M.H.M.
DRAWN BY: H-Z STAFF
DATE DRAWN: 03-2013
CHECKED BY: M.H.M.

REGISTERED PROFESSIONAL ENGINEER MAURICE H. MURAD NO. 33366 EXPIRATION 6-30-2014 CIVIL STATE OF CALIFORNIA

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
3990 CONCOURS, SUITE 330 • ONTARIO, CALIFORNIA 91764 • (909) 941-7799
PREPARED UNDER THE SUPERVISION OF: MAURICE H. MURAD
R.C.E. 33366 EXPIRES 6-30-14 DATE 2/14/14

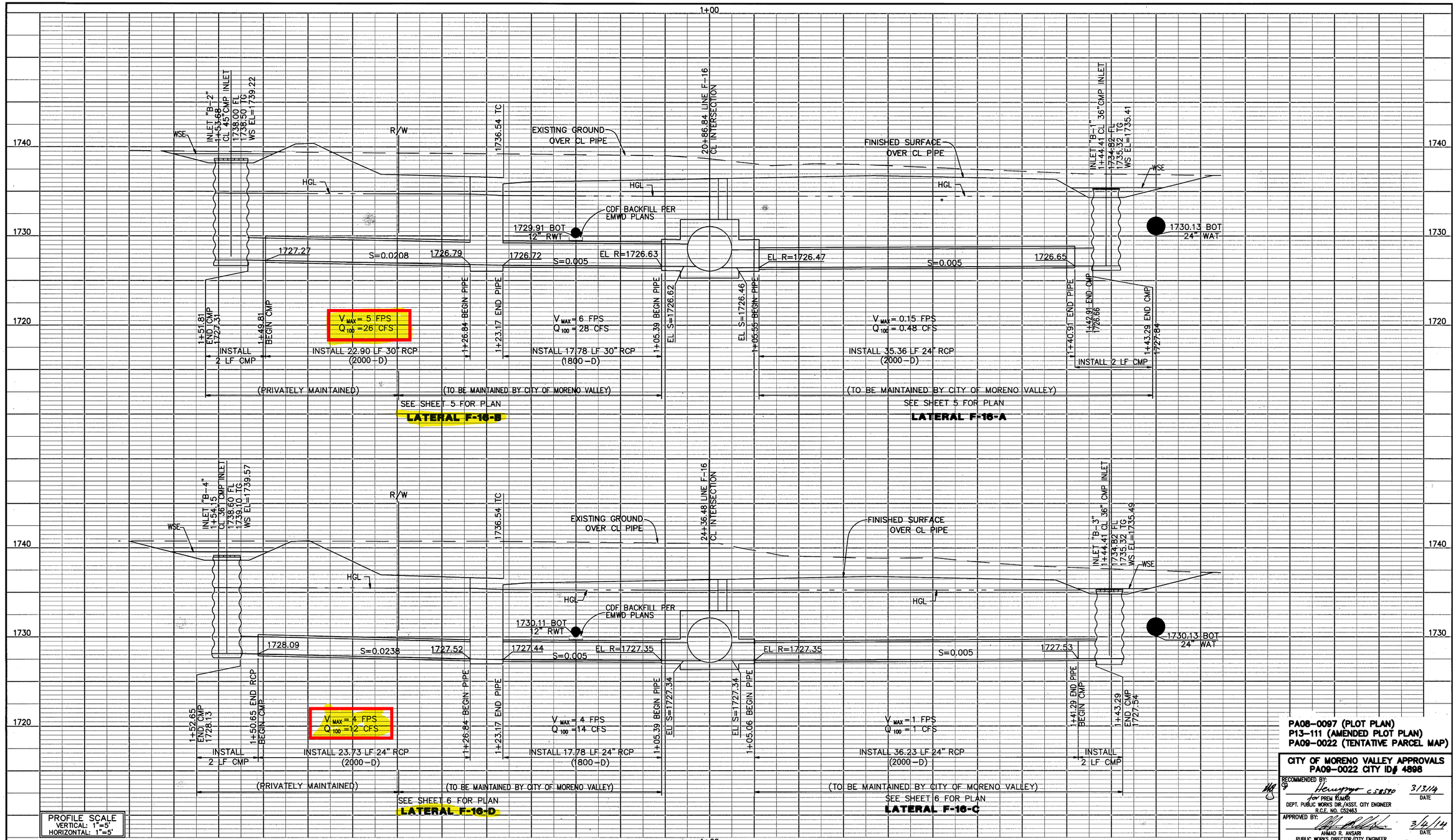
RIVERSIDE COU[illegible]OOD CONTROL
WATER CONS[illegible] DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 5/7/14
APPROVED BY: Mark H. Wills DATE: 5/8/2014

MORENO MDP LINE F-16
24+00.00 TO 28+00.00
AND
LATERALS F-16-C, F-16-D, F-16-E AND F-16-E1

PROJECT NO. 4-0-00401
DRAWING NO. 4-1068
SHEET NO. 6 OF 11

X H:\proj\11031804\dwgs\storm drain\ldrn05.dwg, Layout: 06, Feb 21 2014 9:56am

Attachment: Appendix H - Preliminary WQMP (5613 : Pilot Travel Center Project)



PA08-0097 (PLOT PLAN)
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PA09-0022 (TENTATIVE PARCEL MAP)

CITY OF MORENO VALLEY APPROVALS
PA09-0022 CITY ID# 4898

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PUBLIC WORKS DIRECTOR/CITY ENGINEER
R.C.E. NO. C51318
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DESIGNED BY: M.H.M.
DRAWN BY: H-Z STAFF
DATE DRAWN: 03-2013
CHECKED BY: M.H.M.

REGISTERED PROFESSIONAL ENGINEER MAURICE H. MURAD NO. 33366 EXPIRATION 6-30-2014 CIVIL STATE OF CALIFORNIA

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
3990 CONCOURS, SUITE 330 • ONTARIO, CALIFORNIA 91764 • (909) 941-7799
PREPARED UNDER THE SUPERVISION OF: MAURICE H. MURAD
R.C.E. 33366 EXPIRES 6-30-14 DATE 2/14/14

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE:
APPROVED BY: DATE:

MORENO MDP LINE F-16 CONNECTOR PIPE PROFILES FOR F-16-A, F-16-B, F-16-C, AND F-16-D

PROJECT NO. 4-0-00401
DRAWING NO. 4-1068
SHEET NO. 9 OF 11

MDC

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

N/A

Appendix 6: BMP Design Details

BMP Sizing, Design Details, and other Supporting Documentation

PROJECT SITE
Pilot Moreno Valley
D85=0.667

R 07 W | R 06 W | R 05 W | R 04 W | R 03 W | R 02 W | R 01 W | R 01 E | R 02 E | R 03 E | R 04 E | R 05 E

T 01 S
T 02 S
T 03 S
T 04 S
T 05 S
T 06 S
T 07 S
T 08 S

0.85 MiraLoma
0.61 RiversideNorth
0.68 PigeonPass
0.54 RiversideSouth
0.66 MorenoEast
0.85 Beaumont
0.88 PradoDam
0.51 Woodcrest
0.50 LakeMathews
0.68 PerrisReservoir
0.70 SanJacintoNWS
0.87 VistaGrandeGS
1.18 Idyllwild
0.58 SunCity
0.68 Winchester
0.90 HurkeyCreek
0.70 ElsinoreNWS
1.11 ElCarisoStation
0.77 WildomarLaCresta
0.52 SkinnerLake
0.65 Anza
0.77 SantaRosaPlateau
1.00 TemeculaNWS
0.64 AguangaValley

Santa Ana River Watershed
Santa Margarita Watershed

Rain Gage Locations

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Isohyetal Map for the 85th Percentile 24 hour Storm Event

July 2011

Attachment: Appendix H - Preliminary WQMP (5613 : Pilot Travel Center Project)

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: Kimley-Horn | Date: 8/3/2021
Designed by: Xochitl Ortega | Case No:
Company Project Number/Name: Pilot Moreno Valley

BMP Identification

BMP NAME / ID: BMP-1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E: D_{85}= 0.67 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
1A	*138,540*	*Concrete or Asphalt*	*1*	*0.89*	*123577.7*			
1B	*67940*	*Ornamental Landscaping*	*0.1*	*0.11*	*7504.5*			
	206480	***Total***			**131082.2**	**0.67**	**7286**	**7,370**

Notes:

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: Kimley-Horn   Date: 8/3/2021
Designed by: Xochitl Ortega   Case No:
Company Project Number/Name: Pilot Moreno Valley

BMP Identification

BMP NAME / ID: BMP-1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E D_{85}= 0.67 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
1A	*115,669*	*Concrete or Asphalt*	*1*	*0.89*	*103176.7*			
1B	*89417*	*Ornamental Landscaping*	*0.1*	*0.11*	*9876.8*			
	205086	***Total***			**113053.5**	**0.67**	***6283.9***	***6,566***

Notes:

Bioretention Facility - Design Procedure	BMP ID: BMP-1	Legend:	Required Entries / Calculated Cells

Company Name: Kimley-Horn | Date: 8/3/2021

Designed by: Xochitl Ortega | County/City Case No.:

Design Volume

Enter the area tributary to this feature — A_T = 4.74 acres

Enter V_{BMP} determined from Section 2.1 of this Handbook — V_{BMP} = 7,286 ft^3

Type of Bioretention Facility Design

(●) Side slopes required (parallel to parking spaces or adjacent to walkways)

( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer — d_S = 1.5 ft

Top Width of Bioretention Facility, excluding curb — w_T = 50.0 ft

Total Effective Depth, d_E

$d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$ — d_E = 1.34 ft

Minimum Surface Area, A_m

$$A_M\,(ft^2) = \frac{V_{BMP}\,(ft^3)}{d_E\,(ft)}$$

A_M = 5,454 ft^2

Proposed Surface Area — A= 5,500 ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility — z = 4 :1

Diameter of Underdrain — 6 inches

Longitudinal Slope of Site (3% maximum) — 0 %

6" Check Dam Spacing — 0 feet

Describe Vegetation:

Notes: Bioretention Basin

Bioretention Facility - Design Procedure	BMP ID: BMP-1	Legend:	Required Entries / Calculated Cells

Company Name: Kimley-Horn | Date: 8/3/2021

Designed by: Xochitl Ortega | County/City Case No.:

Design Volume

Enter the area tributary to this feature — A_T = 4.71 acres

Enter V_{BMP} determined from Section 2.1 of this Handbook — V_{BMP} = 6,284 ft^3

Type of Bioretention Facility Design

(●) Side slopes required (parallel to parking spaces or adjacent to walkways)

( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer — d_S = 1.5 ft

Top Width of Bioretention Facility, excluding curb — w_T = 50.0 ft

Total Effective Depth, d_E

$d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$ — d_E = 1.34 ft

Minimum Surface Area, A_m

$$A_M\,(ft^2) = \frac{V_{BMP}\,(ft^3)}{d_E\,(ft)}$$

A_M = 4,704 ft^2

Proposed Surface Area — A= 4,900 ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility — z = 4 :1

Diameter of Underdrain — 6 inches

Longitudinal Slope of Site (3% maximum) — 0 %

6" Check Dam Spacing — 0 feet

Describe Vegetation:

Notes: Bioretention Basin

3.5 Bioretention Facility

Type of BMP	LID – Bioretention
Treatment Mechanisms	Infiltration, Evapotranspiration, Evaporation, Biofiltration
Maximum Drainage Area	This BMP is intended to be integrated into a project's landscaped area in a distributed manner. Typically, contributing drainage areas to Bioretention Facilities range from less than 1 acre to a maximum of around 10 acres.
Other Names	Rain Garden, Bioretention Cell, Bioretention Basin, Biofiltration Basin, Landscaped Filter Basin, Porous Landscape Detention

Description

Bioretention Facilities are shallow, vegetated basins underlain by an engineered soil media. Healthy plant and biological activity in the root zone maintain and renew the macro-pore space in the soil and maximize plant uptake of pollutants and runoff. This keeps the Best Management Practice (BMP) from becoming clogged and allows more of the soil column to function as both a sponge (retaining water) and a highly effective and self-maintaining biofilter. In most cases, the bottom of a Bioretention Facility is unlined, which also provides an opportunity for infiltration to the extent the underlying onsite soil can accommodate. When the infiltration rate of the underlying soil is exceeded, fully biotreated flows are discharged via underdrains. Bioretention Facilities therefore will inherently achieve the maximum feasible level of infiltration and evapotranspiration and achieve the minimum feasible (but highly biotreated) discharge to the storm drain system.

Siting Considerations

These facilities work best when they are designed in a relatively level area. Unlike other BMPs, Bioretention Facilities can be used in smaller landscaped spaces on the site, such as:

- ✓ Parking islands
- ✓ Medians
- ✓ Site entrances

Landscaped areas on the site (such as may otherwise be required through minimum landscaping ordinances), can often be designed as Bioretention Facilities. This can be accomplished by:

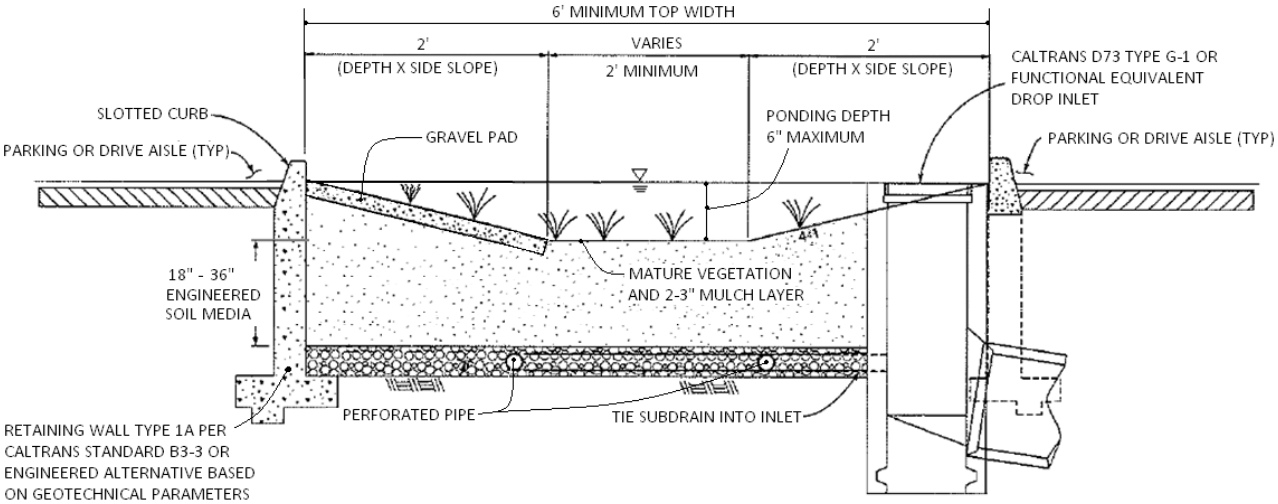
- *Depressing* landscaped areas below adjacent impervious surfaces, rather than elevating those areas
- Grading the site to direct runoff from those impervious surfaces *into* the Bioretention Facility, rather than away from the landscaping
- Sizing and designing the depressed landscaped area as a Bioretention Facility as described in this Fact Sheet

Bioretention Facilities should however not be used downstream of areas where large amounts of sediment can clog the system. Placing a Bioretention Facility at the toe of a steep slope should also be avoided due to the potential for clogging the engineered soil media with erosion from the slope, as well as the potential for damaging the vegetation.

Design and Sizing Criteria

The recommended cross section necessary for a Bioretention Facility includes:

- Vegetated area
- 18' minimum depth of engineered soil media
- 12' minimum gravel layer depth with 6' perforated pipes (added flow control features such as orifice plates may be required to mitigate for HCOC conditions)



While the 18-inch minimum engineered soil media depth can be used in some cases, it is recommended to use 24 inches or a preferred 36 inches to provide an adequate root zone for the chosen plant palate. Such a design also provides for improved removal effectiveness for nutrients. The recommended ponding depth inside of a Bioretention Facility is 6 inches; measured from the flat bottom surface to the top of the water surface as shown in Figure 1.

Because this BMP is filled with an engineered soil media, pore space in the soil and gravel layer is assumed to provide storage volume. However, several considerations must be noted:

- Surcharge storage above the soil surface (6 inches) is important to assure that design flows do not bypass the BMP when runoff exceeds the soil's absorption rate.
- In cases where the Bioretention Facility contains engineered soil media deeper than 36 inches, the pore space within the engineered soil media can only be counted to the 36-inch depth.
- A maximum of 30 percent pore space can be used for the soil media whereas a maximum of 40 percent pore space can be use for the gravel layer.

Figure 1: Standard Layout for a Bioretention Facility

Engineered Soil Media Requirements

The engineered soil media shall be comprised of 85 percent mineral component and 15 percent organic component, by volume, drum mixed prior to placement. The mineral component shall be a Class A sandy loam topsoil that meets the range specified in Table 1 below. The organic component shall be nitrogen stabilized compost[1], such that nitrogen does not leach from the media.

Table 1: Mineral Component Range Requirements

Percent Range	Component
70-80	Sand
15-20	Silt
5-10	Clay

The trip ticket, or certificate of compliance, shall be made available to the inspector to prove the engineered mix meets this specification.

Vegetation Requirements

Vegetative cover is important to minimize erosion and ensure that treatment occurs in the Bioretention Facility. The area should be designed for at least 70 percent mature coverage throughout the Bioretention Facility. To prevent the BMP from being used as walkways, Bioretention Facilities shall be planted with a combination of small trees, densely planted shrubs, and natural grasses. Grasses shall be native or ornamental; preferably ones that do not need to be mowed. The application of fertilizers and pesticides should be minimal. To maintain oxygen levels for the vegetation and promote biodegradation, it is important that vegetation not be completely submerged for any extended period of time. Therefore, a maximum of 6 inches of ponded water shall be used in the design to ensure that plants within the Bioretention Facility remain healthy.

A 2 to 3-inch layer of standard shredded aged hardwood mulch shall be placed as the top layer inside the Bioretention Facility. The 6-inch ponding depth shown in Figure 1 above shall be measured from the top surface of the 2 to 3-inch mulch layer.

Curb Cuts

To allow water to flow into the Bioretention Facility, 1-foot-wide (minimum) curb cuts should be placed approximately every 10 feet around the perimeter of the Bioretention Facility. Figure 2 shows a curb cut in a Bioretention Facility. Curb cut flow lines must be at or above the V_{BMP} water surface level.

[1] For more information on compost, visit the US Composting Council website at: http://compostingcouncil.org/

BIORETENTION FACILITY BMP FACT SHEET

Figure 2: Curb Cut located in a Bioretention Facility

To reduce erosion, a gravel pad shall be placed at each inlet point to the Bioretention Facility. The gravel should be 1- to 1.5-inch diameter in size. The gravel should overlap the curb cut opening a minimum of 6 inches. The gravel pad inside the Bioretention Facility should be flush with the finished surface at the curb cut and extend to the bottom of the slope.

In addition, place an apron of stone or concrete, a foot square or larger, inside each inlet to prevent vegetation from growing up and blocking the inlet. See Figure 3.

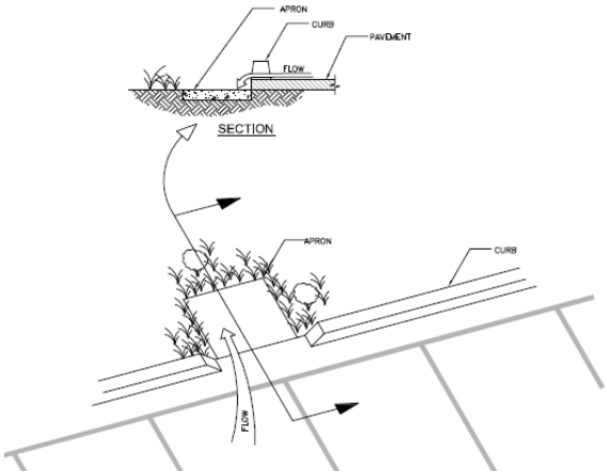


Figure 3: Apron located in a Bioretention Facility

Terracing the Landscaped Filter Basin

It is recommended that Bioretention Facilities be level. In the event the facility site slopes and lacks proper design, water would fill the lowest point of the BMP and then discharge from the basin without being treated. To ensure that the water will be held within the Bioretention Facility on sloped sites, the BMP must be terraced with nonporous check dams to provide the required storage and treatment capacity.

The terraced version of this BMP shall be used on non-flat sites with no more than a 3 percent slope. The surcharge depth cannot exceed 0.5 feet, and side slopes shall not exceed 4:1. Table 2 below shows the spacing of the check dams, and slopes shall be rounded up (i.e., 2.5 percent slope shall use 10' spacing for check dams).

Table 2: Check Dam Spacing

6" Check Dam Spacing	
Slope	**Spacing**
1%	*25'*
2%	*15'*
3%	*10'*

Roof Runoff

Roof downspouts may be directed towards Bioretention Facilities. However, the downspouts must discharge onto a concrete splash block to protect the Bioretention Facility from erosion.

Retaining Walls

It is recommended that Retaining Wall Type 1A, per Caltrans Standard B3-3 or equivalent, be constructed around the entire perimeter of the Bioretention Facility. This practice will protect the sides of the Bioretention Facility from collapsing during construction and maintenance or from high service loads adjacent to the BMP. Where such service loads would not exist adjacent to the BMP, an engineered alternative may be used if signed by a licensed civil engineer.

Side Slope Requirements

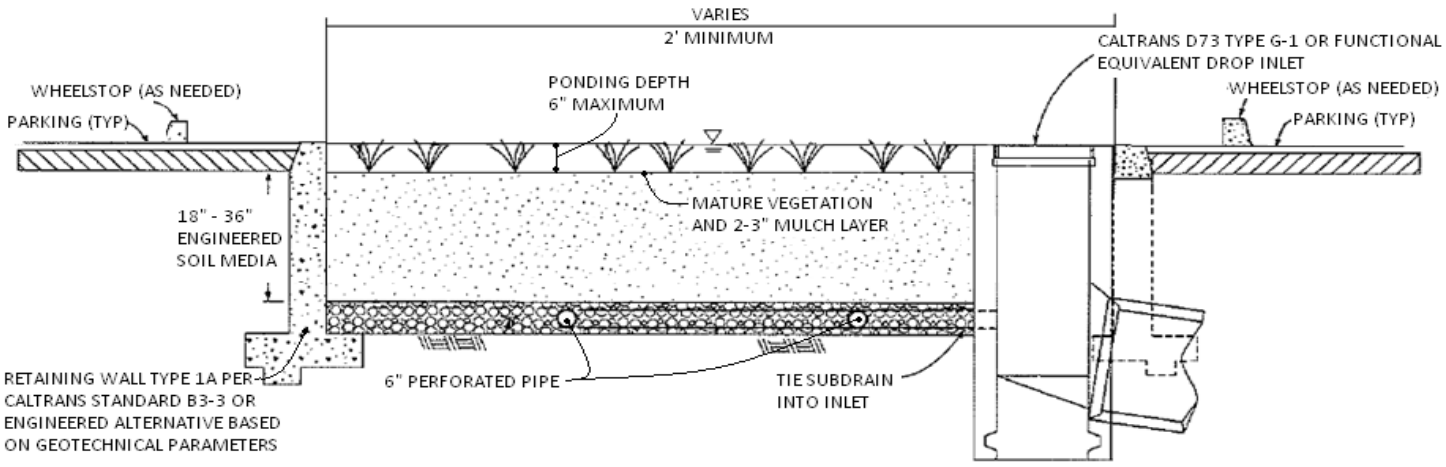
Bioretention Facilities Requiring Side Slopes

The design should assure that the Bioretention Facility does not present a tripping hazard. Bioretention Facilities proposed near pedestrian areas, such as areas parallel to parking spaces or along a walkway, must have a gentle slope to the bottom of the facility. Side slopes inside of a Bioretention Facility shall be 4:1. A typical cross section for the Bioretention Facility is shown in Figure 1.

Bioretention Facilities Not Requiring Side Slopes

Where cars park perpendicular to the Bioretention Facility, side slopes are not required. A 6-inch maximum drop may be used, and the Bioretention Facility must be planted with trees and shrubs to prevent pedestrian access. In this case, a curb is not placed around the Bioretention Facility,

but wheel stops shall be used to prevent vehicles from entering the Bioretention Facility, as shown in Figure 4.



Planter Boxes

Bioretention Facilities can also be placed above ground as planter boxes. Planter boxes must have a minimum width of 2 feet, a maximum surcharge depth of 6 inches, and no side slopes are necessary. Planter boxes must be constructed so as to ensure that the top surface of the engineered soil media will remain level. This option may be constructed of concrete, brick, stone or other stable materials that will not warp or bend. Chemically treated wood or galvanized steel, which has the ability to contaminate stormwater, should not be used. Planter boxes must be lined with an impermeable liner on all sides, including the bottom. Due to the impermeable liner, the inside bottom of the planter box shall be designed and constructed with a cross fall, directing treated flows within the subdrain layer toward the point where subdrain exits the planter box, and subdrains shall be oriented with drain holes oriented down. These provisions will help avoid excessive stagnant water within the gravel underdrain layer. Similar to the in-ground Bioretention Facility versions, this BMP benefits from healthy plants and biological activity in the root zone. Planter boxes should be planted with appropriately selected vegetation.

Figure 5: Planter Box
Source: LA Team Effort

Overflow

An overflow route is needed in the Bioretention Facility design to bypass stored runoff from storm events larger than V_{BMP} or in the event of facility or subdrain clogging. Overflow systems must connect to an acceptable discharge point, such as a downstream conveyance system as shown in Figure 1 and Figure 4. The inlet to the overflow structure shall be elevated inside the Bioretention Facility to be flush with the ponding surface for the design capture volume (V_{BMP}) as shown in Figure 4. This will allow the design capture volume to be fully treated by the Bioretention Facility, and for larger events to safely be conveyed to downstream systems. The overflow inlet shall **not** be located in the entrance of a Bioretention Facility, as shown in Figure 6.

Underdrain Gravel and Pipes

An underdrain gravel layer and pipes shall be provided in accordance with Appendix B – Underdrains.

Figure 6: Incorrect Placement of an Overflow Inlet.

Inspection and Maintenance Schedule

The Bioretention Facility area shall be inspected for erosion, dead vegetation, soggy soils, or standing water. The use of fertilizers and pesticides on the plants inside the Bioretention Facility should be minimized.

Schedule	Activity
Ongoing	• Keep adjacent landscape areas maintained. Remove clippings from landscape maintenance activities. • Remove trash and debris • Replace damaged grass and/or plants • Replace surface mulch layer as needed to maintain a 2-3 inch soil cover.
After storm events	• Inspect areas for ponding
Annually	• Inspect/clean inlets and outlets

Bioretention Facility Design Procedure

1) Enter the area tributary, A_T, to the Bioretention Facility.

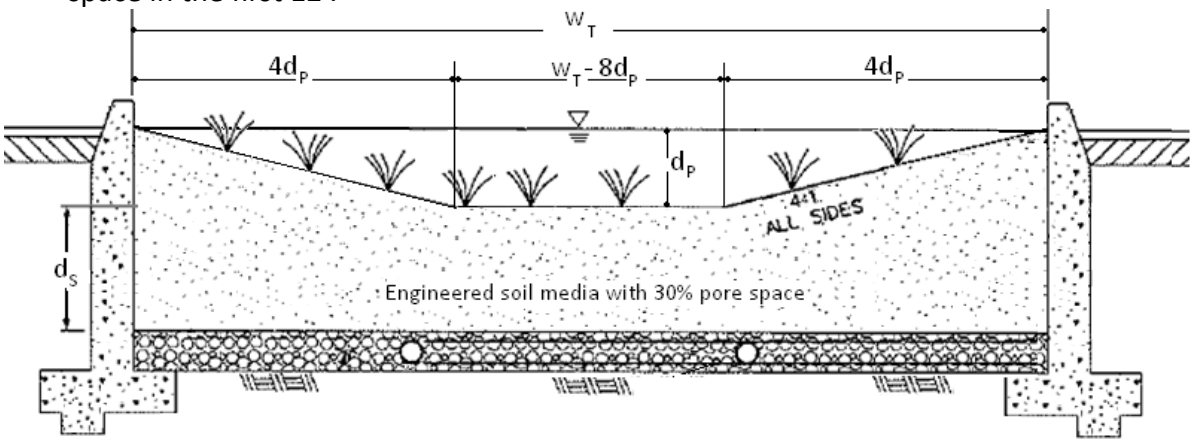
2) Enter the Design Volume, V_{BMP}, determined from Section 2.1 of this Handbook.

3) Select the type of design used. There are two types of Bioretention Facility designs: the standard design used for most project sites that include side slopes, and the modified design used when the BMP is located perpendicular to the parking spaces or with planter boxes that do not use side slopes.

4) Enter the depth of the engineered soil media, d_S. The minimum depth for the engineered soil media can be 18' in limited cases, but it is recommended to use 24' or a preferred 36' to provide an adequate root zone for the chosen plant palette. Engineered soil media deeper than 36' will only get credit for the pore space in the first 36'.

5) Enter the top width of the Bioretention Facility.

6) Calculate the total effective depth, d_E, within the Bioretention Facility. The maximum allowable pore space of the soil media is 30% while the maximum allowable pore space for the gravel layer is 40%. Gravel layer deeper than 12' will only get credit for the pore space in the first 12'.



a. For the design with side slopes the following equation shall be used to determine the total effective depth. Where, d_P is the depth of ponding within the basin.

$$d_E(\text{ft}) = \frac{0.3 \times \left[\left(w_T(\text{ft}) \times d_S(\text{ft})\right) + 4\left(d_P(\text{ft})\right)^2\right] + 0.4 \times 1(\text{ft}) + d_P(\text{ft})\left[4d_P(\text{ft}) + \left(w_T(\text{ft}) - 8d_P(\text{ft})\right)\right]}{w_T(\text{ft})}$$

This above equation can be simplified if the maximum ponding depth of 0.5' is used. The equation below is used on the worksheet to find the minimum area required for the Bioretention Facility:

$$d_E(\text{ft}) = (0.3 \times d_S(\text{ft}) + 0.4 \text{ x } 1(\text{ft})) - \left(\frac{0.7\ (\text{ft}^2)}{w_T(\text{ft})}\right) + 0.5(\text{ft})$$

b. For the design without side slopes the following equation shall be used to determine the total effective depth:

$$d_E(ft) = d_P(ft) + [(0.3) \times d_S(ft) + (0.4) \times 1(ft)]$$

The equation below, using the maximum ponding depth of 0.5', is used on the worksheet to find the minimum area required for the Bioretention Facility:

$$d_E(ft) = 0.5\ (ft) + [(0.3) \times d_S(ft) + (0.4) \times 1(ft)]$$

7) Calculate the minimum surface area, A_M, required for the Bioretention Facility. This does not include the curb surrounding the Bioretention Facility or side slopes.

$$A_M(ft^2) = \frac{V_{BMP}(ft^3)}{d_E\ (ft)}$$

8) Enter the proposed surface area. This area shall not be less than the minimum required surface area.

9) Verify that side slopes are no steeper than 4:1 in the standard design, and are not required in the modified design.

10) Provide the diameter, minimum 6 inches, of the perforated underdrain used in the Bioretention Facility. See Appendix B for specific information regarding perforated pipes.

11) Provide the slope of the site around the Bioretention Facility, if used. The maximum slope is 3 percent for a standard design.

12) Provide the check dam spacing, if the site around the Bioretention Facility is sloped.

13) Describe the vegetation used within the Bioretention Facility.

References Used to Develop this Fact Sheet

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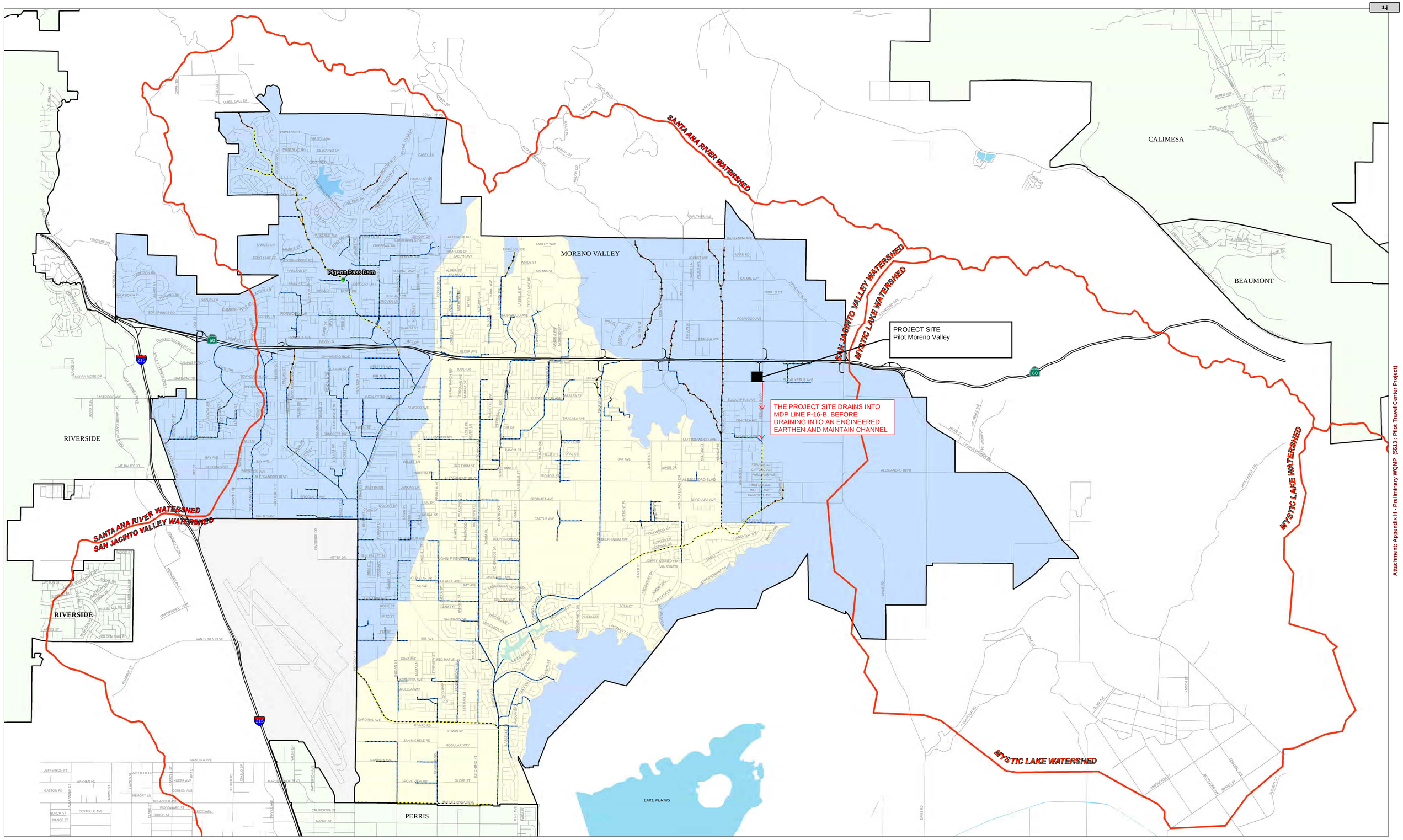
Urbonas, Ben R. Stormwater Sand Filter Sizing and Design: A Unit Operations Approach. Denver: Urban Drainage and Flood Control District, 2002.

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern



CITY OF MORENO VALLEY WATERSHED BOUNDARIES

- Controlled Release Point

Delineation Type
- Engineered, Fully Hardened, and Maintained
- Engineered, Partially Hardened, and Maintained
- Engineered, Earthen, and Maintained
- Not Engineered and Earthen
- Natural

Watercourse Susceptibility Type
- Not Susceptible
- Potentially Susceptible
- Mitigation May Be Required
- Mitigation Not Required
- Watershed Boundary

- Waterbodies
- Roads
- Highways
- City Boundaries
- March Air Reserve Base

N

0 5,000 10,000 Feet

The information shown on this map was compiled from the Riverside County GIS and the City of Moreno Valley GIS. The land base and facility information on this map is for display purposes only and should not be relied upon without independent verification as to its accuracy.Riverside County and City of Moreno Valley will not be held responsible for any claims, losses or damages resulting from the use of this map.

City of Moreno Valley Geographic Information in: State Plane NAD 83 California Zone 6 Feet
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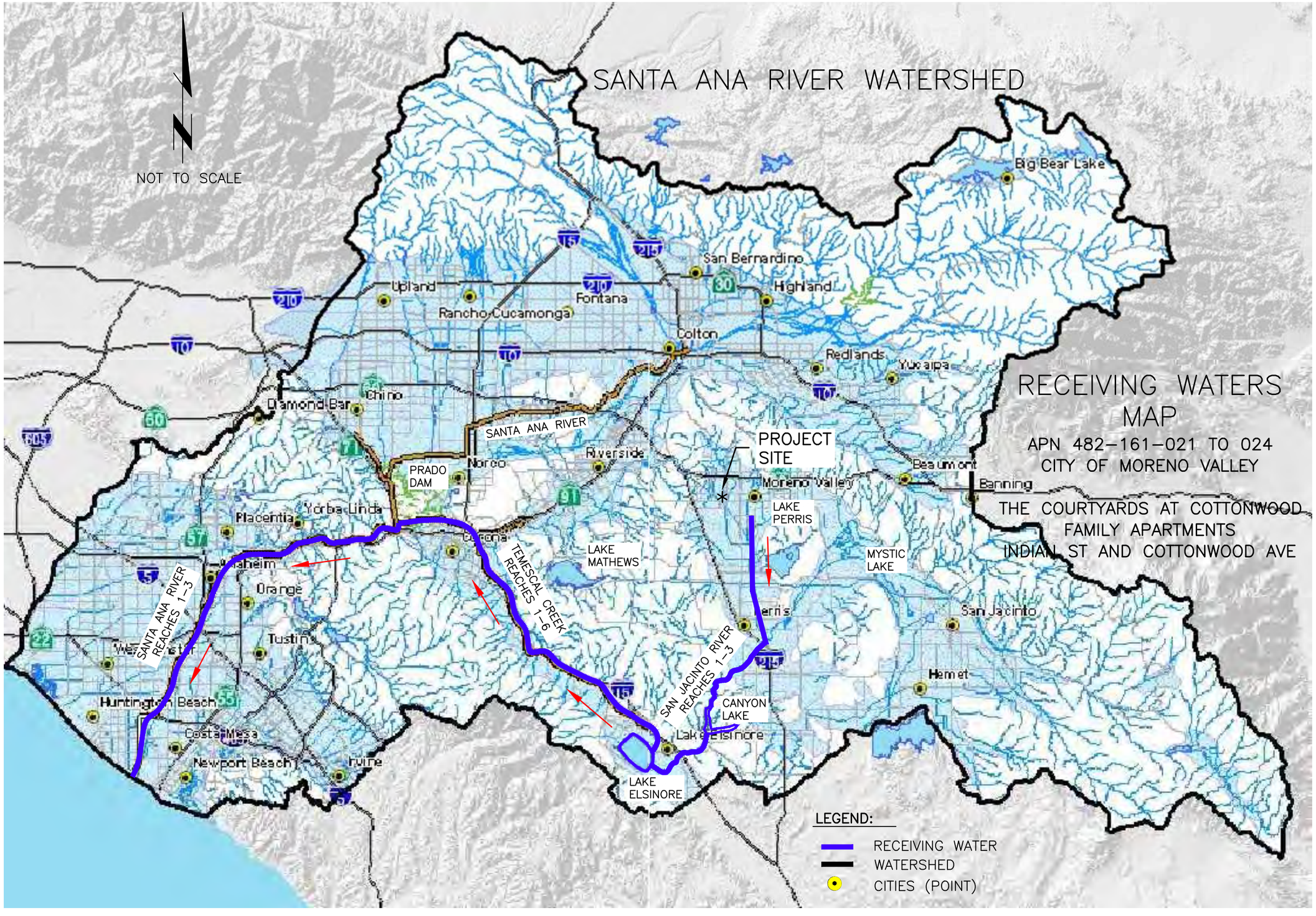
May 23, 2017

MORENO VALLEY WHERE DREAMS SOAR



Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

How to use this worksheet (also see instructions in Section G of the WQMP Template):

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your WQMP Exhibit.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in your WQMP. Use the format shown in Table G.1on page 23 of this WQMP Template. Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs for those shown here.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☑ **A.** On-site storm drain inlets	☑ Locations of inlets.	☑ Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.	☑ Maintain and periodically repaint or replace inlet markings. ☑ Provide stormwater pollution prevention information to new site owners, lessees, or operators. ☑ See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com ☑ Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."
☑ **B.** Interior floor drains and elevator shaft sump pumps		☑ State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	☑ Inspect and maintain drains to prevent blockages and overflow.
☒ **C.** Interior parking garages		☒ State that parking garage floor drains will be plumbed to the sanitary sewer.	☒ Inspect and maintain drains to prevent blockages and overflow.

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☑ **D1.** Need for future indoor & structural pest control		☑ Note building design features that discourage entry of pests.	☑ Provide Integrated Pest Management information to owners, lessees, and operators.
☑ **D2.** Landscape/ Outdoor Pesticide Use	☒ Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained. ☑ Show self-retaining landscape areas, if any. ☑ Show stormwater treatment and hydrograph modification management BMPs. (See instructions in Chapter 3, Step 5 and guidance in Chapter 5.)	State that final landscape plans will accomplish all of the following. ☒ Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. ☑ Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. ☑ Consider using pest-resistant plants, especially adjacent to hardscape. To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	☑ Maintain landscaping using minimum or no pesticides. ☑ See applicable operational BMPs in "What you should know for…..Landscape and Gardening" at http://rcflood.org/stormwater/**Error! Hyperlink reference not valid.** ☑ Provide IPM information to new owners, lessees and operators.

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☒ **E.** Pools, spas, ponds, decorative fountains, and other water features.	☒ Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)	If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.	☒ See applicable operational BMPs in "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at http://rcflood.org/stormwater/
☑ **F.** Food service	☑ For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. ☑ On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.	☑ Describe the location and features of the designated cleaning area. ☑ Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.	☑ See the brochure, "The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://rcflood.org/stormwater/ Provide this brochure to new site owners, lessees, and operators.
☑ **G.** Refuse areas	☑ Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas. ☑ If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area. ☑ Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.	☑ State how site refuse will be handled and provide supporting detail to what is shown on plans. ☑ State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	☑ State how the following will be implemented: Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
❑ **H.** Industrial processes.	❑ Show process area.	❑ **If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."**	❑ **See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at http://rcflood.org/stormwater/

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
X **I.** Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)	X Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area. X Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. X Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	X Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for: ▪ Hazardous Waste Generation ▪ Hazardous Materials Release Response and Inventory ▪ California Accidental Release (CalARP) ▪ Aboveground Storage Tank ▪ Uniform Fire Code Article 80 Section 103(b) & (c) 1991 ▪ Underground Storage Tank www.cchealth.org/groups/hazmat/	X See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☒ **J.** Vehicle and Equipment Cleaning	☒ Show on drawings as appropriate: (1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses. (2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use). (3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer. (4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.	☒ If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.	Describe operational measures to implement the following (if applicable): ☒ Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/ ☐ Car dealerships and similar may rinse cars with water only.

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☒ **K.** Vehicle/Equipment Repair and Maintenance	☒ Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater. ☒ Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas. ☒ Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.	☒ State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area. ☒ State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements. ☒ State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.	In the Stormwater Control Plan, note that all of the following restrictions apply to use the site: ☒ No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains. ☒ No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately. ☒ No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment. Refer to "Automotive Maintenance & Ca Care Best Management Practices for Aut Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http://rcflood.org/stormwater/ Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
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☑ **L.** Fuel Dispensing Areas	☑ Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable. ☑ Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.		☑ The property owner shall dry sweep the fueling area routinely. ☑ See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

[6] The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

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1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☒ **M.** Loading Docks	☒ Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer. ☒ Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. ☒ Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.		☒ Move loaded and unloaded items indoors as soon as possible. ☒ See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

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☑ **N.** Fire Sprinkler Test Water		☑ Provide a means to drain fire sprinkler test water to the sanitary sewer.	☑ See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
O. Miscellaneous Drain or Wash Water or Other Sources ☑ Boiler drain lines ☑ Condensate drain lines ☒ Rooftop equipment ☒ Drainage sumps ☑ Roofing, gutters, and trim. ☒ Other sources		☑ Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. ☑ Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. ☒ Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment. ☒ Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. ☑ Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff. Include controls for other sources as specified by local reviewer.	

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

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1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☑ **P.** Plazas, sidewalks, and parking lots.			☑ Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

RECORDING REQUESTED BY
AND WHEN RECORDED MAIL TO:

LAND DEVELOPMENT DIV.
CITY OF MORENO VALLEY
PO BOX 88005
14177 FREDERICK STREET
MORENO VALLEY, CA 92552-0805

EXEMPT FROM FEE PER G.C. Section 6103

SPACE ABOVE THIS LINE FOR RECORDER'S USE
APN:

STORMWATER TREATMENT DEVICE AND CONTROL MEASURE ACCESS AND MAINTENANCE COVENANT

THIS INSTRUMENT is made and entered into this _____ day of _____, by and between Pilot Travel Centers LLC, hereinafter referred to as "Owner," and the City of Moreno Valley, a municipal corporation, hereinafter referred to as "City."

RECITALS

WHEREAS, the Owner owns real property ("Property") in the City specifically described in Exhibit "A," which is attached hereto and incorporated herein by this reference; and

WHEREAS, at the time of approval of the development project known as Pilot Moreno Valley (the "Project") for the Property, the City required the Project to employ on-site stormwater and non-stormwater control measures to mitigate the Project impacts to water quality and minimize pollutants in urban stormwater runoff; and

WHEREAS, the City and Owner, its successors, and assigns, agree that the health, safety and welfare of the residents of the City, require that on-site stormwater and non-stormwater management control measures be constructed and implemented and adequately maintained on the Property; and

WHEREAS, the Owner has chosen to install Bioretention Basin, hereinafter referred to as the "Device" and other control measures all as described in the Final Water Quality Management Plan (WQMP) to minimize pollutants in urban stormwater and non-stormwater runoff; and

WHEREAS, the Device and other control measures have been installed and/or implemented in accordance with the WQMP, project plans and specifications approved by the City; and

WHEREAS, the Device and other control measures, being installed on private property and draining only private property are private facilities with all maintenance or replacement therefore being the sole responsibility of the Owner; and

WHEREAS, the Owner is aware that periodic and continuous maintenance including, but not necessarily limited to, filter material replacement and sediment removal is required to assure discharges from the Device, other control measures and the Project are in compliance with the City's Municipal Code for stormwater and non-stormwater discharges and that such maintenance activity will require compliance with all Federal, State and local laws and regulations, including

those pertaining to confined space and waste disposal methods in effect at the time such maintenance occurs;

NOW, THEREFORE, in consideration of City's approval of the Project and the foregoing premises, the mutual covenants contained herein, and the following terms and conditions, the City and Owner agree as follows:

1. The Owner hereby provides the City and its designees with full right of access to the Device and other control measures and the immediate vicinity of the property at any time, upon reasonable notice; or in the event of emergency, as determined by City's Public Works Director/City Engineer or designees, no advance notice; for the purpose of inspection, sampling and testing of the Device and other control measures, and in cases of emergency, where the public health, safety, or welfare is compromised, such emergency shall be declared a "nuisance" as defined in the Municipal Code. Such conditions that created the emergency shall be abated as provided for in the Municipal Code and at the Owner's expense as provided for in Section 3, below.

2. The Owner shall diligently maintain the Device and other control measures in a manner assuring all discharges from the Device, other control measures and the Project are in compliance with the Municipal Code for stormwater and non-stormwater discharges at all times. All reasonable precautions shall be exercised by the Owner and the Owner's representatives in the removal and extraction of materials from the Device and other control measures, and the ultimate disposal

of the materials in a manner consistent with all applicable laws. As may be requested from time to time by the City, the Owner shall provide the City with documentation identifying the materials removed, the quantity and the recycle of disposal destinations, as appropriate.

3. In the event the Owner fails to perform the necessary maintenance contemplated by this Instrument, within five (5) days of being given written notice by the City, the lack of maintenance shall be considered a public health and safety concern and declared a "nuisance", the City shall take all necessary actions as provided in the Municipal Code, to abate the nuisance and charge the entire cost and expense to the Owner, including administrative costs, attorneys' fees and interest thereon at the maximum rate authorized by law from the date of the notice of expense until paid in full. Additionally, any discharge as a result from the lack of maintenance prescribed herein from the Device to the City's maintained Municipal Separate Storm Sewer System shall be considered an illegal discharge and considered a violation of the Municipal Code and shall cease immediately. Such cessation may include a yellow or red tag issued to the Project.

4. This Instrument shall be recorded in the Official Records of the County of Riverside at the expense of the Owner and shall constitute notice to all successors and assigns to the title to the Property of the obligations herein set forth. This Instrument shall also constitute a lien against the Property in such amount as will fully reimburse the City, including interest as herein above set forth, subject to foreclosure in event of default in payment.

5. It is the intent of the Owner that the burdens and benefits herein undertaken shall constitute covenants that run with the Property and shall constitute a lien against the Property.

6. This covenant imposes no liability of any kind whatsoever on the City and the Owner agrees to hold the City harmless from any liability in the event the Device and other control measures fail to operate in accordance with the plans and specification submitted to the City.

7. The obligations herein undertaken shall be binding upon the heirs, successors, executors, administrators and assigns of the Owner hereto. The term "Owner" shall include not only the Owner, but also its heirs, successors, executors, administrators, lessees and assigns. The Owner shall notify any successor to title of all or part of the Property about the existence of this Instrument. The Owner shall provide such notice prior to such successor obtaining an interest in all or part of the Property. The Owner shall provide a copy of such notice to the City at the same time such notice is provided to the successor.

8. Time is of the essence in the performance of this Instrument.

9. Any notice to a party required or called for in this Instrument shall be served in person, or by deposit in the U.S. Mail, first class postage prepaid, to the address set forth below. Notice(s) shall be deemed effective upon receipt, or seventy-two

(72) hours after deposit in the U.S. Mail, whichever is earlier. A party may change notice address only by providing written notice thereof to the other party.

CITY:	OWNER:
Public Works Director/City Engineer	Name:
City of Moreno Valley	Company: Pilot Travel Centers LLC
PO Box 88005	Address: 5508 Lonas Drive
14177 Frederick Street	City/State/ZIP: Knoxville, TN 37909
Moreno Valley, CA 92552-0805	

10. This Instrument represents the entire Covenant of the parties hereto as to the matters contained herein and supersedes any and all prior written or verbal agreements between the parties as to the subject matter hereof.

11. This Instrument shall be governed by and construed in accordance with the laws of the State of California.

12. No amendment to this Instrument shall be made without prior written approval by the City.

OWNER:

_____
(Name, Title)

Pilot Travel Centers LLC
(Name of company/partnership/corp./entity)

CITY:

CITY OF MORENO VALLEY

APPROVED AS TO FORM:

_____
City Attorney

By: _____ Date: _____
City Manager

Attest:

By: _____ Date: _____
City Clerk

EXHIBIT “A”

Legal Description

EXHIBIT "A-1"

(Include 8.5x11 project site map and show location(s) of treatment control BMPs)

BMP Inspection and Maintenance Plan

BMP	Responsible Party	Inspection/Maintenance Activities Required	Minimum Frequency of Activities
Parking Area Maintenance	Owner	Parking lots and private streets must be swept.	Quarterly (minimum), weekly during rainy season (oct-may)
Drainage System Maintenance	Owner	Inspect, clean and maintain drainage facilities.	Prior to rainy season and after every rain event greater than 0.5 inches.
Plaza and Sidewalk Cleaning	Owner	Litter shall be picked up. Sidewalk and plaza areas shall be swept.	Weekly
Landscape Maintenance	Owner	Vegetated Areas Mowing and/or trimming of vegetation must be performed on a regular schedule based on specific site conditions. Vegetated areas must be inspected at least annually for erosion and scour. Vegetated areas should also be inspected at least annually for unwanted growth, which should be removed with minimum disruption to the planting soil bed and remaining vegetation. When establishing or restoring vegetation, biweekly inspections of vegetation health should be performed during the first growing season or until the vegetation is established. Once established, inspections of vegetation health, density, and diversity should be performed at least twice annually during both the growing and non-growing seasons. The vegetative cover should be maintained at 85 percent. If vegetation has greater than 50 percent damage, the area should be reestablished in accordance with the original specifications and the inspection requirements presented above. All use of fertilizers, mechanical treatments, pesticides and other means to assure optimum vegetation health should not compromise the intended purpose of the bioretention system. All vegetation deficiencies should be addressed without the use of fertilizers and pesticides whenever possible.	Weekly

BMP Inspection and Maintenance Plan

BMP	Responsible Party	Inspection/Maintenance Activities Required	Minimum Frequency of Activities
Efficient Irrigation	Owner	Irrigation systems must be inspected to ensure proper functionality. Timers must be inspected to avoid overwatering and water cycle and duration shall be adjusted seasonally by landscape maintenance contractor.	Weekly
Storm Drain Signage	Owner	Maintain legibility of stenciling and signs.	Yearly.
Trash Storage Areas	Owner	Trash and waste storage areas must be inspected to ensure receptacles are not collecting storm water. Trash enclosure areas shall be swept and cleaned, dumpsters shall be emptied. Lids must always be maintained closed.	Weekly
Bio-retention Facility	Owner	All bioretention system components expected to receive and/or trap debris and sediment must be inspected for clogging and excessive debris and sediment accumulation at least four times annually as well as after every storm exceeding 1 inch of rainfall. Such components may include bottoms, trash racks, low flow channels, outlet structures, riprap or gabion aprons, and cleanouts. Sediment removal should take place when the basin is thoroughly dry. Disposal of debris, trash, sediment, and other waste material should be done at suitable disposal/recycling sites and in compliance with all applicable local, state, and federal waste regulations. Grass outside of the bioretention system should be mowed at least once a month during the growing season. Grasses within the bioretention system must be carefully maintained so as not to compact the soil, and through hand-held equipment, such as a hand held line trimmer.	Bi-annual and after every rain event greater than 1.0 inches.

BMP Inspection and Maintenance Log

Date	Inspection/Maintenance Task Performed	Inspector

BMP Inspection and Maintenance Log

Date	Inspection/Maintenance Task Performed	Inspector

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

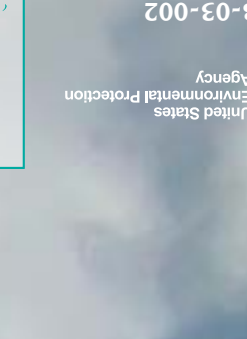
EPA 833-B-03-002
January 2003

United States Environmental Protection Agency
EPA

THE YEAR OF CLEAN WATER
Celebrating the Environment

A Citizen's Guide to Understanding Stormwater

After the Storm



What is stormwater runoff?

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.

Why is stormwater runoff a problem?

Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

The effects of pollution

Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.
- Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.
- Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.

For more information contact:

or visit
www.epa.gov/npdes/stormwater
www.epa.gov/nps

Stormwater Pollution Solutions

Residential

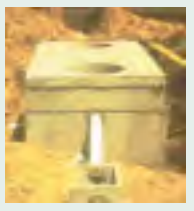
Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them onto the ground or into storm drains.

Lawn care

Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.

- Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- Cover piles of dirt or mulch being used in landscaping projects.

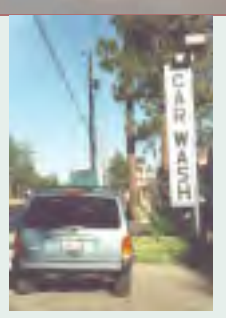
Septic systems



Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.

- Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- Don't dispose of household hazardous waste in sinks or toilets.

Auto care



Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.

- Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.

Pet waste

Pet waste can be a major source of bacteria and excess nutrients in local waters.

- When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.

Education is essential to changing people's behavior. Signs and markers near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.

Residential landscaping

Permeable Pavement—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.

Rain Barrels—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.

Rain Gardens and Grassy Swales—Specially designed areas planted with native plants can provide natural places for rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains

Vegetated Filter Strips—Filter strips are areas o native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.

Commercial

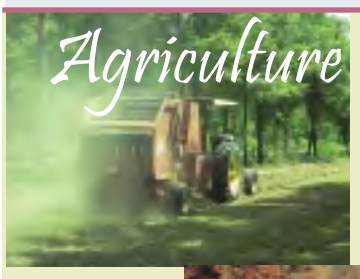
Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

- Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- Cover grease storage and dumpsters and keep them clean to avoid leaks.
- Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

Erosion controls that aren't maintained can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

- Divert stormwater away from disturbed or exposed areas of the construction site.
- Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.

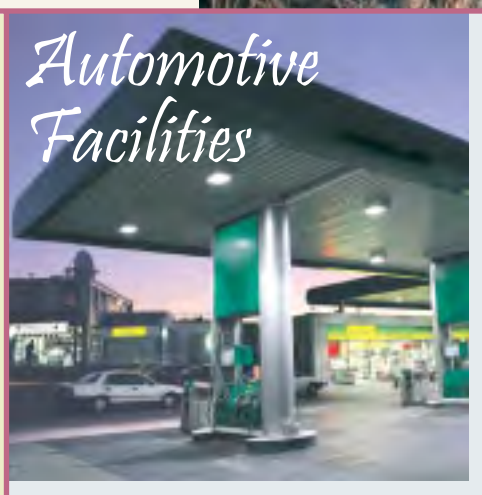
Construction



Agriculture

Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.

- Keep livestock away from streambanks and provide them a water source away from waterbodies.
- Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- Vegetate riparian areas along waterways.
- Rotate animal grazing to prevent soil erosion in fields.
- Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.



Automotive Facilities

Uncovered fueling stations allow spills to b washed into storm drains. Cars waiting to b repaired can leak fuel, oil, and other harmf fluids that can be picked up by stormwater

- Clean up spills immediately and properly dispose of cleanup materials.
- Provide cover over fueling stations and design or retrofit facilities for spill containment.
- Properly maintain fleet vehicles to prever oil, gas, and other discharges from being washed into local waterbodies.
- Install and maintain oil/water separators

Forestry

Improperly managed logging operations can result in erosion and sedimentation.

- Conduct preharvest planning to prevent erosion and lower costs.
- Use logging methods and equipment that minimize soil disturbance.
- Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- Construct stream crossings so that they minimize erosion and physical changes to streams.
- Expedite revegetation of cleared areas.

Landscaping and garden maintenance activities can be major contributors to water pollution. Soils, yard wastes, over-watering and garden chemicals become part of the urban runoff mix that winds its way through streets, gutters and storm drains before entering lakes, rivers, streams, etc. Urban runoff pollution contaminates water and harms aquatic life!

In Riverside County, report illegal discharges into the storm drain, call
1-800-506-2555
"Only Rain Down the Storm Drain"

Important Links:

Riverside County Household Hazardous Waste Collection Information
1-800-304-2226 or www.rivcowm.org

Riverside County Backyard Composting Program
1-800-366-SAVE

Integrated Pest Management (IPM) Solutions
www.ipm.ucdavis.edu

California Master Gardener Programs
www.mastergardeners.org
www.camastergardeners.ucdavis.edu

California Native Plant Society
www.cnps.org

The Riverside County "Only Rain Down the Storm Drain" Pollution Prevention Program gratefully acknowledges Orange County's Storm Water Program for their contribution to this brochure.

...Only Rain Down ...the Storm Drai

What you should know for... Landscape and Gardenin

Best Management tips for:

- Professionals
- Novices
- Landscapers
- Gardeners
- Cultivators

Tips for Landscape & Gardening

This brochure will help you to get the most of your lawn and gardening efforts and keep our waterways clean. Clean waterways provide recreation, establish thriving fish habitats, secure safe sanctuaries for wildlife, and add beauty to our communities. NEVER allow gardening products or waste water to enter the street, gutter or storm drain.

General Landscaping Tips

- Protect stockpiles and materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Prevent erosion of slopes by planting fast-growing, dense ground covering plants. These will shield and bind the soil.

- Plant native vegetation to reduce the amount of water, fertilizers and pesticides applied to the landscape.
- Never apply pesticides or fertilizers when rain is predicted within the next 48 hours.

Garden & Lawn Maintenance

- Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro-spray systems. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your city's program.

- Consider recycling your green waste and adding "nature's own fertilizer" to your lawn or garden.
- Read labels and use only as directed. Do not over-apply pesticides or fertilizers. Apply to spots as needed, rather than blanketing an entire area.
- Store pesticides, fertilizers and other chemicals in a dry covered area to prevent exposure that may result in the deterioration of containers and packaging.
- Rinse empty pesticide containers and re-use rinse water as you would use the product. Do not dump rinse water down storm drains or sewers. Dispose of empty containers in the trash.
- When available, use non-toxic alternatives to traditional pesticides, and use pesticides specifically designed to control the pest you are targeting.
- Try natural long-term common se solutions first. Integrated Pest Managem (IPM) can provide landscaping guidance a solutions, such as:
  - **Physical Controls** - Try hand picki barriers, traps or caulking holes control weeds and pests.
  - **Biological Controls** - Use predat insects to control harmful pests.
  - **Chemical Controls** - Check www.ipm.ucdavis.edu before usi chemicals. Remember, all chemic should be used cautiously and moderation.
- If fertilizer is spilled, sweep up the spill bef irrigating. If the spill is liquid, apply absorbent material such as cat litter, and th sweep it up and dispose of it in the tra
- Take unwanted pesticides to a Househ Waste Collection Center to be recycl
- *Dumping toxics into the street, gutter storm drain is illegal!*

www.bewaterwise.com Great water conservation tips and drought tolerant garden designs.

www.ourwaterourworld.com Learn how safely manage home and garden pests.

Additional information can also be found on the back of this brochure.

Helpful telephone numbers and links:

Riverside County Stormwater Protection Partners

Flood Control District	(951) 955-1200
County of Riverside	(951) 955-1000
City of Banning	(951) 922-3105
City of Beaumont	(951) 769-8520
City of Calimesa	(909) 795-9801
City of Canyon Lake	(951) 244-2955
Cathedral City	(760) 770-0327
City of Coachella	(760) 398-4978
City of Corona	(951) 736-2447
City of Desert Hot Springs	(760) 329-6411
City of Eastvale	(951) 361-0900
City of Hemet	(951) 765-2300
City of Indian Wells	(760) 346-2489
City of Indio	(760) 391-4000
City of Lake Elsinore	(951) 674-3124
City of La Quinta	(760) 777-7000
City of Menifee	(951) 672-6777
City of Moreno Valley	(951) 413-3000
City of Murrieta	(951) 304-2489
City of Norco	(951) 270-5607
City of Palm Desert	(760) 346-0611
City of Palm Springs	(760) 323-8299
City of Perris	(951) 943-6100
City of Rancho Mirage	(760) 324-4511
City of Riverside	(951) 361-0900
City of San Jacinto	(951) 654-7337
City of Temecula	(951) 694-6444
City of Wildomar	(951) 677-7751

REPORT ILLEGAL STORM DRAIN DISPOSAL
1-800-506-2555 or e-mail us at
fcnpdes@rcflood.org

- Riverside County Flood Control and Water Conservation District
  www.rcflood.org

Online resources include:

- California Storm Water Quality Association
  www.casqa.org
- State Water Resources Control Board
  www.waterboards.ca.gov
- Power Washers of North America
  www.thepwna.org

Stormwater Pollution

What you should know for...

Outdoor Cleaning Activities and Professional Mobile Service Providers

Storm drain pollution prevention information for:

- Car Washing / Mobile Detailers
- Window and Carpet Cleaners
- Power Washers
- Waterproofers / Street Sweepers
- Equipment cleaners or degreasers and all mobile service providers

Do you know where street flows actually go?

Storm drains are NOT connected to sanitary sewer systems and treatment plants!

The primary purpose of storm drains is to carry *rain* water away from developed area to prevent flooding. Pollutants discharged to storm drains are transported directl into rivers, lakes and streams. Soaps, degreasers, automotive fluids, litter and a host c materials are washed off buildings, sidewalks, plazas and parking areas. Vehicles an equipment must be properly managed to prevent the pollution of local waterways.

Unintentional spills by mobile service operators can flow into storm drains and pollut our waterways. **Avoid mishaps.** *Always* have a **Spill Response Kit** on hand to clean u unintentional spills. Only emergency **Mechanical** repairs should be done in City streets using drip pans for spills. **Plumbing** should be done on private property. Always stor chemicals in a leak-proof container and keep covered when not in use. **Window/Powe Washing** waste water shouldn't be released into the streets, but should be disposed of i a sanitary sewer, landscaped area or in the soil. Soiled **Carpet Cleaning** wash wate should be filtered before being discharged into the sanitary sewer. Dispose of all filte debris properly. **Car Washing/Detailing** operators should wash cars on private propert and use a regulated hose nozzle for water flow control and runoff prevention. Capture and dispose of waste water and chemicals properly. Remember, storm drains are for receiving rain water runoff only.

REPORT ILLEGAL STORM DRAIN DISPOSAL 1-800-506-2555

Attachment: Appendix H - Preliminary WQMP (5613 : Pilot Travel Center Project)

Help Protect Our Waterways!

Use these guidelines for Outdoor Cleaning Activities and Wash Water Disposal

Did you know that disposing of pollutants into the street, gutter, storm drain or body of water is *PROHIBITED* by law and can result in stiff penalties?

Best Management Practices

Waste wash water from Mechanics, Plumbers, Window/Power Washers, Carpet Cleaners, Car Washing and Mobile Detailing activities may contain significant quantities of motor oil, grease, chemicals, dirt, detergents, brake pad dust, litter and other materials.

Best Management Practices, or BMPs as they are known, are guides to prevent pollutants from entering the storm drains. ***Each of us*** can do our part to keep stormwater clean by using the suggested BMPs below:

Simple solutions for both light and heavy duty jobs:

Do...consider dry cleaning methods first such as a mop, broom, rag or wire brush. Always keep a spill response kit on site.

Do...prepare the work area before power cleaning by using sand bags, rubber mats, vacuum booms, containment pads or temporary berms to keep wash water away from the gutters and storm drains.

Do...use vacuums or other machines to remove and collect loose debris or litter before applying water.

Do...obtain the property owner's permission to dispose of ***small amounts*** of power washing waste water on to landscaped, gravel or unpaved surfaces.

Do...check your local sanitary sewer agency's policies on wash water disposal regulations before disposing of wash water into the sewer. (See list on reverse side)

Do...be aware that if discharging to landscape areas, soapy wash water may damage landscaping. Residual wash water may remain on paved surfaces to evaporate. Sweep up solid residuals and dispose of properly. Vacuum booms are another option for capturing and collecting wash water.

Do...check to see if local ordinances prevent certain activities.

Do not let...wash or waste water from sidewalk, plaza or building cleaning go into a street or storm drain.

Report illegal storm drain disposal
Call Toll Free
1-800-506-2555

Using Cleaning Agents

Try using biodegradable/phosphate-free products. They are easier on the environment, but don't confuse them with being toxic free. Soapy water entering the storm drain system can impact the delicate aquatic environment.

When cleaning surfaces with a ***high-pressure washer*** or ***steam cleaner***, additional precautions should be taken to prevent the discharge of pollutants into the storm drain system. These two methods of surface cleaning can loosen additional material that can contaminate local waterways.

Think Water Conservation

Minimize water use by using high pressure, low volume nozzles. Be sure to check all hoses for leaks. Water is a precious resource, don't let it flow freely and be sure to shut it off in between uses.

Screening Wash Water

Conduct thorough dry cleanup before washin exterior surfaces, such as buildings and deck ***with loose paint***, sidewalks or plaza areas. Kee debris from entering the storm drain afte cleaning by first passing the wash water throug a "20 mesh" or finer screen to catch the soli materials, then dispose of the mesh in a refus container. Do not let the remaining wash wate enter a street, gutter or storm drain.

Drain Inlet Protection & Collection of Wash Water

- Prior to any washing, block all storm drain with an impervious barrier such as sandbag or berms, or seal the storm drain with plug or other appropriate materials.
- Create a containment area with berms an traps or take advantage of a low spot to kee wash water contained.
- Wash vehicles and equipment on grassy c gravel areas so that the wash water can see into the ground.
- Pump or vacuum up all wash water in th contained area.

Concrete/Coring/Saw Cutting and Drilling Projects

Protect any down-gradient inlets by using dr activity techniques whenever possible. If water i used, minimize the amount of water used durin the coring/drilling or saw cutting process. Place barrier of sandbags and/or absorbent berms t protect the storm drain inlet or watercourse. Use shovel or wet vacuum to remove the residue fror the pavement. Do not wash residue or particulat matter into a storm drain inlet or watercourse.

Parking/Storage Area Maintenance SC-43

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓
Oxygen Demanding	✓

Description

Parking lots and storage areas can contribute a number of substances, such as trash, suspended solids, hydrocarbons, oil and grease, and heavy metals that can enter receiving waters through stormwater runoff or non-stormwater discharges. The following protocols are intended to prevent or reduce the discharge of pollutants from parking/storage areas and include using good housekeeping practices, following appropriate cleaning BMPs, and training employees.

Approach

Pollution Prevention

- Encourage alternative designs and maintenance strategies for impervious parking lots. (See New Development and Redevelopment BMP Handbook).
- Keep accurate maintenance logs to evaluate BMP implementation.

Suggested Protocols

General

- Keep the parking and storage areas clean and orderly. Remove debris in a timely fashion.
- Allow sheet runoff to flow into biofilters (vegetated strip and swale) and/or infiltration devices.
- Utilize sand filters or oleophilic collectors for oily waste in low concentrations.

SC-43 Parking/Storage Area Maintenance

- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable hardscape.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide an adequate number of litter receptacles.
- Clean out and cover litter receptacles frequently to prevent spillage.
- Provide trash receptacles in parking lots to discourage litter.
- Routinely sweep, shovel and dispose of litter in the trash.

Surface cleaning

- Use dry cleaning methods (e.g. sweeping or vacuuming) to prevent the discharge of pollutants into the stormwater conveyance system.
- Establish frequency of public parking lot sweeping based on usage and field observations of waste accumulation.
- Sweep all parking lots at least once before the onset of the wet season.
- If water is used follow the procedures below:
  - Block the storm drain or contain runoff.
  - Wash water should be collected and pumped to the sanitary sewer or discharged to a pervious surface, do not allow wash water to enter storm drains.
  - Dispose of parking lot sweeping debris and dirt at a landfill.
- When cleaning heavy oily deposits:
  - Use absorbent materials on oily spots prior to sweeping or washing.
  - Dispose of used absorbents appropriately.

Surface Repair

- Pre-heat, transfer or load hot bituminous material away from storm drain inlets.
- Apply concrete, asphalt, and seal coat during dry weather to prevent contamination form contacting stormwater runoff.
- Cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc., where applicable. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal.

Parking/Storage Area Maintenance SC-43

- Use only as much water as necessary for dust control, to avoid runoff.
- Catch drips from paving equipment that is not in use with pans or absorbent material placed under the machines. Dispose of collected material and absorbents properly.

Inspection

- Have designated personnel conduct inspections of the parking facilities and stormwater conveyance systems associated with them on a regular basis.
- Inspect cleaning equipment/sweepers for leaks on a regular basis.

Training

- Provide regular training to field employees and/or contractors regarding cleaning of paved areas and proper operation of equipment.
- Train employees and contractors in proper techniques for spill containment and cleanup.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and countermeasure (SPCC) plan up-to-date, nad implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Limitations related to sweeping activities at large parking facilities may include high equipment costs, the need for sweeper operator training, and the inability of current sweeper technology to remove oil and grease.

Requirements

Costs

Cleaning/sweeping costs can be quite large, construction and maintenance of stormwater structural controls can be quite expensive as well.

Maintenance

- Sweep parking lot to minimize cleaning with water.
- Clean out oil/water/sand separators regularly, especially after heavy storms.
- Clean parking facilities on a regular basis to prevent accumulated wastes and pollutants from being discharged into conveyance systems during rainy conditions.

SC-43 Parking/Storage Area Maintenance

Supplemental Information

Further Detail of the BMP

Surface Repair

Apply concrete, asphalt, and seal coat during dry weather to prevent contamination form contacting stormwater runoff. Where applicable, cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal. Use only as much water as necessary for dust control, to avoid runoff.

References and Resources

http://www.stormwatercenter.net/

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality control Board. July 1998 (Revised February 2002 by the California Coastal Commission).

Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA) http://www.basma.org

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP)
http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf

Drainage System Maintenance SC-44

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize

Description

As a consequence of its function, the stormwater conveyance system collects and transports urban runoff and stormwater that may contain certain pollutants. The protocols in this fact sheet are intended to reduce pollutants reaching receiving waters through proper conveyance system operation and maintenance.

Targeted Constituents

Sediment	✓
Nutrients	
Trash	✓
Metals	
Bacteria	✓
Oil and Grease	
Organics	

Approach

Pollution Prevention

Maintain catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis to remove pollutants, reduce high pollutant concentrations during the first flush of storms, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.

Suggested Protocols

Catch Basins/Inlet Structures

- Staff should regularly inspect facilities to ensure compliance with the following:
  - Immediate repair of any deterioration threatening structural integrity.
  - Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.
  - Stenciling of catch basins and inlets (see SC34 Waste Handling and Disposal).

CASQA California Stormwater Quality Association

SC-44 Drainage System Maintenance

- Clean catch basins, storm drain inlets, and other conveyance structures before the wet season to remove sediments and debris accumulated during the summer.
- Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Clean and repair as needed.
- Keep accurate logs of the number of catch basins cleaned.
- Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- Dewater the wastes if necessary with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed. Do not dewater near a storm drain or stream.

Storm Drain Conveyance System

- Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- Collect and pump flushed effluent to the sanitary sewer for treatment whenever possible.

Pump Stations

- Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- Do not allow discharge to reach the storm drain system when cleaning a storm drain pump station or other facility.
- Conduct routine maintenance at each pump station.
- Inspect, clean, and repair as necessary all outlet structures prior to the wet season.

Open Channel

- Modify storm channel characteristics to improve channel hydraulics, increase pollutant removals, and enhance channel/creek aesthetic and habitat value.
- Conduct channel modification/improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural (emphasis added) state of any river, stream, or lake in California, must enter into a Steam or Lake Alteration Agreement with the Department of Fish and Game. The developer-applicant should also contact local governments (city, county, special districts), other state agencies (SWRCB, RWQCB, Department of Forestry, Department of Water Resources), and Federal Corps of Engineers and USFWS.

Illicit Connections and Discharges

- Look for evidence of illegal discharges or illicit connections during routine maintenance of conveyance system and drainage structures:
  - Is there evidence of spills such as paints, discoloring, etc?

Drainage System Maintenance SC-44

- Are there any odors associated with the drainage system?
- Record locations of apparent illegal discharges/illicit connections?
- Track flows back to potential dischargers and conduct aboveground inspections. This can be done through visual inspection of upgradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
- Eliminate the discharge once the origin of flow is established.

- Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

Illegal Dumping

- Inspect and clean up hot spots and other storm drainage areas regularly where illegal dumping and disposal occurs.
- Establish a system for tracking incidents. The system should be designed to identify the following:
  - Illegal dumping hot spots
  - Types and quantities (in some cases) of wastes
  - Patterns in time of occurrence (time of day/night, month, or year)
  - Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
  - Responsible parties
- Post "No Dumping" signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

Training

- Train crews in proper maintenance activities, including record keeping and disposal.
- Allow only properly trained individuals to handle hazardous materials/wastes.
- Have staff involved in detection and removal of illicit connections trained in the following:
  - OSHA-required Health and Safety Training (29 CFR 1910.120) plus annual refresher training (as needed).

SC-44 Drainage System Maintenance

- OSHA Confined Space Entry training (Cal-OSHA Confined Space, Title 8 and Federal OSHA 29 CFR 1910.146).
- Procedural training (field screening, sampling, smoke/dye testing, TV inspection).

Spill Response and Prevention

- Investigate all reports of spills, leaks, and/or illegal dumping promptly.
- Clean up all spills and leaks using "dry" methods (with absorbent materials and/or rags) or dig up, remove, and properly dispose of contaminated soil.
- Refer to fact sheet SC-11 Spill Prevention, Control, and Cleanup.

Other Considerations (Limitations and Regulations)

- Clean-up activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. Trade-offs may exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.
- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, liquid/sediment disposal, and prohibition against disposal of flushed effluent to sanitary sewer in some areas.
- Regulations may include adoption of substantial penalties for illegal dumping and disposal.
- Local municipal codes may include sections prohibiting discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the storm drain system.

Requirements

Costs

- An aggressive catch basin cleaning program could require a significant capital and O&M budget.
- The elimination of illegal dumping is dependent on the availability, convenience, and cost of alternative means of disposal. The primary cost is for staff time. Cost depends on how aggressively a program is implemented. Other cost considerations for an illegal dumping program include:
  - Purchase and installation of signs.
  - Rental of vehicle(s) to haul illegally-disposed items and material to landfills.
  - Rental of heavy equipment to remove larger items (e.g., car bodies) from channels.
  - Purchase of landfill space to dispose of illegally-dumped items and material.

Drainage System Maintenance SC-44

- Methods used for illicit connection detection (smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors, such as the level of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary.

Maintenance

- Two-person teams may be required to clean catch basins with vactor trucks.
- Teams of at least two people plus administrative personnel are required to identify illicit discharges, depending on the complexity of the storm sewer system.
- Arrangements must be made for proper disposal of collected wastes.
- Technical staff are required to detect and investigate illegal dumping violations.

Supplemental Information

Further Detail of the BMP

Storm Drain Flushing

Flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in storm drainage systems. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as an open channel, another point where flushing will be initiated, or the sanitary sewer and the treatment facilities, thus preventing resuspension and overflow of a portion of the solids during storm events. Flushing prevents "plug flow" discharges of concentrated pollutant loadings and sediments. Deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, thereby releasing the backed up water and resulting in the cleaning of the storm drain segment.

To further reduce impacts of stormwater pollution, a second inflatable device placed well downstream may be used to recollect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to recollect the flushed waters.

It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65-75% for organics and 55-65% for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used or that fire hydrant line flushing coincide with storm sewer flushing.

SC-44 Drainage System Maintenance

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

Ferguson, B.K. 1991. Urban Stream Reclamation, p. 324-322, Journal of Soil and Water Conservation.

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net

United States Environmental Protection Agency (USEPA). 2002. Pollution Prevention/Good Housekeeping for Municipal Operations Storm Drain System Cleaning. On line:
http://www.epa.gov/npdes/menuofbmps/poll_16.htm

Plaza and Sidewalk Cleaning SC-71

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Description

Pollutants on sidewalks and other pedestrian traffic areas and plazas are typically due to littering and vehicle use. This fact sheet describes good housekeeping practices that can be incorporated into the municipality's existing cleaning and maintenance program.

Approach

Pollution Prevention

- Use dry cleaning methods whenever practical for surface cleaning activities.
- Use the least toxic materials available (e.g. water based paints, gels or sprays for graffiti removal).

Suggested Protocols

Surface Cleaning

- Regularly broom (dry) sweep sidewalk, plaza and parking lot areas to minimize cleaning with water.
- Dry cleanup first (sweep, collect, and dispose of debris and trash) when cleaning sidewalks or plazas, then wash with or without soap.
- Block the storm drain or contain runoff when cleaning with water. Discharge wash water to landscaping or collect water and pump to a tank or discharge to sanitary sewer if allowed. (Permission may be required from local sanitation district.)

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SC-71 Plaza and Sidewalk Cleaning

- Block the storm drain or contain runoff when washing parking areas, driveways or drive-throughs. Use absorbents to pick up oil; then dry sweep. Clean with or without soap. Collect water and pump to a tank or discharge to sanitary sewer if allowed. Street Repair and Maintenance.

Graffiti Removal

- Avoid graffiti abatement activities during rain events.
- Implement the procedures under Painting and Paint Removal in SC-70 Roads, Streets, and Highway Operation and Maintenance fact sheet when graffiti is removed by painting over.
- Direct runoff from sand blasting and high pressure washing (with no cleaning agents) into a dirt or landscaped area after treating with an appropriate filtering device.
- Plug nearby storm drain inlets and vacuum/pump wash water to the sanitary sewer if authorized to do so if a graffiti abatement method generates wash water containing a cleaning compound (such as high pressure washing with a cleaning compound). Ensure that a non-hazardous cleaning compound is used or dispose as hazardous waste, as appropriate.

Surface Removal and Repair

- Schedule surface removal activities for dry weather if possible.
- Avoid creating excess dust when breaking asphalt or concrete.
- Take measures to protect nearby storm drain inlets prior to breaking up asphalt or concrete (e.g. place hay bales or sand bags around inlets). Clean afterwards by sweeping up as much material as possible.
- Designate an area for clean up and proper disposal of excess materials.
- Remove and recycle as much of the broken pavement as possible to avoid contact with rainfall and stormwater runoff.
- When making saw cuts in pavement, use as little water as possible. Cover each storm drain inlet completely with filter fabric during the sawing operation and contain the slurry by placing straw bales, sandbags, or gravel dams around the inlets. After the liquid drains or evaporates, shovel or vacuum the slurry residue from the pavement or gutter and remove from site.
- Always dry sweep first to clean up tracked dirt. Use a street sweeper or vacuum truck. Do not dump vacuumed liquid in storm drains. Once dry sweeping is complete, the area may be hosed down if needed. Wash water should be directed to landscaping or collected and pumped to the sanitary sewer if allowed.

Concrete Installation and Repair

- Schedule asphalt and concrete activities for dry weather.

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- Take measures to protect any nearby storm drain inlets and adjacent watercourses, prior to breaking up asphalt or concrete (e.g. place san bags around inlets or work areas).
- Limit the amount of fresh concrete or cement mortar mixed, mix only what is needed for the job.
- Store concrete materials under cover, away from drainage areas. Secure bags of cement after they are open. Be sure to keep wind-blown cement powder away from streets, gutters, storm drains, rainfall, and runoff.
- Return leftover materials to the transit mixer. Dispose of small amounts of hardened excess concrete, grout, and mortar in the trash.
- Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile, or dispose in the trash.
- Protect applications of fresh concrete from rainfall and runoff until the material has dried.
- Do not allow excess concrete to be dumped onsite, except in designated areas.
- Wash concrete trucks off site or in designated areas on site designed to preclude discharge of wash water to drainage system.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide litter receptacles in busy, high pedestrian traffic areas of the community, at recreational facilities, and at community events.
- Cover litter receptacles and clean out frequently to prevent leaking/spillage or overflow.
- Clean parking lots on a regular basis with a street sweeper.

Training

- Provide regular training to field employees and/or contractors regarding surface cleaning and proper operation of equipment.
- Train employee and contractors in proper techniques for spill containment and cleanup.
- Use a training log or similar method to document training.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

SC-71 Plaza and Sidewalk Cleaning

Other Considerations

- Limitations related to sweeping activities at large parking facilities may include current sweeper technology to remove oil and grease.
- Surface cleaning activities that require discharges to the local sewering agency will require coordination with the agency.
- Arrangements for disposal of the swept material collected must be made, as well as accurate tracking of the areas swept and the frequency of sweeping.

Requirements

Costs

- The largest expenditures for sweeping and cleaning of sidewalks, plazas, and parking lots are in staffing and equipment. Sweeping of these areas should be incorporated into street sweeping programs to reduce costs.

Maintenance

Not applicable

Supplemental Information

Further Detail of the BMP

Community education, such as informing residents about their options for recycling and waste disposal, as well as the consequences of littering, can instill a sense of citizen responsibility and potentially reduce the amount of maintenance required by the municipality.

Additional BMPs that should be considered for parking lot areas include:

- Allow sheet runoff to flow into biofilters (vegetated strip and swale) and infiltration devices.
- Utilize sand filters or oleophilic collectors for oily waste in low concentrations.
- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable hardscape.
- Structural BMPs such as storm drain inlet filters can be very effective in reducing the amount of pollutants discharged from parking facilities during periods of rain.

References and Resources

Bay Area Stormwater Management Agencies Association (BASMAA). 1996. Pollution From Surface Cleaning Folder http://www.basmaa.org

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July. 1998.

Plaza and Sidewalk Cleaning SC-71

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

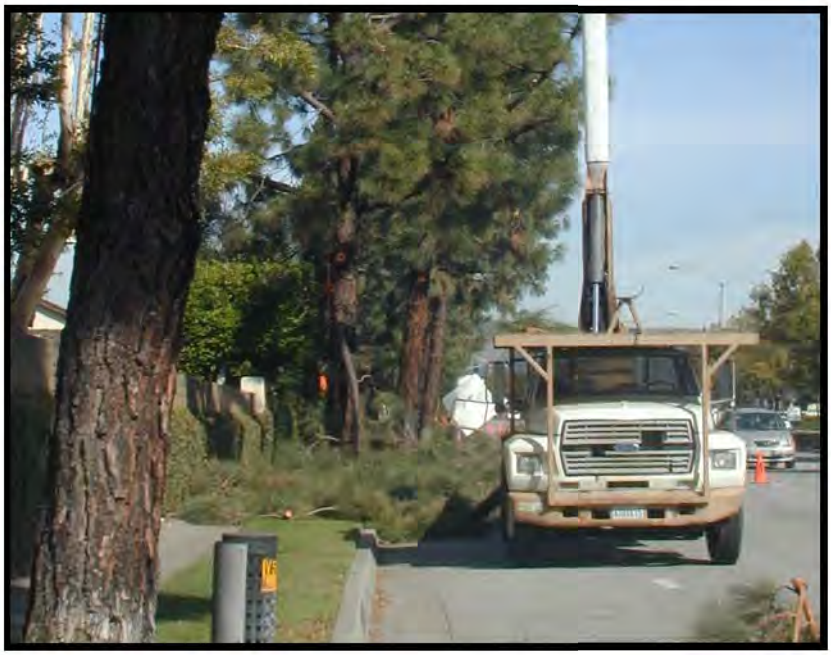
Orange County Stormwater Program
http://www.ocwatersheds.com/stormwater/swp_introduction.asp

Santa Clara Valley Urban Runoff Pollution Prevention Program. 1997 Urban Runoff Management Plan. September 1997, updated October 2000.

Santa Clara Valley Urban Runoff Pollution Prevention Program. Maintenance Best Management Practices for the Construction Industry. Brochures: Landscaping, Gardening, and Pool; Roadwork and Paving; and Fresh Concrete and Mortar Application. June 2001.

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Plan. 2001. Municipal Activities Model Program Guidance. November.

Landscape Maintenance SC-73



Objectives

- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	
Bacteria	
Oil and Grease	
Organics	
Oxygen Demanding	☑

Description

Landscape maintenance activities include vegetation removal; herbicide and insecticide application; fertilizer application; watering; and other gardening and lawn care practices. Vegetation control typically involves a combination of chemical (herbicide) application and mechanical methods. All of these maintenance practices have the potential to contribute pollutants to the storm drain system. The major objectives of this BMP are to minimize the discharge of pesticides, herbicides and fertilizers to the storm drain system and receiving waters; prevent the disposal of landscape waste into the storm drain system by collecting and properly disposing of clippings and cuttings, and educating employees and the public.

Approach

Pollution Prevention

- Implement an integrated pest management (IPM) program. IPM is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools.
- Choose low water using flowers, trees, shrubs, and groundcover.
- Consider alternative landscaping techniques such as naturescaping and xeriscaping.
- Conduct appropriate maintenance (i.e. properly timed fertilizing, weeding, pest control, and pruning) to help preserve the landscapes water efficiency.

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- Consider grass cycling (grass cycling is the natural recycling of grass by leaving the clippings on the lawn when mowing. Grass clippings decompose quickly and release valuable nutrients back into the lawn).

Suggested Protocols

Mowing, Trimming, and Weeding

- Whenever possible use mechanical methods of vegetation removal (e.g mowing with tractor-type or push mowers, hand cutting with gas or electric powered weed trimmers) rather than applying herbicides. Use hand weeding where practical.
- Avoid loosening the soil when conducting mechanical or manual weed control, this could lead to erosion. Use mulch or other erosion control measures when soils are exposed.
- Performing mowing at optimal times. Mowing should not be performed if significant rain events are predicted.
- Mulching mowers may be recommended for certain flat areas. Other techniques may be employed to minimize mowing such as selective vegetative planting using low maintenance grasses and shrubs.
- Collect lawn and garden clippings, pruning waste, tree trimmings, and weeds. Chip if necessary, and compost or dispose of at a landfill (see waste management section of this fact sheet).
- Place temporarily stockpiled material away from watercourses, and berm or cover stockpiles to prevent material releases to storm drains.

Planting

- Determine existing native vegetation features (location, species, size, function, importance) and consider the feasibility of protecting them. Consider elements such as their effect on drainage and erosion, hardiness, maintenance requirements, and possible conflicts between preserving vegetation and the resulting maintenance needs.
- Retain and/or plant selected native vegetation whose features are determined to be beneficial, where feasible. Native vegetation usually requires less maintenance (e.g., irrigation, fertilizer) than planting new vegetation.
- Consider using low water use groundcovers when planting or replanting.

Waste Management

- Compost leaves, sticks, or other collected vegetation or dispose of at a permitted landfill. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Place temporarily stockpiled material away from watercourses and storm drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.
- Reduce the use of high nitrogen fertilizers that produce excess growth requiring more frequent mowing or trimming.

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- Avoid landscape wastes in and around storm drain inlets by either using bagging equipment or by manually picking up the material.

Irrigation

- Where practical, use automatic timers to minimize runoff.
- Use popup sprinkler heads in areas with a lot of activity or where there is a chance the pipes may be broken. Consider the use of mechanisms that reduce water flow to sprinkler heads if broken.
- Ensure that there is no runoff from the landscaped area(s) if re-claimed water is used for irrigation.
- If bailing of muddy water is required (e.g. when repairing a water line leak), do not put it in the storm drain; pour over landscaped areas.
- Irrigate slowly or pulse irrigate to prevent runoff and then only irrigate as much as is needed.
- Apply water at rates that do not exceed the infiltration rate of the soil.

Fertilizer and Pesticide Management

- Utilize a comprehensive management system that incorporates integrated pest management (IPM) techniques. There are many methods and types of IPM, including the following:
  - Mulching can be used to prevent weeds where turf is absent, fencing installed to keep rodents out, and netting used to keep birds and insects away from leaves and fruit.
  - Visible insects can be removed by hand (with gloves or tweezers) and placed in soapy water or vegetable oil. Alternatively, insects can be sprayed off the plant with water or in some cases vacuumed off of larger plants.
  - Store-bought traps, such as species-specific, pheromone-based traps or colored sticky cards, can be used.
  - Slugs can be trapped in small cups filled with beer that are set in the ground so the slugs can get in easily.
  - In cases where microscopic parasites, such as bacteria and fungi, are causing damage to plants, the affected plant material can be removed and disposed of (pruning equipment should be disinfected with bleach to prevent spreading the disease organism).
  - Small mammals and birds can be excluded using fences, netting, tree trunk guards.
  - Beneficial organisms, such as bats, birds, green lacewings, ladybugs, praying mantis, ground beetles, parasitic nematodes, trichogramma wasps, seed head weevils, and spiders that prey on detrimental pest species can be promoted.
- Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.

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- Use pesticides only if there is an actual pest problem (not on a regular preventative schedule).
- Do not use pesticides if rain is expected. Apply pesticides only when wind speeds are low (less than 5 mph).
- Do not mix or prepare pesticides for application near storm drains.
- Prepare the minimum amount of pesticide needed for the job and use the lowest rate that will effectively control the pest.
- Employ techniques to minimize off-target application (e.g. spray drift) of pesticides, including consideration of alternative application techniques.
- Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface.
- Calibrate fertilizer and pesticide application equipment to avoid excessive application.
- Periodically test soils for determining proper fertilizer use.
- Sweep pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
- Purchase only the amount of pesticide that you can reasonably use in a given time period (month or year depending on the product).
- Triple rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Dispose of empty pesticide containers according to the instructions on the container label.

Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering, and repair leaks in the irrigation system as soon as they are observed.
- Inspect pesticide/fertilizer equipment and transportation vehicles daily.

Training

- Educate and train employees on use of pesticides and in pesticide application techniques to prevent pollution. Pesticide application must be under the supervision of a California qualified pesticide applicator.
- Train/encourage municipal maintenance crews to use IPM techniques for managing public green areas.
- Annually train employees within departments responsible for pesticide application on the appropriate portions of the agency's IPM Policy, SOPs, and BMPs, and the latest IPM techniques.

- Employees who are not authorized and trained to apply pesticides should be periodically (at least annually) informed that they cannot use over-the-counter pesticides in or around the workplace.
- Use a training log or similar method to document training.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup
- Have spill cleanup materials readily available and in a know in location
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- The Federal Pesticide, Fungicide, and Rodenticide Act and California Title 3, Division 6, Pesticides and Pest Control Operations place strict controls over pesticide application and handling and specify training, annual refresher, and testing requirements. The regulations generally cover: a list of approved pesticides and selected uses, updated regularly; general application information; equipment use and maintenance procedures; and record keeping. The California Department of Pesticide Regulations and the County Agricultural Commission coordinate and maintain the licensing and certification programs. All public agency employees who apply pesticides and herbicides in "agricultural use" areas such as parks, golf courses, rights-of-way and recreation areas should be properly certified in accordance with state regulations. Contracts for landscape maintenance should include similar requirements.
- All employees who handle pesticides should be familiar with the most recent material safety data sheet (MSDS) files.
- Municipalities do not have the authority to regulate the use of pesticides by school districts, however the California Healthy Schools Act of 2000 (AB 2260) has imposed requirements on California school districts regarding pesticide use in schools. Posting of notification prior to the application of pesticides is now required, and IPM is stated as the preferred approach to pest management in schools.

Requirements

Costs

Additional training of municipal employees will be required to address IPM techniques and BMPs. IPM methods will likely increase labor cost for pest control which may be offset by lower chemical costs.

Maintenance

Not applicable

SC-73 Landscape Maintenance

Supplemental Information

Further Detail of the BMP

Waste Management

Composting is one of the better disposal alternatives if locally available. Most municipalities either have or are planning yard waste composting facilities as a means of reducing the amount of waste going to the landfill. Lawn clippings from municipal maintenance programs as well as private sources would probably be compatible with most composting facilities

Contractors and Other Pesticide Users

Municipal agencies should develop and implement a process to ensure that any contractor employed to conduct pest control and pesticide application on municipal property engages in pest control methods consistent with the IPM Policy adopted by the agency. Specifically, municipalities should require contractors to follow the agency's IPM policy, SOPs, and BMPs; provide evidence to the agency of having received training on current IPM techniques when feasible; provide documentation of pesticide use on agency property to the agency in a timely manner.

References and Resources

King County Stormwater Pollution Control Manual. Best Management Practices for Businesses. 1995. King County Surface Water Management. July. On-line: http://dnr.metrokc.gov/wlr/dss/spcm.htm

Los Angeles County Stormwater Quality Model Programs. Public Agency Activities http://ladpw.org/wmd/npdes/model_links.cfm

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July. 1998.

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United States Environmental Protection Agency (USEPA). 2002. Pollution Prevention/Good Housekeeping for Municipal Operations Landscaping and Lawn Care. Office of Water. Office of Wastewater Management. On-line: http://www.epa.gov/npdes/menuofbmps/poll_8.htm

Site Design & Landscape Planning SD-10

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- ☑ Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.

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SD-10 Site Design & Landscape Planning

Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.
- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.
- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
- Promote natural vegetation by using parking lot islands and other landscaped areas.
- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.
- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

SD-10 Site Design & Landscape Planning

Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Roof Runoff Controls SD-11

Rain Garden

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Description

Various roof runoff controls are available to address stormwater that drains off rooftops. The objective is to reduce the total volume and rate of runoff from individual lots, and retain the pollutants on site that may be picked up from roofing materials and atmospheric deposition. Roof runoff controls consist of directing the roof runoff away from paved areas and mitigating flow to the storm drain system through one of several general approaches: cisterns or rain barrels; dry wells or infiltration trenches; pop-up emitters, and foundation planting. The first three approaches require the roof runoff to be contained in a gutter and downspout system. Foundation planting provides a vegetated strip under the drip line of the roof.

Approach

Design of individual lots for single-family homes as well as lots for higher density residential and commercial structures should consider site design provisions for containing and infiltrating roof runoff or directing roof runoff to vegetative swales or buffer areas. Retained water can be reused for watering gardens, lawns, and trees. Benefits to the environment include reduced demand for potable water used for irrigation, improved stormwater quality, increased groundwater recharge, decreased runoff volume and peak flows, and decreased flooding potential.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Designing New Installations

Cisterns or Rain Barrels

One method of addressing roof runoff is to direct roof downspouts to cisterns or rain barrels. A cistern is an above ground storage vessel with either a manually operated valve or a permanently open outlet. Roof runoff is temporarily stored and then released for irrigation or infiltration between storms. The number of rain

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barrels needed is a function of the rooftop area. Some low impact developers recommend that every house have at least 2 rain barrels, with a minimum storage capacity of 1000 liters. Roof barrels serve several purposes including mitigating the first flush from the roof which has a high volume, amount of contaminants, and thermal load. Several types of rain barrels are commercially available. Consideration must be given to selecting rain barrels that are vector proof and childproof. In addition, some barrels are designed with a bypass valve that filters out grit and other contaminants and routes overflow to a soak-away pit or rain garden.

If the cistern has an operable valve, the valve can be closed to store stormwater for irrigation or infiltration between storms. This system requires continual monitoring by the resident or grounds crews, but provides greater flexibility in water storage and metering. If a cistern is provided with an operable valve and water is stored inside for long periods, the cistern must be covered to prevent mosquitoes from breeding.

A cistern system with a permanently open outlet can also provide for metering stormwater runoff. If the cistern outlet is significantly smaller than the size of the downspout inlet (say ¼ to ½ inch diameter), runoff will build up inside the cistern during storms, and will empty out slowly after peak intensities subside. This is a feasible way to mitigate the peak flow increases caused by rooftop impervious land coverage, especially for the frequent, small storms.

Dry wells and Infiltration Trenches

Roof downspouts can be directed to dry wells or infiltration trenches. A dry well is constructed by excavating a hole in the ground and filling it with an open graded aggregate, and allowing the water to fill the dry well and infiltrate after the storm event. An underground connection from the downspout conveys water into the dry well, allowing it to be stored in the voids. To minimize sedimentation from lateral soil movement, the sides and top of the stone storage matrix can be wrapped in a permeable filter fabric, though the bottom may remain open. A perforated observation pipe can be inserted vertically into the dry well to allow for inspection and maintenance.

In practice, dry wells receiving runoff from single roof downspouts have been successful over long periods because they contain very little sediment. They must be sized according to the amount of rooftop runoff received, but are typically 4 to 5 feet square, and 2 to 3 feet deep, with a minimum of 1-foot soil cover over the top (maximum depth of 10 feet).

To protect the foundation, dry wells must be set away from the building at least 10 feet. They must be installed in solids that accommodate infiltration. In poorly drained soils, dry wells have very limited feasibility.

Infiltration trenches function in a similar manner and would be particularly effective for larger roof areas. An infiltration trench is a long, narrow, rock-filled trench with no outlet that receives stormwater runoff. These are described under Treatment Controls.

Pop-up Drainage Emitter

Roof downspouts can be directed to an underground pipe that daylights some distance from the building foundation, releasing the roof runoff through a pop-up emitter. Similar to a pop-up irrigation head, the emitter only opens when there is flow from the roof. The emitter remains flush to the ground during dry periods, for ease of lawn or landscape maintenance.

Roof Runoff Controls SD-11

Foundation Planting

Landscape planting can be provided around the base to allow increased opportunities for stormwater infiltration and protect the soil from erosion caused by concentrated sheet flow coming off the roof. Foundation plantings can reduce the physical impact of water on the soil and provide a subsurface matrix of roots that encourage infiltration. These plantings must be sturdy enough to tolerate the heavy runoff sheet flows, and periodic soil saturation.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Supplemental Information

Examples

- City of Ottawa's Water Links Surface –Water Quality Protection Program
- City of Toronto Downspout Disconnection Program
- City of Boston, MA, Rain Barrel Demonstration Program

Other Resources

Hager, Marty Catherine, Stormwater, "Low-Impact Development", January/February 2003. www.stormh2o.com

Low Impact Urban Design Tools, Low Impact Development Design Center, Beltsville, MD. www.lid-stormwater.net

Start at the Source, Bay Area Stormwater Management Agencies Association, 1999 Edition

Efficient Irrigation SD-12

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

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SD-12 Efficient Irrigation

- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Storm Drain Signage SD-13

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include "NO DUMPING

– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.
- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Trash Storage Areas SD-32

Description

Trash storage areas are areas where a trash receptacle (s) are located for use as a repository for solid wastes. Stormwater runoff from areas where trash is stored or disposed of can be polluted. In addition, loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or creeks. Waste handling operations that may be sources of stormwater pollution include dumpsters, litter control, and waste piles.

Approach

This fact sheet contains details on the specific measures required to prevent or reduce pollutants in stormwater runoff associated with trash storage and handling. Preventative measures including enclosures, containment structures, and impervious pavements to mitigate spills, should be used to reduce the likelihood of contamination.

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Design requirements for waste handling areas are governed by Building and Fire Codes, and by current local agency ordinances and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code and ordinance requirements. Hazardous waste should be handled in accordance with legal requirements established in Title 22, California Code of Regulation.

Wastes from commercial and industrial sites are typically hauled by either public or commercial carriers that may have design or access requirements for waste storage areas. The design criteria in this fact sheet are recommendations and are not intended to be in conflict with requirements established by the waste hauler. The waste hauler should be contacted prior to the design of your site trash collection areas. Conflicts or issues should be discussed with the local agency.

Designing New Installations

Trash storage areas should be designed to consider the following structural or treatment control BMPs:

- Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This might include berming or grading the waste handling area to prevent run-on of stormwater.
- Make sure trash container areas are screened or walled to prevent off-site transport of trash.

SD-32 Trash Storage Areas

- Use lined bins or dumpsters to reduce leaking of liquid waste.
- Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.
- Pave trash storage areas with an impervious surface to mitigate spills.
- Do not locate storm drains in immediate vicinity of the trash storage area.
- Post signs on all dumpsters informing users that hazardous materials are not to be disposed of therein.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Additional Information

Maintenance Considerations

The integrity of structural elements that are subject to damage (i.e., screens, covers, and signs) must be maintained by the owner/operator. Maintenance agreements between the local agency and the owner/operator may be required. Some agencies will require maintenance deed restrictions to be recorded of the property title. If required by the local agency, maintenance agreements or deed restrictions must be executed by the owner/operator before improvement plans are approved.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Bioretention TC-32

Design Considerations

- Soil for Infiltration
- Tributary Area
- Slope
- Aesthetics
- Environmental Side-effects

Description

The bioretention best management practice (BMP) functions as a soil and plant-based filtration device that removes pollutants through a variety of physical, biological, and chemical treatment processes. These facilities normally consist of a grass buffer strip, sand bed, ponding area, organic layer or mulch layer, planting soil, and plants. The runoff's velocity is reduced by passing over or through buffer strip and subsequently distributed evenly along a ponding area. Exfiltration of the stored water in the bioretention area planting soil into the underlying soils occurs over a period of days.

Targeted Constituents

✓	Sediment	■
✓	Nutrients	▲
✓	Trash	■
✓	Metals	■
✓	Bacteria	■
✓	Oil and Grease	■
✓	Organics	■

Legend *(Removal Effectiveness)*

● Low ■ High

▲ Medium

California Experience

None documented. Bioretention has been used as a stormwater BMP since 1992. In addition to Prince George's County, MD and Alexandria, VA, bioretention has been used successfully at urban and suburban areas in Montgomery County, MD; Baltimore County, MD; Chesterfield County, VA; Prince William County, VA; Smith Mountain Lake State Park, VA; and Cary, NC.

Advantages

- Bioretention provides stormwater treatment that enhances the quality of downstream water bodies by temporarily storing runoff in the BMP and releasing it over a period of four days to the receiving water (EPA, 1999).
- The vegetation provides shade and wind breaks, absorbs noise, and improves an area's landscape.

Limitations

- The bioretention BMP is not recommended for areas with slopes greater than 20% or where mature tree removal would

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be required since clogging may result, particularly if the BMP receives runoff with high sediment loads (EPA, 1999).

- Bioretention is not a suitable BMP at locations where the water table is within 6 feet of the ground surface and where the surrounding soil stratum is unstable.
- By design, bioretention BMPs have the potential to create very attractive habitats for mosquitoes and other vectors because of highly organic, often heavily vegetated areas mixed with shallow water.
- In cold climates the soil may freeze, preventing runoff from infiltrating into the planting soil.

Design and Sizing Guidelines

- The bioretention area should be sized to capture the design storm runoff.
- In areas where the native soil permeability is less than 0.5 in/hr an underdrain should be provided.
- Recommended minimum dimensions are 15 feet by 40 feet, although the preferred width is 25 feet. Excavated depth should be 4 feet.
- Area should drain completely within 72 hours.
- Approximately 1 tree or shrub per 50 ft² of bioretention area should be included.
- Cover area with about 3 inches of mulch.

Construction/Inspection Considerations

Bioretention area should not be established until contributing watershed is stabilized.

Performance

Bioretention removes stormwater pollutants through physical and biological processes, including adsorption, filtration, plant uptake, microbial activity, decomposition, sedimentation and volatilization (EPA, 1999). Adsorption is the process whereby particulate pollutants attach to soil (e.g., clay) or vegetation surfaces. Adequate contact time between the surface and pollutant must be provided for in the design of the system for this removal process to occur. Thus, the infiltration rate of the soils must not exceed those specified in the design criteria or pollutant removal may decrease. Pollutants removed by adsorption include metals, phosphorus, and hydrocarbons. Filtration occurs as runoff passes through the bioretention area media, such as the sand bed, ground cover, and planting soil.

Common particulates removed from stormwater include particulate organic matter, phosphorus, and suspended solids. Biological processes that occur in wetlands result in pollutant uptake by plants and microorganisms in the soil. Plant growth is sustained by the uptake of nutrients from the soils, with woody plants locking up these nutrients through the seasons. Microbial activity within the soil also contributes to the removal of nitrogen and organic matter. Nitrogen is removed by nitrifying and denitrifying bacteria, while aerobic bacteria are responsible for the decomposition of the organic matter. Microbial processes require oxygen and can result in depleted oxygen levels if the bioretention area is not adequately

aerated. Sedimentation occurs in the swale or ponding area as the velocity slows and solids fall out of suspension.

The removal effectiveness of bioretention has been studied during field and laboratory studies conducted by the University of Maryland (Davis et al, 1998). During these experiments, synthetic stormwater runoff was pumped through several laboratory and field bioretention areas to simulate typical storm events in Prince George's County, MD. Removal rates for heavy metals and nutrients are shown in Table 1.

Table 1 Laboratory and Estimated Bioretention Davis et al. (1998); PGDER (1993)

Pollutant	Removal Rate
Total Phosphorus	70-83%
Metals (Cu, Zn, Pb)	93-98%
TKN	68-80%
Total Suspended Solids	90%
Organics	90%
Bacteria	90%

Results for both the laboratory and field experiments were similar for each of the pollutants analyzed. Doubling or halving the influent pollutant levels had little effect on the effluent pollutants concentrations (Davis et al, 1998).

The microbial activity and plant uptake occurring in the bioretention area will likely result in higher removal rates than those determined for infiltration BMPs.

Siting Criteria

Bioretention BMPs are generally used to treat stormwater from impervious surfaces at commercial, residential, and industrial areas (EPA, 1999). Implementation of bioretention for stormwater management is ideal for median strips, parking lot islands, and swales. Moreover, the runoff in these areas can be designed to either divert directly into the bioretention area or convey into the bioretention area by a curb and gutter collection system.

The best location for bioretention areas is upland from inlets that receive sheet flow from graded areas and at areas that will be excavated (EPA, 1999). In order to maximize treatment effectiveness, the site must be graded in such a way that minimizes erosive conditions as sheet flow is conveyed to the treatment area. Locations where a bioretention area can be readily incorporated into the site plan without further environmental damage are preferred. Furthermore, to effectively minimize sediment loading in the treatment area, bioretention only should be used in stabilized drainage areas.

TC-32 Bioretention

Additional Design Guidelines

The layout of the bioretention area is determined after site constraints such as location of utilities, underlying soils, existing vegetation, and drainage are considered (EPA, 1999). Sites with loamy sand soils are especially appropriate for bioretention because the excavated soil can be backfilled and used as the planting soil, thus eliminating the cost of importing planting soil.

The use of bioretention may not be feasible given an unstable surrounding soil stratum, soils with clay content greater than 25 percent, a site with slopes greater than 20 percent, and/or a site with mature trees that would be removed during construction of the BMP.

Bioretention can be designed to be off-line or on-line of the existing drainage system (EPA, 1999). The drainage area for a bioretention area should be between 0.1 and 0.4 hectares (0.25 and 1.0 acres). Larger drainage areas may require multiple bioretention areas. Furthermore, the maximum drainage area for a bioretention area is determined by the expected rainfall intensity and runoff rate. Stabilized areas may erode when velocities are greater than 5 feet per second (1.5 meter per second). The designer should determine the potential for erosive conditions at the site.

The size of the bioretention area, which is a function of the drainage area and the runoff generated from the area is sized to capture the water quality volume.

The recommended minimum dimensions of the bioretention area are 15 feet (4.6 meters) wide by 40 feet (12.2 meters) long, where the minimum width allows enough space for a dense, randomly-distributed area of trees and shrubs to become established. Thus replicating a natural forest and creating a microclimate, thereby enabling the bioretention area to tolerate the effects of heat stress, acid rain, runoff pollutants, and insect and disease infestations which landscaped areas in urban settings typically are unable to tolerate. The preferred width is 25 feet (7.6 meters), with a length of twice the width. Essentially, any facilities wider than 20 feet (6.1 meters) should be twice as long as they are wide, which promotes the distribution of flow and decreases the chances of concentrated flow.

In order to provide adequate storage and prevent water from standing for excessive periods of time the ponding depth of the bioretention area should not exceed 6 inches (15 centimeters). Water should not be left to stand for more than 72 hours. A restriction on the type of plants that can be used may be necessary due to some plants' water intolerance. Furthermore, if water is left standing for longer than 72 hours mosquitoes and other insects may start to breed.

The appropriate planting soil should be backfilled into the excavated bioretention area. Planting soils should be sandy loam, loamy sand, or loam texture with a clay content ranging from 10 to 25 percent.

Generally the soil should have infiltration rates greater than 0.5 inches (1.25 centimeters) per hour, which is typical of sandy loams, loamy sands, or loams. The pH of the soil should range between 5.5 and 6.5, where pollutants such as organic nitrogen and phosphorus can be adsorbed by the soil and microbial activity can flourish. Additional requirements for the planting soil include a 1.5 to 3 percent organic content and a maximum 500 ppm concentration of soluble salts.

Soil tests should be performed for every 500 cubic yards (382 cubic meters) of planting soil, with the exception of pH and organic content tests, which are required only once per bioretention area (EPA, 1999). Planting soil should be 4 inches (10.1 centimeters) deeper than the bottom of the largest root ball and 4 feet (1.2 meters) altogether. This depth will provide adequate soil for the plants' root systems to become established, prevent plant damage due to severe wind, and provide adequate moisture capacity. Most sites will require excavation in order to obtain the recommended depth.

Planting soil depths of greater than 4 feet (1.2 meters) may require additional construction practices such as shoring measures (EPA, 1999). Planting soil should be placed in 18 inches or greater lifts and lightly compacted until the desired depth is reached. Since high canopy trees may be destroyed during maintenance the bioretention area should be vegetated to resemble a terrestrial forest community ecosystem that is dominated by understory trees. Three species each of both trees and shrubs are recommended to be planted at a rate of 2500 trees and shrubs per hectare (1000 per acre). For instance, a 15 foot (4.6 meter) by 40 foot (12.2 meter) bioretention area (600 square feet or 55.75 square meters) would require 14 trees and shrubs. The shrub-to-tree ratio should be 2:1 to 3:1.

Trees and shrubs should be planted when conditions are favorable. Vegetation should be watered at the end of each day for fourteen days following its planting. Plant species tolerant of pollutant loads and varying wet and dry conditions should be used in the bioretention area.

The designer should assess aesthetics, site layout, and maintenance requirements when selecting plant species. Adjacent non-native invasive species should be identified and the designer should take measures, such as providing a soil breach to eliminate the threat of these species invading the bioretention area. Regional landscaping manuals should be consulted to ensure that the planting of the bioretention area meets the landscaping requirements established by the local authorities. The designers should evaluate the best placement of vegetation within the bioretention area. Plants should be placed at irregular intervals to replicate a natural forest. Trees should be placed on the perimeter of the area to provide shade and shelter from the wind. Trees and shrubs can be sheltered from damaging flows if they are placed away from the path of the incoming runoff. In cold climates, species that are more tolerant to cold winds, such as evergreens, should be placed in windier areas of the site.

Following placement of the trees and shrubs, the ground cover and/or mulch should be established. Ground cover such as grasses or legumes can be planted at the beginning of the growing season. Mulch should be placed immediately after trees and shrubs are planted. Two to 3 inches (5 to 7.6 cm) of commercially-available fine shredded hardwood mulch or shredded hardwood chips should be applied to the bioretention area to protect from erosion.

Maintenance

The primary maintenance requirement for bioretention areas is that of inspection and repair or replacement of the treatment area's components. Generally, this involves nothing more than the routine periodic maintenance that is required of any landscaped area. Plants that are appropriate for the site, climatic, and watering conditions should be selected for use in the bioretention cell. Appropriately selected plants will aide in reducing fertilizer, pesticide, water, and overall maintenance requirements. Bioretention system components should blend over time through plant and root growth, organic decomposition, and the development of a natural

soil horizon. These biologic and physical processes over time will lengthen the facility's life span and reduce the need for extensive maintenance.

Routine maintenance should include a biannual health evaluation of the trees and shrubs and subsequent removal of any dead or diseased vegetation (EPA, 1999). Diseased vegetation should be treated as needed using preventative and low-toxic measures to the extent possible. BMPs have the potential to create very attractive habitats for mosquitoes and other vectors because of highly organic, often heavily vegetated areas mixed with shallow water. Routine inspections for areas of standing water within the BMP and corrective measures to restore proper infiltration rates are necessary to prevent creating mosquito and other vector habitat. In addition, bioretention BMPs are susceptible to invasion by aggressive plant species such as cattails, which increase the chances of water standing and subsequent vector production if not routinely maintained.

In order to maintain the treatment area's appearance it may be necessary to prune and weed. Furthermore, mulch replacement is suggested when erosion is evident or when the site begins to look unattractive. Specifically, the entire area may require mulch replacement every two to three years, although spot mulching may be sufficient when there are random void areas. Mulch replacement should be done prior to the start of the wet season.

New Jersey's Department of Environmental Protection states in their bioretention systems standards that accumulated sediment and debris removal (especially at the inflow point) will normally be the primary maintenance function. Other potential tasks include replacement of dead vegetation, soil pH regulation, erosion repair at inflow points, mulch replenishment, unclogging the underdrain, and repairing overflow structures. There is also the possibility that the cation exchange capacity of the soils in the cell will be significantly reduced over time. Depending on pollutant loads, soils may need to be replaced within 5-10 years of construction (LID, 2000).

Cost

Construction Cost

Construction cost estimates for a bioretention area are slightly greater than those for the required landscaping for a new development (EPA, 1999). A general rule of thumb (Coffman, 1999) is that residential bioretention areas average about $3 to $4 per square foot, depending on soil conditions and the density and types of plants used. Commercial, industrial and institutional site costs can range between $10 to $40 per square foot, based on the need for control structures, curbing, storm drains and underdrains.

Retrofitting a site typically costs more, averaging $6,500 per bioretention area. The higher costs are attributed to the demolition of existing concrete, asphalt, and existing structures and the replacement of fill material with planting soil. The costs of retrofitting a commercial site in Maryland, Kettering Development, with 15 bioretention areas were estimated at $111,600.

In any bioretention area design, the cost of plants varies substantially and can account for a significant portion of the expenditures. While these cost estimates are slightly greater than those of typical landscaping treatment (due to the increased number of plantings, additional soil excavation, backfill material, use of underdrains etc.), those landscaping expenses that would be required regardless of the bioretention installation should be subtracted when determining the net cost.

Perhaps of most importance, however, the cost savings compared to the use of traditional structural stormwater conveyance systems makes bioretention areas quite attractive financially. For example, the use of bioretention can decrease the cost required for constructing stormwater conveyance systems at a site. A medical office building in Maryland was able to reduce the amount of storm drain pipe that was needed from 800 to 230 feet - a cost savings of $24,000 (PGDER, 1993). And a new residential development spent a total of approximately $100,000 using bioretention cells on each lot instead of nearly $400,000 for the traditional stormwater ponds that were originally planned (Rappahanock,). Also, in residential areas, stormwater management controls become a part of each property owner's landscape, reducing the public burden to maintain large centralized facilities.

Maintenance Cost

The operation and maintenance costs for a bioretention facility will be comparable to those of typical landscaping required for a site. Costs beyond the normal landscaping fees will include the cost for testing the soils and may include costs for a sand bed and planting soil.

References and Sources of Additional Information

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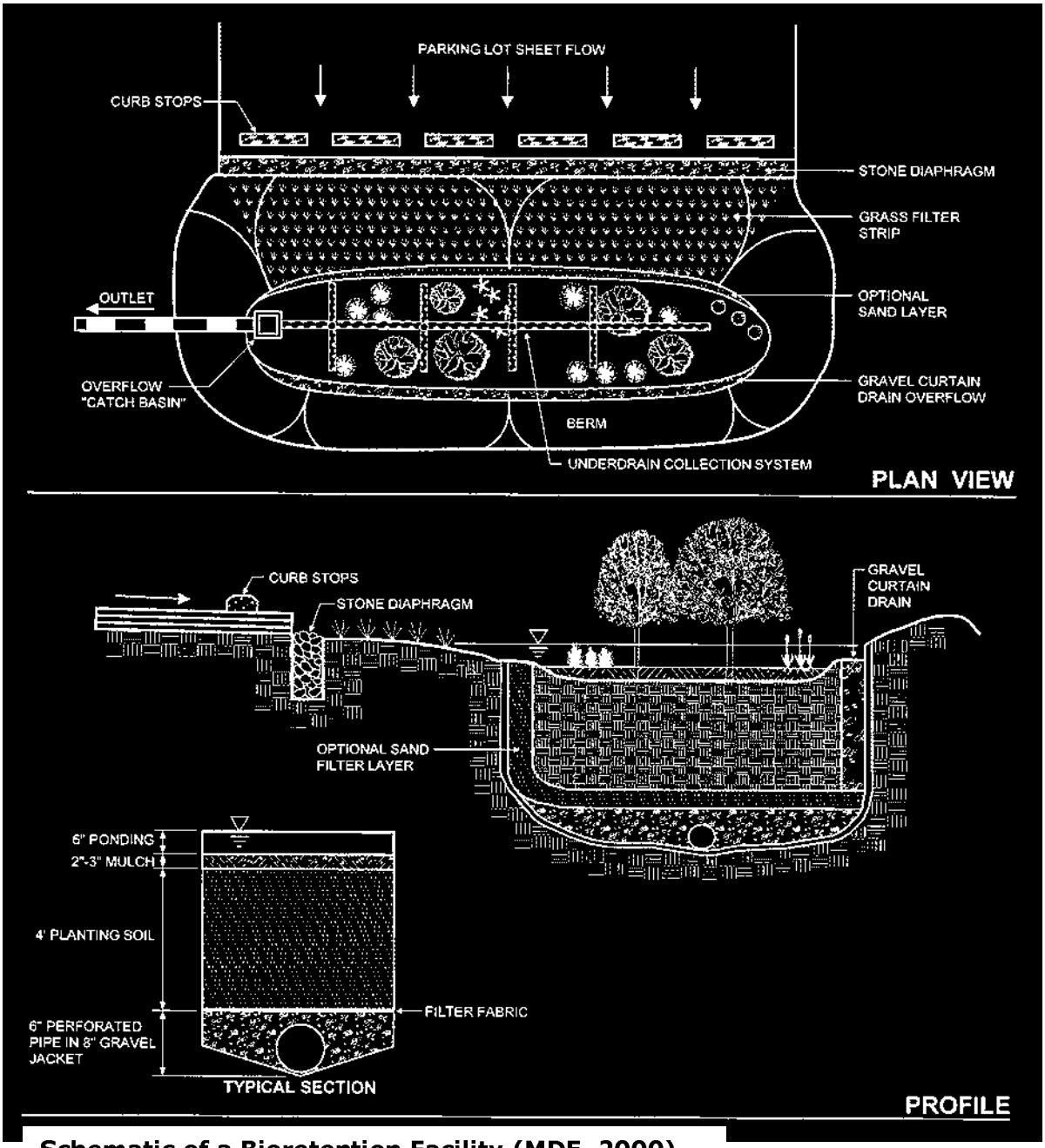
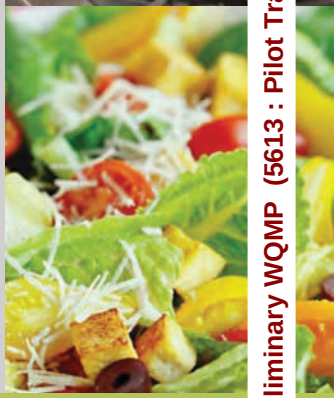
TC-32 Bioretention



Schematic of a Bioretention Facility (MDE, 2000)

The Food Handler's Manual



A Training Handbook for Riverside County Food Handlers

ENVIRONMENTAL HEALTH
COUNTY OF RIVERSIDE
Protecting People and the Environment

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Introduction

Food safety is an important part of public health. The Center for Disease Control and Prevention estimates there are about 48 million people affected by foodborne illnesses each year, of which 3,000 result in death.

Think about the last time you ate out. Was the food served hot? Was there protection like a sneeze guard at the salad bar? Did the restroom have warm water, soap, and paper towels or air dryers at the sink? Riverside County Department of Environmental Health looks for these things, among others, to keep people from getting sick. Food can smell and look delicious, but may still contain harmful bacteria from a variety of sources.

The food service industry is a vital part of Riverside County, adding quality of life to its residents and contributing to a healthy economy. Riverside County has over 10,000 food establishments which employ approximately 100,000 food handlers like you. Applying the information you learn from this guide will help to reduce foodborne illnesses and therefore provide foods that are safe to eat for our community.

1 Thank you for your commitment to food safety.

Inspection and Grade Posting

Riverside County Department of Environmental Health employs approximately 50 trained inspectors, who are Registered Environmental Health Specialists. Since 1963, unannounced inspections have been conducted at restaurants, markets, schools, bakeries, bars, and all other food establishments throughout the county. These inspections are scored and graded. You have probably seen our public notice and grade placards posted.


County of Riverside
DEPARTMENT OF ENVIRONMENTAL HEALTH

PUBLIC NOTICE

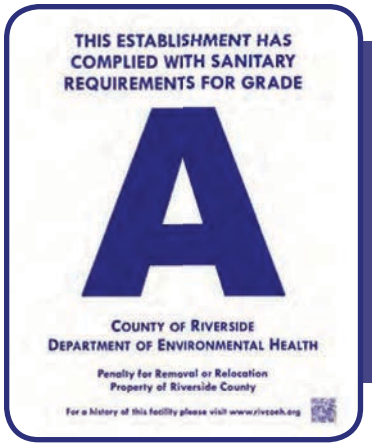
THIS FACILITY IS INSPECTED BY THE COUNTY OF RIVERSIDE DEPARTMENT OF ENVIRONMENTAL HEALTH.

Per California Health and Safety Code, Section 113725.1, a copy of the most recent Environmental Health Food Inspection Report must be made available by this facility for review by the public upon request.

THIS NOTICE SHALL REMAIN POSTED AT OR NEAR THE ENTRANCE TO THE FACILITY.

The Public Notice Card tells the public that they have the right to see a copy of the last inspection report at any time. It is against the law for a facility to refuse to show the last inspection report when requested by the public. You can access a food facility's inspection history on our department website www.rivcoeh.org.

At each inspection, the facility will be graded on food safety and illness prevention on a 100 point scale with points being deducted for each violation observed. At the end of the inspection, the inspector will post a letter grade (A, B, or C) in a place that can be easily seen by the public. An "A" grade represents a passing score and should be the goal of every food establishment. Grades "B" or "C", also known as a "downgrade," indicates that the facility did not pass the inspection and has not met the minimum standards for food safety. In these cases, the food facility must correct the violations within a specified time period and be re-inspected to make sure their practices are safe to prepare food for the public. Failure to correct violations could result in further legal actions, including closure.



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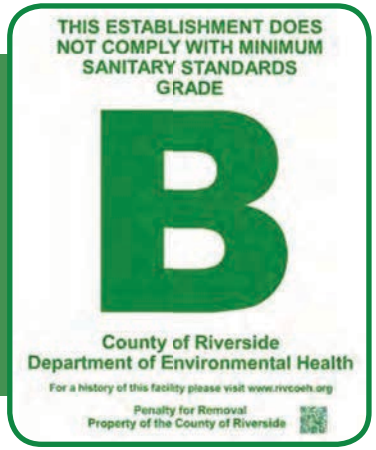

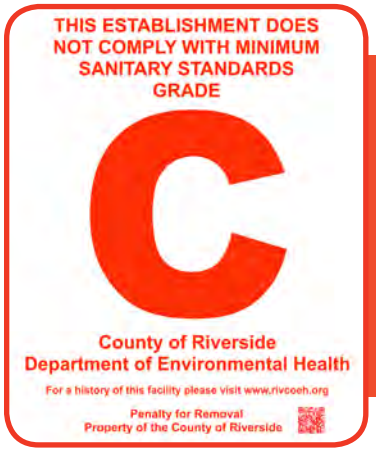

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THE GRADE CARD MAY NOT BE MOVED, DAMAGED, OR COVER UP. ONLY THE INSPECTOR IS ALLOWED TO MOVE OR RELOCATE THE GRADE CARD ONCE IT HAS BEEN P

Foodborne Illness and Contamination Hazards

Have you ever eaten something that possibly made you sick? Eating too many cheeseburgers is one thing, but you may have experienced actual foodborne illness by eating something contaminated. Contaminated food can make you sick with symptoms such as nausea, diarrhea, vomiting, fever, and chills. While most people will recover from the illness, in some cases the effects can be long-term and devastating, even resulting in death. Serious long-term consequences include kidney failure, chronic arthritis, even nerve and brain damage. While foodborne illness can affect just about everyone, certain people such as babies, small children, pregnant women, elderly, and people that are already sick are more susceptible.

EVEN THOUGH THE FOOD LOOKS, SMELLS AND TASTES NORMAL, IF NOT HANDLED CORRECTLY IT COULD MAKE SOMEONE VERY SICK.

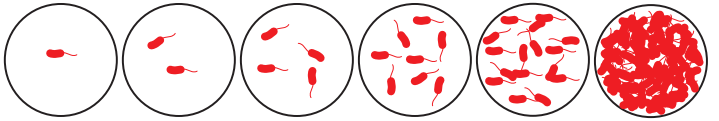
Food becomes unsafe when it comes in contact with hazards. A food hazard is any item or substance that can make food dangerous to eat. Contaminated food may cause foodborne illness. There are three categories of contaminated food:

CHEMICAL CONTAMINATION

This can occur when chemicals like a cleaner, bug spray, or medication gets in or on a food item. This can happen when chemicals are stored in a food preparation area and spill or come in contact with food, possibly poisoning the person who eats that food. Always store chemicals in clearly labeled containers, in a designated area away from food storage and preparation. Avoid spraying or using chemicals near food.

BIOLOGICAL CONTAMINATION

This kind of contamination consists of tiny germs that can't be seen such as bacteria, viruses, fungi, and protozoa. While these are prevalent in our daily lives, those that cause illness are known as pathogens. Bacteria are common pathogens associated with foodborne illness as they are found naturally in soil and water. Bacteria's main goal is to replicate. Some can do this rapidly when actions to control the growth aren't followed. Bacteria like *Salmonella* can double their numbers in less than 20 minutes. So think about a piece of chicken that has 20 bacteria on it, in 10 hours, this piece of chicken could have over 20 million bacteria!



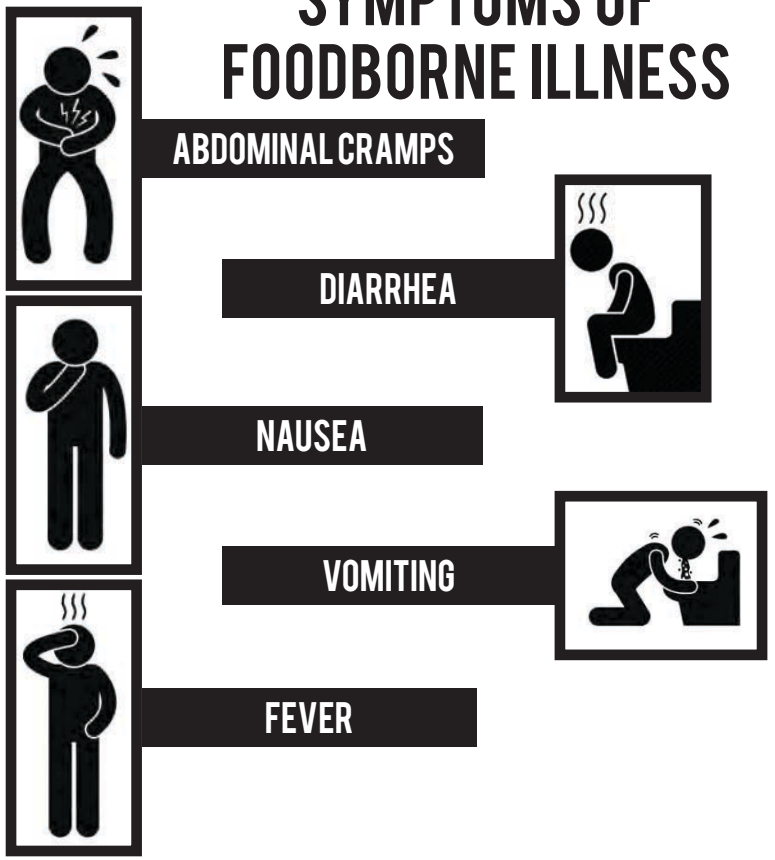
Even if pathogens are killed during the cooking process, they can still leave behind their toxins which can make someone very sick if ingested. For instance, *Bacillus cereus* which is often associated with cooked rice, produces toxins that are released when the bacteria is killed. The bacteria indirectly cause illness through the toxins they produce.

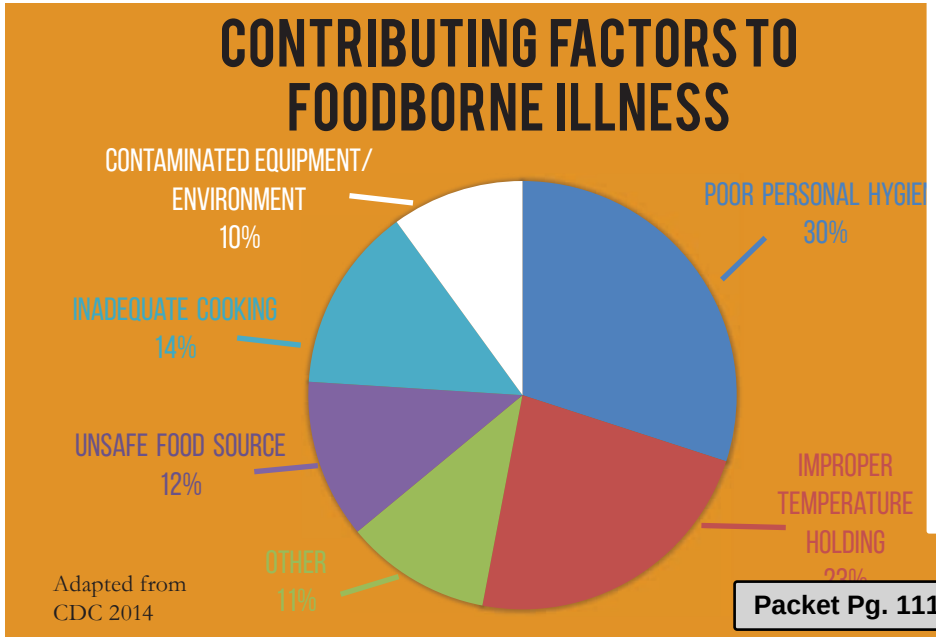
Viruses are also a common pathogen associated with foodborne illness. If you or your coworker come to work sick, you are probably carrying trillions of viruses which can easily spread to food or food-contact surfaces. These viruses can live for days or weeks on surfaces and eventually make their way into food where they are ingested. Some viruses only take a few hours before causing you to feel sick. Other pathogens may take a few days, or even a few weeks. Although you may not be experiencing symptoms, you can still carry around pathogens. That's why you should always follow safe food handling practices.

Foodborne Illness and Contamination Hazards

PHYSICAL CONTAMINATION

Have you ever had to pull a hair out of your food? If so, then you already know what physical contamination is. If something is in food that shouldn't be there such as a bandage, glass or metal fragments, fake fingernails, or even a fly, then it has been contaminated with a physical hazard and must be disposed. Physical contamination can cause injury such as cuts to the mouth, choking, or serious illness. Usually, physical hazards get into food accidentally; however, some can occur naturally like bones, fruit pits, or seeds. It's important to remove these items during preparation unless the physical hazard is obvious like the bone in a chicken leg.



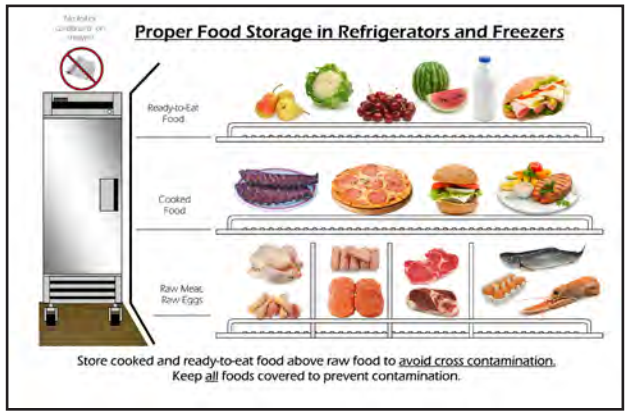


Food Protection

As a food handler, protecting food from potential contamination should be your first priority. Storing food properly is a way to protect it. Food should be stored inside the facility in approved storage areas. Food containers should also be covered, labeled, and stored at least 6 inches off the floor.

Don't forget that ice is also a food and should be protected from contamination as well. Never store food items in the same place as cleaners, chemicals, or personal items. Even utensils and dishes should have their own storage space.

Produce and ready-to-eat foods should be stored on top shelves of refrigerators. Different types of raw meats and raw shell eggs should always be stored separate from one another and on the bottom shelf in a refrigerator. If they happen to drip, they will not cross-contaminate the foods below them.



Cross-contamination refers to pathogens from one type of foo into contact with another type of food. This can happen either by food-to-food (e.g., improper food storage), surface-to-food (e.g., contaminated utensils or surfaces), or person-to-food (e.g., hand contact) cross-contamination. For example, if you use a cutting board for raw chicken which is known for carrying harmful bacteria and then use that same cutting board to cut vegetable without properly cleaning it first, the bacteria from the raw chicken ma be transferred to the vegetables. The vegetables are now contaminated Food can also become cross-contaminated by food handlers themselve For example, if the food handler doesn't properly wash their hands, th may cross contaminate foods through hand contact.

SEPARATE

DON'T CROSS CONTAMINATE

Another way to protect your customers and prevent foodborne illness is to verify the food obtained is from an approved source. All food must be received from a government regulated food supplier.

When food is delivered, look at it carefully and ensure that it is not damaged, contaminated, and has not been tampered with. Cold, potentially hazardous food should be delivered from a refrigerat truck or packed in ice with an internal temperature of 45°F or below. If the food does not appear safe and in good condition, don't accept the ord Once the order has been accep it should be promptly put away.

Personal Hygiene and Health

Practicing good hygiene will help protect food from biological and physical contamination. If a food worker has poor hygiene, they may be the source of food contamination.

- Shower daily and wear clean clothing. Try to limit the pathogens you bring to work.
- Remove jewelry and watches as they can trap food and pathogens and contaminate food or utensils you are handling.

- Properly restrain hair, by pulling it back or wearing a hat or hair/beard net to keep hair out of food.

- Do not eat, drink, smoke, or chew gum while working with food. Small droplets of saliva fall from your mouth and can contaminate food or surfaces.
- Keep fingernails neatly trimmed as dirt and pathogens can get trapped in the space under the fingernails.

- Never cough or sneeze into your hands or in the direction of food areas. You should turn away, and cough or sneeze into the bend of your arm.

- Do not touch the food-contact parts of utensils. For example, utilize the handle when scooping ice and handle silverware by handles only.

If you are sick, you can make everyone around you sick including those whose food you are handling. Some illnesses require you to stay home as they are so contagious you cannot go to work. If you are experiencing any of the following symptoms you must stay home: vomiting, diarrhea, sore throat with a fever, or yellowing of the skin or eyes. Contact your manager to inform them of your symptoms and they will let you know when it is safe for you to return to work. If you are diagnosed with any of the "Big 5" illnesses, you may be required to get a medical release by a doctor to return to work as these illness are so contagious they can be spread to food.

THE BIG 5

- SHIGELLA
- SALMONELLA
- E. COLI
- NOROVIRUS
- HEPATITIS A

Handwashing

Your hands are covered with bacteria and viruses! While you cannot see or feel them, they are there. Washing your hands thoroughly, and often, can greatly reduce the spread of bacteria. Removing bacteria and viruses from your hands prevents them from getting into food and onto other surfaces where they can eventually lead to illness. Good personal hygiene, which includes hand washing, is vital when preparing food. In fact, it is required by law for you to wash your hands. Did you know that a food establishment must have a hand sink designated solely for hand washing? This sink should be supplied with both soap and paper towels in dispensers at all times and should never be blocked off or difficult to access. Do not use a food preparation sink or utensil washing sink to wash your hands as this can be a source of cross-contamination.

5 STEPS TO PROPERLY WASHED HANDS

1 Wet hands with warm water (at least 100°F) at the designated hand sink.

2 Apply liquid soap from a pump dispenser. Do not use bar soap, because it can harbor harmful germs.

3 Rub hands together vigorously for 10-15 seconds. Pay attention to areas between your fingers, under your nails, and your wrists.

4 Rinse hands thoroughly under warm, running water.

5 Dry your hands with paper towels or an air dryer. Use the paper towel to turn off the faucet. Do not use an apron or reusable towels to dry hands as this can be a source of cross-contamination.

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It is important to wash your hands frequently and whenever contamination may have occurred. You must wash your hands in the following instances:

After:

- using the restroom
- eating, drinking, or smoking
- sneezing or coughing
- handling chemicals or performing cleaning duties, including dish washing and touching wiping cloths
- taking out the trash
- touching your body, clothing, an animal, vermin, or any object
- any other activity that may contaminate hands

Before:

- starting work and when returning from a break
- putting on gloves or when changing gloves
- and after handling raw food

WHAT ABOUT HAND SANITIZER?

Notice we haven't discussed hand sanitizer? Hand sanitizer cannot be used as a replacement for handwashing. Not all pathogens are killed with sanitizer. Some bacteria on your hands can produce toxins, which are not affected by hand sanitizer and can still be transferred to food or food contact surfaces causing foodborne illness.

Handwashing

If you have an injury such as a burn, cut, or open wound on your hand, wrist, or forearm, you must wear a bandage. In addition, you must wear either gloves or some kind of clothing/protection to cover the bandage entirely. This double barrier is required to keep the bacteria on your wound from spreading to food or surfaces. If your wound becomes infected, it can contain disease-causing bacteria which can be spread to food and cause foodborne illness. Notify your manager if your wound shows any of the following symptoms: red and swollen, hot to the touch, draining fluids, or pus-filled.

WASH HANDS PROPERLY BEFORE USING GLOVES

Single-use, disposable gloves can be used to enhance food safety when placed on washed hands and changed at appropriate times. If utensils, such as tongs, cannot be used to handle ready-to-eat foods, gloves should be used to limit bare hand contact with food.

FOLLOW THESE GUIDELINES WHEN USING GLOVES:

- Gloves are not a substitute for hand washing. They must be used in conjunction with a proper hand washing regimen.
- Properly wash your hands before you put on gloves.
- Gloves shall be used for only one task and must be discarded when damaged or soiled. Never re-use gloves.
- Gloves are required if you have artificial fingernails, or rings other than a plain band.
- Gloves must be changed as often as you would wash your hands.

Time and Temperature

For bacteria to survive and grow, they need a food source such as protein or sugar, moisture, and the right temperature. A food that can support the rapid growth of bacteria is known as a '**potentially hazardous food**' (PHF). Here are some examples:

Meat and meat products, like chicken, beef, pork, and lamb

Fish and shellfish

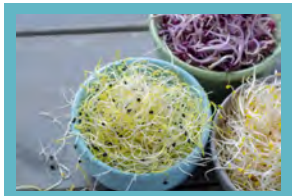
Eggs, whether raw or cooked, or within a dish

Dairy products like milk, cream, custard, yogurt, and soft cheeses

Some cut fruits and vegetables, like melons and tomatoes

Vegetables and potatoes once they are cooked

Plants with protein such as cooked beans, rice, or soy products like tofu



Raw sprouts such as alfalfa or bean sprouts

Raw garlic-in-oil

You may notice that most of these foods are either rich in protein or sugar which bacteria use as a fuel source. They also have a moisture content, so at the right temperature, bacteria will thrive. Since you can't take the food source or moisture away, the only way to prohibit bacteria growth is to control the temperature. You can do this by either controlling the temperature or by controlling the time in which the food is at the suitable temperature.

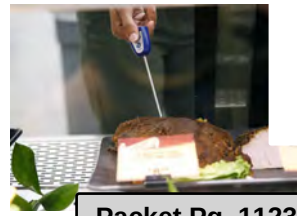
Like yourself, bacteria do not like to be too cold or too hot. B known to cause foodborne illness grow best at warm temperatures. These temperatures are known as the temperature danger zone, which is between 41°F and 135°F. When PHFs are held in the temperature danger zone, bacteria can multiply to levels which can cause foodborne illnesses in as little as four hours. At temperatures of 41°F or below, bacteria will still grow, but n at a rapid rate that causes illness. At temperatures of 135°F or above, t bacteria will either die or be too hot to grow. So to keep the food safe must be kept out of the temperature danger zone.

THE GOAL IS TO REDUCE THE AMOUNT OF TIME PHFs ARE SPENT IN THE TEMPERATURE DANGER ZONE AND MINIMIZ THE TIME SPENT PREPARING, COOLING, AND REHEATING PH

NEVER LEAVE FOOD OUT AT ROOM TEMPERATURE

Storing food in a properly functioning refrigeration system is a great w to ensure it does not enter the temperature danger zone. Remember, bacteria does not stop growing at cold temperatures, but rather their growth only slows down. Be sure to utilize a system like labeling to ensure food is used no more than seven days after it was first thawed, opened, or prepared. Also, be sure the refrigerator has a properly functioning thermometer to ensure food is held at 41°F or below. If a refrigeration system is not available ice can be used but requires frequent monitori to ensure the level of ice is maintained completely surrounding the foo container and is being replenished as it melts.

Note: a thermometer reading of the refrigerator is not the most accurate way to tell if a food is at a safe temperature. The most accurate way to tell is by probing the actual food with a probe thermometer.



Time and Temperature

It is important to thaw food in approved ways to ensure the food does not enter into the temperature danger zone. You should always assume that bacteria is present in or on PHFs. For example, meat contains bacteria either from the animal's digestive track or through processing. This bacteria can survive even in a frozen state.

NEVER THAW FROZEN PHFs ON THE COUNTER OR IN STAGNANT WATER

Use one of these approved thawing methods:

- The safest way is to place the food in a refrigerator overnight. Large items such as a turkey or roast may require several days, so planning ahead is necessary.

- Directly cook the frozen food. For example, placing a frozen hamburger patty directly on the griddle will thaw it as part of the cooking process.

- Use a microwave on the defrost setting to thaw food. This method must be followed by immediate cooking. Also, be sure to rotate or stir the food throughout the process since microwaves do not heat evenly.

- Place the frozen food in the food preparation sink, completely submerged in water and let cool running water (70°F or below) flow over the food. Be sure the water is cool as warm water will allow the surface of the food to enter into the temperature danger zone, allowing bacteria to grow. Also, if the item is in a vacuum sealed package, remove the packaging before thawing process.

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When a PHF is cooked, the harmful bacteria can be destroyed animal products, certain cooking temperatures are required. If these internal temperatures are not reached, the bacteria can survive and will be served along with the food, possibly causing foodborne illness.

Sometimes, your menu will conta an undercooked or raw animal product. You may serve this food as long as your customer is informed of the significantly increased risk of foodborne illness. This is done by a written disclosure statement and written reminder statement. The disclosure identifies the menu item, usually by an asterisk denoting a footnote that states the item is served raw or undercooked. The reminder follows with the phrase: "Consuming raw or undercooked meats, poultry, seafood, shellfish, or eggs may increase your risk of foodborne illness, especially if you have certain medical conditions".

Be sure to utilize your probe thermometer to check internal food temperatures when you are thawing, temperature-holding cooking, or cooling PHF. Ensure the temperature is taken at the thick portion of the food product and that liquids are stirred prior, to gain a accurate temperature. Always make sure the probe of the thermomete is washed, rinsed, and sanitized between uses, just like any other utensil. This is especially important when measuring the temperature of a ready-to-eat food after measuring a raw meat product. Your probe thermometer will require calibration to ensure it is accurate. Your manager can show you how to properly calibrate your thermometer.

One of the major causes of foodborne illness is improperly cooled foods because PHFs must enter the temperature danger zone when cooling. Foods must be rapidly cooled utilizing the two-step process to limit the time spent in the temperature danger zone.

2-STEP COOLING PROCE S

STEP 1: 135°F TO 70°F
IN 2 HOURS OR LESS
STEP 2: 70°F TO 41°F
IN 4 HOURS OR LESS
TOTAL COOLING TIME MUST
BE 6 HOU

Time and Temperature

You can utilize some of these methods to achieve proper rapid cooling:

- Using an ice bath with frequent stirring
- Pouring foods into shallow metal pans and placing in a walk-in cooler
- Using chill sticks or ice paddles
- Using a blast chiller or tumbler
- Portioning into smaller pieces

No matter which cooling method you use to rapidly cool your food, make sure to utilize your probe thermometer to take internal food temperatures to ensure you are meeting the temperature requirements.

Reheating food can also be a dangerous process because the food must enter the temperature danger zone. Foods that will be hot-held must be rapidly and evenly reheated to ensure all portions reach a minimum internal temperature of 165°F.

FOOD TO BE SERVED IMMEDIATELY → **REHEAT TO ANY TEMPERATURE**

FOOD THAT WILL BE HOT-HELD → **REHEAT TO 165°F**

ALL REHEATED FOOD MUST BE REHEATED IN 2 HOURS OR LESS

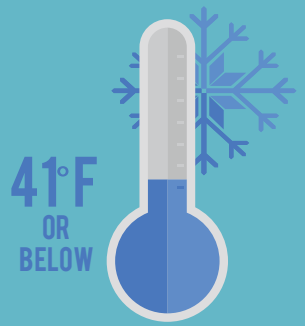
Only use equipment like stoves, ovens, or microwaves to reheat foods.

Never use a steam table or warmer drawer to heat up PHFs. These typ of units will take too long as you only have two hours to reach proper temperature.

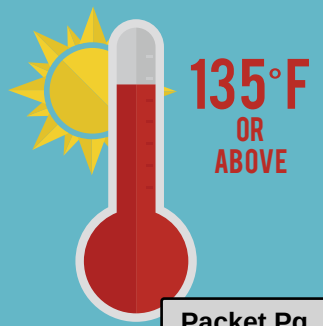
STEAM TABLES AND WARMERS SHOUL ONLY BE USED TO HOLD PHFs HOT, AT O ABOVE 135°F

REMEMBER TO KEEP PHFs AT:

COLD FOOD



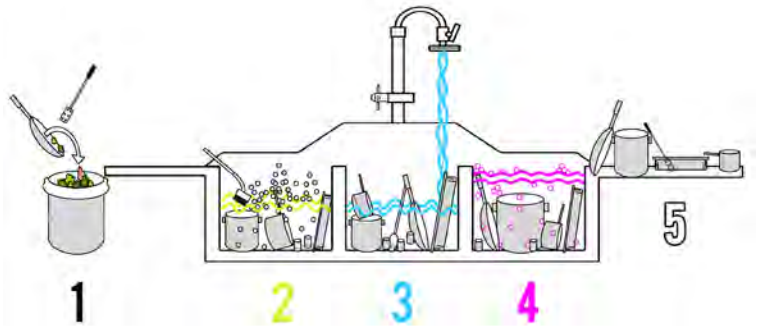
HOT FOOD



Cleaning and Sanitizing

Keeping the food facility, equipment, and utensils clean and sanitized is important in food safety. Disease-causing bacteria and viruses can survive on surfaces that have not been properly cleaned and sanitized. All utensils used in the food facility including plates, cups, cutlery, counters, and cutting boards must be properly washed and sanitized. Washing is the act of physically removing food and debris, while sanitizing is the act of killing any pathogens which may remain. Food facilities can accomplish this manually using a 3-compartment sink, or automatically in a commercial dish-washing machine.

THERE ARE 5 STEPS TO PROPERLY WASH DISHES AND UTENSILS USING A 3-COMPARTMENT SINK



1 **SCRAPE** or pre-rinse items to remove large food particles.

2 **WASH** using a soap or detergent in warm water (minimum 100°F) in the first sink compartment to remove all food and debris including grease and grime.

3 **RINSE** items in clean water in the second compartment to completely remove the soap or detergent residue.

4 **SANITIZE** by completely submerging the item in a solu water and sanitizer in the third compartment. Any of the following solutions are effective to kill pathogens:

- Chlorine (bleach) at 100 ppm for 30 seconds
- Quaternary ammonium at 200 ppm for 60 seconds
- Iodine at 25 ppm for 60 seconds
- Hot water immersion at 171°F for 30 seconds may also be used instead of chemical sanitizers

HAVE YOU CHECKED THE SANITIZER TODAY?

Always remember to check the sanitizer concentration after you have mixed the chemical in water. You do this by using a test strip specific to the type of chemical you are using.

5 **AIR DRY** the items on the clean drain board of the 3-compartm sink. Never towel or paper towel dry the item as you may contaminate it.

CLEANING AND SANITIZING USING AN AUTOMATIC DISH WASHING MACHINE

Commercial dish-washing machines are professionally installed equipment that wash and sanitize dishes automatically. They must be monitored and serviced to ensure they are working properly. Dish washing machines must be maintained according to the manufacturer's instructions. They use chlorine or hot water to sanitize utensils.

- If chlorine is used to sanitize, it must spray utensils with a concentration of 50 ppm during the final rinse.
- If hot water is used to sanitize, a minimum of 160°F hot water must reach the surface of the plate or utensil. This means the temperature gauge on the front of the machine will read much higher than 160°F. A temperature-sensing decal or a thermometer designed to test hot water in dish machines is required to verify utensils are being properly

Cleaning and Sanitizing

Once the cycle is complete, allow the items to air dry. Don't forget to check the sanitizer concentration just as you would when manually cleaning and sanitizing.

Cleaning and sanitizing reduces food hazards and cross-contamination. All food contact surfaces must be cleaned and sanitized often.

SPECIFIC EXAMPLES OF WHEN FOOD CONTACT SURFACES WOULD NEED TO BE CLEANED AND SANITIZED:

- When switching between food types such as raw chicken to raw beef, or raw meat to food that is ready-to-eat.
- Every 4 hours after the utensil or surface comes in contact with PHFs.
- Any other time utensils may be contaminated, such as being dropped on the floor or contacting an unclean surface.
- Whenever a utensil has been used or comes in contact with customers, even if the plate, glass, or utensil was not used by the customer.

Dishes and utensils aren't the only things that need to be cleaned. Floors, walls, ceilings, equipment, counters, and shelving all need to be kept clean too. Food contact surfaces like counter tops and some equipment that need to be cleaned but are too large to wash in a standard 3-compartment sink or automatic dish-washing machine must be cleaned and sanitized in place.

Always refer to the equipment's manufacturer instructions for specifics and:

- Turn off and unplug the equipment.
- Remove any small parts that can be cleaned in the 3-compartment sink.
- Using a bucket with warm (100°F minimum) soapy water, thoroughly wash down all parts of the equipment. You may ne to use a brush or cloth to reach all parts.
- Rinse the soap off of the equipment using a second clean cloth and clear water. If your facility is set up with an approved hose and floor drains, you can use that instead.

- Use a spray bottle of sanitizing solution to saturate the surface and all parts of the equipment.
- Let the equipment air dry and then reassemble.

As a food handler you will proba use wiping cloths to clean, wipe down counters, tables, or food pr surfaces. After a cloth has been used, it must be stored in a bucke with sanitizer solution or properl laundered. The type and concentration of sanitizer should be the sam as for manual sanitization. Be sure to change the sanitizer solution oft to ensure the proper concentration is maintained to keep pathogens from growing.

HAVE YOU CHECKED THE SANITIZER TODAY?

Food Allergens

Approximately 15 million Americans have a food allergy and the number keeps growing. A food allergy is caused when the body's immune system mistakenly thinks that a certain food, or substance within a food, is a threat to your body and triggers a protective response known as an allergic reaction. This can affect certain people even when the food could be safe for most other people. Reactions can range from mild to severe and potentially life-threatening. One of the more serious reactions is called anaphylaxis. This can cause a person to stop breathing.

COMMON SYMPTOMS OF AN ALLERGIC REACTION CAN INCLUDE:

- Hives
- Coughing or wheezing
- Rash or flushed skin
- Dizziness and/or lightheadedness
- Tingly or itchy sensation in the mouth
- Loss of consciousness
- Face, tongue, or lip swelling
- Difficulty breathing
- Vomiting and/or diarrhea
- Swelling of the throat and vocal chords

The eight most common food allergens, responsible for 90% of all documented allergic reactions, are:

As a food handler, it is important for you to take customer inq or statements regarding food allergies seriously. The severity of the allergy could mean the difference between life and death. If you are unsure about how the food is prepared or what is in a particular menu item, ask the cook. Do not just assume a food does not contain a certain ingredient. If you are uncertain, refer customers to your manager. The manager of a food facility must be knowledgeable of the eight major food allergens and the symptoms they may cause. You mu also learn about allergens as it pertains to your job duties.

It is extremely important to prevent cross-contact when dealing with a food allergy. Cross-contact is when one food comes in contact with another food or equipment that contains the allergen. Even the smalle amount of the allergen can cause a reaction in people with food allergi

Cross-contact is not the same as cross-contamination. For instance, if a custom orders a salad and is allergic to pine nuts, you cannot just remove the pine nuts fror the salad. The salad has been compromis due to cross-contact. Another example, is using the same spatula to handle a cheeseburger and then hamburger to serv to a customer allergic to milk. Your faci might have a preparation area designated allergen-free where storage and preparati of allergen-free meals is done. Inform the customer if you are unable t guarantee the food to be allergen-free.

Some people may not know they are allergic to a food. Be able to ident if a customer is experiencing an allergic reaction as symptoms may escalate quickly. Let your manager know and call 911.

Waste and Pest Control



Pests can spread illness to people by contaminating food and surfaces with the pathogens they carry in and on their bodies. Pests common to food establishments include rodents (mice and rats), cockroaches, and flying insects (flies).

COMMON SIGNS OF PESTS

- Brown capsule egg cases or strong oily odor
  → **cockroach infestation**
- Black pepper-like droppings
  → **cockroach infestation**

- Black pellets or droppings, signs of gnawing
  → **rat or mouse infestation**
- Black rub marks along the wall
  → **oil and filth from a rodent's body**

Pests only need a source of food and water and somewhere to hide to cause an infestation. The best way to keep pests out of your food establishment is making sure they cannot get in. Eliminate their food source by taking out the garbage often and maintaining a clean facility.


TO PREVENT RODENT AND INSECTS FR ENTERING, YOU SHOULD:

- Have good seals and weather stripping around doors. Keep windows and doors closed.
- Fix plumbing leaks to keep water from puddling on the floor and remove any leftover mop water.
- Do not leave food debris on the floor; keep stored food in a container with a tight-fitting lid.
- Seal any cracks, crevices, or holes in the floors, walls, or ceiling
- Keep floors, walls, and equipment clean. Remove unused equipment and excessive clutter so pests can't hide.
- Inspect food during deliveries for the presence of pests, and dispose of cardboard properly.
- Always use plastic liners in trash cans and tie the bag closed before putting in dumpster.
- Keep the dumpster area clean and tidy.
- Keep dumpster lids closed. Have dumpster replaced if damage or leaking.
- Obtain routine professional pest control services.
- Immediately clean up droppings and report signs of pests to yo manager.
- Keep air curtains clean and in good repair.

Many of the bug sprays that you find in stores are not only toxic to the insect or rodent, but also to you and your customers. Check the label t ensure it is safe to use around food or contact a professional pest contr service to apply pesticide in a safe manner.


Facility Closure

There are times that a food facility is required to discontinue operation and close for the safety of the public. These include, but are not limited to:

- NO HOT OR COLD RUNNING WATER
- PLUMBING BACK-UP
- COCKROACH, RODENT, OR FLY INFESTATION
- NO ELECTRICITY
- INSUFFICIENT REFRIGERATION
- NO SANITIZER AVAILABLE
- ANY CONDITION THAT POSES AN IMMINENT HEALTH HAZARD TO THE PUBLIC

If you notice any of these conditions, inform your manager immediately, so the facility can close until these conditions are corrected.

OFFICE LOCATIONS

WWW.RIVCOEH.ORG
(888)722-4234

1 CORONA
2275 MAIN ST, SUITE 204
CORONA, CA 92882
(951) 273-9140

2 RIVERSIDE - MAIN OFFICE
4065 COUNTY CIRCLE DR, SUITE 104
RIVERSIDE, CA 92503
(951) 358-5172

3 RIVERSIDE - DOWNTOWN
3880 LEMON ST, SUITE 200
RIVERSIDE, CA 92501
(951) 955-8980

4 MURRIETA
30135 TECHNOLOGY DR. SUITE 250,
MURRIETA, CA 92563
(951) 461-0284

5 HEMET
800 S. SANDERSON AVE, SUITE 200
HEMET, CA 92545
(951) 766-2824

6 PALM SPRINGS
554 S. PASEO DOROTEA
PALM SPRINGS, CA 92264
(760) 320-1048

7 INDIO
47-950 ARABIA ST, SUITE A
INDIO, CA 92201
(760) 863-8287

8 BLYTHE
260 N. BROADWAY
BLYTHE, CA 92225
SELF-SERVI

Appendix I
Noise Impact Study

Pilot Travel Center Moreno Valley

MND Noise Impact Study

City of Moreno Valley, CA

Prepared for:

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De Novo Planning Group
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Date: 8/3/2021

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1.0 Introduction

1.1 Purpose of Analysis and Study Objectives

This noise assessment was prepared to evaluate the potential noise impacts for the project study area and to recommend noise mitigation measures, if necessary, to minimize the potential noise impacts. The assessment was conducted and compared to the noise standards set forth by the Federal, State, and Local agencies. Consistent with the City's Noise Guidelines, the project must demonstrate compliance to the applicable noise criterion as outlined within the City of Moreno Valley Noise Element and Municipal Code.

The following is provided in this report:

- A description of the study area and the proposed project;
- Information regarding the fundamentals of noise;
- A description of the local noise guidelines and standards;
- An analysis of traffic noise impacts to the sensitive receptors and the project site; and
- An analysis of construction noise impacts.

1.2 Site Location and Study Area

The Pilot Travel Moreno Valley Development (Project) site is located near the northwest corner of Redlands Blvd and Eucalyptus Ave, in the City of Moreno Valley, CA. See Exhibit A for the location.

Existing land uses surrounding the Project site include:

- North: SR-60, office land uses;
- East: Redlands Blvd, light industrial land uses;
- South: Eucalyptus Ave, residential agriculture uses; and
- West: Aldi Place, light Industrial land uses.

1.3 Proposed Project Description

The proposed project consists of the construction and operation of a Pilot Travel Center. The proposed travel center would provide fueling facilities, travel amenities, restaurants, and parking facilities for passing motorists and commercial truck operators, as described below; refer to Exhibit B, Site Plan.

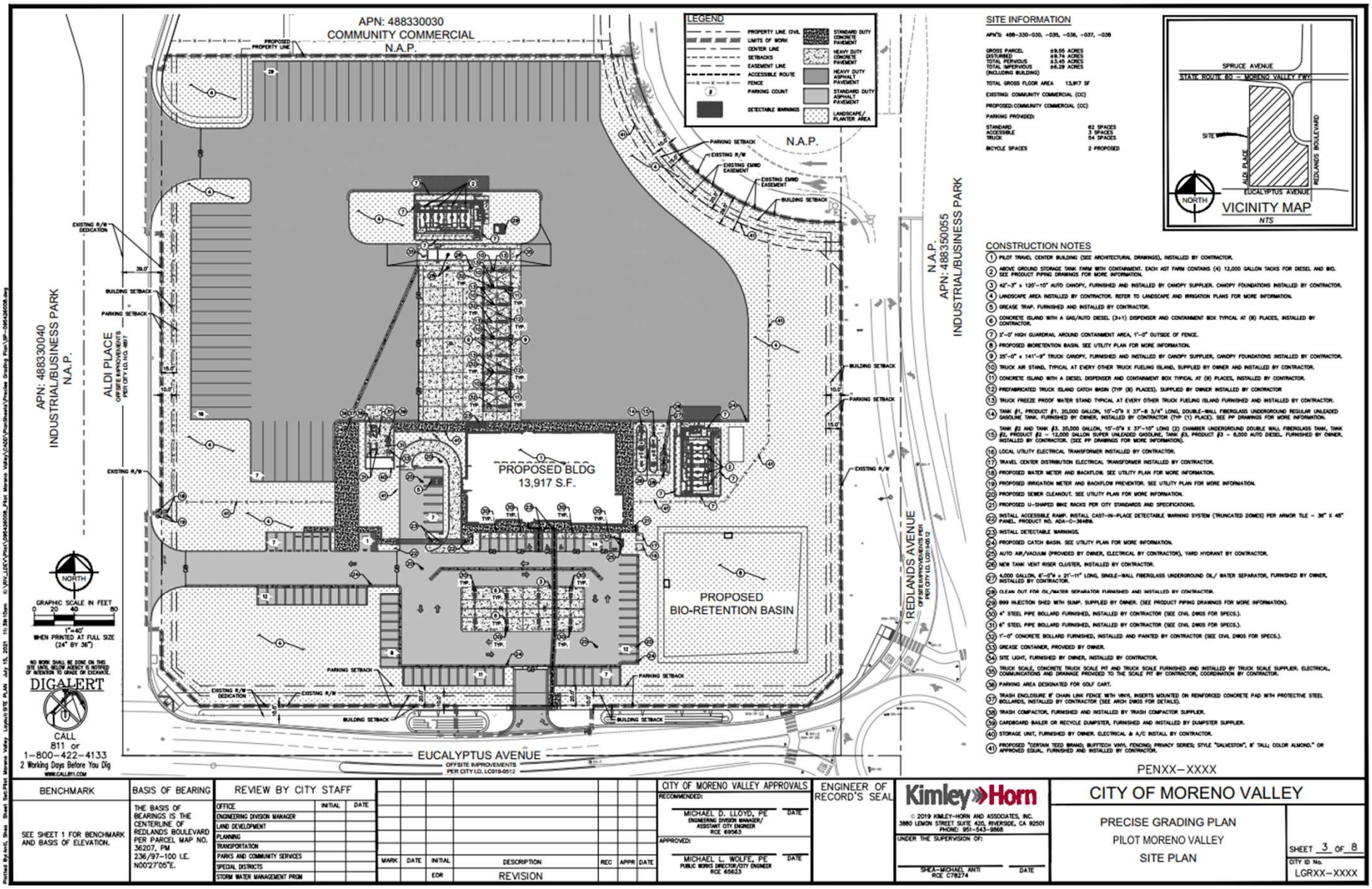
The Project proposes to develop a Pilot Travel Center on 17.28 acres with 65 auto parking, 54 truck parking, 8 gas islands, and 9 diesel fueling lanes. The proposed travel center building will be approximately 14,000 square feet. Primary access to the project site will be from Eucalyptus Avenue and Aldi Place.

Exhibit A

Location Map

Exhibit E

Site Plan



2.0 Fundamentals of Noise

This section of the report provides basic information about noise and presents some of the terms used within the report.

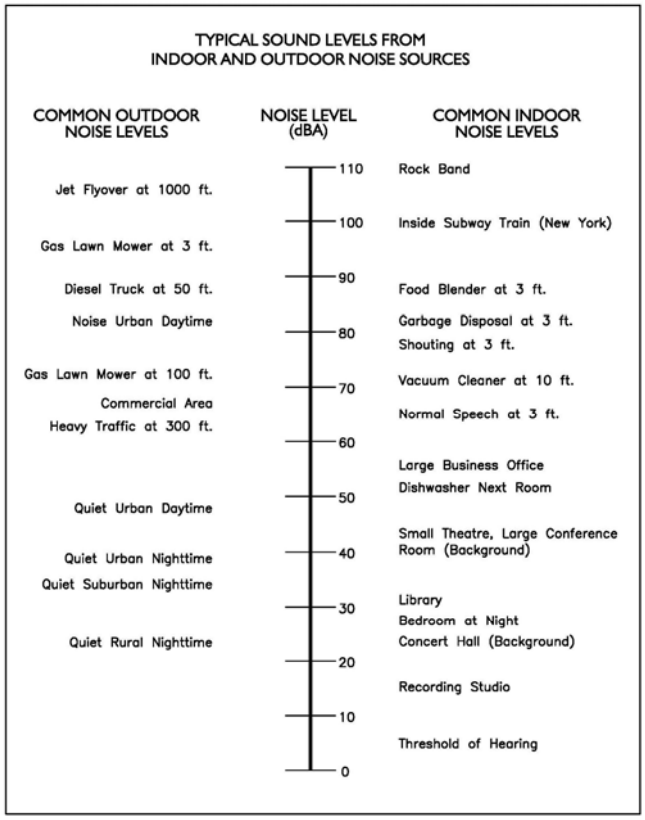
2.1 Sound, Noise, and Acoustics

Sound is a disturbance created by a moving or vibrating source and is capable of being detected by the hearing organs. Sound may be thought of as mechanical energy of a moving object transmitted by pressure waves through a medium to a human ear. For traffic or stationary noise, the medium of concern is air. *Noise* is defined as sound that is loud, unpleasant, unexpected, or unwanted.

2.2 Frequency and Hertz

A continuous sound is described by its *frequency* (pitch) and its *amplitude* (loudness). Frequency relates to the number of pressure oscillations per second. Low-frequency sounds are low in pitch (bass sounding) and high-frequency sounds are high in pitch (squeak). These oscillations per second (cycles) are commonly referred to as Hertz (Hz). The human ear can hear from the bass pitch starting at 20 Hz to the high pitch of 20,000 Hz.

Exhibit C: Typical A-Weighted Noise Levels



2.3 Sound Pressure Levels and Decibels

The *amplitude* of a sound determines its loudness. The loudness of sound increases or decreases as the amplitude increases or decreases. Sound pressure amplitude is measure in units of micro-Newton per square inch meter (N/m2), also called micro-Pascal (µPa). One µPa is approximately one hundred billionths (0.00000000001) of normal atmospheric pressure. Sound pressure level (SPL or L_p) is used to describe in logarithmic units the ratio of actual sound pressures to a reference pressure squared. These units are called decibels abbreviated dB. Exhibit C illustrates references sound levels for different noise sources.

2.4 Addition of Decibels

Because decibels are on a logarithmic scale, sound pressure levels cannot be added or subtracted by simple plus or minus addition. When two sounds or equal SPL are combined, they will produce an SPL 3 dB greater than the original single SPL. In other words, sound energy must be doubled to produce a 3 dB increase. If two sounds differ by approximately 10 dB, the higher sound level is the predominant sound.

2.5 Sensitive Receptors

Noise-sensitive land uses include residential (single and multi-family dwellings, mobile home parks, dormitories, and similar uses); transient lodging (including hotels, motels, and similar uses); hospitals, nursing homes, convalescent hospitals, and other facilities for long-term medical care; public or private educational facilities, libraries, churches, and places of public assembly.

2.6 Human Response to Changes in Noise Levels

In general, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz, (A-weighted scale) and it perceives a sound within that range as being more intense than a sound with a higher or lower frequency with the same magnitude. For purposes of this report as well as with most environmental documents, the A-scale weighting is typically reported in terms of A-weighted decibel (dBA). Typically, the human ear can barely perceive a change in noise level of 3 dB. A change in 5 dB is readily perceptible, and a change in 10 dB is perceived as being twice or half as loud. As previously discussed, a doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound energy (e.g. doubling the volume of traffic on a highway) would result in a barely perceptible change in sound level.

Table 1: Decibel Changes and Loudness

Changes in Intensity Level, dBA	Changes in Apparent Loudness
1	Not perceptible
3	Just perceptible
5	Clearly noticeable
10	Twice (or half) as loud
Source: https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide02.cfm	

2.7 Noise Descriptors

Noise in our daily environment fluctuates over time. Some noise levels occur in regular patterns, others are random. Some noise levels are constant while others are sporadic. Noise descriptors were created to describe the different time-varying noise levels.

A-Weighted Sound Level: The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high-frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

Ambient Noise Level: The composite of noise from all sources, near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Community Noise Equivalent Level (CNEL): The average equivalent A-weighted sound level during a 24-hour day, obtained after the addition of five (5) decibels to sound levels in the evening from 7:00 to 10:00 PM and ten (10) decibels to sound levels in the night before 7:00 AM and after 10:00 PM.

Decibel (dB): A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A): A-weighted sound level (see definition above).

Equivalent Sound Level (LEQ): The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time-varying noise level. The energy average noise level during the sample period.

Habitable Room: Any room meeting the requirements of the Uniform Building Code or other applicable regulations which is intended to be used for sleeping, living, cooking, or dining purposes, excluding such enclosed spaces as closets, pantries, bath or toilet rooms, service rooms, connecting corridors, laundries, unfinished attics, foyers, storage spaces, cellars, utility rooms, and similar spaces.

L(n): The A-weighted sound level exceeded during a certain percentage of the sample time. For example, L10 in the sound level exceeded 10 percent of the sample time. Similarly, L50, L90, and L99, etc.

Noise: *A*ny unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

Outdoor Living Area: Outdoor spaces that are associated with residential land uses typically used for passive recreational activities or other noise-sensitive uses. Such spaces include patio areas, barbecue areas, jacuzzi areas, etc. associated with residential uses; outdoor patient recovery or resting areas associated with hospitals, convalescent hospitals, or rest homes; outdoor areas associated with places of worship which have a significant role in services or other noise-sensitive activities; and outdoor school facilities routinely used for educational purposes which may be adversely impacted by noise. Outdoor areas usually not included in this definition are: front yard areas, driveways, greenbelts, maintenance areas and storage areas associated with residential land uses; exterior areas at hospitals that are not used for patient activities; outdoor areas associated with places of worship and principally used for short-term social gatherings; and, outdoor areas associated with school facilities that are not typically associated with educational uses prone to adverse noise impacts (for example, school play yard areas).

Percent Noise Levels: See L(n).

Sound Level (Noise Level): The weighted sound pressure level obtained by use of a sound level meter having a standard frequency filter for attenuating part of the sound spectrum.

Sound Level Meter: An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

Single Event Noise Exposure Level (SENEL): The dB(A) level which, if it lasted for one second, would produce the same A-weighted sound energy as the actual event.

2.8 Traffic Noise Prediction

Noise levels associated with traffic depends on a variety of factors: volume of traffic; the speed of traffic; auto, medium truck (2-axle), and heavy truck percentage (3-axle and greater); and sound propagation. Higher traffic volume, speeds, and truck percentages equate to a louder volume in noise. A doubling of the Average Daily Traffic (ADT) along a roadway will increase noise levels by approximately 3 dB; reasons for this are discussed in the sections above.

2.9 Sound Propagation

As sound propagates from a source it spreads geometrically. Sound from a small, localized source (i.e., a point source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates at a rate of 6 dB per doubling of distance. The movement of vehicles down a roadway makes the source of the sound appear to propagate from a line (i.e., line source) rather than a point source. This line source results in the noise propagating from a roadway in a cylindrical spreading versus a spherical spreading that results from a point source. The sound level attenuates for a line source at a rate of 3 dB per doubling of distance.

As noise propagates from the source, it is affected by the ground and atmosphere. Noise models use hard site (reflective surfaces) and soft site (absorptive surfaces) to help calculate predicted noise levels. Hard site conditions assume no excessive ground absorption between the noise source and the receiver. Soft site conditions such as grass, soft dirt, or landscaping attenuate noise at a rate of 1.5 dB per doubling of distance. When added to the geometric spreading, the excess ground attenuation results in an overall noise attenuation of 4.5 dB per doubling of distance for a line source and 7.5 dB per doubling of distance for a point source.

Research has demonstrated that atmospheric conditions can have a significant effect on noise levels when noise receivers are located 200 feet from a noise source. Wind, temperature, air humidity, and turbulence can further impact have far sound can travel.

3.0 Ground-Bourne Vibration Fundamentals

3.1 Vibration Descriptors

Ground-borne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. The effects of ground-borne vibrations typically only cause a nuisance to people, but at extreme vibration levels, damage to buildings may occur. Although ground-borne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. Ground-borne noise is an effect of ground-borne vibration and only exists indoors since it is produced from noise radiated from the motion of the walls and floors of a room and may also consist of the rattling of windows or dishes on shelves.

Several different methods are used to quantify vibration amplitude.

PPV – Known as the peak particle velocity (PPV) which is the maximum instantaneous peak in vibration velocity, typically given in inches per second.

RMS – Known as root mean squared (RMS) can be used to denote vibration amplitude

VdB – A commonly used abbreviation to describe the vibration level (VdB) for a vibration source.

3.2 Vibration Perception

Typically, developed areas are continuously affected by vibration velocities of 50 VdB or lower. These continuous vibrations are not noticeable to humans whose threshold of perception is around 65 VdB. Outdoor sources that may produce perceptible vibrations are usually caused by construction equipment, steel-wheeled trains, and traffic on rough roads, while smooth roads rarely produce perceptible ground-borne noise or vibration. To counter the effects of ground-borne vibration, the Federal Transit Administration (FTA) has published guidance relative to vibration impacts. According to the FTA, fragile buildings can be exposed to ground-borne vibration levels of 0.3 inches per second without experiencing structural damage.

There are three main types of vibration propagation: surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wavefront, similar to ripples produced by throwing a rock into a pool of water. P-waves, or compression waves, are body waves that carry their energy along an expanding spherical wavefront. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wavefront. However, unlike P-waves, the particle motion is transverse, or side-to-side and perpendicular to the direction of propagation. As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil but has been shown to be effective enough for screening purposes to identify potential vibration impacts that may need to be studied through actual field tests.

4.0 Regulatory Setting

The proposed project is located in the City of Moreno Valley, California, and noise regulations are addressed through the efforts of various federal, state, and local government agencies. The agencies responsible for regulating noise are discussed below.

4.1 Federal Regulations

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves three purposes:

- Publicize noise emission standards for interstate commerce
- Assist state and local abatement efforts
- Promote noise education and research

The Federal Office of Noise Abatement and Control (ONAC) originally was tasked with implementing the Noise Control Act. However, it was eventually eliminated leaving other federal agencies and committees to develop noise policies and programs. Some examples of these agencies are as follows: The Department of Transportation (DOT) assumed a significant role in noise control through its various agencies. The Federal Aviation Agency (FAA) is responsible for regulating noise from aircraft and airports. The Federal Highway Administration (FHWA) is responsible for regulating noise from the interstate highway system. The Occupational Safety and Health Administration (OSHA) is responsible for the prohibition of excessive noise exposure to workers. The Housing and Urban Development (HUD) is responsible for establishing noise regulations as it relates to exterior/interior noise levels for new HUD-assisted housing developments near high noise areas.

The federal government advocates that local jurisdictions use their land use regulatory authority to arrange new developments in such a way that “noise sensitive” uses are either prohibited from being constructed adjacent to a highway or that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Since the federal government has preempted the setting of standards for noise levels that can be emitted by the transportation source, the City is restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning.

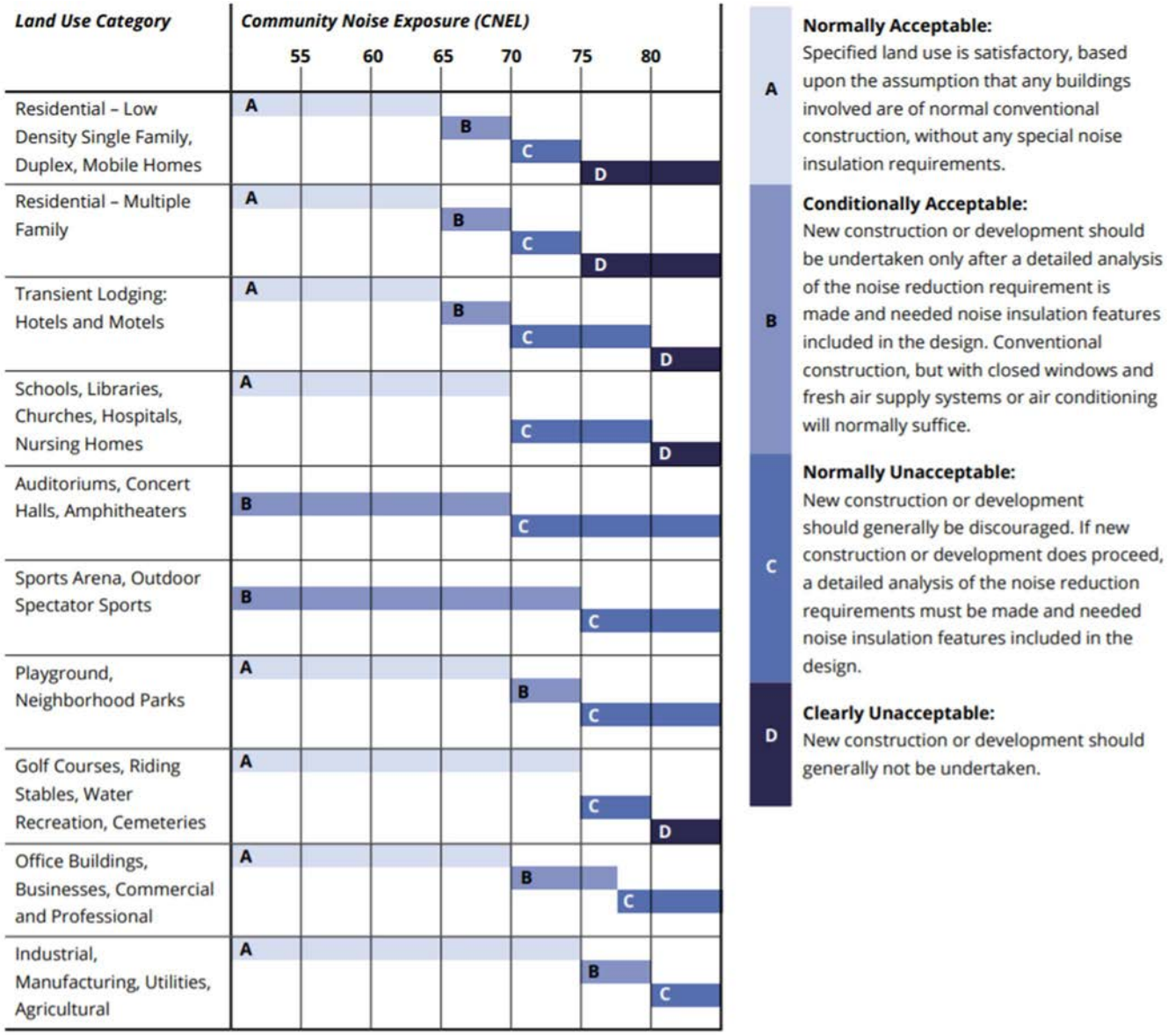
4.2 State Regulations

Established in 1973, the California Department of Health Services Office of Noise Control (ONC) was instrumental in developing regularity tools to control and abate noise for use by local agencies. One significant model is the “Land Use Compatibility for Community Noise Environments Matrix.” The matrix allows the local jurisdiction to delineate the compatibility of sensitive uses with various incremental levels of noise.

The State of California has established noise insulation standards as outlined in Title 24 and the Uniform Building Code (UBC) which in some cases requires acoustical analyses to outline exterior noise levels and to ensure interior noise levels do not exceed the interior threshold. The State mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan.

The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable as illustrated in Exhibit D.

Exhibit D: Land Use Compatibility Guidelines



Source: MoVal 2040 General Plan Update

4.3 City of Moreno Valley Noise Regulations

The City of Moreno Valley outlines their noise regulations and standards within the Municipal Code and the City of Moreno Valley General Plan.

City of Moreno General Plan

Goals, Policies, and Implementation Measures

Policies and goals from the General Plan that would mitigate potential impacts on noise include the following.

Goal

N-1: Design for a pleasant, healthy sound environment conducive to living and working.

Policies

N.1-1: Protect occupants of existing and new buildings from exposure to excessive noise, particularly adjacent to freeways, major roadways, the railroad, and within areas of aircraft overflight

N.1-2: Guide the location and design of transportation facilities, industrial uses, and other potential noise generators to minimize the effects of noise on adjacent land uses.

N.1-3: Apply the community noise compatibility standards (Table N-1) to all new development and major redevelopment projects outside the noise and safety compatibility zones established in the March Air Reserve Base/Inland Port Airport Land Use Compatibility (ALUC) Plan in order to protect against the adverse effects of noise exposure. Projects within the noise and safety compatibility zones are subject to the standards contained in the ALUC Plan.

N.1-4: Require a noise study and/or mitigation measures if applicable for all projects that would expose people to noise levels greater than the "normally acceptable" standard and for any other projects that are likely to generate noise in excess of these standards.

N.1-5: Noise impacts should be controlled at the noise source where feasible, as opposed to at receptor end with measures to buffer, dampen, or actively cancel noise sources. Site design, building orientation, building design, hours of operation, and other techniques, for new developments deemed to be noise generators shall be used to control noise sources.

N.1-6: Require noise buffering, dampening, or active cancellation, on rooftop or other outdoor mechanical equipment located near residences, parks, and other noise sensitive land uses.

N.1-7: Developers shall reduce the noise impacts on new development through appropriate means (e.g. double-paned or soundproof windows, setbacks, berming, and screening). Noise attenuation methods should avoid the use of visible sound walls where possible.

Goal

N-2: Ensure that noise does not have a substantial, adverse effect on the quality of life in the community.

Policies

N.2-1: Use the development review process to proactively identify and address potential noise compatibility issues.

N.2-2: Continue to work with community members and business owners to address noise complaints and ensure voluntary resolution of issues through the enforcement of Municipal Code provisions.

N.2-3: Limit the potential noise impacts of construction activities on surrounding land uses through noise regulations in the Municipal Code that address allowed days and hours of construction, types of work, construction equipment, and sound attenuation devices

N.2-4: Collaborate with the March Joint Powers Authority, March Inland Port Airport Authority, Riverside County Airport Land Use Commission, and other responsible agencies to formulate and apply strategies to address noise and safety compatibility protection from airport operations.

N.2-5: Encourage residential development heavily impacted by aircraft-related noise to transition to uses that are more compatible.

City of Moreno Valley – Noise Ordinance

Section 11.80.030 from the noise ordinance outlines the City's exterior noise limits as it relates to stationary noise sources.

No person shall maintain, create, operate or cause to be operated on private property any source of sound in such a manner as to create any non-impulsive sound which exceeds the limits set forth for the source land use category (as defined in 11.80.020) in Table 11.80.030-2 (*Table 1 in this report*) when measured at a distance of two hundred (200) feet or more from the real property line of the source of the sound, if the sound occurs on privately owned property, or from the source of the sound, if the sound occurs on public right of way, public space or other publicly owned property. Any source of sound in violation of this subsection shall be deemed prima facie to be a noise disturbance.

Table 2: Allowable Exterior Noise Level[1]

Sound Level Standards (dBA Leq)*

General Plan Land Use Designation	Maximum Decibel Level	
	8 a.m. - 10 p.m.	10 p.m. - 8 a.m.
Residential	60	55
Commercial	65	60

- **Sec. 11.80.030(D). – Specific Prohibitions.**

1. Motor Vehicles. No person shall operate or cause to be operated a public or private motor vehicle, or combination of vehicles towed by a motor vehicle, that creates a sound exceeding

the sound level limits in Table 11.80.030-2 when the vehicle(s) are not otherwise subject to noise regulations provided for by the California Vehicle Code.

2. Radios, Televisions, Electronic Audio Equipment, Musical Instruments or Similar Devices from a Stationary Source. No person shall operate, play or permit the operation or playing of any radio, tape player, television, electronic audio equipment, musical instrument, sound amplifier or other mechanical or electronic sound making device that produces, reproduces or amplifies sound in such a manner as to create a noise disturbance. However, this subsection shall not apply to any use or activity exempted in subsection E of this section and any use or activity for which a special permit has been issued pursuant to Section 11.80.040.

3. Radios, Electronic Audio Equipment, or Similar Devices from a Mobile Source Such as a Motor Vehicle. Sound amplification or reproduction equipment on or in a motor vehicle is subject to regulation in accordance with the California Vehicle Code when upon the public right-of-way. When upon public space or publicly owned property other than the public right-of-way or upon private property open to the public, sound amplification or reproduction equipment shall not be operated in such a manner that it is plainly audible at a distance of fifty (50) feet in any direction from the vehicle.

4. Portable, Hand-Held Music or Sound Amplification or Reproduction Equipment. Such equipment shall not be operated on a public right-of-way, public space or other publicly owned property in such a manner as to be plainly audible at a distance of fifty (50) feet in any direction from the operator.

5. Loudspeakers and Public Address Systems.

a. Except as permitted by Section 11.80.040, no person shall operate, or permit the operation of, any loudspeaker, public address system or similar device, for any commercial purpose:

1. Which produces, reproduces or amplifies sound in such a manner as to create a noise disturbance; or

2. During nighttime hours on a public right-of-way, public space or other publicly owned property.

b. No person shall operate, or permit the operation of, any loudspeaker, public address system or similar device, for any noncommercial purpose, during nighttime hours in such a manner as to create a noise disturbance.

6. Animals. No person shall own, possess or harbor an animal or bird that howls, barks, meows, squawks, or makes other sounds that:

a. Create a noise disturbance;

b. Are of frequent or continued duration for ten (10) or more consecutive minutes and are plainly audible at a distance of fifty (50) feet from the real property line of the source of the sound; or

c. Are intermittent for a period of thirty (30) or more minutes and are plainly audible at a distance of fifty (50) feet from the real property line of the source of the sound.

7. Construction and Demolition. No person shall operate or cause the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between the hours of eight p.m. and seven a.m. the following day such that the sound there from creates a noise disturbance, except for emergency work by public service utilities or for other work approved by the city manager or designee. This section shall not apply to the use of power tools as provided in subsection (D)(9) of this section.

8. Emergency Signaling Devices. No person shall intentionally sound or permit the sounding outdoors of any fire, burglar or civil defense alarm, siren or whistle, or similar stationary emergency signaling device, except for emergency purposes or for testing as follows:

a. Testing of a stationary emergency signaling device shall not occur between seven p.m. and seven a.m. the following day;

b. Testing of a stationary emergency signaling device shall use only the minimum cycle test time, in no case to exceed sixty (60) seconds;

c. Testing of a complete emergency signaling system, including the functioning of the signaling device and the personnel response to the signaling device, shall not occur more than once in each calendar month. Such testing shall only occur only on weekdays between seven a.m. and seven p.m. and shall be exempt from the time limit specified in subsection (D)(8)(2) of this section.

9. Power Tools. No person shall operate or permit the operation of any mechanically, electrically or gasoline motor-driven tool during nighttime hours so as to cause a noise disturbance across a residential real property boundary.

10. Pumps, Air Conditioners, Air-Handling Equipment and Other Continuously Operating Equipment. Notwithstanding the general prohibitions of subsection a of this section, no person shall operate or permit the operation of any pump, air conditioning, air-handling or other continuously operating motorized equipment in a state of disrepair or in a manner which otherwise creates a noise disturbance distinguishable from normal operating sounds.

Sec. 11.80.030(E). - Exemptions.

Exemptions. The following uses and activities shall be exempt from the sound level regulations except the maximum sound levels provided in Tables 11.80.030-1 and 11.80.030-1A:

1. Sounds resulting from any authorized emergency vehicle when responding to an emergency call or acting in time of an emergency.

2. Sounds resulting from emergency work as defined in Section 11.80.020

3. Any aircraft operated in conformity with, or pursuant to, federal law, federal air regulations and air traffic control instruction used pursuant to and within the duly adopted federal air regulations; and any aircraft operating under technical difficulties in any kind of distress, under emergency orders of air traffic control, or being operated pursuant to and subsequent to the declaration of an emergency under federal air regulations.

4. All sounds coming from the normal operations of interstate motor and rail carriers, to the extent that local regulation of sound levels of such vehicles has been preempted by the Noise Control Act of 1972 (42 U.S.C. § 4901 et seq.) or other applicable federal laws or regulations

5. Sounds from the operation of motor vehicles, to the extent they are regulated by the California Vehicle Code.

6. Any constitutionally protected noncommercial speech or expression conducted within or upon a any public right-of-way, public space or other publicly owned property constituting an open or a designated public forum in compliance with any applicable reasonable time, place and manner restrictions on such speech or expression or otherwise pursuant to legal authority.

7. Sounds produced at otherwise lawful and permitted city-sponsored events, organized sporting events, school assemblies, school playground activities, by permitted fireworks, and by permitted parades on public right-of-way, public space or other publicly owned property.

8. An event for which a temporary use permit or special event permit has been issued under other provisions of this code, where the provisions of Section 11.80.040 are met, the permit granted expressly grants an exemption from specific standards contained in this chapter, and the permittee and all persons under the permittee's reasonable control actually comply with all conditions of such permit. Violation of any condition of such a permit related to sound or sound equipment shall be a violation of this chapter and punishable as such.

5.0 Study Method and Procedure

The following section describes the noise modeling procedures and assumptions used for this assessment.

5.1 Noise Measurement Procedure and Criteria

Noise measurements are taken to determine the existing noise levels. A noise receiver or receptor is any location in the noise analysis in which noise might produce an impact. The following criteria are used to select measurement locations and receptors:

- Locations expected to receive the highest noise impacts, such as the first row of houses
- Locations that are acoustically representative and equivalent of the area of concern
- Human land usage
- Sites clear of major obstruction and contamination

All measurements equipment meets American National Standards Institute (ANSI) specifications for sound level meters (S1.4-1983 identified in Chapter 19.68.020.AA). MD noise measurement procedures are presented below:

- The sound level meter was calibrated (Piccolo-II) before and after the measurement
- Following the calibration of equipment, a windscreen was placed over the microphone
- Frequency weighting was set on “A” and slow response
- Results of the noise measurements were recorded on field data sheets
- Temperature and sky conditions were observed and documented

5.2 Noise Measurement Location

The noise monitoring location was selected to obtain a baseline of the existing noise environment. One long-term noise measurement was conducted at the Project site. Appendix A includes photos, the field sheet, and measured noise data. Exhibit E illustrates the location of the measurement.

5.3 SoundPLAN Noise Model (Operational Noise)

SoundPLAN acoustical modeling software was utilized to model project operational noise at nearby sensitive receptors. The SoundPLAN software utilizes algorithms (based on the inverse square law) to calculate noise level projections. It allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography, and sensitive receptor locations. It also calculates noise level increases due to the reflection of noise from hard surfaces.

Measured and referenced sound level data was utilized to model the various stationary on-site noise sources associated with project operation, (i.e., idling trucks, parking movements, drive-thru).

Noise associated with proposed truck and automobile parking areas was modeled using SoundPLAN methodology which takes into consideration the overall trip generation, number of parking spaces and

estimates the number of movements per hour per parking space. The fueling areas were modeled by placing a point noise source representative of an idling truck at each fueling station. The truck parking lots were modeled as 0.5-1 movement per space per hour. The car parking lots were modeled as 2-3 movements per space per hour. The truck routes and drive-thru were modeled as continuous line sources traveling 12 mph and 1 mph respectively. Modeling assumptions are summarized in Table 3. SoundPLAN noise modeling input and results are provided in Appendix B.

Table 3: SoundPLAN Modeling Assumptions

Noise Source	Source Type	Reference Sound Level (dBA, Leq)	Distance to Reference Source (ft)
Idling Truck	Point Source	73.8	10
Drive-Thru Speaker	Point Source	84.0	1
Truck Route	Line Source	19.0/m	Sound Power Level
Drive-Thru Cars	Line Source	17.0/m	Sound Power Level

Source: MD Acoustics. Aug 2020.

5.4 Traffic Noise Prediction Modeling

The FHWA Traffic Noise Prediction Model (FHWA-RD-77-108) was utilized to model future traffic noise levels on the project site and existing and existing plus project traffic noise volumes along roadways affected by project generated vehicle traffic. The FHWA model arrives at the predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL).

Project-generated vehicle traffic will result in an incremental increase in ambient noise levels. To determine the project's noise impact to the surrounding land uses, MD generated noise contours for existing ADT, and existing plus project conditions. Table 4 indicates the roadway parameters and vehicle distribution utilized for the modeling. Noise contours are used to provide a characterization of sound levels experienced at a set distance from the centerline of a subject roadway. They are intended to represent a worst-case scenario and do not take into account structures, sound walls, topography, and/or other sound attenuating features that may further reduce the actual noise level. Noise contours are developed for comparative purposes and are used to demonstrate potential increases/decreases along subject roadways as a result of a project. The referenced traffic data and traffic noise calculation worksheets outputs are located in Appendix C.

- Roadway classification – (e.g., freeway, major arterial, arterial, secondary, collector, etc.),
- Roadway Active Width – (distance between the center of the outermost travel lanes on each side of the roadway)
- Average Daily Traffic Volumes (ADT), Speeds, Percentages of autos, medium and heavy trucks
- Roadway grade and angle of view
- Site Conditions (e.g., soft vs. hard)
- Percentage of total ADT which flows each hour throughout a 24-hour period

Table 4: Roadway Parameters and Vehicle Distribution

Roadway	Existing ADT[1]	Existing + Project ADT[2]	Speed (MPH)	Site Conditions
SR-60: Foothill Fwy	72,000	73,677	65	Hard
Eucalyptus Ave	8,000	8,358	40	Hard
Redlands Blvd	15,100	15,279	50	Hard
Freeway Motor-Vehicle Type[3]	**Daytime % (7AM to 7 PM)**	**Evening % (7 PM to 10 PM)**	**Night % (10 PM to 7 AM)**	**Total % of Traffic Flow**
Automobiles	75.5	14.0	10.4	84.00
Medium Trucks	48.0	2.0	50.0	4.00
Heavy Trucks	48.0	2.0	50.0	12.00
Arterial Motor-Vehicle Type[3]	**Daytime % (7AM to 7 PM)**	**Evening % (7 PM to 10 PM)**	**Night % (10 PM to 7 AM)**	**Total % of Traffic Flow**
Automobiles	75.5	14.0	10.4	92.00
Medium Trucks	48.0	2.0	50.0	3.00
Heavy Trucks	48.0	2.0	50.0	5.00

Notes:
[1] 2019 Caltrans highway counts and the 2040 General Plan DEIR
[2] Project trip generation provided in the traffic study prepared for the Project.
[3] https://dot.ca.gov/programs/traffic-operations/census

5.5 Construction Noise Modeling

Construction noise associated with the proposed project was calculated utilizing methodology presented in the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (2018) together with several key construction parameters including distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the project site. Construction activities are anticipated to include four phases site preparation, grading, building construction, and paving.

Construction noise levels were calculated for each phase based on the CalEEMod Air Quality Model assumptions provided by a similar previous project. All equipment was assumed to be situated at the center of the project site. Construction worksheets are provided in Appendix D.

6.0 Existing Noise Environment

One (1) 24-hour noise measurement was conducted at the project site to document the existing noise environment. The measurements include the 1-hour Leq, Lmin, Lmax, and other statistical data (e.g. L2, L8). The results of the noise measurement are presented in Table 5. Noise measurement field sheets are provided in Appendix A.

Table 5: Long-Term Noise Measurement Data for (LT1) (dBA)[1]

Date	Time	1-Hour dB(A)							
		L_{EQ}	L_{MAX}	L_{MIN}	L_2	L_8	L_{25}	L_{50}	L_{90}
4/14/2021	2PM-3PM	53.5	76.2	43.3	61.3	58.7	54.7	50.6	48.2
4/14/2021	3PM-4PM	52.1	68.0	43.7	58.9	55.4	53.9	50.2	47.5
4/14/2021	4PM-5PM	51.5	68.9	42.8	58.3	56.1	52.7	50.1	47.6
4/14/2021	5PM-6PM	52.2	55.7	51.1	55.0	54.2	53.8	51.8	50.2
4/14/2021	6PM-7PM	51.0	62.5	44.3	55.0	53.7	53.0	50.6	48.3
4/14/2021	7PM-8PM	51.1	65.0	43.6	55.9	55.3	53.6	49.7	46.9
4/14/2021	8PM-9PM	53.1	69.3	44.4	59.1	57.2	55.9	51.5	48.5
4/14/2021	9PM-10PM	52.7	68.6	44.7	58.8	57.2	54.6	50.9	49.3
4/14/2021	10PM-11PM	48.8	65.0	43.5	51.7	50.9	50.5	48.2	46.4
4/14/2021	11PM-12AM	49.3	65.7	42.9	54.5	52.1	50.6	47.9	46.3
4/15/2021	12AM-1AM	45.9	62.1	37.3	52.3	50.6	48.4	44.6	41.5
4/15/2021	1AM-2AM	47.1	73.3	38.2	50.9	47.9	46.3	43.7	41.6
4/15/2021	2AM-3AM	45.6	60.2	38.6	51.3	48.0	46.7	44.9	42.6
4/15/2021	3AM-4AM	47.3	64.7	39.3	54.4	49.9	48.4	45.7	43.2
4/15/2021	4AM-5AM	48.6	63.8	40.9	51.7	51.4	51.0	47.5	45.5
4/15/2021	5AM-6AM	51.2	67.5	43.9	56.9	54.3	52.7	50.0	48.3
4/15/2021	6AM-7AM	51.7	65.4	45.3	55.9	55.4	54.2	51.0	48.6
4/15/2021	7AM-8AM	52.8	69.7	43.9	57.1	56.5	55.5	51.5	48.7
4/15/2021	8AM-9AM	55.6	77.6	44.4	57.7	54.9	54.4	49.4	47.3
4/15/2021	9AM-10AM	49.9	73.8	42.3	55.0	51.3	50.6	47.5	45.3
4/15/2021	10AM-11AM	49.5	65.2	43.1	55.5	53.8	52.1	47.8	46.2
4/15/2021	11AM-12PM	47.6	58.8	42.1	50.9	50.6	49.6	47.2	44.8
4/15/2021	12PM-1PM	47.4	61.7	41.3	49.9	49.6	49.2	46.9	45.1
4/15/2021	1PM-2PM	48.4	65.7	41.8	51.9	51.2	51.0	47.1	44.8
CNEL		56.3							

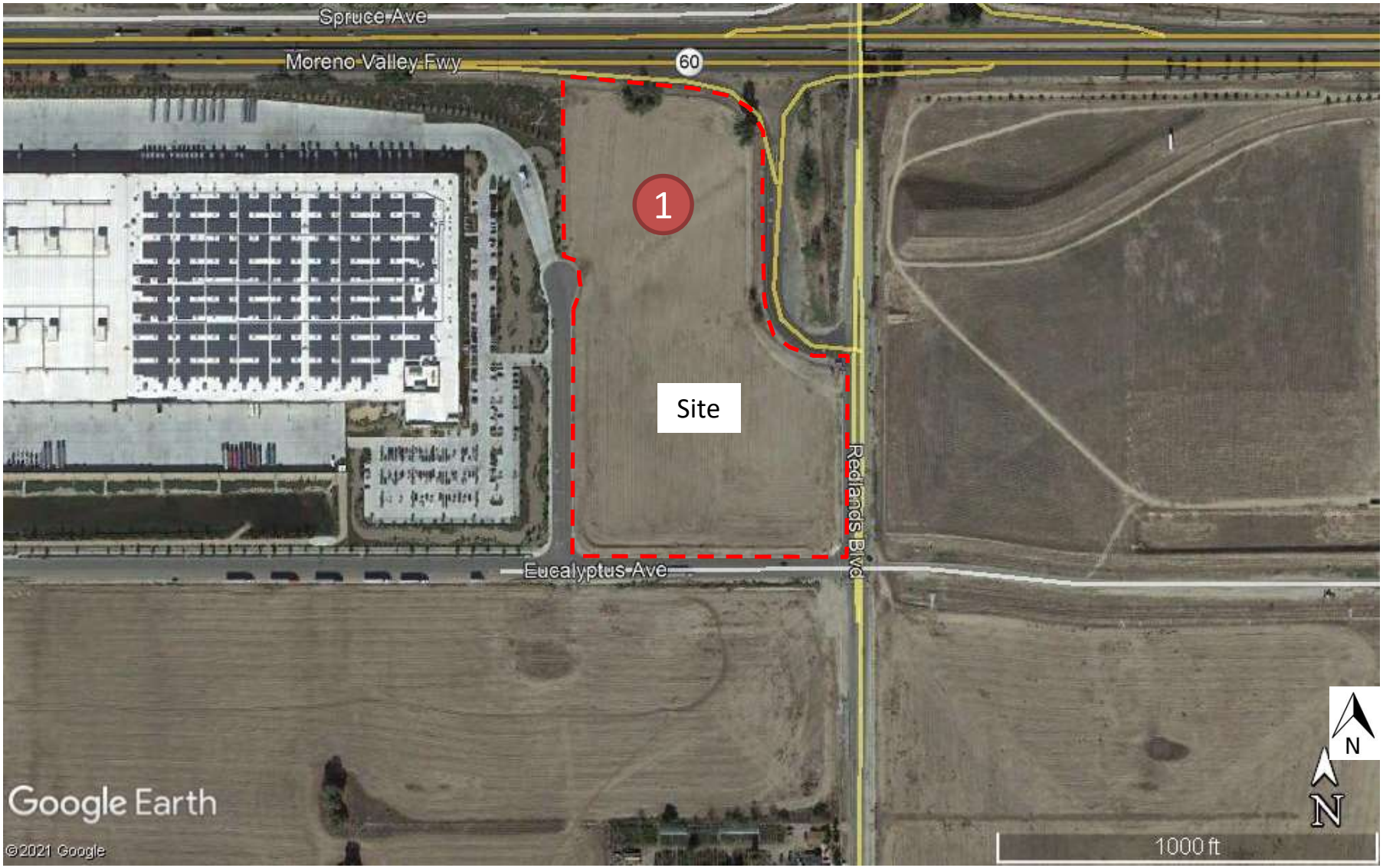
Notes:
[1] Long-term noise monitoring location (LT1) is illustrated in Exhibit E.

The data presented in Table 5 and the field notes provided in Appendix A, indicate that ambient noise levels in the project vicinity range between 45.6 and 53.5 dBA Leq. The overall CNEL was 56.3 dBA CNEL. The field data indicates that the freeway is the dominant noise source.

Exhibit I

Measurement Location

X = Measurement location



7.0 Future Noise Environment Impacts and Mitigation

This assessment analyzes future noise impacts to sensitive receptors and the project and compares the results to the City's Noise Standards. The analysis details the estimated exterior noise levels associated with traffic from adjacent roadway sources. The City has established different significance thresholds for different types of noise impacts.

7.1 Off-Site Traffic Noise Impact

The potential off-site noise impacts caused by the increase in vehicular traffic as a result of the project were calculated at a distance of 50 feet from affected road segments. The noise levels at 50 feet both with and without project-generated vehicle traffic were compared and the increase was calculated. The distance to the 55, 60, 65, and 70 dBA CNEL noise contours are also provided for reference (Appendix C). Noise contours were calculated for the following scenarios and conditions:

- Existing Condition: This scenario refers to the existing year traffic noise condition and is demonstrated in Table 6.

- Existing + Project Condition: This scenario refers to the existing year plus project traffic noise condition and is demonstrated in Table 6.

As shown in Table 6, the addition of project-generated vehicle traffic to SR-60, Eucalyptus Ave, and Redlands Blvd would result in negligible increases in ambient noise levels and would not be significant.

Table 6: Change in Existing Noise Levels as a Result of Project Generated Traffic

Roadway	Segment	Modeled Noise Levels (dBA CNEL) at 50 feet from the Centerline			
		Existing without Project	Existing with Project	Change in Noise Level	Increase of 3 dB or more[2]
State Route 60	Moreno Beach to Redlands	86.9	87.0	0.1	No
Eucalyptus Ave	Moreno Beach to Redlands	71.6	71.8	0.2	No
Redlands Blvd	SR60 to Eucalyptus	75.7	75.7	0.0	No

Notes:
[1] FHWA roadway noise modeling worksheets are provided in Appendix C.
[2] Typical CEQA significance threshold

7.2 On-Site Traffic Noise Impact

Future noise levels associated with traffic were modeled using the FHWA Traffic Noise Model calculations in order to evaluate the project in light of the City's exterior standards presented in Table 3 of this report as they apply to future traffic noise impacts to the proposed project. The Project is currently within the conditionally acceptable range. It will not change due to the increase in traffic levels due to the project. There are no outdoor uses for this Project, therefore, the impact is less than significant.

7.1.3 Noise Impacts to Off-Site Receptors Due to Stationary Noise Sources

The existing and future residential land uses located south of the project site is a sensitive receptor that may be affected by project operational noise. Worst-case operational noise was modeled using SoundPLAN acoustical modeling software. Three (3) receptors representative of nonresidential adjacent sites and one (1) receptor representative of the residential area south of the project site were modeled using the SoundPLAN noise model to evaluate the proposed project's operational impact. A receptor is denoted by a yellow dot. All yellow dots represent either an existing building, a property line, or a sensitive receptor such as an outdoor sensitive area (courtyard, patio, backyard, etc.). The results are in Table 7.

Project Operational Noise Levels

Worst-case "project only" exterior operational noise is presented on Exhibit F. Operational noise levels at the western property line are expected to reach 51 dBA Leq at the residences and 41 to 50 dBA Leq at the adjacent nonresidential properties.

Project Plus Ambient Operational Noise Levels

Existing plus project noise level projections are anticipated to reach up to 52 dBA Leq at the nearest residential receptor and 47 to 52 dBA Leq at the nonresidential receptors. The project-generated operational noise is expected to result in a maximum of 5 dB increase at the adjacent nonresidential sites and 6 dB at the residential site. This does not exceed the noise ordinance and therefore the impact is less than significant.

Table 7: Operational Noise Levels (dBA, CNEL)

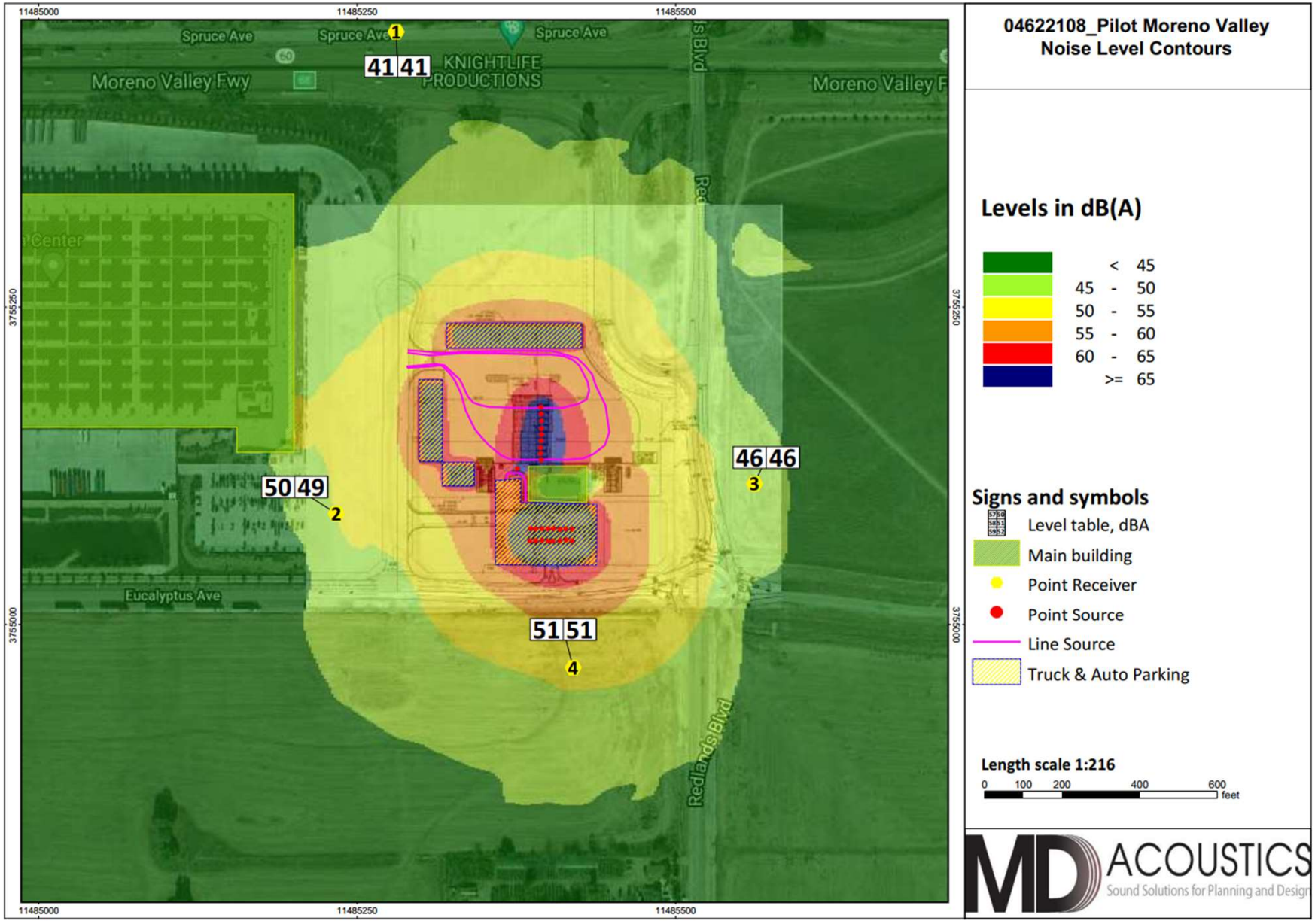
Receptor[1]	Existing Ambient Noise Level (dBA, Leq)[2]		Project Noise Level (dBA, Leq)[3]		Total Combined Noise Level (dBA, Leq)		Land Use Noise Limit (dBA, Leq)		Change in Noise Level as Result of Project	
	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
R1	47	46	41	41	48	47	**65**	**60**	1	1
R2			50	49	52	51			5	5
R3			46	46	50	49			3	3
R4			51	51	52	52	**60**	**55**	5	6

Notes:

1. Receptors 1-3 are commercial, and R4 is residential (defined by section 11.80.030).
2. LT1 quietest daytime/nighttime hours
3. See Exhibit F for the operational noise level projections at said receptors.

Exhibit I

Project Leq Operational Noise Level



8.0 Construction Noise and Vibration Impacts

The degree of construction noise may vary for different areas of the project site and also vary depending on the construction activities. Project construction will occur in four phases, site preparation, grading, building construction, and paving. This section summarizes discusses noise and ground-borne vibration modeling efforts, impact analysis, and mitigation, if necessary.

8.1 Construction Noise

Typical construction equipment noise levels are presented in Table 8.

Table 8: Typical Construction Equipment Noise Levels[1]

EQUIPMENT POWERED BY INTERNAL COMBUSTION ENGINES

Type	Noise Levels (dBA) at 50 Feet
Earth Moving	
Compactors (Ground)	80
Front Loaders	80
Backhoes	80
Tractors	84
Scrapers, Graders	85
Pavers	85
Trucks	84
Materials Handling	
Concrete Mixers	85
Concrete Pumps	82
Cranes	85
Stationary	
Pumps	77
Generators	82
Compressors	80

IMPACT EQUIPMENT

Type	Noise Levels (dBA) at 50 Feet
Concrete Saws	90
Vibratory Pile Driver	95

Notes:
[1] Referenced Noise Levels from the FHWA Construction Noise Handbook

Construction noise associated with each phase of the project was calculated at nearby sensitive receptors utilizing methodology presented in the Federal Highway Administration (FHWA) Construction Noise Model together with several key construction parameters including distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the project site.

Construction equipment typically moves back and forth across the site, and it is an industry standard to use the acoustical center of the site to model average construction noise levels.

Construction activities are anticipated to include four phases site preparation, grading, building construction, and architectural coating. Noise levels associated with each phase are shown in Table 9. The construction noise calculation output worksheet is located in Appendix D.

Table 9: Construction Noise Level by Phase (dBA, Leq)

Activity	Noise Levels at Nearest Sensitive Receptor		
	Southern Residence	North Businesses	East & West Industrial
Site Preparation	55	56	61
Grading	60	61	65
Building Construction	59	60	64
Paving	59	60	64
Note: Construction Modeling Worksheets are provided in Appendix D.			

As shown in Table 10, project construction noise will range between 55 to 60 dBA Leq at the southern residential property line which has an existing use as a nursery, 56 to 61 dBA Leq at the northern businesses' property line, and 61 to 65 dBA Leq at the east and west industrial building façades.

The Project will be required to adhere to Section 11.80.030(D)(7) of the City of Moreno Valley Municipal Code which outlines the allowed times for construction. The projected levels meet the residential and commercial daytime noise limits from Table 11.80.030-2 of the municipal code. This impact is less than significant. No mitigation is required.

8.2 Construction Vibration

Construction activities can produce vibration that may be felt by adjacent land uses. The construction of the proposed project would not require the use of equipment such as pile drivers, which are known to generate substantial construction vibration levels. The primary vibration source during construction may be from a bulldozer. A large bulldozer has a vibration impact of 0.089 inches per second peak particle velocity (PPV) at 25 feet which is perceptible but below any risk to architectural damage.

The fundamental equation used to calculate vibration propagation through average soil conditions and distance is as follows:

$$PPV_{equipment} = PPV_{ref} (100/D_{rec})^{n}$$

Where: PPV_{ref} = reference PPV at 100ft.
D_{rec} = distance from equipment to receiver in ft.
n = 1.1 (the value related to the attenuation rate through ground)

The thresholds from the Caltrans Transportation and Construction Induced Vibration Guidance Manual in Table 10 (below) provides general thresholds and guidelines as to the vibration damage potential from vibratory impacts.

Table 10: Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: Table 19, Transportation and Construction Vibration Guidance Manual, Caltrans, Sept. 2013.

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 11 gives approximate vibration levels for particular construction activities. This data provides a reasonable estimate for a wide range of soil conditions.

Table 11: Vibration Source Levels for Construction Equipment

Equipment	Peak Particle Velocity (inches/second) at 25 feet	Approximate Vibration Level LV (dVB) at 25 feet
Pile driver (impact)	1.518 (upper range)	112
	0.644 (typical)	104
Pile driver (sonic)	0.734 upper range	105
	0.170 typical	93
Clam shovel drop (slurry wall)	0.202	94
Hydromill	0.008 in soil	66
(slurry wall)	0.017 in rock	75
Vibratory Roller	0.21	94
Hoe Ram	0.089	87
Large bulldozer	0.089	87
Caisson drill	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

Source: Transit Noise and Vibration Impact Assessment, Federal Transit Administration, May 2018.

The nearest existing building is 160 feet east of the project site. At this distance, a large bulldozer would yield a worst-case 0.012 PPV (in/sec) which would not be perceptible or result in architectural damage.

The impact is not significant. No mitigation is required. The ground-borne vibration worksheet is provided in Appendix E.

8.3 Construction Noise Reduction Measures

In addition to complying with Section 11.80.030(D)(7) of the City of Moreno Valley Municipal Code, the following measures are recommended to reduce construction noise.

1. During construction, the contractor shall ensure that all construction equipment is equipped with appropriate noise attenuating devices.

2. The contractor should locate equipment staging areas that will create the greatest distance between construction-related noise/vibration sources and sensitive receptors nearest the project site during all project construction.

3. Idling equipment should be turned off when not in use.

4. Equipment shall be maintained so that vehicles and their loads are secured from rattling and banging.

9.0 References

City of Moreno Valley
2021 2040 General Plan
2021 Municipal Code

California Department of Transportation (Caltrans)
2013 Transportation and Construction Induced Vibration Guidance Manual.
2018 Technical Noise Supplement to the Traffic Noise Analysis Protocol. Sept.

Federal Highway Administration (FHWA)
2006 Construction Noise Handbook

Federal Transit Administration (FTA)
2018 Transit Noise and Vibration Impact Assessment Manual

Governor's Office of Planning and Research
State of California General Plan Guidelines, 1998

Kimley-Horn & Associates
Project Scoping Form

SoundPLAN International, LLC
2019 SoundPLAN Essential 8.1 Manual.

Appendix A:

Field Measurement Data

MD ACOUSTICS
Sound Solutions for Planning and Design
www.mdacoustics.com

AZ Office
4960 S. Gilbert Rd, Ste 1-461
Chandler, AZ 85249

1197 E Los Angeles Ave, C-256
Simi Valley, CA 93065

24-Hour Continuous Noise Measurement Datasheet

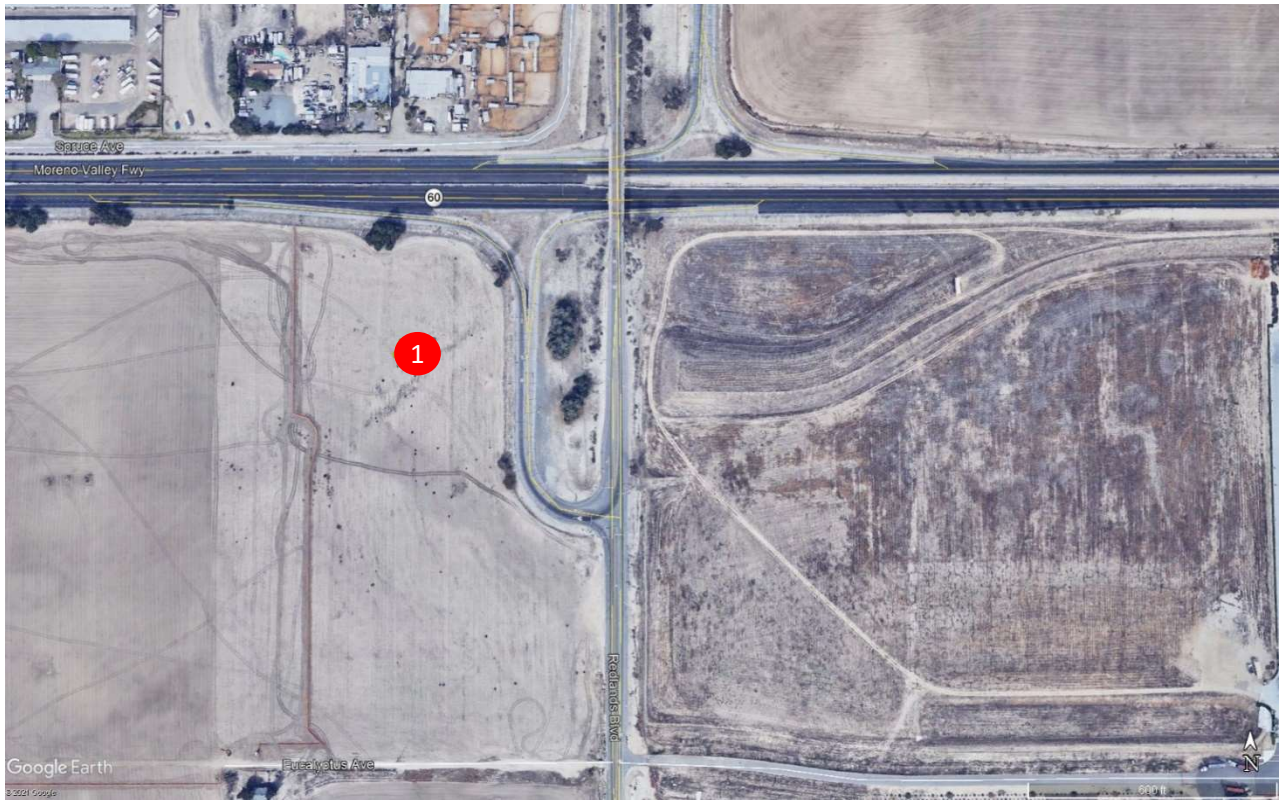
Project: Moreno Valley Pilot
Site Observations: Sunny, temps in the 80's. Winds 3-5 MPH no clouds.
Site Address/Location: N.W. corner Redlands Blvd & Eucalyptus Ave, Moreno Valley, CA
Date: 4/14/21-4/15/21
Field Tech/Engineer: Jason Schuyler & Claire Pincock

General Location:
Sound Meter: Piccolo 2 **SN:** P0219080206
Settings: A-weighted, slow, 1-min, 24-hour duration
Meteorological Con.: Temps in the 80's F. Night Temps in the 50's wind 35-MPH
Site ID: LT1

Site Topo: Flat open
Ground Type: Open land with tall grasses

Noise Source(s) w/ Distance:
C/L of rd is ft from meter

Figure 1: LT-1 Monitoring Location



Attachment: Appendix I - Noise Study (5613 : Pilot Travel Center Project)

MD ACOUSTICS
Sound Solutions for Planning and Design
www.mdacoustics.com

AZ Office
4960 S. Gilbert Rd, Ste 1-461
Chandler, AZ 85249

1197 E Los Angeles Ave, C-256
Simi Valley, CA 93065

24-Hour Noise Measurement Datasheet - Cont.

Project: Moreno Valley Pilot **Day:** 1 of 1
Site Address/Location: N.W. corner Redlands Blvd & Eucalyptus Ave, Moreno Valley, CA
Site ID: LT-1

Date	Start	Stop	Leq	Lmax	Lmin	L2	L8	L25	L50	L90
4/14/2021	2:00 PM	3:00 PM	53.5	76.2	43.3	61.3	58.7	54.7	50.6	48.2
4/14/2021	3:00 PM	4:00 PM	52.1	68.0	43.7	58.9	55.4	53.9	50.2	47.5
4/14/2021	4:00 PM	5:00 PM	51.5	68.9	42.8	58.3	56.1	52.7	50.1	47.6
4/14/2021	5:00 PM	6:00 PM	52.2	55.7	51.1	55.0	54.2	53.8	51.8	50.2
4/14/2021	6:00 PM	7:00 PM	51.0	62.5	44.3	55.0	53.7	53.0	50.6	48.3
4/14/2021	7:00 PM	8:00 PM	51.1	65.0	43.6	55.9	55.3	53.6	49.7	46.9
4/14/2021	8:00 PM	9:00 PM	53.1	69.3	44.4	59.1	57.2	55.9	51.5	48.5
4/14/2021	9:00 PM	10:00 PM	52.7	68.6	44.7	58.8	57.2	54.6	50.9	49.3
4/14/2021	10:00 PM	11:00 PM	48.8	65.0	43.5	51.7	50.9	50.5	48.2	46.4
4/14/2021	11:00 PM	12:00 AM	49.3	65.7	42.9	54.5	52.1	50.6	47.9	46.3
4/14/2021	12:00 AM	1:00 AM	45.9	62.1	37.3	52.3	50.6	48.4	44.6	41.5
4/14/2021	1:00 AM	2:00 AM	47.1	73.3	38.2	50.9	47.9	46.3	43.7	41.6
4/14/2021	2:00 AM	3:00 AM	45.6	60.2	38.6	51.3	48.0	46.7	44.9	42.6
4/15/2021	3:00 AM	4:00 AM	47.3	64.7	39.3	54.4	49.9	48.4	45.7	43.2
4/15/2021	4:00 AM	5:00 AM	48.6	63.8	40.9	51.7	51.4	51.0	47.5	45.5
4/15/2021	5:00 AM	6:00 AM	51.2	67.5	43.9	56.9	54.3	52.7	50.0	48.3
4/15/2021	6:00 AM	7:00 AM	51.7	65.4	45.3	55.9	55.4	54.2	51.0	48.6
4/15/2021	7:00 AM	8:00 AM	52.8	69.7	43.9	57.1	56.5	55.5	51.5	48.7
4/15/2021	8:00 AM	9:00 AM	55.6	77.6	44.4	57.7	54.9	54.4	49.4	47.3
4/15/2021	9:00 AM	10:00 AM	49.9	73.8	42.3	55.0	51.3	50.6	47.5	45.3
4/15/2021	10:00 AM	11:00 AM	49.5	65.2	43.1	55.5	53.8	52.1	47.8	46.2
4/15/2021	11:00 AM	12:00 PM	47.6	58.8	42.1	50.9	50.6	49.6	47.2	44.8
4/15/2021	12:00 PM	1:00 PM	47.4	61.7	41.3	49.9	49.6	49.2	46.9	45.1
4/15/2021	1:00 PM	2:00 PM	48.4	65.7	41.8	51.9	51.2	51.0	47.1	44.8

CNEL: 56.3

MD ACOUSTICS
Sound Solutions for Planning and Design
www.mdacoustics.com

AZ Office
4960 S. Gilbert Rd, Ste 1-461
Chandler, AZ 85249

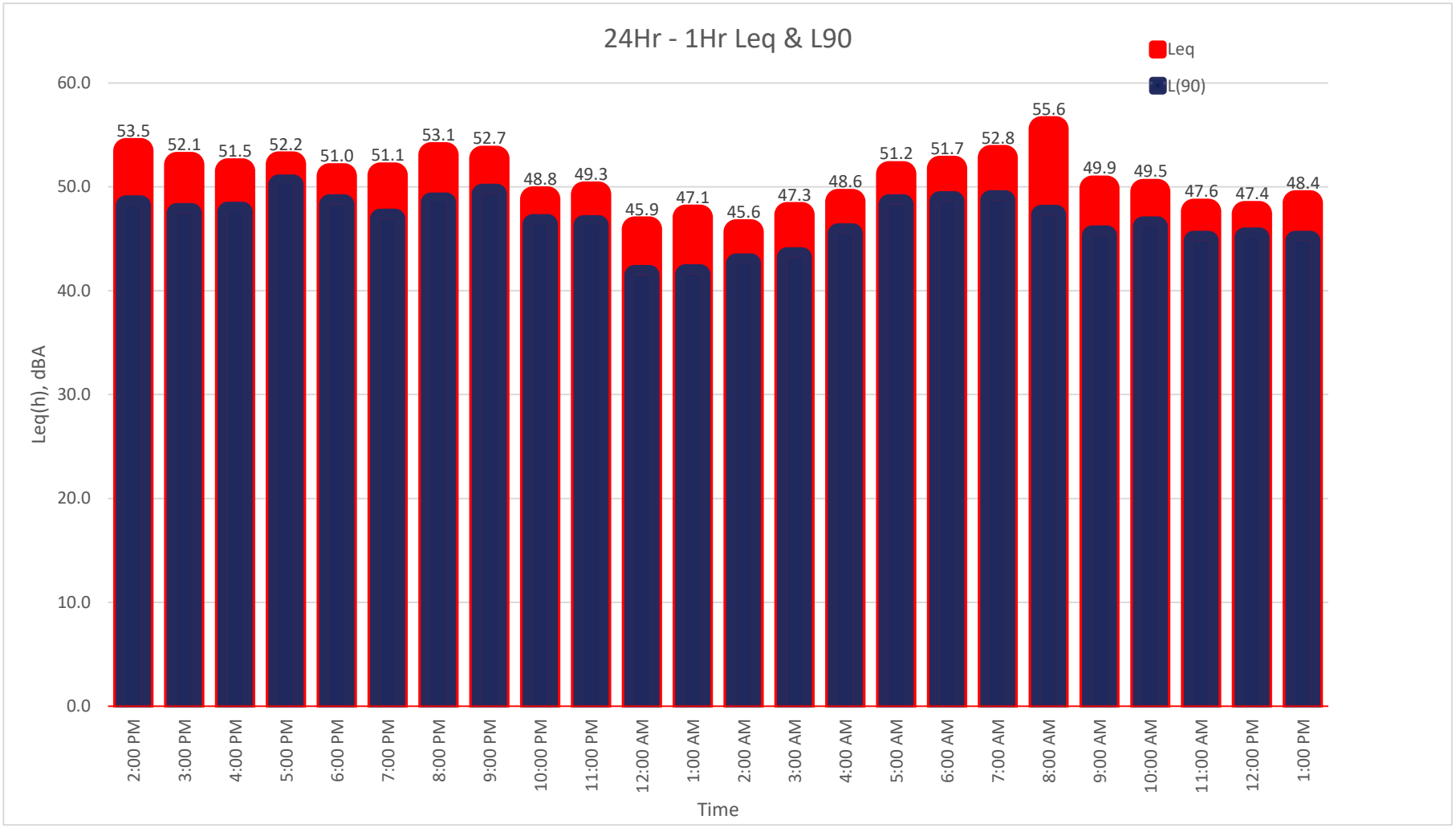
1197 E Los Angeles Ave, C-256
Simi Valley, CA 93065

24-Hour Continuous Noise Measurement Datasheet - Cont.

Project: Moreno Valley Pilot **Day:** 1 of 1

Site Address/Location: N.W. corner Redlands Blvd & Eucalyptus Ave, Moreno Valley, CA

Site ID: LT-1



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24-Hour Continuous Noise Measurement Datasheet - Cont.

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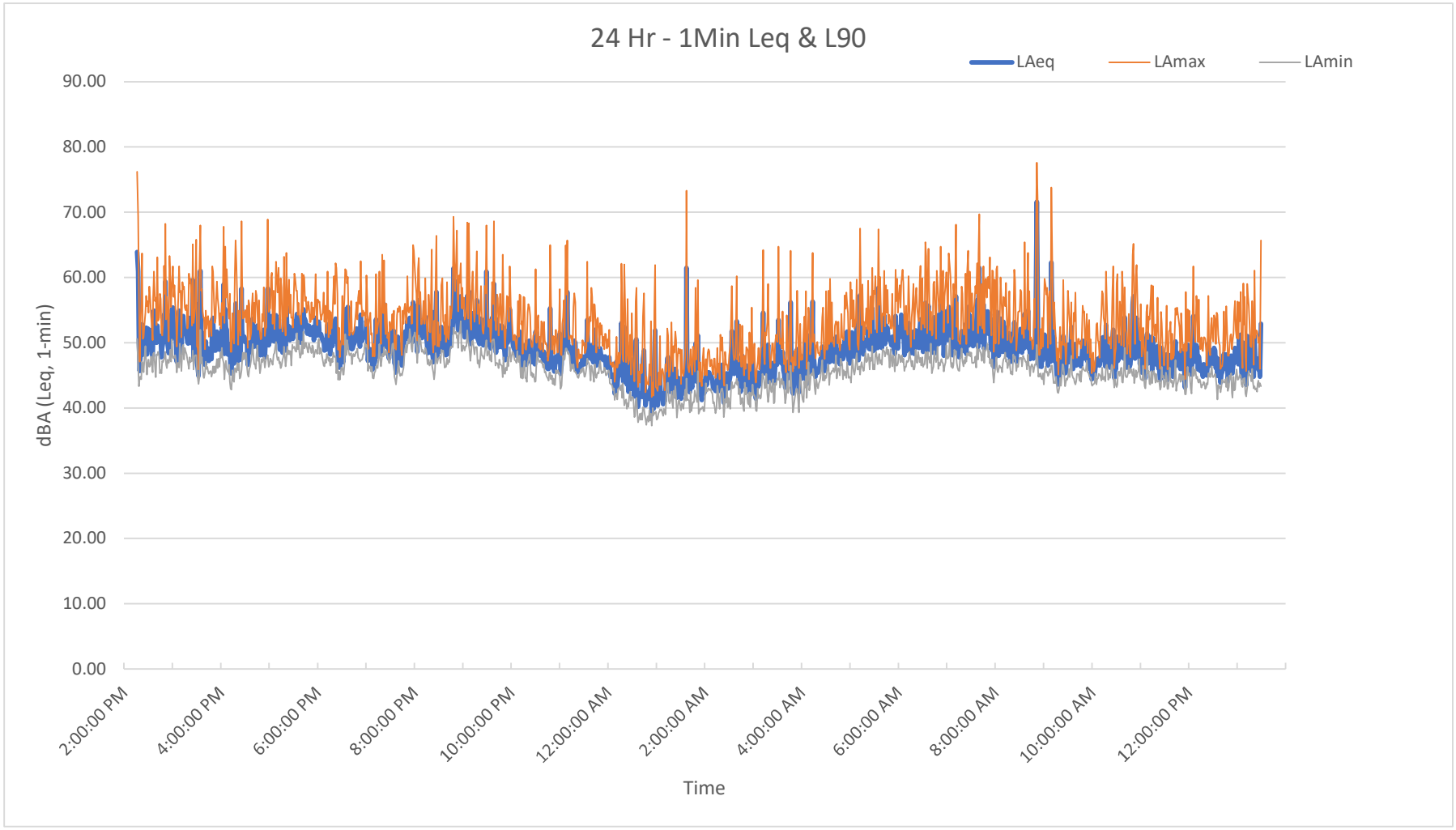

Appendix B:

SoundPLAN Noise Modeling Data

MD ACOUSTICS
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AZ Office
4960 S. Gilbert Rd, Ste 1-461
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p. (602) 774-1950

1197 Los Angeles Ave, Ste C-256
Simi Valley, CA 9306[illegible]
p. (805) 426-447[illegible]

Project: N/A
Site Location: MD Acoustics and Labs 170 S. William Dillard Dr. Suite 103
Date: 8/11/2020
Field Tech/Engineer: Shon Baldwin
Source/System: Semi Truck

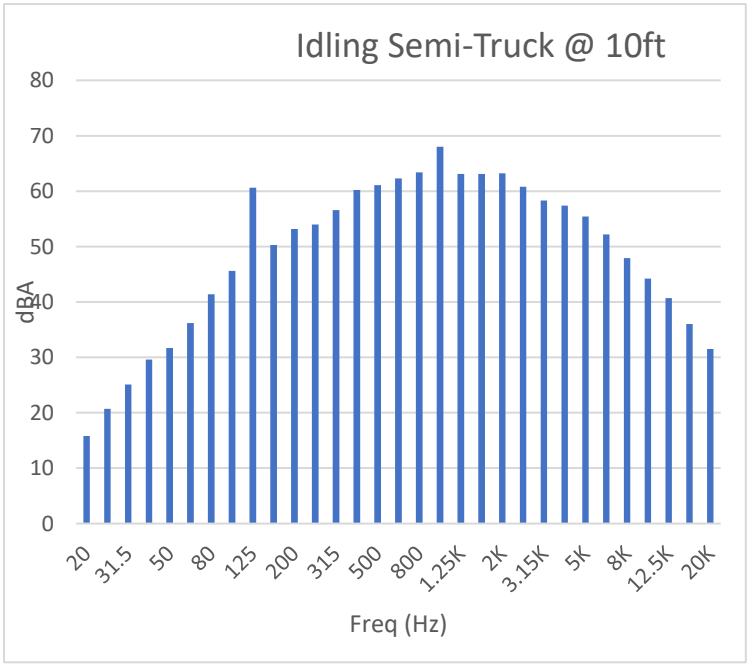
Site Observations:
Clear sky, 95 degrees, F

Location: Loading dock
Sound Meter: NTi XL2 **SN:** A2A-05967-E0
Settings: A-weighted, fast, 1-sec, 30-sec duration
Meteorological Cond.: N/A

Table 1: Summary Measurement Data

Source	System	Overall dB(A)	3rd Octave Band Data (dBA)																																	
			20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1K	1.25K	1.6K	2K	2.5K	3.15K	4K	5K	6.3K	8K	10K	12.5K	16K	20K
Semi-Truck Idle	Semi-Truck	73.8	16	21	25	30	32	36	41	46	61	50	53	54	57	60	61	62	63	68	63.1	63	63	61	58	57	55	52	48	44	41	36	32			

Figure 1: Semi Truck



HME

Customer Driven

Memo

Re: Drive-Thru Sound Pressure Levels From the Menu Board or Speaker Post

The sound pressure levels from the menu board or speaker post are as follows:

1. Sound pressure level (SPL) contours (A weighted) were measured on a typical HME SPP2 speaker post. The test condition was for pink noise set to 84 dBA at 1 foot in front of the speaker. All measurements were conducted outside with the speaker post placed 8 feet from a non-absorbing building wall and at an oblique angle to the wall. These measurements should not be construed to guarantee performance with any particular speaker post in any particular environment. They are typical results obtained under the conditions described above.

2. The SPL levels are presented for different distances from the speaker post:

Distance from the Speaker (Feet)	SPL (dBA)
1 foot	84 dBA
2 feet	78 dBA
4 feet	72 dBA
8 feet	66 dBA
16 feet	60 dBA
32 feet	54 dBA

3. The above levels are based on factory recommended operating levels, which are preset for HME components and represent the optimum level for drive-thru operations in the majority of the installations.

Also, HME incorporates automatic volume control (AVC) into many of our Systems. AVC will adjust the outbound volume based on the outdoor, ambient noise level. When ambient noise levels naturally decrease at night, AVC will reduce the outbound volume on the system. See below for example:

Distance from Outside Speaker	Decibel Level of standard system with 45 dB of outside noise without AVC	Decibel level of standard system with 45 dB of outside noise with AVC active
1 foot	84 dBA	60 dBA
2 feet	78 dBA	54 dBA
4 feet	72 dBA	48 dBA
8 feet	66 dBA	42 dBA
16 feet	60 dBA	36 dBA

If there are any further questions regarding this issue please contact HME customer service at 1-800-848-4468.

Thank you for your interest in HME's products.

Pilot Moreno Valley
Input data parking lots - Situation 1: SP

Parking lot	PLT	f	Unit B0	rence val	Sep.Mtd.	NRT	KPA dB	KI dB	KD dB	KStrO	he hist.
North Truck Park	Truck stops	1.0	1 parking bay	29	X		14.0	3.0	0.0	0.0	1
West Truck Park	Truck stops	1.0	1 parking bay	18	X		14.0	3.0	0.0	0.0	1
South Truck Park	Truck stops	1.0	1 parking bay	7	X		14.0	3.0	0.0	0.0	1
Car Parking	Visitors and staff	1.0	1 parking bay	65			0.0	4.0	4.4	0.0	2

Pilot Moreno Valley
Octave spectra of the sources in dB(A) - Situation 1: SP

Name	Source type	l or A	Li	R'w	L'w	Lw	KI	KT	LwMax	DO-Wall	Time histogram	Emission spectrum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
		m,m²	dB(A)	dB	dB(A)	dB(A)	dB	dB	dB(A)	dB			dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Drive Thru Lane	Line	37.81			17.0	32.8	0.0	0.0		0	100%/24h	Car, driving on asphalt < 30 km/h	14.3	18.3	22.3	25.3	28.3	26.3	21.3	16.3	
Drive-Thru Speaker	Point				84.5	84.5	0.0	0.0		0	100%/24h	Drive Thru Speaker w/o AVC				84.5					
Pump1	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Pump2	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Pump3	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Pump4	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Pump5	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Pump6	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Pump7	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Pump8	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Pump9	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Pump10	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Pump11	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Pump12	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Pump13	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Pump14	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Pump15	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Pump16	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Truck Gas Pump1	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Truck Gas Pump2	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Truck Gas Pump3	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Truck Gas Pump4	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Truck Gas Pump5	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Truck Gas Pump6	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Truck Gas Pump7	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Truck Gas Pump8	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0
Truck Gas Pump9	Point				91.5	91.5	0.0	0.0		0	100%/24h	Idiling Heavy Diesel Truck	60.6	78.8	77.3	83.7	87.9	84.9	79.6	71.7	60.0

Pilot Moreno Valley
Octave spectra of the sources in dB(A) - Situation 1: SP

Name	Source type	l or A	Li	R'w	L'w	Lw	KI	KT	LwMax	DO-Wall	Time histogram	Emission spectrum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
		m,m²	dB(A)	dB	dB(A)	dB(A)	dB	dB	dB(A)	dB			dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Truck Route 1	Line	324.32			19.0	44.1	0.0	0.0		0	100%/24h	Truck: accelerated passing Leq	25.7	29.7	33.7	36.7	39.7	37.7	32.7	27.7	
Truck Route 2	Line	409.16			19.0	45.1	0.0	0.0		0	100%/24h	Truck: accelerated passing Leq	26.7	30.7	34.7	37.7	40.7	38.7	33.7	28.7	
Car Parking	PLot	4188.07			53.3	89.5	0.0	0.0		0	Convenience Store	Typical spectrum	72.8	84.4	76.9	81.4	81.5	81.9	79.2	73.0	60.2
North Truck Park	PLot	2032.56			61.5	94.6	0.0	0.0		0	Truck Stop	Typical spectrum	78.0	89.6	82.1	86.6	86.7	87.1	84.4	78.2	65.4
South Truck Park	PLot	457.49			61.8	88.5	0.0	0.0		0	Truck Stop	Typical spectrum	71.8	83.4	75.9	80.4	80.5	80.9	78.2	72.0	59.2
West Truck Park	PLot	1168.01			61.9	92.6	0.0	0.0		0	Truck Stop	Typical spectrum	75.9	87.5	80.0	84.5	84.6	85.0	82.3	76.1	63.3

Pilot Moreno Valley
Assessed receiver spectra in dB(A) - Situation 1: SP

Time slice	63Hz dB(A)	125Hz dB(A)	250Hz dB(A)	500Hz dB(A)	1kHz dB(A)	2kHz dB(A)	4kHz dB(A)	8kHz dB(A)	16kHz dB(A)
Receiver Receiver 1 Fl G dB(A) dB(A) Leqd Max 41.4 dB(A) Leqn Max 40.7 dB(A)									
Leqd Max	24.1	31.7	23.6	31.4	38.1	35.5	24.5	-3.0	
Leqn Max	21.8	29.9	22.8	30.8	37.8	35.0	23.5	-3.7	
Receiver Receiver 2 Fl G dB(A) dB(A) Leqd Max 50.0 dB(A) Leqn Max 49.4 dB(A)									
Leqd Max	32.8	42.2	30.9	38.7	46.1	44.4	36.7	20.1	-18.8
Leqn Max	30.5	40.6	30.0	38.0	45.7	43.9	35.9	19.0	-20.7
Receiver Receiver 3 Fl G dB(A) dB(A) Leqd Max 45.9 dB(A) Leqn Max 45.6 dB(A)									
Leqd Max	26.2	35.9	29.9	36.3	42.1	40.4	33.1	16.3	-24.8
Leqn Max	24.4	35.0	29.5	36.0	42.0	40.2	32.8	16.2	-24.8
Receiver Receiver 4 Fl G dB(A) dB(A) Leqd Max 51.2 dB(A) Leqn Max 51.0 dB(A)									
Leqd Max	30.8	42.0	32.4	38.3	47.3	46.4	39.4	25.1	-6.3
Leqn Max	29.5	41.3	32.1	38.0	47.2	46.2	39.1	24.9	-6.4

Pilot Moreno Valley
Contribution level - Situation 1: SP

Source	Source group	Source ty	Leqd Max dB(A)	Leqn Max dB(A)
Receiver Receiver 1 Fl G dB(A) dB(A) Leqd Max 41.4 dB(A) Leqn Max 40.7 dB(A)				
North Truck Park	Truck Parking/Gas	PLot	33.3	30.3
Truck Gas Pump4	Truck Parking/Gas	Point	30.0	30.0
Truck Gas Pump5	Truck Parking/Gas	Point	30.0	30.0
Truck Gas Pump9	Truck Parking/Gas	Point	29.9	29.9
Truck Gas Pump8	Truck Parking/Gas	Point	29.9	29.9
Truck Gas Pump6	Truck Parking/Gas	Point	29.8	29.8
Truck Gas Pump7	Truck Parking/Gas	Point	29.8	29.8
West Truck Park	Truck Parking/Gas	PLot	28.9	25.9
Truck Gas Pump1	Truck Parking/Gas	Point	28.6	28.6
Truck Gas Pump2	Truck Parking/Gas	Point	28.4	28.4
Truck Gas Pump3	Truck Parking/Gas	Point	28.2	28.2
Car Parking	Car Parking/Gas	PLot	26.7	24.9
South Truck Park	Truck Parking/Gas	PLot	25.5	22.5
Pump1	Car Parking/Gas	Point	25.5	25.5
Pump2	Car Parking/Gas	Point	25.4	25.4
Pump9	Car Parking/Gas	Point	25.2	25.2
Pump10	Car Parking/Gas	Point	25.2	25.2
Pump11	Car Parking/Gas	Point	20.2	20.2
Drive-Thru Speaker	Drive Thru	Point	20.2	20.2
Pump12	Car Parking/Gas	Point	17.6	17.6
Pump13	Car Parking/Gas	Point	16.9	16.9
Pump3	Car Parking/Gas	Point	16.9	16.9
Pump14	Car Parking/Gas	Point	16.1	16.1
Pump15	Car Parking/Gas	Point	15.8	15.8
Pump16	Car Parking/Gas	Point	15.6	15.6
Pump4	Car Parking/Gas	Point	15.4	15.4
Pump5	Car Parking/Gas	Point	14.9	14.9
Pump6	Car Parking/Gas	Point	14.7	14.7
Pump7	Car Parking/Gas	Point	14.1	14.1
Pump8	Car Parking/Gas	Point	13.9	13.9
Truck Route 2	Truck Parking/Gas	Line	-17.3	-17.3
Truck Route 1	Truck Parking/Gas	Line	-18.1	-18.1
Drive Thru Lane	Drive Thru	Line	-31.2	-31.2
Receiver Receiver 2 Fl G dB(A) dB(A) Leqd Max 50.0 dB(A) Leqn Max 49.4 dB(A)				
West Truck Park	Truck Parking/Gas	PLot	40.9	37.9
Car Parking	Car Parking/Gas	PLot	38.6	36.9
South Truck Park	Truck Parking/Gas	PLot	37.3	34.3
North Truck Park	Truck Parking/Gas	PLot	37.2	34.2
Truck Gas Pump9	Truck Parking/Gas	Point	35.5	35.5
Truck Gas Pump8	Truck Parking/Gas	Point	35.4	35.4
Truck Gas Pump7	Truck Parking/Gas	Point	35.4	35.4
Pump1	Car Parking/Gas	Point	35.3	35.3
Pump9	Car Parking/Gas	Point	35.3	35.3

Pilot Moreno Valley
Contribution level - Situation 1: SP

Source	Source group	Source ty	Leqd Max dB(A)	Leqn Max dB(A)	
Truck Gas Pump6	Truck Parking/Gas	Point	35.3	35.3	
Truck Gas Pump5	Truck Parking/Gas	Point	35.2	35.2	
Pump2	Car Parking/Gas	Point	35.1	35.1	
Truck Gas Pump4	Truck Parking/Gas	Point	35.1	35.1	
Pump10	Car Parking/Gas	Point	35.0	35.0	
Truck Gas Pump3	Truck Parking/Gas	Point	34.9	34.9	
Truck Gas Pump2	Truck Parking/Gas	Point	34.8	34.8	
Pump3	Car Parking/Gas	Point	34.8	34.8	
Pump11	Car Parking/Gas	Point	34.7	34.7	
Truck Gas Pump1	Truck Parking/Gas	Point	34.7	34.7	
Pump4	Car Parking/Gas	Point	34.5	34.5	
Pump12	Car Parking/Gas	Point	34.4	34.4	
Pump5	Car Parking/Gas	Point	34.3	34.3	
Pump6	Car Parking/Gas	Point	34.0	34.0	
Pump7	Car Parking/Gas	Point	33.7	33.7	
Pump8	Car Parking/Gas	Point	33.5	33.5	
Pump13	Car Parking/Gas	Point	31.7	31.7	
Drive-Thru Speaker	Drive Thru	Point	30.9	30.9	
Pump14	Car Parking/Gas	Point	30.7	30.7	
Pump15	Car Parking/Gas	Point	30.3	30.3	
Pump16	Car Parking/Gas	Point	29.8	29.8	
Truck Route 2	Truck Parking/Gas	Line	-11.2	-11.2	
Truck Route 1	Truck Parking/Gas	Line	-12.1	-12.1	
Drive Thru Lane	Drive Thru	Line	-21.0	-21.0	
Receiver Receiver 3 Fl G dB(A) dB(A) Leqd Max 45.9 dB(A) Leqn Max 45.6 dB(A)					
Car Parking	Car Parking/Gas	PLot	33.8	32.1	
North Truck Park	Truck Parking/Gas	PLot	32.7	29.7	
Truck Gas Pump1	Truck Parking/Gas	Point	32.0	32.0	
Truck Gas Pump2	Truck Parking/Gas	Point	32.0	32.0	
Truck Gas Pump9	Truck Parking/Gas	Point	32.0	32.0	
Truck Gas Pump3	Truck Parking/Gas	Point	32.0	32.0	
Truck Gas Pump4	Truck Parking/Gas	Point	31.9	31.9	
Truck Gas Pump8	Truck Parking/Gas	Point	31.9	31.9	
Truck Gas Pump5	Truck Parking/Gas	Point	31.9	31.9	
Truck Gas Pump7	Truck Parking/Gas	Point	31.9	31.9	
Truck Gas Pump6	Truck Parking/Gas	Point	31.8	31.8	
Pump8	Car Parking/Gas	Point	31.6	31.6	
Pump16	Car Parking/Gas	Point	31.4	31.4	
Pump7	Car Parking/Gas	Point	31.4	31.4	
Pump15	Car Parking/Gas	Point	31.2	31.2	
Pump6	Car Parking/Gas	Point	31.2	31.2	
Pump14	Car Parking/Gas	Point	31.0	31.0	
Pump5	Car Parking/Gas	Point	31.0	31.0	
Pump13	Car Parking/Gas	Point	30.8	30.8	
Pump4	Car Parking/Gas	Point	30.8	30.8	

Pilot Moreno Valley
Contribution level - Situation 1: SP

Source	Source group	Source ty	Leqd Max dB(A)	Leqn Max dB(A)	
Pump12	Car Parking/Gas	Point	30.7	30.7	
Pump3	Car Parking/Gas	Point	30.6	30.6	
Pump11	Car Parking/Gas	Point	30.5	30.5	
Pump2	Car Parking/Gas	Point	30.4	30.4	
Pump10	Car Parking/Gas	Point	30.3	30.3	
Pump1	Car Parking/Gas	Point	30.2	30.2	
Pump9	Car Parking/Gas	Point	30.1	30.1	
West Truck Park	Truck Parking/Gas	PLot	29.0	25.9	
South Truck Park	Truck Parking/Gas	PLot	21.9	18.9	
Drive-Thru Speaker	Drive Thru	Point	13.1	13.1	
Truck Route 2	Truck Parking/Gas	Line	-14.8	-14.8	
Truck Route 1	Truck Parking/Gas	Line	-17.3	-17.3	
Drive Thru Lane	Drive Thru	Line	-44.4	-44.4	
Receiver Receiver 4 Fl G	dB(A)	dB(A)	Leqd Max 51.2 dB(A)	Leqn Max 51.0 dB(A)	
Car Parking	Car Parking/Gas	PLot	41.5	39.8	
Pump16	Car Parking/Gas	Point	39.3	39.3	
Pump14	Car Parking/Gas	Point	39.2	39.2	
Pump15	Car Parking/Gas	Point	39.2	39.2	
Pump13	Car Parking/Gas	Point	39.2	39.2	
Pump12	Car Parking/Gas	Point	39.1	39.1	
Pump11	Car Parking/Gas	Point	39.0	39.0	
Pump10	Car Parking/Gas	Point	38.9	38.9	
Pump9	Car Parking/Gas	Point	38.8	38.8	
Pump8	Car Parking/Gas	Point	38.5	38.5	
Pump6	Car Parking/Gas	Point	38.5	38.5	
Pump7	Car Parking/Gas	Point	38.4	38.4	
Pump5	Car Parking/Gas	Point	38.3	38.3	
Pump4	Car Parking/Gas	Point	38.3	38.3	
Pump3	Car Parking/Gas	Point	37.2	37.2	
Pump1	Car Parking/Gas	Point	36.6	36.6	
Pump2	Car Parking/Gas	Point	36.4	36.4	
West Truck Park	Truck Parking/Gas	PLot	30.7	27.7	
South Truck Park	Truck Parking/Gas	PLot	29.8	26.8	
North Truck Park	Truck Parking/Gas	PLot	29.0	26.0	
Drive-Thru Speaker	Drive Thru	Point	27.4	27.4	
Truck Gas Pump1	Truck Parking/Gas	Point	20.7	20.7	
Truck Gas Pump2	Truck Parking/Gas	Point	20.3	20.3	
Truck Gas Pump3	Truck Parking/Gas	Point	19.9	19.9	
Truck Gas Pump4	Truck Parking/Gas	Point	19.4	19.4	
Truck Gas Pump5	Truck Parking/Gas	Point	18.9	18.9	
Truck Gas Pump6	Truck Parking/Gas	Point	18.2	18.2	
Truck Gas Pump7	Truck Parking/Gas	Point	17.3	17.3	
Truck Gas Pump8	Truck Parking/Gas	Point	16.2	16.2	
Truck Gas Pump9	Truck Parking/Gas	Point	14.6	14.6	
Truck Route 2	Truck Parking/Gas	Line	-17.8	-17.8	

Pilot Moreno Valley
Contribution level - Situation 1: SP

Source	Source group	Source ty	⌊eqd Max dB(A)	⌊eqn Max dB(A)	
Truck Route 1	Truck Parking/Gas	Line	-21.3	-21.3	
Drive Thru Lane	Drive Thru	Line	-27.9	-27.9	

Appendix C:

FHWA Roadway Noise Modeling Worksheets

ATTACHMENT 2 - TRIP GENERATION TABLES

Table 1 - Trip Generation Rates

Land Use	Source	Units	Daily Trip Rate	AM Peak Hour Rate		PM Peak Hour Rate	
				Trip Rate	In : Out	Trip Rate	In : Out
Fast-Foot Restaurant w Drive-Through Window	ITE Code 934	2.312 ksf	470.95	40.19	51% : 49%	32.67	52% : 48%
Super Convenience Market/Gas Station	ITE Code 960	16 FP	230.52	28.08	50% : 50%	22.96	50% : 50%
Truck Stop	Data (a)/ITE Code 950	11 Truck FP	72.73	7.18	51% : 49%	8.41	49% : 51%

Notes
KSF = thousand square feet, FP = Fueling Positions
AM and/or PM rates correspond to peak of adjacent street traffic
Trip Generation data for ITE Codes from *ITE Trip Generation, 10th Edition*
(a) Daily Trip Generation data received from Pilot

Table 2 - Project Passenger Car Trip Generation

Proposed Land Use (a)	Units	Daily Trips	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Fast-Food Restaurant with Drive-Through (b)	2.312	1,089	47	46	93	40	36	76
Internal Capture (c) (Daily: 13%, AM: 11%, PM: 12%)		*-142*	*-5*	*-5*	*-10*	*-5*	*-4*	*-9*
Net Driveway Trips – Fast-food Restaurant with Drive-Through		947	42	41	83	35	32	67
Pass-By Trips (d) (Daily: 50%, AM: 49%, PM: 50%)		*-474*	*-21*	*-20*	*-41*	*-18*	*-16*	*-34*
Diverted Trips (e) (Daily: 25%, AM: 28%, PM: 23%)		*-237*	*-12*	*-11*	*-23*	*-8*	*-7*	*-15*
Net Primary Trips – Fast-food Restaurant with Drive-Through		*236*	*9*	*10*	*19*	*9*	*9*	*18*
Super Convenience Market/Gas Station (b)	16 Fueling Positions	3,688	225	224	449	184	183	367
Internal Capture (c) (Daily: 13%, AM: 11%, PM: 12%)		*-479*	*-25*	*-24*	*-49*	*-22*	*-22*	*-44*
Net Driveway Trips – Gas Station with Convenience Market		3,209	200	200	400	162	161	323
Pass-By Trips (d) (Daily: 59%, AM: 62%, PM: 56%)		*-1,893*	*-124*	*-124*	*-248*	*-91*	*-90*	*-181*
Diverted Trips (e) (Daily: 26%, AM: 21%, PM: 31%)		*-834*	*-42*	*-42*	*-84*	*-50*	*-50*	*-100*
Net Primary Trips – Super Convenience Market/Gas Station		*482*	*34*	*34*	*68*	*21*	*21*	*42*
Net Passenger Car Trips (f)	*Net Driveway Trips*	*4,156*	*242*	*241*	*483*	*197*	*193*	*390*
	Net Primary Trips (with pass-by reduction) (g)	*1,789*	*97*	*97*	*194*	*88*	*87*	*175*
	Net Primary Trips (with pass-by and diverted trip	*718*	*43*	*44*	*87*	*30*	*30*	*60*

Notes
(a) Passenger Car trips include trips to 2.400 ksf Fast-Food Restaurant with drive-thru and a 16 fueling position Super Convenience Market/Gas Station.
(b) Trip Generation data from ITE Trip Generation Manual, 10th Edition
(c) Internal capture rates from ITE Trip Generation Handbook, 3rd Edition NCHRP 684 Interna Trip Capture Estimation Tool
(d) Pass-by rates from ITE Trip Generation Handbook, 3rd Edition for ITE LU 934 Fast-Food Restaurant With Drive-Through Window and LU 945 Gasoline/Service Station With Convenience Market
(e) Diverted trip rates from ITE Trip Generation Handbook, 3rd Edition for ITE LU 934 Fast-Food Restaurant With Drive-Through Window and LU 945 Gasoline/Service Station With Convenience Market
(f) Net passenger car trips are the sum of trips generated by the Fast-Food Restaurant without drive-thru land use and Super Convenience Market/Gas Station land use
(g) These values will be used for Traffic Analysis

Table 3 - Truck Trip Generation

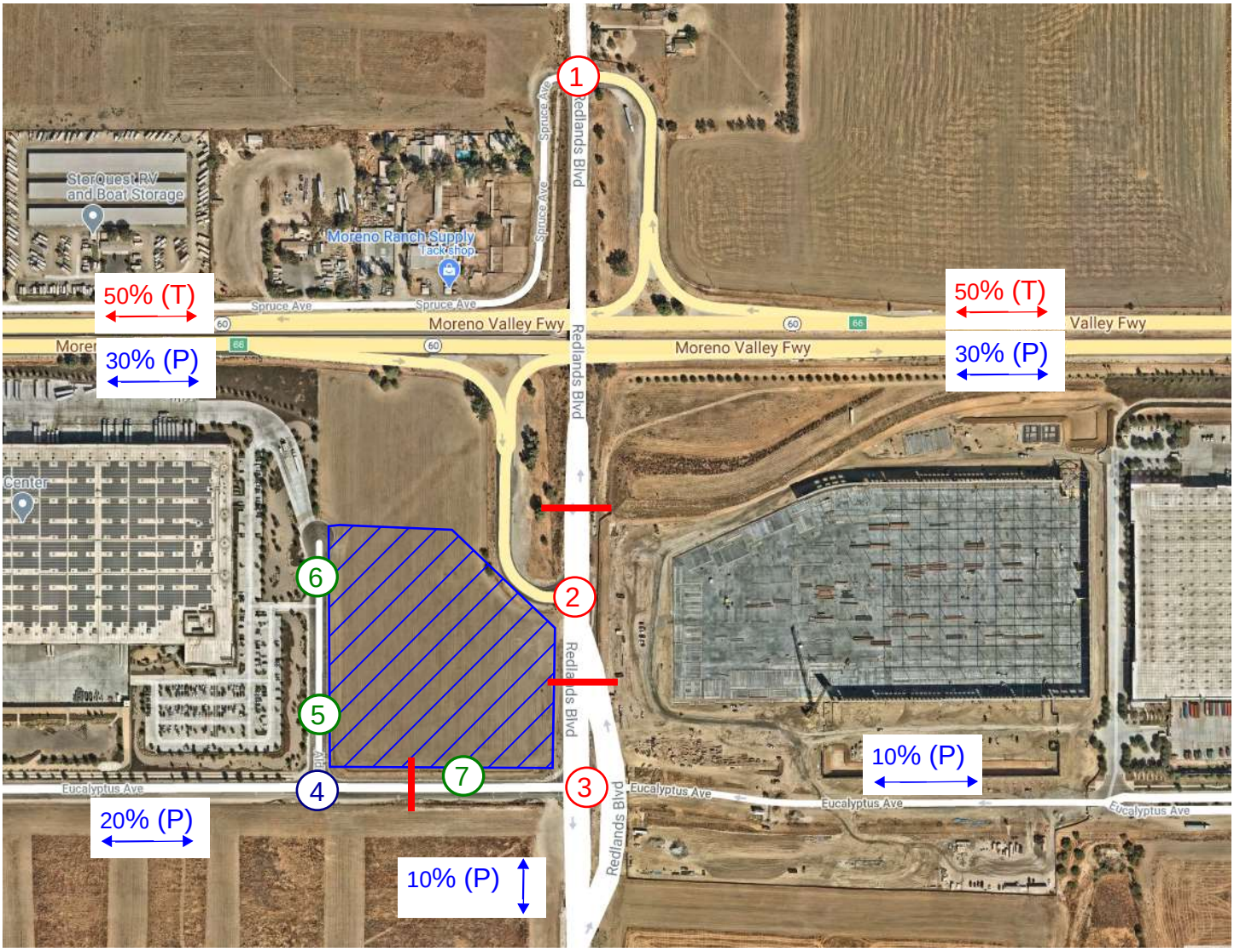
Proposed Land Use	Units	Daily Trips (a)	AM Peak Hour (b)			PM Peak Hour (b)		
			In	Out	Total	In	Out	Total
Truck Stop	11 Fueling Positions	800	40	39	79	46	47	93
Internal Capture (c) 0%		*0*	*0*	*0*	*0*	*0*	*0*	*0*
Net Driveway Trips – Truck Stop		800	40	39	79	46	47	93
Net Driveway Trips in PCE (PCE=3.0)		2,400	120	117	237	138	141	279
Pass-By Trips (d) (Daily: 5%, AM: 5%, PM: 5%)		*-40*	*-2*	*-2*	*-4*	*-2*	*-3*	*-5*
Net Primary Trips – Truck Stop		*760*	*38*	*37*	*75*	*44*	*44*	*88*
Net Primary Trips in PCE (PCE=3.0)		*2,280*	*114*	*111*	*225*	*132*	*132*	*264*

Notes
(a) Truck trips include trips to the Truck Stop land use portion only, using daily trip information obtained from similar faclilities
(b) Peak hour information estimated using peak hour percentages from ITE Trip Generation Manual, 10th Edition
(c) No internal capture was assumed for the Truck Stop land use, as a truck stop is assumed to include a variety of services
(d) As there was no supporting data available to define the number of pass-by trips, pass-by rates were estimated to be 5%
(e) As there was no supporting data available to define the number of pass-by trips, diverted rates were estimated to be similar to a Super Convenience Market with Gas Station

Table 4 - Total Project Trip Generation

	Daily Trips	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Total Primary Trips							
Fast Food w Drive-Through	473	21	21	42	17	16	33
Super Convenience Market/Gas Station	1,316	76	76	152	71	71	142
Truck Stop (PCE = 3.0)	2,280	114	111	225	132	132	264
Total Primary Trip Generation	4,069	211	208	419	220	219	439
Total Driveway Trips							
Fast Food w Drive-Through	947	42	41	83	35	32	67
Super Convenience Market/Gas Station	3,209	200	200	400	162	161	323
Truck Stop (PCE = 3.0)	2,400	120	117	237	138	141	279
Total Driveway Trip Generation	6,556	362	358	720	335	334	669

Attachment 3: Project Study Area



FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT: Pilot Moreno Valley
ROADWAY: SR60
LOCATION: LT1

JOB #: 0462-2021-08
DATE: 3-Aug-21
ENGINEER: C Pincock

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	72,000	
SPEED =	65	
PK HR % =	12%	
NEAR LANE/FAR LANE DIS	50	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	8,300	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		50
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER		0
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	10	
MEDIUM TRUCKS =	10	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	10	

WALL INFORMATION

HTH WALL	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.755	0.140	0.104	0.8400
MEDIUM TRUCK	0.480	0.020	0.500	0.0400
HEAVY TRUCKS	0.480	0.020	0.500	0.1200

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	43.41	- -
MEDIUM TRUCKS	4.0	43.31	- -
HEAVY TRUCKS	8.0	43.41	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	81.1	78.5	77.2	71.1	79.5	80.2
MEDIUM TRUCKS	74.0	69.4	61.7	70.9	77.0	77.1
HEAVY TRUCKS	82.3	77.7	69.9	79.1	85.3	85.3
NOISE LEVELS (dBA)	85.1	81.4	78.0	80.3	86.8	86.9

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	81.1	78.5	77.2	71.1	79.5	80.2
MEDIUM TRUCKS	74.0	69.4	61.7	70.9	77.0	77.1
HEAVY TRUCKS	82.3	77.7	69.9	79.1	85.3	85.3
NOISE LEVELS (dBA)	85.1	81.4	78.0	80.3	86.8	86.9

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	2476	7830	24762	78304
LDN	2391	7560	23906	75597

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT: Pilot Moreno Valley
ROADWAY: Eucalyptus
LOCATION: LT1

JOB #: 0462-2021-08
DATE: 3-Aug-21
ENGINEER: C Pincock

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	8,000
SPEED =	40
PK HR % =	10%
NEAR LANE/FAR LANE DIS	40
ROAD ELEVATION =	0.0
GRADE =	0.0 %
PK HR VOL =	800

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		50
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER		0
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	10	
MEDIUM TRUCKS =	10	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	10	

WALL INFORMATION

HTH WALL	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.755	0.140	0.104	0.9200
MEDIUM TRUCK	0.480	0.020	0.500	0.0300
HEAVY TRUCKS	0.480	0.020	0.500	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	45.92	- -
MEDIUM TRUCKS	4.0	45.84	- -
HEAVY TRUCKS	8.0	45.92	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	65.0	63.0	61.7	55.6	64.1	64.7
MEDIUM TRUCKS	59.1	55.1	47.3	56.5	62.7	62.7
HEAVY TRUCKS	66.2	62.2	54.4	63.6	69.8	69.8
NOISE LEVELS (dBA)	69.1	66.0	62.6	64.9	71.4	71.6

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	65.0	63.0	61.7	55.6	64.1	64.7
MEDIUM TRUCKS	59.1	55.1	47.3	56.5	62.7	62.7
HEAVY TRUCKS	66.2	62.2	54.4	63.6	69.8	69.8
NOISE LEVELS (dBA)	69.1	66.0	62.6	64.9	71.4	71.6

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	72	227	718	2271
LDN	69	219	694	2193

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT: Pilot Moreno Valley
ROADWAY: Redlands
LOCATION: LT1

JOB #: 0462-2021-08
DATE: 3-Aug-21
ENGINEER: C Pincock

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	15,100	
SPEED =	50	
PK HR % =	10%	
NEAR LANE/FAR LANE DIS	35	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	1,510	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		50
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER		0
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	10	
MEDIUM TRUCKS =	10	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	10	

WALL INFORMATION

HTH WALL	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.755	0.140	0.104	0.9200
MEDIUM TRUCK	0.480	0.020	0.500	0.0300
HEAVY TRUCKS	0.480	0.020	0.500	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	46.93	- -
MEDIUM TRUCKS	4.0	46.85	- -
HEAVY TRUCKS	8.0	46.93	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.5	68.4	67.2	61.1	69.5	70.2
MEDIUM TRUCKS	63.3	59.3	51.5	60.7	66.9	66.9
HEAVY TRUCKS	69.7	65.7	57.9	67.2	73.3	73.3
NOISE LEVELS (dBA)	73.5	70.6	67.8	68.8	75.5	75.7

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.5	68.4	67.2	61.1	69.5	70.2
MEDIUM TRUCKS	63.3	59.3	51.5	60.7	66.9	66.9
HEAVY TRUCKS	69.7	65.7	57.9	67.2	73.3	73.3
NOISE LEVELS (dBA)	73.5	70.6	67.8	68.8	75.5	75.7

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	184	583	1845	5834
LDN	176	558	1764	5580

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT: Pilot Moreno Valley
ROADWAY: Redlands
LOCATION: LT1

JOB #: 0462-2021-08
DATE: 3-Aug-21
ENGINEER: C Pincock

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	15,279	
SPEED =	50	
PK HR % =	10%	
NEAR LANE/FAR LANE DIS	35	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	1,528	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		50
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER		0
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	10	
MEDIUM TRUCKS =	10	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	10	

WALL INFORMATION

HTH WALL	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.755	0.140	0.104	0.9200
MEDIUM TRUCK	0.480	0.020	0.500	0.0300
HEAVY TRUCKS	0.480	0.020	0.500	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	46.93	- -
MEDIUM TRUCKS	4.0	46.85	- -
HEAVY TRUCKS	8.0	46.93	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.5	68.5	67.2	61.2	69.6	70.2
MEDIUM TRUCKS	63.3	59.3	51.6	60.8	66.9	67.0
HEAVY TRUCKS	69.8	65.8	58.0	67.2	73.4	73.4
NOISE LEVELS (dBA)	73.6	70.7	67.8	68.9	75.5	75.7

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.5	68.5	67.2	61.2	69.6	70.2
MEDIUM TRUCKS	63.3	59.3	51.6	60.8	66.9	67.0
HEAVY TRUCKS	69.8	65.8	58.0	67.2	73.4	73.4
NOISE LEVELS (dBA)	73.6	70.7	67.8	68.9	75.5	75.7

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	187	590	1867	5903
LDN	179	565	1785	5646

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT: Pilot Moreno Valley
ROADWAY: Eucalyptus
LOCATION: LT1

JOB #: 0462-2021-08
DATE: 3-Aug-21
ENGINEER C Pincock

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	8,358
SPEED =	40
PK HR % =	10%
NEAR LANE/FAR LANE DIS	40
ROAD ELEVATION =	0.0
GRADE =	0.0 %
PK HR VOL =	836

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		50
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER		0
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	10	
MEDIUM TRUCKS =	10	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	10	

WALL INFORMATION

HTH WALL	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.755	0.140	0.104	0.9200
MEDIUM TRUCK	0.480	0.020	0.500	0.0300
HEAVY TRUCKS	0.480	0.020	0.500	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	45.92	- -
MEDIUM TRUCKS	4.0	45.84	- -
HEAVY TRUCKS	8.0	45.92	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	65.2	63.2	61.9	55.8	64.3	64.9
MEDIUM TRUCKS	59.3	55.3	47.5	56.7	62.9	62.9
HEAVY TRUCKS	66.3	62.4	54.6	63.8	69.9	70.0
NOISE LEVELS (dBA)	69.3	66.2	62.8	65.1	71.6	71.8

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	65.2	63.2	61.9	55.8	64.3	64.9
MEDIUM TRUCKS	59.3	55.3	47.5	56.7	62.9	62.9
HEAVY TRUCKS	66.3	62.4	54.6	63.8	69.9	70.0
NOISE LEVELS (dBA)	69.3	66.2	62.8	65.1	71.6	71.8

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	75	237	750	2372
LDN	72	229	725	2292

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

PROJECT: Pilot Moreno Valley
ROADWAY: SR60
LOCATION: LT1

JOB #: 0462-2021-08
DATE: 3-Aug-21
ENGINEER: C Pincock

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	73,677	
SPEED =	65	
PK HR % =	11%	
NEAR LANE/FAR LANE DIS	50	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	8,300	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		50
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER		0
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	10	
MEDIUM TRUCKS =	10	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	10	

WALL INFORMATION

HTH WALL	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.755	0.140	0.104	0.8400
MEDIUM TRUCK	0.480	0.020	0.500	0.0400
HEAVY TRUCKS	0.480	0.020	0.500	0.1200

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	43.41	- -
MEDIUM TRUCKS	4.0	43.31	- -
HEAVY TRUCKS	8.0	43.41	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	81.1	78.6	77.3	71.2	79.6	80.3
MEDIUM TRUCKS	74.0	69.5	61.8	71.0	77.1	77.2
HEAVY TRUCKS	82.3	77.8	70.0	79.2	85.4	85.4
NOISE LEVELS (dBA)	85.1	81.5	78.1	80.4	86.9	87.0

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	81.1	78.6	77.3	71.2	79.6	80.3
MEDIUM TRUCKS	74.0	69.5	61.8	71.0	77.1	77.2
HEAVY TRUCKS	82.3	77.8	70.0	79.2	85.4	85.4
NOISE LEVELS (dBA)	85.1	81.5	78.1	80.4	86.9	87.0

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	2534	8013	25339	80128
LDN	2446	7736	24463	77358

Appendix D:

Construction Noise Modeling Output

Receptor - Residences to the South

A	B	C	D	E	F	G	H	I	J
Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA	Dist. To Recptr.	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Recptr. Item Lmax, dBA	Recptr. Items Leq, dBA
SITE PREP									
1. Tractors/Loaders/Backhoes	1	80	1100	40	0.40	-26.8	-4.0	53.2	49.2
2. Rubber Tired Dozers	1	85	1100	40	0.40	-26.8	-4.0	58.2	54.2
							Log Sum	59.3	55.4
GRADE									
1. Excavators	1	85	1100	40	0.40	-26.8	-4.0	58.2	54.2
2. Rubber Tired Dozers	1	85	1100	40	0.40	-26.8	-4.0	58.2	54.2
3. Graders	1	85	1100	40	0.40	-26.8	-4.0	58.2	54.2
4. Tractors/Loaders/Backhoes	2	80	1100	40	0.80	-26.8	-1.0	53.2	52.2
							Log Sum	61.8	59.8
BUILD									
1. Cranes	1	85	1100	16	0.16	-26.8	-8.0	58.2	50.2
2. Forklifts	1	85	1100	40	0.40	-26.8	-4.0	58.2	54.2
3. Generator Sets	1	82	1100	50	0.50	-26.8	-3.0	55.2	52.1
4. Welders	1	73	1100	40	0.40	-26.8	-4.0	46.2	42.2
5. Tractors/Loaders/Backhoes	3	80	1100	40	1.20	-26.8	0.8	53.2	53.9
							Log Sum	62.7	59.0
PAVE									
1. Sweepers/Scrubbers	1	80	1100	10	0.10	-26.8	-10.0	53.2	43.2
2. Pavers	1	85	1100	50	0.50	-26.8	-3.0	58.2	55.1
3. Rollers	1	85	1100	20	0.20	-26.8	-7.0	58.2	51.2
4. Paving Equipment	2	85	1100	20	0.40	-26.8	-4.0	58.2	54.2
5. Rubbered Tired Loaders	1	80	1100	40	0.40	-26.8	-4.0	53.2	49.2
							Log Sum	62.4	59.1

Receptor - Business to the North

A	B	C	D	E	F	G	H	I	J
Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA	Dist. To Recptr.	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Recptr. Item Lmax, dBA	Recptr. Item Leq, dBA
SITE PREP									
1. Tractors/Loaders/Backhoes	1	80	1000	40	0.40	-26.0	-4.0	54.0	50.0
2. Rubber Tired Dozers	1	85	1000	40	0.40	-26.0	-4.0	59.0	55.0
							Log Sum	60.2	56.2
GRADE									
1. Excavators	1	85	1000	40	0.40	-26.0	-4.0	59.0	55.0
2. Rubber Tired Dozers	1	85	1000	40	0.40	-26.0	-4.0	59.0	55.0
3. Graders	1	85	1000	40	0.40	-26.0	-4.0	59.0	55.0
4. Tractors/Loaders/Backhoes	2	80	1000	40	0.80	-26.0	-1.0	54.0	53.0
							Log Sum	62.6	60.6
BUILD									
1. Cranes	1	85	1000	16	0.16	-26.0	-8.0	59.0	51.0
2. Forklifts	1	85	1000	40	0.40	-26.0	-4.0	59.0	55.0
3. Generator Sets	1	82	1000	50	0.50	-26.0	-3.0	56.0	53.0
4. Welders	1	73	1000	40	0.40	-26.0	-4.0	47.0	43.0
5. Tractors/Loaders/Backhoes	3	80	1000	40	1.20	-26.0	0.8	54.0	54.8
							Log Sum	63.5	59.8
PAVE									
1. Sweepers/Scrubbers	1	80	1000	10	0.10	-26.0	-10.0	54.0	44.0
2. Pavers	1	85	1000	50	0.50	-26.0	-3.0	59.0	56.0
3. Rollers	1	85	1000	20	0.20	-26.0	-7.0	59.0	52.0
4. Paving Equipment	2	85	1000	20	0.40	-26.0	-4.0	59.0	55.0
5. Rubbered Tired Loaders	1	80	1000	40	0.40	-26.0	-4.0	54.0	50.0
							Log Sum	63.2	60.0

Receptor - Industrial East & West

A	B	C	D	E	F	G	H	I	J
Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA	Dist. To Recptr.	Item Usage Percent	Usage Factor	Dist. Correction dB	Usage Adj. dB	Recptr. Item Lmax, dBA	Recptr. Item Leq, dBA
SITE PREP									
1. Tractors/Loaders/Backhoes	1	80	600	40	0.40	-21.6	-4.0	58.4	54.4
2. Rubber Tired Dozers	1	85	600	40	0.40	-21.6	-4.0	63.4	59.4
							Log Sum	64.6	60.6
GRADE									
1. Excavators	1	85	600	40	0.40	-21.6	-4.0	63.4	59.4
2. Rubber Tired Dozers	1	85	600	40	0.40	-21.6	-4.0	63.4	59.4
3. Graders	1	85	600	40	0.40	-21.6	-4.0	63.4	59.4
4. Tractors/Loaders/Backhoes	2	80	600	40	0.80	-21.6	-1.0	58.4	57.4
							Log Sum	67.1	65.0
BUILD									
1. Cranes	1	85	600	16	0.16	-21.6	-8.0	63.4	55.5
2. Forklifts	1	85	600	40	0.40	-21.6	-4.0	63.4	59.4
3. Generator Sets	1	82	600	50	0.50	-21.6	-3.0	60.4	57.4
4. Welders	1	73	600	40	0.40	-21.6	-4.0	51.4	47.4
5. Tractors/Loaders/Backhoes	3	80	600	40	1.20	-21.6	0.8	58.4	59.2
							Log Sum	67.9	64.3
PAVE									
1. Sweepers/Scrubbers	1	80	600	10	0.10	-21.6	-10.0	58.4	48.4
2. Pavers	1	85	600	50	0.50	-21.6	-3.0	63.4	60.4
3. Rollers	1	85	600	20	0.20	-21.6	-7.0	63.4	56.4
4. Paving Equipment	2	85	600	20	0.40	-21.6	-4.0	63.4	59.4
5. Rubbered Tired Loaders	1	80	600	40	0.40	-21.6	-4.0	58.4	54.4
							Log Sum	67.6	64.4

Appendix E:

Construction Vibration Modeling Output

VIBRATION LEVEL IMPACT

Project:	Pilot	Date: 8/3/21
Source:	Large Bulldozer	
Scenario:	Unmitigated	
Location:	Building to West	
Address:	Pilot Moreno Valley	

PPV = PPVref(25/D)^n (in/sec)

DATA INPUT

Equipment = Type	2	Large Bulldozer	INPUT SECTION IN BLUE
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	160.00	Distance from Equipment to Receiver (ft)	
n =	1.10	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

DATA OUT RESULTS

PPV =	**0.012**	IN/SEC	OUTPUT IN RED

Transportation Impact Analysis

for

Moreno Valley Travel Center

In the City of Moreno Valley

September 2021

Kimley»Horn

TRANSPORTATION IMPACT ANALYSIS
FOR THE PROPOSED
MORENO VALLEY TRAVEL CENTER
IN THE CITY OF MORENO VALLEY

Prepared by:

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September 2021

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TRANSPORTATION IMPACT ANALYSIS FOR THE PROPOSED MORENO VALLEY TRAVEL CENTER IN THE CITY OF MORENO VALLEY

INTRODUCTION

Purpose and Study Objectives

This transportation impact study has been prepared to address the traffic-related effects of the proposed Moreno Valley Travel Center project in the City of Moreno Valley. This transportation impact analysis has been conducted in accordance with the requirements stated in the City of Moreno Valley *Transportation Impact Analysis (TIA) Preparation Guide* (June 2020).

This report includes a description of existing traffic conditions in the surrounding area, estimated project trip generation and distribution, future traffic growth, and an assessment of project-related effects on the transportation system. Where necessary, circulation system improvements have been identified to address project-related deficiencies at the study locations.

Project Overview

The project is located on the northwest corner of the intersection of Redlands Boulevard and Eucalyptus Avenue. The project site is shown in its regional setting on Figure 1. The project site (approximately 10 acres) is currently vacant and bounded by vacant land to the north, Eucalyptus Avenue to the south, Aldi Place to the west, and Redlands Boulevard to the east.

The project consists of the construction of a truck stop with 10 truck fueling positions, a gas station with 16 fueling positions and a convenience market, and an approximately 2,312 square-foot fast-food restaurant with a drive-through. A copy of the project site plan is provided on Figure 2.

Vehicular access for the project site would be via one unsignalized right-in-right-out (RIRO) only driveway on Eucalyptus Avenue, one full-access unsignalized driveway on Aldi Place, and one truck accessible driveway roughly three quarters of the way up Aldi Place.

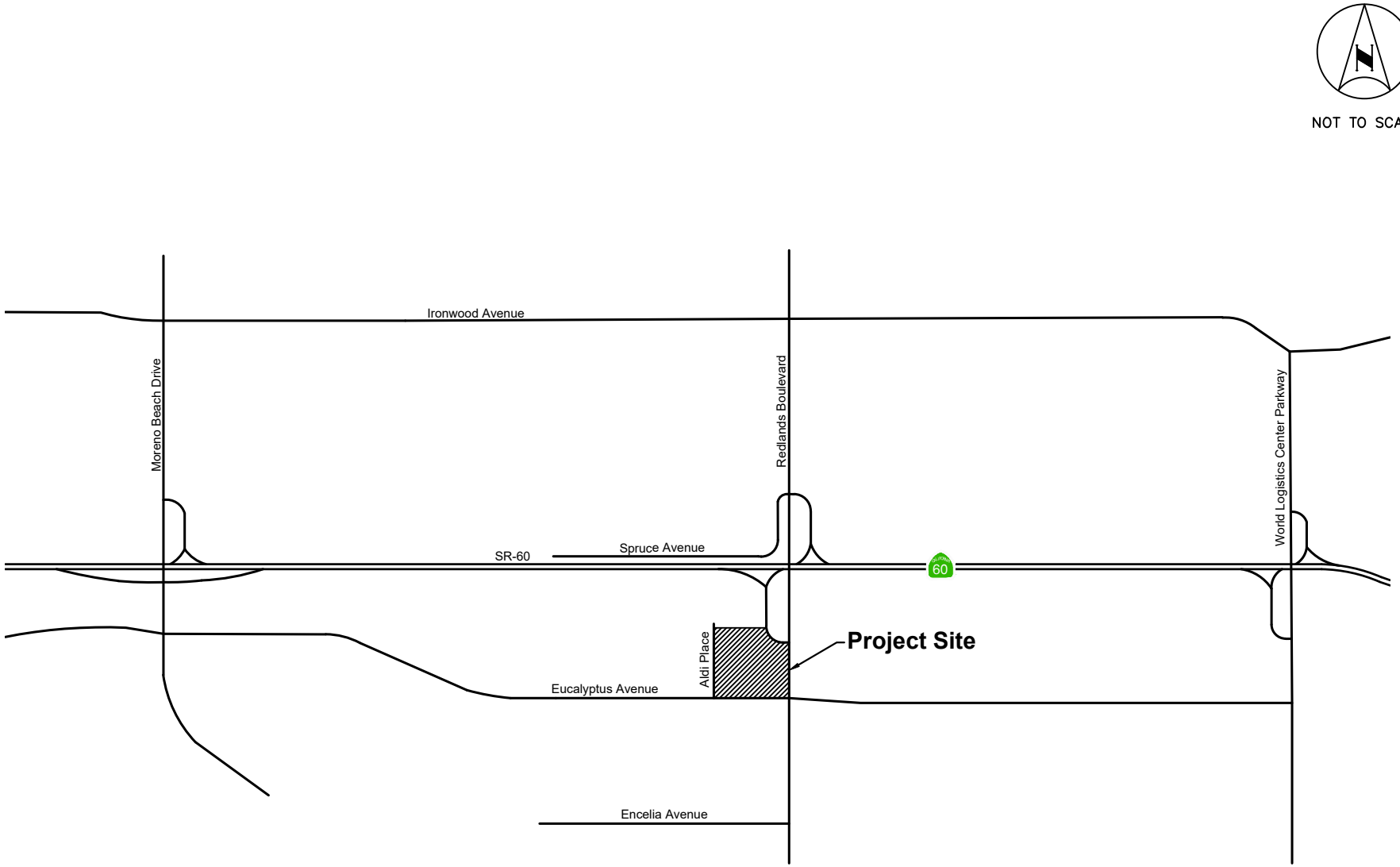


FIGURE 1
VICINITY MAP

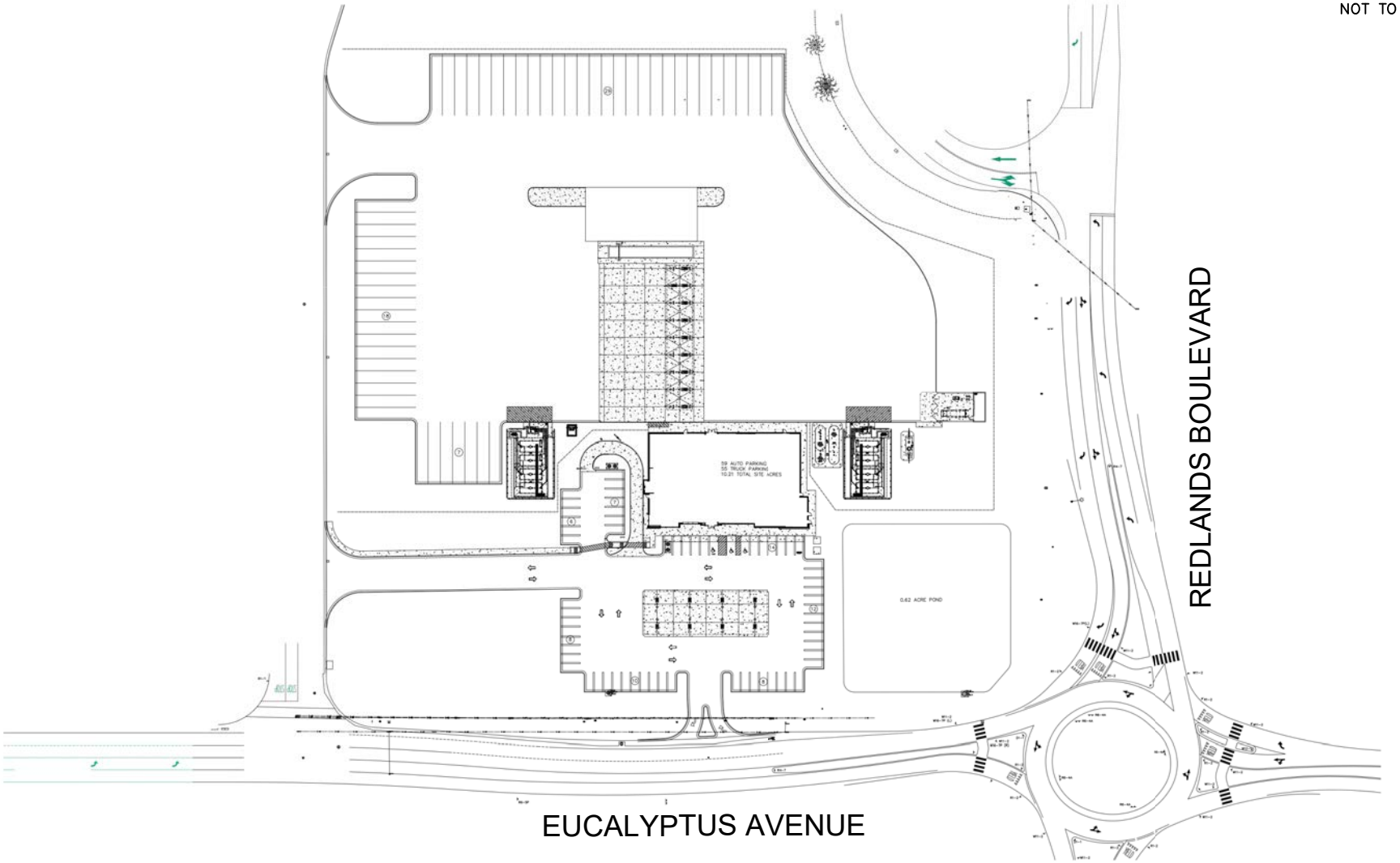


FIGURE 2
PROJECT SITE PLAN

ANALYSIS SCENARIOS AND METHODOLOGY

Analysis Scenarios

Based on the City of Moreno Valley TIA Preparation Guide, the project will be evaluated in the morning and evening peak hours for the following conditions:

- Existing Conditions
- Opening Year 2022 (Existing Plus Ambient Growth)
- Opening Year 2022 Plus Project

If analysis shows that improvements are required based on deficiency criteria, then the Opening Year 2022 Plus Project Plus Improvements scenario will be analyzed.

Intersection Analysis – HCM Methodology

This study includes evaluation of morning and evening peak hour operations at 4 study intersections and 3 proposed driveways located in the City of Moreno Valley.

Peak hour intersection operations at the study intersections and driveways were evaluated using the methods prescribed in the Highway Capacity Manual 6th Edition (HCM), consistent with the City of Moreno Valley *TIA Preparation Guide*.

For signalized intersections, the HCM methodology estimates the average delay (in average seconds per vehicle) for each of the movements through the intersection, considering a number of factors, including the number of lanes, volume of traffic, and the signal timing phasing.

For unsignalized intersections, the HCM methodology analysis determines the average total delay for each vehicle making any movement from the stop-controlled minor street, as well as left turns from the major street. Delay values are calculated based on the relationship between traffic on the major street and the availability of acceptable gaps in the traffic stream through which conflicting traffic movements can be made.

The intersection of Redlands Boulevard at Eucalyptus Avenue is a roundabout. Analysis of the roundabout intersection was conducted using the SIDRA software. This software uses a gap-acceptance methodology and determines the roundabout capacity, based on the roundabout geometry. The combined (hybrid) geometry and gap-acceptance parameters take into account the effect that the traffic volumes on the roundabout and the roundabout geometry would have on driver behavior, through gap-availability and gap-acceptance modeling.

The HCM delay forecast translates to a Level of Service designation, ranging from LOS A to LOS F. a summary of each Level of Service and the corresponding delay is provided in the following chart.

LEVEL OF SERVICE DEFINITIONS	
Level of Service	Description
A	No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication. Typically, the approach appears quite open, turns are made easily and nearly all drivers find freedom of operation.
B	This service level represents stable operation, where an occasional approach phase is fully utilized and a substantial number are approaching full use. Many drivers begin to feel restricted within platoons of vehicles.
C	This level still represents stable operating conditions. Occasionally drivers may have to wait through more than one red signal indication, and backups may develop behind turning vehicles. Most drivers feel somewhat restricted but not objectionably so.
D	This level encompasses a zone of increasing restriction, approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks within the peak period; however, enough cycles with lower demand occur to permit periodic clearance of developing queues, thus preventing excessive backups.
E	Capacity occurs at the upper end of this service level. It represents the most vehicles that any particular intersection approach can accommodate. Full utilization of every signal cycle is seldom attained no matter how great the demand.
F	This level describes forced flow operations at low speeds, where volumes exceed capacity. These conditions usually result from queues of vehicles backing up from a restriction downstream. Speeds are reduced substantially, and stoppages may occur for short or long periods of time due to the congestion. In the extreme case, both speed and volume can drop to zero.

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED AND UNSIGNALIZED INTERSECTIONS		
Level of Service	Signalized Intersection (Average delay per vehicle, in seconds) [1]	Unsignalized Intersections (Average delay per vehicle, in seconds) [2]
A	≤ 10	0 – 10
B	> 10 – 20	> 10 – 15
C	> 20 – 35	> 15 – 25
D	> 35 – 55	> 25 – 35
E	> 55 – 80	> 35 – 50
F	> 80	> 50

[1] Source: Highway Capacity Manual (HCM 6th Edition), Exhibit 18-4.

[2] Source: Highway Capacity Manual (HCM 6th Edition), Exhibits 19-1 and 20-2.

Roadway Segment Analysis

The City of Moreno Valley General Plan Circulation Element (adopted July 11, 2006) identifies acceptable capacities for roadway segments within the City based on a roadway hierarchy. The chart below shows roadway segment LOS is defined by volume to capacity ratio (v/c).

LEVEL OF SERVICE CRITERIA FOR ROADWAY SEGMENTS [1]					
Type of Roadway	Level of Service				
	A	**B**	**C**	**D**	**E**
Industrial Collector (2-Lane)	7,500 ADT	8,800 ADT	10,000 ADT	11,300 ADT	12,500 ADT
Divided Arterial (4-Lane)	22,500 ADT	26,300 ADT	30,000 ADT	33,800 ADT	37,500 ADT

[1] Source: City of Moreno Valley TIA Preparation Guide, Table 1

Level of Service Standards

The City of Moreno Valley General Plan has established the following standards regarding minimum acceptable level of service (LOS):

- LOS D is applicable at intersections and roadway segments that are adjacent to freeway on/off ramps, and adjacent to employment generating land uses. LOS C is applicable to all other intersections and roadway segments. For the study intersections and roadway segments, LOS D is acceptable.

Signalized Intersection Impacts

Traffic effects at signalized intersections are considered locally significant when any of the following occurs between the "without project" and the "plus project" conditions:

- Any signalized study intersection operating at an acceptable LOS without project traffic in which the addition of project traffic causes the intersection to degrade to unacceptable LOS shall identify improvements to provide acceptable LOS.
- Any signalized study intersection that is operating at an unacceptable LOS without project traffic where the project increases delay by 5.0 or more seconds shall identify improvements to offset the increase in delay.

Unsignalized Intersection Impacts

Unsignalized intersections will require an operational improvement if the study determines that either section a) or both sections b) and c) occur:

a) The addition of project related traffic causes the intersection to degrade from an acceptable LOS to an unacceptable LOS.
b) The project adds 5.0 seconds or more of delay to an intersection that is already projected to operate without project traffic at an unacceptable LOS.
c) The intersection meets the peak hour traffic signal warrant after the addition of project traffic.

If the conditions above are satisfied, improvements should be identified that achieve the following:

- LOS D or better for case a) above or pre-project LOS and delay for case b) above.

Roadway Segment Impacts

Consistent with the City's acceptable LOS, the following roadway segment requirements should be considered and improvements recommended if the project exceeds the noted operational goals:

- Any study roadway segment operating at acceptable LOS without project traffic in which the addition of project traffic causes the segment to degrade to unacceptable LOS should identify improvements to achieve an acceptable LOS.
- Any roadway segment that operates at an unacceptable LOS in the no project scenario where the project adds traffic in excess of 5% of the roadway capacity (e.g., a volume-to-capacity ratio increase of 0.05) should identify improvements to add capacity to the segment.

STUDY AREA

This transportation impact analysis includes documentation of existing conditions, future conditions, and identification of project-related deficiencies at the following study locations:

<u>Existing Intersections</u>

1. Redlands Boulevard at SR-60 WB Ramps/Spruce Avenue
2. Redlands Boulevard at SR-60 EB Ramps
3. Redlands Boulevard at Eucalyptus Avenue (roundabout)
4. Aldi Place at Eucalyptus Avenue

<u>Future Project Driveways</u>

D1. Aldi Place at North Project Driveway
D2. Aldi Place at South Project Driveway
D3. Eucalyptus Avenue at Project Driveway

Roadway Segments

1. Redlands Boulevard between Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps
2. Redlands Boulevard between SR-60 EB Ramps and Eucalyptus Avenue
3. Eucalyptus Avenue between Aldi Place and Redland Boulevard

The study locations were established in consultation with City of Moreno Valley staff through the Scoping Letter Agreement process. A copy of the approved Scoping Letter Agreement is provided in *Appendix A*.

AREA CONDITIONS

Existing Street System

Regional access to the site is provided primarily by the Moreno Valley Freeway (SR-60). Direct access to the project site is provided via Eucalyptus Avenue and Aldi Place.

Existing lane configurations and intersection controls at the study intersections are shown on Figure 3. A copy of the City of Moreno Valley Circulation Plan is provided on Figure 4. The following provides a description of the roadways surrounding the project site.

Redlands Boulevard – Redlands Boulevard is a two-lane undivided roadway with one lane in each direction. The posted speed limit is 50 miles per hour (mph) and on-street parking is prohibited along the roadway. Redlands Boulevard is designated as a Divided Arterial (4-Lane) in the City of Moreno Valley Circulation Plan.

Eucalyptus Avenue – Eucalyptus Avenue is a three-lane divided roadway with two lanes in the westbound direction and one lane in the eastbound direction within the project vicinity. On-street parking is prohibited along the roadway and the posted speed limit is 40 mph. Eucalyptus Avenue is designated as an Arterial in the City of Moreno Valley Circulation Plan.

Aldi Place – Aldi Place is a two-lane divided roadway with one lane in each direction. The posted speed limit it 35 mph and on-street parking is prohibited along the roadway.

Transit Service

Transit service within the project area is provided by Riverside Transit Agency, which serves the cities of Moreno Valley, Riverside, and other surrounding communities. The closest bus stop in the project vicinity is located at the Stoneridge Towne Center, approximately 1.5 miles from the project site. A description of the bus route serving the project area is provided below.

Route 31 – Route 31 operates within the communities of Moreno Valley, Beaumont, Banning, and San Jacinto. Route 31 operates on weekdays from approximately 7:00 AM to 8:45 PM with approximately 15-minute headways (the time between bus arrivals).

Existing Traffic Volumes

Existing daily, morning peak hour, and evening peak hour counts were conducted at the study intersections and roadway segments. Due to the current disruptions amid the COVID-19 pandemic, an adjustment factor was applied to existing volumes, based on a comparison of existing volumes and historical counts at study intersections #1, #2, and #3. Based on the volume comparison, an adjustment factor of 11% was applied to the new counts at the study intersections and roadway segments.

Existing morning and evening peak hour volumes and daily roadway volumes are presented on Figure 5. Peak hour intersection traffic count worksheets and daily roadway volume worksheets are provided in *Appendix B*.

Intersection Operating Conditions

Intersection Level of Service analysis was conducted for the morning and evening peak hours using the analysis procedures and assumptions described previously in this report. The results of the intersection analysis for Existing Conditions are shown on Table 1. Copies of Existing Conditions intersection analysis worksheets are provided in *Appendix C*.

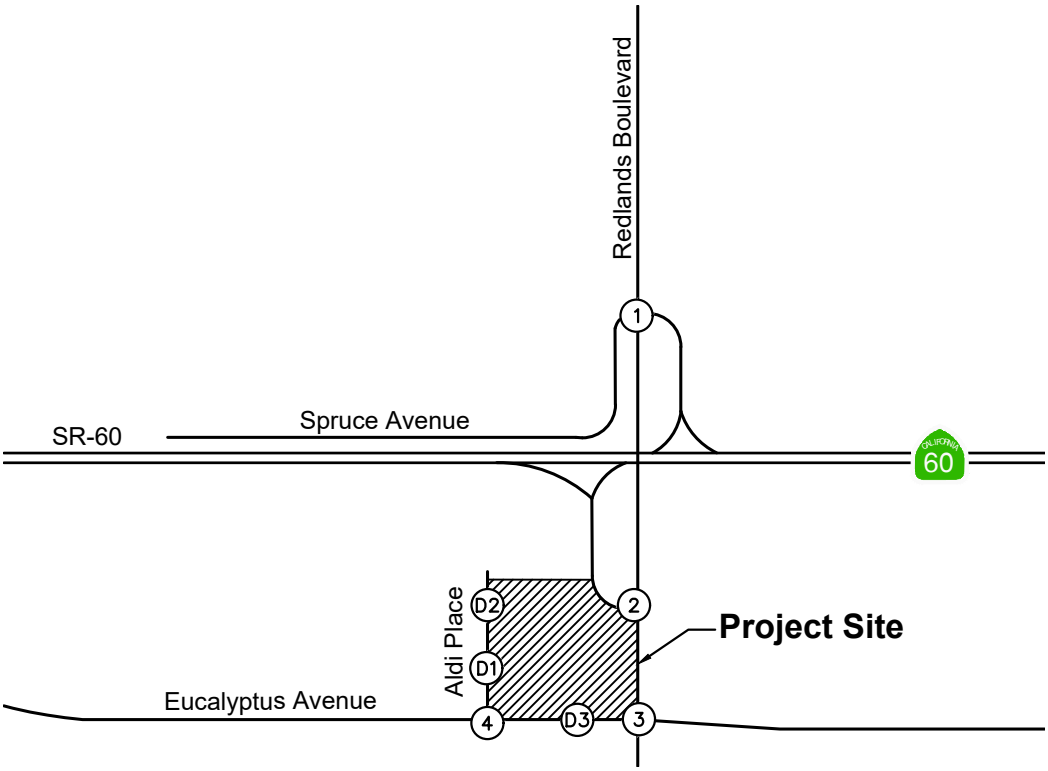
Review of this table indicates that all of the study intersections are currently operating at Level of Service D or better under Existing Conditions.

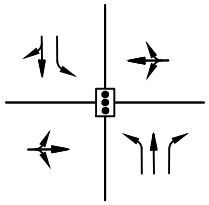
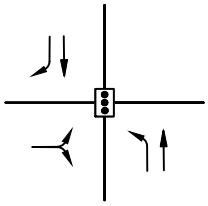
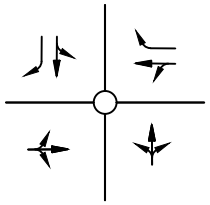
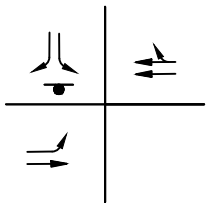
Daily Roadway Operating Conditions

Roadway Level of Service analysis was conducted using the analysis procedures and assumptions described previously in this report. As shown in Table 2, all study roadway segments are currently operating at acceptable Level of Service under Existing Conditions except for the following:

1. Redlands Boulevard between Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps

NOT TO SCALE



1. Redlands Blvd at Spruce Ave/SR-60 WB Ramps	2. Redlands Blvd at SR-60 EB Ramps	3. Redlands Blvd at Eucalyptus Ave
		
4. Aldi Place at Eucalyptus Ave	**D1. Aldi Place at South Project Driveway**	**D2. Aldi Place at North Project Driveway**
	FUTURE INTERSECTION	FUTURE INTERSECTION
D3. Eucalyptus Ave at Project Driveway		
FUTURE INTERSECTION		

LEGEND:

- (X) = Study Intersection
- = Turn or Through Lane
- = Signal
- = Stop Sign
- = Roundabout

FIGURE 3
EXISTING LANE CONFIGURATION AND TRAFFIC CONTROL

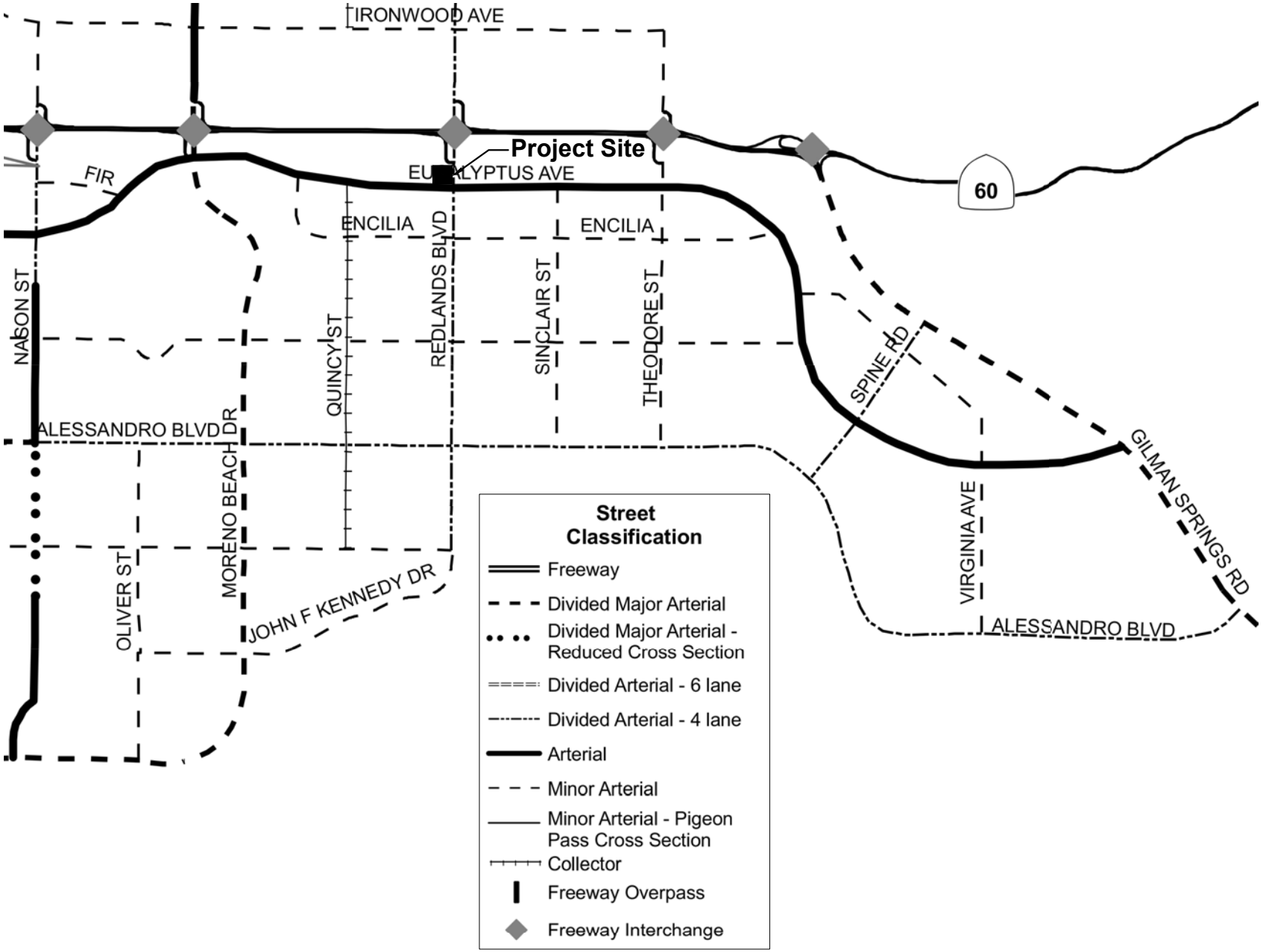
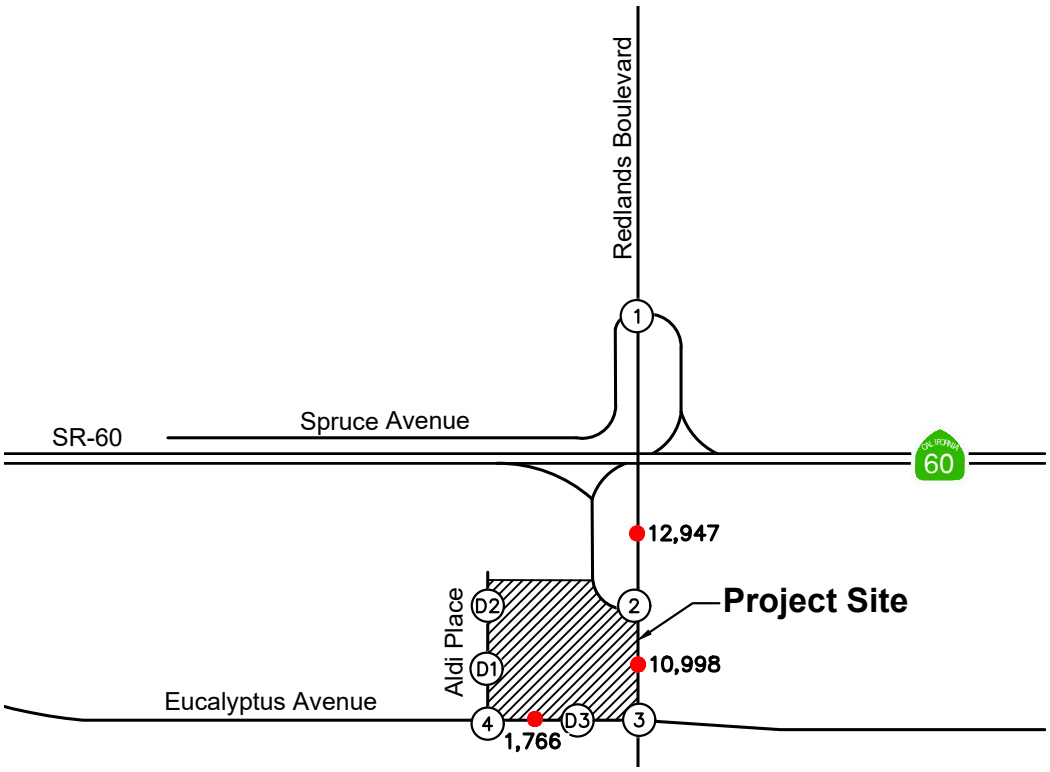


FIGURE 4
CITY OF MORENO VALLEY CIRCULATION PLAN

NOT TO SCALE



1. Redlands Blvd at Spruce Ave/SR-60 WB Ramps	2. Redlands Blvd at SR-60 EB Ramps	3. Redlands Blvd at Eucalyptus Ave
2/3 ↙ 251/398 ← 270/276 ↖ 49/18; 31/43 ↗; 1/1 → 3/3 → 3/8 ↘; 7/10 ↑ 556/672 ↑ 117/89	24/69 ↙ 261/404; 251/367 → 48/132 ↘; 42/68 ↑ 431/389 ↑	54/40 ↙ 253/488 ← 2/6; 14/36 → 6/24 ↘; 12/13 ↑ 457/417 ↑
4. Aldi Place at Eucalyptus Ave	D1. Aldi Place at South Project Driveway	D2. Aldi Place at North Project Driveway
16/9 ↙ 12/14 ↖ 28/14 ← 36/43; 14/6 → 10/48 →	FUTURE INTERSECTION	FUTURE INTERSECTION
D3. Eucalyptus Ave at Project Driveway		
FUTURE INTERSECTION		

LEGEND:

(X) = Study Intersection

XX/YY = AM/PM Peak Hour Turning Movement Volumes

X,XXX = Average Daily Traffic Volume

FIGURE 5
EXISTING TRAFFIC VOLUMES

TABLE 1
SUMMARY OF INTERSECTION OPERATION
EXISTING CONDITIONS

Int. #	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Redlands Blvd at SR-60 WB Ramps/Spruce Ave	S	25.0	C	27.3	C
2	Redlands Blvd at SR-60 EB Ramps	S	19.5	B	27.8	C
3	Redlands Blvd at Eucalyptus Ave	U	5.4	A	6.1	A
4	Aldi Place at Eucalyptus Ave	U	9.2	A	9.1	A

Notes:
- Bold values indicate intersections operating at an unacceptable Level of Service
- Delay values for unsignalized intersections represent the average vehicle delay on the worst (highest delay) intersection approach.

TABLE 2
SUMMARY OF ROADWAY SEGMENT ANALYSIS
EXISTING CONDITIONS

Roadway	Segment	Existing Configuration	Existing ADT	LOS **D** Capacity	LOS **D** or Better?
Redlands Boulevard	Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps	2-Lane Industrial Collector	12,947	11,300	No
	SR-60 EB Ramps and Eucalyptus Avenue	4-Lane Divided Arterial	10,998	33,800	Yes
Eucalyptus Avenue	Aldi Place and Redlands Boulevard	3-Lane Divided Arterial	1,766	25,350	Yes

PROJECT TRAFFIC

Project Trip Generation

Trip generation estimates for the proposed project are based on daily and peak hour trip generation rates obtained from the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition) and applicant provided data as noted below for the following uses:

- ITE Land Use 934: Fast Food Restaurant with Drive-Through Window
- ITE Land Use 950: Truck Stop
- ITE Land Use 960 Super Convenience Market with Gas Station
- Daily Truck Stop fuel pump data received from similar truck stop sites (contained in *Appendix D*)

Not all trips from the project are anticipated to be new. Some trips are expected to be captured by the internal land uses, or from the existing flow of traffic passing the site. Internal capture, pass-by, and diverted trip reductions were applied to the project based on methodology within the ITE Trip Generation Handbook (3rd Edition) and the National Cooperative Highway Research Program (NCHRP) 684 Internal Trip Capture Estimation Tool.

The truck stop land use was estimated to generate only truck trips and as such, a passenger car equivalent (PCE) factor was applied to the truck stop trips (3.0 PCE for 4+-axle trucks) to determine the total PCE trips to be generated by the truck stop land use.

Trip rates and the estimated project trip generation are shown on Table 3. ITE trip generation references, including pass-by and diverted trip percentage tables, and internal capture worksheets are included in Appendix A as part of the project scoping agreement.

After applying internal capture, pass-by, diverted trip reductions, and PCE factors, the project is estimated to generate 4,069 net new PCE trips on a daily basis, with 419 net new PCE trips in the morning peak hour, and 439 net new PCE trips in the evening peak hour.

Trip Distribution and Assignment

Project trip distribution assumptions for the project site were developed taking into account the proposed site uses, existing travel patterns, and routes to and from the freeway system. Separate distribution patterns were assumed for passenger car trips and truck trips. Primary trips are new vehicle trips that are assumed to be added to the network as a result of development of the project site. Separate project trip distributions were developed for pass-by trips for passenger cars.

Project trip distribution for passenger cars and trucks are shown on Figure 6. Project-related traffic volumes are shown on Figure 7.

TABLE 3
SUMMARY OF PROJECT TRIP GENERATION
MORENO VALLEY TRAVEL CENTER PROJECT

Trip Generation Rates

Land Use	ITE Code (a)	Unit	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Fast-Food Restaurant w Drive-Through Window	934	KSF	470.950	0.51	0.49	40.19	0.52	0.48	32.67
Super Convenience Market/Gas Station	960	FP	230.520	0.50	0.50	28.08	0.50	0.50	22.96
Truck Stop	Data (b) / 950	FP	72.727	0.51	0.49	7.18	0.49	0.51	8.41

Project Trip Generation

Land Use	Quantity	Unit	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Passenger Car Trips									
Fast-Food Restaurant with Drive-Through	2.312	KSF	1,089	47	46	93	40	36	76
Internal Capture (c) (Daily: 13%, AM: 11%, PM: 12%)			-142	-5	-5	-10	-5	-4	-9
Pass-By Trips (d) (Daily: 50%, AM: 49%, PM: 50%)			-474	-21	-20	-41	-18	-16	-34
Diverted Trips (e) (Daily: 25%, AM: 28%, PM: 23%)			-237	-12	-11	-23	-8	-7	-15
Super Convenience Market/Gas Station	16	FP	3,688	225	224	449	184	183	367
Internal Capture (c) (Daily: 13%, AM: 11%, PM: 12%)			-479	-25	-24	-49	-22	-22	-44
Pass-By Trips (d) (Daily: 59%, AM: 62%, PM: 56%)			-1,893	-124	-124	-248	-91	-90	-181
Diverted Trips (e) (Daily: 26%, AM: 21%, PM: 31%)			-834	-42	-42	-84	-50	-50	-100
Truck Trips (f) (g) (h)									
Truck Stop	10	FP	800	40	39	79	46	47	93
Pass-By Trips (i) (Daily: 5%, AM: 5%, PM: 5%)			-40	-2	-2	-4	-2	-3	-5
PCE Truck Stop (PCE Factor = 3)			2,400	120	117	237	138	141	279
PCE Pass-By Trips (i) (Daily: 5%, AM: 5%, PM: 5%)			-120	-6	-6	-12	-6	-9	-15
Total Driveway Trips			6,556	362	358	720	335	334	669
Passenger Car			4,156	242	241	483	197	193	390
Truck PCE			2,400	120	117	237	138	141	279
Total Primary Trips			4,069	211	208	419	220	219	439
Passenger Car			1,789	97	97	194	88	87	175
Truck PCE			2,280	114	111	225	132	132	264

Notes:
KSF = thousand square feet, FP = Fueling Position
AM and/or PM rates correspond to peak of adjacent street traffic

(a) Trip Generation data for ITE Codes from *ITE Trip Generation, 10th Edition*
(b) Daily Trip Generation data provided by Applicant
(c) Internal capture rates from ITE Trip Generation Handbook, 3rd Edition NCHRP 684 Interna Trip Capture Estimation Tool
(d) Pass-by rates from ITE Trip Generation Handbook, 3rd Edition for ITE LU 934 Fast-Food Restaurant With Drive-Through Window and LU 945 Gasoline/Service Station With Convenience Market
(e) Diverted trip rates from ITE Trip Generation Handbook, 3rd Edition for ITE LU 934 Fast-Food Restaurant With Drive-Through Window and LU 945 Gasoline/Service Station With Convenience Market
(f) Truck trips include trips to the Truck Stop land use portion only, using daily trip information obtained from similar faclilities
(g) Peak hour information estimated using peak hour percentages from ITE Trip Generation Manual, 10th Edition
(h) No internal capture was assumed for the Truck Stop land use, as a truck stop is assumed to include a variety of services
(i) As there was no supporting data available to define the number of pass-by trips, pass-by rates were estimated to be 5%

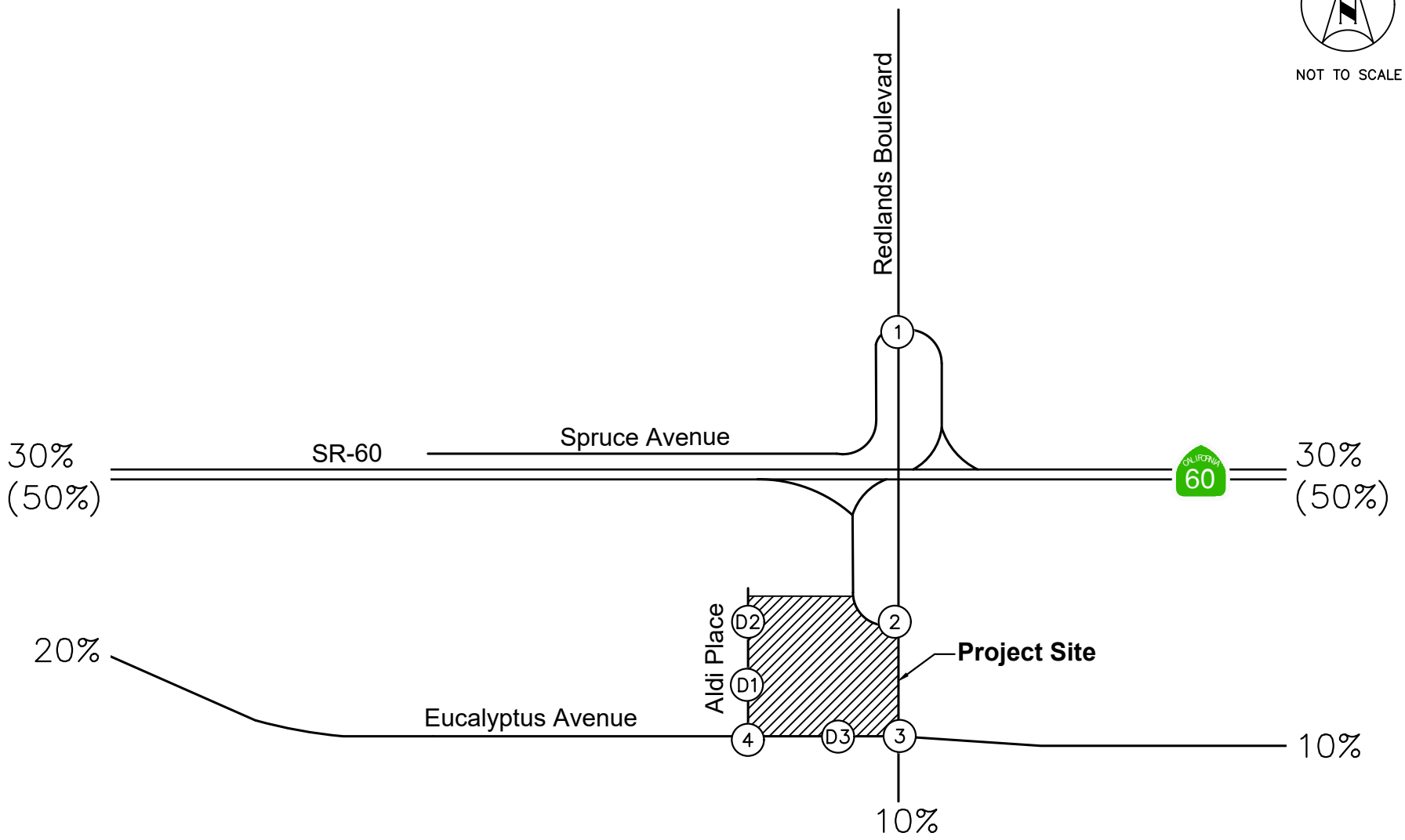


FIGURE 6
PROJECT TRIP DISTRIBUTION

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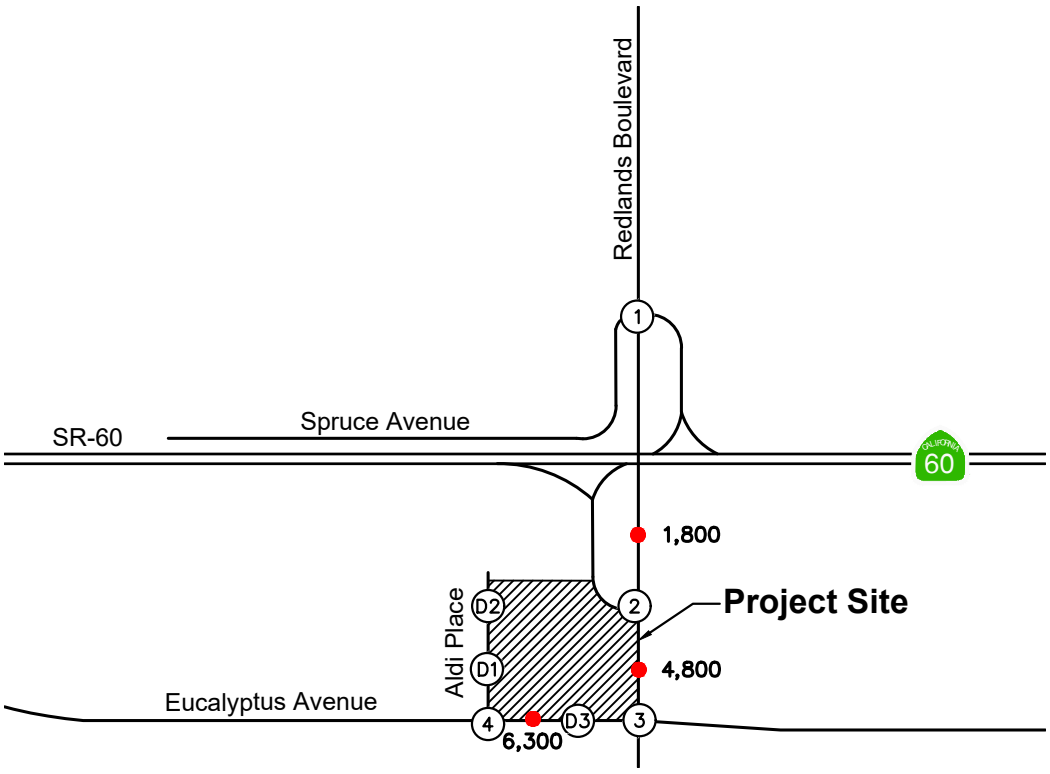

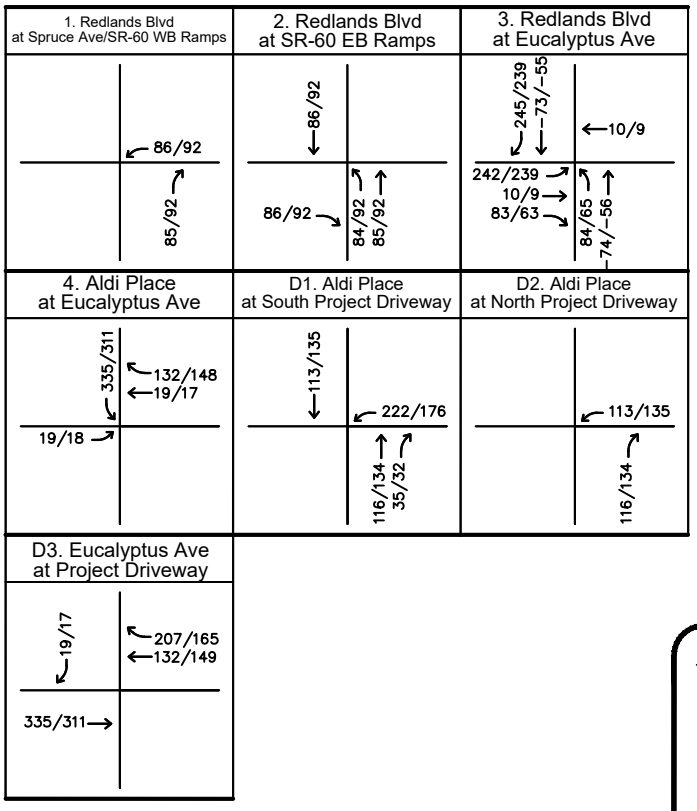

LEGEND:

(X) = Study Intersection

XX/YY = AM/PM Peak Hour Turning Movement Volumes

● X,XXX = Average Daily Traffic Volume

FIGURE 7
PROJECT-RELATED TOTAL TRAFFIC VOLUMES

FUTURE CONDITIONS

Opening Year 2022 Conditions

The Project Opening Year (the year the project would be constructed and occupied) is anticipated to be Year 2022. An ambient growth rate of 2% per year to Opening Year 2022 was applied to existing traffic volumes to capture background traffic growth. Ambient growth was added to existing traffic to develop Opening Year 2022 forecasts. The resulting morning and evening peak hour volumes and daily roadway volumes are presented on Figure 8.

Intersection Operating Conditions

Intersection Level of Service analysis was conducted for the morning and evening peak hours for the Opening Year 2022 Conditions. The results are shown on Table 4. Intersection analysis worksheets for this scenario are provided in *Appendix C*.

Review of this table indicates that all of the study intersections would continue to operate at an acceptable LOS under Opening Year 2022 Conditions.

Daily Roadway Operating Conditions

Roadway Level of Service analysis was conducted using the analysis procedures and assumptions described previously in this report. As shown in Table 5, the following study roadway segments would continue to operate at an unacceptable LOS under Opening Year 2022 Conditions:

1. Redlands Boulevard between Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps

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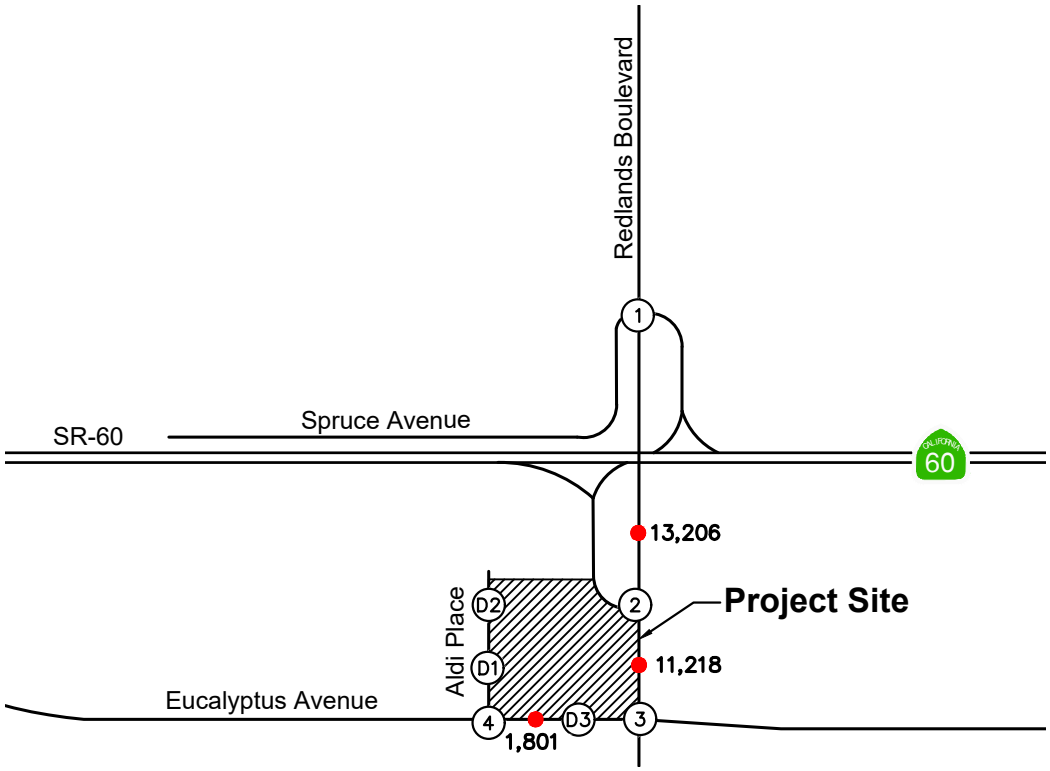

1. Redlands Blvd at Spruce Ave/SR-60 WB Ramps	2. Redlands Blvd at SR-60 EB Ramps	3. Redlands Blvd at Eucalyptus Ave
2/3 ← 256/406 ← 275/282 ← 50/18 1/1 → 3/3 → 3/8 → 7/10 ↑ 567/685 ↑ 119/91 ↑ 32/44	24/70 ← 266/412 256/374 → 49/135 → 43/69 ↑ 440/397 ↑	55/41 ← 258/498 ← 2/6 14/37 → 6/24 → 12/13 ↑ 466/425 ↑
4. Aldi Place at Eucalyptus Ave	**D1. Aldi Place at South Project Driveway**	**D2. Aldi Place at North Project Driveway**
16/9 → 12/14 ← 29/14 ← 37/44 14/6 → 10/49 →	FUTURE INTERSECTION	FUTURE INTERSECTION
D3. Eucalyptus Ave at Project Driveway		
FUTURE INTERSECTION		

LEGEND:

(X) = Study Intersection

XX/YY = AM/PM Peak Hour Turning Movement Volumes

● X,XXX = Average Daily Traffic Volume

FIGURE 8
OPENING YEAR 2022 TRAFFIC VOLUMES

TABLE 4
SUMMARY OF INTERSECTION OPERATION
OPENING YEAR 2022 WITHOUT PROJECT

Int. #	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Redlands Blvd at SR-60 WB Ramps/Spruce Ave	S	25.6	C	28.9	C
2	Redlands Blvd at SR-60 EB Ramps	S	19.6	B	28.3	C
3	Redlands Blvd at Eucalyptus Ave	U	5.5	A	6.2	A
4	Aldi Place at Eucalyptus Ave	U	9.2	A	9.1	A

Notes:
- Bold values indicate intersections operating at an unacceptable Level of Service
- Delay values for unsignalized intersections represent the average vehicle delay on the worst (highest delay) intersection approach.

TABLE 5
SUMMARY OF ROADWAY SEGMENT ANALYSIS
OPENING YEAR 2022 WITHOUT PROJECT

Roadway	Segment	Existing ADT	Opening Year 2022 Base ADT	LOS **D** Capacity	LOS **D** or Better?
Redlands Boulevard	Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps	12,947	13,206	11,300	No
	SR-60 EB Ramps and Eucalyptus Avenue	10,998	11,218	33,800	Yes
Eucalyptus Avenue	Aldi Place and Redlands Boulevard	1,766	1,801	25,350	Yes

FUTURE CONDITIONS PLUS PROJECT

Opening Year 2022 Plus Project Conditions

Project-related traffic was added to the Opening Year 2022 traffic volumes, and the resulting morning and evening peak hour volumes and daily roadway volumes are presented on Figure 9.

Intersection Operating Conditions

Intersection Level of Service analysis was conducted for the morning and evening peak hours for the Opening Year 2022 Plus Project Conditions. The results of the intersection analysis are shown on Table 6. Copies of intersection analysis worksheets for this scenario are provided in *Appendix C*.

Review of this table indicates that all of the study intersections would continue to operate at an acceptable LOS under Opening Year 2022 Plus Project Conditions.

Daily Roadway Operating Conditions

Roadway Level of Service analysis was conducted using the analysis procedures and assumptions described previously in this report. As shown in Table 7, the following study roadway segments would continue to operate at unacceptable LOS under Opening Year 2022 Plus Project Conditions:

1. Redlands Boulevard between Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps

Based on the roadway segment impact criteria presented earlier in this report, with the addition of project traffic the project would have a project related effect at the following study roadway segments:

1. Redlands Boulevard between Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps

Recommended improvements for roadway segment #1 are presented in the Recommended Improvements section of this report.

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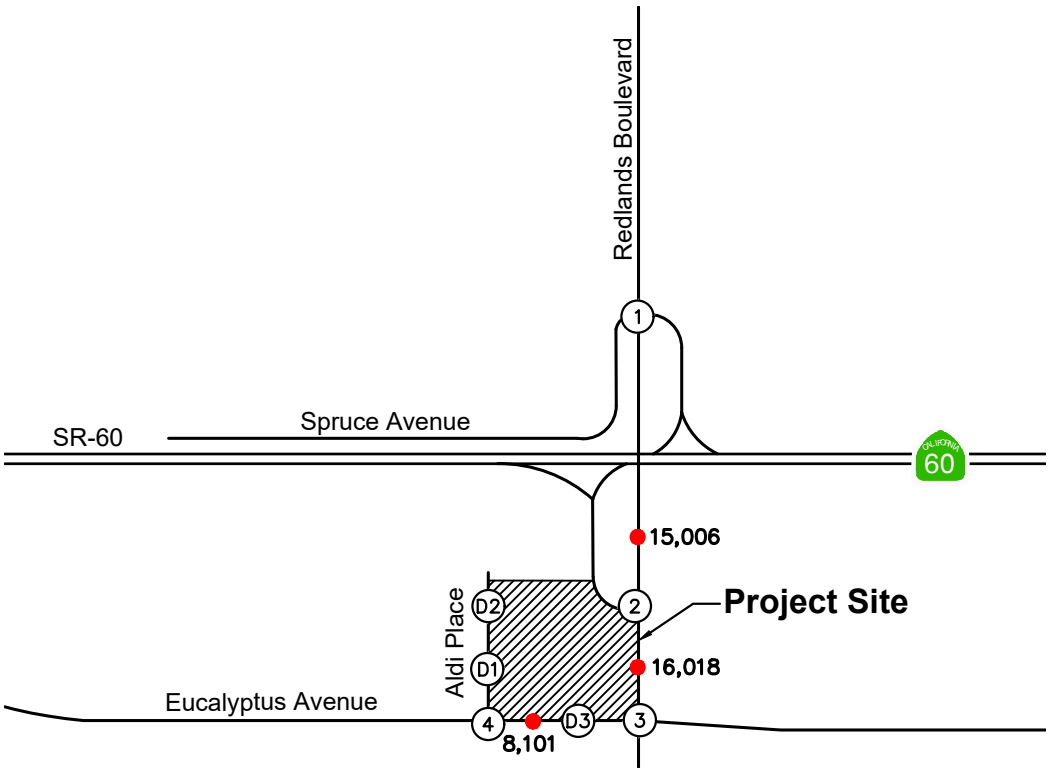
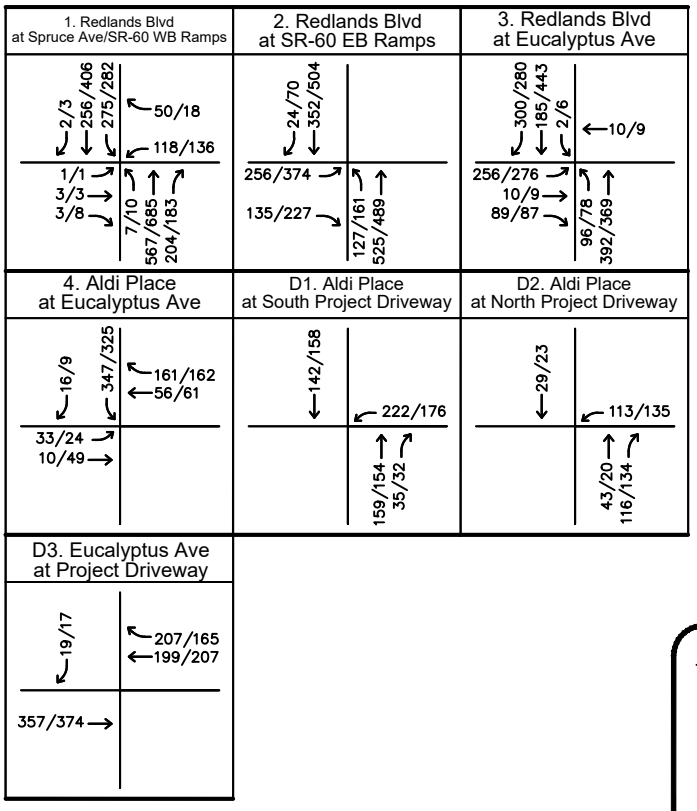




LEGEND:

(X) = Study Intersection

XX/YY = AM/PM Peak Hour Turning Movement Volumes

X,XXX = Average Daily Traffic Volume

FIGURE 9
OPENING YEAR 2022 PLUS PROJECT TRAFFIC VOLUMES

TABLE 6
SUMMARY OF INTERSECTION OPERATION
OPENING YEAR 2022 PLUS PROJECT

Int. #	Intersection	AM Peak Hour						PM Peak Hour					
		Without Project		With Project		Change in Delay	Project-Related Effect?	Without Project		With Project		Change in Delay	Project-Related Effect?
		Delay	LOS	Delay	LOS			Delay	LOS	Delay	LOS		
1	Redlands Blvd at SR-60 WB Ramps/Spruce Ave	25.6	C	33.5	C	7.9	No	28.9	C	33.9	C	5.0	No
2	Redlands Blvd at SR-60 EB Ramps	19.6	B	26.5	C	6.9	No	28.3	C	43.3	D	15.0	No
3	Redlands Blvd at Eucalyptus Ave	5.5	A	6.8	A	1.3	No	6.2	A	8.5	A	2.3	No
4	Aldi Place at Eucalyptus Ave	9.2	A	18.7	C	9.5	No	9.1	A	14.3	B	5.2	No
5	Aldi Place at South Project Driveway	-	-	12.9	B	-	No	-	-	12.3	B	-	No
6	Aldi Place at North Project Driveway	-	-	9.8	A	-	No	-	-	9.8	A	-	No
7	Eucalyptus Ave at Project Driveway	-	-	9.6	A	-	No	-	-	9.5	A	-	No

Notes:
- Bold values indicate intersections operating at an unacceptable Level of Service
- Delay values for unsignalized intersections represent the average vehicle delay on the worst (highest delay) intersection approach.

TABLE 7
SUMMARY OF ROADWAY SEGMENT ANALYSIS
OPENING YEAR 2022 PLUS PROJECT

Roadway	Segment	Opening Year 2022 Base ADT	Project ADT	Opening Year 2022 Plus Project ADT	LOS **D** Capacity	LOS **D** or Better?
Redlands Boulevard	Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps	13,206	2,400	15,606	11,300	No
	SR-60 EB Ramps and Eucalyptus Avenue	11,218	4,900	16,118	33,800	Yes
Eucalyptus Avenue	Aldi Place and Redlands Boulevard	1,801	5,700	7,501	25,350	Yes

RECOMMENDED IMPROVEMENTS

Intersection Improvements

Based on the Level of Service standards and significant effect criteria discussed previously, the project would not have a project-related effect on any of the study intersections.

Roadway Improvements

Based on the impact criteria in the City of Moreno Valley *TIA Preparation Guide* (June 2020), the following study roadway segments would have a project-related effect:

1. Redlands Boulevard between Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps

The following improvements are recommended:

1. Redlands Boulevard between Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps: Widen from 2 lanes to 4 lanes. This improvement is consistent with the City of Moreno Valley General Plan and the project will pay DIF and TUMF fees toward this planned improvement.

A summary of the study roadway segments after implementation of these recommended improvements in provided on Table 8.

SITE ACCESS ANALYSIS

Vehicular access for the project site would be via three driveways, one driveway on Eucalyptus Avenue and two driveways on Aldi Place. The driveway on Eucalyptus Avenue would provide right-in-right-out (RIRO) only access. The southern driveway on Aldi Place would be for passenger vehicle access to the gas station from Aldi Place. The northern driveway on Aldi Place would provide truck ingress and egress access to the project site. All project driveways would be unsignalized.

In the Opening Year 2022 Plus Project scenario, the southbound approach at intersection of Aldi Place at Eucalyptus Avenue would have a 95th percentile left-turn queue of 112 feet and 64 feet in the morning and evening peak hours, respectively. The distance between the stop bar at the intersection and the center of the southern driveway will be 128 feet, which can accommodate the left-turn queue lengths and also satisfy the minimum driveway spacing of 100 feet for a local road identified in the *City of Moreno Valley Municipal Code (Table 9.11.080-14)*.

TABLE 8
SUMMARY OF ROADWAY SEGMENT ANALYSIS WITH PROPOSED RECOMMENDED IMPROVEMENTS
OPENING YEAR 2022 PLUS PROJECT

Roadway	Segment	Opening Year 2022 Base ADT	Project ADT	Opening Year 2022 Plus Project ADT	LOS **D** Capacity	LOS **D** or Better?
Redlands Boulevard	Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps	13,206	2,400	15,606	33,800	Yes
	SR-60 EB Ramps and Eucalyptus Avenue	11,218	4,900	16,118	33,800	Yes
Eucalyptus Avenue	Aldi Place and Redlands Boulevard	1,801	5,700	7,501	25,350	Yes

VEHICLE MILES TRAVELED ANALYSIS

Introduction

Senate Bill 743 (SB 743) was approved by California legislature in September 2013. SB 743 requires changes to California Environmental Quality Act (CEQA), specifically directing the Governor's Office of Planning and Research (OPR) to develop alternative metrics to the use of vehicular "Level of Service" (LOS) for evaluating transportation projects. OPR has prepared a technical advisory ("OPR" Technical Advisory) for evaluating transportation impacts in CEQA and has recommended that Vehicle Miles Traveled (VMT) replace LOS as the primary measure of transportation impacts. This analysis was prepared to document the VMT analysis for the Moreno Valley Travel Center Project following the OPR Technical Advisory (December 2018) and the City of Moreno Valley *TIA Preparation Guide* (June 2020).

Vehicle Miles Traveled Screening

This section documents Vehicle Miles Traveled (VMT)/SB 743 considerations for the Project. OPR provides details on appropriate screening thresholds that can be used to identify when a proposed land use project is anticipated to result in a less than significant impact without conducting a more detailed level analysis.

A land use project needs only meet one of the screening thresholds to be presumed to result in not a significant impact under CEQA pursuant to SB 743.

Land Use Type Screening

The OPR and SBCTA VMT Guidelines identify that Project types falling under the screening criteria includes the following:

- K-12 Schools
- Local-serving retail less than 50,000 square feet
- Local parks
- Day care centers
- Local serving gas stations
- Local serving banks
- Local serving hotels (e.g. non-destination hotels)
- Student housing Projects on or adjacent college campuses
- Local-serving assembly uses, Community Institutions
- Local serving community colleges
- Affordable or supportive housing, Assisted living facilities, Senior housing
- Projects generating less than 110 daily vehicle trips

Since the project is expected to operate as a local serving gas station and many of the project trips are diverted link trips, meaning that the project trips will already be on the roadway network but will stop by the project site as it is nearby or on the way to their intended destination, the VMT generated by the project is expected to be minimal. Therefore, the project should be screened out due to its land use type and further VMT analysis is not required. A VMT Analysis Memo has been provided in *Appendix E*.

SUMMARY OF FINDINGS AND CONCLUSIONS

- The project is located on the northwest corner of the Redlands Boulevard and Eucalyptus Avenue intersection.

- The project consists of the construction of a truck stop with 10 truck fueling positions and truck stop facilities, a gas station with a convenience market and 16 fueling positions, and a 2,312 square-foot fast-food restaurant with a drive-through.

- The project is estimated to generate 4,069 net new PCE trips on a daily basis, with 419 net new PCE trips in the morning peak hour, and 439 net new PCE trips in the evening peak hour.

- Vehicular access for the project site would be via three driveways. The driveway on Eucalyptus Avenue would provide right-in-right-out (RIRO) only access. The southern driveway on Aldi Place would be for passenger vehicle access to the gas station from Aldi Place. The northern driveway on Aldi Place would provide truck ingress and egress access to the project site. All project driveways would be unsignalized.

- Under Existing Conditions, all study locations currently operate at Level of Service D or better, except for the following roadway segment:

    - Redlands Boulevard between Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps

- Under Opening Year 2022 Conditions, all study locations would operate at Level of Service D or better, except for the following roadway segment:

    - Redlands Boulevard between Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps

- Under Opening Year 2022 Plus Project Conditions, all study locations would operate at Level of Service D or better, except for the following roadway segment:

    - Redlands Boulevard between Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps

- The project would have a project-related effect at the following study roadway segment:

    - Redlands Boulevard between Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps

- The project will pay DIF and TUMF fees toward the planned roadway improvement to widen Redlands Boulevard from 2 lanes to 4 lanes between Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps. This improvement is consistent with the City of Moreno Valley General Plan.

- The project is expected to operate as a local serving gas station and many of the project trips are diverted links. Therefore, the project should be screened out due to its land use type and further VMT analysis is not required.

APPENDIX A

APPROVED SCOPING AGREEMENT

EXHIBIT A

Project Scoping Form

This scoping form shall be submitted to the Lead Agency to assist in identifying infrastructure improvements that may be required to support traffic from the proposed project.

Project Identification:

Case Number:	PPA20-0019; LST21-0013
Related Cases:	
SP No.	
EIR No.	
GPA No.	
CZ No.	
Project Name:	Moreno Valley Travel Center
Project Address:	Northwest corner of Redlands Blvd and Eucalyptus Ave
Project Opening Year:	2022
Project Description:	Travel Center with 16 gas station fueling positions and convenience store, 2,312 s.f. fast food restaurant with drive-through, and 11 truck stop fueling positions. See Attachment 1 for site plan.

	Consultant:	**Developer:**
Name:	Kimley-Horn & Associates	Pilot Travel Centers
Address:	3880 Lemon Ave, Suite 420	5508 Lonas Dr
	Riverside, CA 92501	Knoxville, TN 37909
Telephone:	714-780-2543	865-474-2935
Email:	Pranesh.Tarikere@kimley-horn.com	Ryan.Robinson@pilottravelcenters.com

Trip Generation Information:

Trip Generation Data Source: ITE Trip Generation manual, 10th Edition; data from similar area travel centers provided by applicant.

Nick Minicilli

Approved 6/3/2021

Current General Plan Land Use: Commercial

Proposed General Plan Land Use: Commercial

Current Zoning: Community Commercial

Proposed Zoning: Community Commercial

	Existing Trip Generation			Proposed Trip Generation		
	In	Out	Total	In	Out	Total
AM Trips	0	0	0	362	358	720
PM Trips	0	0	0	335	334	669

Trip Internalization: ☒ Yes ☐ No (_____% Trip Discount) See Attachment 2

Pass-By Allowance: ☒ Yes ☐ No (_____% Trip Discount) See Attachment 2

Potential Screening Checks

Is your project screened from specific analyses (see Page 3 of the guidelines related to LOS assessment and Pages 22-23 for VMT screening criteria).

Is the project screened from LOS assessment? ☐ Yes ☒ No

LOS screening justification (see Page 3 of the guidelines): _____

Is the project screened from VMT assessment? [X] Yes [ ] No

VMT screening justification (see Pages 22-23 of the guidelines): The project will provide a local-serving gas station and local serving retail under 50,000 s.f. (convenience market and fast-food).

Level of Service Scoping

- Proposed Trip Distribution (Attach Graphic for Detailed Distribution): see Attachment 3

North	South	East	West
100% (Trucks) 60% (Cars) %	10% (Cars) %	0 %	30% (Cars) %

Link level of service and data collection:

_X_ will be required

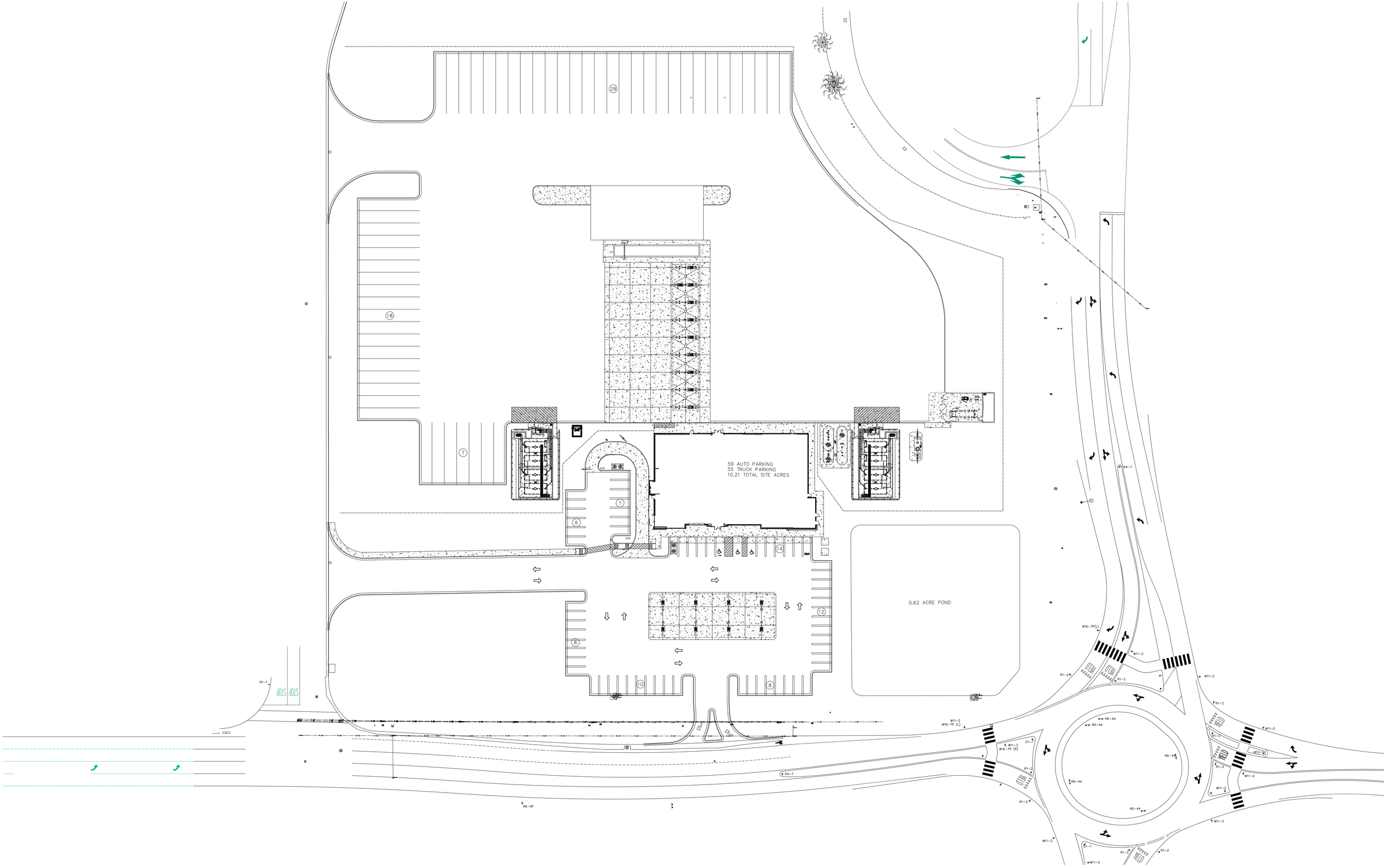
____ will not be required

- Attach list of study intersections (and roadway segments if applicable) see Attachment 3
- Attach site plan
- Other specific items to be addressed:
  - Site access
  - On-site circulation
  - Parking
  - Consistency with Plans supporting Bikes/Peds/Transit
  - Other _____
- Date of Traffic Counts see Attachment 4
- Attach proposed analysis scenarios (years plus proposed forecasting approach)
- Attach proposed phasing approach (if the project is phased)

VMT Scoping

For projects that are not screened, identify the following:

- Travel Demand Forecasting Model Used N/A
- Attach WRCOG Screening VMT Assessment output or describe why it is not appropriate for use
- Attach proposed Model Land Use Inputs and Assumed Conversion Factors (attach)



ATTACHMENT 2 - TRIP GENERATION TABLES

Table 1 - Trip Generation Rates

Land Use	Source	Units	Daily Trip Rate	AM Peak Hour Rate		PM Peak Hour Rate	
				Trip Rate	In : Out	Trip Rate	In : Out
Fast-Foot Restaurant w Drive-Through Window	ITE Code 934	2.312 ksf	470.95	40.19	51% : 49%	32.67	52% : 48%
Super Convenience Market/Gas Station	ITE Code 960	16 FP	230.52	28.08	50% : 50%	22.96	50% : 50%
Truck Stop	Data (a)/ITE Code 950	11 Truck FP	72.73	7.18	51% : 49%	8.41	49% : 51%

Notes
KSF = thousand square feet, FP = Fueling Positions
AM and/or PM rates correspond to peak of adjacent street traffic
Trip Generation data for ITE Codes from *ITE Trip Generation, 10th Edition*
(a) Daily Trip Generation data received from Pilot

Table 2 - Project Passenger Car Trip Generation

Proposed Land Use (a)	Units	Daily Trips	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Fast-Food Restaurant with Drive-Through (b)	2.312	1,089	47	46	93	40	36	76
Internal Capture (c) (Daily: 13%, AM: 11%, PM: 12%)		*-142*	*-5*	*-5*	*-10*	*-5*	*-4*	*-9*
Net Driveway Trips – Fast-food Restaurant with Drive-Through		947	42	41	83	35	32	67
Pass-By Trips (d) (Daily: 50%, AM: 49%, PM: 50%)		*-474*	*-21*	*-20*	*-41*	*-18*	*-16*	*-34*
Diverted Trips (e) (Daily: 25%, AM: 28%, PM: 23%)		*-237*	*-12*	*-11*	*-23*	*-8*	*-7*	*-15*
Net Primary Trips – Fast-food Restaurant with Drive-Through		*236*	*9*	*10*	*19*	*9*	*9*	*18*
Super Convenience Market/Gas Station (b)	16 Fueling Positions	3,688	225	224	449	184	183	367
Internal Capture (c) (Daily: 13%, AM: 11%, PM: 12%)		*-479*	*-25*	*-24*	*-49*	*-22*	*-22*	*-44*
Net Driveway Trips – Gas Station with Convenience Market		3,209	200	200	400	162	161	323
Pass-By Trips (d) (Daily: 59%, AM: 62%, PM: 56%)		*-1,893*	*-124*	*-124*	*-248*	*-91*	*-90*	*-181*
Diverted Trips (e) (Daily: 26%, AM: 21%, PM: 31%)		*-834*	*-42*	*-42*	*-84*	*-50*	*-50*	*-100*
Net Primary Trips – Super Convenience Market/Gas Station		*482*	*34*	*34*	*68*	*21*	*21*	*42*
Net Passenger Car Trips (f)	*Net Driveway Trips*	*4,156*	*242*	*241*	*483*	*197*	*193*	*390*
	Net Primary Trips (with pass-by reduction) (g)	*1,789*	*97*	*97*	*194*	*88*	*87*	*175*
	Net Primary Trips (with pass-by and diverted trip	*718*	*43*	*44*	*87*	*30*	*30*	*60*

Notes
(a) Passenger Car trips include trips to 2.400 ksf Fast-Food Restaurant with drive-thru and a 16 fueling position Super Convenience Market/Gas Station.
(b) Trip Generation data from ITE Trip Generation Manual, 10th Edition
(c) Internal capture rates from ITE Trip Generation Handbook, 3rd Edition NCHRP 684 Interna Trip Capture Estimation Tool
(d) Pass-by rates from ITE Trip Generation Handbook, 3rd Edition for ITE LU 934 Fast-Food Restaurant With Drive-Through Window and LU 945 Gasoline/Service Station With Convenience Market
(e) Diverted trip rates from ITE Trip Generation Handbook, 3rd Edition for ITE LU 934 Fast-Food Restaurant With Drive-Through Window and LU 945 Gasoline/Service Station With Convenience Market
(f) Net passenger car trips are the sum of trips generated by the Fast-Food Restaurant without drive-thru land use and Super Convenience Market/Gas Station land use
(g) These values will be used for Traffic Analysis

Table 3 - Truck Trip Generation

Proposed Land Use	Units	Daily Trips (a)	AM Peak Hour (b)			PM Peak Hour (b)		
			In	Out	Total	In	Out	Total
Truck Stop	11 Fueling Positions	800	40	39	79	46	47	93
Internal Capture (c) 0%		*0*	*0*	*0*	*0*	*0*	*0*	*0*
Net Driveway Trips – Truck Stop		800	40	39	79	46	47	93
Net Driveway Trips in PCE (PCE=3.0)		2,400	120	117	237	138	141	279
Pass-By Trips (d) (Daily: 5%, AM: 5%, PM: 5%)		*-40*	*-2*	*-2*	*-4*	*-2*	*-3*	*-5*
Net Primary Trips – Truck Stop		*760*	*38*	*37*	*75*	*44*	*44*	*88*
Net Primary Trips in PCE (PCE=3.0)		*2,280*	*114*	*111*	*225*	*132*	*132*	*264*

Notes
(a) Truck trips include trips to the Truck Stop land use portion only, using daily trip information obtained from similar faclilities
(b) Peak hour information estimated using peak hour percentages from ITE Trip Generation Manual, 10th Edition
(c) No internal capture was assumed for the Truck Stop land use, as a truck stop is assumed to include a variety of services
(d) As there was no supporting data available to define the number of pass-by trips, pass-by rates were estimated to be 5%
(e) As there was no supporting data available to define the number of pass-by trips, diverted rates were estimated to be similar to a Super Convenience Market with Gas Station

Table 4 - Total Project Trip Generation

	Daily Trips	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Total Primary Trips							
Fast Food w Drive-Through	473	21	21	42	17	16	33
Super Convenience Market/Gas Station	1,316	76	76	152	71	71	142
Truck Stop (PCE = 3.0)	2,280	114	111	225	132	132	264
Total Primary Trip Generation	4,069	211	208	419	220	219	439
Total Driveway Trips							
Fast Food w Drive-Through	947	42	41	83	35	32	67
Super Convenience Market/Gas Station	3,209	200	200	400	162	161	323
Truck Stop (PCE = 3.0)	2,400	120	117	237	138	141	279
Total Driveway Trip Generation	6,556	362	358	720	335	334	669

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:		**Organization:**	Kimley-Horn and Associates, Inc.
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**Daily Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office		-	0	0	0	0
Retail	960	16	16 FP	3,690	1,845	1,845
Restaurant	933	3	2,312 SF	1,090	545	545
Cinema/Entertainment		-	Screen(s)	0	0	0
Residential		-	Dwelling Unit(s)	0	0	0
Hotel		-	Room(s)	0	0	0
All Other Land Uses[2]		-	0	0	0	0
				4,780	2,390	2,390

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.00	0%	0%	1.00	0%	0%
Retail	1.00	0%	0%	1.00	0%	0%
Restaurant	1.00	0%	0%	1.00	0%	0%
Cinema/Entertainment	1.00	0%	0%	1.00	0%	0%
Residential	1.00	0%	0%	1.00	0%	0%
Hotel	1.00	0%	0%	1.00	0%	0%
All Other Land Uses[2]	1.00	0%	0%	1.00	0%	0%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		240	0	0	0
Restaurant	0	76		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	4,780	2,390	2,390
Internal Capture Percentage	13%	13%	13%
External Vehicle-Trips[5]	4,148	2,074	2,074
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	4%	13%
Restaurant	44%	14%
Cinema/Entertainment	N/A	N/A
Residential	N/A	N/A
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:		**Organization:**	Kimley-Horn and Associates, Inc.
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office		-	0	0	0	0
Retail	960	16	16 FP	449	225	224
Restaurant	933	3	2,312 SF	93	47	46
Cinema/Entertainment		-	Screen(s)	0	0	0
Residential		-	Dwelling Unit(s)	0	0	0
Hotel		-	Room(s)	0	0	0
All Other Land Uses[2]		-	0	0	0	0
				542	272	270

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.00	0%	0%	1.00	0%	0%
Retail	1.00	0%	0%	1.00	0%	0%
Restaurant	1.00	0%	0%	1.00	0%	0%
Cinema/Entertainment	1.00	0%	0%	1.00	0%	0%
Residential	1.00	0%	0%	1.00	0%	0%
Hotel	1.00	0%	0%	1.00	0%	0%
All Other Land Uses[2]	1.00	0%	0%	1.00	0%	0%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		24	0	0	0
Restaurant	0	6		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	542	272	270
Internal Capture Percentage	11%	11%	11%
External Vehicle-Trips[5]	482	242	240
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	3%	11%
Restaurant	51%	13%
Cinema/Entertainment	N/A	N/A
Residential	N/A	N/A
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:		**Organization:**	Kimley-Horn and Associates, Inc.
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office		-	0	0	0	0
Retail		16	16 FP	367	184	183
Restaurant		2	2,312 SF	76	40	36
Cinema/Entertainment		-	Screen(s)	0	0	0
Residential		-	Dwelling Unit(s)	0	0	0
Hotel		-	Room(s)	0	0	0
All Other Land Uses[2]		-	0	0	0	0
				443	224	219

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.00	0%	0%	1.00	0%	0%
Retail	1.00	0%	0%	1.00	0%	0%
Restaurant	1.00	0%	0%	1.00	0%	0%
Cinema/Entertainment	1.00	0%	0%	1.00	0%	0%
Residential	1.00	0%	0%	1.00	0%	0%
Hotel	1.00	0%	0%	1.00	0%	0%
All Other Land Uses[2]	1.00	0%	0%	1.00	0%	0%

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		12	0	0	0
Restaurant	0	15		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	443	224	219
Internal Capture Percentage	12%	12%	12%
External Vehicle-Trips[5]	389	197	192
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	8%	7%
Restaurant	30%	42%
Cinema/Entertainment	N/A	N/A
Residential	N/A	N/A
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be

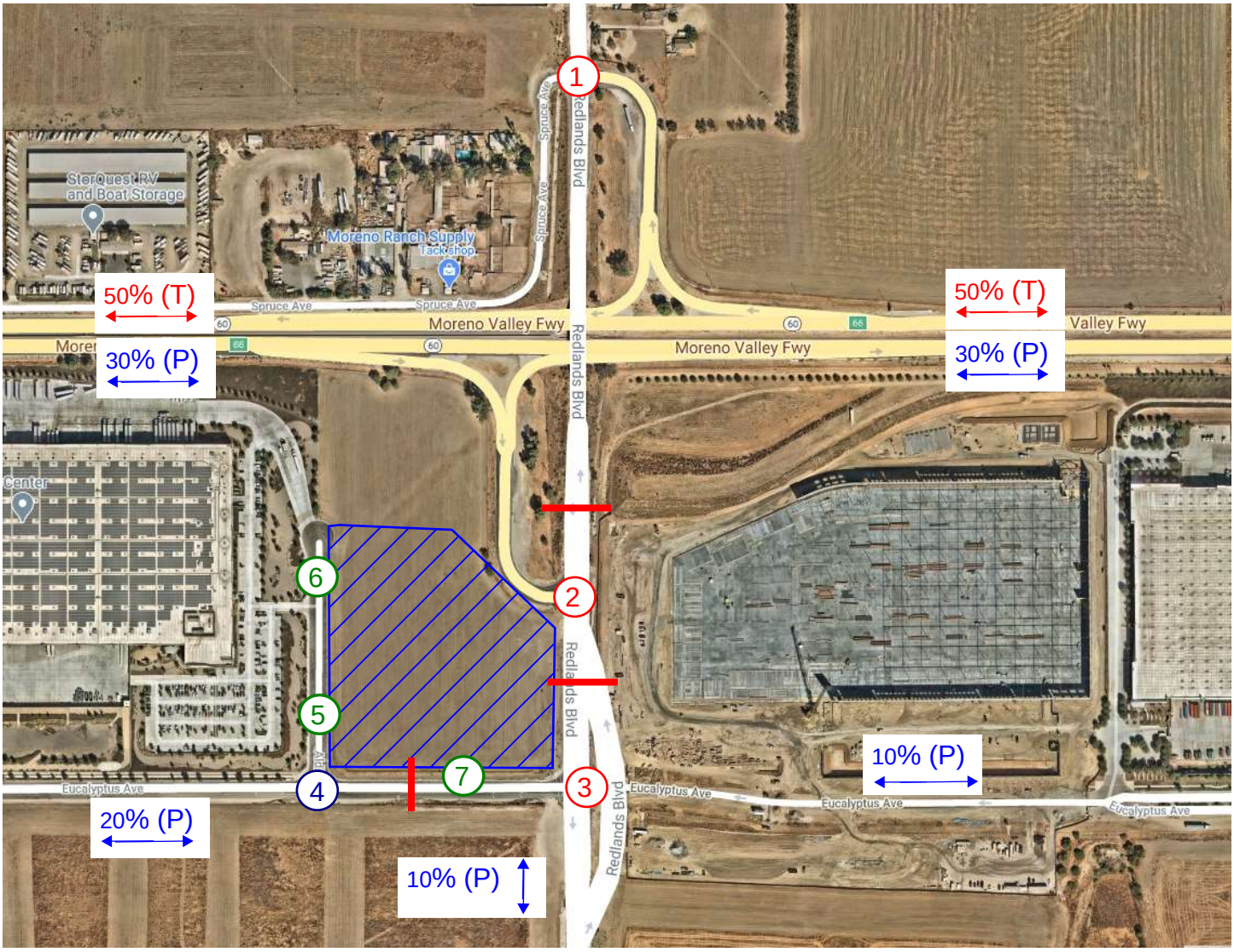
[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Attachment 3: Project Study Area



Project Area

Study Intersection (Signalized)

Study Intersection (Unsignalized)

Study Roadway Segment

Project Driveway

XX% (T) Truck Distribution

XX% (P) Passenger Car Distribution

Attachment 3A: Pass-By Distribution

Project Area

Study Intersection (Signalized)

Study Intersection (Unsignalized)

Project Driveway

XX% (P) Pass-By Distribution

Attachment 4

Traffic Data: If available, historical intersection data at study intersections taken within the last 5 years will be obtained and a 2% per year growth rate will be applied to develop “Existing 2021” base scenario analysis volumes. Historical count data will be compared to new count data to determine a COVID adjustment factor to apply to new intersection counts.

For intersections where historical counts are unavailable, new counts will be collected at all study intersections and a COVID adjustment factor will be applied to develop “pre-COVID 19” traffic volumes for use in “Existing 2021” base scenario analysis.

Analysis scenarios:

- Existing (2021) Conditions
- Project Completion Year – Exiting plus Ambient Growth Rate (to be provided by the Traffic Engineering Division) over two years
- Project Completion Year Plus Project – Exiting plus Ambient Growth Rate (to be provided by the Traffic Engineering Division) over two years plus Project traffic

Project Phasing: N/A

APPENDIX **B**

TRAFFIC COUNT DATA SHEETS

National Data & Surveying Services

Intersection Turning Movement Count

Location: Redlands Blvd & Spruce Ave/SR-60 WB Ramps
City: Moreno Valley
Control: Signalized

Project ID: 21-030056-001
Date: 7/27/2021

Data - Totals

NS/EW Streets:	Redlands Blvd				Redlands Blvd				Spruce Ave/SR-60 WB Ramps				Spruce Ave/SR-60 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	116	35	0	54	37	0	0	0	1	1	0	10	1	6	0	263
7:15 AM	0	140	25	0	82	57	0	0	0	1	0	0	8	0	13	0	326
7:30 AM	2	144	29	0	57	54	1	0	0	1	2	0	6	0	11	0	307
7:45 AM	1	100	23	0	54	60	0	0	1	0	0	0	11	0	7	0	257
8:00 AM	3	117	28	0	50	55	1	0	0	1	1	0	3	0	13	0	272
8:15 AM	1	101	19	0	30	29	1	0	3	2	2	0	4	0	5	0	197
8:30 AM	0	94	23	0	69	43	2	0	0	0	1	0	2	0	8	0	242
8:45 AM	1	72	21	0	43	22	0	0	0	0	2	0	8	0	8	0	177
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	10	884	203	0	439	357	5	0	4	6	9	0	52	1	71	0	2041
APPROACH %'s :	0.91%	80.58%	18.51%	0.00%	54.81%	44.57%	0.62%	0.00%	21.05%	31.58%	47.37%	0.00%	41.94%	0.81%	57.26%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	6	501	105	0	243	226	2	0	1	3	3	0	28	0	44	0	1162
PEAK HR FACTOR :	0.500	0.870	0.905	0.000	0.741	0.942	0.500	0.000	0.250	0.750	0.375	0.000	0.636	0.000	0.846	0.000	0.891
	0.874				0.847				0.583				0.857				

NS/EW Streets:	Redlands Blvd				Redlands Blvd				Spruce Ave/SR-60 WB Ramps				Spruce Ave/SR-60 WB Ramps				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	2	142	22	0	60	95	0	0	0	0	4	0	13	0	3	0	341
4:15 PM	1	159	14	0	62	56	1	0	0	1	0	0	10	0	5	0	309
4:30 PM	4	161	18	0	67	102	1	0	0	2	1	0	8	0	6	0	370
4:45 PM	2	143	26	0	60	106	1	0	1	0	2	0	8	0	2	0	351
5:00 PM	1	153	19	0	42	76	0	0	1	2	0	0	18	1	1	0	314
5:15 PM	1	141	17	0	48	102	1	0	0	0	2	0	16	0	3	0	331
5:30 PM	4	115	25	0	98	74	0	0	0	2	3	0	12	0	7	0	340
5:45 PM	1	120	20	0	69	114	0	0	0	0	1	0	12	0	3	0	340
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	16	1134	161	0	506	725	4	0	2	7	13	0	97	1	30	0	2696
APPROACH %'s :	1.22%	86.50%	12.28%	0.00%	40.97%	58.70%	0.32%	0.00%	9.09%	31.82%	59.09%	0.00%	75.78%	0.78%	23.44%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	9	605	80	0	249	359	3	0	1	3	7	0	39	0	16	0	1371
PEAK HR FACTOR :	0.563	0.939	0.769	0.000	0.929	0.847	0.750	0.000	0.250	0.375	0.438	0.000	0.750	0.000	0.667	0.000	0.926
	0.948				0.899				0.688				0.859				

Prepared by National Data & Surveying Services

Redlands Blvd & Spruce Ave / SR-60 WB Ramps

Peak Hour Turning Movement Count

ID: 21-030056-001
City: Moreno Valley

Day: Tuesday
Date: 7/27/2021

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	7:00 AM - 09:00 AM
NONE	NONE
04:00 PM - 05:00 PM	4:00 PM - 06:00 PM

CONTROL: Signalized

	AM	NOON	PM
TEV	1162	0	1371
PHF	0.89		0.93

SOUTHBOUND (Redlands Blvd)

	L	T	R	U	Total	
AM	2	226	243	0	546	AM
NOON	0	0	0	0	0	NOON
PM	3	359	249	0	622	PM

EASTBOUND (Spruce Ave/SR-60 WB Ramps)

	L	T	R	U	
AM	8	0	12		
NOON	0	0	0	0	
NOON	1	0	1	0	
NOON	3	0	3	1	
NOON	3	0	7	0	
PM				0 1 1 0	

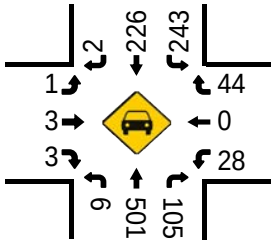
WESTBOUND (Spruce Ave/SR-60 WB Ramps)

	L	T	R	U	
PM	16	0	44	0	
NOON	0	0	0	1	
NOON	39	0	28	0	
NOON	0	0	0	0	
AM	332	0	351		
AM				0 1 1 1	

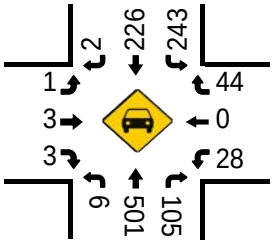
NORTHBOUND (Redlands Blvd)

	L	T	R	U	Total	
PM	405	0	9	605	80	PM
NOON	0	0	0	0	0	NOON
AM	257	0	6	501	105	AM

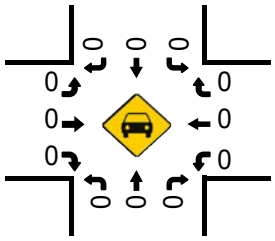
Totals (AM)



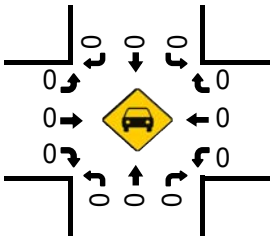
Totals (AM)



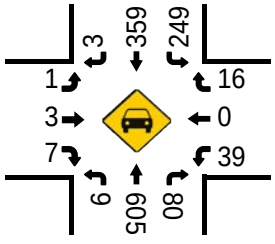
Totals (NOON)



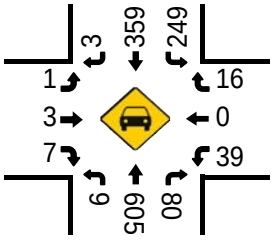
Totals (NOON)



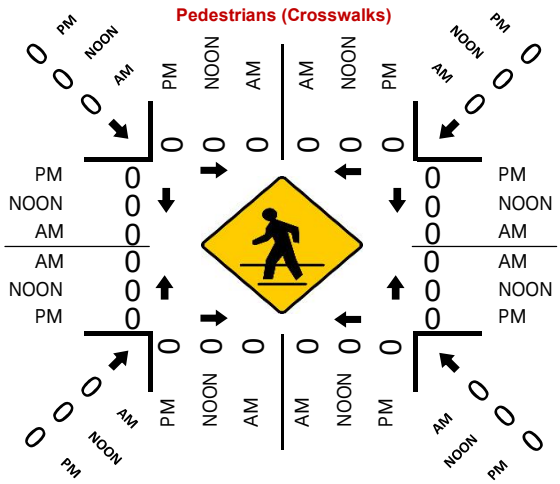
Totals (PM)



Totals (PM)



Pedestrians (Crosswalks)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Redlands Blvd & SR-60 EB Ramps
City: Moreno Valley
Control: Signalized

Project ID: 21-030056-002
Date: 7/27/2021

Data - Totals

NS/EW Streets:	Redlands Blvd				Redlands Blvd				SR-60 EB Ramps				SR-60 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	0	1	1	0	0.5	0	0.5	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	7	94	0	0	0	47	3	0	52	0	6	0	0	0	0	0	209
7:15 AM	19	113	0	0	0	56	6	0	52	0	11	0	0	0	0	0	257
7:30 AM	7	108	0	0	0	61	5	0	74	0	9	0	0	0	0	0	264
7:45 AM	6	83	0	0	0	63	3	0	45	0	12	0	0	0	0	0	212
8:00 AM	6	84	0	0	0	55	8	0	55	0	11	0	0	0	0	0	219
8:15 AM	9	76	0	0	0	31	0	0	47	0	8	0	0	0	0	0	171
8:30 AM	10	62	0	0	0	42	5	0	53	0	13	0	0	0	0	0	185
8:45 AM	11	51	0	0	0	30	5	0	51	0	16	0	0	0	0	0	164
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	75	671	0	0	0	385	35	0	429	0	86	0	0	0	0	0	1681
APPROACH %'s :	10.05%	89.95%	0.00%	0.00%	0.00%	91.67%	8.33%	0.00%	83.30%	0.00%	16.70%	0.00%					
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	38	388	0	0	0	235	22	0	226	0	43	0	0	0	0	0	952
PEAK HR FACTOR :	0.500	0.858	0.000	0.000	0.000	0.933	0.688	0.000	0.764	0.000	0.896	0.000	0.000	0.000	0.000	0.000	0.902
	0.807				0.973				0.810								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	0	1	1	0	0.5	0	0.5	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	12	96	0	0	0	94	14	0	73	0	24	0	0	0	0	0	313
4:15 PM	15	75	0	0	0	60	9	0	101	0	34	0	0	0	0	0	294
4:30 PM	18	98	0	0	0	92	21	0	77	0	29	0	0	0	0	0	335
4:45 PM	14	85	0	0	0	91	13	0	86	0	15	0	0	0	0	0	304
5:00 PM	20	90	0	0	0	93	14	0	89	0	31	0	0	0	0	0	337
5:15 PM	9	77	0	0	0	88	14	0	79	0	44	0	0	0	0	0	311
5:30 PM	13	64	0	0	0	99	7	0	79	0	24	0	0	0	0	0	286
5:45 PM	10	67	0	0	0	106	12	0	82	0	31	0	0	0	0	0	308
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	111	652	0	0	0	723	104	0	666	0	232	0	0	0	0	0	2488
APPROACH %'s :	14.55%	85.45%	0.00%	0.00%	0.00%	87.42%	12.58%	0.00%	74.16%	0.00%	25.84%	0.00%					
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	61	350	0	0	0	364	62	0	331	0	119	0	0	0	0	0	1287
PEAK HR FACTOR :	0.763	0.893	0.000	0.000	0.000	0.978	0.738	0.000	0.930	0.000	0.676	0.000	0.000	0.000	0.000	0.000	0.955
	0.886				0.942				0.915								

Prepared by National Data & Surveying Services

Redlands Blvd & SR-60 EB Ramps

Peak Hour Turning Movement Count

ID: 21-030056-002
City: Moreno Valley

Day: Tuesday
Date: 7/27/2021

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

Redlands Blvd

SOUTHBOUND

AM	22	235	0	0	614	AM
NOON	0	0	0	0	0	NOON
PM	62	364	0	0	681	PM

EASTBOUND (SR-60 EB Ramps)

AM	NOON	PM	
60	0	123	
0	0	0	0
226	0	331	0.5
0	0	0	0
43	0	119	0.5
AM	NOON	PM	

WESTBOUND (SR-60 EB Ramps)

PM	NOON	AM	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	
PM	NOON	AM	

CONTROL			
Signalized			
TEV	952 AM	0 NOON	1287 PM
PHF	0.90		0.95

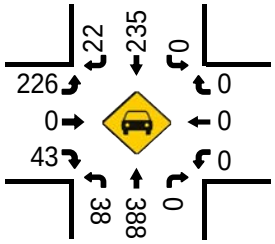
PM	483	0	61	350	0	PM
NOON	0	0	0	0	0	NOON
AM	278	0	38	388	0	AM

NORTHBOUND

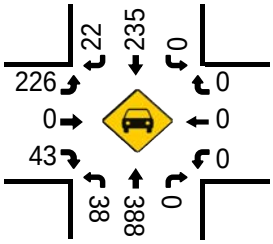
Redlands Blvd

Turning movements at intersection: 1 1 0 0 | 0 1 1 0

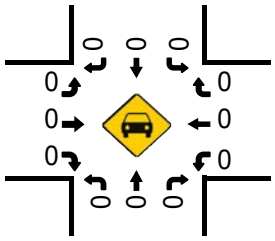
Totals (AM)



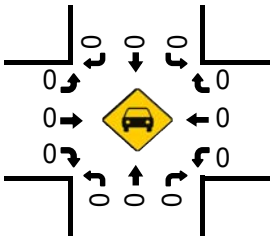
Totals (AM)



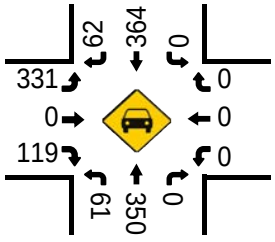
Totals (NOON)



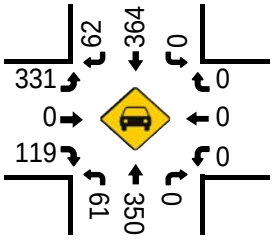
Totals (NOON)



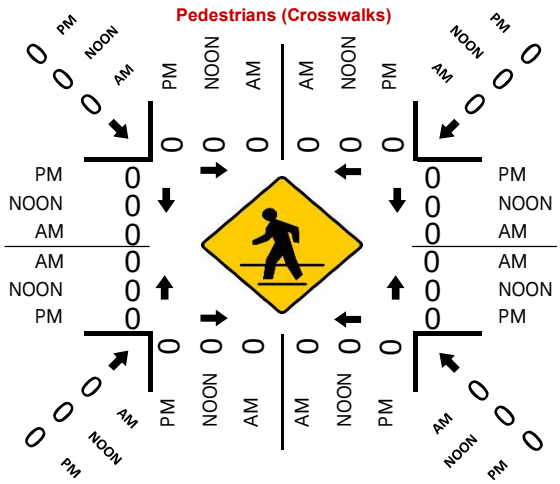
Totals (PM)



Totals (PM)



Pedestrians (Crosswalks)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Redlands Blvd & Eucalyptus Ave
City: Moreno Valley
Control: 3-Way Yield(NB/SB/EB)

Project ID: 21-030056-003
Date: 7/27/2021

Data - Totals

NS/EW Streets:	Redlands Blvd				Redlands Blvd				Eucalyptus Ave				Eucalyptus Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	93	0	0	0	37	13	0	4	0	1	0	0	0	0	0	149
7:15 AM	1	126	0	0	0	54	8	1	2	0	0	1	0	0	0	0	193
7:30 AM	3	118	0	0	0	56	13	0	1	0	3	0	0	0	0	0	194
7:45 AM	2	82	0	0	0	63	16	1	3	0	1	0	0	0	0	0	168
8:00 AM	5	86	0	0	0	55	12	0	6	0	1	0	0	0	0	0	165
8:15 AM	3	74	0	1	0	36	4	0	12	0	2	0	0	0	0	0	132
8:30 AM	3	72	0	0	0	43	6	0	1	0	4	0	0	0	0	0	129
8:45 AM	0	60	0	0	0	34	15	0	3	0	0	0	0	0	0	0	112
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	18	711	0	1	0	378	87	2	32	0	12	1	0	0	0	0	1242
APPROACH %'s :	2.47%	97.40%	0.00%	0.14%	0.00%	80.94%	18.63%	0.43%	71.11%	0.00%	26.67%	2.22%					
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	11	412	0	0	0	228	49	2	12	0	5	1	0	0	0	0	720
PEAK HR FACTOR :	0.550	0.817	0.000	0.000	0.000	0.905	0.766	0.500	0.500	0.000	0.417	0.250	0.000	0.000	0.000	0.000	0.928
	0.833				0.872				0.643								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	94	0	0	0	91	19	2	5	0	5	0	0	0	0	0	217
4:15 PM	3	87	0	0	0	93	7	1	11	0	5	0	0	0	0	0	207
4:30 PM	1	99	0	0	0	102	11	2	7	0	4	1	0	0	0	0	227
4:45 PM	2	89	0	0	0	102	8	1	8	0	7	0	0	0	0	0	217
5:00 PM	5	103	0	0	0	117	8	1	7	0	6	1	0	0	0	0	248
5:15 PM	4	85	0	0	0	119	9	1	6	0	5	2	0	0	0	0	231
5:30 PM	0	60	0	1	0	119	5	0	10	0	1	1	0	0	0	0	197
5:45 PM	1	63	0	0	0	126	1	4	10	0	2	0	0	0	0	0	207
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	17	680	0	1	0	869	68	12	64	0	35	5	0	0	0	0	1751
APPROACH %'s :	2.44%	97.42%	0.00%	0.14%	0.00%	91.57%	7.17%	1.26%	61.54%	0.00%	33.65%	4.81%					
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	12	376	0	0	0	440	36	5	28	0	22	4	0	0	0	0	923
PEAK HR FACTOR :	0.600	0.913	0.000	0.000	0.000	0.924	0.818	0.625	0.875	0.000	0.786	0.500	0.000	0.000	0.000	0.000	0.930
	0.898				0.932				0.900								

Prepared by National Data & Surveying Services

Redlands Blvd & Eucalyptus Ave

Peak Hour Turning Movement Count

ID: 21-030056-003
City: Moreno Valley

Day: Tuesday
Date: 7/27/2021

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

CONTROL: 3-Way Yield(NB/SB/EB)

	AM	NOON	PM
TEV	720	0	923
PHF	0.93		0.93

SOUTHBOUND (Redlands Blvd)

	L	T	R	U	Total	
AM	49	228	0	2	426	AM
NOON	0	0	0	0	0	NOON
PM	36	440	0	5	409	PM

EASTBOUND (Eucalyptus Ave)

	L	T	R	U	Total	
AM	61	0	52	0	113	AM
NOON	0	0	0	0	0	NOON
PM	1	0	4	0	5	PM
PM	12	0	28	0	40	PM
NOON	0	0	0	1	1	NOON
AM	5	0	22	0	27	AM

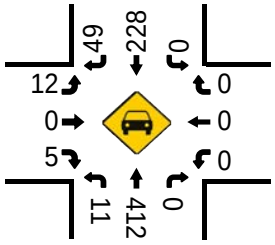
WESTBOUND (Eucalyptus Ave)

	L	T	R	U	Total	
PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM
AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

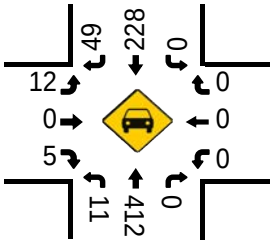
NORTHBOUND (Redlands Blvd)

	L	T	R	U	Total	
PM	462	0	12	376	0	PM
NOON	0	0	0	0	0	NOON
AM	233	0	11	412	0	AM

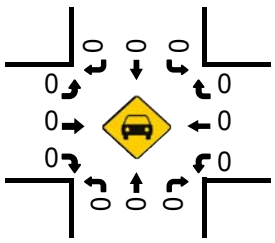
Totals (AM)



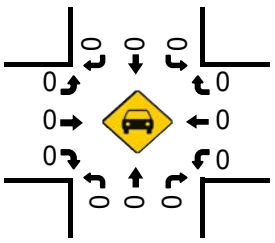
Totals (AM)



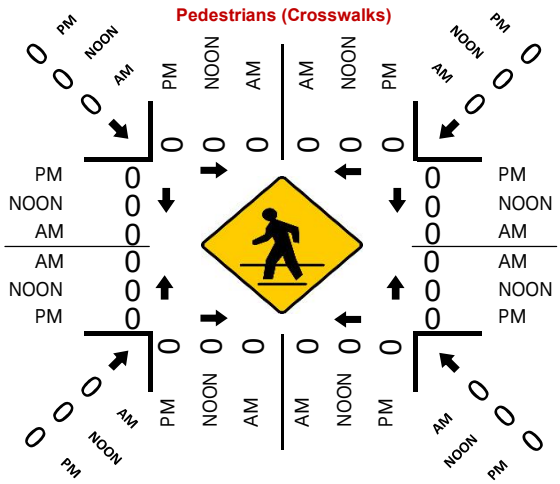
Totals (NOON)



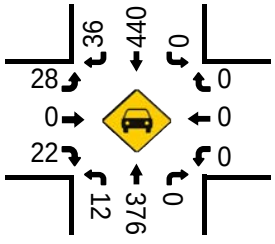
Totals (NOON)



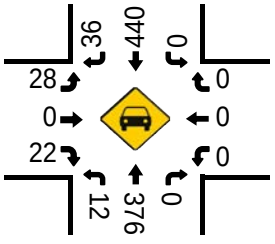
Pedestrians (Crosswalks)



Totals (PM)



Totals (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Aldi Pl & Eucalyptus Ave
City: Moreno Valley
Control: 1 Way Stop(SB)

Project ID: 21-030056-004
Date: 7/27/2021

Data - Totals

NS/EW Streets:	Aldi Pl				Aldi Pl				Eucalyptus Ave				Eucalyptus Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	1	0	1	0	1	1	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	1	0	4	0	5	2	0	0	0	6	6	0	24
7:15 AM	0	0	0	0	2	0	5	0	5	0	0	0	0	7	5	1	25
7:30 AM	0	0	0	0	2	0	2	0	0	2	0	0	0	7	7	1	21
7:45 AM	0	0	0	0	2	0	2	0	5	1	0	0	0	14	9	0	33
8:00 AM	0	0	0	0	5	0	5	0	3	6	0	0	0	4	4	0	27
8:15 AM	0	0	0	0	6	0	2	0	1	5	0	0	0	5	4	0	23
8:30 AM	0	0	0	0	1	0	5	0	1	3	0	0	0	7	4	0	21
8:45 AM	0	0	0	0	3	0	3	0	3	2	0	1	0	7	7	0	26
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	22	0	28	0	23	21	0	1	0	57	46	2	200
APPROACH %'s :					44.00%	0.00%	56.00%	0.00%	51.11%	46.67%	0.00%	2.22%	0.00%	54.29%	43.81%	1.90%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	11	0	14	0	13	9	0	0	0	32	25	2	106
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.550	0.000	0.700	0.000	0.650	0.375	0.000	0.000	0.000	0.571	0.694	0.500	0.803
					0.625				0.611				0.641				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	1	0	1	0	1	1	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	3	0	4	0	1	8	0	0	0	12	4	0	32
4:15 PM	0	0	0	0	3	0	0	0	0	12	0	1	0	13	1	0	30
4:30 PM	0	0	0	0	7	0	4	0	0	6	0	1	0	8	5	0	31
4:45 PM	0	0	0	0	0	0	3	0	0	14	0	0	0	6	3	0	26
5:00 PM	0	0	0	0	2	0	1	0	1	12	0	1	0	12	3	0	32
5:15 PM	0	0	0	0	4	0	0	0	1	11	0	1	0	13	2	0	32
5:30 PM	0	0	0	0	7	0	0	0	1	6	0	0	0	6	0	0	20
5:45 PM	0	0	0	0	4	0	1	0	0	5	0	0	0	1	0	0	11
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	30	0	13	0	4	74	0	4	0	71	18	0	214
APPROACH %'s :					69.77%	0.00%	30.23%	0.00%	4.88%	90.24%	0.00%	4.88%	0.00%	79.78%	20.22%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	13	0	8	0	2	43	0	3	0	39	13	0	121
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.464	0.000	0.500	0.000	0.500	0.768	0.000	0.750	0.000	0.750	0.650	0.000	0.945
					0.477				0.857				0.867				

Prepared by National Data & Surveying Services

Aldi Pl & Eucalyptus Ave

Peak Hour Turning Movement Count

ID: 21-030056-004
City: Moreno Valley

Day: Tuesday
Date: 7/27/2021

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

Aldi Pl

SOUTHBOUND

AM	14	0	11	0	38	AM
NOON	0	0	0	0	0	NOON
PM	8	0	13	0	15	PM
	1	0	1	0		

EASTBOUND (Eucalyptus Ave)

AM	NOON	PM	
46	0	50	
0	0	3	0
13	0	2	1
9	0	43	1
0	0	0	0
AM	NOON	PM	

WESTBOUND (Eucalyptus Ave)

PM	NOON	AM	
13	0	25	0
39	0	32	2
0	0	0	0
0	0	2	0
56	0	22	
PM	NOON	AM	

CONTROL

1 Way Stop(SB)

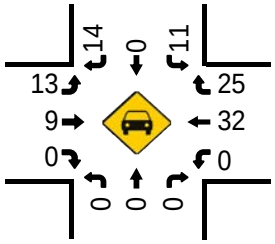
TEV	106 AM	0 NOON	121 PM
PHF	0.80		0.95

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM
	0	0	0	0		

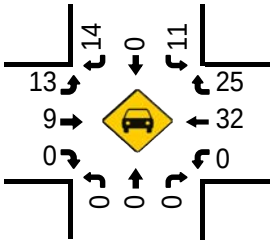
NORTHBOUND

Aldi Pl

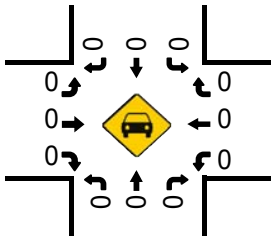
Totals (AM)



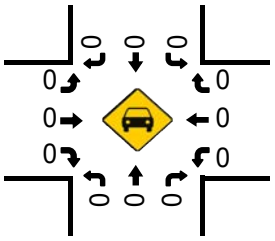
Totals (AM)



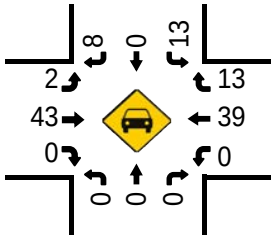
Totals (NOON)



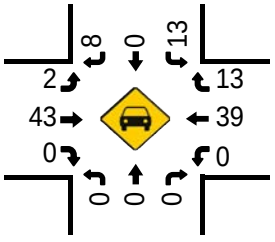
Totals (NOON)



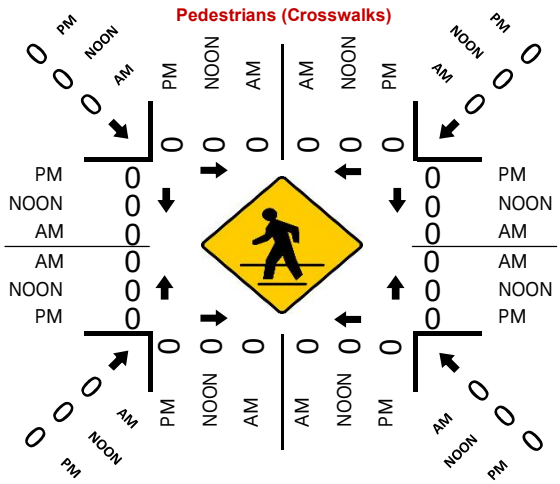
Totals (PM)



Totals (PM)



Pedestrians (Crosswalks)



APPENDIX C

INTERSECTION ANALYSIS WORKSHEETS

Moreno Valley Travel Center Project

Vistro File: K:\...\Moreno Valley Pilot AM.vistro
Report File: K:\...\1 EX AM.pdf

Scenario 1 EX AM
8/27/2021

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Redlands Blvd at Spruce Ave/SR-60 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.625	25.0	C
2	Redlands Blvd at SR-60 EB Ramps	Signalized	HCM 6th Edition	NB Left	0.495	19.5	B
4	Aldi Pl at Eucalyptus Ave	Two-way stop	HCM 6th Edition	SB Left	0.017	9.2	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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Version 2021 (SP 0-4)

Intersection Level Of Service Report
Intersection 1: Redlands Blvd at Spruce Ave/SR-60 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	25.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.625

Intersection Setup

Name	Redlands Blvd			Redlands Blvd			Spruce Ave			SR-60 WB Ramps		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

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Volumes

Name	Redlands Blvd			Redlands Blvd			Spruce Ave			SR-60 WB Ramps		
Base Volume Input [veh/h]	7	556	117	270	251	2	1	3	3	31	0	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	556	117	270	251	2	1	3	3	31	0	49
Peak Hour Factor	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	156	33	76	70	1	0	1	1	9	0	14
Total Analysis Volume [veh/h]	8	624	131	303	282	2	1	3	3	35	0	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	6	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups			6									
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	10	10	5	10	0	0	10	0	0	10	0
Maximum Green [s]	30	30	30	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	46	14	14	48	16	0	0	14	0	0	14	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No	No	No	No			No			No	
Maximum Recall	No	No	No	No	No			No			No	
Pedestrian Recall	No	No	No	No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Version 2021 (SP 0-4)

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	44	44	19	62	2	9
g / C, Green / Cycle	0.01	0.49	0.49	0.21	0.69	0.02	0.10
(v / s)_i Volume / Saturation Flow Rate	0.00	0.37	0.09	0.19	0.17	0.00	0.06
s, saturation flow rate [veh/h]	1603	1683	1431	1603	1681	1554	1493
c, Capacity [veh/h]	19	827	703	342	1164	28	148
d1, Uniform Delay [s]	44.16	18.52	12.83	34.33	5.11	43.57	38.84
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.12	6.34	0.59	7.66	0.50	4.46	3.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	0.75	0.19	0.89	0.24	0.25	0.61
d, Delay for Lane Group [s/veh]	58.28	24.86	13.41	41.99	5.61	48.03	42.78
Lane Group LOS	E	C	B	D	A	D	D
Critical Lane Group	No	Yes	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.25	11.21	1.53	7.00	1.79	0.19	2.04
50th-Percentile Queue Length [ft/ln]	6.25	280.14	38.30	174.96	44.78	4.68	51.07
95th-Percentile Queue Length [veh/ln]	0.45	16.70	2.76	11.34	3.22	0.34	3.68
95th-Percentile Queue Length [ft/ln]	11.26	417.38	68.94	283.42	80.61	8.43	91.92

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Version 2021 (SP 0-4)

Movement, Approach, & Intersection Results

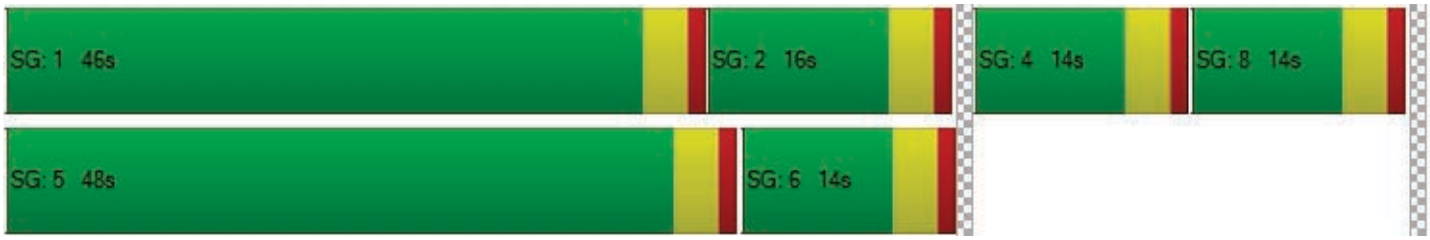
d_M, Delay for Movement [s/veh]	58.28	24.86	13.41	41.99	5.61	5.61	48.03	48.03	48.03	42.78	42.78	42.78
Movement LOS	E	C	B	D	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	23.25			24.39			48.03			42.78		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	25.05											
Intersection LOS	C											
Intersection V/C	0.625											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	222	267	222	222
d_b, Bicycle Delay [s]	35.56	33.80	35.56	35.56
l_b,int, Bicycle LOS Score for Intersection	2.819	2.528	1.571	1.708
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Version 2021 (SP 0-4)

Intersection Level Of Service Report
Intersection 2: Redlands Blvd at SR-60 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	19.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.495

Intersection Setup

Name	Redlands Blvd		Redlands Blvd		SR-60 EB Ramps	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

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Version 2021 (SP 0-4)

Volumes

Name	Redlands Blvd		Redlands Blvd		SR-60 EB Ramps	
Base Volume Input [veh/h]	42	431	261	24	251	48
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	42	431	261	24	251	48
Peak Hour Factor	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	119	72	7	70	13
Total Analysis Volume [veh/h]	47	478	289	27	278	53
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

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Version 2021 (SP 0-4)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Overlap	Split	Split
Signal Group	1	6	2	2	3	0
Auxiliary Signal Groups				2,3		
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	10	10	10	5	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	49	32	32	41	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	5	5	0
Pedestrian Clearance [s]	0	10	10	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Version 2021 (SP 0-4)

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	0.00	2.00
g_i, Effective Green Time [s]	4	61	53	78	21
g / C, Green / Cycle	0.04	0.68	0.59	0.87	0.24
(v / s)_i Volume / Saturation Flow Rate	0.03	0.28	0.17	0.02	0.21
s, saturation flow rate [veh/h]	1603	1683	1683	1431	1573
c, Capacity [veh/h]	64	1137	995	1246	370
d1, Uniform Delay [s]	42.72	6.62	9.09	0.76	33.31
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.75	1.14	0.74	0.03	7.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.42	0.29	0.02	0.89
d, Delay for Lane Group [s/veh]	57.47	7.76	9.82	0.79	40.92
Lane Group LOS	E	A	A	A	D
Critical Lane Group	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.29	3.85	2.76	0.02	7.59
50th-Percentile Queue Length [ft/ln]	32.16	96.15	68.88	0.50	189.73
95th-Percentile Queue Length [veh/ln]	2.32	6.92	4.96	0.04	12.11
95th-Percentile Queue Length [ft/ln]	57.89	173.06	123.99	0.89	302.68

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Movement, Approach, & Intersection Results

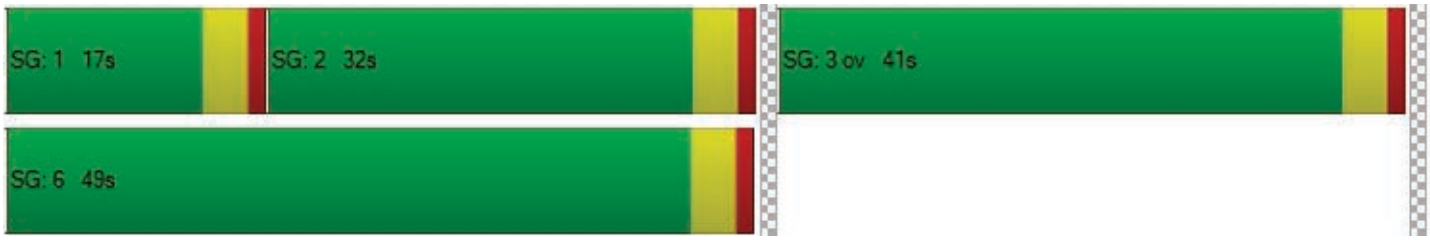
d_M, Delay for Movement [s/veh]	57.47	7.76	9.82	0.79	40.92	40.92
Movement LOS	E	A	A	A	D	D
d_A, Approach Delay [s/veh]	12.21		9.05		40.92	
Approach LOS	B		A		D	
d_I, Intersection Delay [s/veh]	19.47					
Intersection LOS	B					
Intersection V/C	0.495					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1000	622	822
d_b, Bicycle Delay [s]	11.25	21.36	15.61
l_b,int, Bicycle LOS Score for Intersection	2.426	2.081	2.106
Bicycle LOS	B	B	B

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 4: Aldi Pl at Eucalyptus Ave

Control Type:	Two-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.017

Intersection Setup

Name	Aldi Pl		Eucalyptus Ave		Eucalyptus Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Aldi Pl		Eucalyptus Ave		Eucalyptus Ave	
Base Volume Input [veh/h]	12	16	14	10	36	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	16	14	10	36	28
Peak Hour Factor	0.8030	0.8030	0.8030	0.8030	0.8030	0.8030
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	5	4	3	11	9
Total Analysis Volume [veh/h]	15	20	17	12	45	35
Pedestrian Volume [ped/h]	0		0		0	

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Version 2021 (SP 0-4)

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.02	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.19	8.59	7.40	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.05	0.06	0.03	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.31	1.50	0.85	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	8.85		4.34		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.02					
Intersection LOS	A					

Moreno Valley Travel Center Project

Vistro File: K:\...\Moreno Valley Pilot PM.vistro
Report File: K:\...\1 EX PM.pdf

Scenario 1 EX PM
8/27/2021

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Redlands Blvd at Spruce Ave/SR-60 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.668	27.3	C
2	Redlands Blvd at SR-60 EB Ramps	Signalized	HCM 6th Edition	NB Left	0.632	27.8	C
4	Aldi Pl at Eucalyptus Ave	Two-way stop	HCM 6th Edition	SB Left	0.017	9.1	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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Version 2021 (SP 0-4)

Intersection Level Of Service Report
Intersection 1: Redlands Blvd at Spruce Ave/SR-60 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	27.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.668

Intersection Setup

Name	Redlands Blvd			Redlands Blvd			Spruce Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

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Version 2021 (SP 0-4)

Volumes

Name	Redlands Blvd			Redlands Blvd			Spruce Ave					
Base Volume Input [veh/h]	10	672	89	276	398	3	1	3	8	43	0	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	672	89	276	398	3	1	3	8	43	0	18
Peak Hour Factor	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	181	24	75	107	1	0	1	2	12	0	5
Total Analysis Volume [veh/h]	11	726	96	298	430	3	1	3	9	46	0	19
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	6	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups			6									
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	10	10	5	10	0	0	10	0	0	10	0
Maximum Green [s]	30	30	30	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	21	14	14	48	41	0	0	14	0	0	14	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No	No	No	No			No			No	
Maximum Recall	No	No	No	No	No			No			No	
Pedestrian Recall	No	No	No	No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Version 2021 (SP 0-4)

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	44	44	19	62	3	8
g / C, Green / Cycle	0.01	0.49	0.49	0.21	0.69	0.03	0.09
(v / s)_i Volume / Saturation Flow Rate	0.01	0.43	0.07	0.19	0.26	0.01	0.04
s, saturation flow rate [veh/h]	1603	1683	1431	1603	1681	1495	1548
c, Capacity [veh/h]	24	826	702	337	1154	47	138
d1, Uniform Delay [s]	43.99	20.52	12.51	34.45	5.95	42.58	38.95
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.60	12.80	0.41	7.61	0.93	3.13	2.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.88	0.14	0.88	0.38	0.28	0.47
d, Delay for Lane Group [s/veh]	57.59	33.32	12.91	42.06	6.89	45.71	41.41
Lane Group LOS	E	C	B	D	A	D	D
Critical Lane Group	No	Yes	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.33	15.49	1.09	6.88	3.17	0.32	1.44
50th-Percentile Queue Length [ft/ln]	8.26	387.20	27.27	172.10	79.26	8.02	36.09
95th-Percentile Queue Length [veh/ln]	0.59	21.94	1.96	11.19	5.71	0.58	2.60
95th-Percentile Queue Length [ft/ln]	14.86	548.55	49.08	279.67	142.67	14.43	64.97

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Version 2021 (SP 0-4)

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.59	33.32	12.91	42.06	6.89	6.89	45.71	45.71	45.71	41.41	41.41	41.41
Movement LOS	E	C	B	D	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	31.29			21.22			45.71			41.41		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	27.32											
Intersection LOS	C											
Intersection V/C	0.668											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	222	822	222	222
d_b, Bicycle Delay [s]	35.56	15.61	35.56	35.56
I_b,int, Bicycle LOS Score for Intersection	2.934	2.766	1.581	1.667
Bicycle LOS	C	C	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report
Intersection 2: Redlands Blvd at SR-60 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	27.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.632

Intersection Setup

Name	Redlands Blvd		Redlands Blvd			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

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Volumes

Name	Redlands Blvd		Redlands Blvd			
Base Volume Input [veh/h]	68	389	404	69	367	132
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	68	389	404	69	367	132
Peak Hour Factor	0.9550	0.9550	0.9550	0.9550	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	102	106	18	96	35
Total Analysis Volume [veh/h]	71	407	423	72	384	138
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

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Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Overlap	Split	Split
Signal Group	1	6	2	2	3	0
Auxiliary Signal Groups				2,3		
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	10	10	10	5	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	14	46	32	32	44	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	5	5	0
Pedestrian Clearance [s]	0	10	10	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	0.00	2.00
g_i, Effective Green Time [s]	5	50	41	77	32
g / C, Green / Cycle	0.06	0.55	0.45	0.86	0.36
(v / s)_i Volume / Saturation Flow Rate	0.04	0.24	0.25	0.05	0.34
s, saturation flow rate [veh/h]	1603	1683	1683	1431	1553
c, Capacity [veh/h]	91	928	758	1222	559
d1, Uniform Delay [s]	41.91	11.95	18.17	1.00	27.77
k, delay calibration	0.11	0.50	0.50	0.50	0.28
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.58	1.51	2.96	0.09	16.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.44	0.56	0.06	0.93
d, Delay for Lane Group [s/veh]	55.49	13.46	21.12	1.09	44.21
Lane Group LOS	E	B	C	A	D
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.88	4.86	6.75	0.09	12.87
50th-Percentile Queue Length [ft/ln]	47.04	121.53	168.67	2.17	321.70
95th-Percentile Queue Length [veh/ln]	3.39	8.48	11.01	0.16	18.75
95th-Percentile Queue Length [ft/ln]	84.67	211.93	275.16	3.91	468.78

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.49	13.46	21.12	1.09	44.21	44.21
Movement LOS	E	B	C	A	D	D
d_A, Approach Delay [s/veh]	19.70		18.21		44.21	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	27.77					
Intersection LOS	C					
Intersection V/C	0.632					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	933	622	889
d_b, Bicycle Delay [s]	12.80	21.36	13.89
l_b,int, Bicycle LOS Score for Intersection	2.348	2.376	2.421
Bicycle LOS	B	B	B

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report
Intersection 4: Aldi Pl at Eucalyptus Ave

Control Type:	Two-way stop	Delay (sec / veh):	9.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.017

Intersection Setup

Name	Aldi Pl		Eucalyptus Ave		Eucalyptus Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Aldi Pl		Eucalyptus Ave		Eucalyptus Ave	
Base Volume Input [veh/h]	14	9	6	48	43	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	9	6	48	43	14
Peak Hour Factor	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	2	2	13	11	4
Total Analysis Volume [veh/h]	15	10	6	51	46	15
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.09	8.51	7.35	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.05	0.03	0.01	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.28	0.73	0.29	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	8.85		0.77		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.86					
Intersection LOS	A					

Moreno Valley Travel Center Project

Vistro File: K:\...\Moreno Valley Pilot AM.vistro
Report File: K:\...\2 OY AM.pdf

Scenario 3 OY AM
8/27/2021

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Redlands Blvd at Spruce Ave/SR-60 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.637	25.6	C
2	Redlands Blvd at SR-60 EB Ramps	Signalized	HCM 6th Edition	NB Left	0.505	19.6	B
4	Aldi Pl at Eucalyptus Ave	Two-way stop	HCM 6th Edition	SB Left	0.017	9.2	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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Intersection Level Of Service Report
Intersection 1: Redlands Blvd at Spruce Ave/SR-60 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	25.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.637

Intersection Setup

Name	Redlands Blvd			Redlands Blvd			Spruce Ave			SR-60 WB Ramps		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

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Version 2021 (SP 0-4)

Volumes

Name	Redlands Blvd			Redlands Blvd			Spruce Ave			SR-60 WB Ramps		
Base Volume Input [veh/h]	7	556	117	270	251	2	1	3	3	31	0	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	567	119	275	256	2	1	3	3	32	0	50
Peak Hour Factor	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	159	33	77	72	1	0	1	1	9	0	14
Total Analysis Volume [veh/h]	8	636	134	309	287	2	1	3	3	36	0	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Version 2021 (SP 0-4)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	6	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups			6									
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	10	10	5	10	0	0	10	0	0	10	0
Maximum Green [s]	30	30	30	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	46	14	14	48	16	0	0	14	0	0	14	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No	No	No	No			No			No	
Maximum Recall	No	No	No	No	No			No			No	
Pedestrian Recall	No	No	No	No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Version 2021 (SP 0-4)

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	44	44	20	62	2	9
g / C, Green / Cycle	0.01	0.49	0.49	0.22	0.69	0.02	0.10
(v / s)_i Volume / Saturation Flow Rate	0.00	0.38	0.09	0.19	0.17	0.00	0.06
s, saturation flow rate [veh/h]	1603	1683	1431	1603	1681	1554	1493
c, Capacity [veh/h]	19	819	696	348	1163	28	149
d1, Uniform Delay [s]	44.16	19.05	13.08	34.16	5.15	43.57	38.84
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.12	7.12	0.61	7.65	0.51	4.46	4.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	0.78	0.19	0.89	0.25	0.25	0.62
d, Delay for Lane Group [s/veh]	58.28	26.17	13.69	41.81	5.66	48.03	42.92
Lane Group LOS	E	C	B	D	A	D	D
Critical Lane Group	No	Yes	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.25	11.78	1.59	7.13	1.83	0.19	2.09
50th-Percentile Queue Length [ft/ln]	6.25	294.55	39.71	178.20	45.87	4.68	52.31
95th-Percentile Queue Length [veh/ln]	0.45	17.41	2.86	11.51	3.30	0.34	3.77
95th-Percentile Queue Length [ft/ln]	11.26	435.28	71.48	287.67	82.57	8.43	94.16

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Movement, Approach, & Intersection Results

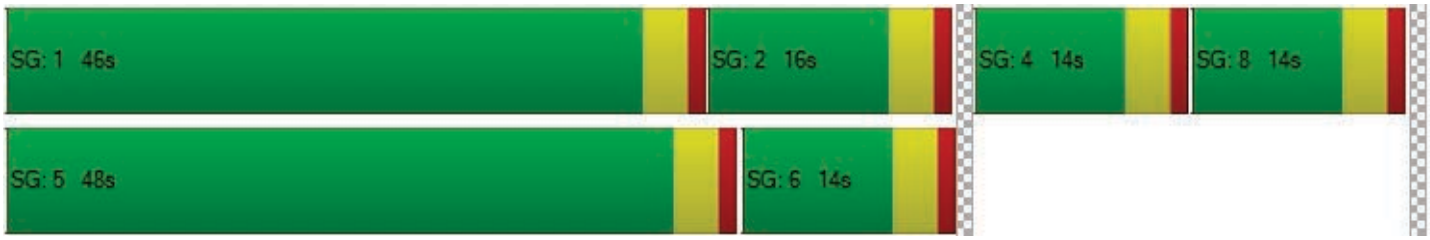
d_M, Delay for Movement [s/veh]	58.28	26.17	13.69	41.81	5.66	5.66	48.03	48.03	48.03	42.92	42.92	42.92
Movement LOS	E	C	B	D	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	24.35			24.34			48.03			42.92		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	25.62											
Intersection LOS	C											
Intersection V/C	0.637											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	222	267	222	222
d_b, Bicycle Delay [s]	35.56	33.80	35.56	35.56
l_b,int, Bicycle LOS Score for Intersection	2.843	2.546	1.571	1.711
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 2: Redlands Blvd at SR-60 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	19.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.505

Intersection Setup

Name	Redlands Blvd		Redlands Blvd		SR-60 EB Ramps	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

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Volumes

Name	Redlands Blvd		Redlands Blvd		SR-60 EB Ramps	
Base Volume Input [veh/h]	42	431	261	24	251	48
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	43	440	266	24	256	49
Peak Hour Factor	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	122	74	7	71	14
Total Analysis Volume [veh/h]	48	488	295	27	284	54
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

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Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Overlap	Split	Split
Signal Group	1	6	2	2	3	0
Auxiliary Signal Groups				2,3		
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	10	10	10	5	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	49	32	32	41	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	5	5	0
Pedestrian Clearance [s]	0	10	10	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Version 2021 (SP 0-4)

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	0.00	2.00
g_i, Effective Green Time [s]	4	60	53	78	22
g / C, Green / Cycle	0.04	0.67	0.59	0.87	0.24
(v / s)_i Volume / Saturation Flow Rate	0.03	0.29	0.18	0.02	0.21
s, saturation flow rate [veh/h]	1603	1683	1683	1431	1573
c, Capacity [veh/h]	65	1130	987	1245	377
d1, Uniform Delay [s]	42.71	6.85	9.34	0.77	33.11
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.11	1.21	0.78	0.03	7.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.43	0.30	0.02	0.90
d, Delay for Lane Group [s/veh]	57.82	8.06	10.12	0.80	40.73
Lane Group LOS	E	A	B	A	D
Critical Lane Group	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.32	4.04	2.87	0.02	7.74
50th-Percentile Queue Length [ft/ln]	32.94	101.05	71.78	0.50	193.52
95th-Percentile Queue Length [veh/ln]	2.37	7.28	5.17	0.04	12.30
95th-Percentile Queue Length [ft/ln]	59.29	181.88	129.21	0.91	307.59

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Movement, Approach, & Intersection Results

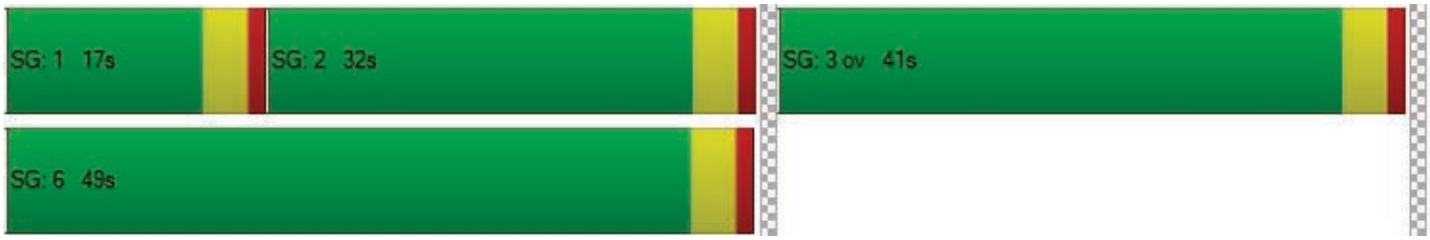
d_M, Delay for Movement [s/veh]	57.82	8.06	10.12	0.80	40.73	40.73
Movement LOS	E	A	B	A	D	D
d_A, Approach Delay [s/veh]	12.52		9.34		40.73	
Approach LOS	B		A		D	
d_I, Intersection Delay [s/veh]	19.63					
Intersection LOS	B					
Intersection V/C	0.505					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1000	622	822
d_b, Bicycle Delay [s]	11.25	21.36	15.61
l_b,int, Bicycle LOS Score for Intersection	2.444	2.091	2.117
Bicycle LOS	B	B	B

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 4: Aldi Pl at Eucalyptus Ave

Control Type:	Two-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.017

Intersection Setup

Name	Aldi Pl		Eucalyptus Ave		Eucalyptus Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Aldi Pl		Eucalyptus Ave		Eucalyptus Ave	
Base Volume Input [veh/h]	12	16	14	10	36	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	16	14	10	37	29
Peak Hour Factor	0.8030	0.8030	0.8030	0.8030	0.8030	0.8030
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	5	4	3	12	9
Total Analysis Volume [veh/h]	15	20	17	12	46	36
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.02	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.20	8.60	7.41	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.05	0.06	0.03	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.31	1.50	0.85	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	8.85		4.34		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.98					
Intersection LOS	A					

Moreno Valley Travel Center Project

Vistro File: K:\...\Moreno Valley Pilot PM.vistro
Report File: K:\...\2 OY PM.pdf

Scenario 3 OY PM
8/27/2021

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Redlands Blvd at Spruce Ave/SR-60 WB Ramps	Signalized	HCM 6th Edition	NB Left	0.682	28.9	C
2	Redlands Blvd at SR-60 EB Ramps	Signalized	HCM 6th Edition	NB Left	0.644	28.3	C
4	Aldi Pl at Eucalyptus Ave	Two-way stop	HCM 6th Edition	SB Left	0.017	9.1	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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Intersection Level Of Service Report
Intersection 1: Redlands Blvd at Spruce Ave/SR-60 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	28.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.682

Intersection Setup

Name	Redlands Blvd			Redlands Blvd			Spruce Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

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Volumes

Name	Redlands Blvd			Redlands Blvd			Spruce Ave					
Base Volume Input [veh/h]	10	672	89	276	398	3	1	3	8	43	0	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	685	91	282	406	3	1	3	8	44	0	18
Peak Hour Factor	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	185	25	76	110	1	0	1	2	12	0	5
Total Analysis Volume [veh/h]	11	740	98	305	438	3	1	3	9	48	0	19
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	6	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups			6									
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	10	10	5	10	0	0	10	0	0	10	0
Maximum Green [s]	30	30	30	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	21	14	14	48	41	0	0	14	0	0	14	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No	No	No	No			No			No	
Maximum Recall	No	No	No	No	No			No			No	
Pedestrian Recall	No	No	No	No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Version 2021 (SP 0-4)

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	44	44	19	62	3	8
g / C, Green / Cycle	0.01	0.49	0.49	0.21	0.69	0.03	0.09
(v / s)_i Volume / Saturation Flow Rate	0.01	0.44	0.07	0.19	0.26	0.01	0.04
s, saturation flow rate [veh/h]	1603	1683	1431	1603	1681	1495	1550
c, Capacity [veh/h]	24	817	694	344	1152	47	140
d1, Uniform Delay [s]	43.99	21.27	12.79	34.25	6.03	42.58	38.91
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.60	15.52	0.43	7.60	0.96	3.13	2.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.91	0.14	0.89	0.38	0.28	0.48
d, Delay for Lane Group [s/veh]	57.59	36.79	13.22	41.86	7.00	45.71	41.42
Lane Group LOS	E	D	B	D	A	D	D
Critical Lane Group	No	Yes	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.33	16.68	1.13	7.04	3.27	0.32	1.49
50th-Percentile Queue Length [ft/ln]	8.26	417.09	28.26	175.90	81.70	8.02	37.21
95th-Percentile Queue Length [veh/ln]	0.59	23.38	2.04	11.39	5.88	0.58	2.68
95th-Percentile Queue Length [ft/ln]	14.86	584.56	50.88	284.66	147.05	14.43	66.97

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.59	36.79	13.22	41.86	7.00	7.00	45.71	45.71	45.71	41.42	41.42	41.42
Movement LOS	E	D	B	D	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	34.34			21.25			45.71			41.42		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	28.88											
Intersection LOS	C											
Intersection V/C	0.682											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	222	822	222	222
d_b, Bicycle Delay [s]	35.56	15.61	35.56	35.56
I_b,int, Bicycle LOS Score for Intersection	2.960	2.791	1.581	1.670
Bicycle LOS	C	C	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report

Intersection 2: Redlands Blvd at SR-60 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	28.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.644

Intersection Setup

Name	Redlands Blvd		Redlands Blvd			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

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Volumes

Name	Redlands Blvd		Redlands Blvd			
Base Volume Input [veh/h]	68	389	404	69	367	132
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	397	412	70	374	135
Peak Hour Factor	0.9550	0.9550	0.9550	0.9550	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	104	108	18	98	35
Total Analysis Volume [veh/h]	72	416	431	73	392	141
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

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Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Overlap	Split	Split
Signal Group	1	6	2	2	3	0
Auxiliary Signal Groups				2,3		
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	10	10	10	5	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	14	46	32	32	44	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	5	5	0
Pedestrian Clearance [s]	0	10	10	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	0.00	2.00
g_i, Effective Green Time [s]	5	49	40	77	33
g / C, Green / Cycle	0.06	0.54	0.44	0.85	0.37
(v / s)_i Volume / Saturation Flow Rate	0.04	0.25	0.26	0.05	0.34
s, saturation flow rate [veh/h]	1603	1683	1683	1431	1553
c, Capacity [veh/h]	92	916	745	1221	569
d1, Uniform Delay [s]	41.87	12.40	18.78	1.01	27.49
k, delay calibration	0.11	0.50	0.50	0.50	0.29
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.45	1.62	3.26	0.09	17.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.45	0.58	0.06	0.94
d, Delay for Lane Group [s/veh]	55.32	14.02	22.04	1.11	44.50
Lane Group LOS	E	B	C	A	D
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.90	5.11	7.06	0.09	13.20
50th-Percentile Queue Length [ft/ln]	47.60	127.76	176.58	2.24	330.03
95th-Percentile Queue Length [veh/ln]	3.43	8.82	11.42	0.16	19.16
95th-Percentile Queue Length [ft/ln]	85.68	220.44	285.54	4.04	478.99

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.32	14.02	22.04	1.11	44.50	44.50
Movement LOS	E	B	C	A	D	D
d_A, Approach Delay [s/veh]	20.12		19.01		44.50	
Approach LOS	C		B		D	
d_I, Intersection Delay [s/veh]	28.27					
Intersection LOS	C					
Intersection V/C	0.644					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	933	622	889
d_b, Bicycle Delay [s]	12.80	21.36	13.89
l_b,int, Bicycle LOS Score for Intersection	2.365	2.391	2.439
Bicycle LOS	B	B	B

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report
Intersection 4: Aldi Pl at Eucalyptus Ave

Control Type:	Two-way stop	Delay (sec / veh):	9.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.017

Intersection Setup

Name	Aldi Pl		Eucalyptus Ave		Eucalyptus Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Aldi Pl		Eucalyptus Ave		Eucalyptus Ave	
Base Volume Input [veh/h]	14	9	6	48	43	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	9	6	49	44	14
Peak Hour Factor	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	2	2	13	12	4
Total Analysis Volume [veh/h]	15	10	6	52	47	15
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.10	8.51	7.35	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.05	0.03	0.01	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.28	0.73	0.29	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	8.86		0.76		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.83					
Intersection LOS	A					

Moreno Valley Travel Center Project

Vistro File: K:\...\Moreno Valley Pilot AM.vistro
Report File: K:\...\3 OY WP AM.pdf

Scenario 4 OY WP AM
8/27/2021

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Redlands Blvd at Spruce Ave/SR-60 WB Ramps	Signalized	HCM 6th Edition	WB Left	0.697	33.5	C
2	Redlands Blvd at SR-60 EB Ramps	Signalized	HCM 6th Edition	NB Left	0.628	26.5	C
4	Aldi Pl at Eucalyptus Ave	Two-way stop	HCM 6th Edition	SB Left	0.630	18.7	C
5	Aldi Pl at South Project Driveway	Two-way stop	HCM 6th Edition	WB Left	0.329	12.9	B
6	Aldi Pl at North Project Driveway	Two-way stop	HCM 6th Edition	WB Left	0.131	9.8	A
7	Project Driveway at Eucalyptus Ave	Two-way stop	HCM 6th Edition	SB Right	0.024	9.6	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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Intersection Level Of Service Report
Intersection 1: Redlands Blvd at Spruce Ave/SR-60 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	33.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.697

Intersection Setup

Name	Redlands Blvd			Redlands Blvd			Spruce Ave			SR-60 WB Ramps		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

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Volumes

Name	Redlands Blvd			Redlands Blvd			Spruce Ave			SR-60 WB Ramps		
Base Volume Input [veh/h]	7	556	117	270	251	2	1	3	3	31	0	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	85	0	0	0	0	0	0	86	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	567	204	275	256	2	1	3	3	118	0	50
Peak Hour Factor	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910	0.8910
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	159	57	77	72	1	0	1	1	33	0	14
Total Analysis Volume [veh/h]	8	636	229	309	287	2	1	3	3	132	0	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	6	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups			6									
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	10	10	5	10	0	0	10	0	0	10	0
Maximum Green [s]	30	30	30	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	46	14	14	48	16	0	0	14	0	0	14	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No	No	No	No			No			No	
Maximum Recall	No	No	No	No	No			No			No	
Pedestrian Recall	No	No	No	No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	43	43	20	61	2	10
g / C, Green / Cycle	0.01	0.48	0.48	0.22	0.68	0.02	0.11
(v / s)_i Volume / Saturation Flow Rate	0.00	0.38	0.16	0.19	0.17	0.00	0.12
s, saturation flow rate [veh/h]	1603	1683	1431	1603	1681	1554	1547
c, Capacity [veh/h]	19	801	680	348	1145	28	172
d1, Uniform Delay [s]	44.16	19.89	14.73	34.16	5.53	43.57	40.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.12	8.00	1.34	7.65	0.53	4.46	60.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	0.79	0.34	0.89	0.25	0.25	1.09
d, Delay for Lane Group [s/veh]	58.28	27.88	16.06	41.81	6.06	48.03	100.48
Lane Group LOS	E	C	B	D	A	D	F
Critical Lane Group	No	Yes	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.25	12.22	3.04	7.13	1.94	0.19	6.63
50th-Percentile Queue Length [ft/ln]	6.25	305.60	75.95	178.20	48.39	4.68	165.72
95th-Percentile Queue Length [veh/ln]	0.45	17.96	5.47	11.51	3.48	0.34	11.22
95th-Percentile Queue Length [ft/ln]	11.26	448.95	136.72	287.67	87.10	8.43	280.52

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Movement, Approach, & Intersection Results

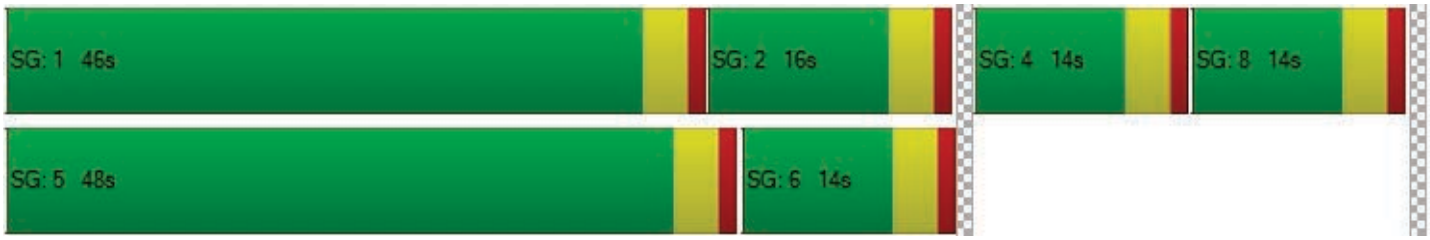
d_M, Delay for Movement [s/veh]	58.28	27.88	16.06	41.81	6.06	6.06	48.03	48.03	48.03	100.48	100.48	100.48
Movement LOS	E	C	B	D	A	A	D	D	D	F	F	F
d_A, Approach Delay [s/veh]	25.06			24.53			48.03			100.48		
Approach LOS	C			C			D			F		
d_I, Intersection Delay [s/veh]	33.48											
Intersection LOS	C											
Intersection V/C	0.697											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	222	267	222	222
d_b, Bicycle Delay [s]	35.56	33.80	35.56	35.56
l_b,int, Bicycle LOS Score for Intersection	3.000	2.546	1.571	1.870
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 2: Redlands Blvd at SR-60 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	26.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.628

Intersection Setup

Name	Redlands Blvd		Redlands Blvd		SR-60 EB Ramps	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

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Volumes

Name	Redlands Blvd		Redlands Blvd		SR-60 EB Ramps	
Base Volume Input [veh/h]	42	431	261	24	251	48
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	84	85	86	0	0	86
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	127	525	352	24	256	135
Peak Hour Factor	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	146	98	7	71	37
Total Analysis Volume [veh/h]	141	582	390	27	284	150
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

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Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Overlap	Split	Split
Signal Group	1	6	2	2	3	0
Auxiliary Signal Groups				2,3		
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	10	10	10	5	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	49	32	32	41	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	5	5	0
Pedestrian Clearance [s]	0	10	10	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	0.00	2.00
g_i, Effective Green Time [s]	10	54	41	72	28
g / C, Green / Cycle	0.11	0.61	0.45	0.80	0.31
(v / s)_i Volume / Saturation Flow Rate	0.09	0.35	0.23	0.02	0.28
s, saturation flow rate [veh/h]	1603	1683	1683	1431	1539
c, Capacity [veh/h]	171	1018	764	1151	471
d1, Uniform Delay [s]	39.36	10.73	17.47	1.76	30.19
k, delay calibration	0.11	0.50	0.50	0.50	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.45	2.33	2.43	0.04	14.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.57	0.51	0.02	0.92
d, Delay for Lane Group [s/veh]	48.81	13.06	19.91	1.79	44.62
Lane Group LOS	D	B	B	A	D
Critical Lane Group	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.46	6.87	5.98	0.07	10.64
50th-Percentile Queue Length [ft/ln]	86.44	171.79	149.40	1.68	265.90
95th-Percentile Queue Length [veh/ln]	6.22	11.17	9.99	0.12	15.98
95th-Percentile Queue Length [ft/ln]	155.59	279.27	249.63	3.02	399.61

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Movement, Approach, & Intersection Results

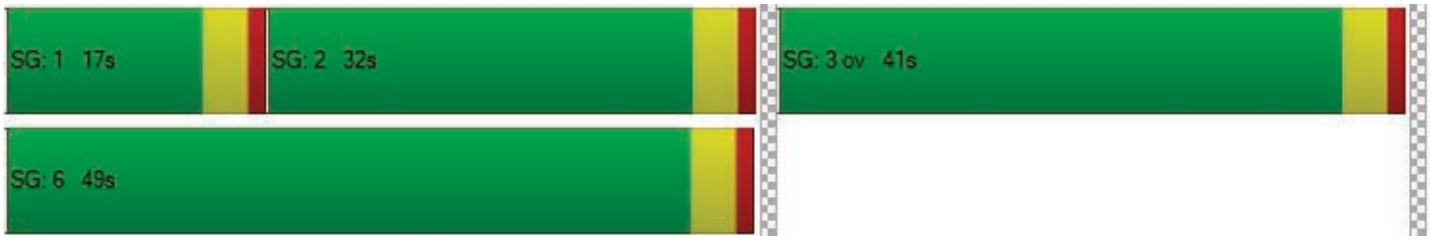
d_M, Delay for Movement [s/veh]	48.81	13.06	19.91	1.79	44.62	44.62
Movement LOS	D	B	B	A	D	D
d_A, Approach Delay [s/veh]	20.03		18.73		44.62	
Approach LOS	C		B		D	
d_I, Intersection Delay [s/veh]	26.47					
Intersection LOS	C					
Intersection V/C	0.628					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1000	622	822
d_b, Bicycle Delay [s]	11.25	21.36	15.61
l_b,int, Bicycle LOS Score for Intersection	2.753	2.248	2.276
Bicycle LOS	C	B	B

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 4: Aldi Pl at Eucalyptus Ave

Control Type:	Two-way stop	Delay (sec / veh):	18.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.630

Intersection Setup

Name	Aldi Pl		Eucalyptus Ave		Eucalyptus Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Aldi Pl		Eucalyptus Ave		Eucalyptus Ave	
Base Volume Input [veh/h]	12	16	14	10	36	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	189	0	19	0	19	130
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	146	0	0	0	0	2
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	347	16	33	10	56	161
Peak Hour Factor	0.8030	0.8030	0.8030	0.8030	0.8030	0.8030
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	108	5	10	3	17	50
Total Analysis Volume [veh/h]	432	20	41	12	70	200
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.63	0.02	0.03	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	18.73	9.14	7.88	0.00	0.00	0.00
Movement LOS	C	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	4.47	0.07	0.10	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	111.73	1.73	2.46	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	18.30		6.10		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	11.09					
Intersection LOS	C					

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Intersection Level Of Service Report

Intersection 5: Aldi Pl at South Project Driveway

Control Type:	Two-way stop	Delay (sec / veh):	12.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.329

Intersection Setup

Name	Aldi Pl		Aldi Pl		South Project Driveway	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Aldi Pl		Aldi Pl		South Project Driveway	
Base Volume Input [veh/h]	42	0	0	28	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	114	35	0	111	78	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	2	0	0	2	144	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	35	0	142	222	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	9	0	36	56	0
Total Analysis Volume [veh/h]	159	35	0	142	222	0
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.33	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.61	0.00	12.93	11.75
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	1.43	1.43
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	35.86	35.86
d_A, Approach Delay [s/veh]	0.00		0.00		12.93	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	5.14					
Intersection LOS	B					

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Intersection Level Of Service Report
Intersection 6: Aldi Pl at North Project Driveway

Control Type:	Two-way stop	Delay (sec / veh):	9.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.131

Intersection Setup

Name	Aldi Pl		Aldi Pl		North Project Driveway	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Aldi Pl		Aldi Pl		North Project Driveway	
Base Volume Input [veh/h]	42	0	0	28	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	114	0	0	111	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	0	0	2	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	43	116	0	29	113	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	29	0	7	28	0
Total Analysis Volume [veh/h]	43	116	0	29	113	0
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.13	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.53	0.00	9.79	9.40
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.45	0.45
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	11.23	11.23
d_A, Approach Delay [s/veh]	0.00		0.00		9.79	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.68					
Intersection LOS	A					

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Intersection Level Of Service Report
Intersection 7: Project Driveway at Eucalyptus Ave

Control Type:	Two-way stop	Delay (sec / veh):	9.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.024

Intersection Setup

Name	Project Driveway		Eucalyptus Ave		Eucalyptus Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Project Driveway		Eucalyptus Ave		Eucalyptus Ave	
Base Volume Input [veh/h]	0	0	0	22	66	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0200	1.0000	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	19	0	189	130	62
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	146	2	145
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	19	0	357	199	207
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	5	0	89	50	52
Total Analysis Volume [veh/h]	0	19	0	357	199	207
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	9.59	0.00	0.00	0.00	0.00
Movement LOS		A		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.07	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	1.81	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.59		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.23					
Intersection LOS	A					

Moreno Valley Travel Center Project

Vistro File: K:\...\Moreno Valley Pilot PM.vistro
Report File: K:\...\3 OY WP PM.pdf

Scenario 4 OY WP PM
8/27/2021

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Redlands Blvd at Spruce Ave/SR-60 WB Ramps	Signalized	HCM 6th Edition	WB Left	0.744	33.9	C
2	Redlands Blvd at SR-60 EB Ramps	Signalized	HCM 6th Edition	NB Left	0.830	43.3	D
4	Aldi Pl at Eucalyptus Ave	Two-way stop	HCM 6th Edition	SB Left	0.473	14.3	B
5	Aldi Pl at South Project Driveway	Two-way stop	HCM 6th Edition	WB Left	0.264	12.3	B
6	Aldi Pl at North Project Driveway	Two-way stop	HCM 6th Edition	WB Left	0.152	9.8	A
7	Project Driveway at Eucalyptus Ave	Two-way stop	HCM 6th Edition	SB Right	0.021	9.5	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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Intersection Level Of Service Report
Intersection 1: Redlands Blvd at Spruce Ave/SR-60 WB Ramps

Control Type:	Signalized	Delay (sec / veh):	33.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.744

Intersection Setup

Name	Redlands Blvd			Redlands Blvd			Spruce Ave					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

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Volumes

Name	Redlands Blvd			Redlands Blvd			Spruce Ave					
Base Volume Input [veh/h]	10	672	89	276	398	3	1	3	8	43	0	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	92	0	0	0	0	0	0	92	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	685	183	282	406	3	1	3	8	136	0	18
Peak Hour Factor	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	185	49	76	110	1	0	1	2	37	0	5
Total Analysis Volume [veh/h]	11	740	198	305	438	3	1	3	9	147	0	19
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing m		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

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Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	6	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups			6									
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	10	10	5	10	0	0	10	0	0	10	0
Maximum Green [s]	30	30	30	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	21	14	14	48	41	0	0	14	0	0	14	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No	No	No	No			No			No	
Maximum Recall	No	No	No	No	No			No			No	
Pedestrian Recall	No	No	No	No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	42	42	19	60	3	10
g / C, Green / Cycle	0.01	0.47	0.47	0.21	0.67	0.03	0.11
(v / s)_i Volume / Saturation Flow Rate	0.01	0.44	0.14	0.19	0.26	0.01	0.10
s, saturation flow rate [veh/h]	1603	1683	1431	1603	1681	1495	1581
c, Capacity [veh/h]	24	782	665	344	1118	47	176
d1, Uniform Delay [s]	43.99	23.01	14.96	34.25	6.85	42.58	39.73
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.60	21.44	1.14	7.60	1.05	3.13	20.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.95	0.30	0.89	0.39	0.28	0.94
d, Delay for Lane Group [s/veh]	57.59	44.45	16.11	41.86	7.89	45.71	60.43
Lane Group LOS	E	D	B	D	A	D	E
Critical Lane Group	No	Yes	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.33	18.51	2.62	7.04	3.59	0.32	4.60
50th-Percentile Queue Length [ft/ln]	8.26	462.64	65.52	175.90	89.84	8.02	114.92
95th-Percentile Queue Length [veh/ln]	0.59	25.56	4.72	11.39	6.47	0.58	8.11
95th-Percentile Queue Length [ft/ln]	14.86	639.01	117.93	284.66	161.70	14.43	202.83

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.59	44.45	16.11	41.86	7.89	7.89	45.71	45.71	45.71	60.43	60.43	60.43
Movement LOS	E	D	B	D	A	A	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	38.69			21.78			45.71			60.43		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	33.93											
Intersection LOS	C											
Intersection V/C	0.744											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	222	822	222	222
d_b, Bicycle Delay [s]	35.56	15.61	35.56	35.56
l_b,int, Bicycle LOS Score for Intersection	3.125	2.791	1.581	1.834
Bicycle LOS	C	C	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report
Intersection 2: Redlands Blvd at SR-60 EB Ramps

Control Type:	Signalized	Delay (sec / veh):	43.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.830

Intersection Setup

Name	Redlands Blvd		Redlands Blvd			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

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Volumes

Name	Redlands Blvd		Redlands Blvd			
Base Volume Input [veh/h]	68	389	404	69	367	132
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	92	92	92	0	0	92
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	161	489	504	70	374	227
Peak Hour Factor	0.9550	0.9550	0.9550	0.9550	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	128	132	18	98	59
Total Analysis Volume [veh/h]	169	512	528	73	392	238
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

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Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Overlap	Split	Split
Signal Group	1	6	2	2	3	0
Auxiliary Signal Groups				2,3		
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	10	10	10	5	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	14	46	32	32	44	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	5	5	0
Pedestrian Clearance [s]	0	10	10	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	0.00	2.00
g_i, Effective Green Time [s]	10	43	29	72	39
g / C, Green / Cycle	0.11	0.48	0.33	0.80	0.43
(v / s)_i Volume / Saturation Flow Rate	0.11	0.30	0.31	0.05	0.41
s, saturation flow rate [veh/h]	1603	1683	1683	1431	1533
c, Capacity [veh/h]	178	812	550	1144	657
d1, Uniform Delay [s]	39.75	17.31	29.70	1.90	24.95
k, delay calibration	0.11	0.50	0.50	0.50	0.41
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	21.14	3.70	29.52	0.11	23.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.63	0.96	0.06	0.96
d, Delay for Lane Group [s/veh]	60.88	21.01	59.22	2.00	48.06
Lane Group LOS	E	C	E	A	D
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.70	8.22	15.23	0.20	16.43
50th-Percentile Queue Length [ft/ln]	117.48	205.46	380.64	4.92	410.76
95th-Percentile Queue Length [veh/ln]	8.25	12.92	21.63	0.35	23.08
95th-Percentile Queue Length [ft/ln]	206.35	322.99	540.63	8.86	576.95

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.88	21.01	59.22	2.00	48.06	48.06
Movement LOS	E	C	E	A	D	D
d_A, Approach Delay [s/veh]	30.91		52.27		48.06	
Approach LOS	C		D		D	
d_I, Intersection Delay [s/veh]	43.27					
Intersection LOS	D					
Intersection V/C	0.830					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	933	622	889
d_b, Bicycle Delay [s]	12.80	21.36	13.89
l_b,int, Bicycle LOS Score for Intersection	2.683	2.551	2.599
Bicycle LOS	B	B	B

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report
Intersection 4: Aldi Pl at Eucalyptus Ave

Control Type:	Two-way stop	Delay (sec / veh):	14.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.473

Intersection Setup

Name	Aldi Pl		Eucalyptus Ave		Eucalyptus Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Aldi Pl		Eucalyptus Ave		Eucalyptus Ave	
Base Volume Input [veh/h]	14	9	6	48	43	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	202	0	18	0	17	146
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	109	0	0	0	0	2
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	325	9	24	49	61	162
Peak Hour Factor	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	2	6	13	16	43
Total Analysis Volume [veh/h]	344	10	25	52	65	171
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.47	0.01	0.02	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	14.31	8.99	7.76	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.56	0.03	0.06	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	63.88	0.83	1.44	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	14.16		2.52		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	7.80					
Intersection LOS	B					

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Intersection Level Of Service Report
Intersection 5: Aldi Pl at South Project Driveway

Control Type:	Two-way stop	Delay (sec / veh):	12.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.264

Intersection Setup

Name	Aldi Pl		Aldi Pl		South Project Driveway	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Aldi Pl		Aldi Pl		South Project Driveway	
Base Volume Input [veh/h]	20	0	0	23	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	132	32	0	132	70	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	2	0	0	3	106	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	154	32	0	158	176	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	8	0	40	44	0
Total Analysis Volume [veh/h]	154	32	0	158	176	0
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.26	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.59	0.00	12.33	11.05
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	1.06	1.06
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	26.46	26.46
d_A, Approach Delay [s/veh]	0.00		0.00		12.33	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	4.17					
Intersection LOS	B					

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Intersection Level Of Service Report
Intersection 6: Aldi Pl at North Project Driveway

Control Type:	Two-way stop	Delay (sec / veh):	9.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.152

Intersection Setup

Name	Aldi Pl		Aldi Pl		North Project Driveway	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Aldi Pl		Aldi Pl		North Project Driveway	
Base Volume Input [veh/h]	20	0	0	23	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0200	1.0200	1.0200	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	132	0	0	132	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	2	0	0	3	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	134	0	23	135	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	34	0	6	34	0
Total Analysis Volume [veh/h]	20	134	0	23	135	0
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.15	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.52	0.00	9.79	9.43
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.54	0.54
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	13.39	13.39
d_A, Approach Delay [s/veh]	0.00		0.00		9.79	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.23					
Intersection LOS	A					

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Intersection Level Of Service Report
Intersection 7: Project Driveway at Eucalyptus Ave

Control Type:	Two-way stop	Delay (sec / veh):	9.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.021

Intersection Setup

Name	Project Driveway		Eucalyptus Ave		Eucalyptus Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Project Driveway		Eucalyptus Ave		Eucalyptus Ave	
Base Volume Input [veh/h]	0	0	0	62	57	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0200	1.0000	1.0200	1.0200	1.0200
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	17	0	202	146	56
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	109	3	109
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	17	0	374	207	165
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	0	94	52	41
Total Analysis Volume [veh/h]	0	17	0	374	207	165
Pedestrian Volume [ped/h]	0		0		0	

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Version 2021 (SP 0-4)

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	9.46	0.00	0.00	0.00	0.00
Movement LOS		A		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.06	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	1.58	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.46		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.21					
Intersection LOS	A					

APPENDIX **D**

DAILY TRUCK STOP TRIP DATA

	12:00AM	01:00AM	02:00AM	03:00AM	04:00AM	05:00AM	06:00AM	07:00AM	08:00AM	09:00AM	10:00AM	11:00AM	12:00PM	01:00PM	02:00PM	03:00PM	04:00PM	05:00PM	06:00PM	07:00PM	08:00PM	09:00PM	10:00PM	11:00PM	Day Total
Thursday	495	494	496	545	679	854	1,032	1,145	1,208	1,239	1,292	1,317	1,345	1,316	1,302	1,256	1,190	1,110	1,003	914	771	676	577	523	22,777
Friday	490	481	489	541	671	821	984	1,092	1,131	1,175	1,215	1,248	1,242	1,234	1,171	1,125	1,078	1,002	915	795	711	615	528	468	21,223
Saturday	426	392	386	393	454	551	658	788	869	952	986	1,003	969	940	901	830	774	687	610	541	460	386	331	299	15,587
Sunday	263	259	235	250	284	356	470	580	697	785	874	940	959	947	932	913	835	772	687	611	536	457	385	353	14,382
Monday	335	329	370	448	567	741	890	989	1,040	1,100	1,171	1,223	1,233	1,249	1,254	1,239	1,186	1,121	992	911	786	663	575	498	20,908
Tuesday	479	475	486	562	674	835	1,016	1,146	1,269	1,263	1,297	1,341	1,350	1,347	1,347	1,329	1,257	1,193	1,085	967	834	709	618	540	23,418
Wednesday	507	502	511	572	700	871	1,056	1,174	1,244	1,286	1,338	1,375	1,371	1,365	1,320	1,314	1,252	1,159	1,047	932	813	696	591	528	23,524
Total for we	2,995	2,932	2,972	3,312	4,030	5,029	6,107	6,914	7,457	7,799	8,172	8,447	8,469	8,399	8,227	8,007	7,573	7,043	6,340	5,670	4,910	4,202	3,605	3,209	141,820
Hourly perc	2.11%	2.07%	2.10%	2.34%	2.84%	3.55%	4.31%	4.87%	5.26%	5.50%	5.76%	5.96%	5.97%	5.92%	5.80%	5.65%	5.34%	4.97%	4.47%	4.00%	3.46%	2.96%	2.54%	2.26%	100.00%
Expected tra	8	8	8	9	11	14	17	19	21	22	23	24	24	24	23	23	21	20	18	16	14	12	10	9	400

Monthly vol	900,000	gallons
Daily volun	30,000	gallons
Average fill	105	gallons
Fills/day	286	
Safety facto	1.4	(accounts for non-fueling customers)
Trucks/day	400	

Distribution numbers are based on sales data from 56 similar facilities in the region surrounding Moreno Valley, CA.

APPENDIX E

VMT ANALYSIS MEMO

Kimley»Horn

September 1, 2021

Mr. Nick Minicilli
City of Moreno Valley
14177 Frederick St
Moreno Valley, CA 92553

Subject: *Vehicle Miles Traveled Memorandum for the Moreno Valley Travel Center Project in the City of Moreno Valley*

Dear Mr. Casey:

Kimley-Horn and Associates, Inc. has prepared a Vehicle Miles Traveled (VMT) memorandum, per request from the City of Moreno Valley staff, for the proposed Moreno Valley Travel Center Project. The City has required submittal of this memorandum based on the City of Moreno Valley *Transportation Impact Analysis (TIA) Preparation Guide* (June 2020). VMT analysis is used to evaluate transportation impacts under CEQA.

PROJECT DESCRIPTION

The project is located on the northwest corner of the intersection of Redlands Boulevard and Eucalyptus Avenue. The project site is shown in its regional setting on Figure 1. The project site (approximately 10 acres) is currently vacant and bounded by vacant land to the north, Eucalyptus Avenue to the south, Aldi Place to the west, and Redlands Boulevard to the east.

The project consists of the construction of a truck stop with 10 truck fueling positions, a gas station with 16 fueling positions and a convenience market, and an approximately 2,312 square-foot fast-food restaurant with a drive-through. A copy of the project site plan is provided on Error! Reference source not found..

Vehicular access for the project site would be via one unsignalized right-in-only driveway on Eucalyptus Avenue, one full-access unsignalized driveway on Aldi Place, and one truck accessible driveway roughly three quarters of the way up Aldi Place.

NOT TO SCALE

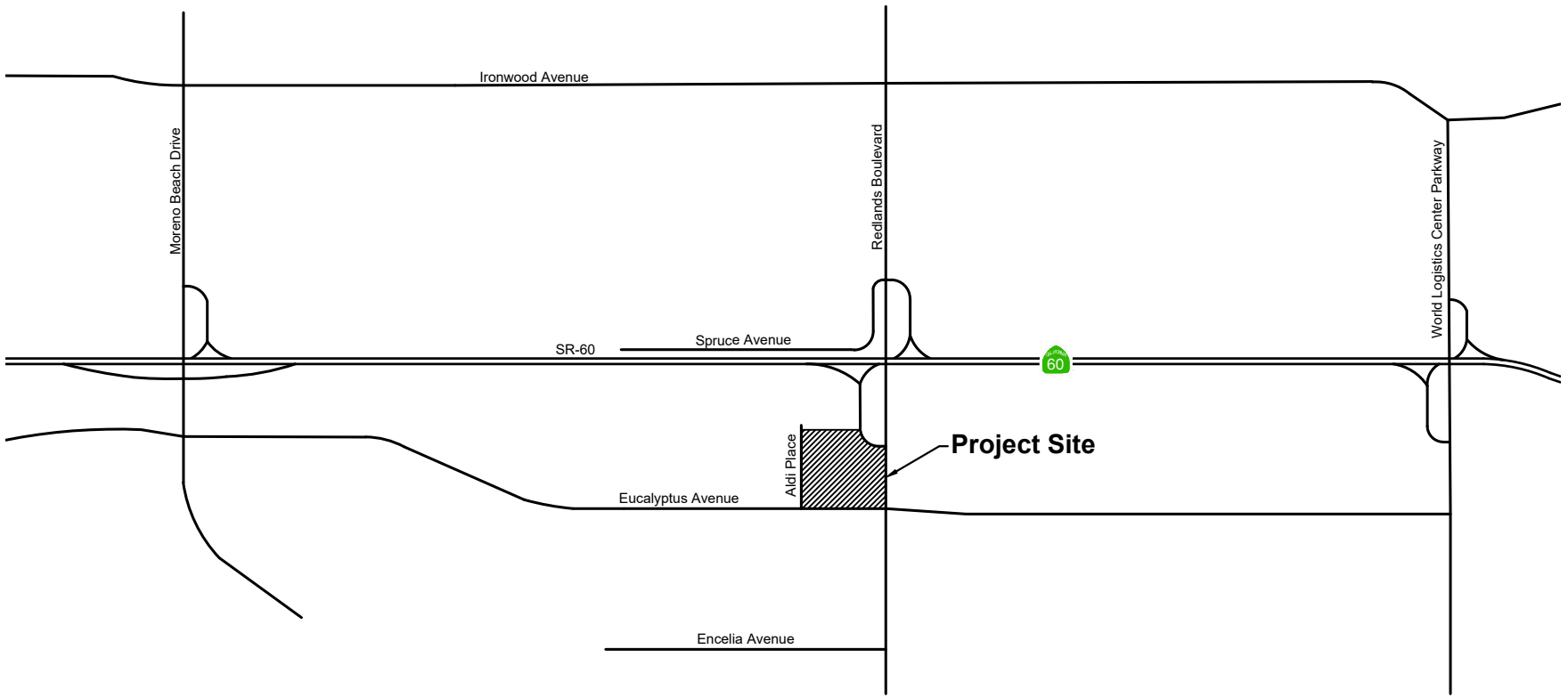


FIGURE 1
VICINITY MAP

NOT TO SCALE

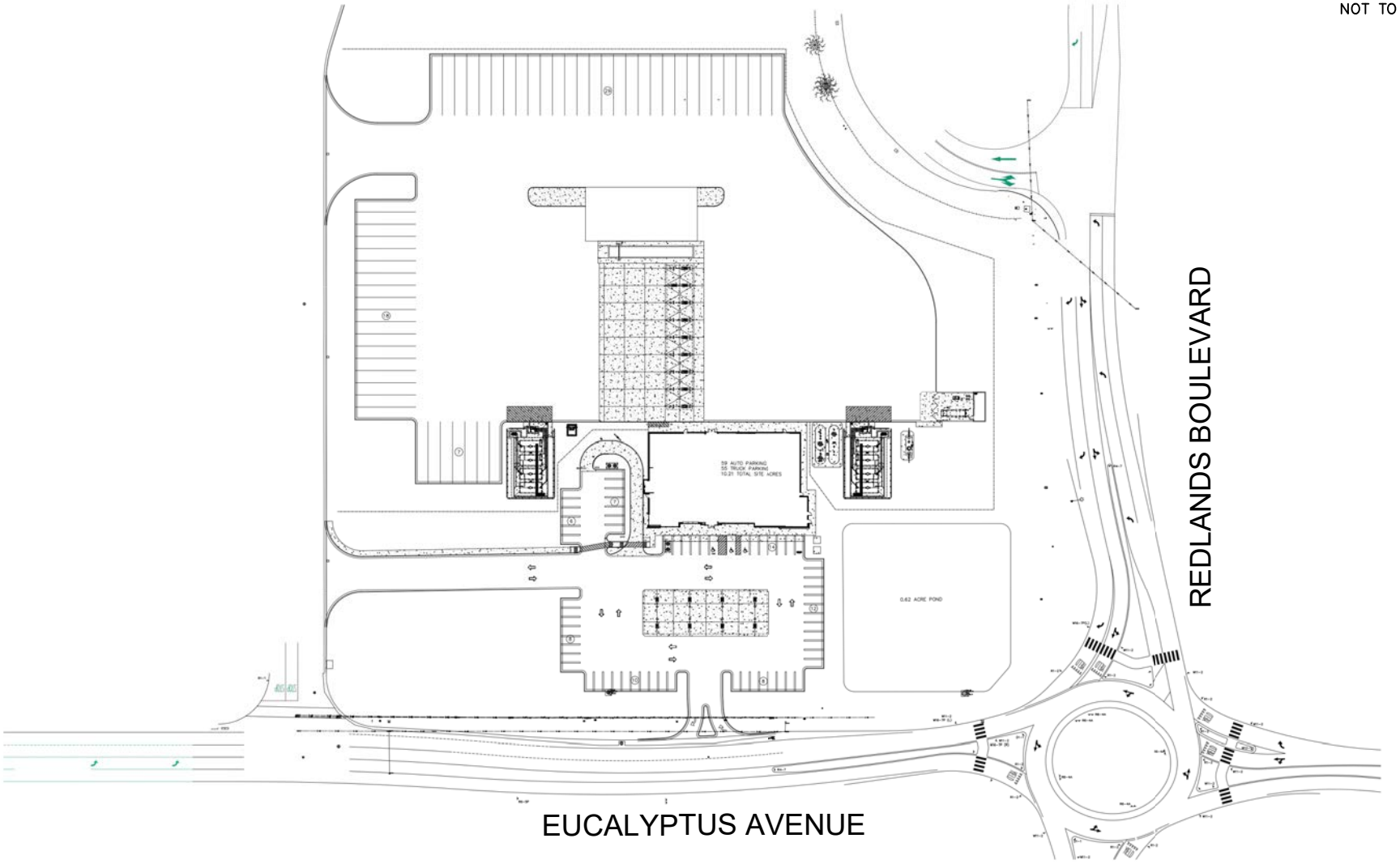


FIGURE 2
PROJECT SITE PLAN

CEQA VEHICLE MILES TRAVELED (VMT) ASSESSMENT

Senate Bill 743 (SB 743) was approved by California legislature in September 2013. SB 743 requires changes to California Environmental Quality Act (CEQA), specifically directing the Governor's Office of Planning and Research (OPR) to develop alternative metrics to the use of vehicular "Level of Service" (LOS) for evaluating transportation projects. OPR has prepared a technical advisory ("OPR Technical Advisory") for evaluating transportation impacts in CEQA and has recommended that Vehicle Miles Traveled (VMT) replace LOS as the primary measure of transportation impacts. The Natural Resources Agency has adopted updates to CEQA Guidelines to incorporate SB 743 that requires VMT for the purposes of determining a significant transportation impact under CEQA.

The City of Moreno Valley has adopted the City of Moreno Valley *TIA Preparation Guide* (June 2020) which provides details on appropriate screening thresholds that can be used to identify when a proposed land use project is anticipated to result in a less-than-significant impact without conducting a more detailed level analysis. Screening thresholds are broken down into the following three criteria:

1. Transit Priority Area (TPA)
2. Low VMT Generating Area
3. Project Type Screening

Land development projects that meet one or more of the above screening thresholds may be presumed to create a less than significant impact on transportation and circulation. The screening thresholds were reviewed and evaluated for this project.

Transit Priority Area (TPA)

A project located within a TPA as determined by the most recent SCAG RTP/SCS would be considered to have a less-than-significant transportation impact. The proposed project is not located within a TPA.

The Transit Priority Area threshold is not met.

Low VMT Generating Area

A project located within a low VMT generating area as determined by the most recent SCAG RTP/SCS would be considered to have a less-than-significant transportation impact. The proposed project is not located within a low VMT generating area.

The Low VMT Generating Area threshold is not met.

Project Type Screening

The OPR and SBCTA VMT Guidelines identify that Project types falling under the screening criteria includes the following:

- Local K-12 Schools
- Local parks
- Day care centers
- Local serving gas stations
- Local serving banks
- Local serving hotels
- Student housing projects
- Local serving community colleges
- Projects generating less than 400 daily vehicle trips

Since the project consists of 16 fueling positions and associated convenience store, a 2,312 square-foot fast food restaurant with a drive-through, and a truck stop with 10 fueling positions the project is considered to be local serving and should be screened out due to its land use types.

The Land Use Type Screening threshold is met for all the project land uses.

FINDINGS AND CONCLUSIONS

Based on review of the City's VMT screening thresholds, the project meets the Land Use Type Screening threshold; therefore, the project would result in a less-than-significant transportation impact, and no additional VMT analysis is required.

Please contact me if you have any questions or if you need additional information.

Sincerely,

KIMLEY-HORN AND ASSOCIATES, INC.

Trevor Briggs, P.E (C87664)

Appendix J
Trip Generation

ATTACHMENT 2 - TRIP GENERATION TABLES

Table 1 - Trip Generation Rates

Land Use	Source	Units	Daily Trip Rate	AM Peak Hour Rate		PM Peak Hour Rate	
				Trip Rate	In : Out	Trip Rate	In : Out
Fast-Foot Restaurant w Drive-Through Window	ITE Code 934	2.312 ksf	470.95	40.19	51% : 49%	32.67	52% : 48%
Super Convenience Market/Gas Station	ITE Code 960	16 FP	230.52	28.08	50% : 50%	22.96	50% : 50%
Truck Stop	Data (a)/ITE Code 950	11 Truck FP	72.73	7.18	51% : 49%	8.41	49% : 51%

Notes
KSF = thousand square feet, FP = Fueling Positions
AM and/or PM rates correspond to peak of adjacent street traffic
Trip Generation data for ITE Codes from *ITE Trip Generation, 10th Edition*
(a) Daily Trip Generation data received from Pilot

Table 4 - Total Project Trip Generation

	Daily Trips	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Total Primary Trips							
Fast Food w Drive-Through	473	21	21	42	17	16	33
Super Convenience Market/Gas Station	1,316	76	76	152	71	71	142
Truck Stop (PCE = 3.0)	2,280	114	111	225	132	132	264
Total Primary Trip Generation	4,069	211	208	419	220	219	439
Total Driveway Trips							
Fast Food w Drive-Through	947	42	41	83	35	32	67
Super Convenience Market/Gas Station	3,209	200	200	400	162	161	323
Truck Stop (PCE = 3.0)	2,400	120	117	237	138	141	279
Total Driveway Trip Generation	6,556	362	358	720	335	334	669

CITY OF MORENO VALLEY

NOTICE OF AVAILABILITY AND INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION (MND)

NOTICE IS HEREBY GIVEN that the City of Moreno Valley is considering a recommendation that the project herein identified will have no significant environmental impact in compliance with Section 15070 of the CEQA guidelines. A copy of the **MITIGATED NEGATIVE DECLARATION** and the **ENVIRONMENTAL CHECKLIST,** which supports the proposed findings, are on file at the City of Moreno Valley.

Project:	Conditional Use Permit PEN21-0077
Applicant:	Pilot Company
Property Owner:	NALA Prop
APNs:	488-330-030, 488-330-035, 488-330-036, 488-330-037 and 488-330-038
Location:	Northwest corner of Redlands Boulevard and Eucalyptus Avenue
Proposal:	Applicant is requesting approval of a Conditional Use Permit for the Pilot Travel Center to develop a 17.28-acre site with a 14,087-square foot travel center building with space for a drive-thru fast food restaurant, additional food service with a kitchen, retail store, driver amenities (e.g., restrooms, showers, laundry), and support/utility areas, fueling stations for passenger vehicles and trucks, and above ground fuel storage tanks.
Council District:	3

This Notice of Availability (NOA) has been prepared to notify agencies and interested parties that the City of Moreno Valley as the Lead Agency has prepared an Initial Study and Mitigated Negative Declaration pursuant to requirements of the California Environmental Quality Act (CEQA) to evaluate the potential environmental impacts associated with construction and operation of the Pilot Travel Center project as described below.

Project Description: The Pilot Travel Center proposes to develop a 17.28-acre site with 14,087-square foot travel center building with space for a drive-thru fast food restaurant, additional food service with a kitchen, retail store, driver amenities (e.g., restrooms, showers, laundry), and support/utility areas, fueling stations for passenger vehicles and trucks, and above ground fuel storage tanks within Community Commercial (CC) District.

Project Location: The Project site is located on the northwest corner of Redlands Boulevard and Eucalyptus Avenue in Moreno Valley, Riverside County, California. (Assessor Parcel Numbers (APN's): 488-330-030, -035, -036, -037, and -038). The Project site is not included on any list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

Potential Environmental Impacts: The City of Moreno Valley has prepared an Initial Study to determine the environmental effects associated with the above actions and finds the issuance of a Mitigated Negative Declaration is the appropriate level of environmental review. The Initial Study/Mitigated Negative Declaration concludes that all potentially significant impacts of the Project would be mitigated to a less than significant level.

Public Review and Comment Deadline: Copies of the Initial Study/Mitigated Negative Declaration are available at the Planning Division at the address listed below. Pursuant to Section 15105(b) of the CEQA Guidelines, the City has established a 20-day public review period for the Initial Study/Mitigated Negative Declaration which begins November 10, 2021 and ends November 30, 2021. Written comments on the Initial Study/Mitigated Negative Declaration must be received at the City of Moreno Valley Community Development Department by no later than the conclusion of the 20-day review period, 5:30 pm on November 30, 2021. Written comments on the Initial Study/Mitigated Negative Declaration should be addressed to:

Jeff Bradshaw, Associate Planner
14177 Frederick Street

Post Office Box 88005
Moreno Valley, California 92552 Phone: (951) 413-3224
Email: jeffreyb@moval.org

Document Availability: The Initial Study/Mitigated Negative Declaration, and all documents incorporated and/or referenced therein, can be reviewed during normal business hours (7:30 a.m. to 5:30 p.m., Monday through Thursday and Friday, 7:30 a.m. to 4:30 p.m.) at the City of Moreno Valley Planning Division counter, located at 14177 Frederick Street, Moreno Valley, CA 92553.

	Press-Enterprise	November 9, 2021
Sean Kelleher	Newspaper	Date of Publication
Planning Official, Community Development Department		

PILOT TRAVEL CENTER PROJECT
Conditional Use Permit (PEN21-0077)

Mitigation Monitoring and Reporting Program

LEAD AGENCY: CITY OF MORENO VALLEY
14177 Frederick Street
Moreno Valley, California 92552

PREPARED BY: DE NOVO PLANNING GROUP
180 E. Main Street, Suite 108
Tustin, California 92780

November 2021

MITIGATION MONITORING AND REPORTING PROGRAM

The California Environmental Quality Act (CEQA) requires that when a public agency completes an environmental document which includes measures to mitigate or avoid significant environmental effects, the public agency must adopt a reporting or monitoring program. This requirement ensures that environmental impacts found to be significant will be mitigated. The reporting or monitoring program must be designed to ensure compliance during project implementation (Public Resources Code Section 21081.6). Specifically, Public Resources Code § 21081.6 states:

> (a) *When making findings required by paragraph (1) of subdivision (a) of Section 21081 or when adopting a mitigated negative declaration pursuant to paragraph (2) of subdivision (c) of Section 21080, the following requirements shall apply:*
>
> *(1) The public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation. For those changes which have been required or incorporated into the project at the request of a responsible agency or a public agency having jurisdiction by law over natural resources affected by the project, that agency shall, if so requested by the lead or responsible agency, prepare and submit a proposed reporting or monitoring program.*
>
> *(2) The lead agency shall specify the location and custodian of the documents or other material which constitute the record of proceedings upon which its decision is based.*

This Mitigation Monitoring and Reporting Program (MMRP) has been developed to provide the mechanism by which to monitor mitigation measures outlined in the Pilot Travel Center Project Initial Study/Mitigated Negative Declaration (IS/MND). The Pilot Travel Center Project MMRP has been prepared in conformance with Public Resources Code §21081.6 and City of Moreno Valley (City) monitoring requirements.

State CEQA Guidelines §15097 provides clarification of mitigation monitoring and reporting requirements and guidance to local lead agencies on implementing strategies. The reporting or monitoring program must be designed to ensure compliance during project implementation. The City of Moreno Valley is the Lead Agency for the Pilot Travel Center Project and is therefore responsible for ensuring MMRP implementation. This MMRP has been drafted to meet Public Resources Code §21081.6 requirements as a fully enforceable monitoring program.

The MMRP Checklist is intended to provide verification that all applicable mitigation measures relative to significant environmental impacts are monitored and reported. Monitoring will include: 1) verification that each mitigation measure has been implemented; 2) recordation of the actions taken to implement each mitigation; and 3) retention of records in the Pilot Travel Center Project file.

This MMRP delineates responsibilities for monitoring the Project, but also allows the City flexibility and discretion in determining how best to monitor implementation. Monitoring procedures will vary according to the type of mitigation measure. Adequate monitoring consists of demonstrating that monitoring procedures took place and that mitigation measures were implemented. This includes the review of all monitoring reports, enforcement actions, and document disposition, unless otherwise noted in the MMRP Checklist. If an adopted mitigation measure is not being properly implemented, the designated monitoring personnel shall require corrective actions to ensure adequate implementation.

The numbering system in the following table corresponds with the IS/MND's numbering system. The MMRP table "Verification" column will be used by the parties responsible for documenting when the mitigation measure has been completed. The City of Moreno Valley will complete ongoing documentation and mitigation compliance monitoring. The completed MMRP and supplemental documents will be kept on file at the City of Moreno Valley Planning Department.

Mitigation Monitoring and Reporting Program Checklist

Mitigation Measures	Implementation Timing	Monitoring/ Reporting Methods	Responsible for Approval/ Monitoring	Verification		
				Initials	Date	Remarks
BIOLOGICAL RESOURCES						
BIO-1: The Project proponent shall implement the following measure to avoid or minimize impacts on burrowing owl populations: A pre-construction survey for burrowing owls shall be completed within the Project site no more than 30 days prior to construction activities in accordance with the Western Riverside MSHCP burrowing owl survey guidelines (County of Riverside, 2006). If burrowing owls are observed during the preconstruction survey and impacts to the owls or occupied burrows are unavoidable, a specific mitigation methodology for the owls shall be determined in coordination with CDFW in order to reduce impacts to a level that is less than significant. Mitigation measures for any burrowing owls present could include avoidance of the owl burrows during the nesting season and/or passive relocation of burrowing owls.	Pre-Construction, no more than 30 days prior to construction activities	Pre-Construction Burrowing Owl Survey	City of Moreno Valley Planning Division and Building and Safety Division/Project Applicant, Construction Contractor, and Biologist			
BIO-2: The Project proponent shall implement the following measure to avoid or minimize impacts on nesting birds: Wherever feasible, any ground disturbance activities shall be conducted during the non-breeding season for birds (approximately September 1 through January 31) in order to avoid violations of the MBTA and California Fish and Game Code §§ 3503, 3503.5 and 3513. If activities with the potential to disrupt nesting birds are scheduled to occur during the bird breeding season (February 1 through August 31), a preconstruction nesting bird survey shall be conducted by a qualified biologist who is experienced in the identification of avian species and conducting nesting bird surveys no more	Pre-Construction, no more than three (3) days prior to construction activities if occurring during the bird breeding season (February 1 through August 31)	Pre-Construction Nesting Bird Survey	City of Moreno Valley Planning Division and Building and Safety Division/Project Applicant, Construction Contractor, and Biologist			

Mitigation Measures	Implementation Timing	Monitoring/ Reporting Methods	Responsible for Approval/ Monitoring	Verification		
				Initials	Date	Remarks
than three (3) days prior to the start of construction activities. The nest surveys shall include the Project site and adjacent areas where Project activities have the potential to cause nest failure. If no nesting birds are observed during the survey, site preparation and construction activities may begin. If nesting birds (including nesting raptors) are found to be present, avoidance or minimization measures shall be undertaken to avoid potential Project-related impacts. Measures may include establishment of an avoidance buffer until nesting has been completed and periodic nest monitoring by the Project biologist. The width of the avoidance buffer will be determined by the Project biologist. Typically, this is 300 feet from the nest site in all directions (500 feet is typically recommended by CDFW for raptors), until the juveniles have fledged and there has been no evidence of a second attempt at nesting. The monitoring biologist will monitor the nest(s) during construction and document any findings.						
CULTURAL RESOURCES						
CUL-1: Prior to the issuance of a grading permit, the Developer shall retain a professional Archaeologist to conduct monitoring of all mass grading and trenching activities. The Project Archaeologist shall have the authority to temporarily redirect earthmoving activities in the event that suspected archaeological resources are unearthed during Project construction. The Project Archaeologist, in consultation with the Soboba Band of Luiseño Indians and Pechanga Band of Luiseño Indians (the Consulting Tribes), the contractor, and the City, shall develop a Cultural Resources Management Plan (CRMP) in consultation pursuant to the definition in AB 52 to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the Project site. A consulting tribe	Prior to Issuance of a Grading Permit	Archaeological Monitor Agreement/Cultural Resources Management Plan	City of Moreno Valley Planning Division/Project Applicant, Construction Contractor, and Project Archaeologist			

Mitigation Measures	Implementation Timing	Monitoring/ Reporting Methods	Responsible for Approval/ Monitoring	Verification		
				Initials	Date	Remarks
is defined as a tribe that initiated the AB 52 tribal consultation process for the Project, has not opted out of the AB 52 consultation process, and has completed AB 52 consultation with the City as provided for in Cal Pub Res Code Section 21080.3.2(b)(1) of AB52. Details in the Plan shall include: a. Project grading and development scheduling; b. The Project Archeologist and the Soboba Band of Luiseño Indians and Pechanga Band of Luiseño Indians shall attend the pre-grading meeting with the City, the construction manager and any contractors and will conduct a mandatory Cultural Resources Worker Sensitivity Training to those in attendance. The Training will include a brief review of the cultural sensitivity of the Project and the surrounding area; what resources could potentially be identified during earthmoving activities; the requirements of the monitoring program; the protocols that apply in the event inadvertent discoveries of cultural resources are identified, including who to contact and appropriate avoidance measures until the find(s) can be properly evaluated; and any other appropriate protocols. All new construction personnel that will conduct earthwork or grading activities that begin work on the Project following the initial Training must take the Cultural Sensitivity Training prior to beginning work and the Project Archaeologist and the Soboba Band of Luiseño Indians and Pechanga Band of Luiseño Indians shall make themselves available to provide the training on an as-needed basis;						

Mitigation Measures	Implementation Timing	Monitoring/ Reporting Methods	Responsible for Approval/ Monitoring	Verification		
				Initials	Date	Remarks
c. The protocols and stipulations that the contractor, City, Consulting Tribe(s) and Project Archaeologist will follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits that shall be subject to a cultural resources evaluation.						
CUL-2: Prior to the issuance of a grading permit, the Developer shall secure agreements with the Soboba Band of Luiseño Indians and Pechanga Band of Luiseño Indians for tribal monitoring. The Developer is also required to provide a minimum of 30 days advance notice to the tribes of all mass grading and trenching activities. The Native American Tribal Representatives shall have the authority to temporarily halt and redirect earth moving activities in the affected area in the event that suspected archaeological resources are unearthed. If the Native American Tribal Representatives suspect that an archaeological resource may have been unearthed, the Project Archaeologist or the Tribal Representatives shall immediately redirect grading operations in a 100-foot radius around the find to allow identification and evaluation of the suspected resource. In consultation with the Native American Tribal Representatives, the Project Archaeologist shall evaluate the suspected resource and make a determination of significance pursuant to California Public Resources Code Section 21083.2.	Prior to the Issuance of a Grading Permit/ During Ground Disturbing Activities	Native American Monitor Agreements	City of Moreno Valley Planning Division/Project Applicant, Construction Contractor, and Project Archaeologist			
CUL-3: In the event that Native American cultural resources are discovered during the course of grading (inadvertent discoveries), the following procedures shall be carried out for final disposition of the discoveries: a. One or more of the following treatments, in order of preference, shall be employed with the tribes.	During Ground Disturbing Activities	Construction Site Monitoring	City of Moreno Valley Planning Division/Project Applicant, Construction Contractor, and			

Mitigation Measures	Implementation Timing	Monitoring/ Reporting Methods	Responsible for Approval/ Monitoring	Verification		
				Initials	Date	Remarks
Evidence of such shall be provided to the City of Moreno Valley Planning Department: i. Preservation-In-Place of the cultural resources, if feasible. Preservation in place means avoiding the resources, leaving them in the place they were found with no development affecting the integrity of the resources. ii. Onsite reburial of the discovered items as detailed in the treatment plan required pursuant to Mitigation Measure CUL-1. This shall include measures and provisions to protect the future reburial area from any future impacts in perpetuity. Reburial shall not occur until all legally required cataloging and basic recordation have been completed. No recordation of sacred items is permitted without the written consent of all Consulting Native American Tribal Governments as defined in CUL-1.			Project Archaeologist			
CUL-4: The City shall verify that the following note is included on the Grading Plan: "If any suspected archaeological resources are discovered during ground-disturbing activities and the Project Archaeologist or Native American Tribal Representatives are not present, the construction supervisor is obligated to halt work in a 100-foot radius around the find and call the Project Archaeologist and the Tribal Representatives to the site to assess the significance of the find."	Prior to Issuance of Grading Permit	Grading Plan Verification	City of Moreno Valley Planning Division and Building and Safety Division/Project Applicant, and Construction Contractor			

Mitigation Measures	Implementation Timing	Monitoring/ Reporting Methods	Responsible for Approval/ Monitoring	Verification		
				Initials	Date	Remarks
CUL-5: If potential historic or cultural resources are uncovered during excavation or construction activities at the project site, work in the affected area must cease immediately and a qualified person meeting the Secretary of the Interior's standards (36 CFR 61), Tribal Representatives, and all site monitors per the Mitigation Measures, shall be consulted by the City to evaluate the find, and as appropriate recommend alternative measures to avoid, minimize or mitigate negative effects on the historic, or prehistoric resource. Determinations and recommendations by the consultant shall be immediately submitted to the Planning Division for consideration, and implemented as deemed appropriate by the Community Development Director, in consultation with the State Historic Preservation Officer (SHPO) and any and all Consulting Native American Tribes as defined in CUL-1 before any further work commences in the affected area.	During Ground Disturbing Activities	Construction Site Monitoring	City of Moreno Valley Planning Division/Project Applicant, Construction Contractor, and Project Archaeologist			
GEOLOGY AND SOILS						
GEO-1: Retain a Qualified Paleontologist. Prior to initial ground disturbance, the applicant shall retain a project paleontologist, defined as a paleontologist who meets the Society for Vertebrate Paleontology (SVP) standards for Qualified Professional Paleontologist, to direct all mitigation measures related to paleontological resources. A qualified paleontologist (Principal Paleontologist) is defined by the SVP standards as an individual with an M.S. or Ph.D. in paleontology or geology who is experienced with paleontological procedures and techniques, who is knowledgeable in the geology of California, and who has worked as a paleontological mitigation project supervisor for a least one year.	Prior to Ground Disturbing Activities	Paleontological Monitor Agreement	City of Moreno Valley Planning Division/Project Applicant, Construction Contractor, and Paleontologist			
GEO-2: Paleontological Mitigation and Monitoring Program. Prior to construction activity the Principal Paleontologist shall prepare a Paleontological Mitigation and	Prior to Ground Disturbing Activities	Paleontological Mitigation and Monitory Program	City of Moreno Valley Planning Division/Project			

Mitigation Measures	Implementation Timing	Monitoring/ Reporting Methods	Responsible for Approval/ Monitoring	Verification		
				Initials	Date	Remarks
Monitoring Program to be implemented during ground disturbance activity for the proposed Project. This program shall outline paleontological monitoring extent and duration, salvage and preparation of fossils, the final mitigation and monitoring report, and paleontological staff qualifications.			Applicant, Construction Contractor, and Paleontologist			
GEO-3: Paleontological Monitoring. Ground disturbing construction activities (including grading, trenching, foundation work and other excavations) shall be monitored on a full-time basis by a qualified paleontological monitor during initial ground disturbance. The Paleontological Mitigation and Monitoring Program shall be supervised by the Principal Paleontologist. Monitoring shall be conducted by a qualified paleontological monitor, who is defined as an individual who has experience with collection and salvage of paleontological resources. The duration and timing of the monitoring will be determined by the Principal Paleontologist. If the Principal Paleontologist determines that full-time monitoring is no longer warranted, they may recommend that monitoring be reduced to periodic spot-checking or cease entirely. Monitoring would be reinstated if any new or unforeseen deeper ground disturbances are required, and reduction or suspension would need to be reconsidered by the Principal Paleontologist.	During Ground Disturbing Activities	Construction Site Monitoring & Completion of Daily Monitoring Logs	City of Moreno Valley Planning Division/Project Applicant, Construction Contractor, and Paleontologist			
GEO-4: Salvage of Fossils. If fossils are discovered, the Project Paleontologist or paleontological monitor shall recover them. Typically, fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases, larger fossils (such as complete skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In this case the Paleontologist shall have the authority to temporarily direct, divert or halt construction activity to ensure that the fossil(s) can be removed in a safe and timely manner.	During Ground Disturbing Activities	Construction Site Monitoring	City of Moreno Valley Planning Division/Project Applicant, Construction Contractor, and Paleontologist			

Mitigation Measures	Implementation Timing	Monitoring/ Reporting Methods	Responsible for Approval/ Monitoring	Verification		
				Initials	Date	Remarks
GEO-5: Preparation and Curation of Recovered Fossils. Once salvaged, significant fossils shall be identified to the lowest possible taxonomic level, prepared to a curation-ready condition, and curated in a scientific institution with a permanent paleontological collection (such as the Western Science Center or John D. Cooper Center), along with all pertinent field notes, photos, data, and maps. Fossils of undetermined significance at the time of collection may also warrant curation at the discretion of the Principal Paleontologist.	During Ground Disturbing Activities	Identification and Curation	City of Moreno Valley Planning Division/Project Applicant, Construction Contractor, and Paleontologist			
GEO-6: Final Paleontological Mitigation Report. Upon completion of ground disturbing activity (and curation of fossils if necessary) the Principal Paleontologist shall prepare a final mitigation and monitoring report outlining the results of the mitigation and monitoring program. The report shall include discussion of the location, duration and methods of the monitoring, stratigraphic sections, any recovered fossils, and the scientific significance of those fossils, and where fossils were curated.	Upon Completion of Ground Disturbing Activities	Submittal of Final Mitigation and Monitoring Report	City of Moreno Valley Planning Division/Project Applicant, Construction Contractor, and Paleontologist			
TRIBAL CULTURAL RESOURCES						
Refer to Mitigation Measures CUL-1 through CUL-6.						

RESOLUTION NUMBER 2022-02

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF MORENO VALLEY, CALIFORNIA, APPROVING A CONDITIONAL USE PERMIT (PEN21-0077) FOR THE PILOT TRAVEL CENTER PROJECT LOCATED AT THE NORTHWEST CORNER OF REDLANDS BOULEVARD AND EUCALYPTUS AVENUE (APN'S: 488-330-030, 488-330-035, 488-330-036, 488-330-037 AND 488-330-038)

WHEREAS, the City of Moreno Valley ("City") is a general law city and a municipal corporation of the State of California and pursuant to its police powers is authorized to approve a conditional use permit for the development of conditionally permitted uses; and

WHEREAS, Pilot Company, ("Applicant") is seeking approval of Conditional Use Permit (PEN21-0077) for the development of a Pilot Travel Center with a 14,087-square foot travel center building with space for a drive-through fast-food restaurant, additional food service with a kitchen, retail store, driver amenities (e.g., restrooms, showers, laundry), and support/utility areas, fueling stations for passenger vehicles and trucks, and above ground fuel storage tanks ("Proposed Project") on a 17.28-acre site located at the northwest corner of Redlands Boulevard and Eucalyptus Avenue, consisting of APN's 488-330-030, 488-330-035, 488-330-036, 488-330-037 and 488-330-038 ("Project Site"); and

WHEREAS, Section 9.02.060 (Conditional Use Permits) of the Moreno Valley Municipal Code acknowledges that the purpose of conditional use permits is to allow the establishment of uses that may have special impacts or uniqueness such that their effect on the surrounding environment cannot be determined in advance of the use being proposed for a particular location and that the conditional use permit application process involves the review of the location, design, and configuration of improvements related to the project, and the potential impact of the project on the surrounding area based on fixed and established standards; and

WHEREAS, Conditional Use Permit (PEN21-0077) has been evaluated in accordance with Section 9.02.060 (Conditional Use Permits) of the Municipal Code with consideration given to the City's General Plan, Zoning Ordinance, and other applicable laws and regulations; and

WHEREAS, Section 9.02.060 of the Municipal Code provides that conditions of approval for projects for which a Conditional Use Permit (CUP) is required may be imposed by the Planning Commission to address on-site improvements, off-site improvements, the manner in which the site is used, and any other conditions as may be deemed necessary to protect the public health, safety, and welfare to ensure that the Proposed Project will be developed in accordance with the purpose and intent of Title 9 (Planning and Zoning) of the Municipal Code; and

WHEREAS, pursuant to the provisions of Section 9.02.200 (Public Hearing and Notification Procedures) of the Municipal Code and Government Code Section 65905, a

public hearing was scheduled for December 9, 2021, and notice thereof was duly published and posted, and mailed to all property owners of record within 600 feet of the Project Site; and

WHEREAS, on December 9, 2021, the Planning Commission continued the public hearing for the Proposed Project to January 13, 2022, at the request of the Applicant; and

WHEREAS, on January 13, 2022, the Planning Commission, after closing the public testimony period of the continued January 13 public hearing, continued the public hearing again to February 10, 2022; and

WHEREAS, the purpose of the continuance was to direct the Applicant and City Staff to report back to the Planning Commission regarding the following items: i) World Logistics Center Specific Plan overnight parking restrictions; ii) Trip Generation Summary, and iii) Security Plan; and

WHEREAS, at the continued February 10, 2022, public hearing, the Planning Commission considered Conditional Use Permit (PEN21-0077); and

WHEREAS, consistent with the requirements of Section 9.02.060 (Conditional Use Permits) of the Municipal Code, the Planning Commission considered the proposed Conditions of Approval set forth in Conditional Use Permit (PEN21-0077), which conditions were prepared by Planning Division staff who deemed said conditions to be necessary to protect the public health, safety, and welfare and to ensure the Proposed Project will be developed in accordance with the purpose and intent of Title 9 (Planning and Zoning) of the Municipal Code; and

WHEREAS, the Planning Commission reviewed and considered whether each of the requisite findings specified in Section 9.02.060 of the Municipal Code and set forth herein could be made with respect to the Proposed Project as conditioned by the Conditions of Approval; and

WHEREAS, on February 10, 2022, in accordance with the provisions of the California Environmental Quality Act (CEQA) and CEQA Guidelines, the Planning Commission approved Resolution 2022-01, approving the Mitigation Monitoring and Reporting Program and certifying the Mitigated Negative Declaration prepared for the Proposed Project.

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

Section 1. **Recitals and Exhibits**

That the foregoing Recitals and attached Exhibits are true and correct and are hereby incorporated by this reference.

Section 2. **Notice**

That pursuant to Government Code section 66020(d)(1), notice is hereby given that the Proposed Project is subject to certain fees, dedications, reservations, and other exactions as provided herein.

Section 3. Evidence

That the Planning Commission has considered all of the evidence submitted into the administrative record for the Proposed Project, including, but not limited to the following:

(a) Moreno Valley General Plan and all other relevant provisions contained therein;
(b) Title 9 (Planning and Zoning) of the Moreno Valley Municipal Code and all other relevant provisions referenced therein;
(c) Application for the approval of Conditional Use Permit (PEN21-0077) and all documents, records, and references contained therein;
(d) Conditions of Approval for Conditional Use Permit (PEN21-0077), attached hereto as Exhibit A;
(e) Public hearing notices;
(f) Staff Report prepared for the Planning Commission's consideration and all documents, records, and references related thereto, and Staff's presentation at the public hearings;
(g) Staff Report prepared for the Planning Commission's consideration and all documents, records, and references related thereto, and Staff's presentation at the public hearings;
(h) Testimony and/or comments from Applicant and its representatives during the public hearings; and
(i) Testimony and/or comments from all persons provided in written format or correspondence, at, or prior to, the public hearings.

Section 4. Findings

That based on the content of the foregoing Recitals and the Evidence contained in the Administrative Record as set forth above, the Planning Commission makes the following findings in approving Conditional Use Permit (PEN21-0077):

(a) That the Proposed Project is consistent with the goals, objectives, policies, and programs of the General Plan;
(b) That the Proposed Project complies with all applicable zoning and other regulations;
(c) That the Proposed Project will not be detrimental to the public health, safety or welfare or materially injurious to properties or improvements in the vicinity; and
(d) The proposed project's location, design, and operation will be compatible with existing and planned land use in the vicinity.

Section 5. Approval

That based on the foregoing Recitals, Administrative Record, and Findings, the Planning Commission hereby approves CUP PEN21-0077 subject to the Conditions of Approval for CUP PEN21-0077, attached hereto as Exhibit A.

Section 6. **Repeal of Conflicting Provisions**

That all the provisions as heretofore adopted by the Planning Commission that conflicts with the provisions of this Resolution are hereby repealed.

Section 7. **Severability**

That the Planning Commission declares that, should any provision, section, paragraph, sentence or word of this Resolution be rendered or declared invalid by any final court action in a court of competent jurisdiction or by reason of any preemptive legislation, the remaining provisions, sections, paragraphs, sentences or words of this Resolution as hereby adopted shall remain in full force and effect.

Section 8. **Effective Date**

That this Resolution shall take effect immediately upon the date of adoption.

Section 9. **Certification**

That the Secretary of the Planning Commission shall certify to the passage of this Resolution.

PASSED AND ADOPTED THIS 10th day of February 2022.

CITY OF MORENO VALLEY
PLANNING COMMISSION

_____
Patricia Korzec, Chairperson

ATTEST:

_____
Sean P. Kelleher, Planning Official

APPROVED AS TO FORM:

_____
Steven B. Quintanilla, Interim City Attorney

Exhibits:

Exhibit A: Conditions of Approval

Exhibit A

CONDITIONAL USE PERMIT (PEN21-0077) CONDITIONS OF APPROVAL

CITY OF MORENO VALLEY
CONDITIONS OF APPROVAL
Conditional Use Permit (PEN21-0077)

EFFECTIVE DATE:
EXPIRATION DATE:

COMMUNITY DEVELOPMENT DEPARTMENT

Planning Division

1. Conditional Use Permit PEN21-0077 is approved for the Pilot Travel Center to develop a 17.28-acre site with a 14,087-square foot travel center building with space for a drive-thru fast food restaurant, additional food service with a kitchen, retail store, driver amenities (e.g., restrooms, showers, laundry), and support/utility areas, fueling stations for passenger vehicles and trucks, 54 truck parking spaces and above ground fuel storage tanks. A change or modification to the land use or the approved site plans may require a separate approval. Prior to any change or modification, the property owner shall contact the City of Moreno Valley Community Development Department to determine if a separate approval is required.

2. Any expansion to this use or exterior alterations will require the submittal of a separate application(s) and shall be reviewed and approved under separate permit(s). (MC 9.02.080)

3. The developer, or the developer's successor-in-interest, shall be responsible for maintaining any undeveloped portion of the site, including the remainder area north of the truck parking area, in a manner that provides for the control of weeds, erosion and dust. Landscape and irrigation shall be installed in the remainder area. (MC 9.02.030)

4. This approval shall expire three years after the approval date of this project unless used or extended as provided for by the City of Moreno Valley Municipal Code; otherwise it shall become null and void and of no effect whatsoever. Use means the beginning of substantial construction contemplated by this approval within the three-year period, which is thereafter pursued to completion, or the beginning of substantial utilization contemplated by this approval. (MC 9.02.230)

5. Applicant/Developer shall defend, indemnify and hold harmless City, city council, commissions, boards, subcommittees and City's elected and appointed officials, commissioners, board members, officers, agents, consultants and employees ("City Parties") from and against any and all liabilities, demands, claims, actions or proceedings and costs and expenses incidental thereto (including costs of defense, settlement and reasonable attorneys' fees), which any or all of them may suffer,

incur, be responsible for or pay out as a result of or in connection with any challenge to the legality, validity or adequacy of any of the following items: (i) any agreements by and among City and Developer including without limitation any Development Agreement, (ii) any and all permits, licenses and entitlements approved by City; (iii) any environmental determination made by City in connection with the Project Site or Project; and (iv) any proceedings or other actions undertaken by City in connection with the adoption or approval of any of the above.

6. All landscaped areas shall be maintained in a healthy and thriving condition, free from weeds, trash and debris. (MC 9.02.030)

7. The site shall be developed in accordance with the approved plans on file in the Community Development Department - Planning Division, the Municipal Code regulations, General Plan, and the conditions contained herein. Prior to any use of the project site or business activity being commenced thereon, all Conditions of Approval shall be completed to the satisfaction of the Planning Official. (MC 9.14.020)

8. Any signs indicated on the submitted plans are not included with this approval. Any signs, whether permanent (e.g. wall, monument) or temporary (e.g. banner, flag), require separate application and approval by the Planning Division. No signs are permitted in the public right of way. (MC 9.12)

9. All site plans, grading plans, landscape and irrigation plans, fence/wall plans, lighting plans and street improvement plans shall be coordinated for consistency with this approval.

Special Conditions

10. Drive-up or drive-through speaker system shall not be detectable above daytime ambient noise levels beyond the property line boundaries, and shall not exceed fifty-five (55) dBA at any one time beyond the boundaries of the property line. (MC9.09.080 C.6 and 9.10.140)

11. The travel center parking lot lighting shall be maintained in good repair and shall comply with the Municipal Code lighting standards.

12. Prior to the start of any construction, temporary security fencing shall be erected. The fencing shall be a minimum of six (6) feet high with locking, gated access and shall remain through the duration of construction. Security shall remain in place until the project is completed or the above conditions no longer exist. (Security fencing is required if there is: construction, unsecured structures, unenclosed storage of materials and/or equipment, and/or the condition of the site constitutes a public hazard).

13. A minimum of one outdoor trash receptacle shall be provided on-site. At least one additional on-site outdoor trash receptacle shall be provided for every ten (10) required parking spaces.(MC 9.09.080 C 5.)

14. Development projects adjacent to the Moreno Valley Freeway (California State Highway 60) shall be landscaped within the freeway right-of-way and maintained by the property owner, as prescribed in the landscape guidelines established by the city of Moreno Valley. If the freeway right-of-way is not landscaped, the property owner shall maintain the right-of-way along their frontage in a manner that is free of weeds, vegetative debris, and refuse. An encroachment permit shall be reviewed and approved by the City, and Caltrans if applicable, prior to issuance of a grading permit.

15. Prior to issuance of building permits, the developer shall combine the multiple parcels of the Project site into a single parcel.

16. A detailed security plan shall be submitted to the City for review and approval prior to building permit issuance. At a minimum, the security plan shall include the following to ensure security at the site:

    a) Security surveillance cameras and a video recording system must be installed to monitor all doors into and out of the building(s) on the site, the parking lot, loading areas, and all exterior sides of the property adjacent to the public rights-of-way. The cameras and recording system must be of adequate quality, color rendition, and resolution to allow the identification of any individual present on the site.

    b) Professionally and centrally monitored fire, sprinkler, robbery and burglar alarm systems must be installed as required and maintained in good working condition. The alarm system must include a private security company that is required to respond to every alarm.

    Through the security plan, the City may require details regarding staffing and deployment of security for a commercial center larger than two (2) acres, and if deemed necessary for the purposes of security, the City may require that the property owner maintain the services of a private security company to monitor the buildings and parking areas based on the specific facts and circumstances associated with the site.

17. Signage shall be posted, limiting on-site parking to the minimum amount of time consistent with applicable Federal truck driver rest requirements.

Prior to Grading Permit

18. Prior to issuance of any grading permit, all Conditions of Approval and Mitigation Measures shall be printed on the grading plans and completed to the satisfaction of the Community Development Director.

19. Prior to the issuance of grading permits, decorative (e.g. colored/scored concrete or as approved by the Planning Official) pedestrian pathways across circulation aisles/paths shall be provided throughout the development to connect commercial buildings with open space and/or parking. and/or the public right-of-way. The pathways shall be shown on the precise grading plan. (GP Objective 46.8, DG)

20. Prior to approval of any grading permits, final median enhancement/landscape/irrigation plans shall be submitted to the Public Works Department - Special Districts for review and approval by Public Works and Planning. (GP - Circulation Master Plan) Timing of installation shall be determined by PW-Special Districts.

21. Prior to approval of any grading plan, local and master-planned multi-use trail easements shall be shown on the rough and precise grading plans in accordance with the City's Master Trail Plan.

22. Prior to issuance of any grading permits, mitigation measures contained in the Mitigation Monitoring Program approved with this project shall be implemented as provided therein. A mitigation monitoring fee, as provided by City ordinance, shall be paid by the applicant within 30 days of project approval. No City permit or approval shall be issued until such fee is paid. (CEQA)

23. Prior to issuance of grading permits, the developer shall pay the applicable Stephens' Kangaroo Rat (SKR) Habitat Conservation Plan mitigation fee. (Ord)

24. Within thirty (30) days prior to any grading or other land disturbance, a pre-construction survey for Burrowing Owls shall be conducted pursuant to the established guidelines of Multiple Species Habitat Conservation Plan. The pre-construction survey shall be submitted to the Planning Division prior to any disturbance of the site and/or grading permit issuance.

25. Prior to issuance of any building permit, all Conditions of Approval and Mitigation Measures shall be printed on the building plans and completed to the satisfaction of the Community Development Director.

26. Prior to the issuance of building permits, the developer shall provide documentation that contact was made to the U.S. Postal Service to determine the appropriate type and location of mailboxes.

27. Prior to the issuance of building permits, proposed covered trash enclosure(s) shall be included in the building plans. The trash enclosure(s), including the roof

materials, shall be compatible with the architecture, color and materials of the main building(s) design. Trash enclosure areas shall include landscaping on three sides. (GP Objective 43.6, DG)

28. Prior to issuance of any building permits, final landscaping and irrigation plans shall be submitted to the Planning Division for review and approval. After the third plan check review for landscape plans, an additional plan check fee shall apply. The plans shall be prepared in accordance with the City's Landscape Requirements and shall include:

a. A three (3) foot high decorative wall, solid hedge or berm shall be placed in any setback areas between a public right of way and a parking lot for screening.

b. Finger and end planters with required step outs and curbing shall be provided every 12 parking stalls as well as at the terminus of each aisle.

c. Diamond planters shall be provided every 3 parking stalls.

d. Drought tolerant landscape shall be used. Sod shall be limited to gathering areas.

e. Street trees shall be provided every 40 feet on center in the right of way.

f. On-site trees shall be planted at an equivalent of one (1) tree per thirty (30) linear feet of the perimeter of a parking lot and per thirty linear feet of a building dimension for the portions of the building visible from a parking lot or right of way. Trees may be massed for pleasing aesthetic effects.

g. Enhanced landscaping shall be provided at all driveway entries and street corner locations The review of all utility boxes, transformers etc. shall be coordinated to provide adequate screening from public view.

h. Enhanced landscaping shall be installed at the site's southeast corner to match the installed landscape design established at the northeast corner of Redlands Boulevard and Eucalyptus Avenue.

i. A three (3) foot tall berm shall be built along Redlands Boulevard with dense landscaping, including a screening tree row on top. Behind the berm shall be an eight (8) foot tall metal fence. A similar fence shall be installed along the north and west sides of the site. A similar style of four (4) foot tall fence shall be installed around the water quality basins.

J. The fuel storage tanks shall be screened by ten (10) foot tall fences that match the design/style of the perimeter fence.

K. A screening tree row is required outside the fence along the northern limit of the truck parking area.

L. Groundcover and irrigation shall be installed in the remainder area between the truck parking area and the SR-60 right-of-way. The maintenance of this area is the responsibility of the developer.

M. Landscaping shall be installed on three sides of any trash enclosure.

N. All site perimeter and parking lot landscape and irrigation shall be installed prior to building final or the release of any certificate of occupancy permits.

29. Prior to issuance of building permits, the Planning Division shall review and approve the location and method of enclosure or screening of transformer cabinets, commercial gas meters and back flow preventers as shown on the final working drawings. Location and screening shall comply with the following criteria: transformer cabinets and commercial gas meters shall not be located within required setbacks and shall be screened from public view either by architectural treatment or landscaping; multiple electrical meters shall be fully enclosed and incorporated into the overall architectural design of the building(s); back-flow preventers shall be screened by landscaping. (GP Objective 43.30)

30. Prior to issuance of a building permit, the developer/property owner or developer's successor-in-interest shall pay all applicable impact fees due at permit issuance, including but not limited to Multi-species Habitat Conservation Plan (MSHCP) mitigation fees. (Ord)

31. Prior to building final, the developer/owner or developer's/owner's successor-in-interest shall pay all applicable impact fees, including but not limited to Transportation Uniform Mitigation fees (TUMF), and the City's adopted Development Impact Fees. (Ord)

32. Detailed, on-site, computer generated, point-by-point comparison lighting plan, including exterior building, parking lot, and landscaping lighting, shall be included in the Building Plans for review by the Planning Division. The lighting plan shall be generated on the plot plan and shall be integrated with the final landscape plan. The plan shall indicate the manufacturer's specifications for light fixtures used, shall include style, illumination, location, height and method of shielding per the City's Municipal Code requirements. After the third plan check review for lighting plans, an additional plan check fee will apply. (MC 9.08.100, 9.16.280)

33. Prior to issuance of building permits, screening details shall be addressed on the building plans for roof top equipment submitted for Planning Division review and

approval through the building plan check process. All equipment shall be completely screened so as not to be visible from public view, and the screening shall be an integral part of the building.

Prior to Building Final or Occupancy

34. Prior to building final, all required landscaping and irrigation shall be installed per plan, certified by the Landscape Architect and inspected by the Planning Division. (MC 9.03.040, MC 9.17).

35. Prior to building final, Planning approved/stamped landscape plans shall be provided to the Community Development Department – Planning Division on a CD disk.

36. Prior to building final, the Project shall be constructed according to the approved plans on file in the Planning Division and all Conditions of Approval and Mitigation Measures shall completed to the satisfaction of the Community Development Director.

Building Division

37. The proposed non-residential project shall comply with the latest Federal Law, Americans with Disabilities Act, and State Law, California Code of Regulations, Title 24, Chapter 11B for accessibility standards for the disabled including access to the site, exits, bathrooms, work spaces, etc.

38. Prior to submittal, all new development, including residential second units, are required to obtain a valid property address prior to permit application. Addresses can be obtained by contacting the Building Safety Division at 951.413.3350.

39. Contact the Building Safety Division for permit application submittal requirements.

40. All new buildings 10,000 square feet and over, shall include building commissioning in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements (OPR). All requirements in the California Green Building Standards Code, sections 5.410.2 - 5.410.2.6 must be met.

41. Any construction within the city shall only be as follows: Monday through Friday seven a.m. to seven p.m(except for holidays which occur on weekdays), eight a.m. to four p.m.; weekends and holidays (as observed by the city and described in the Moreno Valley Municipal Code Chapter 2.55), unless written approval is first obtained from the Building Official or City Engineer.

42. Building plans submitted shall be signed and sealed by a California licensed design professional as required by the State Business and Professions Code.

43. The proposed development shall be subject to the payment of required development fees as required by the City's current Fee Ordinance at the time a building application is submitted or prior to the issuance of permits as determined by the City.

44. The proposed project will be subject to approval by the Eastern Municipal Water District and all applicable fees and charges shall be paid prior to permit issuance. Contact the water district at 951.928.3777 for specific details.

45. All new structures shall be designed in conformance to the latest design standards adopted by the State of California in the California Building Code, (CBC) Part 2, Title 24, California Code of Regulations including requirements for allowable area, occupancy separations, fire suppression systems, accessibility, etc.

46. The proposed non-residential project shall comply with California Green Building Standards Code, Section 5.106.5.3, mandatory requirements for Electric Vehicle Charging Station (EVCS).

47. The proposed project's occupancy shall be classified by the Building Official and must comply with exiting, occupancy separation(s) and minimum plumbing fixture requirements. Minimum plumbing fixtures shall be provided per the California Plumbing Code, Table 422.1. The occupant load and occupancy classification shall be determined in accordance with the California Building Code.

48. Prior to permit issuance, every applicant shall submit a properly completed Waste Management Plan (WMP), as a portion of the building or demolition permit process. (MC 8.80.030)

ECONOMIC DEVELOPMENT DEPARTMENT (EDD)

49. New Moreno Valley businesses may work with the Economic Development Department to coordinate job recruitment fairs.

50. New Moreno Valley businesses may adopt a "First Source" approach to employee recruitment that gives notice of job openings to Moreno Valley residents for one week in advance of public recruitment.

51. New Moreno Valley businesses are encouraged to hire local residents.

52. New Moreno Valley businesses are encouraged to provide a job fair flyer and/or web announcement to the City in advance of job recruitments, so that the City can assist in publicizing these events.

53. New Moreno Valley businesses may utilize the workforce recruitment services provided by the Moreno Valley Business & Employment Resource Center ("BERC").

    The BERC offers free assistance to Moreno Valley businesses recruiting and training potential employees. Complimentary services include:
    • Job Announcements
    • Applicant testing / pre-screening
    • Interviewing
    • Job Fair support
    • Training space

FIRE DEPARTMENT

Fire Prevention Bureau

54. All Fire Department access roads or driveways shall not exceed 12 percent grade. (CFC 503.2.7 and MVMC 8.36.060[G])

55. The Fire Department emergency vehicular access road shall be (all weather surface) capable of sustaining an imposed load of 80,000 lbs. GVW, based on street standards approved by the Public Works Director and the Fire Prevention Bureau. The approved fire access road shall be in place during the time of construction. Temporary fire access roads shall be approved by the Fire Prevention Bureau. (CFC 501.4, and MV City Standard Engineering Plan 108d)

56. The angle of approach and departure for any means of Fire Department access shall not exceed 1 ft drop in 20 ft (0.3 m drop in 6 m), and the design limitations of the fire apparatus of the Fire Department shall be subject to approval by the AHJ. (CFC 503 and MVMC 8.36.060)

57. Prior to construction, all locations where structures are to be built shall have an approved Fire Department access based on street standards approved by the Public Works Director and the Fire Prevention Bureau. (CFC 501.4)

58. Prior to issuance of Building Permits, the applicant/developer shall provide the Fire Prevention Bureau with an approved site plan for Fire Lanes and signage. (CFC 501.3)

59. Prior to issuance of Certificate of Occupancy or Building Final, "Blue Reflective Markers" shall be installed to identify fire hydrant locations in accordance with City specifications. (CFC 509.1 and MVLT 440A-0 through MVLT 440C-0)

60. Prior to issuance of building permits, plans specifying the required structural materials for building construction in high fire hazard severity zones shall be submitted to the Fire Prevention Bureau for approval. (CFC, 4905)

61. Prior to issuance of Certificate of Occupancy or Building Final, all commercial buildings shall display street numbers in a prominent location on the street side and rear access locations. The numerals shall be a minimum of twelve inches in height. (CFC 505.1, MVMC 8.36.060[I])

62. Prior to issuance of Certificate of Occupancy, approval shall be required from the County of Riverside Community Health Agency (Department of Environmental Health) and Moreno Valley Fire Prevention Bureau to maintain, store, use, handle materials, or conduct processes which produce conditions hazardous to life or property, and to install equipment used in connection with such activities. (CFC 105)

63. Existing fire hydrants on public streets are allowed to be considered available. Existing fire hydrants on adjacent properties shall not be considered available unless fire apparatus access roads extend between properties and easements are established to prevent obstruction of such roads. (CFC 507, 501.3) a - After the local water company signs the plans, the originals shall be presented to the Fire Prevention Bureau for signatures. The required water system, including fire hydrants, shall be installed, made serviceable, and be accepted by the Moreno Valley Fire Department prior to beginning construction. They shall be maintained accessible.

64. Final fire and life safety conditions will be addressed when the Fire Prevention Bureau reviews building plans. These conditions will be based on occupancy, use, California Building Code (CBC), California Fire Code (CFC), and related codes, which are in effect at the time of building plan submittal.

65. Prior to issuance of Certificate of Occupancy or Building Final, the applicant/developer shall install a fire alarm system monitored by an approved Underwriters Laboratory listed central station based on a requirement for monitoring the sprinkler system, occupancy or use. Fire alarm panel shall be accessible from exterior of building in an approved location. Plans shall be submitted to the Fire Prevention Bureau for approval prior to installation. (CFC Chapter 9 and MVMC 8.36.100)

66. The Fire Code Official is authorized to enforce the fire safety during construction requirements of Chapter 33. (CFC Chapter 33 & CBC Chapter 33)

67. A fire extinguisher with a minimum rating of 3A:40BC shall be mounted in an accessible location within the cell site enclosure next to the fueled generator.

68. Fire lanes and fire apparatus access roads shall have an unobstructed width of not less than twenty–four (24) feet and an unobstructed vertical clearance of not less the thirteen (13) feet six (6) inches. (CFC 503.2.1 and MVMC 8.36.060[E])

69. Prior to issuance of Certificate of Occupancy or Building Final, the applicant/developer shall install a fire sprinkler system based on square footage and type of construction, occupancy or use. Fire sprinkler plans shall be submitted to the Fire Prevention Bureau for approval prior to installation. (CFC Chapter 9, MVMC 8.36.100[D])

70. Prior to issuance of the building permit for development, independent paved access to the nearest paved road, maintained by the City shall be designed and constructed by the developer within the public right of way in accordance with City Standards. (MVMC 8.36.060, CFC 501.4)

71. Prior to issuance of a Certificate of Occupancy or Building Final, a "Knox Box Rapid Entry System" shall be provided. The Knox-Box shall be installed in an accessible location approved by the Fire Code Official. All exterior security emergency access gates shall be electronically operated and be provided with Knox key switches for access by emergency personnel. (CFC 506.1)

72. Fire Department access driveways over 150 feet in length shall have a turn-around as determined by the Fire Prevention Bureau capable of accommodating fire apparatus. (CFC 503 and MVMC 8.36.060, CFC 501.4)

73. During phased construction, dead end roadways and streets which have not been completed shall have a turn-around capable of accommodating fire apparatus. (CFC 503.1 and 503.2.5)

74. If construction is phased, each phase shall provide an approved emergency vehicular access way for fire protection prior to any building construction. (CFC 501.4)

75. Plans for private water mains supplying fire sprinkler systems and/or private fire hydrants shall be submitted to the Fire Prevention Bureau for approval. (CFC 105 and CFC 3312.1)

76. The Fire Prevention Bureau is required to set a minimum fire flow for the remodel or construction of all commercial buildings per CFC Appendix B and Table B105.1. The applicant/developer shall provide documentation to show there exists a water system capable of delivering said waterflow for 2 hour(s) duration at 20-PSI residual operating pressure. The required fire flow may be adjusted during the approval process to reflect changes in design, construction type, or automatic fire protection measures as approved by the Fire Prevention Bureau. Specific requirements for the project will be determined at time of submittal. (CFC 507.3, Appendix B)

77. Dead-end streets and/or fire apparatus access roads in excess of 150 feet in length shall be provided with an approved turnaround for fire apparatus.

78. Prior to construction, all traffic calming designs/devices must be approved by the Fire Marshal and City Engineer.

79. Prior to building construction, dead end roadways and streets which have not been completed shall have a turnaround capable of accommodating fire apparatus. (CFC 503.2.5)

80. Prior to issuance of Certificate of Occupancy or Building Final, the applicant/developer shall be responsible for obtaining underground and/or above ground tank permits for the storage of combustible liquids, flammable liquids, or any other hazardous materials from both the County of Riverside Community Health Agency Department of Environmental Health and the Fire Prevention Bureau. (CFC 105)

81. Prior to issuance of Building Permits, the applicant/developer shall furnish one copy of the water system plans to the Fire Prevention Bureau for review. Plans shall: a. Be signed by a registered civil engineer or a certified fire protection engineer; b. Contain a Fire Prevention Bureau approval signature block; and c. Conform to hydrant type, location, spacing of new and existing hydrants and minimum fire flow required as determined by the Fire Prevention Bureau. The required water system, including fire hydrants, shall be installed, made serviceable, and be accepted by the Moreno Valley Fire Department prior to beginning construction. They shall be maintained accessible.

FINANCIAL & MANAGEMENT SERVICES DEPARTMENT

Moreno Valley Utility

82. This project requires the installation of electric distribution facilities. A non-exclusive easement shall be provided to Moreno Valley Utility and shall include the rights of ingress and egress for the purpose of operation, maintenance, facility repair, and meter reading.

83. This project requires the installation of electric distribution facilities. The developer shall submit a detailed engineering plan showing design, location and schematics for the utility system to be approved by the City Engineer. In accordance with Government Code Section 66462, the Developer shall execute an agreement with the City providing for the installation, construction, improvement and dedication of the utility system following recordation of final map and concurrent with trenching operations and other improvements so long as said agreement incorporates the

approved engineering plan and provides financial security to guarantee completion and dedication of the utility system.

The Developer shall coordinate and receive approval from the City Engineer to install, construct, improve, and dedicate to the City all utility infrastructure including but not limited to, conduit, equipment, vaults, ducts, wires (including fiber optic cable), switches, conductors, transformers, and "bring-up" facilities including electrical capacity to serve the identified development and other adjoining, abutting, or benefiting projects as determined by Moreno Valley Utility – collectively referred to as "utility system" (to and through the development), along with any appurtenant real property easements, as determined by the City Engineer to be necessary for the distribution and/or delivery of any and all "utility services" to and within the project. For purposes of this condition, "utility services" shall mean electric, cable television, telecommunication (including video, voice, and data) and other similar services designated by the City Engineer. "Utility services" shall not include sewer, water, and natural gas services, which are addressed by other conditions of approval.

The City, or the City's designee, shall utilize dedicated utility facilities to ensure safe, reliable, sustainable and cost effective delivery of utility services and maintain the integrity of streets and other public infrastructure. Developer shall, at developer's sole expense, install or cause the installation of such interconnection facilities as may be necessary to connect the electrical distribution infrastructure within the project to the Moreno Valley Utility owned and controlled electric distribution system.

84. Existing Moreno Valley Utility electrical infrastructure shall be preserved in place. The developer will be responsible, at developer's expense, for any and all costs associated with the relocation of any of Moreno Valley Utility's underground electrical distribution facilities, as determined by Moreno Valley Utility, which may be in conflict with any developer planned construction on the project site.

PUBLIC WORKS DEPARTMENT

Land Development

85. Rubberized Emulsion- Aggregate Slurry (REAS), as defined in Section 203-5 of Standard Specifications for Public Works Construction, shall be required prior to 90% security reduction or the end of the one-year warranty period of the public streets, as determined by the City Engineer following inspection of pavement conditions. If slurry is required, a slurry mix design shall be submitted for review and approved by the City Engineer. As defined in Section 203-5 of the Standard Specifications for Public Works Construction, Type I slurry shall apply to the Local Street classification and Type II slurry shall apply to the Collector and greater street

classifications. All existing striping, pavement markings, and markers shall be removed (sandblasted) prior to slurry application and replaced reestablished to match existing (pre-slurry application) and per City standards.

86. The developer shall comply with all applicable City ordinances and resolutions including the City's Municipal Code (MC) and if subdividing land, the Government Code (GC) of the State of California, specifically Sections 66410 through 66499.58, said sections also referred to as the Subdivision Map Act (SMA). [MC 9.14.010]

87. The final approved conditions of approval (COAs) issued and any applicable Mitigation Measures by the Planning Division shall be photographically or electronically placed on mylar sheets and included in the Grading and Street Improvement plans.

88. The developer shall monitor, supervise and control all construction related activities, so as to prevent these activities from causing a public nuisance, including but not limited to, insuring strict adherence to the following:
(a) Removal of dirt, debris, or other construction material deposited on any public street no later than the end of each working day.
(b) Observance of working hours as stipulated on permits issued by the Land Development Division.
(c) The construction site shall accommodate the parking of all motor vehicles used by persons working at or providing deliveries to the site.
(d) All dust control measures per South Coast Air Quality Management District (SCAQMD) requirements during the grading operations.
Violation of any condition, restriction or prohibition set forth in these conditions shall subject the owner, applicant, developer or contractor(s) to remedy as noted in City Municipal Code 8.14.090. In addition, the City Engineer or Building Official may suspend all construction related activities for violation of any condition, restriction or prohibition set forth in these conditions until such time as it has been determined that all operations and activities are in conformance with these conditions.

89. Drainage facilities (e.g., catch basins, water quality basins, etc.) with sump conditions shall be designed to convey the tributary 100-year storm flows. Secondary emergency escape shall also be provided.

90. If improvements associated with this project are not initiated within two (2) years of the date of approval of the Public Improvement Agreement (PIA), the City Engineer may require that the engineer's estimate for improvements associated with the project be modified to reflect current City construction costs in effect at the time of request for an extension of time for the PIA or issuance of a permit. [MC 9.14.210(B)(C)]

91. The developer shall protect downstream properties from damage caused by alteration of drainage patterns (i.e. concentration or diversion of flow, etc).

Protection shall be provided by constructing adequate drainage facilities, including, but not limited to, modifying existing facilities or by securing a drainage easement. [MC 9.14.110]

92. Public drainage easements, when required, shall be a minimum of 25 feet wide and shall be shown on the map and plan, and noted as follows: "Drainage Easement – no structures, obstructions, or encroachments by land fills are allowed." In addition, the grade within the easement area shall not exceed a 3:1 (H:V) slope, unless approved by the City Engineer.

93. The maintenance responsibility of the proposed storm drain line shall be clearly identified. Storm drain lines within private property will be privately maintained and those within public streets will be publicly maintained.

94. The proposed private storm drain system shall connect to the existing Moreno MDP Laterals F-16-B and F-16-D. Storm drain manholes shall be placed at the right-of-way line to mark the beginning of the publicly maintained portion of the storm drain laterals.

95. This project shall submit civil engineering design plans, reports and/or documents (prepared by a registered/licensed civil engineer) for review and approval by the City Engineer per the current submittal requirements, prior to the indicated threshold or as required by the City Engineer. The submittal consists of, but is not limited to, the following:
    a. Rough grading w/ erosion control plan (prior to grading permit issuance);
    b. Precise grading w/ erosion control plan (prior to building permit issuance);
    c. Street improvement plan (prior to encroachment permit issuance);
    d. Final drainage study (prior to grading plan approval);
    e. Final WQMP (prior to grading plan approval);
    f. Lot line adjustment and Offers of Dedication (prior to building permit issuance;
    g. As-Built revision for all plans (prior to occupancy release)

96. Water quality best management practices (BMPs) designed to meet Water Quality Management Plan (WQMP) requirements for single-family residential development shall not be used as a construction BMP. Water quality BMPs shall be maintained for the entire duration of the project construction and be used to treat runoff from those developed portions of the project. Water quality BMPs shall be protected from upstream construction related runoff by having proper best management practices in place and maintained. Water quality BMPs shall be graded per the approved design plans and once landscaping and irrigation has been installed, it and its maintenance shall be turned over to an established Homeowner's Association (HOA). The Homeowner's Association shall enter into an agreement with the City for basin maintenance.

Prior to Grading Plan Approval

97. Resolution of all drainage issues shall be as approved by the City Engineer.

98. A final detailed drainage study (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer. The study shall include, but not be limited to: existing and proposed hydrologic conditions as well as hydraulic calculations for all drainage control devices and storm drain lines. The study shall analyze 1, 3, 6 and 24-hour duration events for the 2, 5, 10 and 100-year storm events [MC 9.14.110(A.1)]. A digital (pdf) copy of the approved drainage study shall be submitted to the Land Development Division.

99. Emergency overflow areas shall be shown at all applicable drainage improvement locations in the event that the drainage improvement fails or exceeds full capacity. This may include, but not be limited to, secondary overflow catch basins, emergency spillways within detention or water quality basins, or additional overflow risers.

100. A final project-specific Water Quality Management Plan (WQMP) shall be submitted for review and approved by the City Engineer, which:

a. Addresses Site Design Best Management Practices (BMPs) such as minimizing impervious areas, maximizing permeability, minimizes directly connected impervious areas to the City's street and storm drain systems, and conserves natural areas;

b. Incorporates Source Control BMPs and provides a detailed description of their implementation;

c. Describes the long-term operation and maintenance requirements for BMPs requiring maintenance; and

d. Describes the mechanism for funding the long-term operation and maintenance of the BMPs.

A copy of the final WQMP template can be obtained on the City's Website or by contacting the Land Development Division. A digital (pdf) copy of the approved final project-specific Water Quality Management Plan (WQMP) shall be submitted to the Land Development Division.

101. The final project-specific Water Quality Management Plan (WQMP) shall be consistent with the approved P-WQMP, as well as in full conformance with the document: "Water Quality Management Plan - A Guidance Document for the Santa Ana Region of Riverside County" dated October 22, 2012. The F-WQMP shall be submitted and approved prior to application for and issuance of grading permits. At a minimum, the F-WQMP shall include the following: Site Design BMPs; Source Control BMPs, Treatment Control BMPs, Operation and Maintenance requirements for BMPs and sources of funding for BMP implementation.

a. The Applicant has proposed to incorporate the use of bioretention basins. Final design and sizing details of all BMPs must be provided in the first submittal of

the F-WQMP. The Applicant acknowledges that more area than currently shown on the plans may be required to treat site runoff as required by the WQMP guidance document.

b. The Applicant shall substantiate the applicable Hydrologic Condition of Concerns (HCOC) in Section F of the F-WQMP. The HCOC designates that the project will be exempt from mitigation requirements based on Exemption 3.

c. All proposed LID BMP's shall be designed in accordance with the RCFC&WCD's Design Handbook for Low Impact Development Best Management Practices, dated September 2011.

d. The proposed LID BMP's as identified in the project-specific P-WQMP shall be incorporated into the Final WQMP.

e. The NPDES notes per City Standard Drawing No. MVFE-350-0 shall be included in the grading plans.

f. Post-construction treatment control BMPs, once placed into operation for post-construction water quality control, shall not be used to treat runoff from construction sites or unstabilized areas of the site.

g. Prior to precise grading plan approval, the grading plan shall show any proposed trash enclosure to include a cover (roof) and sufficient size for dual bin (1 for trash and 1 for recyclables). The architecture shall be approved by the Planning Division and any structural approvals shall be made by the Building and Safety Division.

102. The developer shall ensure compliance with the City Grading ordinance, these Conditions of Approval and the following criteria:

a. The project street and lot grading shall be designed in a manner that perpetuates the existing natural drainage patterns with respect to tributary drainage area and outlet points. Unless otherwise approved by the City Engineer, lot lines shall be located at the top of slopes.

b. Any grading that creates cut or fill slopes adjacent to the street shall provide erosion control, sight distance control, and slope easements as approved by the City Engineer.

c. All improvement plans are substantially complete and appropriate clearance letters are provided to the City.

d. A soils/geotechnical report (addressing the soil's stability and geological conditions of the site) shall be submitted to the Land Development Division for review. A digital (pdf) copy of the soils/geotechnical report shall be submitted to the Land Development Division.

103. Grading plans (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal requirements.

104. The developer shall select Low Impact Development (LID) Best Management Practices (BMPs) designed per the latest version of the Water Quality Management

Plan (WQMP) - a guidance document for the Santa Ana region of Riverside County.

105. The developer shall submit recorded slope easements from adjacent property owners in all areas where grading resulting in slopes is proposed to take place outside of the project boundaries. For all other offsite grading, written permission from adjacent property owners shall be submitted.

106. The developer shall pay all remaining plan check fees.

107. A Storm Water Pollution Prevention Plan (SWPPP) shall be prepared in conformance with the State's current Construction Activities Storm Water General Permit. A copy of the current SWPPP shall be kept at the project site and be available for review upon request.

108. For projects that will result in discharges of storm water associated with construction with a soil disturbance of one or more acres of land, the developer shall submit a Notice of Intent (NOI) and obtain a Waste Discharger's Identification number (WDID#) from the State Water Quality Control Board (SWQCB) which shall be noted on the grading plans.

Prior to Grading Permit

109. A receipt showing payment of the Area Drainage Plan (ADP) fee to Riverside County Flood Control and Water Conservation District shall be submitted. [MC 9.14.100(O)]

110. The developer shall pay current DIF fees adopted by the City Council. [Ord. 695 § 1.1 (part), 2005] [MC 3.38.030, 040, 050]

111. A digital (pdf) copy of all approved grading plans shall be submitted to the Land Development Division.

112. Security, in the form of a cash deposit (preferable), bond or letter of credit shall be submitted as a guarantee of the implementation and maintenance of erosion control measures. At least twenty-five (25) percent of the required security shall be in the form of a cash deposit with the City. [MC 8.21.160(H)]

113. Security, in the form of a cash deposit (preferable), bond or letter of credit shall be submitted as a guarantee of the completion of the grading operations for the project. [MC 8.21.070]

114. The developer shall pay all applicable inspection fees.

115. The developer shall pay current TUMF fees adopted by the City Council. [Ord. 835 § 2.1, 2012] [MC 3.44.060]

Prior to Improvement Plan Approval

116. The developer is required to bring any existing access ramps adjacent to and fronting the project to current ADA (Americans with Disabilities Act) requirements. However, when work is required in an intersection that involves or impacts existing access ramps, all access ramps in that intersection shall be retrofitted to comply with current ADA requirements, unless otherwise approved by the City Engineer.

117. The developer shall submit clearances from all applicable agencies, and pay all applicable plan check fees.

118. The street improvement plans shall comply with current City policies, plans and applicable City standards (i.e. MVSI-160 series, etc.) throughout this project.

119. Drainage facilities (i.e. catch basins, etc.) with sump conditions shall be designed to convey the tributary 100-year storm flows. Secondary emergency escape shall also be provided.

120. The hydrology study shall be designed to accept and properly convey all off-site drainage flowing onto or through the site. In the event that the City Engineer permits the use of streets for drainage purposes, the provisions of current City standards shall apply. Should the quantities exceed the street capacity or the use of streets be prohibited for drainage purposes, as in the case where one travel lane in each direction shall not be used for drainage conveyance for emergency vehicle access on streets classified as minor arterials and greater, the developer shall provide adequate facilities as approved by the City Engineer. [MC 9.14.110 A.2]

121. All public improvement plans (prepared by a licensed/registered civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal requirements.

122. The following shall be required as part of the street improvement plan review and approval:

a. A four (4) foot dedication, as shown on the City of Moreno Valley Standard Plan No. MVSI-112C-0, at all driveway approaches.

b. Eucalyptus Avenue - removal of existing sidewalk and construction of a six (6) foot wide sidewalk per Standard Plan No. MVSI-115A-0; construction of a raised median along the proposed driveway approach to restrict access to right turns in and out only; reconstruction of ADA ramps as needed to meet ADA requirements and City Standards.

c. Aldi Place - construction of a six (6) foot wide sidewalk per Standard Plan No. MVSI-115A-0.

d. Aldi Place - slurry seal of half street. Additional slurry and/or repairs beyond

the centerline may be required if damage occurs to the existing pavement as a result of construction activity.

123. For non-subdivision projects, all street dedications shall be free of encumbrances, irrevocably offered to the public and shall continue in force until the City accepts or abandons such offers, unless otherwise approved by the City Engineer.

124. The plans shall indicate any restrictions on trench repair pavement cuts to reflect the City's moratorium on disturbing newly-constructed pavement less than three (3) years old and recently slurry sealed streets less than one (1) year old. Pavement cuts may be allowed for emergency repairs or as specifically approved in writing by the City Engineer. Special requirements shall be imposed for repaving, limits to be determined by the City Engineer.

125. All dry and wet utilities shall be shown on the plans and any crossings shall be potholed to determine actual location and elevation. Any conflicts shall be identified and addressed on the plans. The pothole survey data shall be submitted to Land Development with the public improvement plans for reference purposes only. The developer is responsible to coordinate with all affected utility companies and bear all costs of any utility relocation.

Prior to Encroachment Permit

126. A digital (pdf) copy of all approved improvement plans shall be submitted to the Land Development Division.

127. All applicable inspection fees shall be paid.

128. For non-subdivision projects, execution of a Public Improvement Agreement (PIA) and/or security (in the form of a cash deposit or other approved means) may be required as determined by the City Engineer. [MC 9.14.220]

129. The plans shall indicate any restrictions on trench repair pavement cuts to reflect the City's moratorium on disturbing newly-constructed pavement less than three (3) years old and recently slurry sealed streets less than one (1) year old. Pavement cuts may be allowed for emergency repairs or as specifically approved in writing by the City Engineer. Special requirements shall be imposed for repaving, limits to be determined by the City Engineer.

130. Any work performed within public right-of-way requires an encroachment permit.

Prior to Building Permit

131. An engineered-fill certification, rough grade certification and compaction report shall

be submitted for review and approved by the City Engineer. A digital (pdf) copy of the approved compaction report shall be submitted to the Land Development Division. All pads shall meet pad elevations per approved grading plans as noted by the setting of “blue-top” markers installed by a registered land surveyor or licensed civil engineer.

132. For non-subdivision projects, the developer shall guarantee the completion of all related public improvements required for this project by executing a Public Improvement Agreement (PIA) with the City and posting the required security. [MC 9.14.220]

133. A lot line adjustment (LLA) shall be submitted for review, approval, and recordation. The LLA shall include the existing APNs 488-330-030, 488-330-035, 488-330-036, 488-330-037, and 488-330-038. Although five (5) APNs are listed, only three (3) legal Parcels 'B', 'C', and 'D' per LLA No. 983 (DOC# 2007-0180759) will be involved in the LLA for this project.

134. For Commercial/Industrial projects, the owner may have to secure coverage under the State’s General Industrial Activities Storm Water Permit as issued by the State Water Resources Control Board.

135. For non-subdivision projects, all street dedications shall be free of encumbrances, irrevocably offered to the public and shall continue in force until the City accepts or abandons such offers, unless otherwise approved by the City Engineer.

136. A walk through with a Land Development Inspector shall be scheduled to inspect existing improvements within public right of way along project frontage. Any missing, damaged or substandard improvements including ADA access ramps that do not meet current City standards shall be required to be installed, replaced and/or repaired. The applicant shall post security to cover the cost of the repairs and complete the repairs within the time allowed in the public improvement agreement used to secure the improvements.

137. Certification to the line, grade, flow test and system invert elevations for the water quality control BMPs shall be submitted for review and approved by the City Engineer (excluding models homes).

138. Prior to issuance of a building permit, the developer shall make a lump sum, fair share, estimated reimbursement payment of $215,000 towards the Eucalyptus Avenue and Redlands Boulevard roundabout improvement, consistent with the terms of the Reimbursement Agreement associated with project PEN18-0254. As an alternative to the lump sum reimbursement, developer may ask the City to form a special financing district, or other legally permissible process, to finance the fair share reimbursement payment plus the cost to form a special financing district, etc . Properties included as part of the development project are levied an annual parcel

charge against the annual property tax bill until such costs have been paid in full. The exact terms of the repayment will be determined at the time the property owner elects to consider this alternative. At the time of the public hearing to consider formation of the district or other legally permissible process, the property owner(s) will not protest the formation of such, but will retain the right to object to any eventual parcel charge that is not equitable should the financial burden of the parcel charge not be reasonably proportionate to the benefit the affected property receives from the improvement. All expenses related to this process will be borne by the property owner at the time of the request. Formation of a district requires a minimum 6-month process.

Prior to Occupancy

139. All outstanding fees shall be paid.

140. All required as-built plans (prepared by a registered/licensed civil engineer) shall be submitted for review and approved by the City Engineer per the current submittal requirements.

141. The final/precise grade certification shall be submitted for review and approved by the City Engineer.

142. For commercial, industrial and multi-family projects, in compliance with Proposition 218, the developer shall agree to approve the City of Moreno Valley NPDES Regulatory Rate Schedule that is in place at the time of certificate of occupancy issuance. Under the current permit for storm water activities required as part of the National Pollutant Discharge Elimination System (NPDES) as mandated by the Federal Clean Water Act, this project is subject to the following requirements:

a. Select one of the following options to meet the financial responsibility to provide storm water utilities services for the required continuous operation, maintenance, monitoring system evaluations and enhancements, remediation and/or replacement, all in accordance with Resolution No. 2002-46.

i. Participate in the mail ballot proceeding in compliance with Proposition 218, for the Common Interest, Commercial, Industrial and Quasi-Public Use NPDES Regulatory Rate Schedule and pay all associated costs with the ballot process; or

ii. Establish an endowment to cover future City costs as specified in the Common Interest, Commercial, Industrial and Quasi-Public Use NPDES Regulatory Rate Schedule.

b. Notify the Special Districts Division of the intent to request building permits 90 days prior to their issuance and the financial option selected. The financial option selected shall be in place prior to the issuance of certificate of occupancy. [California Government Code & Municipal Code]

143. The developer shall complete all public improvements in conformance with current City standards, except as noted in the Special Conditions, including but not limited to the following:

a. Street improvements including, but not limited to: pavement, base, curb and/or gutter, cross gutters, spandrel, sidewalks, drive approaches, pedestrian ramps, street lights (<MVU: SL-2 / SCE: LS-2>), signing, striping, under sidewalk drains, landscaping and irrigation, medians, pavement tapers/transitions and traffic control devices as appropriate.

b. Storm drain facilities including, but not limited to: storm drain pipe, storm drain laterals, open channels, catch basins and local depressions.

c. City-owned utilities.

d. Sewer and water systems including, but not limited to: sanitary sewer, potable water and recycled water.

e. Under grounding of all existing and proposed utilities adjacent to and on-site. [MC 9.14.130]

f. Relocation of overhead electrical utility lines including, but not limited to: electrical, cable and telephone.

144. For commercial, industrial and multi-family projects, a Stormwater Treatment Device and Control Measure Access and Maintenance Covenant shall be recorded to provide public notice of the maintenance requirements to be implemented per the approved final project-specific WQMP. A boilerplate copy of the covenant can be obtained by contacting the Land Development Division.

145. The applicant shall ensure the following, pursuant to Section XII. I. of the 2010 NPDES Permit:

a. Field verification that structural Site Design, Source Control and Treatment Control BMPs are designed, constructed and functional in accordance with the approved Final Water Quality Management Plan (WQMP).

b. Certification of best management practices (BMPs) from a state licensed civil engineer. An original WQMP BMP Certification shall be submitted for review and approved by the City Engineer.

146. The Developer shall comply with the following water quality related items:

a. Notify the Land Development Division prior to construction and installation of all structural BMPs so that an inspection can be performed.

b. Demonstrate that all structural BMPs described in the approved final project-specific WQMP have been constructed and installed in conformance with the approved plans and specifications;

c. Demonstrate that Developer is prepared to implement all non-structural BMPs described in the approved final project-specific WQMP; and

d. Demonstrate that an adequate number of copies of the approved final project-specific WQMP are available for future owners/occupants.

e. Clean and repair the water quality BMP's, including re-grading to approved

civil drawing if necessary.

f. Obtain approval and complete installation of the irrigation and landscaping.

Special Districts Division

147. Street Light Coordination/Advanced Energy Fees. Prior to the issuance of the 1st Building Permit for this project, the Developer shall pay New Street Light Installation Fees for all street lights required to be installed for this development. Payment will be collected by the Land Development Division. Fees are based on the street light administration/coordination and advanced energy fees as set forth in the City Fees, Charges, and Rates as adopted by City Council and effective at the time of payment. Any change in the project which increases the number of street lights to be installed requires payment of the fees at the then current fee. Questions may be directed to the Special Districts Administration at 951.413.3470 or SDAdmin@moval.org.

148. CFD 2014-01. Prior to applying for the 1st Building Permit, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the annexation fee, form an association to fund the services or fund an endowment) to provide an ongoing funding source for a) Street Lighting Services for capital improvements, energy charges, and maintenance and/or b) Landscape Maintenance Services for public parkway, traffic circle, open space, and/or median landscaping on Eucalyptus Ave. and/or Redlands Blvd.

This condition must be fully satisfied prior to issuance of the 1st Certificate of Occupancy. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or formation, but will retain the right to object to any eventual tax/assessment/fee that is not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings.

Alternatively, the condition can be satisfied by the Developer forming a property owner association that will be responsible for the improvements and any and all operation and maintenance costs for the improvements or by funding an endowment

in an amount sufficient to yield an annual revenue stream that meets the annual obligation, as calculated by Special Districts Admin staff. The Developer must contact Special Districts Administration at 951.413.3470 or at SDAdmin@moval.org to satisfy this condition.

149. Approved Landscape Plans. For those areas to be maintained by the City and prior to the issuance of the 1st Building Permit, Planning, Landscape Services and Transportation Engineering staff, at a minimum, shall review and approve the final median, parkway, slope, traffic circle and/or open space landscape/irrigation plans as designated on the tentative map or in these Conditions of Approval.

150. Major Infrastructure SFD Major Infrastructure Financing District. Prior to applying for the 1st Building Permit, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the annexation fee or use the alternative identified at the time of the special financing district formation) to provide an ongoing funding source for the construction and maintenance of major infrastructure improvements, which may include but is not limited to thoroughfares, bridges, and certain flood control improvements. This condition will be applicable provided said district is under development at the time this project applies for the 1st Building Permit. This condition must be fully satisfied prior to issuance of the 1st Certificate of Occupancy. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or formation, but will retain the right to object to any eventual tax/assessment/fee that is not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings. An alternative to satisfying this condition will be identified at such time as a special financing district has been established. At the time of development, the developer must contact Special Districts Administration at 951.413.3470 or at SDAdmin@moval.org to determine if this condition is applicable.

151. NPDES Funding. Prior to applying for the 1st Building Permit and if the Land Development Division requires this project to provide a funding source for the City's National Pollutant Discharge Elimination System (NPDES) program, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the balloting/annexation fee or fund an endowment) to provide an ongoing funding

source for the NPDES program. This condition must be fully satisfied prior to issuance of the 1st Certificate of Occupancy. This condition will be satisfied with the successful special election process into the NPDES program, or other special financing district, and payment of all costs associated with the special election process. Participation in the NPDES program requires an annual payment of the annual special tax, assessment, rate or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the City Council action to consider the ballot/annexation into or formation of the district, the qualified elector(s) will not protest the ballot/annexation or formation, but will retain the right to object to any eventual tax/assessment/rate/fee that is not equitable should the financial burden of the tax/assessment/rate/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings. (MC 3.50.050). Alternatively, the condition can be satisfied by the Developer funding an endowment in an amount sufficient to yield an annual revenue stream that meets the annual obligation, as calculated by Special Districts Admin staff. The Developer must contact Special Districts Administration at 951.413.3470 or at SDAdmin@moval.org to satisfy this condition.

152. Park Maintenance Funding. Prior to applying for the 1st Building Permit, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the annexation fee or fund an endowment) to provide an ongoing funding source for the continued maintenance, enhancement, and/or retrofit of parks, open spaces, linear parks, and/or trails systems.

    This condition must be fully satisfied prior to issuance of the 1st Certificate of Occupancy. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or formation, but will retain the right to object to any eventual tax/assessment/fee that is not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings.

Alternatively, the condition can be satisfied by the Developer funding an endowment in an amount sufficient to yield an annual revenue stream that meets the annual obligation, as calculated by Special Districts Admin staff. The Developer must contact Special Districts Administration at 951.413.3470 or at SDAdmin@moval.org to satisfy this condition.

153. Maintenance Services Funding. Prior to applying for the 1st Building Permit, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the annexation fee or use the alternative identified at the time of the special financing district formation) to provide an ongoing funding source for the operation and maintenance of public improvements and/or services associated with impacts of the development. This condition will only be applicable provided said district is under development at the time this project applies for the 1st Building Permit.

This condition must be fully satisfied prior to issuance of the 1st Certificate of Occupancy. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or formation, but will retain the right to object to any eventual tax/assessment/fee that is not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings.

An alternative to satisfying this funding source will be identified at such time as a special financing district has been established. At the time of development, the developer must contact Special Districts Administration at 951.413.3470 or at SDAdmin@moval.org to determine if this condition is applicable.

154. Public Safety Funding. Prior to applying for the 1st Building Permit, the qualified elector (e.g. property owner) must initiate the process (i.e. pay the annexation fee or use the alternative identified at the time of the special financing district formation) to provide an ongoing funding source for Public Safety services, which may include but is not limited to Police, Fire Protection, Paramedic Services, Park Rangers, and Animal Control services. This condition will only be applicable provided said district is under development at the time this project applies for the 1st Building Permit.

This condition must be fully satisfied prior to issuance of the 1st Certificate of

Occupancy. This condition will be satisfied with the successful annexation/formation (i.e. special election process) into a special financing district and payment of all costs associated with the special election process. Annexation into a special financing district requires an annual payment of the annual special tax, assessment, or fee levied against the property tax bill, or other lawful means, of the parcels of the project for such district. At the time of the public hearing to consider annexation into or formation of the district, the qualified elector(s) will not protest the annexation or formation, but will retain the right to object to any eventual tax/assessment/fee that is not equitable should the financial burden of the tax/assessment/fee not be reasonably proportionate to the benefit the affected property receives from the improvements to be installed and/or maintained or services provided. The special election requires a minimum 90-day process in compliance with the provisions of Article 13C of the California Constitution, Proposition 218, or other applicable legislation, and consistent with the scheduling for City Council meetings.

An alternative to satisfying this condition will be identified at such time as a special financing district has been established. At the time of development, the developer must contact Special Districts Administration at 951.413.3470 or at SDAdmin@moval.org to determine if this condition is applicable.

155. Bioretention Basin Maintenance. The ongoing maintenance of any bioretention basin, or other like water quality BMP constructed in the public right of way, shall be the responsibility of a property owner association or the property owner.

156. Maintenance Period. The Developer, or the Developer's successors or assignees shall be responsible for all parkway, traffic circle, open space and/or median landscape maintenance and utility costs, etc. for a period no less than one (1) year commencing from the time all items of work have been completed to the satisfaction of Landscape Services staff as per the City of Moreno Valley Public Works Department Landscape Design Guidelines, or until such time as the City accepts maintenance responsibilities.

157. Landscape Inspection Fees. Inspection fees for the monitoring of landscape installation associated with the City of Moreno Valley maintained landscaping are due prior to the required pre-construction meeting. (MC 3.32.040)

158. Landscape Guidelines. Plans for parkway, median, slope, traffic circle, and/or open space landscape areas designated in the project's Conditions of Approval for incorporation into a City Coordinated landscape maintenance program, shall be prepared and submitted in accordance with the City of Moreno Valley Public Works Department Landscape Design Guidelines. The guidelines are available on the City's website at www.moval.org or from Landscape Services (951.413.3480 or SDLandscape@moval.org).

159. Maintenance Responsibility. The ongoing maintenance of any landscaping required to be installed behind the curb shall be the responsibility of the property owner.

160. Irrigation Modifications. Modification of existing irrigation systems for parkway improvements may be required per the direction of, approval by and coordination with Landscape Services. Please contact Landscape Services at 951.413.3480 or SDLandscape@moval.org to coordinate the modifications.

161. Landscape Plan Check Fees. Plan check fees for review of parkway/median, open space, and/or traffic circle landscape plans for improvements that shall be maintained by the City of Moreno Valley are due upon the first plan submittal. (MC 3.32.040)

162. Damage. Any damage to existing landscape areas maintained by the City of Moreno Valley due to project construction shall be repaired/replaced by the Developer, or Developer's successors in interest, at no cost to the City of Moreno Valley.

163. Parkway, open space, traffic circle, and/or median landscaping specified in the project's Conditions of Approval shall be constructed in compliance with the approved landscape plans and completed prior to the issuance of the first Certificate of Occupancy/Building Final for this project.

164. Mylars of the landscape and irrigation plans shall be submitted on hanging tab to Landscape Services.

Transportation Engineering Division

165. Conditions of approval may be modified or added if a phasing plan is submitted for this development.

166. Driveways shall conform to City of Moreno Valley Standard Plan No. MVSI-112C-0 for Commercial Driveway Approaches. Access at the
•Eucalyptus Avenue driveway: Right-in and right-out only.
•Aldi Place southerly driveway: Full access for passenger vehicles only.
•Aldi Place northerly driveway: Full access for trucks only.

167. All proposed on-site traffic signing and striping should be accordance with the latest California Manual on Uniform Traffic Control Devices (CAMUTCD).

168. Eucalyptus Avenue is classified as an Arterial (100'RW/76'CC) per City Standard Plan No. MVSI-104A-0. Any modifications or improvements undertaken by this project shall be consistent with the City's standards for this facility. A Class II bicycle lane shall be provided along project frontage. Additional improvements such as

bicycle ramps, shared use path, or any additional bicycle treatment at the Redlands Boulevard/ Eucalyptus Avenue roundabout shall be considered during the design of street improvements.

169. Redlands Boulevard is classified as a 4-Lane Divided Arterial (110'RW/86'CC) per City Standard Plan No. MVSI-103A-0 with any necessary roadway transitions south of this project. Any modifications or improvements undertaken by this project shall be consistent with the City's standards for this facility. A Class II bicycle lane shall be provided along project frontage. Additional improvements such as bicycle ramps, shared use path, or any additional bicycle treatment at the Redlands Boulevard/Eucalyptus Avenue roundabout shall be considered during the design of street improvements.

170. Aldi Place is classified as an Industrial Collector (78'RW/56'CC) per City Standard Plan No. MVSI-106A-0. Any modifications or improvements undertaken by this project shall be consistent with the City's standards for this facility.

171. Prior to issuance of an encroachment permit for work within the public right-of-way, construction traffic control plans prepared by a qualified, registered Civil or Traffic Engineer shall be required for plan approval by the City Engineer.

172. Prior to issuance of a building permit, all applicable DIF and TUMF shall be paid. Payment of these fees covers the cost to address the project's share of cumulative traffic impacts on of Redlands Boulevard between State Route 60 Westbound Ramps and State Route 60 Eastbound Ramps.

173. Prior to final approval of the landscape plans and construction plans for any type of fencing or monument sign, the project plans shall demonstrate that sight distance at the project driveways conforms to City Standard Plan No. MVSI-164A-0 through MVSI-164C-0. Trees, plants, shrubs, fencing, or monument signing shall not be located in an area that obstructs the drivers' line-of-sight.

174. Prior to the final approval of the street improvement plans, a signing and striping plan shall be prepared per City of Moreno Valley Standard Plans - Section 4 for Redlands Boulevard, Eucalyptus Avenue, and Aldi Place. Signing and striping plans shall be prepared per the latest edition of the California Manual on Uniform Traffic Control Devices (CAMUTCD) and current City of Moreno Valley Standard Plans by a qualified registered civil or traffic engineer.

175. Prior to the final approval of the street improvement plans, a median modification plan shall be prepared by a registered civil engineer to extend the existing raised median along the project's frontage on Eucalyptus Avenue at least 150 feet west of the west ECR of the driveway on Eucalyptus Avenue.

176. Prior to issuance of a Certificate of Occupancy, all approved street improvements

shall be installed to the satisfaction of the City Engineer.

177. Prior to issuance of a Certificate of Occupancy, all approved signing and striping shall be installed per current City Standards.

178. Prior to issuance of Certificate of Occupancy, the raised median modifications on Eucalyptus Avenue shall be completed and fully operational per the approved plans to the satisfaction of the City Engineer.

PARKS & COMMUNITY SERVICES DEPARTMENT

179. This project is subject to current Development Impact Fees.

Standard Conditions

180. Detailed final plans (mylars, PDF, and AutoCAD file on a DVD-R) for parks, trails/bikeways, fencing, and adjoining landscaped areas shall be submitted to and approved by the Director of Parks and Community Services, or his/her designee, prior to the issuance of any building permits. All plans are to include a profile showing grade changes.

181. Within the improvements for PCS, the applicant shall show all existing and planned easements on all maps and plans. Easements on City/CSD owned or maintained parks, trails, bikeways, and landscape shall be identified on each of these plans with the instrument number of the recorded easement.

182. Prior to recordation of the Final Map, the applicant shall post security to guarantee construction or modification of parks, trails and/or bikeways for the City/CSD. Copies of said documentation shall be provided to PCS, prior to the approval of the Final Map.

183. Applicable plan check and inspection fees shall be paid, per the approved City fee schedule.

184. A restriction shall be placed on lots that back up to City/CSD owned or maintained parks, trails, bikeways, and landscaped areas, preventing openings or gates accessing the City/CSD owned or maintained property. This shall be documented through Covenants, Conditions, and Restrictions (CC&R's). A copy of the CC&R's with this restriction noted shall be submitted and approved by the Director of Parks and Community Services or his/her designee, prior to the recordation of the Final Map.

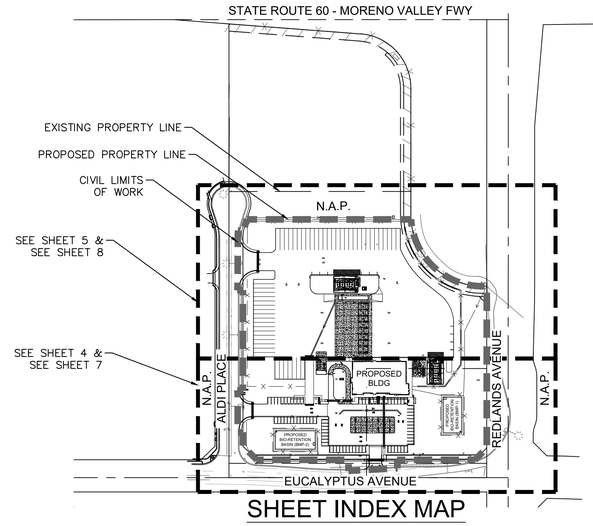
185. The following plans require PCS written approval: Tentative tract/parcel maps; rough grading plans (including all Delta changes); Final Map; precise grading plans;

street improvement plans; traffic signal plans; fence and wall plans; landscape plans for areas adjacent to bikeways; trail improvement plans. PCS will not approve any permits without review and approval of the above items.


Wendy's
Pilot
PJ·FRESH
CINNABON
WELCOME

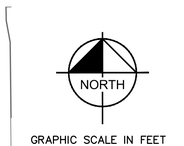
CITY OF MORENO VALLEY
PRELIMINARY GRADING PLAN

PILOT MORENO VALLEY



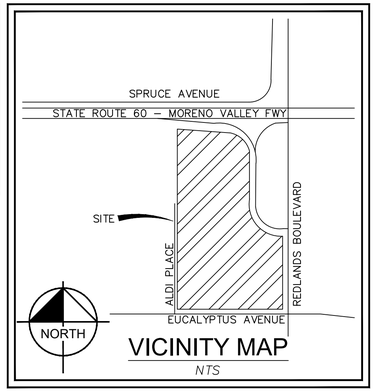
SHEET INDEX MAP

SCALE 1" = 200'



UTILITY COMPANIES	PHONE NUMBERS
BOX SPRINGS MUTUAL WATER COMPANY	(951) 653-6419
CHARTER SPECTRUM	(877) 906-9121
CROWN CASTLE	(855) 913-4237
EASTERN MUNICIPAL WATER DIST	(951) 928-3777
EDGEMONT COMMUNITY SERVICES DIST.	(951) 784-2632
FRONTIER COMMUNICATION	(800) 921-8101
SC EDISON COMPANY	(800) 655-4555
SC GAS COMPANY	(800) 427-2200
SUNESYS	(951) 278-0400
RIVERSIDE TRANSIT AGENCY	(951) 565-5164
UNDERGROUND SERVICE ALERT	(800) 422-4133
MORENO VALLEY UTILITY	(951) 413-3500
MORENO VALLEY SPECIAL DISTRICTS	(951) 413-3480
TRAFFIC SIGNAL MAINTENANCE (CITY)	(951) 413-3140
VERIZON WIRELESS	(800) 922-0204

SHEET INDEX



VICINITY MAP

NTS

THE GRADING AND/OR IMPROVEMENT PLANS ARE APPROVED FOR A PERIOD OF TWO (2) YEARS FROM THE DATE SIGNED BY THE CITY ENGINEER. AFTER THE TWO (2) YEAR PERIOD HAS LAPSED, THE ENGINEER OF RECORD MAY BE REQUIRED TO SUBMIT AND PROCESS FOR CITY ENGINEER APPROVAL, UPDATED PLANS THAT COMPLY WITH THE MOST CURRENT CITY STANDARDS, PRACTICES, AND POLICIES.

UTILITY NOTE:
APPROVAL OF THESE PLANS BY CITY OF MORENO VALLEY LAND DEVELOPMENT DIVISION DOES NOT CONSTITUTE FINAL APPROVAL FOR THE CONSTRUCTION OF WATER AND SEWER UTILITIES UNTIL REVIEWED, APPROVED, AND PERMIT ISSUED BY THE BUILDING AND SAFETY DIVISION.

A SEPARATE ON-SITE UNDERGROUND FIRE SERVICE PLAN FOR CONSTRUCTION SHALL BE SUBMITTED TO THE FIRE PREVENTION BUREAU FOR REVIEW AND APPROVAL.

GEOTECH AND GEOLOGIST CERTIFICATION

THIS GRADING PLAN HAS BEEN REVIEWED BY THE UNDERSIGNED AND FOUND TO BE IN CONFORMANCE WITH THE RECOMMENDATIONS AS OUTLINED IN THE FOLLOWING SOILS AND GEOLOGICAL REPORT FOR THIS PROJECT.

REPORT TITLE: GEOTECHNICAL EVALUATION REPORT MORENO VALLEY TRUCK STOP MODEL, GEOTECHNICAL ENGINEERING PERCOLATION/INFILTRATION TEST REPORT FOR MORENO VALLEY TRUCK STOP PILOT # 1316, AND GEOTECHNICAL ADDENDUM REPORT MORENO VALLEY PILOT #1316 TRUCK MODEL STOP.

REPORT DATE: FEBRUARY 26, 2021
REVISED: MARCH 1, 2021

FIRM NAME: GEOTECHNICAL SOLUTIONS, INC

BY: .....
DHARMA SHAKYA, GE 2773 DATE

NOTES
ADD 2.09' TO ALL ELEVATIONS SHOWN ON THIS PLAN SET.

STANDARD GENERAL IMPROVEMENT NOTES:

1. ALL WORK CALLED FOR ON THE PLANS SHALL BE IN COMPLIANCE WITH CURRENT CITY STANDARD PLANS ADOPTED BY THE CITY COUNCIL.
2. A CONSTRUCTION PERMIT MUST BE OBTAINED FROM THE LAND DEVELOPMENT DIVISION COUNTER BY THE CONTRACTOR PRIOR TO GRADING AND/OR CONSTRUCTION WORK OF ANY TYPE WITHIN THE PUBLIC RIGHT-OF-WAY.
3. AN ENCROACHMENT PERMIT IS REQUIRED IN ALL CASES WHERE WORK WILL INTERFERE WITH EITHER VEHICULAR OR PEDESTRIAN TRAFFIC.
4. CITY INSPECTION OF THE WORK CALLED FOR ON THE PLANS SHALL NOT IN ANY WAY RELIEVE THE CONTRACTOR AND / OR THE DEVELOPER OF THEIR OBLIGATION TO PERFORM THE WORK IN COMPLIANCE WITH THE PLANS.
5. ANY ALTERATIONS OR VARIANCES FROM THE PLANS, EXCEPT MINOR ADJUSTMENTS IN THE FIELD TO MEET EXISTING CONDITIONS, SHALL BE REQUESTED IN WRITING AND MAY NOT BE INSTITUTED UNTIL APPROVED BY THE CITY ENGINEER OR DESIGNATED REPRESENTATIVE ACTING SPECIFICALLY ON HIS/HER INSTRUCTIONS.
6. THE GRADING AND/OR IMPROVEMENT PLANS ARE APPROVED FOR A PERIOD OF TWO (2) YEARS FROM THE DATE SIGNED BY THE CITY ENGINEER. AFTER THE TWO (2) YEAR PERIOD HAS LAPSED, THE ENGINEER OF RECORD MAY BE REQUIRED TO SUBMIT AND PROCESS FOR THE CITY ENGINEER APPROVAL, UPDATED PLANS THAT COMPLY WITH THE MOST CURRENT CITY STANDARDS, PRACTICES AND POLICIES.
7. ALL ELEVATIONS SHOWN ON THE PLAN ARE ESTABLISHED BY LOCAL BENCH MARK. SURVEY MONUMENTS SHALL BE PROTECTED IN PLACE.
8. QUANTITIES AS SHOWN ON THE PLAN ARE ESTIMATED AND THE CONTRACTOR IS ADVISED THAT ALL FINAL QUANTITIES OF MATERIAL AND WORK IN PLACE MAY BE SOMEWHAT GREATER OR LESS THAN THOSE INDICATED ON THE PLANS.
9. CONCRETE GUTTERS, ALLEY APPROACHES, DRIVEWAYS AND OTHER CONCRETE ITEMS SUBJECT TO VEHICULAR TRAFFIC SHALL BE BARRICADED WITH NO VEHICULAR TRAFFIC PERMITTED FOR A PERIOD NO LESS THAN SEVEN DAYS FOLLOWING THE PLACEMENT OF SAID CONCRETE ITEM(S). WHEN THE GENERAL PROVISIONS CALL FOR THE USE OF SAID CONCRETE ITEM(S) FOR VEHICULAR TRAFFIC EARLIER THAN THE SEVENTH DAY FOR CONVENIENCE OF OPERATION OR WHEN THE CONTRACTOR SO DESIRES, CONCRETE CONTAINING EIGHT SACKS OF CEMENT PER CUBIC YARD SHALL BE USED UNDER THE DIRECTION OF THE CITY ENGINEER TO ALLOW TRAFFIC AFTER 72 HOURS OF PLACEMENT OF CONCRETE.
10. IRRIGATION LINE WITHIN ANY CITY STREET SHALL HAVE A THIRTY INCH MINIMUM COVER FROM FINISH SURFACE UNLESS SAID IRRIGATION LINE IS ENCASED IN CONCRETE OR BEDDED IN A SPECIAL CONCRETE CRADLE.
11. THE CONTRACTOR SHALL OPERATE IN A MANNER COMPLIANT WITH ALL APPLICABLE SECTIONS OF THE MUNICIPAL CODE AND COMPLIANT WITH ALL APPLICABLE CITY COUNCIL RESOLUTIONS.
12. THE LOCATION OF UNDERGROUND UTILITY OR IRRIGATION LINES AS SHOWN ON THE PLANS, IS APPROXIMATE, AND SINCE THE ACTUAL LOCATION MAYBE SOMEWHAT DIFFERENT FROM THAT SHOWN, THE CONTRACTOR IS REQUIRED TO CONTACT THE INTERESTED UTILITY OR WATER COMPANY BEFORE EXCAVATING IN THE VICINITY OF ANY SUCH LINES.
13. PARKWAY TREES INSTALLED BY THE DEVELOPER SHALL BE PLANTED AND MAINTAINED IN COMPLIANCE WITH THE APPROPRIATE CITY STANDARD.
14. ALL STREET NAME AND TRAFFIC REGULATORY SIGNS INDICATED ON THE PLANS WILL BE INSTALLED BY THE DEVELOPER IN ACCORDANCE WITH THE APPROPRIATE CITY STANDARDS.
15. IF THE STREETS LIGHTS INDICATED ON THE PLANS ARE SERVICED BY SOUTHERN CALIFORNIA EDISON (SCE), THE STREET LIGHTS SHALL BE INSTALLED BY SCE. IF THE STREET LIGHTS INDICATED ON THE PLANS ARE SERVICED BY MORENO VALLEY UTILITY (MVU), THE STREET LIGHTS SHALL BE INSTALLED BY THE DEVELOPER. THE DEVELOPER SHALL WORK DIRECTLY WITH THE CORRESPONDING UTILITY PURVEYOR WHEN THE LIGHTS ARE TO BE SERVED FROM AN UNDERGROUND SYSTEM.
16. AN APPROVED WEED KILLER SHALL BE APPLIED TO THE PREPARED BASE PRIOR TO ASPHALT PAVING IN ALL AREAS WHERE THERE IS ANY EVIDENCE OF HUMUS OR ORGANIC MATERIAL PRESENT IN THE BASE (EITHER NATIVE OR IMPORTED) MATERIAL. ALL WEED KILLERS SHALL BE APPLIED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS.
17. PROVISIONS SHALL BE MADE BY THE CONTRACTOR FOR CONTRIBUTORY DRAINAGE AT ALL TIMES.
18. WHEN APPLICABLE, ALL ANTI-GRAFFITI COATING SHALL BE VITROCEM HI-BUILD GRAFFITI GLAZED COATING FOR CONCRETE BLOCK OR AN EQUAL APPROVED BY THE CITY ENGINEER.
19. HOURS OF OPERATION ARE 7:00 AM – 7:00 PM MONDAY – FRIDAY; 8:00 AM – 4:00 PM (RESIDENTIAL). SATURDAY BY PRIOR APPOINTMENT ONLY. NO WORK ON SUNDAY OR PUBLIC HOLIDAY WITHOUT PRIOR CITY APPROVAL.

LEGAL DESCRIPTION:

PARCEL C AND D OF LOT LINE ADJUSTMENT NO. 983 / CERTIFICATE OF COMPLIANCE IN THE CITY OF MORENO VALLEY, COUNTY RIVERSIDE, STATE OF CALIFORNIA RECORDED 03/16/2007 AS DOC #2007-0180759 IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY OF OFFICIAL RECORDS. REFER TO SHEET 2 FOR MORE INFORMATION.

FLOOD NOTE:

THE SUBJECT PROPERTY LIES WITHIN ZONE "X" – AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN SHOWN ON FLOOD INSURANCE RATE MAP PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY; MAP NUMBER 06065C0760G AND 06065C0770G, WHICH BEARS AN EFFECTIVE DATE AUGUST 28, 2008.

THE ABOVE STATEMENT IS FOR INFORMATION ONLY AND THE SURVEYOR ASSUMES NO LIABILITY FOR THE CORRECTNESS OF THE CITED MAP. IN ADDITION, THE ABOVE STATEMENT DOES NOT REPRESENT THE SURVEYOR'S OPINION OF THE PROBABILITY OF FLOODING.

DECLARATION OF ENGINEER OF RECORD:

I HEREBY DECLARE THAT THE DESIGN OF THE IMPROVEMENTS AS SHOWN ON THESE PLANS COMPLIES WITH PROFESSIONAL ENGINEERING STANDARDS AND PRACTICES. AS THE ENGINEER IN RESPONSIBLE CHARGE OF DESIGN OF THESE IMPROVEMENTS, I ASSUME FULL RESPONSIBLE CHARGE FOR SUCH DESIGN. I UNDERSTAND AND ACKNOWLEDGE THAT THE PLAN CHECK OF THESE PLANS BY THE CITY OF MORENO VALLEY IS A REVIEW FOR THE LIMITED PURPOSE OF ENSURING THAT THE PLANS COMPLY WITH CITY PROCEDURES, APPLICABLE POLICIES, AND ORDINANCES. THE PLAN CHECK IS NOT A DETERMINATION OF THE TECHNICAL ADEQUACY OF THE DESIGN OF THE IMPROVEMENTS. SUCH PLAN CHECK DOES NOT, THEREFORE, RELIEVE ME OF MY RESPONSIBILITY FOR THE DESIGN OF THESE IMPROVEMENTS. AS ENGINEER OF RECORD (EOR), I AGREE TO INDEMNIFY AND HOLD THE CITY OF MORENO VALLEY, THE MORENO VALLEY HOUSING AUTHORITY, AND THE MORENO VALLEY COMMUNITY SERVICES DISTRICT (CSD), ITS OFFICERS, AGENTS, AND EMPLOYEES HARMLESS FROM ANY AND ALL LIABILITY OF CLAIMS, DAMAGES, OR INJURIES TO ANY PERSON OR PROPERTY WHICH MIGHT ARISE FROM THE NEGLIGENT ACTS, ERRORS, OR OMISSIONS OF THE ENGINEER OF RECORD. I HAVE READ AND INFORMED THE PROJECT APPLICANT/DEVELOPER THAT APPROVAL OF THESE PLANS DOES NOT RELIEVE THEM FROM THE REQUIREMENTS OF THE CONDITIONS OF APPROVAL (ATTACHED HEREIN OR IN OTHER APPROVED IMPROVEMENT PLANS).

I ALSO HEREBY DECLARE THAT I HAVE COMPARED THESE PLANS WITH ALL APPLICABLE ADA TITLE II AND TITLE 24 REQUIREMENTS FOR DISABILITY ACCESS FOR THIS PROJECT, AND THESE PLANS ARE IN FULL COMPLIANCE WITH THOSE REQUIREMENTS.

11/8/2021
SHEA-MICHAEL ANTI, R.C.E. # C78274 DATE

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.

DIGALERT

CALL 811 or 1-800-422-4133
2 Working Days Before You Dig
WWW.CALL811.COM

ENGINEER'S NOTICE TO CONTRACTOR:

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. THESE LOCATIONS ARE APPROXIMATE AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR, SO THAT ANY NECESSARY ADJUSTMENT CAN BE MADE IN ALIGNMENT AND/OR GRADE OF THE PROPOSED IMPROVEMENTS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT ANY UTILITY FACILITIES SHOWN AND ANY OTHER FACILITIES NOT OF RECORD OR NOT SHOWN ON THESE PLANS.

BLDG SQ. FOOTAGE

TOTAL GROSS FLOOR AREA	14,087 SF

SITE INFORMATION

GROSS PARCEL	±9.55 ACRES
TOTAL PERVIOUS	±3.61 ACRES
TOTAL IMPERVIOUS (INCLUDING BUILDING)	±5.94 ACRES

ROUGH/PRECISE GRADING PLANS

RAW EARTHWORK	QUANTITIES CUT	FILL
ROUGH GRADING	21,772 CY	2,683 CY
OVER-EXCAVATION WORK	-- CY	-- CY
REMEDIAL WORK	-- CY	-- CY
SHRINKAGE (0%)	-- CY	-- CY
SUBTOTAL PROJECT EARTHWORK QUANTITIES	-- CY	-- CY
IMPORT MATERIAL	-- CY	-- CY
EXPORT MATERIAL	-- CY	-- CY
TOTAL PROJECT EARTHWORK QUANTITIES	19,089 CY	0 CY

THE OPINION OF EARHTWORK QUANTITIES SHOWN ABOVE ARE UNADJUSTED GROSS VOLUMES AND DO NOT INCLUDE THE EFFECTS OF SCARIFYING, OVEREXCAVATION, RECOMPACTION, SHRINKAGE SUBSIDENCE, OR OTHER FACTORS AND ARE SUBJECT TO FIELD CONDITIONS THAT MAY BE SPECIFIED IN THE SOILS REPORT AND ARE FOR REFERENCE AND FEE. THE CIVIL ENGINEER ASSUMES NO RESPONSIBILITY FOR FINAL EARTHWORK QUANTITIES.

LEGEND

	PROPERTY LINE / RIGHT-OF-WAY LINE
	LIMITS OF WORK
	CENTER LINE
	SETBACK LINE
	EASEMENT LINE
—x—x—x—x—x—	FENCE
GB	GRADE BREAK LINE
(1745.00 TC) (1745.00 TP)	PROPOSED SPOT ELEVATION
1745.00 TC 1745.00 TP	EXISTING SPOT ELEVATION
0.71%	PROPOSED FLOW (DIRECTION AND SLOPE)
	DIRECTION OF FLOW
	CURB DRAIN INLET
#	PARKING COUNT

ABBREVIATIONS

AB	AGGREGATE BASE
APN	ASSESSOR'S PARCEL NUMBER
ARCH	ARCHITECT
BLDG	BUILDING
BR	BOTTOM OF RAMP
BW	BACK OF WALK
CY	CUBIC YARD
EX	EXISTING
F	FIRE
FAR	FLOOR TO AREA RATIO
FL	FLOW LINE
FS	FINISHED SURFACE
GB	GRADE BREAK
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
NO	NUMBER
POC	POINT OF CONNECTION
POT	PATH OF TRAVEL
R	RIDGE
S	SEWER
STD	STANDARD
TC	TOP OF CURB
TP	TOP OF PAVEMENT
TR	TOP OF RAMP
TYP	TYPICAL
W	WATER

PAVEMENT LEGEND

	STANDARD DUTY CONCRETE PAVEMENT
	HEAVY DUTY CONCRETE PAVEMENT
	HEAVY DUTY ASPHALT PAVEMENT
	STANDARD DUTY ASPHALT
	PAVEMENT LANDSCAPE/ PLANTER AREA
	DETECTABLE WARNINGS

ZONING DESIGNATION

EXISTING: COMMUNITY COMMERCIAL (CC)

PROPOSED: COMMUNITY COMMERCIAL (CC)

PROJECT DESCRIPTION

PROPOSED DEVELOPMENT OF VACANT COMMUNITY COMMERCIAL LOT LOCATED AT THE NORTHWEST CORNER OF REDLANDS AVENUE AND EUCALYPTUS AVENUE, MORENO VALLEY, CA 92555.

PROPOSED PILOT TRAVEL CENTER WITH 13,917 SQ FT. BUILDING WITH RESTAURANT, DRIVE-THRU, AND CAR/TRUCK FUELING AREAS.

BENCHMARK AND BASIS OF ELEVATION

THE BASIS OF ELEVATIONS IS THE METRO WATER DISTR OF SO. CALIFORNIA BENCHMARK STAMPED "IVF 55 1993" -DIRECTIONS: FROM THE INTERSECTION OF THE FREEWAY AND REDLANDS BLVD, NORTH ON REDLANDS BLVD, APPROX. 500 FEET (152.4 M) TO THE NORTHWEST CORNER OF REDLANDS BLVD AND SPRUCE ST. BENCHMARK IS LOCATED 43 FEET (13.1 M) WEST OF THE CENTERLINE OF REDLANDS BLVD. AND 29 FEET (8.8 M) NORTH OF THE CENTERLINE OF SPRUCE ST., IN TOP OF A 10 INCH WIDE BY 7.5 FEET (2.3 M) LONG CONCRETE HEADWALL AT WEST END. EL=1785.67, NAVD 88.

ASSESORS PARCEL NUMBER (APN)

488-330-030, -035, -036, -037, -038

OWNER/APPLICANT

PILOT TRAVEL CENTERS LLC
5508 LONAS DRIVE
KNOXVILLE, TN 37909
(865) 588-7488

DEVELOPER

PILOT TRAVEL CENTERS LLC
5508 LONAS DRIVE
KNOXVILLE, TN 37909
(865) 588-7488
ATTN: RYAN ROBINSON
RYAN.ROBINSON@PILOTTRAVELCENTERS.COM

CIVIL ENGINEER

KIMLEY HORN & ASSOCIATES, INC.
3880 LEMON STREET # 420
RIVERSIDE, CA 92501
ATTN: SHEA-MICHAEL ANTI
(760) 565-5146
SHEA.ANTI@KIMLEY-HORN.COM

SURVEYOR

LG LAND SURVEYING, INC
30355 CALLE FELIZ TER
VALLEY CENTER, CA 92082
ATTN: JOHN GERVAIS, PLS 8674
(619) 535-1172
JOHN@LGLSINC.COM
DATE OF FIELD SURVEY: JANUARY 28, 2021

SOILS ENGINEER

GEOTECHNICAL SOLUTIONS, INC
27 MAUCHLY, SUITE 210
IRVINE, CA 92618
ATTN: DHARMA SHAKYA, PhD, PE, GE
(949) 453-0406'
PROJECT: G-5852-08, G-5852-01

ADA NOTE:
ALL ADA/TITLE 24 REQUIREMENTS AND PATH OF TRAVEL INCLUDING BUT NOT LIMITED TO ACCESS SHALL BE REVIEWED AND APPROVED BY CITY OF MORENO VALLEY BUILDING AND SAFETY DIVISION. APPROVAL OF THESE PLANS DOES NOT CONSTITUTE FINAL APPROVAL OF THE ACCESS REQUIREMENTS.

WDID No.

PEN21-0077 WQMP No.

BENCHMARK	BASIS OF BEARING
SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97-100 I.E. N00°27'05"E.

REVIEW BY CITY STAFF

OFFICE	INITIAL	DATE
ENGINEERING DIVISION MANAGER		
LAND DEVELOPMENT		
PLANNING		
TRANSPORTATION		
PARKS AND COMMUNITY SERVICES		
SPECIAL DISTRICTS		
STORM WATER MANAGEMENT PRGM		

MARK	DATE	INITIAL	DESCRIPTION	REC	APPR	DATE
		EOR	REVISION			

CITY OF MORENO VALLEY APPROVALS

RECOMMENDED:

MICHAEL D. LLOYD, PE DATE
ENGINEERING DIVISION MANAGER/
ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:

MICHAEL L. WOLFE, PE DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL

REGISTERED PROFESSIONAL ENGINEER
SHEA-MICHAEL ANTI
RCE NO. 78274
CIVIL
STATE OF CALIFORNIA

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951-543-9868

UNDER THE SUPERVISION OF:

11/8/2021
SHEA-MICHAEL ANTI DATE
RCE C78274

CITY OF MORENO VALLEY

PRELIMINARY GRADING PLAN
PILOT MORENO VALLEY
TITLE SHEET

SHEET 1 OF 9

CITY ID No.
LGRXX-XXXX

STANDARD GRADING NOTES

1. ALL WORK SHALL CONFORM TO THE CITY OF MORENO VALLEY GRADING REGULATIONS, THE ADOPTED CALIFORNIA BUILDING CODE, AND THE LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF ALL UTILITIES OR STRUCTURES ABOVE OR BELOW GROUND, SHOWN OR NOT SHOWN ON THESE PLANS. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ALL DAMAGE TO ANY UTILITIES OR STRUCTURES CAUSED BY HIS/HER OPERATION.
3. ADJACENT STREETS ARE TO BE CLEANED DAILY OF ALL DIRT AND DEBRIS THAT ARE THE RESULT OF OPERATION.
4. DUST SHALL BE CONTROLLED BY WATERING OR OTHER APPROVED METHODS.
5. HOURS OF OPERATION ARE 7:00 AM – 7:00 PM MONDAY– FRIDAY; 8:00 AM – 4:00 PM (RESIDENTIAL). SATURDAY BY PRIOR APPOINTMENT ONLY. NO WORK ON SUNDAY OR PUBLIC HOLIDAY WITHOUT PRIOR CITY APPROVAL.
6. THE CITY PUBLIC WORKS DEPT SHALL BE CONTACTED AT (951) 413–3120 TO SCHEDULE A PRE–GRADING MEETING 48 HOURS PRIOR TO BEGINNING OF GRADING.

ALL GRADING SHALL BE COMPLETED UNDER THE SUPERVISION OF A REGISTERED SOILS ENGINEER OF RECORD IN CONFORMANCE WITH RECOMMENDATIONS OF THE GEOTECHNICAL EVALUATION REPORT AND GEOTECHNICAL ENGINEERING PERCOLATION/INFILTRATION TEST REPORT AT SOUTH OF FREEWAY 60 & REDLANDS BOULEVARD MORENO VALLEY, CALIFORNIA DATED FEBRUARY 26, 2021; AND GEOTECHNICAL ADDENDUM REPORT AT SOUTH OF FREEWAY 60 & REDLANDS BOULEVARD MORENO VALLEY, CALIFORNIA DATED MARCH 1, 2021 PREPARED BY GEOTECHNICAL SOLUTIONS, INC..

7. TWO SETS OF THE FINAL SOILS REPORT SHALL BE SUBMITTED TO THE ENGINEERING DEPT FOR REVIEW AND APPROVAL PRIOR TO THE ISSUANCE OF A BUILDING PERMIT. THE SOILS REPORT SHALL REFLECT THE FACT THAT THE COMPACTION HAS BEEN OBTAINED NOT ONLY IN THE BUILDING PAD LOCATIONS, BUT IN THE REMAINDER OF THE SITE, INCLUDING THE SLOPES. FINAL SOILS GRADING CERTIFICATION SHALL BE SUBMITTED BY THE SOILS ENGINEER OF RECORD THAT THE FINAL GRADING CONFORMS TO APPENDIX J OF THE CALIFORNIA BUILDING CODE (CBC) AND THE APPROVED GRADING PLAN.
8. ALL SLOPES SHALL BE A MAXIMUM OF 2:1, CUT OR FILL, UNLESS OTHERWISE RECOMMENDED BY REGISTERED SOILS ENGINEER AND APPROVED BY THE CITY ENGINEER.
9. ALL PADS AND SWALES SHALL DRAIN A MINIMUM OF 2%, ADJACENT TO AND WITHIN 10' OF A BUILDING, THEN A MINIMUM OF 1% TO THE STREET OR DRIVES.
10. ALL TRENCH BACKFILLS SHALL BE TESTED AND CERTIFIED BY THE SOILS ENGINEER OF RECORD TO NOT LESS THAN 90% MAXIMUM DENSITY AS DETERMINED BY ASTM SOIL COMPACTION TEST D1557. THE TOP 1.5 FT. OF SUBGRADE BELOW THE STREET PAVEMENT STRUCTURAL SECTION SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.
11. SEPARATE PERMITS SHALL BE REQUIRED FOR ANY IMPROVEMENT WORK WITHIN THE PUBLIC RIGHT OF WAY.
12. CUT SLOPES GREATER THAN 5 FEET IN VERTICAL HEIGHT, AND FILL SLOPES GREATER THAN 3 FEET IN VERTICAL HEIGHT SHALL BE PLANTED WITH APPROVED GROUND COVER OR OTHER APPROVED SLOPE EROSION CONTROL METHOD TO PROTECT SLOPE FROM EROSION AND INSTABILITY IN ACCORDANCE WITH THE GRADING REGULATIONS.
13. SEPARATE PERMITS FROM THE BUILDING DEPT SHALL BE REQUIRED FOR ALL WALLS AND FENCES.
14. SEPARATE PERMITS FROM THE BUILDING DEPT SHALL BE REQUIRED FOR ALL ONSITE WATER AND SEWER INSTALLATIONS.
15. ALL SLOPES ADJACENT TO THE PUBLIC RIGHT OF WAY SHALL BE SET BACK 2 FEET IF HEIGHT IS LESS THAN 10 FEET, AND 3 FEET IF HEIGHT IS GREATER THAN 10 FEET.
16. DAMAGED OR ALTERED PUBLIC IMPROVEMENTS SHALL BE REPAIRED OR REPLACED AS REQUIRED BY THE CITY ENGINEER.
17. AN "AS – BUILT" GRADING PLAN SHALL BE SUBMITTED AT THE COMPLETION OF WORK, AND PRIOR TO THE ISSUANCE OF THE OCCUPANCY PERMIT.
18. CERTIFICATION BY THE RCE OF RECORD THAT THE ROUGH GRADING SOIL COMPACTION HAS BEEN COMPLETED PER ITEMS 7, 8, AND 11 AND THE SITE CONFORMS TO THIS PLAN AS TO LINE AND GRADE SHALL BE REQUIRED PRIOR TO ISSUANCE OF BUILDING PERMIT.
19. THE RCE OF RECORD SIGNING THESE PLANS IS RESPONSIBLE FOR ASSURING THE ACCURACY AND ACCEPTABILITY OF THE DESIGN HEREON. IN THE EVENT OF DISCREPANCIES ARISING DURING CONSTRUCTION, THE RCE OF RECORD SHALL BE RESPONSIBLE FOR DETERMINING AND ACCEPTABLE SOLUTION AND REVISING THE PLANS FOR APPROVAL BY THE CITY ENGINEER.
20. ALL IMPORTED SOIL SHALL HAVE A CERTIFICATE GIVEN TO THE CITY ENGINEER STATING THAT THE SOIL IS FREE FROM CONTAMINANTS BEFORE SOIL IS UNLOADED.

I HEREBY STATE THAT THIS PLAN WAS PREPARED UNDER MY SUPERVISION AND THAT IT CONFORMS TO THE LATEST EDITION OF THE CALIFORNIA BUILDING CODE (CBC) AS MODIFIED BY CITY OF MORENO VALLEY ORDINANCES, THE INTERIM GUIDELINES, AND THE PRELIMINARY SOILS REPORT PREPARED FOR THIS PROJECT.

NAME _____

RCE # _____

DATE _____

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.

DIGALERT

CALL
811 or
1–800–422–4133
2 Working Days Before You Dig
WWW.CALL811.COM

RECORD DRAWINGS

1. WHERE LOCAL JURISDICTIONS REQUIRE RECORD DRAWINGS, THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER AND OWNER COPIES OF A PAVING, GRADING AND DRAINAGE RECORD DRAWING AND A SEPARATE UTILITY RECORD DRAWING, BOTH PREPARED BY A CALIFORNIA REGISTERED SURVEYOR. THE RECORD DRAWINGS SHALL VERIFY ALL DESIGN INFORMATION INCLUDED ON THE DESIGN PLANS OF THE SAME NAME.

PROJECT CLOSEOUT

CONTRACTOR SHALL PROVIDE THE NECESSARY ITEMS INCLUDING ANY TESTING, REPORTS, OR CERTIFICATION DOCUMENTS REQUIRED BY THE GOVERNING JURISDICTIONS TO PROPERLY CLOSEOUT THE PROJECT BEFORE IT CAN BE DEEMED COMPLETE.

EASEMENTS

3 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
GRANTED TO: EASTERN MUNICIPAL WATER DISTRICT
PURPOSE: PIPELINES
RECORDING DATE: SEPTEMBER 19, 1962
RECORDING NO: 87666 OF OFFICIAL RECORDS
AFFECTS: A PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED IN SAID DOCUMENT

4 THE OWNERSHIP OF SAID LAND DOES NOT INCLUDE RIGHTS OF ACCESS TO OR FROM THE STREET, HIGHWAY, OR FREEWAY ABUTTING SAID LAND, SUCH RIGHTS HAVING BEEN RELINQUISHED BY THE DOCUMENT,
RECORDING DATE: DECEMBER 27, 1962
RECORDING NO: 119151 OF OFFICIAL RECORDS
AFFECTS: STATE HIGHWAY 60
WAIVER OF ANY CLAIMS FOR DAMAGES TO SAID PROPERTY BY REASON OF THE LOCATION, CONSTRUCTION, LANDSCAPING OR MAINTENANCE OF THE FREEWAY ADJOINING SAID PROPERTY, AS CONTAINED IN THE DEED TO THE STATE OF CALIFORNIA RECORDED DECEMBER 27, 1962, INSTRUMENT NO. 119151 OF OFFICIAL RECORDS.

7 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
GRANTED TO: EASTERN MUNICIPAL WATER DISTRICT
PURPOSE: PIPELINES
RECORDING DATE: APRIL 13, 2011
RECORDING NO: 2011–0163138 OF OFFICIAL RECORDS
AFFECTS: A PORTION OF SAID LAND OVER PARCELS B AND C OF LOT LINE ADJUSTMENT NO. 983

9 AN IRREVOCABLE OFFER TO DEDICATE AN EASEMENT OVER A PORTION OF SAID LAND FOR PURPOSE(S): PUBLIC HIGHWAY RECORDING DATE: DECEMBER 20, 2013
RECORDING NO: 2013–0590126 OF OFFICIAL RECORDS AFFECTS: A PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED IN SAID DOCUMENT SAID OFFER OF DEDICATION WAS ACCEPTED BY THE CITY ENGINEER PURSUANT TO THE AUTHORITY CONFERRED BY RESOLUTION NO. 94–5 OF THE CITY COUNCIL OF MORENO VALLEY. (PLOTTED HEREON)

LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS: PARCELS B, C & D AS SHOWN ON LOT LINE ADJUSTMENT NO. 983 AS EVIDENCED BY DOCUMENT RECORDED MARCH 16, 2007 AS INSTRUMENT NO. 07–180759 OF OFFICIAL RECORDS, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

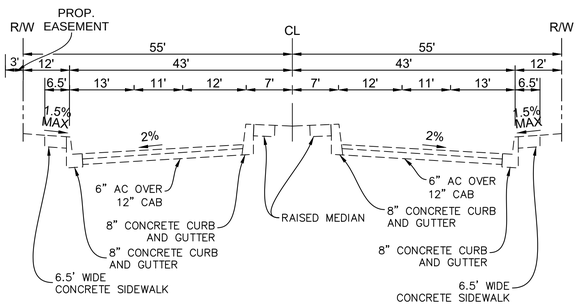
PARCEL "B":
IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, BEING A PORTION OF LOTS 1 AND 2, BLOCK 35 OF MAP NO. 1 BEAR VALLEY AND ALESSANDRO, AS SHOWN BY MAP ON FILE IN BOOK 11, PAGE 10 OF MAPS, RECORDS OF SAN BERNARDINO COUNTY, STATE OF CALIFORNIA, LYING IN SECTION 2, TOWNSHIP 3 SOUTH, RANGE 3 WEST, SAN BERNARDINO MERIDIAN, MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE CENTERLINE INTERSECTION OF REDLANDS BOULEVARD, 120 FEET IN WIDTH, AND GREVILLEA AVENUE, 80 FEET IN WIDTH, AS SHOWN ON SAID MAP NO. 1; THENCE ALONG THE CENTERLINE OF SAID REDLANDS BOULEVARD SOUTH 00°26'55" WEST A DISTANCE OF 40.00 FEET TO A POINT ON THE EASTERLY PROLONGATION OF THE SOUTHERLY RIGHT–OF– WAY OF SAID GREVILLEA AVENUE; THENCE ALONG SAID EASTERLY PROLONGATION NORTH 89°33'42" WEST A DISTANCE OF 60.00 FEET TO A POINT DESCRIBED AS THE BEGINNING OF COURSE "A" OF PARCEL "L" PER BOOK 3289, PAGE 186 OF THE DEEDS TO THE STATE OF CALIFORNIA AS RECORDED ON DECEMBER 27, 1962 AS INSTRUMENT NO. 119152 OF OFFICIAL RECORDS, IN THE OFFICE OF THE RIVERSIDE COUNTY RECORDER, SAID POINT BEING ON THE WESTERLY LINE OF SAID REDLANDS BOULEVARD, 120 FEET WIDE AS SHOWN ON SAID MAP NO. 1; THENCE ON A LINE PARALLEL WITH AND 60 DISTANT FROM SAID CENTERLINE SOUTH 00°26'55" WEST A DISTANCE OF 744.99 FEET TO THE SOUTHEAST CORNER OR COURSE "B" OF SAID PARCEL "L" SAID POINT BEING THE TRUE POINT OF BEGINNING; THENCE CONTINUING ALONG THE WESTERLY LINE OF SAID REDLANDS BOULEVARD SOUTH 00°26'55" WEST A DISTANCE OF 230.34 FEET; THENCE LEAVING SAID WESTERLY LINE, ON A LINE PARALLEL WITH AND 305.00 FEET DISTANT FROM THE CENTERLINE OF SAID FIR AVENUE NORTH 89°33'43" WEST A DISTANCE OF 336.00 FEET TO A POINT 396.00 FEET DISTANT FROM THE CENTERLINE OF SAID REDLANDS BOULEVARD; THENCE LEAVING SAID PARALLEL LINE, ON A LINE PARALLEL AND 396.00 FEET DISTANT FROM THE CENTERLINE OF SAID REDLANDS BOULEVARD, SOUTH 00°26'55" WEST A DISTANCE OF 305.00 FEET TO A POINT ON THE CENTERLINE OF SAID FIR AVENUE; THENCE ALONG SAID CENTERLINE NORTH 89°33'43" WEST A DISTANCE OF 384.19 FEET TO A POINT 540.00 FEET EAST OF THE WESTERLY LINE OF SAID LOT 7; THENCE ON A LINE PARALLEL WITH AND 540.00 FEET DISTANT FROM SAID WESTERLY LINE NORTH 00°26'58" EAST A DISTANCE OF 800.00 FEET TO A POINT 480.34 FEET DISTANT FROM THE SOUTHERLY RIGHT–OF–WAY OF SAID GREVILLEA AVENUE; THENCE ON A LINE PARALLEL WITH AND 480.34 FEET DISTANT FROM SAID SOUTHERLY LINE SOUTH 89°33'42" EAST A DISTANCE OF 508.20 FEET TO A POINT ON

THE LINE OF SAID COURSE "A"; THENCE ALONG SAID COURSE "A" THE FOLLOWING COURSES: SOUTH 00°25'50" WEST A DISTANCE OF 64.68 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE NORTHEASTERLY HAVING A RADIUS OF 200.00 FEET WITH A RADIAL BEARING OF NORTH 89°34'10" WEST; THENCE SOUTHERLY AND SOUTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 89°58'55" AN ARC LENGTH OF 314.10 FEET TO A POINT DESCRIBED AS THE BEGINNING OF COURSE "B" OF SAID PARCEL "L"; THENCE LEAVING SAID COURSE "A", ALONG SAID COURSE "B" SOUTH 89°33'05" EAST A DISTANCE OF 11.96 FEET TO A POINT ON THE WEST LINE OF SAID REDLANDS BOULEVARD, SAID POINT BEING THE TRUE POINT OF BEGINNING.

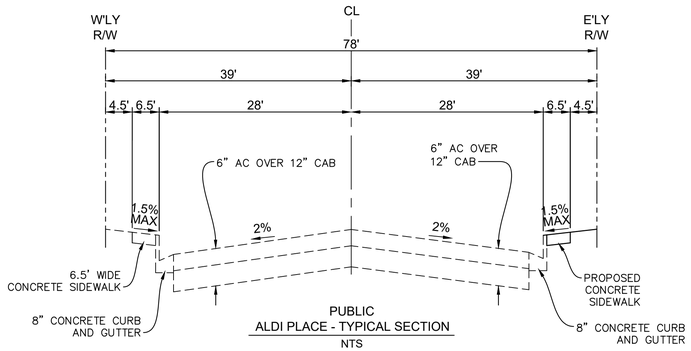
APN 488–330–035; APN 488–330–037

PARCEL "D":
IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, BEING A PORTION OF LOT 8, BLOCK 35 OF MAP NO. 1 BEAR VALLEY AND ALESSANDRO, AS SHOWN BY MAP ON FILE IN BOOK 11, PAGE 10 OF MAPS, RECORDS OF SAN BERNARDINO COUNTY, STATE OF CALIFORNIA, TOGETHER WITH THAT PORTION OF FIR AVENUE WITHIN SAID BLOCK 35 LYING EAST OF THE WEST LINE OF SAID LOT 7 PROLONGED SOUTHERLY LYING IN SECTION 2, TOWNSHIP 3 SOUTH, RANGE 3 WEST, SAN BERNARDINO MERIDIAN, MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE CENTERLINE INTERSECTION OF REDLANDS BOULEVARD, 120 FEET IN WIDTH, AND GREVILLEA AVENUE, 80 FEET IN WIDTH, AS SHOWN ON SAID MAP NO. 1; THENCE ALONG THE CENTERLINE OF SAID REDLANDS BOULEVARD SOUTH 00°26'55" WEST A DISTANCE OF 40.00 FEET TO A POINT ON THE EASTERLY PROLONGATION OF THE SOUTHERLY RIGHTOF– WAY OF SAID GREVILLEA AVENUE; THENCE ALONG SAID EASTERLY PROLONGATION NORTH 89°33'42" WEST A DISTANCE OF 60.00 FEET TO A POINT DESCRIBED AS THE BEGINNING OF COURSE "A" OF PARCEL "L" PER BOOK 3289, PAGE 186 OF DEEDS, TO THE STATE OF CALIFORNIA AS RECORDED ON DECEMBER 27, 1962 AS INSTRUMENT NO. 119152 OF OFFICIAL RECORDS, IN THE OFFICE OF THE RIVERSIDE COUNTY RECORDER, SAID POINT BEING ON THE WESTERLY LINE OF SAID REDLANDS BOULEVARD, 120 FEET WIDE AS SHOWN ON SAID MAP NO. 1; THENCE ON A LINE PARALLEL WITH AND 60 DISTANT FROM SAID CENTERLINE SOUTH 00°26'55" WEST A DISTANCE OF 744.99 FEET TO THE SOUTHEAST CORNER OF COURSE "B" OF SAID PARCEL "L"; THENCE CONTINUING ALONG THE WESTERLY LINE OF SAID REDLANDS BOULEVARD SOUTH 00°26'55" WEST A DISTANCE OF 230.34 FEET TO THE TRUE POINT OF BEGINNING; THENCE LEAVING SAID WESTERLY LINE ON A LINE PARALLEL WITH AND 305.00 FEET DISTANT FROM THE CENTERLINE OF SAID FIR AVENUE NORTH 89°33'43" WEST A DISTANCE OF 336.00 FEET TO A POINT 396.00 FEET DISTANT FROM THE CENTERLINE OF SAID REDLANDS BOULEVARD; THENCE LEAVING SAID PARALLEL LINE, ON A LINE PARALLEL WITH AND 396.00 FEET DISTANT FROM THE CENTERLINE OF SAID REDLANDS BOULEVARD SOUTH 00°26'55" WEST A DISTANCE OF 305.00 FEET TO THE CENTERLINE OF SAID FIR AVENUE; THENCE LEAVING SAID PARALLEL LINE, ALONG THE CENTERLINE OF SAID FIR AVENUE SOUTH 89°33'43" EAST A DISTANCE OF 336.00 FEET TO A POINT ON THE WESTERLY LINE OF SAID REDLANDS BOULEVARD, SAID POINT BEING THE SOUTHEAST CORNER OF LOT 8, BLOCK 35 OF SAID MAP NO. 1; THENCE ALONG SAID WESTERLY LINE NORTH 00°26'55" EAST A DISTANCE OF 305.00 FEET TO THE TRUE POINT OF BEGINNING.

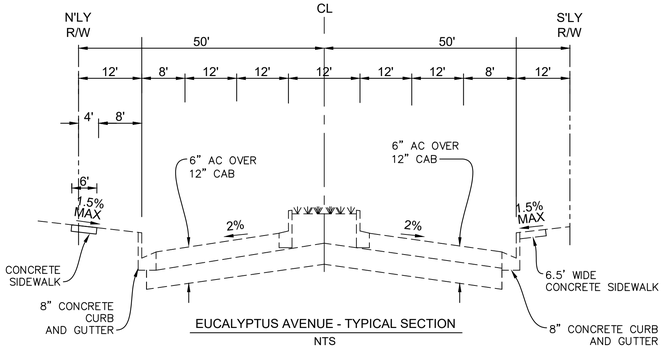
APN 488–330–038



REDLANDS AVENUE - TYPICAL SECTION
NTS



PUBLIC
ALDI PLACE - TYPICAL SECTION
NTS



EUCALYPTUS AVENUE - TYPICAL SECTION
NTS

PLACE HOLDER TO BE PROVIDED DURING FINAL DESIGN. SECTION TO REPRESENT ULTIMATE BUILDOUT

EUCALYPTUS AVENUE - TYPICAL SECTION AT ROUNDABOUT
NTS

PEN21–0077

BENCHMARK	BASIS OF BEARING
SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97–100 I.E. N00°27'05"E.

REVIEW BY CITY STAFF

OFFICE	INITIAL	DATE
ENGINEERING DIVISION MANAGER		
LAND DEVELOPMENT		
PLANNING		
TRANSPORTATION		
PARKS AND COMMUNITY SERVICES		
SPECIAL DISTRICTS		
STORM WATER MANAGEMENT PRGM		

MARK	DATE	INITIAL	DESCRIPTION	REC	APPR	DATE
		EOR	REVISION			

CITY OF MORENO VALLEY APPROVALS

RECOMMENDED:
MICHAEL D. LLOYD, PE — DATE
ENGINEERING DIVISION MANAGER/ ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:
MICHAEL L. WOLFE, PE — DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL
REGISTERED PROFESSIONAL ENGINEER — SHEA–MICHAEL ANTI — RCE NO. 78274 — CIVIL — STATE OF CALIFORNIA

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951–543–9868

UNDER THE SUPERVISION OF:
SHEA–MICHAEL ANTI — 11/8/2021 — DATE
RCE C78274

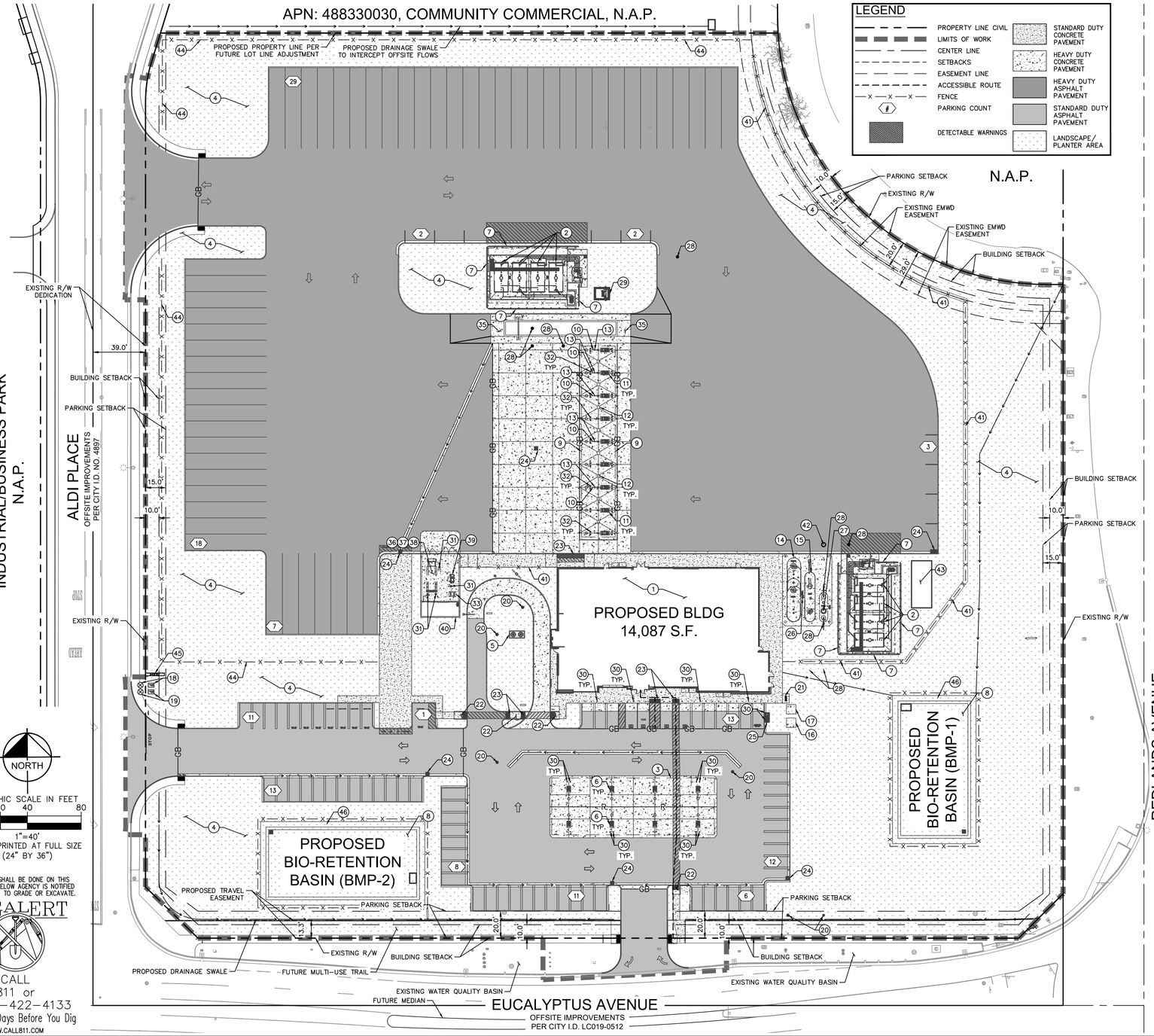
CITY OF MORENO VALLEY

PRELIMINARY GRADING PLAN
PILOT MORENO VALLEY
GENERAL NOTES

SHEET 2 OF 9
CITY ID No.
LGRXX–XXXX

Plotted By: Serron, Leandro Sheet Set: Pilot Moreno Valley – Entitlement Layout: GENERAL NOTES November 08, 2021 06:03:57pm K:\RIV_LDEV\Pilot\09542608_Pilot Moreno Valley\CADD\PlanSheets\Preliminary Grading Plan\CIN–09542608.dwg

Attachment: Project Plans (5613 : Pilot Travel Center Project)



NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.

DIGALERT

CALL 811 or 1-800-422-4133
2 Working Days Before You Dig
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SITE INFORMATION

APPLICANT/DEVELOPER: PILOT TRAVEL CENTERS, LLC

APN'S: 488-330-030, -035, -036, -037, -038

SITE AREA	±9.55 ACRES
TOTAL PERVIOUS	±3.61 ACRES
TOTAL IMPERVIOUS (INCLUDING BUILDING)	±5.94 ACRES
TOTAL GROSS FLOOR AREA	14,087 SF

EXISTING: COMMUNITY COMMERCIAL (CC)

PROPOSED: COMMUNITY COMMERCIAL (CC)

FEMA FLOOD ZONE DESIGNATION: ZONE X-SHADED

FRONT BUILDING SETBACK: 10'

SIDE BUILDING SETBACK: 10'

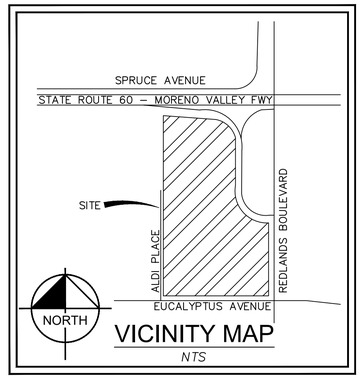
FRONT PARKING SETBACK: 20'

SIDE PARKING SETBACK: 15'

TOTAL REQUIRED PARKING: 83 SPACES

TOTAL PROVIDED AUTO PARKING: 89 SPACES

TOTAL PROVIDED TRUCK PARKING: 54 SPACES



CONSTRUCTION NOTES

1. PILOT TRAVEL CENTER BUILDING (SEE ARCHITECTURAL DRAWINGS), INSTALLED BY CONTRACTOR.
2. ABOVE GROUND STORAGE TANK FARM WITH CONTAINMENT. EACH AST FARM CONTAINS (4) 12,000 GALLON TACKS FOR DIESEL AND BIO. SEE PRODUCT PIPING DRAWINGS FOR MORE INFORMATION.
3. 42'-3" x 120'-10" AUTO CANOPY, FURNISHED AND INSTALLED BY CANOPY SUPPLIER. CANOPY FOUNDATIONS INSTALLED BY CONTRACTOR.
4. LANDSCAPE AREA INSTALLED BY CONTRACTOR. REFER TO LANDSCAPE AND IRRIGATION PLANS FOR MORE INFORMATION.
5. GREASE TRAP. FURNISHED AND INSTALLED BY CONTRACTOR.
6. CONCRETE ISLAND WITH A GAS/AUTO DIESEL (3+1) DISPENSER AND CONTAINMENT BOX TYPICAL AT (8) PLACES, INSTALLED BY CONTRACTOR.
7. 2'-0" HIGH GUARDRAIL AROUND CONTAINMENT AREA, 1'-0" OUTSIDE OF FENCE.
8. PROPOSED BIORETENTION BASIN. SEE UTILITY PLAN FOR MORE INFORMATION.
9. 25'-0" x 141'-9" TRUCK CANOPY, FURNISHED AND INSTALLED BY CANOPY SUPPLIER, CANOPY FOUNDATIONS INSTALLED BY CONTRACTOR.
10. TRUCK AIR STAND, TYPICAL AT EVERY OTHER TRUCK FUELING ISLAND, SUPPLIED BY OWNER AND INSTALLED BY CONTRACTOR.
11. CONCRETE ISLAND WITH A DIESEL DISPENSER AND CONTAINMENT BOX TYPICAL AT (9) PLACES, INSTALLED BY CONTRACTOR.
12. PREFABRICATED TRUCK ISLAND CATCH BASIN (TYP (8) PLACES). SUPPLIED BY OWNER INSTALLED BY CONTRACTOR
13. TRUCK FREEZE PROOF WATER STAND TYPICAL AT EVERY OTHER TRUCK FUELING ISLAND FURNISHED AND INSTALLED BY CONTRACTOR.
14. TANK #1, PRODUCT #1. 20,000 GALLON, 10'-0"ø X 37'-8 3/4" LONG, DOUBLE-WALL FIBERGLASS UNDERGROUND REGULAR UNLEADED GASOLINE TANK. FURNISHED BY OWNER, INSTALLED BY CONTRACTOR (TYP (1) PLACE). SEE PP DRAWINGS FOR MORE INFORMATION.
15. TANK #2 AND TANK #3. 20,000 GALLON, 10'-0"ø X 37'-10" LONG (2) CHAMBER UNDERGROUND DOUBLE WALL FIBERGLASS TANK, TANK #2, PRODUCT #2 – 12,000 GALLON SUPER UNLEADED GASOLINE, TANK #3, PRODUCT #3 – 8,000 AUTO DIESEL. FURNISHED BY OWNER, INSTALLED BY CONTRACTOR. (SEE PP DRAWINGS FOR MORE INFORMATION).
16. LOCAL UTILITY ELECTRICAL TRANSFORMER INSTALLED BY CONTRACTOR.
17. TRAVEL CENTER DISTRIBUTION ELECTRICAL TRANSFORMER INSTALLED BY CONTRACTOR.
18. PROPOSED WATER METER AND BACKFLOW. SEE UTILITY PLAN FOR MORE INFORMATION.
19. PROPOSED IRRIGATION METER AND BACKFLOW PREVENTOR. SEE UTILITY PLAN FOR MORE INFORMATION.
20. PROPOSED SEWER CLEANOUT. SEE UTILITY PLAN FOR MORE INFORMATION.
21. PROPOSED U-SHAPED BIKE RACKS PER CITY STANDARDS AND SPECIFICATIONS.
22. INSTALL ACCESSIBLE RAMP. INSTALL CAST-IN-PLACE DETECTABLE WARNING SYSTEM (TRUNCATED DOMES) PER ARMOR TILE – 36" X 48" PANEL. PRODUCT NO. ADA-C-3648W.
23. INSTALL DETECTABLE WARNINGS.
24. PROPOSED CATCH BASIN. SEE UTILITY PLAN FOR MORE INFORMATION.
25. AUTO AIR/VACUUM (PROVIDED BY OWNER, ELECTRICAL BY CONTRACTOR), YARD HYDRANT BY CONTRACTOR.
26. NEW TANK VENT RISER CLUSTER, INSTALLED BY CONTRACTOR.
27. 4,000 GALLON, 6'-0"ø x 21'-11" LONG, SINGLE-WALL FIBERGLASS UNDERGROUND OIL/ WATER SEPARATOR, FURNISHED BY OWNER, INSTALLED BY CONTRACTOR.
28. CLEAN OUT FOR OIL/WATER SEPARATOR FURNISHED AND INSTALLED BY CONTRACTOR.
29. B99 INJECTION SHED WITH SUMP. SUPPLIED BY OWNER. (SEE PRODUCT PIPING DRAWINGS FOR MORE INFORMATION).
30. 4" STEEL PIPE BOLLARD FURNISHED, INSTALLED BY CONTRACTOR (SEE CIVIL DWGS FOR SPECS.).
31. 6" STEEL PIPE BOLLARD FURNISHED, INSTALLED BY CONTRACTOR (SEE CIVIL DWGS FOR SPECS.).
32. 1'-0" CONCRETE BOLLARD FURNISHED, INSTALLED AND PAINTED BY CONTRACTOR (SEE CIVIL DWGS FOR SPECS.).
33. GREASE CONTAINER, PROVIDED BY OWNER.
34. SITE LIGHT, FURNISHED BY OWNER, INSTALLED BY CONTRACTOR.
35. TRUCK SCALE, CONCRETE TRUCK SCALE PIT AND TRUCK SCALE FURNISHED AND INSTALLED BY TRUCK SCALE SUPPLIER. ELECTRICAL, COMMUNICATIONS AND DRAINAGE PROVIDED TO THE SCALE PIT BY CONTRACTOR, COORDINATION BY CONTRACTOR.
36. PARKING AREA DESIGNATED FOR GOLF CART.
37. TRASH ENCLOSURE 8' CHAIN LINK FENCE WITH VINYL INSERTS MOUNTED ON REINFORCED CONCRETE PAD WITH PROTECTIVE STEEL BOLLARDS, INSTALLED BY CONTRACTOR (SEE ARCH DWGS FOR DETAILS).
38. TRASH COMPACTOR, FURNISHED AND INSTALLED BY TRASH COMPACTOR SUPPLIER.
39. CARDBOARD BAILER OR RECYCLE DUMPSTER, FURNISHED AND INSTALLED BY DUMPSTER SUPPLIER.
40. STORAGE UNIT, FURNISHED BY OWNER. ELECTRICAL & A/C INSTALL BY CONTRACTOR.
41. PROPOSED 8' FENCE ON TOP OF 3' BERM. SEE LANDSCAPE PLAN FOR MORE INFORMATION.
42. 36" MANHOLE BY JENSEN REFER TO UTILITY PLAN FOR MORE INFORMATION.
43. FUTURE HYDROGEN TANK LOCATION.
44. PROPOSED 6' FENCE. SEE LANDSCAPE PLAN FOR MORE INFORMATION.
45. PROPOSED 6" DOUBLE CHECK DETECTOR ASSEMBLY. SEE UTILITY PLAN FOR MORE INFORMATION.
46. PROPOSED 4' FENCE. SEE LANDSCAPE PLAN FOR MORE INFORMATION.

PEN21-0077

BENCHMARK	BASIS OF BEARING
SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97-100 I.E. N00°27'05"E.

REVIEW BY CITY STAFF		
OFFICE	INITIAL	DATE
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PARKS AND COMMUNITY SERVICES		
SPECIAL DISTRICTS		
STORM WATER MANAGEMENT PRGM		

MARK	DATE	INITIAL	DESCRIPTION	REC	APPR	DATE
		EOR	REVISION			

CITY OF MORENO VALLEY APPROVALS

RECOMMENDED:

MICHAEL D. LLOYD, PE — DATE
ENGINEERING DIVISION MANAGER/ ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:

MICHAEL L. WOLFE, PE — DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL

REGISTERED PROFESSIONAL ENGINEER — SHEA-MICHAEL ANTI — RCE NO. 78274 — CIVIL — STATE OF CALIFORNIA

Kimley»Horn

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PHONE: 951-543-9868

UNDER THE SUPERVISION OF:

SHEA-MICHAEL ANTI — 11/8/2021
RCE C78274 — DATE

CITY OF MORENO VALLEY

PRELIMINARY GRADING PLAN
PILOT MORENO VALLEY
SITE PLAN

SHEET 3 OF 9

CITY ID No. LGRXX-XXXX

APN: 488330040
INDUSTRIAL/BUSINESS PARK
N.A.P.

ALDI PLACE
OFFSITE IMPROVEMENTS
PER CITY I.D. NO. 4897

SEE SHEET 5

PROPOSED BLDG
14,087 S.F.

PROPOSED
BIO-RETENTION
BASIN (BMP-2)

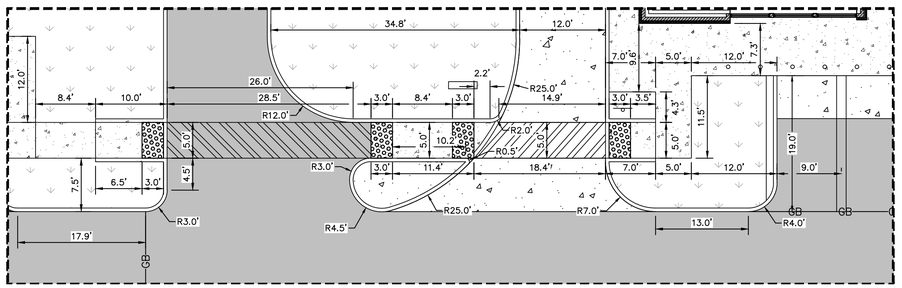
PROPOSED
BIO-RETENTION
BASIN (BMP-1)

REDLANDS AVENUE
OFFSITE IMPROVEMENTS
PER CITY I.D. LC019-0512

N.A.P.
APN: 488350055
INDUSTRIAL/BUSINESS PARK

EXISTING R/W
BUILDING SETBACK
PARKING SETBACK
PROPOSED TRAVEL EASEMENT
PROPOSED DRAINAGE SWALE
FUTURE MULTI-USE TRAIL
PROPOSED 6' SIDEWALK
FUTURE MEDIAN
DETAIL 1 HEREON

EUCALYPTUS AVENUE
OFFSITE IMPROVEMENTS
PER CITY I.D. LC019-0512



DETAIL 1
1"=10'

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LEGEND

- PROPERTY LINE CIVIL
- LIMITS OF WORK
- CENTER LINE
- SETBACKS
- EASEMENT LINE
- GB — GRADE BREAK
- DETECTABLE WARNINGS
- STANDARD DUTY CONCRETE PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
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- STANDARD DUTY ASPHALT PAVEMENT
- LANDSCAPE/ PLANTER AREA

NORTH
GRAPHIC SCALE IN FEET
0 15 30 60
1"=30'
WHEN PRINTED AT FULL SIZE
(24" BY 36")

PEN21-0077

BENCHMARK	BASIS OF BEARING
SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97-100 I.E. N00°27'05"E.

REVIEW BY CITY STAFF		
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ENGINEERING DIVISION MANAGER		
LAND DEVELOPMENT		
PLANNING		
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SPECIAL DISTRICTS		
STORM WATER MANAGEMENT PRGM		

MARK	DATE	INITIAL	DESCRIPTION	REC	APPR	DATE
		EOR	REVISION			

CITY OF MORENO VALLEY APPROVALS

RECOMMENDED:

MICHAEL D. LLOYD, PE — DATE
ENGINEERING DIVISION MANAGER/
ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:

MICHAEL L. WOLFE, PE — DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL
REGISTERED PROFESSIONAL ENGINEER
SHEA-MICHAEL ANTI
RCE NO. 78274
STATE OF CALIFORNIA
CIVIL

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951-543-9868

UNDER THE SUPERVISION OF:

SHEA-MICHAEL ANTI — 11/8/2021 — DATE
RCE C78274

CITY OF MORENO VALLEY

PRELIMINARY GRADING PLAN
PILOT MORENO VALLEY
HORIZONTAL CONTROL PLAN

SHEET 4 OF 9
CITY ID No.
LGRXX-XXXX

APN: 488330040
INDUSTRIAL/BUSINESS PARK
N.A.P.

ALDI PLACE
OFFSITE IMPROVEMENTS
PER CITY I.D. NO. 4897

APN: 488330030, COMMUNITY COMMERCIAL
N.A.P.

N17°39'34"E
22.38'

N89°33'03"W 458.59'

PROPOSED PROPERTY LINE PER
FUTURE LOT LINE ADJUSTMENT

PROPOSED DRAINAGE SWALE
TO INTERCEPT OFFSITE FLOWS

N.A.P.

BUILDING SETBACK
PARKING SETBACK
EXISTING EMWD
EASEMENT
EXISTING R/W
EXISTING EMWD
EASEMENT

EXISTING R/W
DEDICATION

BUILDING SETBACK
PARKING SETBACK
BUILDING SETBACK

SEE SHEET 4

N.A.P.
APN: 488350055
INDUSTRIAL/BUSINESS PARK

REDLANDS AVENUE
OFFSITE IMPROVEMENTS
PER CITY I.D. LC019-0512

N27°05'E 452.44'

N27°05'E 583.14'

LEGEND

- PROPERTY LINE CIVIL
- LIMITS OF WORK
- CENTER LINE
- SETBACKS
- EASEMENT LINE
- GB — GRADE BREAK
- DETECTABLE WARNINGS
- STANDARD DUTY CONCRETE PAVEMENT
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SHEET 5 OF 9

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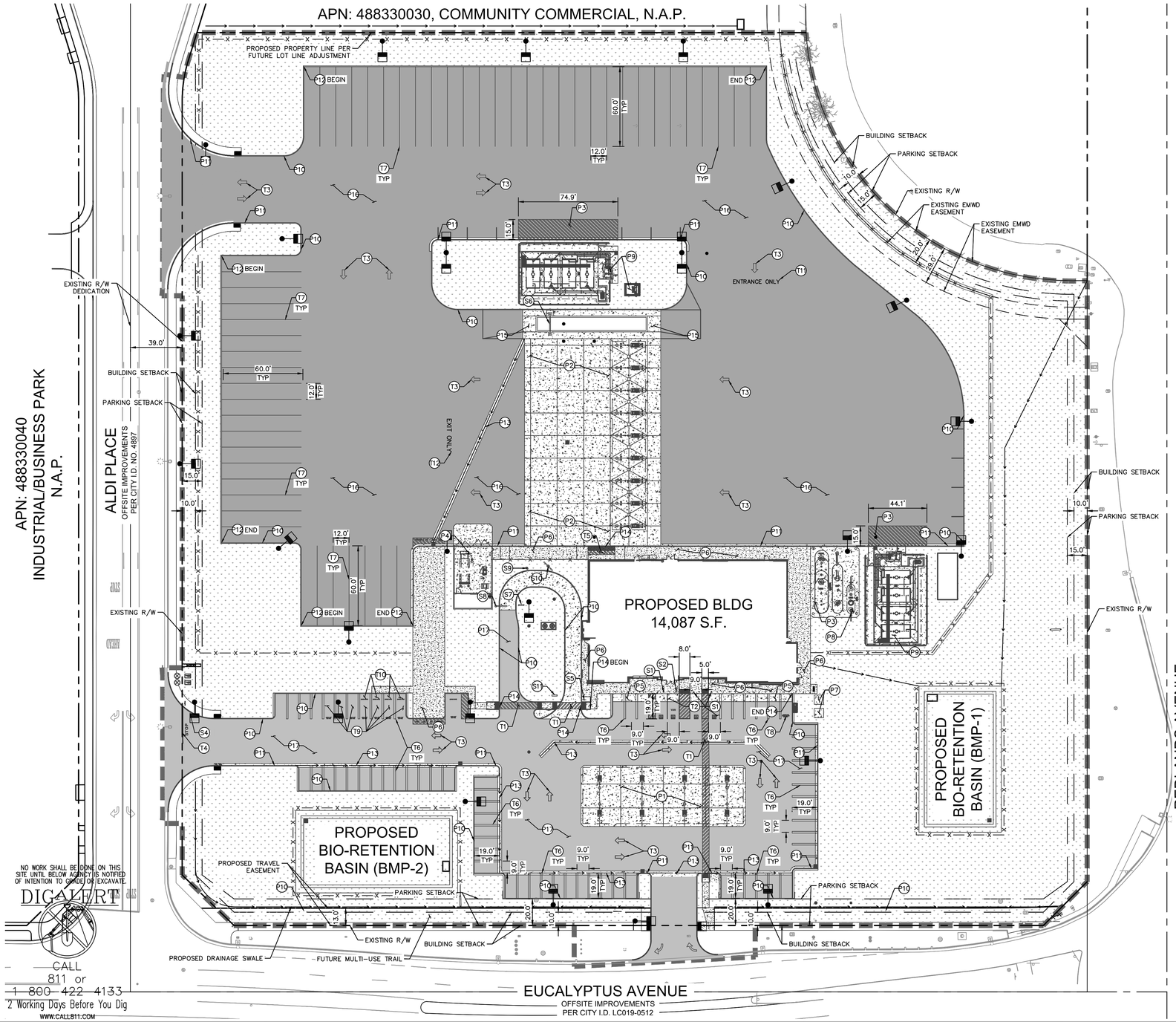

LEGEND

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- CIVIL LIMITS OF WORK
- CENTER LINE
- SETBACKS
- EASEMENT LINE
- FENCE
- DETECTABLE WARNINGS
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- STANDARD DUTY ASPHALT PAVEMENT
- LANDSCAPE/ PLANTER AREA

PAVEMENT NOTES

(P1) 6" REINFORCED CONCRETE PAD FOR AUTO CANOPY. WATER FROM SITE SHOULD NOT DRAIN ACROSS THE CONCRETE PAD FOR THE AUTO CANOPY. ASPHALT PAVING ON ALL (4) SIDES OF THE CONCRETE PAD SHOULD DRAIN AWAY FROM CONCRETE PAD. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS, INSTALLED BY CONTRACTOR.

(P2) 8" REINFORCED CONCRETE PAD FOR TRUCK CANOPY. WATER FROM SITE SHOULD NOT DRAIN ACROSS THE CONCRETE PAD FOR THE TRUCK CANOPY. ASPHALT PAVING ON BOTH SIDES OF THE CONCRETE PAD SHOULD DRAIN AWAY FROM CONCRETE PAD. CONCRETE PAD FOR THE TRUCK CANOPY MUST DRAIN TO CATCH BASIN. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

(P3) 8" REINFORCED CONCRETE PAD AT TANK FARM. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

(P4) 8" REINFORCED CONCRETE PAD TRASH ENCLOSURE. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

(P5) 6" REINFORCED CONCRETE PARKING APRON AT PARKING SPACES IN FRONT OF BUILDING. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

(P6) 4" REINFORCED CONCRETE SIDEWALK. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

(P7) 7'-0" X 7'-0" X 6" REINFORCED CONCRETE PAD FOR ELECTRICAL TRANSFORMER. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY FOR SIZE AND REINFORCING REQUIREMENTS. INSTALLED BY CONTRACTOR.

(P8) 4" REINFORCED CONCRETE PAD AT OIL/WATER SEPARATOR. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

(P9) SEE PP DRAWINGS FOR AST AND BIO SHED FOUNDATION DESIGN.

(P10) STANDARD DUTY CURB. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

(P11) STANDARD DUTY CURB AND GUTTER. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

(P12) HEAVY DUTY CURB. SEE SECTIONS AND DETAILS FOR SPECIFICATIONS. INSTALLED BY CONTRACTOR.

(P13) INSTALL RIBBON GUTTER.

(P14) ZERO ELEVATION CURB. SEE GRADING PLANS FOR DETAILS AND SPECIFICATIONS.

(P15) 8" REINFORCED CONCRETE RAMP FOR CAT SCALE.

(P16) CONSTRUCT HEAVY DUTY ASPHALT PAVEMENT.

(P17) CONSTRUCT STANDARD DUTY ASPHALT PAVEMENT.

STRIPING NOTES

(T1) INSTALL ACCESSIBLE PATH OF TRAVEL STRIPING.

(T2) INSTALL ACCESSIBLE STRIPING PARKING STALL AND ACCESSIBLE PARKING SYMBOL.

(T3) ALL DIRECTIONAL AND PARKING STRIPING TO BE SAFETY YELLOW-UNLESS NOTED OTHERWISE (TYP).

(T4) STOP LINE INSTALLED BY CONTRACTOR.

(T5) 5'-0" X 20'-0" PASSENGER DROP-OFF/LOADING ZONE. TRAFFIC STRIPING 4" WIDE PAINTED (SAFETY YELLOW) PARALLEL STRIPES AT 16" O.C. FURNISHED AND INSTALLED BY CONTRACTOR.

(T6) 4" YELLOW DOUBLE HAIRPIN STRIPING, TYP. (COLOR PER CITY CODE).

(T7) 4" YELLOW PAINTED SOLID LINE, TYP. (COLOR PER CITY CODE).

(T8) PROPOSED "PARKING FOR SERVICE ISLAND USE ONLY." PAVEMENT MARKING.

(T9) PROPOSED "CLEAN AIR/ VAN POOL." PAVEMENT MARKING.

(T10) PROPOSED FUTURE EVCS PARKING STALLS.

(T11) PROPOSED "ENTRANCE ONLY" PAVEMENT MARKING.

(T12) PROPOSED "EXIT ONLY" PAVEMENT MARKING.

SIGNING NOTES

(S1) INSTALL ACCESSIBLE PARKING STALL SIGN AND SINGLE BASE SIGN POST.

(S2) INSTALL VAN ACCESSIBLE PARKING STALL SIGN AND SINGLE BASE SIGN POST.

(S3) "PASSENGER LOADING ZONE ONLY" SIGN FURNISHED AND INSTALLED BY CONTRACTOR.

(S4) "STOP SIGN" SIGN INSTALLED BY CONTRACTOR.

(S5) "PED-XING" SIGN FURNISHED AND INSTALLED BY CONTRACTOR.

(S6) SEE SS DRAWINGS FOR ALL OTHER SIGNAGE.

(S7) RESTAURANT "DRIVE-THRU" (INTERNALLY ILLUMINATED) DIRECTIONAL SIGN FURNISHED BY OWNER, INSTALLED BY SIGN SUPPLIER. CONCRETE FOUNDATION AND ELECTRICAL INSTALLED BY CONTRACTOR.

(S8) "DRIVE-THRU CLEARANCE 9 FT. 6 IN." SIGN FURNISHED BY OWNER, INSTALLED BY SIGN SUPPLIER. CONCRETE FOUNDATION INSTALLED BY CONTRACTOR.

(S9) RESTAURANT PREVIEW BOARD (INTERNALLY ILLUMINATED) FURNISHED BY OWNER, INSTALLED BY SIGN SUPPLIER. CONCRETE FOUNDATION AND ELECTRICAL INSTALLED BY CONTRACTOR.

(S10) "RESTAURANT" MENU BOARD (INTERNALLY ILLUMINATED) AND INTERCOM SYSTEM FURNISHED BY OWNER, INSTALLED BY SIGN SUPPLIER. CONCRETE FOUNDATION AND ELECTRICAL INSTALLED BY CONTRACTOR.

(S11) "THANK YOU / DO NOT ENTER" DIRECTIONAL SIGN (INTERNALLY ILLUMINATED) FURNISHED BY OWNER, INSTALLED BY SIGN SUPPLIER. CONCRETE FOUNDATION AND ELECTRICAL INSTALLED BY CONTRACTOR.

GENERAL PAVING NOTES

1. ALL MANHOLES MUST BE SET 2" HIGHER THAN PAVING TO PROVIDE A CROWN IN A 24"Ø AREA AROUND EACH MANHOLE.
2. SUB-BASE MUST BE COMPACTED TO 95% STANDARD PROCTOR WITH A WATER CONTENT WITHIN 1.5% OF OPTIMUM.
3. STONE BASE MUST BE COMPACTED TO 95% STANDARD PROCTOR WITH A WATER CONTENT WITHIN 1.5% OF OPTIMUM.
4. PRIOR TO INSTALLING BITUMINOUS PAVING CONTRACTOR IS TO PROOF-ROLL SUB-BASE USING HEAVY, PNEUMATIC-TIRED ROLLERS TO LOCATE AREAS THAT ARE UNSTABLE OR THAT REQUIRE FURTHER COMPACTION. NOTIFY CONSTRUCTION MANAGER IN WRITING OF ANY UNSATISFACTORY CONDITIONS. DO NOT BEGIN PAVING INSTALLATION UNTIL THESE CONDITIONS HAVE BEEN SATISFACTORILY CORRECTED.
5. ASPHALT PAVING @ EDGE OF CONCRETE PAD FOR THE TRUCK CANOPY SHOULD BE LAID @1/4" HIGHER THAN CONCRETE PAD ON EXIT SIDE CANOPY.
6. CONCRETE COLLAR IS REQUIRED FOR ALL STRUCTURES IN PAVEMENT.

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RCE 69563

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RCE 65623

ENGINEER OF RECORD'S SEAL

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Kimley»Horn

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PHONE: 951-543-9868

UNDER THE SUPERVISION OF:

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RCE C78274

11/8/2021
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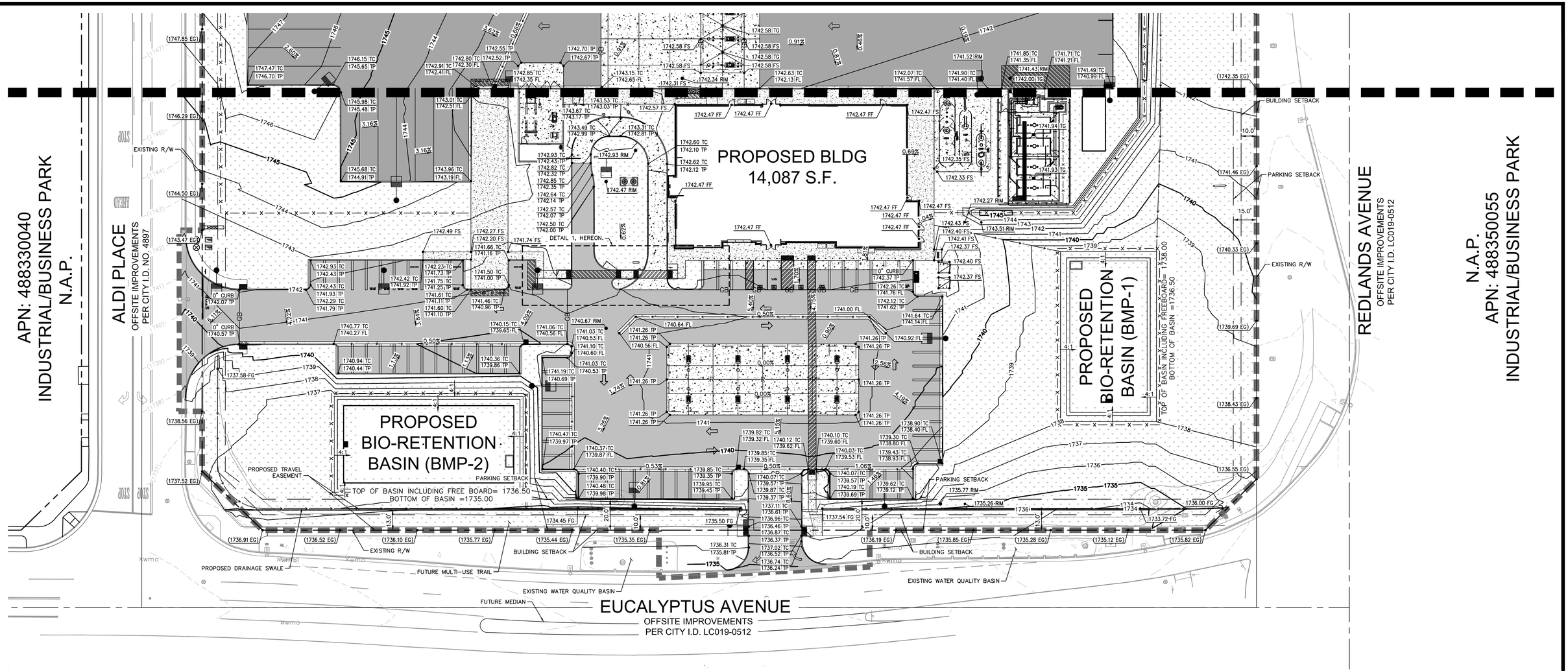
CITY OF MORENO VALLEY

PRELIMINARY GRADING PLAN
PILOT MORENO VALLEY
SIGNING, STRIPING, AND PAVEMENT PLAN

SHEET 6 OF 9

CITY ID No.
LGRXX-XXXX



GRADING NOTES

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5. MAXIMUM SLOPE IN ACCESSIBLE PARKING SPACES AND LOADING ZONES SHALL NOT EXCEED 2.0% IN ALL DIRECTIONS.
6. MAXIMUM RUNNING SLOPE SHALL NOT EXCEED 5% AND CROSS SLOPE SHALL NOT EXCEED 2% ON ALL SIDEWALKS AND ACCESSIBLE ROUTES.
7. MATCH EXISTING ELEVATIONS AT THE PROPERTY LIMITS.
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- LIMITS OF WORK
- CENTER LINE
- SETBACKS
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- (1745.00 TC) / (1745.00 TP) — PROPOSED ELEVATION
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SHEET 7 OF 9

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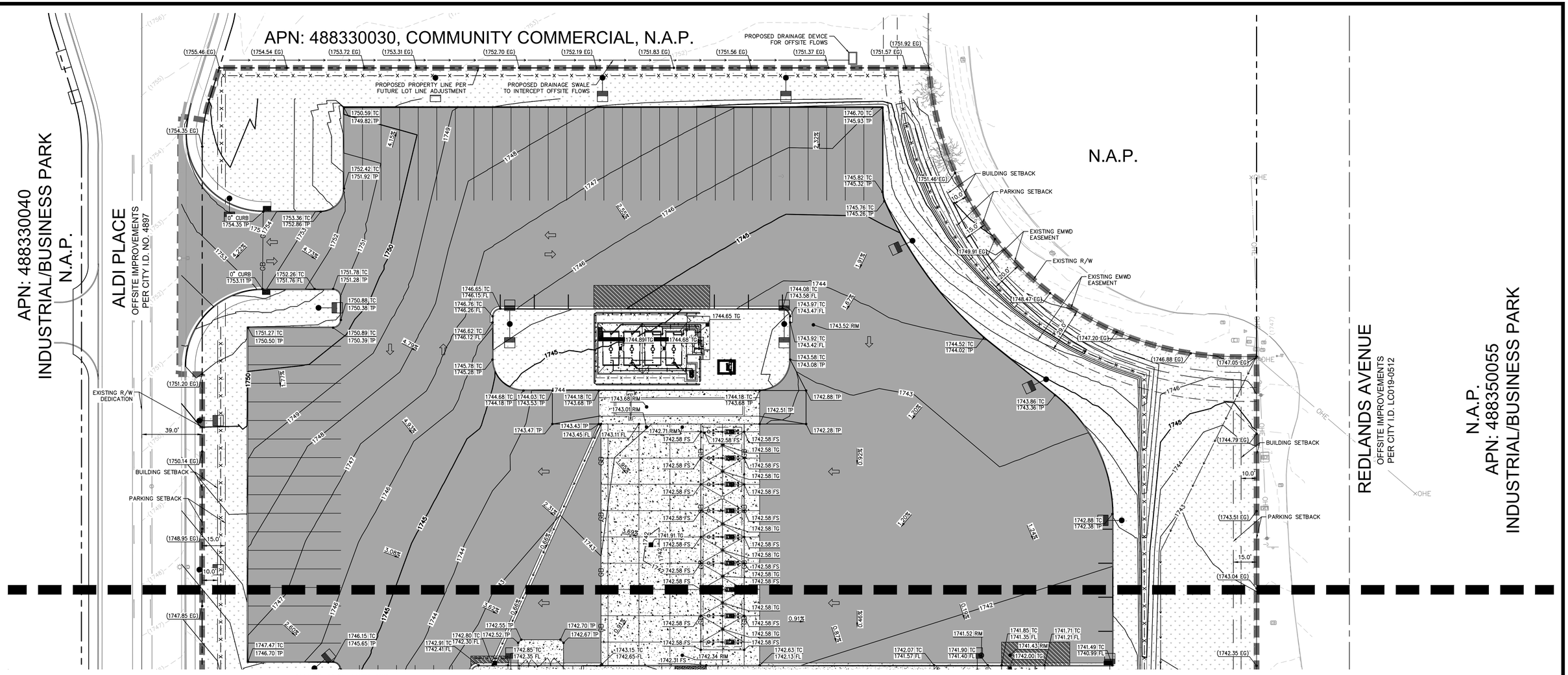

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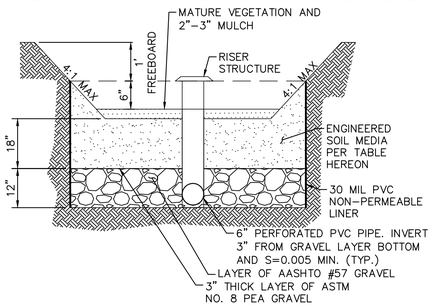

BMP-1 & BMP-2 TYPICAL SECTION

NTS

TABLE 1 MINERAL COMPONENT RANGE REQUIREMENTS FOR BIO-RETENTION FACILITY	
PERCENTAGE RANGE	COMPONENT
70-80	SAND
15-20	SILT
5-10	CLAY

THE TRIP TICKET, OR CERTIFICATE OF COMPLIANCE, SHALL BE MADE AVAILABLE TO THE INSPECTOR TO PROVE THE ENGINEERED MIX MEETS THIS SPECIFICATION.

THE ENGINEERED SOIL MEDIA SHALL BE COMPRISED OF 85 PERCENT MINERAL COMPONENT AND 15 PERCENT ORGANIC COMPONENT, BY VOLUME, DRUM MIXED PRIOR TO PLACEMENT. THE MINERAL COMPONENT SHALL BE A CLASS A SANDY LOAM TOPSOIL THAT MEETS THE RANGE SPECIFIED IN TABLE 1 BELOW. THE ORGANIC COMPONENT SHALL BE NITROGEN STABILIZED COMPOST 1, SUCH THAT NITROGEN DOES NOT LEACH FROM THE MEDIA.

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SHEET 8 OF 9

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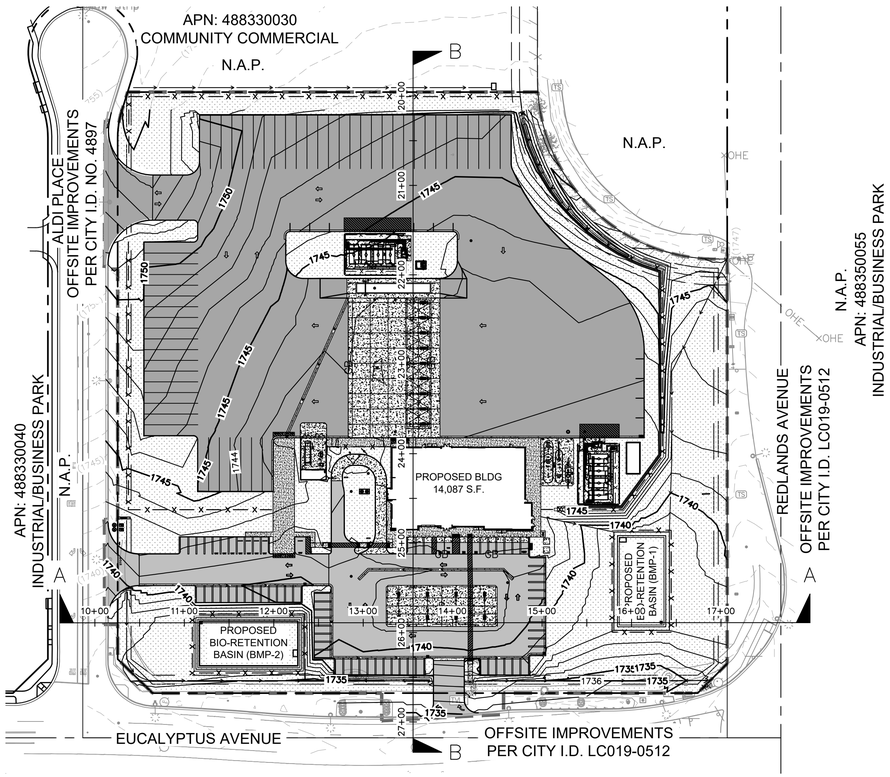
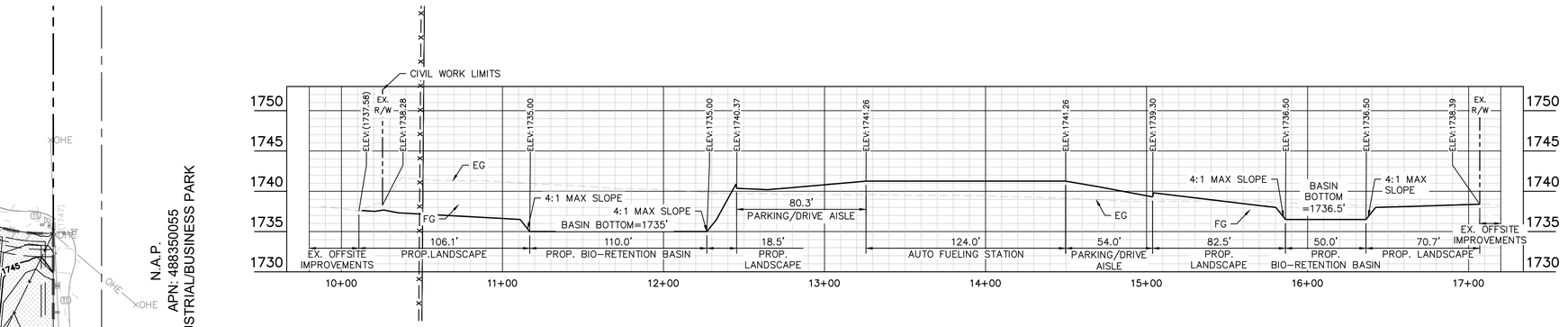
LGRXX-XXXX



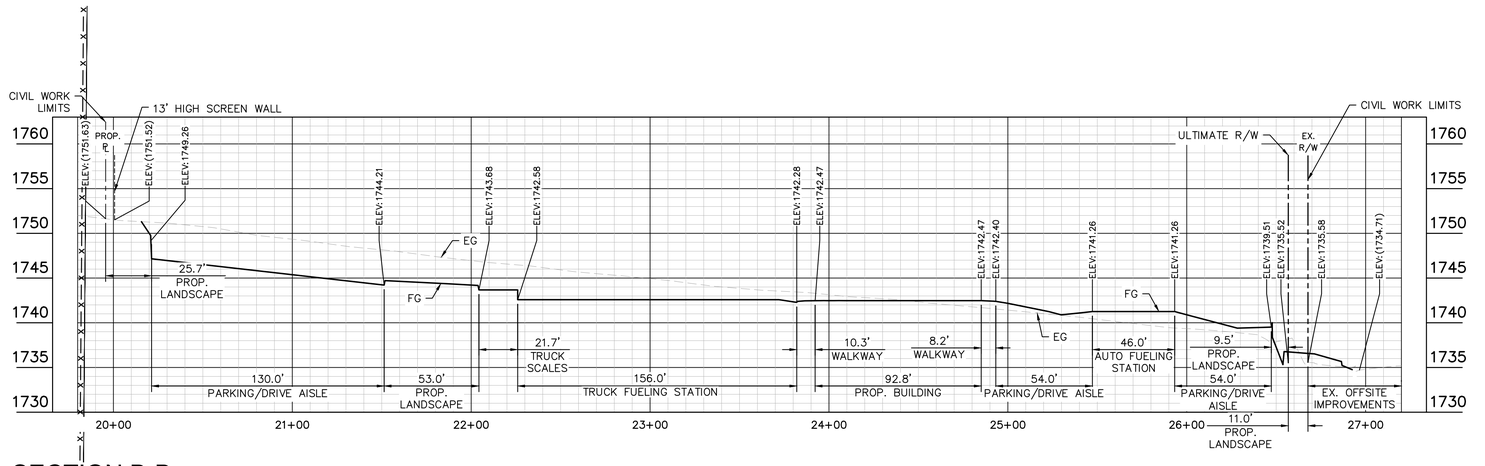
SECTION MAP

1"=80'



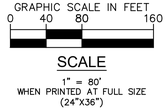
SECTION A-A

HORIZONTAL SCALE 1"=40"
VERTICAL SCALE 1"=4'



SECTION B-B

HORIZONTAL SCALE 1"=40"
VERTICAL SCALE 1"=4'



NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.

DIGALERT

CALL
811 or
1-800-422-4133
2 Working Days Before You Dig
WWW.CALL811.COM

PEN21-0077

BENCHMARK	BASIS OF BEARING
SEE SHEET 1 FOR BENCHMARK AND BASIS OF ELEVATION.	THE BASIS OF BEARINGS IS THE CENTERLINE OF REDLANDS BOULEVARD PER PARCEL MAP NO. 36207, PM 236/97-100 I.E. N00°27'05"E.

REVIEW BY CITY STAFF		
OFFICE	INITIAL	DATE
ENGINEERING DIVISION MANAGER		
LAND DEVELOPMENT		
PLANNING		
TRANSPORTATION		
PARKS AND COMMUNITY SERVICES		
SPECIAL DISTRICTS		
STORM WATER MANAGEMENT PRGM		

MARK	DATE	INITIAL	DESCRIPTION	REC	APPR	DATE
		EOR	REVISION			

CITY OF MORENO VALLEY APPROVALS

RECOMMENDED:

MICHAEL D. LLOYD, PE — DATE
ENGINEERING DIVISION MANAGER/
ASSISTANT CITY ENGINEER
RCE 69563

APPROVED:

MICHAEL L. WOLFE, PE — DATE
PUBLIC WORKS DIRECTOR/CITY ENGINEER
RCE 65623

ENGINEER OF RECORD'S SEAL

REGISTERED PROFESSIONAL ENGINEER
SHEA MICHAEL ANTI
RCE NO. 78274
CIVIL
STATE OF CALIFORNIA

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951-543-9868

UNDER THE SUPERVISION OF:

SHEA-MICHAEL ANTI — 11/8/2021 — DATE
RCE C78274

CITY OF MORENO VALLEY

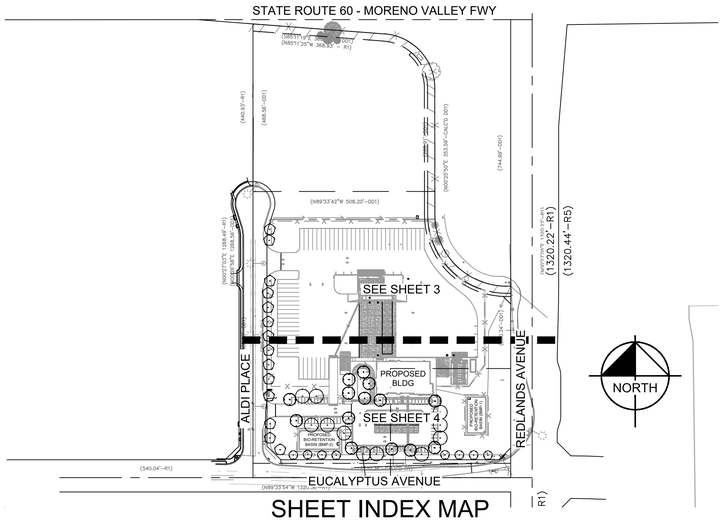
PRELIMINARY GRADING PLAN
PILOT MORENO VALLEY
SECTIONS

SHEET 9 OF 9

CITY ID No.
LGRXX-XXXX

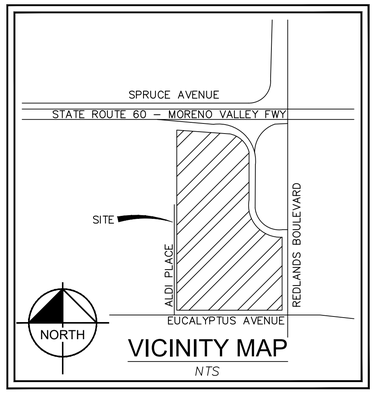
CITY OF MORENO VALLEY
PRELIMINARY LANDSCAPE PLAN

PILOT MORENO VALLEY



SHEET INDEX MAP

SCALE 1" = 100'



VICINITY MAP

NTS

OWNER/APPLICANT

PILOT TRAVEL CENTERS LLC
5508 LONAS DRIVE
KNOXVILLE, TN 37909
(865) 588–7488

DEVELOPER

PILOT TRAVEL CENTERS LLC
5508 LONAS DRIVE
KNOXVILLE, TN 37909
(865) 588–7488
ATTN: RYAN ROBINSON
RYAN.ROBINSON@PILOTTRAVELCENTERS.COM

CIVIL ENGINEER

KIMLEY HORN & ASSOCIATES, INC.
3880 LEMON STREET # 420
RIVERSIDE, CA 92501
ATTN: SHEA–MICHAEL ANTI
(760) 565–5146
SHEA.ANTI@KIMLEY–HORN.COM

SURVEYOR

LG LAND SURVEYING, INC
30355 CALLE FELIZ TER
VALLEY CENTER, CA 92082
ATTN: JOHN GERVAIS, PLS 8674
(619) 535–1172
JOHN@LGLSINC.COM
DATE OF FIELD SURVEY: JANUARY 28, 2021

SOILS ENGINEER

GEOTECHNICAL SOLUTIONS, INC
27 MAUCHLY, SUITE 210
IRVINE, CA 92618
ATTN: DHARMA SHAKYA, PhD, PE, GE
(949) 453–0406'
PROJECT: G–5852–08, G–5852–01

LANDSCAPE ARCHITECT

KIMLEY HORN & ASSOCIATES, INC.
401 B STREET # 600
SAN DIEGO, CA 92101
ATTN: CHRIS FREY
(619) 744–0118
CHRIS.FREY@KIMLEY–HORN.COM

BENCHMARK AND BASIS OF ELEVATION

THE BASIS OF ELEVATIONS IS THE METRO WATER DISTR OF SO. CALIFORNIA BENCHMARK STAMPED "IVF 55 1993" –DIRECTIONS: FROM THE INTERSECTION OF THE FREEWAY AND REDLANDS BLVD, NORTH ON REDLANDS BLVD, APPROX. 500 FEET (152.4 M) TO THE NORTHWEST CORNER OF REDLANDS BLVD AND SPRUCE ST. BENCHMARK IS LOCATED 43 FEET (13.1 M) WEST OF THE CENTERLINE OF REDLANDS BLVD. AND 29 FEET (8.8 M) NORTH OF THE CENTERLINE OF SPRUCE ST., IN TOP OF A 10 INCH WIDE BY 7.5 FEET (2.3 M) LONG CONCRETE HEADWALL AT WEST END. EL=1785.67, NAVD 88.

ASSESORS PARCEL NUMBER (APN)

488–330–030, –035, –036, –037, –038

PENXX-XXXX

Sheet Index	
Sheet Number	Sheet Title
1	TITLE SHEET
2	PLANTING NOTES
3	PRELIMINARY LANDSCAPE PLAN
4	PRELIMINARY LANDSCAPE PLAN

ZONING DESIGNATION

EXISTING: COMMUNITY COMMERCIAL (CC)

PROPOSED: COMMUNITY COMMERCIAL (CC)

BLDG SQ. FOOTAGE

TOTAL GROSS FLOOR AREA 13,917 SF

SITE INFORMATION

GROSS PARCEL	±9.55 ACRES
DISTURBED	±9.74 ACRES
TOTAL PERVIOUS	±3.45 ACRES
TOTAL IMPERVIOUS (INCLUDING BUILDING)	±6.29 ACRES

PROJECT DESCRIPTION

EXISTING COMMUNITY COMMERCIAL SITE IS VACANT AT THE NORTHWEST CORNER OF REDLANDS BOULEVARD AND EUCALYPTUS AVENUE, MORENO VALLEY, CA 92555.

PROPOSED PILOT TRAVEL CENTER WITH 13,917 SQ FT. BUILDING WITH RESTAURANT, DRIVE–THRU, AND CAR/TRUCK FUELING AREAS.

LEGAL DESCRIPTION:

PARCEL C AND D OF LOT LINE ADJUSTMENT NO. 983 / CERTIFICATE OF COMPLIANCE IN THE CITY OF MORENO VALLEY, COUNTY RIVERSIDE, STATE OF CALIFORNIA RECORDED 03/16/2007 AS DOC #2007–0180759 IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY OF OFFICIAL RECORDS.

LANDSCAPE ARCHITECT NOTES

1. THE TERM "LANDSCAPE ARCHITECT" USED HEREIN SHALL MEAN THE LANDSCAPE ARCHITECT WHO HAS SIGNED AND SEALED THESE PLANS AND IS IN RESPONSIBLE CHARGE OF THE LANDSCAPE ARCHITECTURE DESIGN. THE TERM "CONTRACTOR" USED HEREIN SHALL MEAN ANY GENERAL CONTRACTOR OR SUBCONTRACTOR USING THESE PLANS. ANY AGENCY SIGNATURE OR APPROVAL ON THESE PLANS DOES NOT CONSTITUTE APPROVAL OF ANY OF THESE NOTES.
2. THE LANDSCAPE ARCHITECT WILL NOT PROVIDE, OBSERVE, COMMENT ON NOR ENFORCE ANY SAFETY MEASURES OR REGULATIONS. THE CONTRACTOR SHALL DESIGN, CONSTRUCT, AND MAINTAIN ALL SAFETY MEASURES AND SHALL BE SOLELY RESPONSIBLE FOR SAME AND COMPLYING WITH ALL LOCAL, STATE AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS, AND REGULATIONS. THE CONTRACTOR AGREES THAT SHE/HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOBSITE CONDITIONS AND SAFETY OF ALL PERSONS AND PROPERTY DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
3. THE LANDSCAPE ARCHITECT SHALL HAVE NO RESPONSIBILITY FOR ANY OF THE CONTRACTOR'S MEANS AND METHODS OF CONSTRUCTION, TECHNIQUES, EQUIPMENT CHOICE AND USAGE, SEQUENCE, SCHEDULE, SAFETY PROGRAMS, OR SAFETY PRACTICES, NOR SHALL THE LANDSCAPE ARCHITECT HAVE ANY AUTHORITY OR RESPONSIBILITY TO STOP OR DIRECT THE WORK OF ANY CONTRACTOR.
4. THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE LANDSCAPE ARCHITECT AND OWNER, THEIR AGENTS AND EMPLOYEES, HARMLESS FROM ANY AND ALL CLAIMS, DEMANDS, JUDGMENTS, LOSS, DAMAGES, COSTS, EXPENSES, FEES OR LIABILITY WHATSOEVER, REAL OR ALLEGED, IN CONNECTION WITH, IN WHOLE OR IN PART, DIRECTLY OR INDIRECTLY, THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE LANDSCAPE ARCHITECT.
5. IF THERE ARE ANY QUESTIONS REGARDING THESE PLANS, THE CONTRACTOR SHALL REQUEST IN WRITING FROM THE LANDSCAPE ARCHITECT AND THE OWNER, AN INTERPRETATION BEFORE DOING ANY RELATED OR IMPACTED WORK.
6. THE CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE PROPERTY FROM ANY EROSION AND SILTATION THAT RESULT FROM CONTRACTOR OPERATIONS BY APPROPRIATE MEANS UNTIL SUCH TIME THAT THE PROJECT IS COMPLETED AND ACCEPTED FOR MAINTENANCE BY WHOMEVER IS TO BE ULTIMATELY RESPONSIBLE FOR MAINTENANCE.
7. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO STARTING WORK NEAR THEIR FACILITIES AND SHALL COORDINATE WORK WITH UTILITY COMPANY REPRESENTATIVES.
8. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED FROM A SEARCH OF READILY AVAILABLE RECORDS. NO REPRESENTATION IS MADE AS TO THE ACCURACY OR COMPLETENESS OF SAID UTILITY INFORMATION. THE CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN HEREON AND ANY OTHERS NOT OF RECORD OR NOT SHOWN ON THESE PLANS. ALL DAMAGES THERETO CAUSED BY THE CONTRACTOR SHALL BE REPAIRED TO THE APPROPRIATE SPECIFICATIONS AND STANDARDS AT THE SOLE EXPENSE OF THE CONTRACTOR.
9. THE LOCATION, ELEVATIONS, SIZE, TYPE AND CONDITION OF EXISTING IMPROVEMENTS ADJACENT TO THE PROPOSED WORK INDICATED ON THESE PLANS SHALL BE CONFIRMED BY THE CONTRACTOR BY FIELD MEASUREMENTS AND OBSERVATIONS PRIOR TO CONSTRUCTION OF NEW WORK. THE CONTRACTOR WILL IMMEDIATELY INFORM THE LANDSCAPE ARCHITECT IN WRITING IF ANY DISCREPANCIES OR CONFLICTING INFORMATION IS FOUND.
10. THE CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATIONS AND LOCATE EXISTING UNDERGROUND FACILITIES AS NEEDED, SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLANS IF REVISIONS ARE NECESSARY DUE TO THE ACTUAL LOCATION, SIZE, TYPE, OR CONDITION OF EXISTING FACILITIES DIFFERING FROM WHAT IS SHOWN ON THESE PLANS.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL OF ANY DAMAGE TO THE EXISTING IMPROVEMENTS AND REPLACEMENT TO THE SATISFACTION OF THE OWNER.
12. SHOULD CONFLICTING INFORMATION BE FOUND ON THE PLANS THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT IN WRITING IMMEDIATELY BEFORE PROCEEDING WITH THE WORK IN QUESTION.
13. ANYTHING MENTIONED IN THE SPECIFICATIONS, IF ANY, AND NOT SHOWN ON THE DRAWINGS, OR SHOWN ON THE DRAWINGS AND NOT MENTIONED IN THE SPECIFICATIONS, SHALL BE OF LIKE EFFECT AS IF SHOWN OR MENTIONED IN BOTH.

UTILITY COMPANIES	PHONE NUMBERS
BOX SPRINGS MUTUAL WATER COMPANY	(951) 653–6419
CHARTER SPECTRUM	(877) 906–9121
CROWN CASTLE	(855) 913–4237
EASTERN MUNICIPAL WATER DIST	(951) 928–3777
EDGEMONT COMMUNITY SERVICES DIST.	(951) 784–2632
FRONTIER COMMUNICATION	(800) 921–8101
SC EDISON COMPANY	(800) 655–4555
SC GAS COMPANY	(800) 427–2200
SUNESYS	(951) 278–0400
RIVERSIDE TRANSIT AGENCY	(951) 565–5164
UNDERGROUND SERVICE ALERT	(800) 422–4133
MORENO VALLEY UTILITY	(951) 413–3500
MORENO VALLEY SPECIAL DISTRICTS	(951) 413–3480
TRAFFIC SIGNAL MAINTENANCE (CITY)	(951) 413–3140
VERIZON WIRELESS	(800) 922–0204

No.	REVISIONS	DATE	BY

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951–543–9868
WWW.KIMLEY–HORN.COM

KHA PROJECT	
DATE	4/16/2021
SCALE	AS SHOWN
DESIGNED BY	LD
DRAWN BY	LD
CHECKED BY	CF

PILOT TRAVEL CENTER
MORENO VALLEY

LICENSED LANDSCAPE ARCHITECT — CHRISTOPHER J. FREY — No. 5613 — 11/19/2021 — STATE OF CALIFORNIA
NOT FOR CONSTRUCTION

TITLE SHEET

SHEET NUMBER
1

PARKING LOT TREE REQUIREMENTS

TREE SHADE	
SHADE REQUIRED AT 10 YEARS MATURITY =	50%
PARKING LOT AREA: 12,660 SF 50% OF PARKING AREA: 6,330 SF	
SHADE PROVIDED (6,427 SF) =	51%

STREET TREE REQUIREMENT

TREES SHALL BE SPACED AT 40' O.C. INTERVALS

LANDSCAPE NOTE:

THE SELECTION OF PLANT MATERIAL IS BASED ON CULTURAL, AESTHETIC, AND MAINTENANCE CONSIDERATIONS. ALL PLANTING AREAS SHALL BE PREPARED WITH APPROPRIATE SOIL AMENDMENTS, FERTILIZERS AND APPROPRIATE SUPPLEMENTS BASED UPON A SOILS REPORT FROM AN AGRICULTURAL SUITABILITY SOIL SAMPLE TAKEN FROM THE SITE. ¾" CRUSHED ROCK MULCH SHALL FILL IN BETWEEN SHRUBS TO SHIELD THE SOIL FROM THE SUN, EVAPOTRANSPIRATION, AND RUN-OFF. ALL SHRUB BEDS SHALL BE MULCHED TO A 2" DEPTH TO HELP CONSERVE WATER, LOWER SOIL TEMPERATURE, AND REDUCE WEED GROWTH. THE SHRUBS SHALL BE ALLOWED TO GROW IN THEIR NATURAL FORMS. ALL LANDSCAPE IMPROVEMENTS SHALL FOLLOW THE GUIDELINES SET FORTH BY THE CITY OF MORENO VALLEY MUNICIPAL CODE.

IRRIGATION NOTE:

AN AUTOMATIC IRRIGATION SYSTEM SHALL BE INSTALLED TO PROVIDE 100% COVERAGE FOR ALL PLANTING AREAS SHOWN ON THE PLAN. THE WATER SUPPLY FOR THIS SITE IS A POTABLE WATER CONNECTION AND A DEDICATED IRRIGATION METER WILL BE PROVIDED. LOW VOLUME EQUIPMENT SHALL PROVIDE SUFFICIENT WATER FOR PLANT GROWTH WITH NO WATER LOSS DUE TO WATER CONTROLLERS, AND OTHER NECESSARY IRRIGATION EQUIPMENT. ALL POINT SOURCE SYSTEM SHALL BE ADEQUATELY FILTERED AND REGULATED PER THE MANUFACTURER'S RECOMMENDED DESIGN PARAMETERS. ALL IRRIGATION IMPROVEMENTS SHALL FOLLOW THE GUIDELINES SET FORTH BY THE CITY OF MORENO VALLEY MUNICIPAL CODE.

PLANT SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	CONT	HEIGHT/SPREAD	CAL.	WUCOLS
	8	EBENOPSIS EBANO / TEXAS EBONY	24" BOX	10-12' HT. X 4-5' SPR.	1" CAL.	MODERATE
	11	PINUS ELDARICA / AFGHAN PINE	24" BOX	9'-11' HT. X 4'-5' SPR.	1" CAL.	MODERATE
	14	PISTACIA CHINENSIS / CHINESE PISTACHE	24" BOX	9'-11' HT. X 4'-5' SPR.	1" CAL.	MODERATE
	14	PROSOPIS CHILENSIS `THORNLESS` / THORNLESS CHILEAN MESQUITE	24" BOX	9'-11' HT. - 3'-4' SPR.	1" CAL.	LOW

SHRUBS	QTY	BOTANICAL / COMMON NAME	CONT.	SPACING	WUCOLS	SIZE
	42	AGAVE AMERICANA / CENTURY PLANT	5 GAL.	AS SHOWN	LOW	
	75	AGAVE X 'BLUE FLAME' / BLUE FLAME AGAVE	5 GAL.	AS SHOWN	LOW	
	8	ANIGOZANTHOS FLAVIDUS `BUSH GOLD` / KANGAROO PAW	5 GAL.	36" O.C.	LOW	
	56	BACCHARIS PILULARIS `PIGEON POINT` / PIGEON POINT COYOTE BRUSH	5 GAL.	48" O.C.	LOW	
	33	CALLISTEMON VIMINALIS `LITTLE JOHN` / DWARF WEEPING BOTTLEBRUSH	5 GAL.	48" O.C.	LOW	
	496	CHONDROPETALUM ELEPHANTINUM / LARGE CAPE RUSH	5 GAL.	60" O.C.	MODERATE	
	52	DIETES IRIDIOIDES / FORTNIGHT LILY	5 GAL.	36" O.C.	LOW	
	62	HESPERALOE PARVIFLORA / RED YUCCA	5 GAL.	48" O.C.	LOW	
	130	LANTANA X `NEW GOLD` / NEW GOLD LANTANA	5 GAL.	48" O.C.	LOW	
	253	LEUCOPHYLLUM FRUTESCENS `COMPACTA` / COMPACT TEXAS RANGER	5 GAL.	48" O.C.	LOW	
	296	MUHLENBERGIA CAPILLARIS / PINK MUHLY GRASS	5 GAL.	48" O.C.	MODERATE	
	787	MUHLENBERGIA RIGENS / DEER GRASS	5 GAL.	48" O.C.	MODERATE	
	63	MYRICA CALIFORNICA / PACIFIC WAX MYRTLE	5 GAL.	AS SHOWN	MODERATE	
	220	MYRTUS COMMUNIS / COMMON MYRTLE	5 GAL.	60" O.C.	LOW	
	87	OLEA EUROPAEA `LITTLE OLLIE` TM / LITTLE OLLIE OLIVE	5 GAL.	60" O.C.	LOW	
	28	RHAMNUS CALIFORNICA `LITTLE SUR` / LITTLE SUR COFFEEBERRY	5 GAL.	60" O.C.	LOW	
	122	SALVIA LEUCANTHA / MEXICAN BUSH SAGE	5 GAL.	60" O.C.	LOW	
	112	WESTRINGIA FRUTICOSA `MORNING LIGHT` / MORNING LIGHT COAST ROSEMARY	5 GAL.	48" O.C.	LOW	

INERT MATERIAL	QTY	BOTANICAL / COMMON NAME	CONT.	SPACING	WUCOLS	SIZE
	11	ROCK BOULDERS / 4' DIAMETER 4'X4'X4' `PALE SUNSET BOULDER` BY SOUTHWEST BOULDER AND STONE OR APPROVED EQUAL.	ROCK	AS SHOWN	-	-
	20	ROCK BOULDERS / 3' DIAMETER 3'X3'X3' `PALE SUNSET BOULDER` BY SOUTHWEST BOULDER AND STONE OR APPROVED EQUAL.	ROCK	AS SHOWN	-	-

GROUND COVERS	QTY	BOTANICAL / COMMON NAME	CONT.	SPACING	WUCOLS
	98	ACACIA REDOLENS `LOW BOY` / LOW BOY BANK CATCLAW	5 GAL.	96" O,C,	LOW
	770	ARTEMISIA CALIFORNICA `CANYON GREY` / CANYON GREY CALIFORNIA SAGEBRUSH	5 GAL.	60" O.C.	VERY LOW
	87	BACCHARIS PILULARIS `PIGEON POINT` / COYOTE BRUSH	5 GAL.	72" O.C.	LOW
	513	MYOPORUM PARVIFOLIUM / TRAILING MYOPORUM	5 GAL.	72" O.C.	LOW
	867	ROSMARINUS OFFICINALIS `IRENE` TM / IRENE TRAILING ROSEMARY	5 GAL.	72" O.C.	LOW

INERTS	QTY	BOTANICAL / COMMON NAME	CONT.	SPACING	WUCOLS
	7,456 SF	ROCK / ARIZONA RIVER ROCK ARIZONA RIVER ROCK TO MATCH ADJECENT PROPERTY. 3" - 5" DIAMETER, 5" DEPTH	ROCK	-	-

No.	REVISIONS	DATE	BY

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951-543-9868
WWW.KIMLEY-HORN.COM

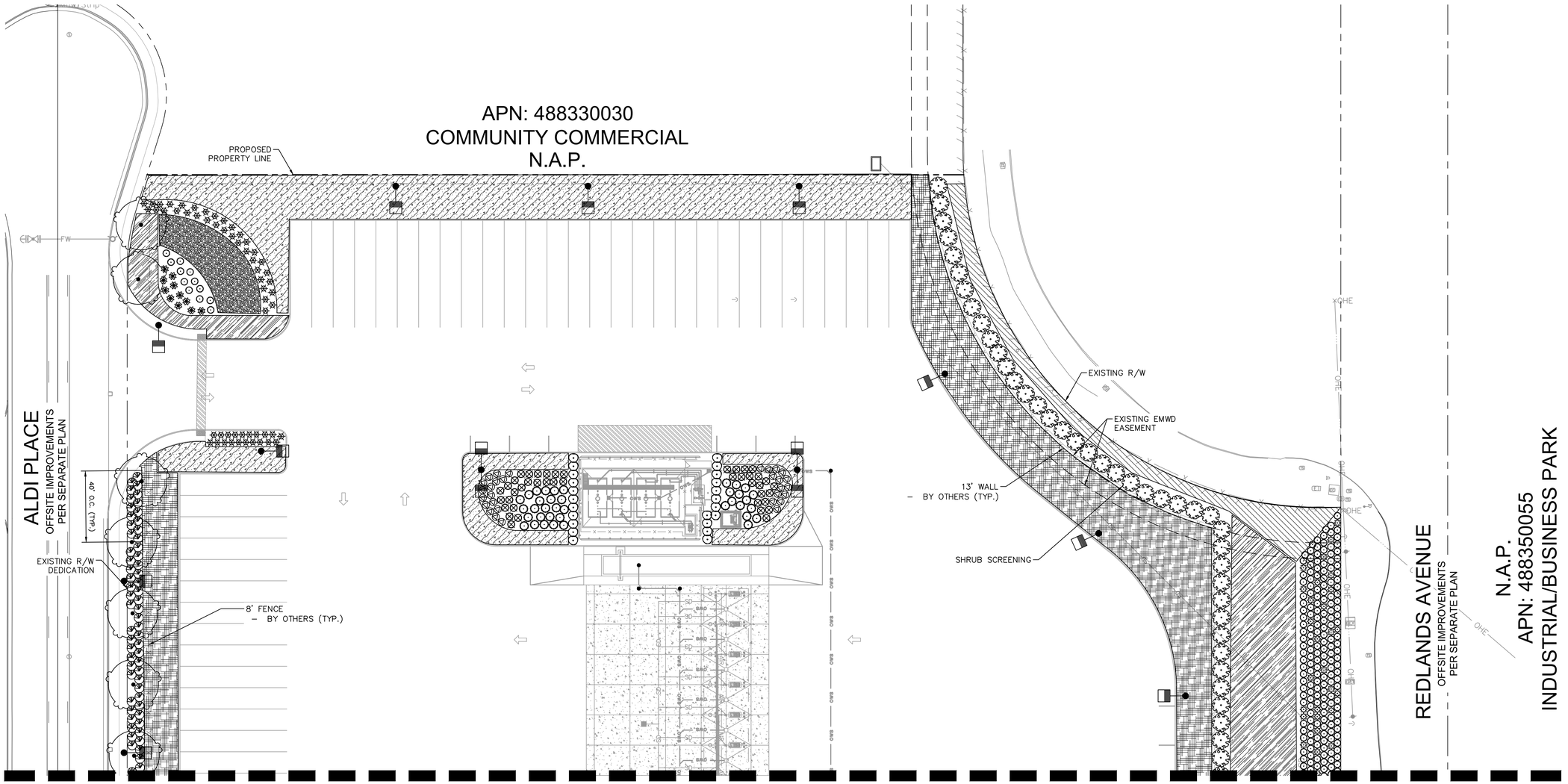
KHA PROJECT	
DATE	4/16/2021
SCALE	AS SHOWN
DESIGNED BY	LD
DRAWN BY	LD
CHECKED BY	CF

PILOT TRAVEL CENTER
MORENO VALLEY

NOT FOR CONSTRUCTION

PLANTING NOTES

SHEET NUMBER 2



MATCHLINE - SEE SHEET 4

PARKING LOT TREE REQUIREMENTS

TREE SHADE	
SHADE REQUIRED AT 10 YEARS MATURITY =	50%
PARKING LOT AREA: 12,660 SF 50% OF PARKING AREA: 6,330 SF	
SHADE PROVIDED (6,427 SF) =	51%

STREET TREE REQUIREMENT

TREES SHALL BE SPACED AT 40' O.C. INTERVALS

NOTE: SEE SHEET 2 FOR PLANT SCHEDULE

NORTH

GRAPHIC SCALE IN FEET
0 15 30 60
1"=30'
WHEN PRINTED AT FULL SIZE
(24" BY 36")

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2021 KIMLEY–HORN AND ASSOCIATES, INC.
3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951–543–9868
WWW.KIMLEY–HORN.COM

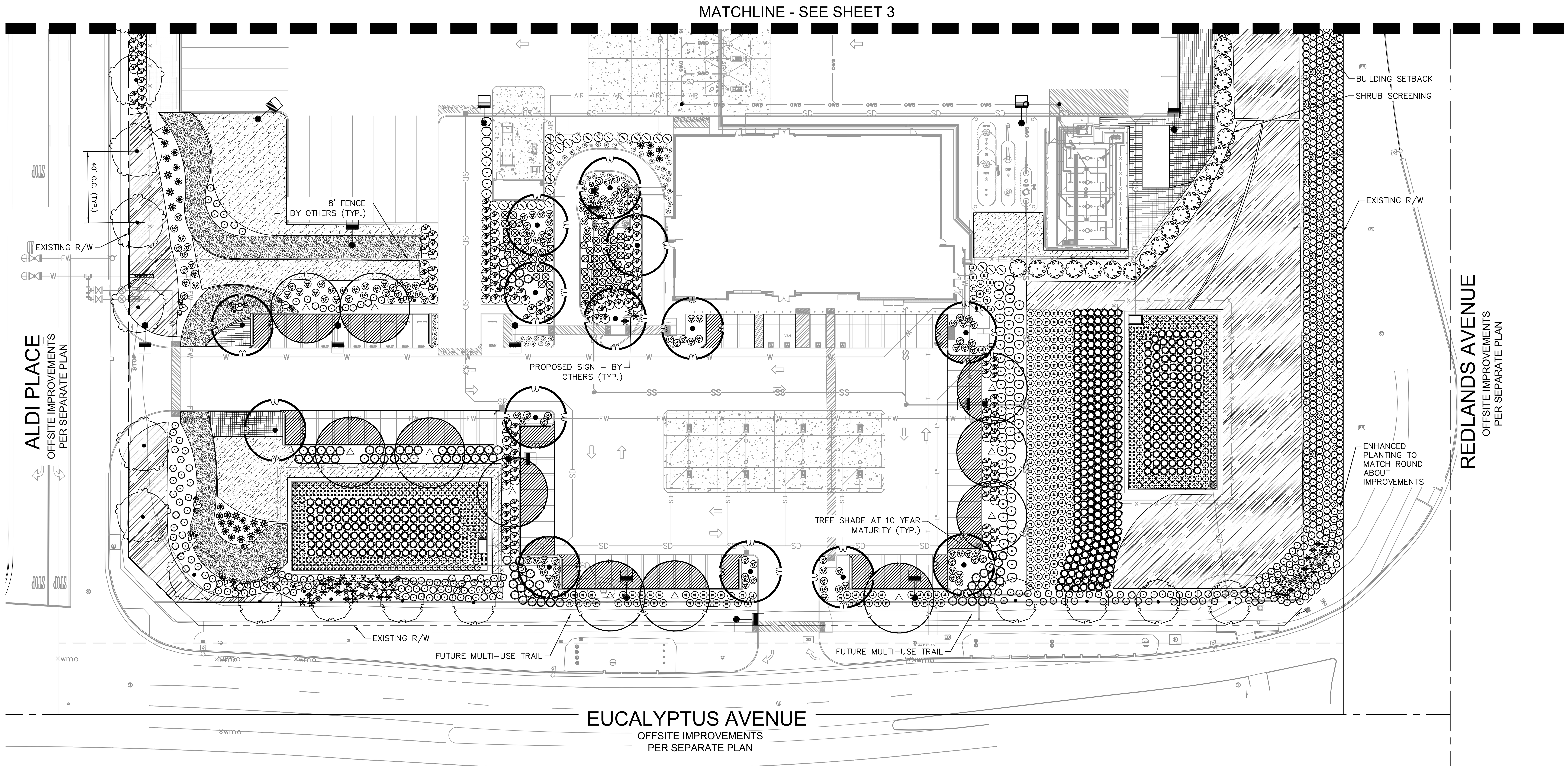
KHA PROJECT	
DATE	4/16/2021
SCALE	AS SHOWN
DESIGNED BY	LD
DRAWN BY	LD
CHECKED BY	CF

NOT FOR CONSTRUCTION
11/5/2021
11/19/2021

PILOT TRAVEL CENTER
MORENO VALLEY

PRELIMINARY LANDSCAPE PLAN

SHEET NUMBER
3



PARKING LOT TREE REQUIREMENTS

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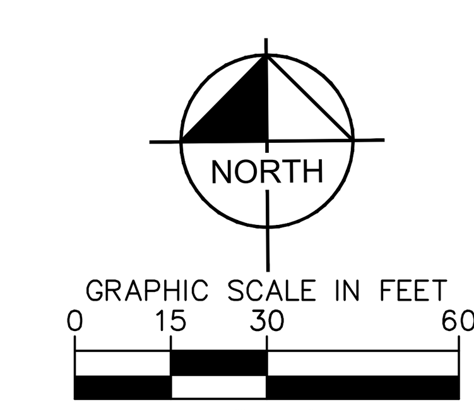
NOTE: SEE SHEET 2 FOR PLANT SCHEDULE



1"=30'
WHEN PRINTED AT FULL SIZE
(24" BY 36")

No.	REVISIONS	DATE	BY

Kimley»Horn

3880 LEMON STREET SUITE 420, RIVERSIDE, CA 92501
PHONE: 951-543-9868
WWW.KIMLEY-HORN.COM

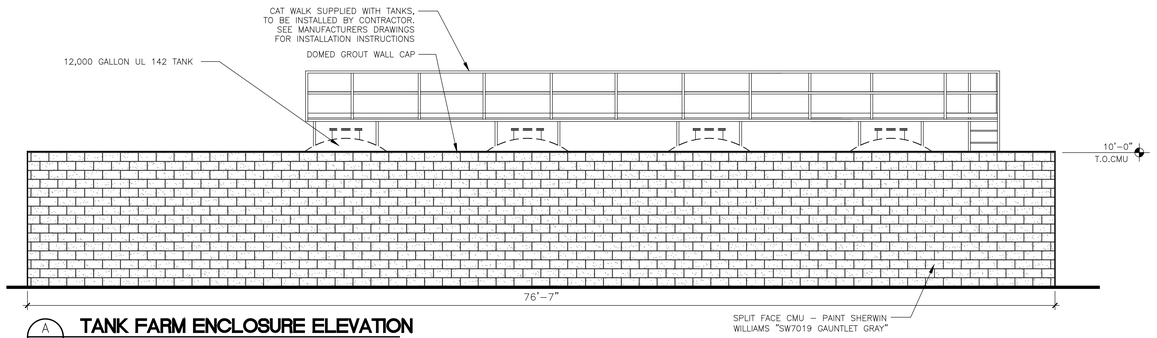
KHA PROJECT	
DATE	4/16/2021
SCALE	AS SHOWN
DESIGNED BY	LD
DRAWN BY	LD
CHECKED BY	CF

PILOT TRAVEL CENTER
MORENO VALLEY

NOT FOR CONSTRUCTION

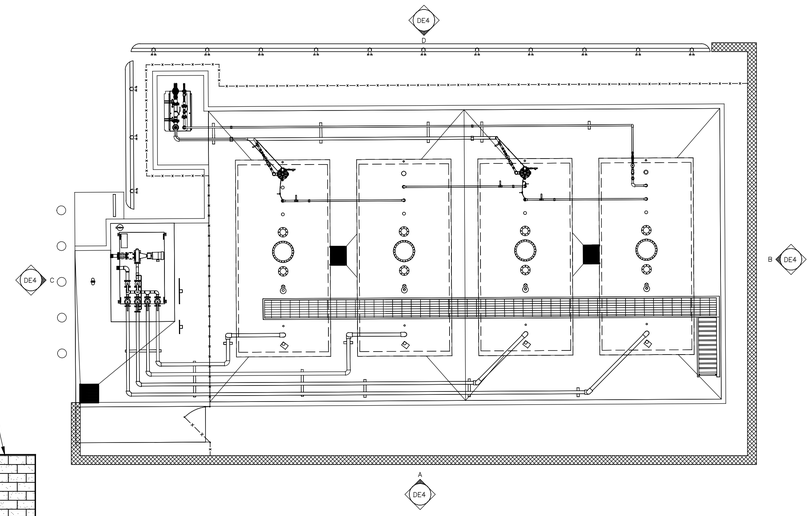
PRELIMINARY LANDSCAPE PLAN

SHEET NUMBER
4



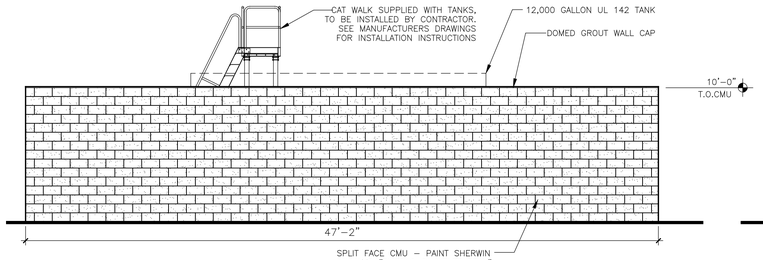
A DE4 TANK FARM ENCLOSURE ELEVATION

SCALE: 3/16" = 1'-0"



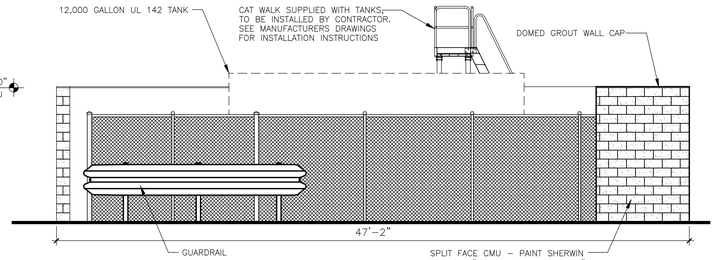
1 DE4 TANK FARM #1 PLAN

SCALE: 1/8" = 1'-0"



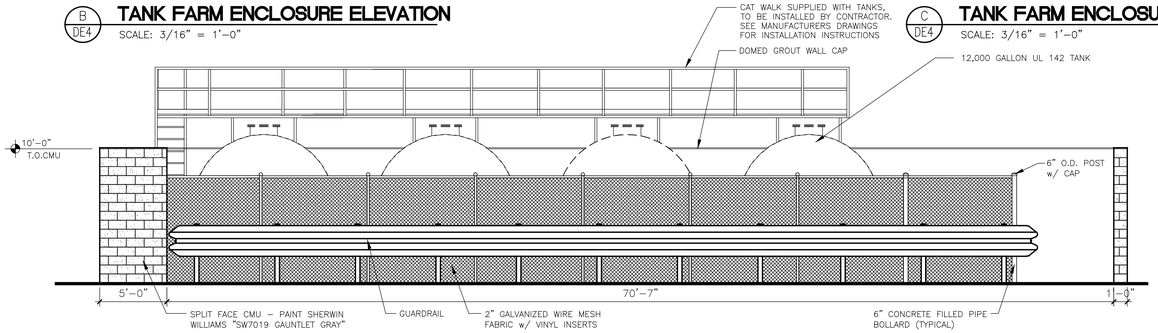
B DE4 TANK FARM ENCLOSURE ELEVATION

SCALE: 3/16" = 1'-0"



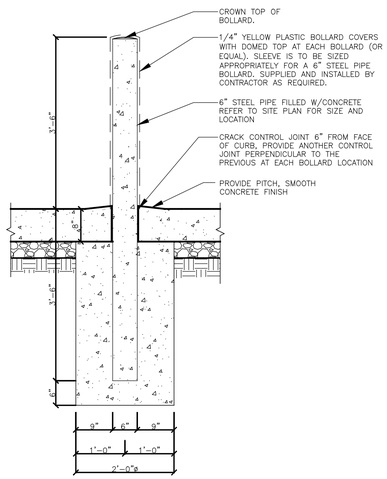
C DE4 TANK FARM ENCLOSURE ELEVATION

SCALE: 3/16" = 1'-0"



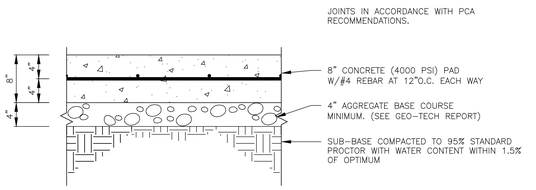
D DE4 TANK FARM ENCLOSURE ELEVATION

SCALE: 3/16" = 1'-0"



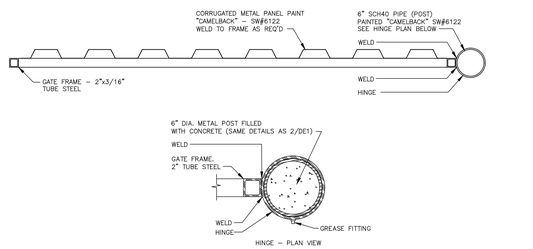
2 DE4 BOLLARD DETAIL

SCALE: N.T.S.



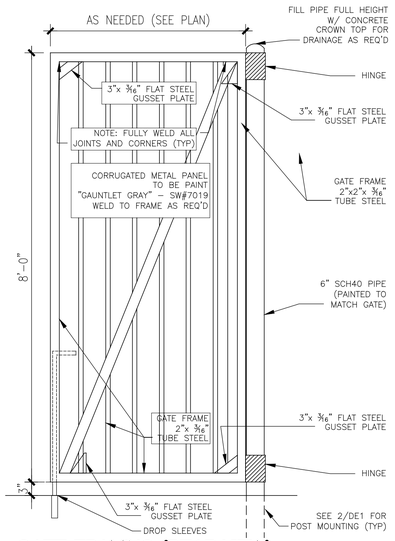
3 DE4 TANK FARM ENCLOSURE CONCRETE PAD SECTION

SCALE: 1" = 1'-0"



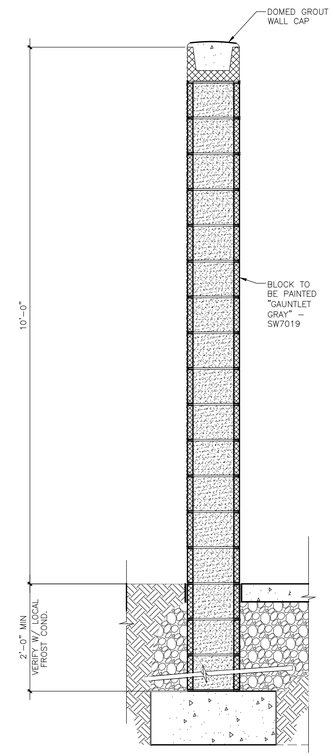
4 DE4 HEAVY DUTY GATE / HINGE DETAIL

SCALE: N.T.S.



5 DE4 GATE FRAMING (REAR VIEW)

SCALE: N.T.S.



6 DE4 WALL SECTION

3/4" = 1'-0"

LICENSED ARCHITECT ROY S. PARSONS III No. C-30843 REN. 11/30/21 STATE OF CALIFORNIA

09/17/21

PILOT COMPANY
DESIGN DEPARTMENT
5508 LONAS ROAD
KNOXVILLE, TENNESSEE 37909
(865) 583-7488

TANK FARM #1 PLAN, EXTERIOR ELEVATIONS, & DETAILS

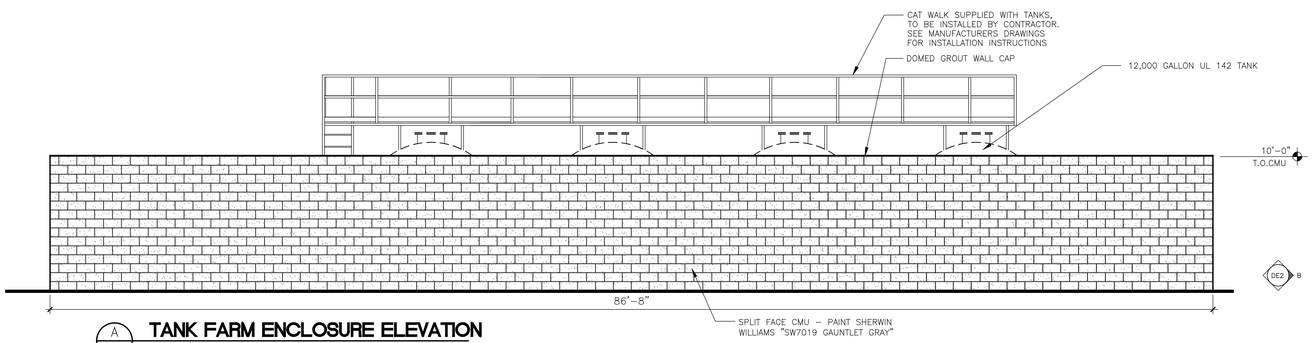
PILOT TRAVEL CENTER

NWC EUCALYPTUS AVE & REDLANDS BLVD
MORENO VALLEY, CA 92555

DATE:	REV:	REVISION DESCRIPTION:	INT.:
DATE: 05/07/21	DRAWN BY: MMB	PROJECT: 1316-01	

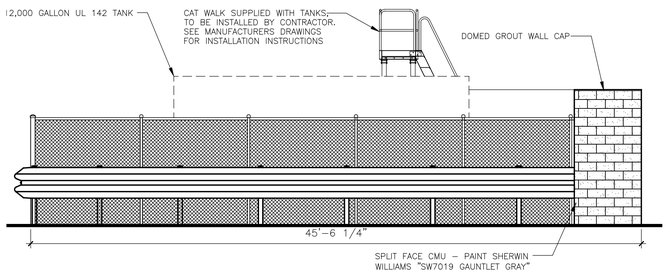
SHEET:

DE4



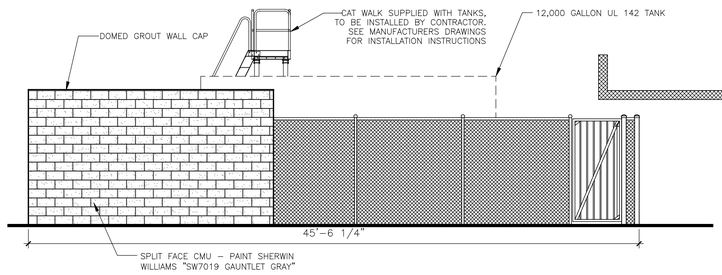
A DE5 TANK FARM ENCLOSURE ELEVATION

SCALE: 3/16" = 1'-0"



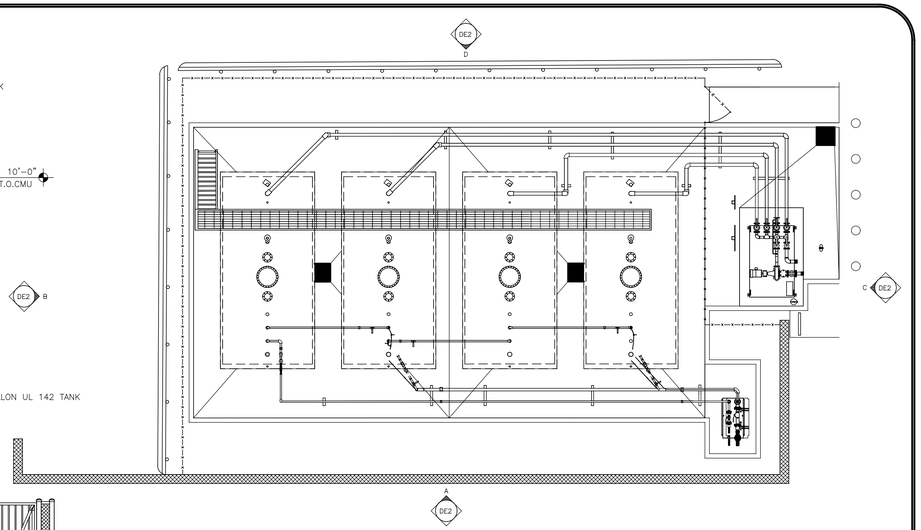
B DE5 TANK FARM ENCLOSURE ELEVATION

SCALE: 3/16" = 1'-0"



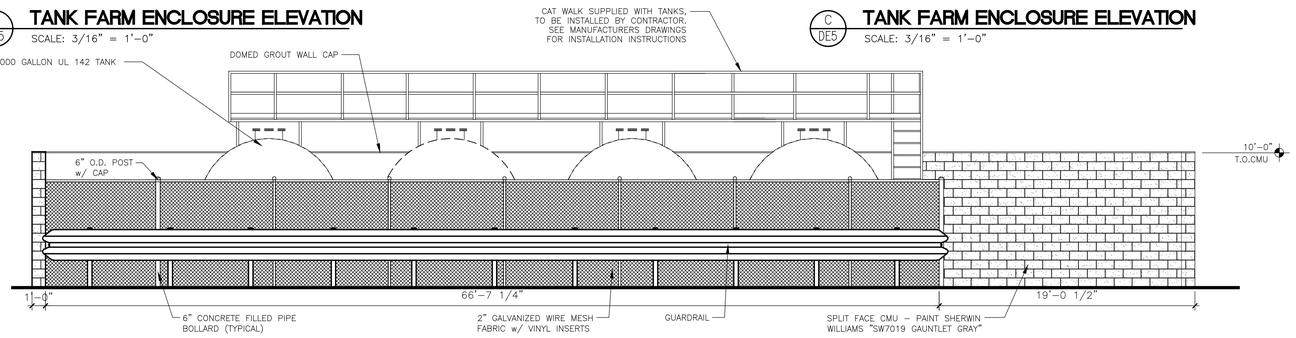
C DE5 TANK FARM ENCLOSURE ELEVATION

SCALE: 3/16" = 1'-0"



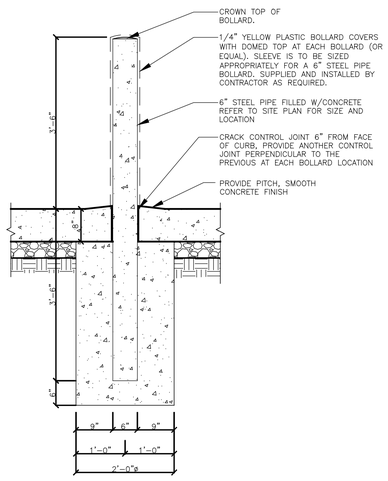
1 DE5 TANK FARM #2 PLAN

SCALE: 1/8" = 1'-0"



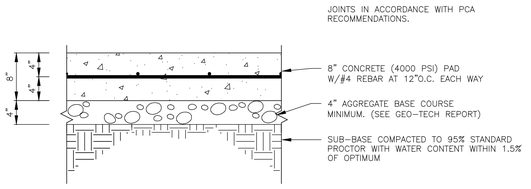
D DE5 TANK FARM ENCLOSURE ELEVATION

SCALE: 3/16" = 1'-0"



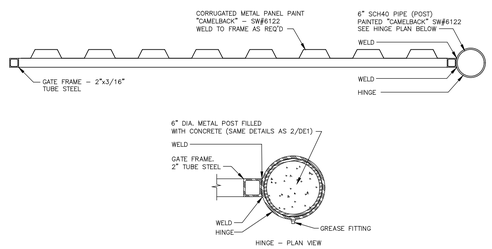
2 DE5 BOLLARD DETAIL

SCALE: N.T.S.



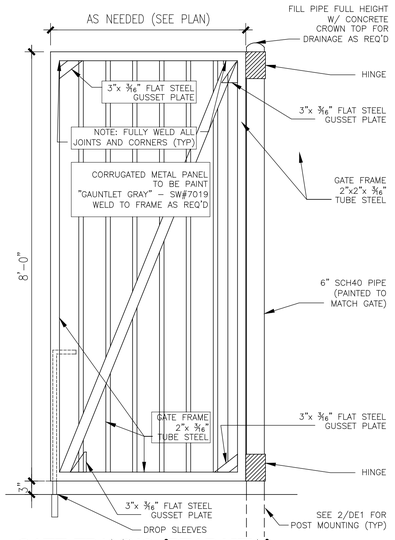
3 DE5 TANK FARM ENCLOSURE CONCRETE PAD SECTION

SCALE: 1" = 1'-0"



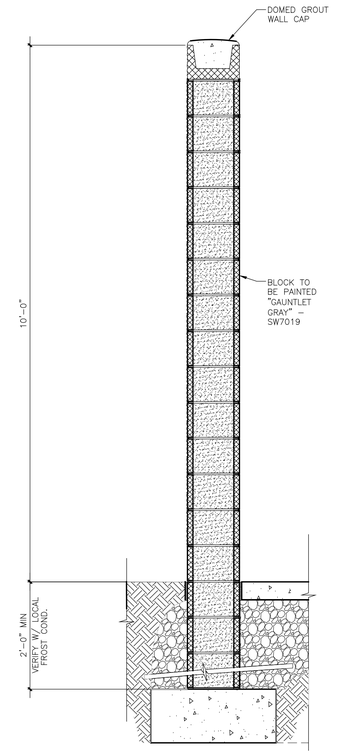
4 DE5 HEAVY DUTY GATE / HINGE DETAIL

SCALE: N.T.S.



5 DE5 GATE FRAMING (REAR VIEW)

SCALE: N.T.S.



6 DE5 WALL SECTION

3/4" = 1'-0"

LICENSED ARCHITECT
ROY S. PARSONS III
No. C-30643
REN. 11/30/21
STATE OF CALIFORNIA
09/17/21

PILOT COMPANY
DESIGN DEPARTMENT
5508 LONAS ROAD
KNOXVILLE, TENNESSEE 37909
(865) 583-7488

TANK FARM #2
PLAN, EXTERIOR ELEVATIONS, & DETAILS

PILOT TRAVEL CENTER

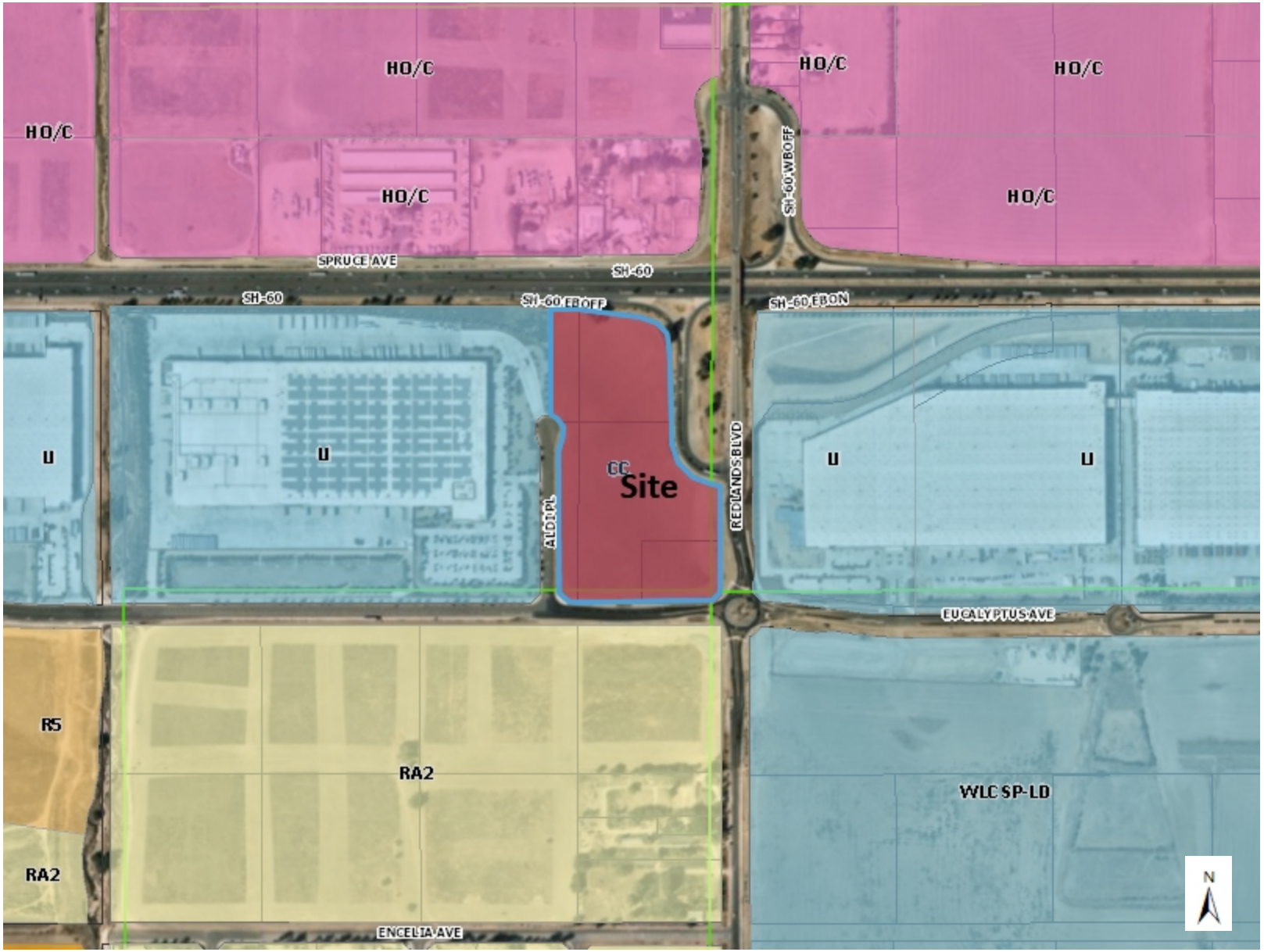
NWC EUCALYPTUS AVE & REDLANDS BLVD
MORENO VALLEY, CA 92555

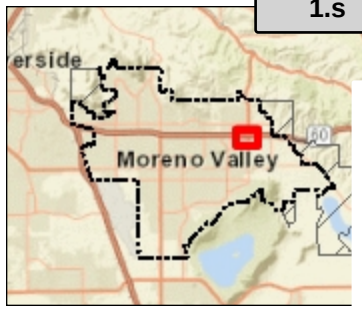
DATE:	REV:	REVISION DESCRIPTION:	INT.:
DATE: 05/07/21	DRAWN BY: MMB	PROJECT: 1316-01	

SHEET:

DE5

Community Commercial (CC) District





Legend

Zoning

- Commercial
- Center Mixed Use
- Downtown Center
- Corridor Mixed Use
- Industrial/Business Park
- Public Facilities
- Highway Office/Commercial
- Office
- Business Flex
- Large Lot Residential
- Residential Agriculture 2 DU/AC
- Residential 2 DU/AC
- Suburban Residential
- Multi-family
- Open Space/Park

Master Plan of Trails

- Bridge
- Improved
- Multiuse
- Proposed
- Regional
- State

Road Labels

Parcels

Image Source: Nearmap

Notes:

PEN21-0077 - Conditional Use Permit

1,261.9 0 630.96 1,261.9 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere

Print Date: 1/5/2022

DISCLAIMER: The information shown on this map was compiled from the City of Moreno Valley GIS and Riverside County GIS. The land base and facility information on this map is for display purposes only and should not be relied upon without independent verification as to its accuracy. Riverside County and City of Moreno Valley will not be held responsible for any claims, losses or damages resulting from the use of this map.

Kimley»Horn

TECHNICAL MEMORANDUM

To: Wei Sun, T.E. P.T.O.E.
City Traffic Engineer
City of Moreno Valley

From: Trevor Briggs, P.E.
Kimley-Horn and Associates, Inc.

Date: December 29, 2021

Subject: *Response to City Review Comments (dated October 15, 2021) to the Transportation Impact Analysis (dated September 2021) for the Proposed Moreno Valley Travel Center Project*

Kimley-Horn and Associates, Inc. has prepared responses to the City Review Comments (dated October 15, 2021) to the Transportation Impact Analysis (dated September 2021) for the proposed Moreno Valley Travel Center Project, for the City's review. Kimley-Horn's responses are provided in the attached matrix.

Please let me know if you have any questions or comments.

Proposed Moreno Valley Travel Center Traffic Impact Analysis Report Review Comments and Responses	
Comment	Response
CITY OF MORENO VALLEY	
Page 4 | a. On Page 4 the report lists the Opening Year analysis scenario as "Existing Plus Ambient Growth". However, per the City's TIA guidelines the opening year without project scenario is to contain the existing traffic volumes plus a background growth rate (ambient growth) PLUS approved projects (cumulative projects) and approved roadway modifications. No cumulative projects were included in the analysis present in the report. A list of approved cumulative projects needs to be obtained from the city and included in the opening year analysis. The "With Project" analysis scenario will then be built upon that base condition.	a. Per the City of Moreno Valley Transportation Engineering Division *Transportation Impact Analysis Preparation Guide for Vehicle Miles Traveled and Level of Service Assessment* (June 2020), the Project Completion (Opening Year) analysis scenario (page 9, under "Analysis Scenarios") is described as follows: "*Traffic conditions prior to the time that the proposed development is completed will be estimated by increasing the existing traffic counts by an appropriate growth rate to be provided by the Transportation Engineering Division, projected to the year that the project is estimated to be complete (minimum of two years). Traffic generated by the proposed project will then be added, and the impacts on the circulation system will be analyzed. This will be the basis for determining project-specific (direct) impacts, mitigation, and conditions of approval. It is essential that without and with project traffic conditions evaluated under this scenario are provided.*" Consistent with the City's guidelines and the Approved Scoping Agreement for the Traffic Study (Appendix A), an ambient growth rate of 2% per year was applied to existing volumes to evaluate the project-related effects under Project Completion/Opening Year conditions (without and with project) in the Traffic Study.

Proposed Moreno Valley Travel Center Traffic Impact Analysis Report Review Comments and Responses	
Comment	Response
Appendix C | a. The intersection of Eucalyptus Avenue and Redlands Boulevard is a roundabout. While results of the capacity analysis is listed in the report for that intersection, no capacity analyses worksheets are provided for review in the Appendix.	a. Traffic Analysis worksheets for the intersection of Eucalyptus Avenue and Redlands Boulevard are provided as an attachment to this Response to Comment matrix. As noted in the comment, the results of the capacity analysis for the intersection were already summarized in the Traffic Study.
Page 27 | a. On Page 27 the report provides a summary of the queuing analysis for the Aldi Drive and Eucalyptus Avenue intersection. Due to the very high volume of southbound left turns that are projected to be generated by the project, the preparer needs to confirm with the City Traffic Engineer if there would be any plan to provide alternative traffic control to the existing one-way stop sign control. Because the project's south driveway is close to the intersection and that is the only location for site traffic to return back to Redlands Boulevard it is important the queuing and intersection operations do not result in a queue that would obstruct the south driveway exiting left turns.	a. As noted on Page 27 of the Traffic Study ("Site Access Analysis"), under Opening Year 2022 Plus Project conditions, the southbound approach at the intersection of Aldi Place at Eucalyptus Avenue would have a 95th percentile left-turn queue of 112 feet and 64 feet in the AM and PM peak hours, respectively. The distance between the stop bar at the intersection and the center of the southern driveway would be approximately 128 feet, which can accommodate the left-turn queue lengths. In addition, under Opening Year 2022 Plus Project conditions, the intersection of Aldi Place at Eucalyptus Avenue would operate at an acceptable Level of Service (LOS C or better) during the AM and PM peak hours. Based on the traffic analysis, no alternative traffic control is recommended.

Proposed Moreno Valley Travel Center Traffic Impact Analysis Report Review Comments and Responses	
Comment	Response
Page 29 | a. In the last full sentence on Page 29, the line states "…presumed to result in a not a significant impact under CEQA pursuant to SB 743." Change the sentence to read "…presumed to result in a less than significant impact under CEQA pursuant to SB 743."	a. Acknowledged. The requested language does not change the analysis or conclusions of the Traffic Study prepared for the CEQA document.
Page 29 | a. In the last section on Page 29, the report lists screening criteria for VMT analyses. However, the criteria listed are not from the City of Moreno Valley and are identified as for the County of San Bernardino. The correct information needs to be provided.	a. Acknowledged. However, the screening criteria (local-serving gas station) noted in the Traffic Study, in which the proposed project would be screened out of a VMT analysis and be presumed to have a less-than-significant VMT impact, is consistent with the City of Moreno Valley VMT guidelines and the Approved Scoping Agreement for the Traffic Study (Appendix A). The requested language does not change the analysis or conclusions of the Traffic Study prepared for the CEQA document.
Page 30 | a. In the paragraph on Page 30. Change the text to read as follows: "The project, as proposed, will be a local-serving gas station and retail development of less than 50,000 square-feet with most of the truck stop-related trips expected to be diverted traffic from adjacent SR-60. Based on the City's VMT guidelines, the project would be expected to have a less than significant project-specific and cumulative impact based VMT. A VMT Analysis Memo has been provided in Appendix E."	a. Acknowledged. The requested language does not change the analysis or conclusions of the Traffic Study prepared for the CEQA document.

ATTACHMENT

TRAFFIC ANALYSIS WORKSHEETS
REDLANDS BOULEVARD AT EUCALYPTUS AVENUE

INTERSECTION SUMMARY

Site: 101 [Int 1_Ex_AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	34.8	mph	34.8	mph
Travel Distance (Total)	551.4	veh-mi/h	661.7	pers-mi/h
Travel Time (Total)	15.8	veh-h/h	19.0	pers-h/h
Desired Speed (Program)	40.0	mph		
Speed Efficiency	0.87			
Travel Time Index	8.56			
Congestion Coefficient	1.15			
Demand Flows (Total)	874	veh/h	1049	pers/h
Percent Heavy Vehicles (Demand)	3.0	%		
Degree of Saturation	0.388			
Practical Spare Capacity	118.9	%		
Effective Intersection Capacity	2250	veh/h		
Control Delay (Total)	1.32	veh-h/h	1.59	pers-h/h
Control Delay (Average)	5.4	sec	5.4	sec
Control Delay (Worst Lane)	6.4	sec		
Control Delay (Worst Movement)	6.4	sec	6.4	sec
Geometric Delay (Average)	0.0	sec		
Stop-Line Delay (Average)	5.4	sec		
Idling Time (Average)	4.7	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	2.5	veh		
95% Back of Queue - Distance (Worst Lane)	64.2	ft		
Ave. Queue Storage Ratio (Worst Lane)	0.02			
Total Effective Stops	31	veh/h	37	pers/h
Effective Stop Rate	0.04		0.04	
Proportion Queued	0.12		0.12	
Performance Index	23.2		23.2	
Cost (Total)	331.09	$/h	331.09	$/h
Fuel Consumption (Total)	21.1	gal/h		
Carbon Dioxide (Total)	188.8	kg/h		
Hydrocarbons (Total)	0.016	kg/h		
Carbon Monoxide (Total)	0.235	kg/h		
NOx (Total)	0.285	kg/h		

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Site Model Variability Index (Iterations 3 to N): 0.0 %
Number of Iterations: 3 (Maximum: 10)
Largest change in Lane Degrees of Saturation for the last three Flow-Capacity Iterations: 100.0% 91.6% 0.0%

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	419,478	veh/y	503,374	pers/y
Delay	635	veh-h/y	761	pers-h/y
Effective Stops	14,750	veh/y	17,700	pers/y
Travel Distance	264,674	veh-mi/y	317,609	pers-mi/y
Travel Time	7,604	veh-h/y	9,125	pers-h/y

Cost	158,925	$/y	158,925	$/y
Fuel Consumption	10,110	gal/y		
Carbon Dioxide	90,642	kg/y		
Hydrocarbons	8	kg/y		
Carbon Monoxide	113	kg/y		
NOx	137	kg/y		

Organisation: KIMLEY-HORN & ASSOCIATES INC | Licence: NETWORK / Enterprise | Processed: Friday, August 27, 2021 8:31:34 AM
Project: K:\SND_TPTO\095426008_Moreno_Valley_Pilot_TC\Traffic\7 Submittals\1st Submittal\1 Analysis\Sidra\Moval Pilot_Roundabout.sip9

INTERSECTION SUMMARY

Site: 101 [Int 1_Ex_PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	34.4	mph	34.4	mph
Travel Distance (Total)	706.9	veh-mi/h	848.3	pers-mi/h
Travel Time (Total)	20.5	veh-h/h	24.6	pers-h/h
Desired Speed (Program)	40.0	mph		
Speed Efficiency	0.86			
Travel Time Index	8.45			
Congestion Coefficient	1.16			
Demand Flows (Total)	1120	veh/h	1343	pers/h
Percent Heavy Vehicles (Demand)	3.0	%		
Degree of Saturation	0.396			
Practical Spare Capacity	114.5	%		
Effective Intersection Capacity	2825	veh/h		
Control Delay (Total)	1.90	veh-h/h	2.29	pers-h/h
Control Delay (Average)	6.1	sec	6.1	sec
Control Delay (Worst Lane)	6.4	sec		
Control Delay (Worst Movement)	6.4	sec	6.4	sec
Geometric Delay (Average)	0.0	sec		
Stop-Line Delay (Average)	6.1	sec		
Idling Time (Average)	5.1	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	2.4	veh		
95% Back of Queue - Distance (Worst Lane)	61.0	ft		
Ave. Queue Storage Ratio (Worst Lane)	0.02			
Total Effective Stops	86	veh/h	103	pers/h
Effective Stop Rate	0.08		0.08	
Proportion Queued	0.18		0.18	
Performance Index	30.2		30.2	
Cost (Total)	429.06	$/h	429.06	$/h
Fuel Consumption (Total)	27.3	gal/h		
Carbon Dioxide (Total)	244.6	kg/h		
Hydrocarbons (Total)	0.021	kg/h		
Carbon Monoxide (Total)	0.304	kg/h		
NOx (Total)	0.370	kg/h		

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Site Model Variability Index (Iterations 3 to N): 0.0 %
Number of Iterations: 3 (Maximum: 10)
Largest change in Lane Degrees of Saturation for the last three Flow-Capacity Iterations: 100.0% 92.4% 0.0%

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	537,391	veh/y	644,870	pers/y
Delay	914	veh-h/y	1,097	pers-h/y
Effective Stops	41,185	veh/y	49,422	pers/y
Travel Distance	339,318	veh-mi/y	407,182	pers-mi/y
Travel Time	9,857	veh-h/y	11,828	pers-h/y

Cost	205,949	$/y	205,949	$/y
Fuel Consumption	13,094	gal/y		
Carbon Dioxide	117,397	kg/y		
Hydrocarbons	10	kg/y		
Carbon Monoxide	146	kg/y		
NOx	178	kg/y		

Organisation: KIMLEY-HORN & ASSOCIATES INC | Licence: NETWORK / Enterprise | Processed: Friday, August 27, 2021 8:31:36 AM
Project: K:\SND_TPTO\095426008_Moreno_Valley_Pilot_TC\Traffic\7 Submittals\1st Submittal\1 Analysis\Sidra\Moval Pilot_Roundabout.sip9

INTERSECTION SUMMARY

Site: 101 [Int 1_OY_AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	34.8	mph	34.8	mph
Travel Distance (Total)	561.7	veh-mi/h	674.0	pers-mi/h
Travel Time (Total)	16.2	veh-h/h	19.4	pers-h/h
Desired Speed (Program)	40.0	mph		
Speed Efficiency	0.87			
Travel Time Index	8.55			
Congestion Coefficient	1.15			
Demand Flows (Total)	890	veh/h	1068	pers/h
Percent Heavy Vehicles (Demand)	3.0	%		
Degree of Saturation	0.396			
Practical Spare Capacity	114.8	%		
Effective Intersection Capacity	2249	veh/h		
Control Delay (Total)	1.36	veh-h/h	1.64	pers-h/h
Control Delay (Average)	5.5	sec	5.5	sec
Control Delay (Worst Lane)	6.5	sec		
Control Delay (Worst Movement)	6.5	sec	6.5	sec
Geometric Delay (Average)	0.0	sec		
Stop-Line Delay (Average)	5.5	sec		
Idling Time (Average)	4.8	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	2.6	veh		
95% Back of Queue - Distance (Worst Lane)	66.1	ft		
Ave. Queue Storage Ratio (Worst Lane)	0.02			
Total Effective Stops	32	veh/h	38	pers/h
Effective Stop Rate	0.04		0.04	
Proportion Queued	0.12		0.12	
Performance Index	23.8		23.8	
Cost (Total)	337.51	$/h	337.51	$/h
Fuel Consumption (Total)	21.5	gal/h		
Carbon Dioxide (Total)	192.4	kg/h		
Hydrocarbons (Total)	0.016	kg/h		
Carbon Monoxide (Total)	0.240	kg/h		
NOx (Total)	0.291	kg/h		

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Site Model Variability Index (Iterations 3 to N): 0.0 %
Number of Iterations: 3 (Maximum: 10)
Largest change in Lane Degrees of Saturation for the last three Flow-Capacity Iterations: 100.0% 91.6% 0.0%

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	427,304	veh/y	512,765	pers/y
Delay	654	veh-h/y	785	pers-h/y
Effective Stops	15,163	veh/y	18,196	pers/y
Travel Distance	269,608	veh-mi/y	323,530	pers-mi/y
Travel Time	7,753	veh-h/y	9,304	pers-h/y

Cost	162,007	$/y	162,007 $/y
Fuel Consumption	10,301	gal/y	
Carbon Dioxide	92,357	kg/y	
Hydrocarbons	8	kg/y	
Carbon Monoxide	115	kg/y	
NOx	140	kg/y	

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Project: K:\SND_TPTO\095426008_Moreno_Valley_Pilot_TC\Traffic\7 Submittals\1st Submittal\1 Analysis\Sidra\Moval Pilot_Roundabout.sip9

INTERSECTION SUMMARY

Site: 101 [Int 1_OY_PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	34.4	mph	34.4	mph
Travel Distance (Total)	720.6	veh-mi/h	864.8	pers-mi/h
Travel Time (Total)	21.0	veh-h/h	25.2	pers-h/h
Desired Speed (Program)	40.0	mph		
Speed Efficiency	0.86			
Travel Time Index	8.44			
Congestion Coefficient	1.16			
Demand Flows (Total)	1141	veh/h	1370	pers/h
Percent Heavy Vehicles (Demand)	3.0	%		
Degree of Saturation	0.404			
Practical Spare Capacity	110.2	%		
Effective Intersection Capacity	2823	veh/h		
Control Delay (Total)	1.97	veh-h/h	2.36	pers-h/h
Control Delay (Average)	6.2	sec	6.2	sec
Control Delay (Worst Lane)	6.5	sec		
Control Delay (Worst Movement)	6.5	sec	6.5	sec
Geometric Delay (Average)	0.0	sec		
Stop-Line Delay (Average)	6.2	sec		
Idling Time (Average)	5.2	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	2.5	veh		
95% Back of Queue - Distance (Worst Lane)	63.0	ft		
Ave. Queue Storage Ratio (Worst Lane)	0.02			
Total Effective Stops	90	veh/h	108	pers/h
Effective Stop Rate	0.08		0.08	
Proportion Queued	0.18		0.18	
Performance Index	31.0		31.0	
Cost (Total)	437.89	$/h	437.89	$/h
Fuel Consumption (Total)	27.8	gal/h		
Carbon Dioxide (Total)	249.5	kg/h		
Hydrocarbons (Total)	0.021	kg/h		
Carbon Monoxide (Total)	0.310	kg/h		
NOx (Total)	0.378	kg/h		

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Site Model Variability Index (Iterations 3 to N): 0.0 %
Number of Iterations: 3 (Maximum: 10)
Largest change in Lane Degrees of Saturation for the last three Flow-Capacity Iterations: 100.0% 92.5% 0.0%

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	547,826	veh/y	657,391	pers/y
Delay	946	veh-h/y	1,135	pers-h/y
Effective Stops	43,004	veh/y	51,605	pers/y
Travel Distance	345,909	veh-mi/y	415,091	pers-mi/y
Travel Time	10,062	veh-h/y	12,074	pers-h/y

Cost	210,188	$/y	210,188	$/y
Fuel Consumption	13,358	gal/y		
Carbon Dioxide	119,759	kg/y		
Hydrocarbons	10	kg/y		
Carbon Monoxide	149	kg/y		
NOx	181	kg/y		

INTERSECTION SUMMARY

Site: 101 [Int 1_OY WP_AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	33.3	mph	33.3	mph
Travel Distance (Total)	868.4	veh-mi/h	1042.1	pers-mi/h
Travel Time (Total)	26.1	veh-h/h	31.3	pers-h/h
Desired Speed (Program)	40.0	mph		
Speed Efficiency	0.83			
Travel Time Index	8.13			
Congestion Coefficient	1.20			
Demand Flows (Total)	1376	veh/h	1651	pers/h
Percent Heavy Vehicles (Demand)	3.0	%		
Degree of Saturation	0.499			
Practical Spare Capacity	70.3	%		
Effective Intersection Capacity	2757	veh/h		
Control Delay (Total)	2.60	veh-h/h	3.12	pers-h/h
Control Delay (Average)	6.8	sec	6.8	sec
Control Delay (Worst Lane)	9.2	sec		
Control Delay (Worst Movement)	9.2	sec	9.2	sec
Geometric Delay (Average)	0.0	sec		
Stop-Line Delay (Average)	6.8	sec		
Idling Time (Average)	4.7	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	3.2	veh		
95% Back of Queue - Distance (Worst Lane)	81.8	ft		
Ave. Queue Storage Ratio (Worst Lane)	0.02			
Total Effective Stops	395	veh/h	474	pers/h
Effective Stop Rate	0.29		0.29	
Proportion Queued	0.42		0.42	
Performance Index	39.9		39.9	
Cost (Total)	550.84	$/h	550.84	$/h
Fuel Consumption (Total)	35.7	gal/h		
Carbon Dioxide (Total)	320.0	kg/h		
Hydrocarbons (Total)	0.028	kg/h		
Carbon Monoxide (Total)	0.393	kg/h		
NOx (Total)	0.494	kg/h		

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Site Model Variability Index (Iterations 3 to N): 0.0 %
Number of Iterations: 3 (Maximum: 10)
Largest change in Lane Degrees of Saturation for the last three Flow-Capacity Iterations: 100.0% 93.1% 0.0%

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	660,522	veh/y	792,626	pers/y
Delay	1,249	veh-h/y	1,499	pers-h/y
Effective Stops	189,488	veh/y	227,386	pers/y
Travel Distance	416,847	veh-mi/y	500,217	pers-mi/y
Travel Time	12,532	veh-h/y	15,038	pers-h/y

Cost	264,403	$/y	264,403	$/y
Fuel Consumption	17,135	gal/y		
Carbon Dioxide	153,585	kg/y		
Hydrocarbons	13	kg/y		
Carbon Monoxide	189	kg/y		
NOx	237	kg/y		

Organisation: KIMLEY-HORN & ASSOCIATES INC | Licence: NETWORK / Enterprise | Processed: Friday, August 27, 2021 8:31:36 AM
Project: K:\SND_TPTO\095426008_Moreno_Valley_Pilot_TC\Traffic\7 Submittals\1st Submittal\1 Analysis\Sidra\Moval Pilot_Roundabout.sip9

INTERSECTION SUMMARY

Site: 101 [Int 1_OY WP_PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	32.6	mph	32.6	mph
Travel Distance (Total)	1071.7	veh-mi/h	1286.0	pers-mi/h
Travel Time (Total)	32.9	veh-h/h	39.5	pers-h/h
Desired Speed (Program)	40.0	mph		
Speed Efficiency	0.81			
Travel Time Index	7.93			
Congestion Coefficient	1.23			
Demand Flows (Total)	1696	veh/h	2035	pers/h
Percent Heavy Vehicles (Demand)	3.0	%		
Degree of Saturation	0.507			
Practical Spare Capacity	67.7	%		
Effective Intersection Capacity	3346	veh/h		
Control Delay (Total)	3.98	veh-h/h	4.78	pers-h/h
Control Delay (Average)	8.5	sec	8.5	sec
Control Delay (Worst Lane)	11.5	sec		
Control Delay (Worst Movement)	11.5	sec	11.5	sec
Geometric Delay (Average)	0.0	sec		
Stop-Line Delay (Average)	8.5	sec		
Idling Time (Average)	5.3	sec		
Intersection Level of Service (LOS)	LOS A			
95% Back of Queue - Vehicles (Worst Lane)	3.6	veh		
95% Back of Queue - Distance (Worst Lane)	92.4	ft		
Ave. Queue Storage Ratio (Worst Lane)	0.02			
Total Effective Stops	739	veh/h	886	pers/h
Effective Stop Rate	0.44		0.44	
Proportion Queued	0.49		0.49	
Performance Index	56.8		56.8	
Cost (Total)	693.25	$/h	693.25	$/h
Fuel Consumption (Total)	44.8	gal/h		
Carbon Dioxide (Total)	401.4	kg/h		
Hydrocarbons (Total)	0.035	kg/h		
Carbon Monoxide (Total)	0.490	kg/h		
NOx (Total)	0.619	kg/h		

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Site Model Variability Index (Iterations 3 to N): 0.0 %
Number of Iterations: 3 (Maximum: 10)
Largest change in Lane Degrees of Saturation for the last three Flow-Capacity Iterations: 100.0% 93.4% 0.0%

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	813,913	veh/y	976,696	pers/y
Delay	1,912	veh-h/y	2,295	pers-h/y
Effective Stops	354,570	veh/y	425,484	pers/y
Travel Distance	514,402	veh-mi/y	617,282	pers-mi/y
Travel Time	15,796	veh-h/y	18,956	pers-h/y

Cost	332,759	$/y	332,759	$/y
Fuel Consumption	21,500	gal/y		
Carbon Dioxide	192,694	kg/y		
Hydrocarbons	17	kg/y		
Carbon Monoxide	235	kg/y		
NOx	297	kg/y		

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South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SENT VIA E-MAIL:
jeffreyb@moval.org
Jeff Bradshaw, Associate Planner
City of Moreno Valley, Planning Department
14177 Frederick Street
Post Office Box 88005
Moreno Valley, California 92558

November 23, 2021

Mitigated Negative Declaration (MND) for the Proposed Pilot Travel Center Project (PEN21-0077) (Proposed Project)

South Coast Air Quality Management District (South Coast AQMD) staff appreciates the opportunity to comment on the above-mentioned document. The City of Moreno Valley is the Lead Agency under the California Environmental Quality Act (CEQA) for the Proposed Project. The following comments include information on South Coast AQMD's permits that the Lead Agency should consider in the Final MND.

In the MND, the Lead Agency proposes to construct and operate a 14,087-square-foot travel center and a fueling service station with 16 gasoline pumps and nine diesel pumps on 17.28 acres (Proposed Project). The MND calculated the residential cancer risk based on a 70-year exposure and the workplace cancer risk based on a 40-year exposure. The South Coast AQMD's CEQA significance threshold of 10 in a million for cancer risk is based on a 30-year exposure duration for sensitive receptors and a 25-year exposure duration for off-site workers. Since the Lead Agency compared the Proposed Project's cancer risk to the South Coast AQMD's CEQA significance threshold of 10 in a million to determine the level of significance for the Proposed Project's health risk impacts, the Lead Agency should use a 30-year exposure period for sensitive receptors (residents) and a 25-year exposure period for off-site workers to re-calculate the Proposed Project's health risks in the Final MND.

Since implementation of the gasoline service portion of the Proposed Project requires permits from South Coast AQMD, the Lead Agency should identify South Coast AQMD as the CEQA Responsible Agency for the Proposed Project in the Final MND (CEQA Guidelines Section 15381). Any assumptions used in the Final MND will be used as the basis for permit conditions and limits for the Proposed Project. The 2015 revised Office of Environmental Health Hazard Assessment (OEHHA) methodology is being used by South Coast AQMD for determining operational health risks for permitting applications and also for all CEQA projects where South Coast AQMD is the Lead Agency. Please contact South Coast AQMD's Engineering and Permitting staff at (909) 396-3385 for questions on permits. For more general information on permits, please visit South Coast AQMD's webpage at: http://www.aqmd.gov/home/permits.

Pursuant to CEQA Guidelines Section 15074, prior to approving the Proposed Project, the Lead Agency shall consider the MND for adoption together with any comments received during the public review process. Please provide South Coast AQMD with written responses to all

JASON E. UHLEY
General Manager-Chief Engineer

1995 MARKET STREET
RIVERSIDE, CA 92501
951.955.1200
951.788.9965 FAX
www.rcflood.org

RIVERSIDE COUNTY FLOOD CONTROL
AND WATER CONSERVATION DISTRICT

241312

December 2, 2021

City of Moreno Valley
Community Development Department Planning Division
Post Office Box 88005
Moreno Valley, CA 92552-0805

Attention: Jeff Bradshaw

Re: PEN 21-0077
APNs 488-330-030, 488-330-035, 488-330-037, 488-330-036, 488-330-037 and 488-330-038

The Riverside County Flood Control and Water Conservation District (District) does not normally recommend conditions for land divisions or other land use cases in incorporated cities. The District also does not plan check City land use cases or provide State Division of Real Estate letters or other flood hazard reports for such cases. District comments/recommendations for such cases are normally limited to items of specific interest to the District including District Master Drainage Plan facilities, other regional flood control and drainage facilities which could be considered a logical component or extension of a master plan system, and District Area Drainage Plan fees (development mitigation fees). In addition, information of a general nature is provided.

The District's review is based on the above-referenced project transmittal, received November 12, 2021. The District **has not** reviewed the proposed project in detail, and the following comments do not in any way constitute or imply District approval or endorsement of the proposed project with respect to flood hazard, public health and safety, or any other such issue:

☐ This project would not be impacted by District Master Drainage Plan facilities, nor are other facilities of regional interest proposed.

☒ This project involves District proposed Master Drainage Plan facilities, namely, Moreno MDP Line F-2. The District will accept ownership of such facilities on written request of the City. Facilities must be constructed to District standards, and District plan check and inspection will be required for District acceptance. Plan check, inspection, and administrative fees will be required.

☐ This project proposes channels, storm drains 36 inches or larger in diameter, or other facilities that could be considered regional in nature and/or a logical extension of the adopted _____ Master Drainage Plan. The District would consider accepting ownership of such facilities on written request of the City. Facilities must be constructed to District standards, and District plan check and inspection will be required for District acceptance. Plan check, inspection, and administrative fees will be required.

☒ This project is located within the limits of the District's Moreno Area Drainage Plan for which drainage fees have been adopted. If the project is proposing to create additional impervious surface area, applicable fees should be paid by cashier's check or money order only to the Flood Control District or City prior to issuance of grading or building permits. Fees to be paid should be at the rate in effect at the time of issuance of the actual permit.

☒ An encroachment permit shall be obtained for any construction related activities occurring within District right of way or facilities, namely, Moreno MDP Line F-2 and F-16. For further information, contact the District's Encroachment Permit Section at 951.955.1266.

☐ The District's previous comments are still valid.

GENERAL INFORMATION

This project may require a National Pollutant Discharge Elimination System (NPDES) permit from the State Water Resources Control Board. Clearance for grading, recordation, or other final approval should not be given until the City has determined that the project has been granted a permit or is shown to be exempt.

If this project involves a Federal Emergency Management Agency (FEMA) mapped floodplain, then the City should require the applicant to provide all studies, calculations, plans, and other information required to meet FEMA requirements, and should further require that the applicant obtain a Conditional Letter of Map Revision (CLOMR) prior to grading, recordation, or other final approval of the project and a Letter of Map Revision (LOMR) prior to occupancy.

If a natural watercourse or mapped floodplain is impacted by this project, the City should require the applicant to obtain a Section 1602 Agreement from the California Department of Fish and Wildlife and a Clean Water Act Section 404 Permit from the U.S. Army Corps of Engineers, or written correspondence from these agencies indicating the project is exempt from these requirements. A Clean Water Act Section 401 Water Quality Certification may be required from the local California Regional Water Quality Control Board prior to issuance of the Corps 404 permit.

Very truly yours,

Deborah de Chambeau

DEBORAH DE CHAMBEAU
Engineering Project Manager

ec: Riverside County Planning Department
Attn: Phayvanh Nanthavongdouangsy
City of Moreno Valley
Attn: Chris Ormsby

WMC:slj:ju

comments contained herein prior to the adoption of the Final MND. When responding to issues raised in the comments, responses should provide sufficient details giving reasons why specific comments and suggestions are not accepted. There should be good faith, reasoned analysis in response. Conclusory statements unsupported by factual information do not facilitate the purpose and goal of CEQA on public disclosure and are not meaningful, informative, or useful to decision makers and the public who are interested in the Proposed Project.

South Coast AQMD staff is available to work with the Lead Agency to address any air quality questions that may arise from this comment letter. Please contact me at lsun@aqmd.gov if you have questions or wish to discuss the comments.

Sincerely,

Lijin Sun

Lijin Sun.
Program Supervisor, CEQA IGR
Planning, Rule Development & Area Sources

LS
RVC211116-05
Control Number

Jeff Bradshaw

From: George Hague <gbhague@gmail.com>
Sent: Thursday, December 2, 2021 5:28 PM
To: Jeff Bradshaw
Cc: Sean P. Kelleher
Subject: Pilot Gas Travel Center Initial Study and MND comments

Good afternoon Mr Bradshaw,

Re: Pilot Gas Travel Center Initial Study/Mitigated Negative Declaration

This projects direct/indirect cumulative impacts are much closer than 300 feet to the land across the street that is zoned for homes and therefore the families that could be living in them. It is not the building or the pumps that cause impacts, but the toxic diesel trucks that will be using Eucalyptus Ave which places them more like 100 feet away from the property our recently approved General Plan designated for family homes. Based on page 2 of the traffic report the project will attract more than 6,500 trips of which at least 2,200 are toxic diesel truck trips using Eucalyptus Ave and within 100 feet of land zoned for homes.

There is also no analysis of how much and how long the trucks will idle while on the project site which must be done or the analysis of air quality impact is inadequate. Trucks use Auxiliary Power Units (APU) to run much of their onboard equipment like air-conditioning. What limits are in placed on the use of diesel APU's on the project and what analysis has been done on their impact to Greenhouse gas (GHG) and our air quality which is in non-attainment? Will plug ins be required for electric APU's? Will the Truck Stop have places for electric semi trucks to recharge — such trucks are on the road now and will significantly increase by 2030?

Please remember the health of Moreno Valley residents is important and diesel pollution has heavily contributed to much of Moreno Valley south of SR-60 into a state designated Disadvantage Community based on SB 535.

As shown in the figure under my name shows this proposal is located on lands the state designates as Disadvantage Community under SB 535. The project does very little to lessen the burden of living in this area and must do more as outlined for communities so designated as shown by the state and the legislation. In fact this Truck Stop will significantly increase the burden on living in this area.

There is no analysis of this project's impact on our Auto Center. All of the more than 3,2000 project vehicles which includes at least 1,200 Daily diesel trucks may drive west on Eucalyptus Ave to avoid the tight radius of the roundabout and therefore pass the several dealerships owned by Moss Bros to reach Moreno Beach Drive. Who has informed them of this project and given them time to make Initial Study comments on the very possible serious

impacts to their businesses — which could significantly impact tax revenues for our city. It has been my understanding that the City has conditioned other existing warehousing between Redlands Blvd and Moreno Beach Dr to not use Moreno Beach Blvd. If this is true, how can you allow this project's 1,000's of cars and diesel trucks to turn left towards Moreno Beach Dr? With the median extended many vehicles will be forced to drive west to Moreno Beach and impact Moss Bros.

The Traffic letter of October 15, 2021 points out problems such as a lack of cumulative traffic impacts. Has traffic analysis and MND been amended to address all the concerns with the the project? "Due to the lack of approved cumulative project traffic data in the 'Opening Year Without Project' scenarios, both the of the opening year analysis will need to be revised. In addition, the capacity analyses worksheets for the roundabout analyses need to be included in the revised report." (October 15, 2021 letter — Technical Memorandum)

This Truck Stop Project is inconsistent with the. The "Vision and Guiding Principles" of the General Plan 4 including to support and create "Livable Neighborhoods" that "prioritize … community health." General Plan p. 1-10. According to the Land Use & Community Character Element, the purpose of the General Plan's land use designations are to "enhance[] livability and quality of life for current and future residents.." General Plan p. 2-8. Yet the Project will result in uses that brings substantial truck traffic and noise to the residential designated area across the street. The General Plan states that "residential neighborhoods form the basic fabric of the community. These are areas of the city characterized primarily by housing, parks, and community facilities." Id. The Project—a vehicle attracting facility consisting of round-the-clock operations and thousands of truck trips per day —represents the opposite of community-oriented development.

Diesel trucks have an A-weighted sound level of 90 decibels at 150 feet which this projects generates as trucks turn into and leave the project. This is an impact to the land our General Plan designated as residential and is across the street. This impacts has not been fully analyzed.

The project is inconsistent with the Environmental Justice element of the General Plan. The Project is patently inconsistent with the principles, policies, and goals of the new General Plan with respect to land use compatibility.

Has CalTrans been given this and commented — if not they should?

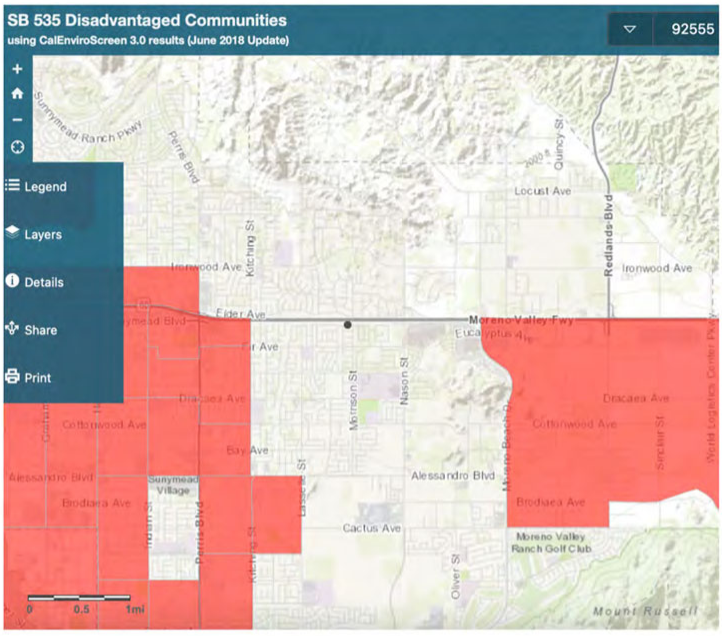
The queuing areas are not long enough and will cause problems like the first Starbucks on Moreno Beach Dr.

The Sierra Club appreciates this opportunity to provide some additional input into this project. Please keep us informed of all meetings and future documents by emailing me and sending them to our local P.O. Box.

Sincerely,

George Hague
Sierra club
Moreno Valley Group
Conservation Chair

P.O. Box 1325
Moreno Valley, CA 92556



Jeff Bradshaw

From: George Hague <gbhague@gmail.com>
Sent: Tuesday, December 7, 2021 4:13 PM
To: Jeff Bradshaw
Cc: Sean P. Kelleher; City Clerk
Subject: Comments on the Pilot Gas Travel Center for the Planning Commission

Good afternoon Planning Commissioners, December 7, 2021

Re: Pilot Gas Travel Center

I hope you as Planning Commissioners will require more information and more/better conditions of approval.

This projects direct/indirect cumulative impacts are much closer than 300 feet to the land across the street that is zoned for homes and therefore the families that could be living in them. It is not the building or the pumps that cause impacts, but the toxic diesel trucks that will be using Eucalyptus Ave which places them more like 100 feet away from the property our recently approved General Plan designated for family homes. Based on page 2 of the traffic report the project will attract more than 6.500 trips of which at least 2,200 are toxic diesel truck trips using Eucalyptus Ave and within 100 feet of land zoned for homes.

There is also no analysis of how much and how long the trucks will idle while on the project site which must be done or the analysis of air quality impact is inadequate. Trucks use Auxiliary Power Units (APU) to run much of their onboard equipment like air-conditioning. What limits are in placed on the use of diesel APU's on the project and what analysis has been done on their impact to Greenhouse gas (GHG) and our air quality which is in non-attainment? How many plug ins will be required for electric APU's? Will the Truck Stop have places for electric semi trucks to recharge — such trucks are on the road now and will significantly increase by 2030? You can add conditions to the project to make sure our city does what it can to reduce diesel and air pollution.

The very least a project like this can do is have an enhance vegetation plan which helps reduce pollution/greenhouse gas, but it appears that it is just the opposite. Much more greenery needs to be added between the the project and Redlands Blvd as well as SR-60/offramp. Trees that hide some many trucks and at the same time help our non-attainment air needs to be added by you.

Particles, odors and pollutant gases such as nitrogen oxides, ammonia and sulfur dioxide settle on the leaves of a tree. Trees absorb these toxic chemicals through their stomata, or 'pores', effectively filtering these chemicals from the air. Trees also mitigate the greenhouse gas effect by trapping heat, reduce ground-level ozone levels and release life-giving oxygen.

What is to prevent the northern part of the property that is not part of the project from becoming a parking lot for many trucks?

Will there be 24/7 security personnel part of this this Truck Stop? This is something you can require.

Please remember the health of Moreno Valley residents is important and diesel pollution has turned much of Moreno Valley south of SR-60 into a state designated Disadvantage Community based on SB 535.

As shown in the figure under my name shows this proposal is located on lands the state designates as Disadvantage Community under SB 535. The project does very little to lessen the burden of living in this area and must do more as outlined for communities so designated by the state and the legislation. In fact this Truck Stop will significantly increase the burden on living in this area.

There is no analysis of this project's impact on our Auto Center. All of the more than 3,2000 project vehicles which includes at least 1,200 Daily diesel trucks may be forced to drive west on Eucalyptus Ave passed the several dealerships owned by Moss Bros to reach Moreno Beach Drive. Who has informed them of this project and given them time to make Initial Study comments on the very possible serious impacts to their businesses — which could significantly impact tax revenues for our city. It has been my understanding that the City has conditioned other existing warehousing between Redlands Blvd and Moreno Beach Dr to not use Moreno Beach Blvd. If this is true, how can you force many of this project's 1,000's of cars and diesel trucks to turn right towards Moreno Beach Dr by placing a median on Eucalyptus?

This Truck Stop Project is inconsistent with the. The "Vision and Guiding Principles" of the General Plan 4 including to support and create "Livable Neighborhoods" that "prioritize … community health." General Plan p. 1-10. According to the Land Use & Community Character Element, the purpose of the General Plan's land use designations are to "enhance[] livability and quality of life for current and future residents.." General Plan p. 2-8. Yet the Project will result in uses that brings substantial truck traffic and noise to the residential designated area across the street. The General Plan states that "residential neighborhoods form the basic fabric of the community. These are areas of the city characterized primarily by housing, parks, and community facilities." Id. The Project—a vehicle attracting facility consisting of round-the-clock operations and thousands of truck trips per day —represents the opposite of community-oriented development.

Diesel trucks have an A-weighted sound level of 90 decibels at 150 feet which this projects generates as trucks turn into and leave the project. This is an impact to the land our General Plan designated as residential and is across the street. This impacts has not been fully analyzed.

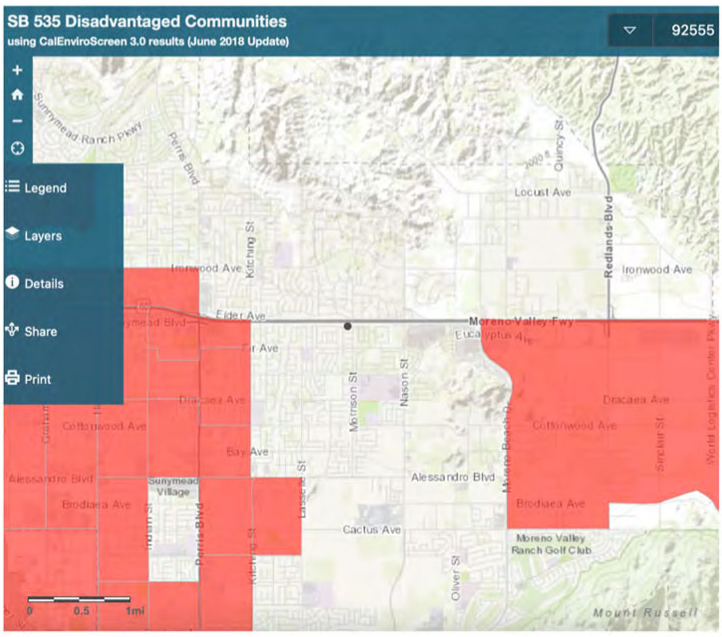
The project is inconsistent with the Environmental Justice element of the General Plan. The Project is patently inconsistent with the principles, policies, and goals of the new General Plan with respect to land use compatibility.

The World Logistic Center will be having a truck stop in a much better location which will not impact nearby residents and those trying use the roundabout on Redlands Blvd. Many of the project's trucks will be trying to use the roundabout which is really too small for them to easily make the turns and the Redlands Blvd overpass/interchange is already very busy for its small size with no plans for future improvements.

Please encourage the developer to find a better location such as further east on the World Logistic Center lands.

Sincerely,

George Hague



13

Jeff Bradshaw

From: George Hague <gbhague@gmail.com>
Sent: Wednesday, December 8, 2021 4:29 PM
To: Jeff Bradshaw
Cc: Sean P. Kelleher; City Clerk
Subject: Pilot Gas Travel Centers & suggestions & a few recent police actions

Good afternoon Planning Commissioners,

Thank you for reading my email from yesterday which had as one of its questions = whether they were going to have 24/7 security officers. I wrote that after I saw some of the problems at a few other Pilot Travel Centers/Truck stops as you can read below. Please require it!!

The first link found below has some good suggestions on Personal Safety worth considering while those that follow reveal a few serious problems at Pilot stations.

I strongly believe it is worth waiting a couple of years for the World Logistic Center to build their required truck stop for gas closer to Gilman Springs Road — away from land zoned for homes. The current proposal will have 1,000's of Daily diesel truck trips using Eucalyptus Ave and within 100 feet of the property zoned for homes…..we need more homes.

Stay well,

George Hague

Truck Driver Safety Tips for **Truck Stops** - Drive My Way
Drive My Way › blog › truck-driver-safety-tips-for-truck-st
Sep 4, 2019 **...** There are many reasons why parking and safety are **issues at truck stops**. First of all, most trucks are now longer than the allotted parking ...

Some recent problems at Pilot Gas Travel Centers/Truck Stops in the following links

Sheriff: Man "viciously executed" victim at Wisconsin **gas** station
https://www.weau.com › police-scene-incident-wisconsin-travel-center

Jul 13, 2021 **...** Racine County Sheriff Christopher Schmaling say sevents unfolded starting about 7:30 a.m. Tuesday at the **Pilot Travel Center** in the village ...

https://www.13abc.com › 2021/09/21

Sep 20, 2021 **...** Michigan State **Police** report it missing from **Pilot Travel Center** in Whiteford Twp.

Sheriff: Man 'viciously executed' at Caledonia **gas** station; shooter ...
Journal Times › news › local › crime-and-courts › sheriff-man-viciousl...

Jul 13, 2021 **... Pilot shooting**. Racine County Sheriff's and Caledonia **Police** officers occupied the **Pilot Travel Center** parking lot next to Interstate 94 …

Undercover investigator kills suspect who 'executed' man at **gas** ...
FOX6 News Milwaukee | Wisconsin & Local Milwaukee News WITI › news › heavy-police-presence-franksville-truck-stop
Jul 13, 2021 **...** "This morning, one of our Sheriff's Investigators was shot during an active shooter incident at the **Pilot Travel Center** in Caledonia. While …

Knoxville **Pilot** employees killed in stabbing attack
Knoxville News Sentinel › police-respond-attempted-stabbing-pilot-truck-stop

Apr 7, 2020 **...** Three people are dead after a stabbing at a **Pilot Travel Center** just off ... at the scene of a stabbing and **shooting** at a **Pilot** truck stop.

From: Darric
To: Jeff Bradshaw; Joe Bunker
Subject: Pilot Travel Center
Date: Wednesday, December 1, 2021 10:56:23 AM

Warning: External Email – Watch for Email Red Flags!

Good Morning Jeffrey,

It has come to my attention that you and the City of Moreno Valley are hell-bent on ruining our neighborhood with warehouses and Travel Center Truck Stops which will attract homelessness. The State of California and is political persuasion tend to ignore facts and act like things do not exist with a utopia-like foresight.

My name is Darric V Williams and I own the house @ 28793 Dracaea Ave, Moreno Valley, CA 92555. I am convinced that you do not live in my neighborhood. Cause if you did you would not approved of the things that your commission keeps pushing through on the people who worked hard to buy homes in this area and you are continuing to destroy it in the name of progress...

The added trips, trucks, congestion, noise, homelessness etc which Moreno Vally is on the verge of becoming San Francisco because of its lax policy and poor judgment is concerning to me as a resident.

I respectfully want to you consider denying this project off Redlands blvd. I do not come without compromise... I would support moving off of Theodore st where no homes are in close proximity... Your projects would face less pushback if you keep your desired construction of warehouses off of Theodore St... Off Redlands, I would consider food places, grocery stores etc, a park... There are a lot of things you could do with this land that would help keep the community feeling family friendly... But too often your decisions appear to be motivated by money and back door pay-offs by aspiring developers...

Please accept my perspective as the majority in this area... We are a silent majority that is not so silent anymore... Please treat our community and homes like you live here... Not just get a paycheck from the city and go home to a different neighborhood to live in peace because you do not have to live with the decision you have made for other homeowners.

BR

Darric
951.634.9143

--
Darric V. Williams

Cell 951.634.9143
Fax 810.963.0303

From: Joe Bunker
To: Jeff Bradshaw
Subject: Pilot Travel Center (PEN21-0077)
Date: Wednesday, December 1, 2021 10:56:56 AM

Warning: External Email – Watch for Email Red Flags!

Dear Mr. Bradshaw;
Please include this email in the public comment response section for the project listed above. I live in the neighborhood south of Encelia Ave. and will be directly impacted by the 2,200 Diesel Truck daily trips made to this project that will inevitably impact the round-about at Redlands Blvd. and Eucalyptus Ave. that I use daily. I also object to the project based on the history of these travel centers; they are known for their attractiveness to the homeless population and to those who commit human trafficking, as well as prostitution and drug sales. This project will greatly degrade my neighborhood and property values and put our neighborhood youth at risk.
Thank you,
Joe Bunker

From: Richard
To: Jeff Bradshaw
Subject: Pilot Travel Center (PEN21-0077)
Date: Wednesday, December 1, 2021 9:46:51 PM

Warning: External Email – Watch for Email Red Flags!

Dear Mr. Bradshaw;
Please include this email in the public comment response section for the project listed above. I live in the neighborhood south of Encelia Ave and have lived in this neighborhood for over 20 years and will be directly impacted by the 2,200 Diesel Truck daily trips made to this project that will severely impact the traffic on Redlands Blvd, Eucalyptus Ave and the exits and entrances to the freeway. I also object to the project based on the history of these travel centers; they are known for their attractiveness to the homeless population and to those who commit human trafficking, as well as prostitution and drug sales. This project will greatly degrade my neighborhood and property values and put our neighborhood youth at risk along with the health of all the surrounding homeowners do to all the air pollution caused by the excess amount of diesel's that would be traveling through it everyday.

Thank you,
Richard Moreno

Sent from my iPhone

Jeff Bradshaw

From: George Hague <gbhague@gmail.com>
Sent: Sunday, January 30, 2022 11:30 PM
To: Jeff Bradshaw
Cc: Sean P. Kelleher
Subject: 1 truck per minute .... 1 car every ten seconds because of the Pilot Truck Stop/travel center added to existing traffic

http://morenovalleyca.iqm2.com/Citizens/Detail_Meeting.aspx?ID=2868
Down load Pilot **agenda packet** for referenced pages (1-13-2022)

Good afternoon Planning Commissioners, January 30, 2022

RE: Pilot Truck Stop/Travel Center

Almost one truck per minute very slowly using the roundabout and Eucalyptus Ave near land zoned for homes = Pilot truck stop/travel center

The developer said most of the 400 diesel trucks (actually 800 truck trips in/out on packet page 1220) will be using the site during the day. Therefore we could have 3/4 of the 800 diesel truck trips during the 12 hours of daylight or 600 truck trips. This means 600 trucks divided by 12 hours = 50 trucks every hour or about one per minute very slowly using the poorly designed single lane roundabout and the out-of-date Redlands Blvd interchange near Spruce Ave. Since they are using 3 passenger car equivalent (PCE) for each truck this could be 3 per minute….they could have used 4 or 5 PCE.

Total project driveway trips for passenger cars is = 4,156 trips (packet page 1220 in the link found above). Again uing 3/4 of that total during `12 daylight hours = 3117 car trips. This means 3117 divided by 12 = 260 trips per hour added to the 50 trucks (3X's PCE 150 more "cars") or a total of 410 "cars" per hour.

Pilot Travel Center will add about 1 car every 10 seconds to the single lane roundabout above the the existing traffic which is currently awful several extended times per day. Their own traffic study shows the single lane interchange (between Spruce Ave/SR-60 EB & SR-60 WB Ramps) will be negatively impacted (agenda packet page 1235) to worse than Level of Service D. While they write widening Redlands Blvd to four lanes may help a little they do not address the roundabout and interchange remaining single lanes — with no money or plans to upgrade the interchange.

These totals do not take in account all the cumulative traffic from all the approved/built and not built warehouses/projects and warehouses/projects which could be approved that will also need to use portions of the roundabout and interchange If all of these were included in their traffic counts, then the numbers would be much worse.

George Hague

P.S. **Why doesn't the city have a Truck Parking Standard? It is a good project in the wrong location.**

Jeff Bradshaw

From: George Hague <gbhague@gmail.com>
Sent: Monday, January 31, 2022 10:49 PM
To: Jeff Bradshaw
Cc: Sean P. Kelleher
Subject: Pilot Truck Stop/Travel Center & impacted Redlands Blvd Interchange

http://morenovalleyca.iqm2.com/Citizens/Detail_Meeting.aspx?ID=2868
Down load Pilot **agenda packet** for referenced page (1-13-2022)

Good afternoon again Planning Commissioner, January 31, 2022

Within the agenda packet you had for your last meeting on the Pilot Truck Stop/Travel Center found in the link found above, they mention that the interchange will be impacted — without using the word "interchange". The sentences below my name come from Agenda Packet Page 1235 in the link found above.

Those sentences mention Spruce Ave which is the frontage road on the north side of SR-60 near the interchange. It appears the SR-60 West Bound Ramps and SR-60 East Bound Ramps (the interchange) will operate at a Level Of Service that is worse than "D" which means "E" or "F" and that is really bad. **It is very sad that they are not sharing how bad this interchange could be in 2023 or 2024 if the AM/PM Service Station/Market is approved that uses areas adjacent to Spruce Ave at Redlands Blvd as it entrance/exit = at the interchange.** There is also the real possibility the City Council will approve the Moreno Valley Trade Center over your objections. By using the "Opening Year 2022" they are not including these two projects which will really clog this interchange as well as the single lane roundabout. CEQA demands and You must require a complete traffic analysis which includes these two projects as well as others.

It will be many years before the Redlands Blvd Interchange is upgraded to be like Nason Street — even if this developer pays his required DIF and TUMF fees for this purpose. They will only represent a very small fraction of the interchange replacement's total cost.

The single lane roundabout which is very poorly designed for large semi-trucks makes the recommendation of widening Redland's Blvd to four lanes almost meaningless. If the City would not approve General Plan Amendments for warehousing in this area or the Conditional Use Permit for this project, the roundabout would be functional.

Stay well,

George Hague

· Under Existing Conditions, all study locations currently operate at Level of Service D or better, except for the following roadway segment:

o Redlands Boulevard between Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps · Under Opening Year 2022 Conditions, all study locations would operate at Level of Service D

or better, except for the following roadway segment:
o Redlands Boulevard between Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps

· Under Opening Year 2022 Plus Project Conditions, all study locations would operate at Level of Service D or better, except for the following roadway segment:

o Redlands Boulevard between Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps

· The project would have a project-related effect at the following study roadway segment:
o Redlands Boulevard between Spruce Avenue/SR-60 WB Ramps and SR-60 EB Ramps

- Agenda Packet Page 1235

From: George Hague
To: Jeff Bradshaw
Cc: Sean P. Kelleher
Subject: III Pilot Truck Stop/Travel Center & AM/PM Service Station
Date: Wednesday, February 2, 2022 4:23:16 PM

Warning: External Email – Watch for Email Red Flags!

Good afternoon Planning Commissioners, February 2, 2022

The Pilot Travel Center location is seen in the map found below as well as the proposed AM/PM Service Station which is only a short distance away. As I mentioned in my last email the Pilot project will significantly impact the interchange shown in the picture to a level of service which is not acceptable and that is without including the AM/PM service station. It is probably also without the Moreno Valley Trade Center's traffic — both project traffic must be part of this project's traffic analysis or it is inadequate. CEQA requires both projects' traffic to be part of the Pilots traffic analysis and the Planning Commission must also require it. I assume all traffic from all the warehouses on Eucalyptus Ave will also be included.

To protect a major tax base for the city all Pilot truck traffic must be required to only use the small section of Eucalyptus Ave in front of their project and none of the roadway that goes through the Auto Center. I believe the ProLogis Eucalyptus Industrial Park is required to not go through the Auto Center and that is why they paid for most of the signals on Redlands Blvd south of the proposed AM/PM service station.

Those of you who have tried to use the single lane roundabout on Redlands Blvd during the evening "rush" hour(s) know it is already significantly impacted with traffic and the Pilot's slow moving trucks (about one/minute) will make it a nightmare — let alone all the 1,000's of Daily project's car trips. Widening Redlands Blvd will not improve the bottleneck/traffic jam caused by the single lane roundabout if this project is approved.

Pilot's required TUMP and DIF contribution will provide little to improve the out-of-date Redland Blvd's Interchange to match Nason Street's is years away.

The best place for a truck stop is where it is already planned and only a couple of miles away from this Pilot site = within the World Logistic Center (WLC). We do not need two truck stops a few miles apart. The WLC site is away from homes and land zoned for homes. **The Pilot Truck Stop is across the street from land zoned for homes and their trucks will use Eucalyptus Ave right in front of where homes could be built.**

Take care and stay well,

George Hague

Arco AM/PM Service Station Project

The project is located at the southeast corner of Redlands Boulevard and Hemlock Avenue.

This project includes:

An application for a Conditional Use Permit to develop a 2.4-acre portion of a 6.9-acre site with a 6,323-square foot retail building

Building includes a 5,123-square foot food market with office and storage in a mezzanine level and an adjacent 1,200-square foot retail tenant space

Fueling stations for gasoline and diesel dispensing within the Highway Office/Commercial (HO/C) District.

Arco AM/PM Service Station Project Review Documents

Project Map

Environmental Review Documents

Notice to Adopt a Mitigated Negative Declaration | Mitigated Negative Declaration

Technical Appendices

(updated 1/13/2022)

Appendix A:MSHCP Consistency Analysis and Habitat Assessment

Appendix B: Air Quality and Greenhouse Gas Study

Appendix C:Jurisdictional Waters and Wetlands Delineation

PLANNING COMMISSION

STAFF REPORT

Meeting Date: January 13, 2022

A CONDITIONAL USE PERMIT FOR THE DEVELOPMENT OF A TRAVEL CENTER THAT INCLUDES FAST FOOD, RETAIL, FUELING STATIONS FOR PASSENGER VEHICLES AND TRUCKS, AND TRUCK PARKING ON A 17-ACRE PARCEL LOCATED AT THE NORTHWEST CORNER OF REDLANDS BOULEVARD AND EUCALYPTUS AVENUE

Case:	PEN21-0077 – Conditional Use Permit
Applicant:	Pilot Company
Property Owner	NALA Prop
Representative	Pilot Company, c/o Brad Alsup
Location:	Northwest corner of Redlands Boulevard and Eucalyptus Avenue
Case Planner:	Jeff Bradshaw
Council District:	3
Proposal	This item was continued from December 9, 2021, Planning Commission agenda to the January 13, 2022 agenda. The Applicant is requesting approval of a Conditional Use Permit for the Pilot Travel Center to develop a 17.28-acre site with a 14,087-square foot travel center building with space for a drive-through fast food restaurant, additional food service with a kitchen, retail store, driver amenities (e.g., restrooms, showers, laundry), and support/utility areas, fueling stations for passenger vehicles and trucks, and above ground fuel storage tanks.

SUMMARY

Pilot Company, LLC (“Applicant”), is requesting approval of Conditional Use Permit (PEN21-0077) for the development of the Pilot Travel Center on a 17.28-acre site that

will include a 14,087 square-foot travel center with fueling stations for passenger vehicles and trucks.

BACKGROUND

This Item was continued from December 9, 2021, Planning Commission agenda to the January 13, 2022 agenda.

PROJECT DESCRIPTION

Project

The Proposed Project consists of a Conditional Use Permit (PEN21-0077) to develop a travel center on a vacant property of approximately 17-acres located within the Community Commercial (CC) zoning district. The Project will include a travel center building with space for a drive through fast food restaurant (3,521-square feet), additional food service with a kitchen, retail store (10,566-square feet), driver amenities (e.g., restrooms, showers, laundry), and support/utility areas, fueling stations for passenger vehicles and trucks, truck parking and above ground fuel storage tanks.

The Project Site is comprised of multiple parcels and has been conditioned to combine the parcels into a single parcel prior to issuance of building permits. The footprint of the Project's developable area will not extend to the northern-most property line or the State Route 60 right-of-way. A remainder area will remain undeveloped in anticipation of future off-ramp improvements at Redlands Boulevard. A final design for the off-ramp has not yet been determined by the City of Moreno Valley or Caltrans. The Applicant has agreed to maintain the area with landscaping memorialized as a condition of approval that will make it enforceable.

Conditional Use Permit PEN21-0077

The City of Moreno Valley Municipal Code allows for the development of a service station in the Community Commercial (CC) District with the approval of a Conditional Use Permit if the site is within 300-feet of a residential zoning district. The property to the South of the project site, on the south side of Eucalyptus Avenue, is currently zoned Residential Agriculture 2 (RA-2) District, a residential district.

The travel center building has a gross building floor area of 14,087 square feet and is therefore not classified as a convenience store as defined by the Municipal Code. Beer and wine sales are permitted as an accessory use to the retail operation of the travel center and would not require approval of a Conditional Use Permit.

A Conditional Use Permit allows the City to impose special development requirements to ensure that certain uses will not be detrimental to the Proposed Project's surrounding properties. Basically, conditionally permitted uses may be appropriate at one location but not at another because of the potential for impacts on surrounding properties that cannot be adequately mitigated through a Conditional Use Permit.

The following summarizes the Project's design elements that are intended to minimize impacts on the residential district to the South:

- Perimeter landscape parkways, fences, and screening tree rows along the Site's northern property line and along the Site's Redlands and Aldi Place frontages to screen the truck fueling and truck storage area;
- Screen walls/fencing around the above-ground storage tanks;
- Screen walls/fencing and landscape to screen the trash enclosure and travel center maintenance area; and
- Landscape and irrigation within the undeveloped remainder portion to the North of the truck storage area.

The Proposed Project as designed and conditioned satisfies all requirements of the General Plan and the Municipal Code.

Site/Surrounding Area

The approximately 17-acre Project Site is a vacant and unimproved parcel within the Community Commercial (CC) District located on the south side of State Route 60 at the northwest corner of Redlands Boulevard and Eucalyptus Avenue. The vacant site's topography is mostly level and slopes downward from State Route 60 towards Eucalyptus Avenue. The southern portion of the Site is at grade with Eucalyptus Avenue.

To the North is State Route 60, with existing commercial and residential uses in the newly established Highway Office/Commercial (HO/C) District. The existing use located to the West of the subject site is the Aldi corporate headquarters/distribution facility and Skechers distribution center to the East; both are located in the Light Industrial (LI) zone. To the South is a vacant parcel zoned Residential Agriculture 2 (RA-2) District. The property to the South is currently being considered under appeal for a new warehouse building.

Access

The proposed project will have three access points from one driveway on Eucalyptus Avenue and two driveways on Aldi Place. All driveways have been designed and conditioned to conform to City of Moreno Valley standards for commercial driveway approaches with the following types of access:

- Eucalyptus Avenue driveway: Right-in and right-out only;
- Aldi Place southerly driveway: Full access for passenger vehicles only; and
- Aldi Place northerly driveway: Full access for trucks only.

The Proposed Project has also been designed and conditioned to provide a separate egress from the truck fueling area to the vehicle fueling area to satisfy City emergency access requirements.

Parking

The Proposed Project requires a total of 83 vehicle parking spaces to satisfy Municipal Code requirements for the combination of retail, restaurant, and service station uses on the Project Site. The Proposed Project, as designed, satisfies the City's parking requirements. The City has no requirements for truck parking. The proposed 54 parking spaces for trucks/trailers is a design preference, and it is provided as an amenity within the travel center.

Design

The design of the travel center building is intended to complement the corporate architecture established by the existing warehouses in the near vicinity of the Project. The design includes four-sided architecture with vertical and horizontal articulation changes to separate or frame distinct building elements to break up the massing of each elevation. The elevations combine multiple materials, including the use of glass, corrugated metal, fiberboard, and cement panels, and concrete blocks in light and dark gray tones with white aluminum canopies, mullions, and door frames. The fueling station canopies have been designed with a very low profile to complement the travel center building.

Landscaping

The truck parking area will be screened with an eight (8) foot tall metal fence along all sides. Additionally, a tree row will be planted outside the fence along the north side of the truck parking area, and a three (3) foot tall berm will be planted with dense landscape, and a tree row will be placed in front of the fence along the Redlands Boulevard frontage. The above-ground fuel storage tanks will be screened by a ten (10) foot high metal fence to match the design of the perimeter fence.

The project location includes two segments of multiple-use trails according to the City's Master Plan of Trails. The project has been conditioned and designed to construct a segment of multi-use trail along the Eucalyptus Avenue frontage to match the trail design of the built trail located to the West along the Aldi warehouse frontage and to set aside area along the Redlands Boulevard frontage for future multiple-use trail improvements.

The proposed project has been designed to meet and exceed the required design and landscape standards and objectives of the Municipal Code. The Project has been conditioned to provide landscape and irrigation within the remaining area between the truck fueling area and SR-60. The Applicant has agreed to and been conditioned to install landscape at the southeast of the site to mirror the landscape design established by existing development at the Northeast corner of Redlands Boulevard and Eucalyptus Avenue.

REVIEW PROCESS

All appropriate agencies within and outside of the City have considered the proposed project, which is part of the standard review process for development applications. The Proposed Project was reviewed by the Project Review Staff Committee as required by the Municipal Code. Following subsequent revisions and reviews by staff, the Proposed Project's application and related materials were determined to be complete with a recommendation to approve the Proposed Project as designed and conditioned.

ENVIRONMENTAL

A Mitigated Negative Declaration was prepared by De Novo Planning Group in compliance with the California Environmental Quality Act (CEQA) Guidelines. The Mitigated Negative Declaration examined the potential of the proposed Project's impacts on the environment. The Mitigation Negative Declaration provides information supporting the finding that a Mitigated Negative Declaration serves as the appropriate CEQA documentation for the proposed Project in that the proposed Project, with the implementation of the proposed mitigation measures, will not have a significant effect on the environment. Technical studies prepared in support of the IS/MND include the following: Air Quality / Greenhouse Gas Analysis, Health Risk Assessment, Biological Assessment, Cultural Resource Survey, Geotechnical Study, Preliminary Hydrology Study, Noise Study, Traffic Impact Analysis, and Vehicle Miles Traveled memorandum. The electronic files for the Mitigated Negative Declaration with appendices are attached to this staff report. Anyone wishing to view the documents can also do so at City Hall.

Mitigation measures are recommended for the proposed Project in the following areas: Biological Resources, Geological Resource, Cultural Resources, and Tribal Cultural Resources, all of which are incorporated into the Mitigation Monitoring and Report Program. Based on the Initial Study and the proposed mitigation measures, the proposed Project will not result in any significant impacts or environmental damage.

The Public Comment Period for the Notice of Availability for the Mitigated Negative Declaration began on November 10, 2021, and ended on December 2, 2021, which satisfied the required 20-day review period. As for this staff report preparation, the City had received one comment letter from the South Coast Air Quality Management District (SCAQMD). A copy of that letter is attached to this report for reference. Should comments regarding the Project be received prior to the Planning Commission public hearing, they will be provided at the public hearing.

NOTIFICATION

Public notice was sent to all property owners of record within 600 feet of the Project Site on November 24, 2021. The public hearing notice for this project was also posted on the site and published in the Press-Enterprise Newspaper on November 26, 2021, for the December 9, 2021, Planning Commission Meeting. At the December 9, 2021 Meeting, the Planning Commission continued this Item to January 13, 2022. Therefore, no further notification is required.

REVIEW AGENCY COMMENTS

The project application materials were circulated for review by all appropriate City departments and divisions and applicable outside agencies.

STAFF RECOMMENDATION

Staff recommends that the Planning Commission take the following actions:

a. That the Planning Commission **ADOPT** Resolution No. 2022-01, and thereby:

   1. **APPROVE** the Mitigation Monitoring and Reporting Program prepared for the proposed project, which consists of Conditional Use Permit (PEN21-0077) pursuant to CEQA and the CEQA Guidelines; based on the findings set forth and/or referenced in Resolution 2022-01; and

   2. **CERTIFY** the Initial Study/Mitigated Negative Declaration prepared for Conditional Use Permit (PEN21-0077) on file with the Community Development Department, incorporated herein by this reference, which was completed in compliance with CEQA and the CEQA Guidelines, and reflects that the Planning Commission reviewed and considered the information contained in the Mitigated Negative Declaration, and exercised its independent judgment and analysis of the proposed Project's potential environmental impacts, based on the findings set forth and/or referenced in Resolution 2022-01; and

b. That the Planning Commission **ADOPT** Resolution No. 2022-02, and thereby:

   1. **APPROVE** Conditional Use Permit (PEN21-0077), based on the Recitals, Evidence contained in the Administrative Record, and Findings as set forth and/or referenced in Resolution No. 2022-02.

Prepared by:
Jeffrey Bradshaw
Associate Planner

Approved by:
Sean P Kelleher
Planning Division Manager

ATTACHMENTS

To view large attachments, please click your "bookmarks" on the left hand side of this document for the necessary attachment.

1. Resolution 2022-01 - IS/MND
2. Exhibit A to Resolution 2022-01 - IS/MND
3. Appendix A - Lighting Study
4. Appendix B - Air Quality, Energy, and Greenhouse Gas

5. Appendix C - Health Risk Assessment
6. Appendix D - Biological / MSHCP
7. Appendix E - Cultural Resources
8. Appendix F - Geotechnical
9. Appendix G - Preliminary Hydrology Study
10. Appendix H - Preliminary WQMP
11. Appendix I - Noise Study
12. Appendix J1 - Traffic Impact Analysis
13. Appendix J2 - Trip Generation
14. Exhibit B to Resolution 2022-01 - NOI to Adopt MND
15. Exhibit C to Resolution 2022-01 - MMRP
16. Resolution No. 2022-02 - Conditional Use Permit
17. Project Plans
18. Zoning Map
19. Technical Memorandum - Traffic Impact Analysis Report Review Comments and Responses
20. Comments Received in Resonse to Notice of Availability of the Pilot Travel Center IS/MND
21. Comments in Response to Public Hearing Notice

Kimley»Horn

MEMORANDUM

To	Brad Alsup Director, Construction Development Pilot Travel Centers
From:	Trevor Briggs, P.E. (C87664) Kimley-Horn and Associates, Inc.
Date:	January 25, 2022
Subject:	Trip Generation Summary for the Proposed Moreno Valley Travel Center Project

This memorandum has been prepared to summarize the project trip generation provided in the *Transportation Impact Analysis* (September 2021) for the proposed Moreno Valley Travel Center project located on the northwest corner of the intersection of Redlands Boulevard at Eucalyptus Avenue, in the City of Moreno Valley.

PROJECT TRIP GENERATION

Trip generation estimates for the proposed project are based on daily and peak hour trip generation rates obtained from the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition) and applicant provided data as noted below for the following uses:

- ITE Lane Use 934: Fast Food Restaurant with Drive-Through Window
- ITE Land Use 950: Truck Stop
- ITE Land Use 960: Super Convenience Market with Gas Station
- Daily Truck Stop fuel pump data received from similar truck stop sites

Trip generation estimates for the project are summarized on Table 3 of the *Transportation Impact Analysis* and is provided as Attachment A of this memorandum.

Passenger Car Trips

Before applying any reductions or factors to the project trip estimates, the project is estimated to generate 4,777 daily passenger car trips (2,389 total passenger cars), 542 (272 inbound, 270 outbound) passenger car trips in the morning peak hour, and 443 (224 inbound, 219 outbound) passenger car trips in the evening peak hour.

However, not all trips generated by the project are anticipated to be new vehicles on the roadway. Some trips are expected to be captured by internal land uses, or from the existing flow of traffic passing the site. Internal capture reflects the anticipated on-site internal trips between the different project land uses.

After applying internal capture reductions, the project is estimated to generate 4,156 daily passenger car driveway trips (2,078 total passenger cars), 483 (242 inbound, 241 outbound) passenger car driveway trips in the morning peak hour, and 390 (197 inbound, 193 outbound) passenger car driveway trips in the evening peak hour. Driveway trips refers to the trips that will be accessing the project site through the project driveways.

Trips that are not estimated to remain internal to the proposed project site are considered external trips and are forwarded to the remaining steps of the traffic analysis. Pass-by trips are trips that are traveling on the local roadway system that stop by the project site on the way to their destination. These trips are already accounted for in the existing roadway system through existing counts, and therefore are reduced from the project trip generation.

Diverted trips are similar to pass-by trips, but diverted trips are trips already traveling on the local freeway system that stop by the project site on the way to their destination. For traffic analysis purposes, since diverted trips are considered new trips to the local roadway system, they were not reduced from the project trip generation. The diverted trips noted on Attachment A (previously mentioned) are provided for informational purposes only.

After applying internal capture and pass-by reductions, the project is estimated to generate 1,789 net new daily passenger car trips (895 total passenger cars), 194 (97 inbound, 97 outbound) net new passenger car trips in the morning peak hour, and 175 (88 inbound, 87 outbound) net new passenger car trips in the evening peak hour.

It should be noted that the intent of the proposed project is to service passenger cars that are already on the existing roadway system. A majority of passenger car trips would be existing trips on the local roadway and freeway system.

Truck Trips

Before applying pass-by reductions and passenger car equivalent (PCE) factors, the project is estimated to generate 800 daily truck trips (400 total trucks), 79 (40 inbound, 39 outbound) truck trips in the morning peak hour, and 93 (46 inbound, 47 outbound) truck trips in the evening peak hour.

For traffic analysis purposes, a PCE factor of 3.0 PCE for each truck was applied to project truck trips to determine the impact of the truck trips on the existing roadway system, compared to a single car. Also, for traffic analysis purposes, a small percentage of pass-by trips were reduced from the total truck trips.

After applying pass-by trip reductions and a PCE factor, the project is estimated to generate 2,280 net new daily PCE truck trips, 225 net new PCE truck trips in the morning peak hour, and 264 net new PCE truck trips in the evening peak hour.

It should be noted that the intent of the proposed project is to service trucks that are already on the existing roadway system. A majority of the truck trips would be existing trips from the SR-60 freeway or local roadway system.

CONCLUSION

Before applying any reductions or factors, the proposed Moreno Valley Travel Center project is estimated to generate a combined total (passenger cars and trucks) of 5,577 daily trips (4,777 passenger car trips or 2389 passenger cars; 800 truck trips or 400 total trucks). After applying internal capture and pass-by reductions, the project would generate a combined total of 2,549 net new daily trips (1,789 passenger car trips or 895 passenger cars 760 truck trips or 380 total trucks). For traffic analysis purposes, a PCE factor was applied to the project trucks, resulting in a combined total of 4,069 net new daily PCE trips (1,789 passenger car trips and 2,280 PCE truck trips).

The intent of the proposed project is to service passenger cars and trucks that are already on the existing roadway system. As a result, the proposed project would not be considered a destination location and a majority of the project trips would be existing trips from the SR-60 freeway or local roadway system.

ATTACHMENT A
SUMMARY OF PROJECT TRIP GENERATION
MORENO VALLEY TRAVEL CENTER PROJECT

Trip Generation Rates

Land Use	ITE Code (a)	Unit	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Fast-Food Restaurant w Drive-Through Window	934	KSF	470.950	0.51	0.49	40.19	0.52	0.48	32.67
Super Convenience Market/Gas Station	960	FP	230.520	0.50	0.50	28.08	0.50	0.50	22.96
Truck Stop	Data (b) / 950	FP	72.727	0.51	0.49	7.18	0.49	0.51	8.41

Project Trip Generation

Land Use	Quantity	Unit	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Passenger Car Trips									
Fast-Food Restaurant with Drive-Through	2.312	KSF	1,089	47	46	93	40	36	76
Internal Capture (c) (Daily: 13%, AM: 11%, PM: 12%)			-142	-5	-5	-10	-5	-4	-9
Pass-By Trips (d) (Daily: 50%, AM: 49%, PM: 50%)			-474	-21	-20	-41	-18	-16	-34
Diverted Trips (e) (Daily: 25%, AM: 28%, PM: 23%)			-237	-12	-11	-23	-8	-7	-15
Super Convenience Market/Gas Station	16	FP	3,688	225	224	449	184	183	367
Internal Capture (c) (Daily: 13%, AM: 11%, PM: 12%)			-479	-25	-24	-49	-22	-22	-44
Pass-By Trips (d) (Daily: 59%, AM: 62%, PM: 56%)			-1,893	-124	-124	-248	-91	-90	-181
Diverted Trips (e) (Daily: 26%, AM: 21%, PM: 31%)			-834	-42	-42	-84	-50	-50	-100
Truck Trips (f) (g) (h)									
Truck Stop	10	FP	800	40	39	79	46	47	93
Pass-By Trips (i) (Daily: 5%, AM: 5%, PM: 5%)			-40	-2	-2	-4	-2	-3	-5
PCE Truck Stop (PCE Factor = 3)			2,400	120	117	237	138	141	279
PCE Pass-By Trips (i) (Daily: 5%, AM: 5%, PM: 5%)			-120	-6	-6	-12	-6	-9	-15
Total Driveway Trips			6,556	362	358	720	335	334	669
Passenger Car			4,156	242	241	483	197	193	390
Truck PCE			2,400	120	117	237	138	141	279
Total Primary Trips			4,069	211	208	419	220	219	439
Passenger Car			1,789	97	97	194	88	87	175
Truck PCE			2,280	114	111	225	132	132	264

Notes:
KSF = thousand square feet, FP = Fueling Position
AM and/or PM rates correspond to peak of adjacent street traffic

(a) Trip Generation data for ITE Codes from *ITE Trip Generation, 10th Edition*
(b) Daily Trip Generation data provided by Applicant
(c) Internal capture rates from ITE Trip Generation Handbook, 3rd Edition NCHRP 684 Interna Trip Capture Estimation Tool
(d) Pass-by rates from ITE Trip Generation Handbook, 3rd Edition for ITE LU 934 Fast-Food Restaurant With Drive-Through Window and LU 945 Gasoline/Service Station With Convenience Market
(e) Diverted trip rates from ITE Trip Generation Handbook, 3rd Edition for ITE LU 934 Fast-Food Restaurant With Drive-Through Window and LU 945 Gasoline/Service Station With Convenience Market
(f) Truck trips include trips to the Truck Stop land use portion only, using daily trip information obtained from similar faclilities
(g) Peak hour information estimated using peak hour percentages from ITE Trip Generation Manual, 10th Edition
(h) No internal capture was assumed for the Truck Stop land use, as a truck stop is assumed to include a variety of services
(i) As there was no supporting data available to define the number of pass-by trips, pass-by rates were estimated to be 5%